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(54) Titre : MARQUEURS POUR L'ACCOUTUMANCE
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(57) Abrégé/Abstract:
Correlations between polymorphisms and addiction are provided. Methods of diagnosing, prognosing, and treating addiction are provided. Systems and kits for diagnosis, prognosis and treatment of addiction are provided. Methods of identifying addiction modulators are also described.

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(57) Abstract: Correlations between polymorphisms and addiction are provided. Methods of diagnosing, prognosing, and treating addiction are provided. Systems and kits for diagnosis, prognosis and treatment of addiction are provided. Methods of identifying addiction modulators are also described.

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MARKERS FOR ADDICTION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority to USSN 60/778,597 filed March 1, 2006, and USSN 60/811,318 filed June 6, 2006, each of which is herein incorporated by reference in its entirety for all purposes.

REQUEST TO FILE AN INTERNATIONAL APPLICATION

[0002] This paragraph is a request to accept the present application as an international application under the PCT designating all states.

STATEMENT OF GOVERNMENT INTEREST

[0003] This invention was made with government support under NIH Contract No. HHSN271200477471C. This work is also supported in part by NIH grants CA89392 from the National Cancer Institute, DA12854 and DA015129 from the National Institute on Drug Abuse, and the contract N01DA-0-7079 from NIDA. As such, the United States government has certain rights in the invention.

FIELD OF THE INVENTION

[0004] The present invention is in the field of addiction diagnosis, prognosis, and treatment. The invention relates to correlations between polymorphisms and addiction as well as systems and kits for diagnosis, prognosis and treatment of addiction and methods of identifying addiction modulators.

FIGURES

[0005] This application incorporates by reference herein in its entirety the following Figure 26 which contains Table 1:

File Name	Date Created	Size
TopSNPs.txt	March 1, 2006	1.754 MB

The content of Figure 26 is as follows:

TopSNPs.txt:

This Figure contains a table, termed Table 1 in the specification of the instant application submitted herewith, that contains information about the SNPs found to be associated with nicotine addiction in the Examples herein, *e.g.*, Examples 1, 2, 3, etc and that is some embodiments can be considered to be related to sequences.

In the table described above, the first row is a header row with the column names. The columns are as follows:

1. SNP_ID : Perlegen internal SNP identifier.
2. refsnp_ID: SNP identification number from dbSNP (NCBI) for each variant. This is the reference number according to dbSNP database established and maintained by NCBI of the National Library of Medicine at the National Institute of Health)
3. nda01_all_result.CASES_P: case allele frequency for all samples
4. nda01_all_result.CNRLS_P: control allele frequency for all samples
5. nda01_all_result.DELTA_P: delta allele frequency for all samples
6. nda01_all_result.CALL_RATE: call rate for all samples
7. nda01_all_result.HWE_P_VALUE_CTRLS: Hardy-Weinberg equilibrium (HWE) p-value for the controls
8. nda01_all_result.GC_TREND_SCORE_P: genomic control-corrected trend score p-value for all samples
9. nda01_all_result.TREND_SCORE_FWER: familywise error rate computed from candidate gene trend scores for all samples
10. nda01_all_result_sex_strat.TREND_SCORE_P_SEX_STRAT: gender-stratified trend score p-value for all samples
11. nda01_regression_result.ALL_GLM_P_VALUE: logistic regression on case/control ANOVA p-value for all samples
12. nda01_regression_result.ALL_LM_P_VALUE: linear regression on FTND score ANOVA p-value for all samples
13. nda01_ig_result.CASES_P: case allele frequency for pooled samples
14. nda01_ig_result.CTRLS_P: control allele frequency for pooled samples
15. nda01_ig_result.DELTA_P: delta allele frequency for pooled samples
16. nda01_ig_result.CALL_RATE: call rate in pooled samples
17. nda01_ig_result.HWE_P_VALUE_CTRLS: HWE p-value for the controls in the pooled samples
18. nda01_ig_result.TREND_SCORE_P: uncorrected p-value for the trend score for the pooled samples
19. nda01_ig_result_sex_strat.TREND_SCORE_P_SEX_STRAT: gender-stratified trend score p-value for the pooled samples
20. nda01_regression_result.IG_GLM_P_VALUE: logistic regression on case/control ANOVA p-value for the pooled samples
21. nda01_regression_result.IG_LM_P_VALUE: linear regression on FTND score ANOVA p-value for the pooled samples
22. nda01_rep_result.CASES_P: case allele frequency for the validation samples
23. nda01_rep_result.CTRLS_P: control allele frequency for the validation samples
24. nda01_rep_result.DELTA_P: delta allele frequency for the validation samples
25. nda01_rep_result.CALL_RATE: call rate in validation samples
26. nda01_rep_result.HWE_P_VALUE_CTRLS: HWE p-value for the controls in the validation samples
27. nda01_rep_result.GC_TREND_SCORE_P: genomic control-corrected trend score p-value for the validation samples
28. nda01_rep_result_sex_strat.TREND_SCORE_P_SEX_STRAT: gender-stratified trend score p-value for the validation samples
29. nda01_regression_result.REP_GLM_P_VALUE: logistic regression on case/control ANOVA p-value for the validation samples
30. nda01_regression_result.REP_LM_P_VALUE: linear regression on FTND score ANOVA p-value for the validation samples
31. CHROMOSOME_ID: chromosome where the SNP is mapped in NCBI Build 35 of the human genome

32. contig: contig on which the SNP is mapped in NCBI Build 35 of the human genome
33. POSITION: position on the chromosome where the SNP is mapped
34. gene_name: gene symbol for a gene near or within which the SNP is mapped
35. gene_hyperlink: indicated gene can be found in the NCBI GENE database
36. HIT_TYPE: where the SNP lies in relation to the gene, e.g., upstream, downstream, intron, exon, etc.
37. SYNONYMOUS: whether the SNP alleles cause a synonymous ("yes") or non-synonymous ("no") change in the gene sequence
38. is_candidate_region: 1 if SNP is selected from candidate gene region SNPs; 0 if SNP is selected from analysis of pooled SNPs
39. comments: additional comments regarding the SNP

BACKGROUND OF THE INVENTION

[0006] The impact of nicotine addiction in terms of morbidity, mortality, and economic costs to society is enormous. Tobacco kills more than 430,000 U.S. citizens each year, more than alcohol, cocaine, heroin, homicide, suicide, car accidents, fire, and AIDS combined. Tobacco use is the leading preventable cause of death in the United States.

[0007] Economically, an estimated $80 billion of total U.S. health care costs each year is attributable to smoking. However, this cost is well below the total cost to society because it does not include burn care from smoking-related fires, perinatal care for low-birth-weight infants of mothers who smoke, and medical care costs associated with disease caused by secondhand smoke. Taken together, the direct and indirect costs of smoking are estimated at $138 billion per year.

[0008] Nicotine is one of thousands of chemicals found in the smoke from tobacco products such as cigarettes, cigars, pipes and smokeless tobacco products, such as snuff and chewing tobacco. Nicotine is one of the most frequently used addictive drugs. First identified in the early 1800s, nicotine is the primary component in tobacco that acts on the brain, and has been shown to have a number of complex and sometimes unpredictable effects on the brain and the body.

[0009] Addiction is characterized by compulsive drug-seeking and use, even in the face of negative health consequences. The majority of cigarette smokers identify tobacco as harmful and express a desire to reduce or stop using it, but less than 7 percent of the nearly 35 million of those who make a serious attempt to quit each year succeed. Several factors also serve as determinants for first use and, ultimately, addiction, such as its high level of availability, the small number of legal and social consequences of tobacco use, and the sophisticated marketing and advertising methods used by tobacco companies.

[0010] Research has shown how nicotine increases the levels of dopamine in the brain circuitry that regulates feelings of pleasure, the so-called reward pathways, and this is of primary importance to its addictive nature. Nicotine's pharmacokinetic properties have been found also to enhance its abuse potential. Cigarette smoking produces a rapid distribution of nicotine to the brain, with drug levels peaking within 10 seconds of inhalation. The acute effects of nicotine dissipate in a few minutes, causing the smoker to continue dosing frequently throughout the day to maintain the drug's pleasurable effects and prevent withdrawal.

SUMMARY OF THE INVENTION

[0011] The present invention provides a number of new genetic correlations between nicotine addiction and various polymorphic alleles, providing the basis for early detection of susceptible individuals, as well as an improved understanding of nicotine addiction and related disorders at the molecular and cellular level. These and other features of the invention will be apparent upon review of the following.

[0012] Accordingly, this invention provides previously unknown correlations between various polymorphisms and addiction phenotypes, *e.g.*, susceptibility to nicotine addiction. The detection of these polymorphisms (or loci linked thereto), accordingly, provides robust and precise methods and systems for identifying patients that are at risk for nicotine addiction and related disorders. In addition, the identification of these polymorphisms provides high-throughput systems and methods for identifying modulators of addiction phenotypes. Table 1 provides descriptions of the polymorphisms. Descriptions of the polymorphisms also include a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9.

[0013] Accordingly, in a first aspect, methods of identifying an addiction phenotype for an organism or biological sample derived therefrom are provided. The method includes detecting, in the organism or biological sample, a polymorphism of a gene or at a locus closely linked thereto. Example genes include those listed in Table 1, in which the polymorphism is associated with an addiction phenotype. Similarly, detecting a polymorphism of Table 1, or a locus closely linked thereto, can be used to identify a polymorphism associated with an addiction phenotype. In either case, presence of the relevant polymorphism is correlated to an addiction phenotype, thereby identifying the relevant addiction phenotype. Any of the phenotypes related to addiction can constitute an addiction phenotype, *e.g.*, the phenotype can include an increased susceptibility to nicotine addiction, *etc.* Such aspects also include wherein the polymorphisms a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9.

[0014] The organism or the biological sample can be, or can be derived from, a mammal. For example, the organism can be a human patient, or the biological sample can be derived from a human patient (blood, lymph, skin, tissue, saliva, primary or secondary cell cultures derived therefrom, *etc.*).

[0015] Detecting the polymorphism can include amplifying the polymorphism or a sequence associated therewith and detecting the resulting amplicon. For example, amplifying the polymorphism can include admixing an amplification primer or amplification primer pair with a nucleic acid template isolated from the organism or biological sample. The primer or primer pair is typically complementary or partially complementary to at least a portion of the gene or other polymorphism, or to a proximal sequence thereto, and is capable of initiating nucleic acid polymerization by a polymerase on the nucleic acid template. The amplification can also include extending the primer or primer pair in a DNA polymerization reaction using

a polymerase and the template nucleic acid to generate the amplicon. The amplicon can be detected by hybridizing the amplicon to an array, digesting the amplicon with a restriction enzyme, real-time PCR analysis, sequencing of the amplicon, or the like. Optionally, amplification can include performing a polymerase chain reaction (PCR), reverse transcriptase PCR (RT-PCR), or ligase chain reaction (LCR) using nucleic acid isolated from the organism or biological sample as a template in the PCR, RT-PCR, or LCR. Optionally, amplification can include performing a whole-genome amplification, such as that described in, *e.g.*, USSN 11/173,309, filed June 30, 2005, entitled "Hybridization of Genomic Nucleic Acid without Complexity Reduction." Other formats can include allele specific hybridization, single nucleotide extension, or the like.

[0016] The polymorphism can be any detectable polymorphism, *e.g.*, a SNP. For example, the allele can be any of those noted in Table 1. The alleles can positively correlate to one or more addiction phenotypes, or can correlate negatively. Examples of each are described in Table 1. Additional examples include a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9

[0017] Polymorphisms closely linked to the genes listed in Table 1, and/or any polymorphism of Table 1 can be used as markers for an addiction phenotype. Such closely linked markers are typically about 20 cM or less, *e.g.*, 15 cM or less, often 10 cM or less and, in certain preferred embodiments, 5 cM or less from the gene or other polymorphism of interest (*e.g.*, an allelic marker locus in Table 1). The linked markers can, of course be closer than 5 cM, *e.g.*, 4, 3, 2, 1, 0.5, 0,25, 0.1 cM or less from the gene or marker locus of Table 1. In general, the closer the linkage (or association), the more predictive the linked marker is of an allele of the gene or given marker locus (or association). Here too, other polymorphisms are optionally used, e.g., a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium

with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9.

[0018] In one typical embodiment, correlating the polymorphism is performed by referencing a look up table that comprises correlations between alleles of the polymorphism and the phenotype. This table can be, *e.g.*, a paper or electronic database comprising relevant correlation information. In one aspect, the database can be a multidimensional database comprising multiple correlations and taking multiple correlation relationships into account, simultaneously. Accessing the look up table can include extracting correlation information through a table look-up or can include more complex statistical analysis, such as principle component analysis (PCA), heuristic algorithms that track and/or update correlation information (*e.g.*, neural networks), hidden Markov modeling, or the like.

[0019] Correlation information is useful for determining susceptibility (*e.g.*, patient susceptibility to addiction, *e.g.*, nicotine addiction), and prognosis (*e.g.*, likelihood that conventional methods to quit smoking will be effective in light of patient genotype).

[0020] Kits that comprise, *e.g.*, probes for identifying the markers herein, *e.g.*, packaged in suitable containers with instructions for correlating detected alleles to a addiction phenotype, *e.g.*, increased susceptibility to addiction, *etc.* are a feature of the invention as well.

[0021] In an additional aspect, methods of identifying modulators of an addiction phenotype are provided. The methods include contacting a potential modulator to a gene or gene product, such as a gene product corresponding to those listed in Table 1, and/or any gene product in Table 1, and/or a gene corresponding to any of these gene products. An effect of the potential modulator on the gene or gene product is detected, thereby identifying whether the potential modulator modulates the addiction phenotype. All of the features described above for the alleles, genes, markers, *etc.*, are applicable to these methods as well. Such methods also include polymorphisms such as a polymorphism of Table 21, a

polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9.

[0022] Effects of interest for which one may screen include: (a) increased or decreased expression of any gene of Table 1, and/or any protein encoded by these genes, in the presence of the modulator; (b) a change in the timing or location of expression of any gene of Table 1, and/or any protein encoded by these genes, in the presence of the modulator; (c) a change in any activity of any gene product encoded by any gene of Table 1, in the presence of the modulator; and/or (d) a change in localization of proteins encoded by the genes in Table 1 in the presence of the modulator. Here too the polymorphisms can comprise a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9.

[0023] The invention also includes kits for treatment of a addiction phenotype. In one aspect, the kit comprises a modulator identified by the method above and instructions for administering the compound to a patient to treat the addiction phenotype.

[0024] In an additional aspect, systems for identifying an addiction phenotype for an organism or biological sample derived therefrom are provided. Such systems include, *e.g.*, a set of marker probes and/or primers configured to detect at least one allele of one or more gene or linked locus associated with the addiction phenotype, wherein the gene comprises or

encodes any gene or gene product of Table 1. Typically, the set of marker probes or primers can include or detect a nucleotide sequence of Table 1, or an allele closely linked thereto. The system typically also includes a detector that is configured to detect one or more signal outputs (*e.g.*, light emissions) from the set of marker probes and/or primers, or an amplicon produced from the set of marker probes and/or primers, thereby identifying the presence or absence of the allele. System instructions that correlate the presence or absence of the allele with the predicted addiction phenotype, thereby identifying the addiction phenotype for the organism or biological sample derived therefrom are also a feature of the system. The instructions can include at least one look-up table that includes a correlation between the presence or absence of the one or more alleles and the addiction predisposition. The system can further include a sample, which is typically derived from a mammal, including *e.g.*, a genomic DNA, an amplified genomic DNA, a cDNA, an amplified cDNA, RNA, or an amplified RNA. The systems herein can also include a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9.

[0025] It will be appreciated that the methods, systems and kits above can all be used together in various combinations and that features of the methods can be reflected in the systems and kits, and vice-versa.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application with color drawing(s) will be provided by the Patent and Trademark Office upon request and payment of the necessary fee.

[0027] **Figures 1-6** show Q-Q plots for round 1 sets in Example 1.

[0028] **Figure 7** shows a plot of the FDR q-values in an ordered set of SNPS from Example 1.

[0029] **Figure 8** shows a zoomed-in section of the first 600 SNPs.

[0030] **Figure 9** shows an ordered distribution plot from Example 1.

[0031] **Figure 10** shows a zoomed in section of the first 300 SNPs.

[0032] **Figure 11** shows the sign agreement over a sliding window of 21 SNPs in Example 1.

[0033] **Figure 12** shows sign agreement with window size 101 of Figure 11 in Example 1.

[0034] **Figure 13** shows results of the candidate gene association analysis in Examle 3.

[0035] **Figure 14,** Panels a-c, shows detailed results for the top association signals in Example 3.

[0036] **Figure 15**, Panels a and b, shows Linkage disequilibrium (LD) between markers in (A) the *CHRNB3-CHRNA6* and (B) *CHRNA5-CHRNA3-CHRNB4* clusters of nicotinic receptor genes.

[0037] **Figure 16** shows P values of genome-wide association scan for genes that affect the risk of developing nicotine dependence.

[0038] **Figure 17**, Panels a and b, shows (A) distribution of p-values from the Stage I sample of the 31,960 individually genotyped SNPs that were selected from pooled genotyping stage and (B) distribution of p-values from the additional samples added in Stage II.

[0039] **Figure 18** shows a scatter plot of the allele frequencies from pooling and individual genotyping from the Stage I sample.

[0040] **Figure 19** shows a plot of distributions of standard errors of SNPs selected using different criteria.

[0041] **Figure 20** shows Q-Q plot of logistic regression ANOVA deviance produced from samples added to Stage I samples at Stage II.

[0042] **Figure 21** shows LD and r2 among SNPs in CHRNA5 gene.

[0043] **Figure 22** shows haplotype network for CHRNA5.

[0044] **Figure 23** shows comparative sequence analysis of the alpha 5 niciotinic receptor across species.

[0045] **Figure 24** shows distribution of A allele of rs16969968.

[0046] **Figure 25** shows polymorphism affecting nAChR function.

[0047] **Figure 26** shows Table 1.

DETAILED DESCRIPTION

[0049] The present invention provides correlations between polymorphisms in or proximal to the genes or loci in Table 1 and addiction phenotypes. Thus, detection of particular polymorphisms in these loci, genes or gene products (*e.g.*, RNA or protein products) provides methods for identifying patients that have or are at risk for addiction, *e.g.*, nicotine addiction, *etc.* Systems for detecting and correlating alleles to addiction phenotypes, *e.g.*, for practicing the methods, are also a feature of the invention. In addition, the identification of these polymorphisms provides high-throughput systems and methods for identifying modulators of addiction phenotypes.

[0050] The following definitions are provided to more clearly identify aspects of the present invention. They should not be imputed to any other related or unrelated application or patent.

DEFINITIONS

[0051] It is to be understood that this invention is not limited to particular embodiments, which can, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting. As used in this specification and the appended claims, terms in the singular and the singular forms "a," "an," and "the," for example, optionally include plural referents unless the context clearly dictates otherwise. Thus, for example, reference to "a probe" optionally includes a plurality of probe molecules; similarly, depending on the context, use of the term "a nucleic acid" optionally includes, as a practical matter, many copies of that nucleic acid molecule. Letter designations for genes or proteins can refer to the gene form, the RNA form, and/or the protein form, depending on context. One of skill is fully able to relate the nucleic acid and amino acid forms of the relevant biological molecules by reference to the sequences herein, known sequences and the genetic code.

[0052] Unless otherwise indicated, nucleic acids are written left to right in a 5' to 3' orientation. Numeric ranges recited within the specification are inclusive of the numbers defining the range and include each integer or any non-integer fraction within the defined range. Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which the invention pertains. Although any methods and materials similar or equivalent to those described herein can be used in the practice for testing of the present invention, the preferred materials and methods are described herein. In describing and claiming the present invention, the following terminology will be used in accordance with the definitions set out below.

[0053] A "phenotype" is a trait or collection of traits that is/are observable in an individual or population. The trait can be quantitative (a quantitative trait, or QTL) or qualitative. For example, susceptibility to addiction is a phenotype that can be monitored according to the methods, compositions and systems herein.

[0054] An "addiction phenotype" is a phenotype that displays a predisposition towards developing addiction or a phenotype that displays an increased susceptibility to addiction in an individual. A phenotype that displays a predisposition for addiction, can, for example, show a higher likelihood that addiction will occur in an individual with the phenotype than in members of the general population under a given set of environmental conditions. Addiction phenotypes include, for example, the existence of, medical history of, susceptibility to, or decreased resistance to addiction, such as nicotine addition or addiction to other substances such as cocaine, heroine, alcohol, methamphetamines, etc. Addiction phenotypes also include responses to treatments (whether prophylactic or not) for any of the above phenotypes, including efficacious responses as well as side effects.

[0055] A "polymorphism" is a locus that is variable; that is, within a population, the nucleotide sequence at a polymorphism has more than one version or allele. The term "allele" refers to one of two or more different nucleotide sequences that occur or are encoded at a specific locus, or two or more different polypeptide sequences encoded by such a locus. For example, a first allele can occur on one chromosome, while a second allele occurs on a second homologous chromosome, *e.g.*, as occurs for different chromosomes of a heterozygous individual, or between different homozygous or heterozygous individuals in a population. One example of a polymorphism is a "single nucleotide polymorphism" (SNP), which is a polymorphism at a single nucleotide position in a genome (the nucleotide at the specified position varies between individuals or populations).

[0056] An allele "positively" correlates with a trait when it is linked to it and when presence of the allele is an indictor that the trait or trait form will occur in an individual comprising the allele. An allele "negatively" correlates with a trait when it is linked to it and when presence of the allele is an indicator that a trait or trait form will not occur in an individual comprising the allele.

[0057] A marker polymorphism or allele is "correlated" with a specified phenotype (addiction susceptibility, *etc.*) when it can be statistically linked (positively or negatively) to the phenotype. This correlation is often inferred as being causal in nature, but it need not be—simple genetic linkage to (association with) a locus for a trait that underlies the phenotype is sufficient.

[0058] A "favorable allele" is an allele at a particular locus that positively correlates with a desirable phenotype, *e.g.*, resistance to addiction, or that negatively correlates with an undesirable phenotype *e.g.*, an allele that negatively correlates with predisposition to addiction. A favorable allele of a linked marker is a marker allele that segregates with the favorable allele. A favorable allelic form of a chromosome segment is a chromosome segment that includes a nucleotide sequence that positively correlates with the desired phenotype, or that negatively correlates with the unfavorable phenotype at one or more genetic loci physically located on the chromosome segment.

[0059] An "unfavorable allele" is an allele at a particular locus that negatively correlates with a desirable phenotype, or that correlates positively with an undesirable phenotype, *e.g.*, positive correlation to addiction susceptibility. An unfavorable allele of a linked marker is a marker allele that segregates with the unfavorable allele. An unfavorable allelic form of a chromosome segment is a chromosome segment that includes a nucleotide sequence that negatively correlates with the desired phenotype, or positively correlates with the undesirable phenotype at one or more genetic loci physically located on the chromosome segment.

[0060] "Allele frequency" refers to the frequency (proportion or percentage) at which an allele is present at a locus within an individual, within a line, or within a population of lines. For example, for an allele "A," diploid individuals of genotype "AA," "Aa," or "aa" have allele frequencies of 1.0, 0.5, or 0.0, respectively. One can estimate the allele frequency within a line or population by averaging the allele frequencies of a sample of individuals

from that line or population. Similarly, one can calculate the allele frequency within a population of lines by averaging the allele frequencies of lines that make up the population.

[0061] An individual is "homozygous" if the individual has only one type of allele at a given locus (*e.g.*, a diploid individual has a copy of the same allele at a locus for each of two homologous chromosomes). An individual is "heterozygous" if more than one allele type is present at a given locus (*e.g.*, a diploid individual with one copy each of two different alleles). The term "homogeneity" indicates that members of a group have the same genotype at one or more specific loci. In contrast, the term "heterogeneity" is used to indicate that individuals within the group differ in genotype at one or more specific loci.

[0062] A "locus" is a chromosomal position or region. For example, a polymorphic locus is a position or region where a polymorphic nucleic acid, trait determinant, gene or marker is located. In a further example, a "gene locus" is a specific chromosome location in the genome of a species where a specific gene can be found. Similarly, the term "quantitative trait locus" or "QTL" refers to a locus with at least two alleles that differentially affect the expression or alter the variation of a quantitative or continuous phenotypic trait in at least one genetic background, *e.g.*, in at least one breeding population or progeny.

[0063] A "marker," "molecular marker" or "marker nucleic acid" refers to a nucleotide sequence or encoded product thereof (*e.g.*, a protein) used as a point of reference when identifying a locus or a linked locus. A marker can be derived from genomic nucleotide sequence or from expressed nucleotide sequences (*e.g.*, from an RNA, a cDNA, *etc.*), or from an encoded polypeptide. The term also refers to nucleic acid sequences complementary to or flanking the marker sequences, such as nucleic acids used as probes or primer pairs capable of amplifying the marker sequence. A "marker probe" is a nucleic acid sequence or molecule that can be used to identify the presence of a marker locus, *e.g.*, a nucleic acid probe that is complementary to a marker locus sequence. Nucleic acids are "complementary" when they specifically hybridize in solution, *e.g.*, according to Watson-Crick base pairing rules. A "marker locus" is a locus that can be used to track the presence of a second linked locus, *e.g.*, a linked or correlated locus that encodes or contributes to the population variation of a phenotypic trait. For example, a marker locus can be used to monitor segregation of alleles at a locus, such as a QTL, that are genetically or physically linked to the marker locus. Thus, a "marker allele," alternatively an "allele of a marker locus" is one of a plurality of polymorphic nucleotide sequences found at a marker locus in a population that is polymorphic for the marker locus. In one aspect, the present invention

provides marker loci correlating with a phenotype of interest, *e.g.*, addiction susceptibility/ resistance. Each of the identified markers is expected to be in close physical and genetic proximity (resulting in physical and/or genetic linkage) to a genetic element, *e.g.*, a QTL, that contributes to the relevant phenotype. Markers corresponding to genetic polymorphisms between members of a population can be detected by methods well-established in the art. These include, *e.g.*, PCR-based sequence specific amplification methods, detection of restriction fragment length polymorphisms (RFLP), detection of isozyme markers, detection of allele specific hybridization (ASH), detection of single nucleotide extension, detection of amplified variable sequences of the genome, detection of self-sustained sequence replication, detection of simple sequence repeats (SSRs), detection of single nucleotide polymorphisms (SNPs), or detection of amplified fragment length polymorphisms (AFLPs).

[0064] A "genetic map" is a description of genetic linkage (or association) relationships among loci on one or more chromosomes (or linkage groups) within a given species, generally depicted in a diagrammatic or tabular form. "Mapping" is the process of defining the linkage relationships of loci through the use of genetic markers, populations segregating for the markers, and standard genetic principles of recombination frequency. A "map location" is an assigned location on a genetic map relative to linked genetic markers where a specified marker can be found within a given species. The term "chromosome segment" designates a contiguous linear span of genomic DNA that resides on a single chromosome. Similarly, a "haplotype" is a set of genetic loci found in the heritable material of an individual or population (the set can be a contiguous or non-contiguous). In the context of the present invention genetic elements such as one or more alleles herein and one or more linked marker alleles can be located within a chromosome segment and are also, accordingly, genetically linked, a specified genetic recombination distance of less than or equal to 20 centimorgan (cM) or less, *e.g.*, 15 cM or less, often 10 cM or less, *e.g.*, about 9, 8, 7, 6, 5, 4, 3, 2, 1, 0.75, 0.5, 0.25, or 0.1 CM or less. That is, two closely linked genetic elements within a single chromosome segment undergo recombination during meiosis with each other at a frequency of less than or equal to about 20%, *e.g.*, about 19%, 18%, 17%, 16%, 15%, 14%, 13%, 12%, 11%, 10%, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%, 0.75%, 0.5%, 0.25%, or 0.1% or less.

[0065] A "genetic recombination frequency" is the frequency of a recombination event between two genetic loci. Recombination frequency can be observed by following the segregation of markers and/or traits during meiosis. In the context of this invention, a marker

locus is "associated with" another marker locus or some other locus (for example, an addiction susceptibility locus), when the relevant loci are part of the same linkage group due to association and are in linkage disequilibrium. This occurs when the marker locus and a linked locus are found together in progeny more frequently than if the loci segregate randomly. Similarly, a marker locus can also be associated with a trait, *e.g.*, a marker locus can be "associated with" a given trait (addiction resistance or susceptibility) when the marker locus is in linkage disequilibrium with the trait. The term "linkage disequilibrium" refers to a non-random segregation of genetic loci or traits (or both). In either case, linkage disequilibrium implies that the relevant loci are within sufficient physical proximity along a length of a chromosome so that they segregate together with greater than random frequency (in the case of co-segregating traits, the loci that underlie the traits are in sufficient proximity to each other). Linked loci co-segregate more than 50% of the time, *e.g.*, from about 51% to about 100% of the time. Advantageously, the two loci are located in close proximity such that recombination between homologous chromosome pairs does not occur between the two loci during meiosis with high frequency, *e.g.*, such that closely linked loci co-segregate at least about 80% of the time, more preferably at least about 85% of the time, still more preferably at least 90% of the time, *e.g.*, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, 99.5%, 99.75%, or 99.90% or more of the time.

[0066] The phrase "closely linked," in the present application, means that recombination between two linked loci (*e.g.*, a SNP such as one identified in Table 1 herein and a second linked allele) occurs with a frequency of equal to or less than about 20%. Put another way, the closely (or "tightly") linked loci co-segregate at least 80% of the time. Marker loci are especially useful in the present invention when they are closely linked to target loci (*e.g.*, QTL for addiction, or, alternatively, simply other addiction marker loci). The more closely a marker is linked to a target locus, the better an indicator for the target locus that the marker is. Thus, in one embodiment, tightly linked loci such as a marker locus and a second locus display an inter-locus recombination frequency of about 20% or less, *e.g.*, 15% or less, *e.g.*, 10% or less, preferably about 9% or less, still more preferably about 8% or less, yet more preferably about 7% or less, still more preferably about 6% or less, yet more preferably about 5% or less, still more preferably about 4% or less, yet more preferably about 3% or less, and still more preferably about 2% or less. In highly preferred embodiments, the relevant loci (*e.g.*, a marker locus and a target locus such as a QTL) display a recombination frequency of about 1% or less, *e.g.*, about 0.75% or less, more preferably about 0.5% or less,

or yet more preferably about 0.25% or less, or still more preferably about 0.1% or less. Two loci that are localized to the same chromosome, and at such a distance that recombination between the two loci occurs at a frequency of less than about 20%, *e.g.*, 15%, more preferably 10% (*e.g.*, about 9 %, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%, 0.75%, 0.5%, 0.25%, 0.1% or less) are also said to be "proximal to" each other. When referring to the relationship between two linked genetic elements, such as a genetic element contributing to a trait and a proximal marker, "coupling" phase linkage indicates the state where the "favorable" allele at the trait locus is physically associated on the same chromosome strand as the "favorable" allele of the respective linked marker locus. In coupling phase, both favorable alleles are inherited together by progeny that inherit that chromosome strand. In "repulsion" phase linkage, the "favorable" allele at the locus of interest (*e.g.*, a QTL for addiction susceptibility) is physically associated on the same chromosome strand as an "unfavorable" allele at the proximal marker locus, and the two "favorable" alleles are not inherited together (*i.e.*, the two loci are "out of phase" with each other).

[0067] The term "amplifying" in the context of nucleic acid is any process whereby additional copies of a selected nucleic acid (or those transcribed form thereof) are produced. Typical amplification methods include various polymerase based replication methods, including the polymerase chain reaction (PCR) and whole genome amplification, ligase mediated methods such as the ligase chain reaction (LCR) and RNA polymerase based amplification (*e.g.*, by transcription) methods. An "amplicon" is an amplified nucleic acid, *e.g.*, a nucleic acid that is produced by amplifying a template nucleic acid by any available amplification method (*e.g.*, PCR, LCR, transcription, or the like).

[0068] A "genomic nucleic acid" is a nucleic acid that corresponds in sequence to a heritable nucleic acid in a cell. Common examples include nuclear genomic DNA and amplicons thereof. A genomic nucleic acid is, in some cases, different from a spliced RNA, or a corresponding cDNA, in that the spliced RNA or cDNA is processed, *e.g.*, by the splicing machinery, to remove introns. Genomic nucleic acids optionally comprise non-transcribed (*e.g.*, chromosome structural sequences, promoter regions, enhancer regions, *etc.*) and/or non-translated sequences (*e.g.*, introns), whereas spliced RNA/cDNA typically do not have non-transcribed sequences or introns. A "template genomic nucleic acid" is a genomic nucleic acid that serves as a template in an amplification reaction (*e.g.*, a polymerase based amplification reaction such as PCR, whole genome amplification, a ligase mediated amplification reaction such as LCR, a transcription reaction, or the like).

[0069] An "exogenous nucleic acid" is a nucleic acid that is not native to a specified system (*e.g.*, a germplasm, cell, individual, *etc.*), with respect to sequence, genomic position, or both. As used herein, the terms "exogenous" or "heterologous" as applied to polynucleotides or polypeptides typically refers to molecules that have been artificially supplied to a biological system (*e.g.*, a cell, an individual, *etc.*) and are not native to that particular biological system. The terms can indicate that the relevant material originated from a source other than a naturally occurring source, or can refer to molecules having a non-natural configuration, genetic location or arrangement of parts.

[0070] The term "introduced" when referring to translocating a heterologous or exogenous nucleic acid into a cell refers to the incorporation of the nucleic acid into the cell using any methodology. The term encompasses such nucleic acid introduction methods as "transfection," "transformation" and "transduction."

[0071] As used herein, the term "vector" is used in reference to polynucleotides or other molecules that transfer nucleic acid segment(s) into a cell. The term "vehicle" is sometimes used interchangeably with "vector." A vector optionally comprises parts which mediate vector maintenance and enable its intended use (*e.g.*, sequences necessary for replication, genes imparting drug or antibiotic resistance, a multiple cloning site, operably linked promoter/enhancer elements which enable the expression of a cloned gene, *etc.*). Vectors are often derived from plasmids, bacteriophages, or plant or animal viruses. A "cloning vector" or "shuttle vector" or "subcloning vector" contains operably linked parts that facilitate subcloning steps (*e.g.*, a multiple cloning site containing multiple restriction endonuclease sites).

[0072] The term "expression vector" as used herein refers to a vector comprising operably linked polynucleotide sequences that facilitate expression of a coding sequence in a particular host organism (*e.g.*, a bacterial expression vector or a mammalian cell expression vector). Polynucleotide sequences that facilitate expression in prokaryotes typically include, *e.g.*, a promoter, an operator (optional), and a ribosome binding site, often along with other sequences. Eukaryotic cells can use promoters, enhancers, termination and polyadenylation signals and other sequences that are generally different from those used by prokaryotes. In one optional embodiment, a gene corresponding to a loci herein is cloned into an expression vector and expressed, with the gene product(s) to be used in the methods and systems herein for modulator identification.

[0073] A specified nucleic acid is "derived from" a given nucleic acid when it is constructed using the given nucleic acid's sequence, or when the specified nucleic acid is constructed using the given nucleic acid.

[0074] A "gene" is one or more sequence(s) of nucleotides in a genome that together encode one or more expressed molecule, *e.g.*, an RNA, or polypeptide. The gene can include coding sequences that are transcribed into RNA which may then be translated into a polypeptide sequence, and can include associated structural or regulatory sequences that aid in replication or expression of the gene. Genes of interest in the present invention include those that include or are closely linked to the loci of Table 1.

[0075] A "genotype" is the genetic constitution of an individual (or group of individuals) at one or more genetic loci. Genotype is defined by the allele(s) of one or more known loci of the individual, typically, the compilation of alleles inherited from its parents. A "haplotype" is the genotype of an individual at a plurality of genetic loci on a single DNA strand. Typically, the genetic loci described by a haplotype are physically and genetically linked, *i.e.*, on the same chromosome strand.

[0076] A "set" of markers or probes refers to a collection or group of markers or probes, or the data derived therefrom, used for a common purpose, *e.g.*, identifying an individual with a specified phenotype (*e.g.*, addiction resistance or susceptibility). Frequently, data corresponding to the markers or probes, or derived from their use, is stored in an electronic medium. While each of the members of a set possess utility with respect to the specified purpose, individual markers selected from the set as well as subsets including some, but not all of the markers, are also effective in achieving the specified purpose.

[0077] A "look up table" is a table that correlates one form of data to another, or one or more forms of data with a predicted outcome to which the data is relevant. For example, a look up table can include a correlation between allele data and a predicted trait that an individual comprising one or more given alleles is likely to display. These tables can be, and typically are, multidimensional, *e.g.*, taking multiple alleles into account simultaneously, and, optionally, taking other factors into account as well, such as genetic background, *e.g.*, in making a trait prediction.

[0078] A "computer readable medium" is an information storage media that can be accessed by a computer using an available or custom interface. Examples include memory (*e.g.*, ROM or RAM, flash memory, *etc.*), optical storage media (*e.g.*, CD-ROM), magnetic

storage media (computer hard drives, floppy disks, *etc.*), punch cards, and many others that are commercially available. Information can be transmitted between a system of interest and the computer, or to or from the computer to or from the computer readable medium for storage or access of stored information. This transmission can be an electrical transmission, or can be made by other available methods, such as an IR link, a wireless connection, or the like.

[0079] "System instructions" are instruction sets that can be partially or fully executed by the system. Typically, the instruction sets are present as system software.

[0080] A "translation product" is a product (typically a polypeptide) produced as a result of the translation of a nucleic acid. A "transcription product" is a product (*e.g.*, an RNA, optionally including mRNA, or, *e.g.*, a catalytic or biologically active RNA) produced as a result of transcription of a nucleic acid (*e.g.*, a DNA).

[0081] An "array" is an assemblage of elements. The assemblage can be spatially ordered (a "patterned array") or disordered (a "randomly patterned" array). The array can form or comprise one or more functional elements (*e.g.*, a probe region on a microarray) or it can be non-functional.

[0082] As used herein, the term "SNP" or "single nucleotide polymorphism" refers to a genetic variation between individuals; *e.g.*, a single nitrogenous base position in the DNA of organisms that is variable. As used herein, "SNPs" is the plural of SNP. Of course, when one refers to DNA herein, such reference may include derivatives of the DNA such as amplicons, RNA transcripts thereof, *etc.*

OVERVIEW

[0083] The invention includes new correlations between the polymorphisms of Table 1 (and genes that include or are proximal to the polymorphisms) and one or more addiction phenotypes (*e.g.*, predisposition to addiction). Certain alleles in, and linked to, these genes or gene products are predictive of the likelihood that an individual possessing the relevant alleles will develop addiction or a addiction phenotype. Accordingly, detection of these alleles, by any available method, can be used for diagnostic purposes such as early detection of an addiction phenotype, diagnosis of susceptibility to an addiction phenotype, prognosis for patients that present with an addiction phenotype, and for determining an appropriate treatment or prophylactic for patients presenting with or at risk of developing a addiction phenotype.

[0084] The identification that the polymorphisms, genes or gene products of Table 1 are correlated with addiction phenotypes also provides a platform for screening potential modulators of addiction disorders. Modulators of the activity of any genes or encoded proteins corresponding to the polymorphisms of Table 1 are expected to have an effect on addiction phenotypes. Thus, methods of screening, systems for screening and the like, are features of the invention. Modulators identified by these screening approaches are also a feature of the invention.

[0085] Kits for the diagnosis and treatment of addiction phenotypes, *e.g.*, comprising probes to identify relevant alleles, packaging materials, and instructions for correlating detection of relevant alleles to addiction phenotypes are also a feature of the invention. These kits can also include modulators of addiction phenotypes and/or instructions for treating patients using conventional methods.

METHODS OF IDENTIFYING ADDICTION PREDISPOSITION

[0086] As noted, the invention provides the discovery that certain genes or other loci of Table 1 are linked to addiction phenotypes. Thus, by detecting markers (*e.g.*, the SNPs in Table 1 or loci closely linked thereto) that correlate, positively or negatively, with the relevant phenotypes, it can be determined whether an individual or population is likely to comprise these phenotypes. This provides enhanced early detection options to identify patients that are at risk of developing an addiction phenotype (*e.g.*, nicotine addiction, *etc.*), making it possible, in some cases, to prevent actual development of the addiction phenotype, *e.g.*, by taking early preventative action. Furthermore, knowledge of whether there is a molecular basis for the disorder can also assist in determining patient prognosis, *e.g.*, by providing an indication of how likely it is that a patient can respond to conventional therapy for addiction. Disease treatment can also be targeted based on what type of molecular disorder the patient displays.

[0087] In addition, use of the various markers herein also adds certainty to existing diagnostic techniques for identifying whether a patient is suffering from or will develop a particular addiction phenotype. For specific methods of using markers for risk assessment, diagnostics, prognostics and theranostics, *see*, *e.g.*, USSN 10/956,224, filed September 30, 2004, entitled "Methods for Genetic Analysis," and PCT application no. US2005/007375, filed March 3, 2005, entitled "Methods for Genetic Analysis."

[0088] Determination of whether an individual or population is likely to comprise one or more addiction phenotypes may involve detecting the markers (*e.g.*, the SNPs in Table 1 or loci closely linked thereto) that correlate, positively or negatively, with the relevant phenotypes in combination with other tests to provide additional risk stratification. (For methods of using genotypes in combination with phenotypes, *see*, *e.g.*, USSN 11/043,689, filed January 24, 2005, entitled "Associations using Genotypes and Phenotypes").

[0089] Detection methods for detecting relevant alleles can include any available method, *e.g.*, amplification technologies. For example, detection can include amplifying the polymorphism or a sequence associated therewith and detecting the resulting amplicon. This can include admixing an amplification primer or amplification primer pair with a nucleic acid template isolated from the organism or biological sample (*e.g.*, comprising the SNP or other polymorphism), *e.g.*, where the primer or primer pair is complementary or partially complementary to at least a portion of the gene or tightly linked polymorphism, or to a sequence proximal thereto. The primer is typically capable of initiating nucleic acid polymerization by a polymerase on the nucleic acid template. The primer or primer pair is extended, *e.g.*, in a DNA polymerization reaction (PCR, RT-PCR, *etc.*) comprising a polymerase and the template nucleic acid to generate the amplicon. The amplicon is detected by any available detection process, *e.g.*, sequencing, hybridizing the amplicon to an array (or affixing the amplicon to an array and hybridizing probes to it), digesting the amplicon with a restriction enzyme (*e.g.*, RFLP), real-time PCR analysis, single nucleotide extension, allele-specific hybridization, or the like.

[0090] The correlation between a detected polymorphism and a trait can be performed by any method that can identify a relationship between an allele and a phenotype. Most typically, these methods involve referencing a look up table that comprises correlations between alleles of the polymorphism and the phenotype. The table can include data for multiple allele-phenotype relationships and can take account of additive or other higher order effects of multiple allele-phenotype relationships, *e.g.*, through the use of statistical tools such as principle component analysis, heuristic algorithms, *etc.*

[0091] Within the context of these methods, the following discussion first focuses on how markers and alleles are linked and how this phenomenon can be used in the context of methods for identifying addiction phenotypes, and then focuses on marker detection methods. Additional sections below discuss data analysis.

Markers, Linkage And Alleles

[0092] In traditional linkage (or association) analysis, no direct knowledge of the physical relationship of genes on a chromosome is required. Mendel's first law is that factors of pairs of characters are segregated, meaning that alleles of a diploid trait separate into two gametes and then into different offspring. Classical linkage analysis can be thought of as a statistical description of the relative frequencies of cosegregation of different traits. Linkage analysis is the well characterized descriptive framework of how traits are grouped together based upon the frequency with which they segregate together. That is, if two non-allelic traits are inherited together with a greater than random frequency, they are said to be "linked." The frequency with which the traits are inherited together is the primary measure of how tightly the traits are linked, *i.e.*, traits which are inherited together with a higher frequency are more closely linked than traits which are inherited together with lower (but still above random) frequency. Traits are linked because the genes which underlie the traits reside near one another on the same chromosome. The further apart on a chromosome the genes reside, the less likely they are to segregate together, because homologous chromosomes recombine during meiosis. Thus, the further apart on a chromosome the genes reside, the more likely it is that there will be a recombination event during meiosis that will result in two genes segregating separately into progeny.

[0093] A common measure of linkage (or association) is the frequency with which traits cosegregate. This can be expressed as a percentage of cosegregation (recombination frequency) or, also commonly, in centiMorgans (cM), which are actually a reciprocal unit of recombination frequency. The cM is named after the pioneering geneticist Thomas Hunt Morgan and is a unit of measure of genetic recombination frequency. One cM is equal to a 1% chance that a trait at one genetic locus will be separated from a trait at another locus due to recombination in a single generation (meaning the traits segregate together 99% of the time). Because chromosomal distance is approximately proportional to the frequency of recombination events between traits, there is an approximate physical distance that correlates with recombination frequency. For example, in humans, 1 cM correlates, on average, to about 1 million base pairs (1Mbp).

[0094] Marker loci are themselves traits and can be assessed according to standard linkage analysis by tracking the marker loci during segregation. Thus, in the context of the present invention, one cM is equal to a 1% chance that a marker locus will be separated from another locus (which can be any other trait, *e.g.*, another marker locus, or another trait locus

that encodes a QTL for addiction), due to recombination in a single generation. The markers herein, *e.g.*, those listed in Table 1, can correlate with addiction. This means that the markers comprise or are sufficiently proximal to a QTL for addiction that they can be used as a predictor for the trait itself. This is extremely useful in the context of disease diagnosis.

[0095] From the foregoing, it is clear that any marker that is linked to a trait locus of interest (*e.g.*, in the present case, a QTL or identified linked marker locus for addiction, *e.g.*, as in Table 1) can be used as a marker for that trait. Thus, in addition to the markers noted in Table 1, other markers closely linked to the markers itemized in Table 1 can also usefully predict the presence of the marker alleles indicated in Table 1 (and, thus, the relevant phenotypic trait). Such linked markers are particularly useful when they are sufficiently proximal to a given locus so that they display a low recombination frequency with the given locus. In the present invention, such closely linked markers are a feature of the invention. Closely linked loci display a recombination frequency with a given marker of about 20% or less (the given marker is within 20cM of the given marker). Put another way, closely linked loci co-segregate at least 80% of the time. More preferably, the recombination frequency is 10% or less, *e.g.*, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%, 0.5%, 0.25%, or 0.1% or less. In one typical class of embodiments, closely linked loci are within 5 cM or less of each other.

[0096] As one of skill in the art will recognize, recombination frequencies (and, as a result, map positions) can vary depending on the map used (and the markers that are on the map). Additional markers that are closely linked to (*e.g.*, within about 20 cM, or more preferably within about 10 cM of) the markers identified in Table 1 may readily be used for identification of QTL for addiction predisposition.

[0097] Marker loci are especially useful in the present invention when they are closely linked to target loci (*e.g.*, QTL for addiction phenotypes, or, alternatively, simply other marker loci that are, themselves linked to such QTL) that they are being used as markers for. The more closely a marker is linked to a target locus that encodes or affects a phenotypic trait, the better an indicator for the target locus that the marker is (due to the reduced cross-over frequency between the target locus and the marker). Thus, in one embodiment, closely linked loci such as a marker locus and a second locus (*e.g.*, a given marker locus of Table 1 and an additional second locus) display an inter-locus cross-over frequency of about 20% or less, *e.g.*, 15% or less, preferably 10% or less, more preferably about 9% or less, still more preferably about 8% or less, yet more preferably about 7% or less, still more preferably about 6% or less, yet more preferably about 5% or less, still more

preferably about 4% or less, yet more preferably about 3% or less, and still more preferably about 2% or less. In highly preferred embodiments, the relevant loci (*e.g.*, a marker locus and a target locus such as a QTL) display a recombination a frequency of about 1% or less, *e.g.*, about 0.75% or less, more preferably about 0.5% or less, or yet more preferably about 0.25% or 0.1% or less. Thus, the loci are about 20cM, 19 cM, 18 cM, 17 cM, 16 cM, 15 cM, 14 cM, 13 cM, 12 cM, 11 cM, 10 cM, 9 cM, 8 cM, 7 cM, 6 cM, 5 cM, 4 cM, 3cM, 2cM, 1cM, 0.75 cM, 0.5 cM, 0.25 cM, 0 or .1 cM or less apart. Put another way, two loci that are localized to the same chromosome, and at such a distance that recombination between the two loci occurs at a frequency of less than 20% (*e.g.*, about 19%, 18%, 17%, 16%, 15%, 14%, 13%, 12%, 11%, 10%, 9 %, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%, 0.75%, 0.5%, 0.25%, 0.1% or less) are said to be "proximal to" each other. In one aspect, linked markers are within 100 kb (which correlates in humans to about 0.1cM, depending on local recombination rate), *e.g.*, 50kb, or even 20kb or less of each other.

[0098] When referring to the relationship between two genetic elements, such as a genetic element contributing to addiction, and a proximal marker, "coupling" phase linkage indicates the state where the "favorable" allele at the locus is physically associated on the same chromosome strand as the "favorable" allele of the respective linked marker locus. In coupling phase, both favorable alleles are inherited together by progeny that inherit that chromosome strand. In "repulsion" phase linkage, the "favorable" allele at the locus of interest (*e.g.*, a QTL for addiction) is physically linked with an "unfavorable" allele at the proximal marker locus, and the two "favorable" alleles are not inherited together (*i.e.*, the two loci are "out of phase" with each other).

[0099] In addition to tracking SNP and other polymorphisms in the genome, and in corresponding expressed nucleic acids and polypeptides, expression level differences between individuals or populations for the gene products of Table 1 in either mRNA or protein form, can also correlate to addiction. Accordingly, markers of the invention can include any of, *e.g.*: genomic loci, transcribed nucleic acids, spliced nucleic acids, expressed proteins, levels of transcribed nucleic acids, levels of spliced nucleic acids, and levels of expressed proteins.

Marker Amplification Strategies

[0100] Amplification primers for amplifying markers (*e.g.*, marker loci) and suitable probes to detect such markers or to genotype a sample with respect to multiple marker alleles, are a feature of the invention. In Table 1, specific loci for amplification are provided, along

with amplicon sequences that one of skill can easily use (optionally in conjunction with known flanking sequences) in the design of such primers. For example, primer selection for long-range PCR is described in U.S. patent no. 6,898,531, issued May 24, 2005, entitled "Algorithms for Selection of Primer Pairs" and USSN 10/236,480, filed Sep. 5, 2002; for short-range PCR, USSN 10/341,832, filed Jan. 14, 2003 and provides guidance with respect to primer selection. Also, there are publicly available programs such as "Oligo" available for primer design. With such available primer selection and design software, the publicly available human genome sequence and the polymorphism locations as provided in Table 1, one of skill can design primers to amplify the SNPs of the present invention. Further, it will be appreciated that the precise probe to be used for detection of a nucleic acid comprising a SNP (*e.g.*, an amplicon comprising the SNP) can vary, *e.g.*, any probe that can identify the region of a marker amplicon to be detected can be used in conjunction with the present invention. Further, the configuration of the detection probes can, of course, vary. Thus, the invention is not limited to the sequences recited herein.

[0101] Indeed, it will be appreciated that amplification is not a requirement for marker detection—for example, one can directly detect unamplified genomic DNA simply by performing a Southern blot on a sample of genomic DNA. Procedures for performing Southern blotting, standard amplification (PCR, LCR, or the like) and many other nucleic acid detection methods are well established and are taught, *e.g.*, in Sambrook *et al.*, Molecular Cloning - A Laboratory Manual (3rd Ed.), Vol. 1-3, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, 2000 ("Sambrook"); Current Protocols in Molecular Biology, F.M. Ausubel *et al.*, eds., Current Protocols, a joint venture between Greene Publishing Associates, Inc. and John Wiley & Sons, Inc., (supplemented through 2002) ("Ausubel")) and PCR Protocols A Guide to Methods and Applications (Innis *et al.* eds) Academic Press Inc. San Diego, CA (1990) (Innis).

[0102] Separate detection probes can also be omitted in amplification/detection methods, *e.g.*, by performing a real time amplification reaction that detects product formation by modification of the relevant amplification primer upon incorporation into a product, incorporation of labeled nucleotides into an amplicon, or by monitoring changes in molecular rotation properties of amplicons as compared to unamplified precursors (*e.g.*, by fluorescence polarization).

[0103] Typically, molecular markers are detected by any established method available in the art, including, without limitation, allele specific hybridization (ASH), detection of

single nucleotide extension, array hybridization (optionally including ASH), or other methods for detecting single nucleotide polymorphisms (SNPs), amplified fragment length polymorphism (AFLP) detection, amplified variable sequence detection, randomly amplified polymorphic DNA (RAPD) detection, restriction fragment length polymorphism (RFLP) detection, self-sustained sequence replication detection, simple sequence repeat (SSR) detection, single-strand conformation polymorphisms (SSCP) detection, isozyme marker detection, northern analysis (where expression levels are used as markers), quantitative amplification of mRNA or cDNA, or the like. While the exemplary markers provided in the figures and tables herein are SNP markers, any of the aforementioned marker types can be employed in the context of the invention to identify linked loci that correlate with an addiction phenotype.

Example Techniques For Marker Detection

[0104] The invention provides molecular markers that comprise or are linked to QTL for addiction phenotypes. The markers find use in disease predisposition diagnosis, prognosis, treatment, *etc.* It is not intended that the invention be limited to any particular method for the detection of these markers.

[0105] Markers corresponding to genetic polymorphisms between members of a population can be detected by numerous methods well-established in the art (*e.g.*, PCR-based sequence specific amplification, restriction fragment length polymorphisms (RFLPs), isozyme markers, northern analysis, allele specific hybridization (ASH), array based hybridization, amplified variable sequences of the genome, self-sustained sequence replication, simple sequence repeat (SSR), single nucleotide polymorphism (SNP), random amplified polymorphic DNA ("RAPD") or amplified fragment length polymorphisms (AFLP). In one additional embodiment, the presence or absence of a molecular marker is determined simply through nucleotide sequencing of the polymorphic marker region. Any of these methods are readily adapted to high throughput analysis.

[0106] Some techniques for detecting genetic markers utilize hybridization of a probe nucleic acid to nucleic acids corresponding to the genetic marker (*e.g.*, amplified nucleic acids produced using genomic DNA as a template). Hybridization formats, including, but not limited to: solution phase, solid phase, mixed phase, or *in situ* hybridization assays are useful for allele detection. An extensive guide to the hybridization of nucleic acids is found in Tijssen (1993) Laboratory Techniques in Biochemistry and Molecular Biology--

Hybridization with Nucleic Acid Probes Elsevier, New York, as well as in Sambrook, Berger and Ausubel.

[0107] For example, markers that comprise restriction fragment length polymorphisms (RFLP) are detected, *e.g.*, by hybridizing a probe which is typically a sub-fragment (or a synthetic oligonucleotide corresponding to a sub-fragment) of the nucleic acid to be detected to restriction digested genomic DNA. The restriction enzyme is selected to provide restriction fragments of at least two alternative (or polymorphic) lengths in different individuals or populations. Determining one or more restriction enzyme that produces informative fragments for each allele of a marker is a simple procedure, well known in the art. After separation by length in an appropriate matrix (*e.g.*, agarose or polyacrylamide) and transfer to a membrane (*e.g.*, nitrocellulose, nylon, *etc.*), the labeled probe is hybridized under conditions which result in equilibrium binding of the probe to the target followed by removal of excess probe by washing.

[0108] Nucleic acid probes to the marker loci can be cloned and/or synthesized. Any suitable label can be used with a probe of the invention. Detectable labels suitable for use with nucleic acid probes include, for example, any composition detectable by spectroscopic, radioisotopic, photochemical, biochemical, immunochemical, electrical, optical or chemical means. Useful labels include biotin for staining with labeled streptavidin conjugate, magnetic beads, fluorescent dyes, radiolabels, enzymes, and colorimetric labels. Other labels include ligands which bind to antibodies labeled with fluorophores, chemiluminescent agents, and enzymes. A probe can also constitute radiolabelled PCR primers that are used to generate a radiolabelled amplicon. Labeling strategies for labeling nucleic acids and corresponding detection strategies can be found, *e.g.*, in Haugland (2003) Handbook of Fluorescent Probes and Research Chemicals Ninth Edition by Molecular Probes, Inc. (Eugene OR). Additional details regarding marker detection strategies are found below.

Amplification-based Detection Methods

[0109] PCR, RT-PCR and LCR are in particularly broad use as amplification and amplification-detection methods for amplifying nucleic acids of interest (*e.g.*, those comprising marker loci), facilitating detection of the nucleic acids of interest. Details regarding the use of these and other amplification methods can be found in any of a variety of standard texts, including, *e.g.*, Sambrook, Ausubel, and Berger. Many available biology texts also have extended discussions regarding PCR and related amplification methods. One of skill will appreciate that essentially any RNA can be converted into a double stranded DNA

suitable for restriction digestion, PCR expansion and sequencing using reverse transcriptase and a polymerase ("Reverse Transcription-PCR, or "RT-PCR"). *See also*, Ausubel, Sambrook and Berger, *above*. These methods can also be used to quantitatively amplify mRNA or corresponding cDNA, providing an indication of expression levels of mRNA that correspond to, *e.g.*, the genes or gene products of Table 1 in an individual. Differences in expression levels for these genes between individuals, families, lines and/or populations can be used as markers for addiction phenotypes.

Real Time Amplification/ Detection Methods

[0110] In one aspect, real time PCR or LCR is performed on the amplification mixtures described herein, *e.g.*, using molecular beacons or TaqMan™ probes. A molecular beacon (MB) is an oligonucleotide or PNA which, under appropriate hybridization conditions, self-hybridizes to form a stem and loop structure. The MB has a label and a quencher at the termini of the oligonucleotide or PNA; thus, under conditions that permit intra-molecular hybridization, the label is typically quenched (or at least altered in its fluorescence) by the quencher. Under conditions where the MB does not display intra-molecular hybridization (*e.g.*, when bound to a target nucleic acid, *e.g.*, to a region of an amplicon during amplification), the MB label is unquenched. Details regarding standard methods of making and using MBs are well established in the literature and MBs are available from a number of commercial reagent sources. *See also*, *e.g.*, Leone *et al.* (1995) "Molecular beacon probes combined with amplification by NASBA enable homogenous real-time detection of RNA." Nucleic Acids Res. 26:2150-2155; Tyagi and Kramer (1996) "Molecular beacons: probes that fluoresce upon hybridization" Nature Biotechnology 14:303-308; Blok and Kramer (1997) "Amplifiable hybridization probes containing a molecular switch" Mol Cell Probes 11:187-194; Hsuih *et al.* (1997) "Novel, ligation-dependent PCR assay for detection of hepatitis C in serum" J Clin Microbiol 34:501-507; Kostrikis *et al.* (1998) "Molecular beacons: spectral genotyping of human alleles" Science 279:1228-1229; Sokol *et al.* (1998) "Real time detection of DNA:RNA hybridization in living cells" Proc. Natl. Acad. Sci. U.S.A. 95:11538-11543; Tyagi *et al.* (1998) "Multicolor molecular beacons for allele discrimination" Nature Biotechnology 16:49-53; Bonnet *et al.* (1999) "Thermodynamic basis of the chemical specificity of structured DNA probes" Proc. Natl. Acad. Sci. U.S.A. 96:6171-6176; Fang *et al.* (1999) "Designing a novel molecular beacon for surface-immobilized DNA hybridization studies" J. Am. Chem. Soc. 121:2921-2922; Marras *et al.* (1999) "Multiplex detection of single-nucleotide variation using

molecular beacons" Genet. Anal. Biomol. Eng. 14:151-156; and Vet *et al.* (1999) "Multiplex detection of four pathogenic retroviruses using molecular beacons" Proc. Natl. Acad. Sci. U.S.A. 96:6394-6399. Additional details regarding MB construction and use is found in the patent literature, *e.g.*, USP 5,925,517 (July 20, 1999) to Tyagi *et al.* entitled "Detectably labeled dual conformation oligonucleotide probes, assays and kits;" USP 6,150,097 to Tyagi *et al.* (November 21, 2000) entitled "Nucleic acid detection probes having non-FRET fluorescence quenching and kits and assays including such probes" and USP 6,037,130 to Tyagi *et al.* (March 14, 2000), entitled "Wavelength-shifting probes and primers and their use in assays and kits."

[0111] PCR detection and quantification using dual-labeled fluorogenic oligonucleotide probes, commonly referred to as TaqMan™ probes, can also be performed according to the present invention. These probes are composed of short (*e.g.*, 20-25 base) oligodeoxynucleotides that are labeled with two different fluorescent dyes. On the 5' terminus of each probe is a reporter dye, and on the 3' terminus of each probe a quenching dye is found. The oligonucleotide probe sequence is complementary to an internal target sequence present in a PCR amplicon. When the probe is intact, energy transfer occurs between the two fluorophores and emission from the reporter is quenched by the quencher by FRET. During the extension phase of PCR, the probe is cleaved by 5' nuclease activity of the polymerase used in the reaction, thereby releasing the reporter from the oligonucleotide-quencher and producing an increase in reporter emission intensity. Accordingly, TaqMan™ probes are oligonucleotides that have a label and a quencher, where the label is released during amplification by the exonuclease action of the polymerase used in amplification. This provides a real time measure of amplification during synthesis. A variety of TaqMan™ reagents are commercially available, *e.g.*, from Applied Biosystems (Division Headquarters in Foster City, CA) as well as from a variety of specialty vendors such as Biosearch Technologies (*e.g.*, black hole quencher probes). Further details regarding dual-label probe strategies can be found, *e.g.*, in WO92/02638.

[0112] Other similar methods include *e.g.* fluorescence resonance energy transfer between two adjacently hybridized probes, *e.g.*, using the "LightCycler®" format described in U.S. 6,174,670.

Array-Based Marker Detection

[0113] Array-based detection can be performed using commercially available arrays, *e.g.*, from Affymetrix (Santa Clara, CA) or other manufacturers. Reviews regarding the

operation of nucleic acid arrays include Sapolsky *et al.* (1999) "High-throughput polymorphism screening and genotyping with high-density oligonucleotide arrays." Genetic Analysis: Biomolecular Engineering 14:187-192; Lockhart (1998) "Mutant yeast on drugs" Nature Medicine 4:1235-1236; Fodor (1997) "Genes, Chips and the Human Genome." FASEB Journal 11:A879; Fodor (1997) "Massively Parallel Genomics." Science 277: 393-395; and Chee *et al.* (1996) "Accessing Genetic Information with High-Density DNA Arrays." Science 274:610-614. Array based detection is a preferred method for identification markers of the invention in samples, due to the inherently high-throughput nature of array based detection.

[0114] A variety of probe arrays have been described in the literature and can be used in the context of the present invention for detection of markers that can be correlated to the phenotypes noted herein. For example, DNA probe array chips or larger DNA probe array wafers (from which individual chips would otherwise be obtained by breaking up the wafer) are used in one embodiment of the invention. DNA probe array wafers generally comprise glass wafers on which high density arrays of DNA probes (short segments of DNA) have been placed. Each of these wafers can hold, for example, approximately 60 million DNA probes that are used to recognize longer sample DNA sequences (*e.g.*, from individuals or populations, *e.g.*, that comprise markers of interest). The recognition of sample DNA by the set of DNA probes on the glass wafer takes place through DNA hybridization. When a DNA sample hybridizes with an array of DNA probes, the sample binds to those probes that are complementary to the sample DNA sequence. By evaluating to which probes the sample DNA for an individual hybridizes more strongly, it is possible to determine whether a known sequence of nucleic acid is present or not in the sample, thereby determining whether a marker found in the nucleic acid is present. One can also use this approach to perform ASH, by controlling the hybridization conditions to permit single nucleotide discrimination, *e.g.*, for SNP identification and for genotyping a sample for one or more SNPs.

[0115] The use of DNA probe arrays to obtain allele information typically involves the following general steps: design and manufacture of DNA probe arrays, preparation of the sample, hybridization of sample DNA to the array, detection of hybridization events and data analysis to determine sequence. Preferred wafers are manufactured using a process adapted from semiconductor manufacturing to achieve cost effectiveness and high quality, and are available, *e.g.*, from Affymetrix, Inc of Santa Clara, California.

[0116] For example, probe arrays can be manufactured by light-directed chemical synthesis processes, which combine solid-phase chemical synthesis with photolithographic fabrication techniques as employed in the semiconductor industry. Using a series of photolithographic masks to define chip exposure sites, followed by specific chemical synthesis steps, the process constructs high-density arrays of oligonucleotides, with each probe in a predefined position in the array. Multiple probe arrays can be synthesized simultaneously on a large glass wafer. This parallel process enhances reproducibility and helps achieve economies of scale.

[0117] Once fabricated, DNA probe arrays can be used to obtain data regarding presence and/or expression levels for markers of interest. The DNA samples may be tagged with biotin and/or a fluorescent reporter group by standard biochemical methods. The labeled samples are incubated with an array, and segments of the samples bind, or hybridize, with complementary sequences on the array. The array can be washed and/or stained to produce a hybridization pattern. The array is then scanned and the patterns of hybridization are detected by emission of light from the fluorescent reporter groups. Additional details regarding these procedures are found in the examples below. Because the identity and position of each probe on the array is known, the nature of the DNA sequences in the sample applied to the array can be determined. When these arrays are used for genotyping experiments, they can be referred to as genotyping arrays.

[0118] The nucleic acid sample to be analyzed is isolated, amplified and, typically, labeled with biotin and/or a fluorescent reporter group. The labeled nucleic acid sample is then incubated with the array using a fluidics station and hybridization oven. The array can be washed and or stained or counter-stained, as appropriate to the detection method. After hybridization, washing and staining, the array is inserted into a scanner, where patterns of hybridization are detected. The hybridization data are collected as light emitted from the fluorescent reporter groups already incorporated into the labeled nucleic acid, which is now bound to the probe array. Probes that most clearly match the labeled nucleic acid produce stronger signals than those that have mismatches. Since the sequence and position of each probe on the array are known, by complementarity, the identity of the nucleic acid sample applied to the probe array can be identified.

[0119] In one embodiment, two DNA samples may be differentially labeled and hybridized with a single set of the designed genotyping arrays. In this way two sets of data can be obtained from the same physical arrays. Labels that can be used include, but are not

limited to, cychrome, fluorescein, or biotin (later stained with phycoerythrin-streptavidin after hybridization). Two-color labeling is described in U.S. Patent No. 6,342,355, incorporated herein by reference in its entirety. Each array may be scanned such that the signal from both labels is detected simultaneously, or may be scanned twice to detect each signal separately.

[0120] Intensity data is collected by the scanner for all the markers for each of the individuals that are tested for presence of the marker. The measured intensities are a measure indicative of the amount of a particular marker present in the sample for a given individual (expression level and/or number of copies of the allele present in an individual, depending on whether genomic or expressed nucleic acids are analyzed). This can be used to determine whether the individual is homozygous or heterozygous for the marker of interest. The intensity data is processed to provide corresponding marker information for the various intensities.

Additional Details Regarding Amplified Variable Sequences, SSR, AFLP ASH, SNPs and Isozyme Markers

[0121] Amplified variable sequences refer to amplified sequences of the genome which exhibit high nucleic acid residue variability between members of the same species. All organisms have variable genomic sequences and each organism (with the exception of a clone, *e.g.*, a cloned cell) has a different set of variable sequences. Once identified, the presence of specific variable sequence can be used to predict phenotypic traits. Preferably, DNA from the genome serves as a template for amplification with primers that flank a variable sequence of DNA. The variable sequence is amplified and then sequenced.

[0122] Alternatively, self-sustained sequence replication can be used to identify genetic markers. Self-sustained sequence replication refers to a method of nucleic acid amplification using target nucleic acid sequences which are replicated exponentially, *in vitro,* under substantially isothermal conditions by using three enzymatic activities involved in retroviral replication: (1) reverse transcriptase, (2) Rnase H, and (3) a DNA-dependent RNA polymerase (Guatelli *et al.* (1990) Proc Natl Acad Sci USA 87:1874). By mimicking the retroviral strategy of RNA replication by means of cDNA intermediates, this reaction accumulates cDNA and RNA copies of the original target.

[0123] Amplified fragment length polymophisms (AFLP) can also be used as genetic markers (Vos *et al.* (1995) Nucl Acids Res 23:4407). The phrase "amplified fragment length polymorphism" refers to selected restriction fragments which are amplified before or after

cleavage by a restriction endonuclease. The amplification step allows easier detection of specific restriction fragments. AFLP allows the detection large numbers of polymorphic markers and has been used for genetic mapping (Becker *et al.* (1995) Mol Gen Genet 249:65; and Meksem *et al.* (1995) Mol Gen Genet 249:74).

[0124] Allele-specific hybridization (ASH) can be used to identify the genetic markers of the invention. ASH technology is based on the stable annealing of a short, single-stranded, oligonucleotide probe to a completely complementary single-strand target nucleic acid. Detection may be accomplished *via* an isotopic or non-isotopic label attached to the probe.

[0125] For each polymorphism, two or more different ASH probes are designed to have identical DNA sequences except at the polymorphic nucleotides. Each probe will have exact homology with one allele sequence so that the range of probes can distinguish all the known alternative allele sequences. Each probe is hybridized to the target DNA. With appropriate probe design and hybridization conditions, a single-base mismatch between the probe and target DNA will prevent hybridization. In this manner, only one of the alternative probes will hybridize to a target sample that is homozygous or homogenous for an allele. Samples that are heterozygous or heterogeneous for two alleles will hybridize to both of two alternative probes.

[0126] ASH markers are used as dominant markers where the presence or absence of only one allele is determined from hybridization or lack of hybridization by only one probe. The alternative allele may be inferred from the lack of hybridization. ASH probe and target molecules are optionally RNA or DNA; the target molecules are any length of nucleotides beyond the sequence that is complementary to the probe; the probe is designed to hybridize with either strand of a DNA target; the probe ranges in size to conform to variously stringent hybridization conditions, *etc.*

[0127] PCR allows the target sequence for ASH to be amplified from low concentrations of nucleic acid in relatively small volumes. Otherwise, the target sequence from genomic DNA is digested with a restriction endonuclease and size separated by gel electrophoresis. Hybridizations typically occur with the target sequence bound to the surface of a membrane or, as described in U.S. Patent 5,468,613, the ASH probe sequence may be bound to a membrane.

[0128] In one embodiment, ASH data are typically obtained by amplifying nucleic acid fragments (amplicons) from genomic DNA using PCR, transferring the amplicon target DNA to a membrane in a dot-blot format, hybridizing a labeled oligonucleotide probe to the amplicon target, and observing the hybridization dots by autoradiography.

[0129] Single nucleotide polymorphisms (SNP) are markers that consist of a shared sequence differentiated on the basis of a single nucleotide. Typically, this distinction is detected by differential migration patterns of an amplicon comprising the SNP on *e.g.*, an acrylamide gel. However, alternative modes of detection, such as hybridization, *e.g.*, ASH, or RFLP analysis are also appropriate.

[0130] Isozyme markers can be employed as genetic markers, *e.g.*, to track isozyme markers linked to the markers herein. Isozymes are multiple forms of enzymes that differ from one another in their amino acid, and therefore their nucleic acid sequences. Some isozymes are multimeric enzymes contain slightly different subunits. Other isozymes are either multimeric or monomeric but have been cleaved from the proenzyme at different sites in the amino acid seuqence. Isozymes can be characterized and analyzed at the protein level, or alternatively, isozymes which differ at the nucleic acid level can be determined. In such cases any of the nucleic acid based methods described herein can be used to analyze isozyme markers.

Additional Details Regarding Nucleic Acid Amplification

[0131] As noted, nucleic acid amplification techniques such as PCR and LCR are well known in the art and can be applied to the present invention to amplify and/or detect nucleic acids of interest, such as nucleic acids comprising marker loci. Examples of techniques sufficient to direct persons of skill through such *in vitro* methods, including the polymerase chain reaction (PCR), the ligase chain reaction (LCR), Qβ-replicase amplification and other RNA polymerase mediated techniques (*e.g.*, NASBA), are found in the references noted above, *e.g.*, Innis, Sambrook, Ausubel, and Berger. Additional details are found in Mullis *et al.* (1987) U.S.Patent No.4,683,202; Arnheim & Levinson (October 1, 1990) C&EN 36-47; The Journal Of NIH Research (1991) 3, 81-94; (Kwoh *et al.* (1989) Proc. Natl. Acad. Sci. USA 86, 1173; Guatelli *et al.* (1990) Proc. Natl. Acad. Sci. USA 87, 1874; Lomell *et al.* (1989) J. Clin. Chem 35, 1826; Landegren *et al.*, (1988) Science 241, 1077-1080; Van Brunt (1990) Biotechnology 8, 291-294; Wu and Wallace, (1989) Gene 4, 560; Barringer *et al.* (1990) Gene 89, 117, and Sooknanan and Malek (1995) Biotechnology 13: 563-564. Improved methods of amplifying large nucleic acids by PCR, which is useful in

the context of positional cloning, are further summarized in Cheng *et al.* (1994) Nature 369: 684, and the references therein, in which PCR amplicons of up to 40kb are generated. Methods for long-range PCR are disclosed, for example, in U.S. patent no. 6,898,531, issued May 24, 2005, entitled "Algorithms for Selection of Primer Pairs"; U.S. patent application no. 10/236,480, filed September 9, 2002, entitled "Methods for Amplification of Nucleic Acids"; and U.S. patent no. 6,740,510, issued May 25, 2004, entitled "Methods for Amplification of Nucleic Acids". USSN 10/341,832 (filed 1/14/ 03) also provides details regarding primer picking methods for performing short range PCR.

Detection of protein expression products

[0132] Proteins such as those encoded by the genes noted in Table 1 are encoded by nucleic acids, including those comprising markers that are correlated to the phenotypes of interest herein. For a description of the basic paradigm of molecular biology, including the expression (transcription and/or translation) of DNA into RNA into protein, *see,* Alberts *et al.* (2002) Molecular Biology of the Cell, 4th Edition Taylor and Francis, Inc., ISBN: 0815332181 ("Alberts"), and Lodish *et al.* (1999) Molecular Cell Biology, 4th Edition W H Freeman & Co, ISBN: 071673706X ("Lodish"). Accordingly, proteins corresponding to the genes in Table 1 can be detected as markers, *e.g.*, by detecting different protein isotypes between individuals or populations, or by detecting a differential presence, absence or expression level of such a protein of interest (*e.g.*, a gene product of the genes in Table 1).

[0133] A variety of protein detection methods are known and can be used to distinguish markers. In addition to the various references noted supra, a variety of protein manipulation and detection methods are well known in the art, including, *e.g.*, those set forth in R. Scopes, Protein Purification, Springer-Verlag, N.Y. (1982); Deutscher, Methods in Enzymology Vol. 182: Guide to Protein Purification, Academic Press, Inc. N.Y. (1990); Sandana (1997) Bioseparation of Proteins, Academic Press, Inc.; Bollag *et al.* (1996) Protein Methods, 2nd Edition Wiley-Liss, NY; Walker (1996) The Protein Protocols Handbook Humana Press, NJ, Harris and Angal (1990) Protein Purification Applications: A Practical Approach IRL Press at Oxford, Oxford, England; Harris and Angal Protein Purification Methods: A Practical Approach IRL Press at Oxford, Oxford, England; Scopes (1993) Protein Purification: Principles and Practice 3rd Edition Springer Verlag, NY; Janson and Ryden (1998) Protein Purification: Principles, High Resolution Methods and Applications, Second Edition Wiley-VCH, NY; and Walker (1998) Protein Protocols on CD-ROM Humana Press, NJ; and the references cited therein. Additional details regarding protein purification

and detection methods can be found in Satinder Ahuja ed., Handbook of Bioseparations, Academic Press (2000).

[0134] "Proteomic" detection methods, which detect many proteins simultaneously have been described. These can include various multidimensional electrophoresis methods (*e.g.*, 2-d gel electrophoresis), mass spectrometry based methods (*e.g.*, SELDI, MALDI, electrospray, *etc.*), or surface plasmon reasonance methods. For example, in MALDI, a sample is usually mixed with an appropriate matrix, placed on the surface of a probe and examined by laser desorption/ionization. The technique of MALDI is well known in the art. *See, e.g.*, U.S. patent 5,045,694 (Beavis *et al.*), U.S. patent 5,202,561 (Gleissmann *et al.*), and U.S. Patent 6,111,251 (Hillenkamp). Similarly, for SELDI, a first aliquot is contacted with a solid support-bound (*e.g.*, substrate-bound) adsorbent. A substrate is typically a probe (*e.g.*, a biochip) that can be positioned in an interrogatable relationship with a gas phase ion spectrometer. SELDI is also a well known technique, and has been applied to diagnostic proteomics. *See, e.g.* Issaq *et al.* (2003) "SELDI-TOF MS for Diagnostic Proteomics" Analytical Chemistry 75:149A-155A.

[0135] In general, the above methods can be used to detect different forms (alleles) of proteins and/or can be used to detect different expression levels of the proteins (which can be due to allelic differences) between individuals, families, lines, populations, *etc.* Differences in expression levels, when controlled for environmental factors, can be indicative of different alleles at a QTL for the gene of interest, even if the encoded differentially expressed proteins are themselves identical. This occurs, for example, where there are multiple allelic forms of a gene in non-coding regions, *e.g.*, regions such as promoters or enhancers that control gene expression. Thus, detection of differential expression levels can be used as a method of detecting allelic differences.

[0136] In other aspect of the present invention, a gene comprising, in linkage disequilibrium with, or under the control of a nucleic acid associated with a addiction phenotype may exhibit differential allelic expression. "Differential allelic expression" as used herein refers to both qualitative and quantitative differences in the allelic expression of multiple alleles of a single gene present in a cell. As such, a gene displaying differential allelic expression may have one allele expressed at a different time or level as compared to a second allele in the same cell/tissue. For example, an allele associated with a addiction phenotype may be expressed at a higher or lower level than an allele that is not associated with the addiction phenotype, even though both are alleles of the same gene and are present in the same cell/tissue. Differential

allelic expression and analysis methods are disclosed in detail in U.S. patent application no. 10/438,184, filed May 13, 2003 and U.S. patent application no. 10/845,316, filed May 12, 2004, both of which are entitled "Allele-specific expression patterns." Detection of a differential allelic expression pattern of one or more nucleic acids, or fragments, derivatives, polymorphisms, variants or complements thereof, associated with a addiction phenotype is a prognostic and diagnostic for susceptibility/resistance to a addiction phenotype; likewise, detection of a differential allelic expression pattern of one or more nucleic acids, or fragments, derivatives, polymorphisms, variants or complements thereof, associated with a addiction phenotype is a prognostic and diagnostic of a addiction phenotype and/or a addiction treatment outcome.

Additional Details regarding Types of Markers Appropriate for Screening

[0137] The biological markers that are screened for correlation to the phenotypes herein can be any of those types of markers that can be detected by screening, *e.g.*, genetic markers such as allelic variants of a genetic locus (*e.g.*, as in SNPs), expression markers (*e.g.*, presence or quantity of mRNAs and/or proteins), and/or the like.

[0138] The nucleic acid of interest to be amplified, transcribed, translated and/or detected in the methods of the invention can be essentially any nucleic acid, though nucleic acids derived from human sources are especially relevant to the detection of markers associated with disease diagnosis and clinical applications. The sequences for many nucleic acids and amino acids (from which nucleic acid sequences can be derived *via* reverse translation) are available, including for the genes/proteins of Table 1. Common sequence repositories for known nucleic acids include GenBank® EMBL, DDBJ and the NCBI. Other repositories can easily be identified by searching the internet. The nucleic acid to be amplified, transcribed, translated and/or detected can be an RNA (*e.g.*, where amplification includes RT-PCR or LCR, the Van-Gelder Eberwine reaction or Ribo-SPIA) or DNA (*e.g.*, amplified DNA, cDNA or genomic DNA), or even any analogue thereof (*e.g.*, for detection of synthetic nucleic acids or analogues thereof, *e.g.*, where the sample of interest includes or is used to derive or synthesize artificial nucleic acids). Any variation in a nucleic acid sequence or expression level between individuals or populations can be detected as a marker, *e.g.*, a mutation, a polymorphism, a single nucleotide polymorphism (SNP), an allele, an isotype, expression of an RNA or protein, *etc.* One can detect variation in sequence, expression levels or gene copy numbers as markers that can be correlated to a addiction phenotype.

[0139] For example, the methods of the invention are useful in screening samples derived from patients for a marker nucleic acid of interest, *e.g.*, from bodily fluids (blood, saliva, urine *etc.*), tissue, and/or waste from the patient. Thus, stool, sputum, saliva, blood, lymph, tears, sweat, urine, vaginal secretions, ejaculatory fluid or the like can easily be screened for nucleic acids by the methods of the invention, as can essentially any tissue of interest that contains the appropriate nucleic acids. These samples are typically taken, following informed consent, from a patient by standard medical laboratory methods.

[0140] Prior to amplification and/or detection of a nucleic acid comprising a marker, the nucleic acid is optionally purified from the samples by any available method, *e.g.*, those taught in Berger and Kimmel, Guide to Molecular Cloning Techniques, Methods in Enzymology volume 152 Academic Press, Inc., San Diego, CA (Berger); Sambrook *et al.*, Molecular Cloning - A Laboratory Manual (3rd Ed.), Vol. 1-3, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, 2001 ("Sambrook"); and/or Current Protocols in Molecular Biology, F.M. Ausubel *et al.*, eds., Current Protocols, a joint venture between Greene Publishing Associates, Inc. and John Wiley & Sons, Inc., (supplemented through 2002) ("Ausubel")). A plethora of kits are also commercially available for the purification of nucleic acids from cells or other samples (*see*, *e.g.*, EasyPrep™, FlexiPrep™, both from Pharmacia Biotech; StrataClean™, from Stratagene; and, QIAprep™ from Qiagen). Alternately, samples can simply be directly subjected to amplification or detection, *e.g.*, following aliquotting and/or dilution.

[0141] Examples of markers can include polymorphisms, single nucleotide polymorphisms, presence of one or more nucleic acids in a sample, absence of one or more nucleic acids in a sample, presence of one or more genomic DNA sequences, absence or one or more genomic DNA sequences, presence of one or more mRNAs, absence of one or more mRNAs, expression levels of one or more mRNAs, presence of one or more proteins, expression levels of one or more proteins, and/or data derived from any of the preceding or combinations thereof. Essentially any number of markers can be detected, using available methods, *e.g.*, using array technologies that provide high density, high throughput marker mapping. Thus, at least about 10, 100, 1,000, 10,000, or even 100,000 or more genetic markers can be tested, simultaneously or in a serial fashion (or combination thereof), for correlation to a relevant phenotype, in the first and/or second population. Combinations of markers can also be desirably tested, *e.g.*, to identify genetic combinations or combinations of expression patterns in populations that are correlated to the phenotype.

[0142] As noted, the biological marker to be detected can be any detectable biological component. Commonly detected markers include genetic markers (*e.g.*, DNA sequence markers present in genomic DNA or expression products thereof) and expression markers (which can reflect genetically coded factors, environmental factors, or both). Where the markers are expression markers, the methods can include determining a first expression profile for a first individual or population (*e.g.*, of one or more expressed markers, *e.g.*, a set of expressed markers) and comparing the first expression profile to a second expression profile for the second individual or population. In this example, correlating expression marker(s) to a particular phenotype can include correlating the first or second expression profile to the phenotype of interest.

Probe/Primer Synthesis Methods

[0143] In general, synthetic methods for making oligonucleotides, including probes, primers, molecular beacons, PNAs, LNAs (locked nucleic acids), *etc.*, are well known. For example, oligonucleotides can be synthesized chemically according to the solid phase phosphoramidite triester method described by Beaucage and Caruthers (1981), Tetrahedron Letts., 22(20):1859-1862, *e.g.*, using a commercially available automated synthesizer, *e.g.*, as described in Needham-VanDevanter *et al.* (1984) Nucleic Acids Res., 12:6159-6168. Oligonucleotides, including modified oligonucleotides can also be ordered from a variety of commercial sources known to persons of skill. There are many commercial providers of oligo synthesis services, and thus this is a broadly accessible technology. Any nucleic acid can be custom ordered from any of a variety of commercial sources, such as The Midland Certified Reagent Company (mcrc@oligos.com), The Great American Gene Company (www.genco.com), ExpressGen Inc. (www.expressgen.com), Operon Technologies Inc. (Alameda, CA) and many others. Similarly, PNAs can be custom ordered from any of a variety of sources, such as PeptidoGenic (pkim@ccnet.com), HTI Bio-products, inc. (htibio.com), BMA Biomedicals Ltd (U.K.), Bio·Synthesis, Inc., and many others.

In Silico Marker Detection

[0144] In some embodiments, *in silico* methods can be used to detect the marker loci of interest. For example, the sequence of a nucleic acid comprising the marker locus of interest can be stored in a computer. The desired marker locus sequence or its homolog can be identified using an appropriate nucleic acid search algorithm as provided by, for example, in such readily available programs as BLAST, or even simple word processors. The entire

human genome has been sequenced and, thus, sequence information can be used to identify marker regions, flanking nucleic acids, *etc.*

Amplification Primers For Marker Detection

[0145] In some preferred embodiments, the molecular markers of the invention are detected using a suitable PCR-based detection method, where the size or sequence of the PCR amplicon is indicative of the absence or presence of the marker (*e.g.*, a particular marker allele). In these types of methods, PCR primers are hybridized to the conserved regions flanking the polymorphic marker region.

[0146] It will be appreciated that suitable primers to be used with the invention can be designed using any suitable method. It is not intended that the invention be limited to any particular primer or primer pair. For example, primers can be designed using any suitable software program, such as LASERGENE®, *e.g.*, taking account of publicly available sequence information.

[0147] In some embodiments, the primers of the invention are radiolabelled, or labeled by any suitable means (*e.g.*, using a non-radioactive fluorescent tag), to allow for rapid visualization of the different size amplicons following an amplification reaction without any additional labeling step or visualization step. In some embodiments, the primers are not labeled, and the amplicons are visualized following their size resolution, *e.g.*, following agarose or acrylamide gel electrophoresis. In some embodiments, ethidium bromide staining of the PCR amplicons following size resolution allows visualization of the different size amplicons.

[0148] It is not intended that the primers of the invention be limited to generating an amplicon of any particular size. For example, the primers used to amplify the marker loci and alleles herein are not limited to amplifying the entire region of the relevant locus. The primers can generate an amplicon of any suitable length. In some embodiments, marker amplification produces an amplicon at least 20 nucleotides in length, or alternatively, at least 50 nucleotides in length, or alternatively, at least 100 nucleotides in length, or alternatively, at least 200 nucleotides in length.

Detection of Markers For Positional Cloning

[0149] In some embodiments, a nucleic acid probe is used to detect a nucleic acid that comprises a marker sequence. Such probes can be used, for example, in positional cloning to isolate nucleotide sequences linked to the marker nucleotide sequence. It is not intended that

the nucleic acid probes of the invention be limited to any particular size. In some embodiments, nucleic acid probe is at least 20 nucleotides in length, or alternatively, at least 50 nucleotides in length, or alternatively, at least 100 nucleotides in length, or alternatively, at least 200 nucleotides in length.

[0150] A hybridized probe is detected using, autoradiography, fluorography or other similar detection techniques depending on the label to be detected. Examples of specific hybridization protocols are widely available in the art, *see*, *e.g.*, Berger, Sambrook, and Ausubel, *all herein.*

Generation Of Transgenic Cells

[0151] The present invention also provides cells which are transformed with nucleic acids corresponding to QTL identified according to the invention. For example, such nucleic acids include chromosome intervals (*e.g.*, genomic fragments), ORFs and/or cDNAs that encode genes that correspond or are linked to QTL for addiction phenotypes. Additionally, the invention provides for the production of polypeptides that influence addiction phenotypes. This is useful, *e.g.*, to prevent, predict or treat addictions, and for the generation of transgenic cells. These cells provide commercially useful cell lines having defined genes that influence the relevant phenotype, thereby providing a platform for screening potential modulators of phenotype, as well as basic research into the mechanism of action for each of the genes of interest. In addition, gene therapy can be used to introduce desirable genes into individuals or populations thereof. Such gene therapies may be used to provide a treatment for a disorder exhibited by an individual, or may be used as a preventative measure to prevent the development of such a disorder in an individual at risk. Knock-out animals, such as knock-out mice, can be produced for any of the genes noted herein, to further identify phenotypic effects of the genes. Similarly, recombinant mice or other animals can be used as models for human disease, *e.g.*, by knocking out any natural gene herein and introduction (*e.g.*, *via* homologous recombination) of the human (or other species) gene into the animal. The effects of modulators on the heterologous human genes and gene products can then be monitored in the resulting *in vivo* model animal system.

[0152] General texts which describe molecular biological techniques for the cloning and manipulation of nucleic acids and production of encoded polypeptides include Berger and Kimmel, Guide to Molecular Cloning Techniques, Methods in Enzymology volume 152 Academic Press, Inc., San Diego, CA (Berger); Sambrook *et al.*, Molecular Cloning - A Laboratory Manual (3rd Ed.), Vol. 1-3, Cold Spring Harbor Laboratory, Cold Spring Harbor,

New York, 2001 ("Sambrook") and Current Protocols in Molecular Biology, F.M. Ausubel *et al.*, eds., Current Protocols, a joint venture between Greene Publishing Associates, Inc. and John Wiley & Sons, Inc., (supplemented through 2004 or later) ("Ausubel")). These texts describe mutagenesis, the use of vectors, promoters and many other relevant topics related to, *e.g.*, the generation of clones that comprise nucleic acids of interest, *e.g.*, genes, marker loci, marker probes, QTL that segregate with marker loci, *etc.*

[0153] Host cells are genetically engineered (*e.g.*, transduced, transfected, transformed, *etc.*) with the vectors of this invention (*e.g.*, vectors, such as expression vectors which comprise an ORF derived from or related to a QTL) which can be, for example, a cloning vector, a shuttle vector or an expression vector. Such vectors are, for example, in the form of a plasmid, a phagemid, an agrobacterium, a virus, a naked polynucleotide (linear or circular), or a conjugated polynucleotide. Vectors can be introduced into bacteria, especially for the purpose of propagation and expansion. Additional details regarding nucleic acid introduction methods are found in Sambrook, Berger and Ausubel, *infra*. The method of introducing a nucleic acid of the present invention into a host cell is not critical to the instant invention, and it is not intended that the invention be limited to any particular method for introducing exogenous genetic material into a host cell. Thus, any suitable method, *e.g.*, including but not limited to the methods provided herein, which provides for effective introduction of a nucleic acid into a cell or protoplast can be employed and finds use with the invention.

[0154] The engineered host cells can be cultured in conventional nutrient media modified as appropriate for such activities as, for example, activating promoters or selecting transformants. In addition to Sambrook, Berger and Ausubel, *all infra*, Atlas and Parks (eds) The Handbook of Microbiological Media (1993) CRC Press, Boca Raton, FL and available commercial literature such as the Life Science Research Cell Culture Catalogue (2004) from Sigma- Aldrich, Inc (St Louis, MO) ("Sigma-LSRCCC") provide additional details.

Making knock-out animals and transgenics

[0155] Transgenic animals are a useful tool for studying gene function and testing putative gene or gene product modulators. Human (or other selected species) genes herein can be introduced in place of endogenous genes of a laboratory animal, making it possible to study function of the human (or other, *e.g.*, livestock) gene or gene product in the easily manipulated and studied laboratory animal.

[0156] It will be appreciated that there is not always a precise correspondence for responses to modulators between homologous gene in different animals, making the ability to study the human or other species of interest in a laboratory animal particularly useful. Although similar genetic manipulations can be performed in tissue culture, the interaction of genes and gene products in the context of an intact organism provides a more complete and physiologically relevant picture of such genes and gene products than can be achieved in simple cell-based screening assays. Accordingly, one feature of the invention is the creation of transgenic animals comprising heterologous genes of interest, *e.g.*, the genes in Table 1.

[0157] In general, such a transgenic animal is simply an animal that has had appropriate genes (or partial genes, *e.g.*, comprising coding sequences coupled to a promoter) introduced into one or more of its cells artificially. This is most commonly done in one of two ways. First, a DNA can be integrated randomly by injecting it into the pronucleus of a fertilized ovum. In this case, the DNA can integrate anywhere in the genome. In this approach, there is no need for homology between the injected DNA and the host genome. Second, targeted insertion can be accomplished by introducing the (heterologous) DNA into embryonic stem (ES) cells and selecting for cells in which the heterologous DNA has undergone homologous recombination with homologous sequences of the cellular genome. Typically, there are several kilobases of homology between the heterologous and genomic DNA, and positive selectable markers (*e.g.*, antibiotic resistance genes) are included in the heterologous DNA to provide for selection of transformants. In addition, negative selectable markers (*e.g.*, "toxic" genes such as barnase) can be used to select against cells that have incorporated DNA by non-homologous recombination (random insertion).

[0158] One common use of targeted insertion of DNA is to make knock-out mice. Typically, homologous recombination is used to insert a selectable gene driven by a constitutive promoter into an essential exon of the gene that one wishes to disrupt (*e.g.*, the first coding exon). To accomplish this, the selectable marker is flanked by large stretches of DNA that match the genomic sequences surrounding the desired insertion point. Once this construct is electroporated into ES cells, the cells' own machinery performs the homologous recombination. To make it possible to select against ES cells that incorporate DNA by non-homologous recombination, it is common for targeting constructs to include a negatively selectable gene outside the region intended to undergo recombination (typically the gene is cloned adjacent to the shorter of the two regions of genomic homology). Because DNA lying outside the regions of genomic homology is lost during homologous recombination, cells

undergoing homologous recombination cannot be selected against, whereas cells undergoing random integration of DNA often can. A commonly used gene for negative selection is the herpes virus thymidine kinase gene, which confers sensitivity to the drug gancyclovir.

[0159] Following positive selection and negative selection if desired, ES cell clones are screened for incorporation of the construct into the correct genomic locus. Typically, one designs a targeting construct so that a band normally seen on a Southern blot or following PCR amplification becomes replaced by a band of a predicted size when homologous recombination occurs. Since ES cells are diploid, only one allele is usually altered by the recombination event so, when appropriate targeting has occurred, one usually sees bands representing both wild type and targeted alleles.

[0160] The embryonic stem (ES) cells that are used for targeted insertion are derived from the inner cell masses of blastocysts (early mouse embryos). These cells are pluripotent, meaning they can develop into any type of tissue.

[0161] Once positive ES clones have been grown up and frozen, the production of transgenic animals can begin. Donor females are mated, blastocysts are harvested, and several ES cells are injected into each blastocyst. Blastocysts are then implanted into a uterine horn of each recipient. By choosing an appropriate donor strain, the detection of chimeric offspring (*i.e.*, those in which some fraction of tissue is derived from the transgenic ES cells) can be as simple as observing hair and/or eye color. If the transgenic ES cells do not contribute to the germline (sperm or eggs), the transgene cannot be passed on to offspring.

CORRELATING MARKERS TO PHENOTYPES

[0162] One aspect of the invention is a description of correlations between polymorphisms noted in Table 1 and addiction phenotypes. An understanding of these correlations can be used in the present invention to correlate information regarding a set of polymorphisms that an individual or sample is determined to possess and a phenotype that they are likely to display. Further, higher order correlations that account for combinations of alleles in one or more different genes can also be assessed for correlations to phenotype.

[0163] These correlations can be performed by any method that can identify a relationship between an allele and a phenotype, or a combination of alleles and a combination of phenotypes. For example, alleles in one or more of the genes or loci in Table 1 can be correlated with one or more addiction phenotypes. Most typically, these methods involve

referencing a look up table that comprises correlations between alleles of the polymorphism and the phenotype. The table can include data for multiple allele-phenotype relationships and can take account of additive or other higher order effects of multiple allele-phenotype relationships, *e.g.*, through the use of statistical tools such as principle component analysis, heuristic algorithms, *etc.*

[0164] Correlation of a marker to a phenotype optionally includes performing one or more statistical tests for correlation. Many statistical tests are known, and most are computer-implemented for ease of analysis. A variety of statistical methods of determining associations/correlations between phenotypic traits and biological markers are known and can be applied to the present invention. For an introduction to the topic, *see*, Hartl (1981) A Primer of Population Genetics Washington University, Saint Louis Sinauer Associates, Inc. Sunderland, MA ISBN: 0-087893-271-2. A variety of appropriate statistical models are described in Lynch and Walsh (1998) Genetics and Analysis of Quantitative Traits, Sinauer Associates, Inc. Sunderland MA ISBN 0-87893-481-2. These models can, for example, provide for correlations between genotypic and phenotypic values, characterize the influence of a locus on a phenotype, sort out the relationship between environment and genotype, determine dominance or penetrance of genes, determine maternal and other epigenetic effects, determine principle components in an analysis (*via* principle component analysis, or "PCA"), and the like. The references cited in these texts provides considerable further detail on statistical models for correlating markers and phenotype.

[0165] In addition to standard statistical methods for determining correlation, other methods that determine correlations by pattern recognition and training, such as the use of genetic algorithms, can be used to determine correlations between markers and phenotypes. This is particularly useful when identifying higher order correlations between multiple alleles and multiple phenotypes. To illustrate, neural network approaches can be coupled to genetic algorithm-type programming for heuristic development of a structure-function data space model that determines correlations between genetic information and phenotypic outcomes. For example, NNUGA (Neural Network Using Genetic Algorithms) is an available program (*e.g.*, on the world wide web at cs.bgu.ac.il/~omri/NNUGA which couples neural networks and genetic algorithms. An introduction to neural networks can be found, *e.g.*, in Kevin Gurney, An Introduction to Neural Networks, UCL Press (1999) and on the world wide web at shef.ac.uk/psychology/gurney/notes/index.html. Additional useful neural network references include those noted above in regard to genetic algorithms and, *e.g.*, Bishop, Neural

Networks for Pattern Recognition, Oxford University Press (1995), and Ripley *et al.*, Pattern Recognition and Neural Networks, Cambridge University Press (1995). Two tables showing exemplary data sets including certain statistical analyses are shown in Appendix 1. Specifically, Table 1 shows data for an association study designed to identify genetic loci associated with addiction, and Table 2 shows data from the association study correlating various addiction phenotypes with "case status," *i.e.*, at least one incidence of addiction. These data are discussed further *infra*.

[0166] Additional references that are useful in understanding data analysis applications for using and establishing correlations, principle components of an analysis, neural network modeling and the like, include, *e.g.*, Hinchliffe, Modeling Molecular Structures, John Wiley and Sons (1996), Gibas and Jambeck, Bioinformatics Computer Skills, O'Reilly (2001), Pevzner, Computational Molecular Biology and Algorithmic Approach, The MIT Press (2000), Durbin *et al.*, Biological Sequence Analysis: Probabilistic Models of Proteins and Nucleic Acids, Cambridge University Press (1998), and Rashidi and Buehler, Bioinformatic Basics: Applications in Biological Science and Medicine, CRC Press LLC (2000).

[0167] In any case, essentially any statistical test can be applied in a computer implemented model, by standard programming methods, or using any of a variety of "off the shelf" software packages that perform such statistical analyses, including, for example, those noted above and those that are commercially available, *e.g.*, from Partek Incorporated (St. Peters, Missouri; www.partek.com), *e.g.*, that provide software for pattern recognition (*e.g.*, which provide Partek Pro 2000 Pattern Recognition Software) which can be applied to genetic algorithms for multivariate data analysis, interactive visualization, variable selection, neural network & statistical modeling, *etc.* Relationships can be analyzed, *e.g.*, by Principal Components Analysis (PCA) mapped mapped scatterplots and biplots, Multi-Dimensional Scaling (MDS) Multi-Dimensional Scaling (MDS) mapped scatterplots, star plots, *etc.* Available software for performing correlation analysis includes SAS, R and MathLab.

[0168] The marker(s), whether polymorphisms or expression patterns, can be used for any of a variety of genetic analyses. For example, once markers have been identified, as in the present case, they can be used in a number of different assays for association studies. For example, probes can be designed for microarrays that interrogate these markers. Other exemplary assays include, *e.g.*, the Taqman assays and molecular beacon assays described *supra*, as well as conventional PCR and/or sequencing techniques. Once the markers are

identified (*e.g.*, SNPs are genotyped) in a population, the information may be used for multiple association studies. Such use may be facilitated by storage of the marker and phenotype information in a database that may be accessed at a later date for additional analysis.

[0169] Additional details regarding association studies can be found in U.S. patent no. 6,969,589, issued November 29, 2005, entitled "Methods for Genomic Analysis;" U.S. patent no. 6,897,025, issued May 24, 2005, entitled "Genetic Analysis Systems and Methods;" USSN 10/286,417, filed October 31, 2002, entitled "Methods for Genomic Analysis;" USSN 10/768,788, filed January 30, 2004, entitled "Apparatus and Methods for Analyzing and Characterizing Nucleic Acid Sequences;" USSN 10/447,685, filed May 28, 2003, entitled "Liver Related Disease Compositions and Methods;" USSN 10/970,761, filed October 20, 2004, entitled "Analysis Methods and Apparatus for Individual Genotyping;" USSN 10/956,224, filed September 30, 2004, entitled "Methods for Genetic Analysis;" and USSN 60/722,357, filed September 30, 2005, entitled "Methods and Compositions for Screening and Treatment of Disorders of Blood Glucose Regulation."

[0170] In some embodiments, the marker data is used to perform association studies to show correlations between markers and phenotypes. This can be accomplished by determining marker characteristics in individuals with the phenotype of interest (*i.e.*, individuals or populations displaying the phenotype of interest) and comparing the allele frequency or other characteristics (expression levels, *etc.*) of the markers in these individuals to the allele frequency or other characteristics in a control group of individuals. Such marker determinations can be conducted on a genome-wide basis, or can be focused on specific regions of the genome (*e.g.*, haplotype blocks of interest). In one embodiment, markers that are linked to the genes or loci in Table 1 are assessed for correlation to one or more specific phenotypes.

[0171] In addition to the other embodiments of the methods of the present invention disclosed herein, the methods additionally allow for the "dissection" of a phenotype. That is, a particular phenotypes can result from two or more different genetic bases. For example, a susceptibility phenotype in one individual may be the result of a "defect" (or simply a particular allele—"defect" with respect to a susceptibility phenotype is context dependent, *e.g.*, whether the phenotype is desirable or undesirable in the individual in a given environment) in a gene for in Table 1, while the same basic phenotype in a different individual may be the result of multiple "defects" in multiple genes in Table 1. Thus,

scanning a plurality of markers (*e.g.*, as in genome or haplotype block scanning) allows for the dissection of varying genetic bases for similar (or graduated) phenotypes. In one aspect, such a dissection allows more individualized treatment, since two different patients with the same clinical phenotypes may have different genetic profiles that underlie differential response to treatment. As such, diagnosis of an individual that comprises analysis of their genotype can be used to determine an appropriate treatment regimen. For example, a first set of individuals with a given phenotype (*e.g.*, a history of addiction) and a particular genotype at one or more of the SNPs in Table 1 or SNPs closely linked thereto may have a highly efficacious response to a medical treatment (*e.g.*, comprising administration of "drug X"), while a second set of individuals with the same phenotype but a different genotype at one or more of the SNPs in Table 1 instead experiences a negative side effect (*e.g.*, insomnia, weight gain, depression, *etc.*) in response to the treatment. The markers of the present invention may be used in an association analysis to distinguish between individuals in the first set and individuals in the second set prior to treatment, thereby allowing those who are likely to benefit from the treatment to be treated and identifying those who are likely to experience the side effect for alternative treatments. These methods are discussed in more detail in, *e.g.*, USSN 10/956,224, filed September 30, 2004, entitled "Methods for Genetic Analysis," and PCT application no. US2005/007375, filed March 3, 2005, entitled "Methods for Genetic Analysis."

[0172] As described above, one method of conducting association studies is to compare the allele frequency (or expression level) of markers in individuals with a phenotype of interest ("case group") to the allele frequency in a control group of individuals. In one method, informative SNPs are used to make the SNP haplotype pattern comparison (an "informative SNP" is genetic SNP marker such as a SNP or subset (more than one) of SNPs in a genome or haplotype block that tends to distinguish one SNP or genome or haplotype pattern from other SNPs, genomes or haplotype patterns). The approach of using informative SNPs has an advantage over other whole genome scanning or genotyping methods known in the art, for instead of reading all 3 billion bases of each individual's genome–or even reading the 3-4 million common SNPs that may be found–only informative SNPs from a sample population need to be detected. Reading these particular, informative SNPs provides sufficient information to allow statistically accurate association data to be extracted from specific experimental populations, as described above.

[0173] Thus, in an embodiment of one method of determining genetic associations, the allele frequency of informative SNPs is determined for genomes of a control population that do not display the phenotype. The allele frequency of informative SNPs is also determined for genomes of a population that do display the phenotype. The informative SNP allele frequencies are compared. Allele frequency comparisons can be made, for example, by determining the allele frequency (number of instances of a particular allele in a population divided by the total number of alleles) at each informative SNP location in each population and comparing these allele frequencies. The informative SNPs displaying a difference between the allele frequency of occurrence in the control versus case populations/groups are selected for analysis. Once informative SNPs are selected, the SNP haplotype block(s) that contain the informative SNPs are identified, which in turn identifies a genomic region of interest that is correlated with the phenotype. The genomic regions can be analyzed by genetic or any biological methods known in the art *e.g.*, for use as drug discovery targets or as diagnostic markers.

[0174] In another embodiment of the present invention, linkage disequilibrium (LD) mapping is used to group SNPs for use in association studies, rather than or in addition to the grouping of SNPs into haplotype blocks and patterns. SNPs in close proximity to one another are often strongly correlated, but this correlation structure, or LD, is complex and varies from one region of the genome to another, as well as between different populations. After identifying "LD bins" containing linked SNPs, it becomes possible to determine the sequence of further individuals by reading (*e.g.*, genotyping) only one or a few SNPs from each LD bin as these SNPs are predictive of the genotypes of other SNPs in the LD bin. As for haplotype pattern-based methods, such predictive SNPs are termed "informative SNPs." Methods for determination and use of patterns of LD are provided, *e.g.*, in Hinds, *et al.* (2005) "Whole-Genome Patterns of Common DNA Variation in Three Human Populations", *Science* 307:1072-1079.

SYSTEMS FOR IDENTIFYING ADDICTION PHENOTYPES

[0175] Systems for performing the above correlations are also a feature of the invention. Typically, the system will include system instructions that correlate the presence or absence of an allele (whether detected directly or, *e.g.*, through expression levels) with a predicted phenotype. The system instructions can compare detected information as to allele sequence or expression level with a database that includes correlations between the alleles

and the relevant phenotypes. As noted above, this database can be multidimensional, thereby including higher-order relationships between combinations of alleles and the relevant phenotypes. These relationships can be stored in any number of look-up tables, *e.g.*, taking the form of spreadsheets (*e.g.*, Excel™ spreadsheets) or databases such as an Access™, SQL™, Oracle™, Paradox™, or similar database. The system includes provisions for inputting sample-specific information regarding allele detection information, *e.g.*, through an automated or user interface and for comparing that information to the look up tables.

[0176] Optionally, the system instructions can also include software that accepts diagnostic information associated with any detected allele information, *e.g.*, a diagnosis that a subject with the relevant allele has a particular phenotype. This software can be heuristic in nature, using such inputted associations to improve the accuracy of the look up tables and/ or interpretation of the look up tables by the system. A variety of such approaches, including neural networks, Markov modeling, and other statistical analysis are described above.

[0177] The invention provides data acquisition modules for detecting one or more detectable genetic marker(s) (*e.g.*, one or more array comprising one or more biomolecular probes, detectors, fluid handlers, or the like). The biomolecular probes of such a data acquisition module can include any that are appropriate for detecting the biological marker, *e.g.*, oligonucleotide probes, proteins, aptamers, antibodies, *etc.* These can include sample handlers (*e.g.*, fluid handlers), robotics, microfluidic systems, nucleic acid or protein purification modules, arrays (*e.g.*, nucleic acid arrays), detectors, thermocyclers or combinations thereof, *e.g.*, for acquiring samples, diluting or aliquoting samples, purifying marker materials (*e.g.*, nucleic acids or proteins), amplifying marker nucleic acids, detecting amplified marker nucleic acids, and the like.

[0178] For example, automated devices that can be incorporated into the systems herein have been used to assess a variety of biological phenomena, including, *e.g.*, expression levels of genes in response to selected stimuli (Service (1998) "Microchips Arrays Put DNA on the Spot" Science 282:396-399), high throughput DNA genotyping (Zhang *et al.* (1999) "Automated and Integrated System for High-Throughput DNA Genotyping Directly from Blood" Anal. Chem. 71:1138-1145) and many others. Similarly, integrated systems for performing mixing experiments, DNA amplification, DNA sequencing and the like are also available. *See*, *e.g.*, Service (1998) "Coming Soon: the Pocket DNA Sequencer" Science 282: 399-401. A variety of automated system components are available, *e.g.*, from Caliper Technologies (Hopkinton, MA), which utilize various Zymate systems, which typically

include, *e.g.*, robotics and fluid handling modules. Similarly, the common ORCA® robot, which is used in a variety of laboratory systems, *e.g.*, for microtiter tray manipulation, is also commercially available, *e.g.*, from Beckman Coulter, Inc. (Fullerton, CA). Similarly, commercially available microfluidic systems that can be used as system components in the present invention include those from Agilent technologies and Caliper Technologies. Furthermore, the patent and technical literature includes numerous examples of microfluidic systems, including those that can interface directly with microwell plates for automated fluid handling.

[0179] Any of a variety of liquid handling and/or array configurations can be used in the systems herein. One common format for use in the systems herein is a microtiter plate, in which the array or liquid handler includes a microtiter tray. Such trays are commercially available and can be ordered in a variety of well sizes and numbers of wells per tray, as well as with any of a variety of functionalized surfaces for binding of assay or array components. Common trays include the ubiquitous 96 well plate, with 384 and 1536 well plates also in common use. Samples can be processed in such trays, with all of the processing steps being performed in the trays. Samples can also be processed in microfluidic apparatus, or combinations of microtiter and microfluidic apparatus.

[0180] In addition to liquid phase arrays, components can be stored in or analyzed on solid phase arrays. These arrays fix materials in a spatially accessible pattern (*e.g.*, a grid of rows and columns) onto a solid substrate such as a membrane (*e.g.*, nylon or nitrocellulose), a polymer or ceramic surface, a glass or modified silica surface, a metal surface, or the like. Components can be accessed, *e.g.*, by hybridization, by local rehydration (*e.g.*, using a pipette or other fluid handling element) and fluidic transfer, or by scraping the array or cutting out sites of interest on the array.

[0181] The system can also include detection apparatus that is used to detect allele information, using any of the approaches noted herein. For example, a detector configured to detect real-time PCR products (*e.g.*, a light detector, such as a fluorescence detector) or an array reader can be incorporated into the system. For example, the detector can be configured to detect a light emission from a hybridization or amplification reaction comprising an allele of interest, wherein the light emission is indicative of the presence or absence of the allele. Optionally, an operable linkage between the detector and a computer that comprises the system instructions noted above is provided, allowing for automatic input of detected allele-specific information to the computer, which can, *e.g.*, store the database

information and/or execute the system instructions to compare the detected allele specific information to the look up table.

[0182] Probes that are used to generate information detected by the detector can also be incorporated within the system, along with any other hardware or software for using the probes to detect the amplicon. These can include thermocycler elements (*e.g.*, for performing PCR or LCR amplification of the allele to be detected by the probes), arrays upon which the probes are arrayed and/or hybridized, or the like. The fluid handling elements noted above for processing samples, can be used for moving sample materials (*e.g.*, template nucleic acids and/or proteins to be detected) primers, probes, amplicons, or the like into contact with one another. For example, the system can include a set of marker probes or primers configured to detect at least one allele of one or more genes or linked loci associated with a phenotype, where the gene encodes a polymorphism in Table 1 (*e.g.*, in a gene listed in Table 1). The detector module is configured to detect one or more signal outputs from the set of marker probes or primers, or an amplicon produced from the set of marker probes or primers, thereby identifying the presence or absence of the allele.

[0183] The sample to be analyzed is optionally part of the system, or can be considered separate from it. The sample optionally includes *e.g.*, genomic DNA, amplified genomic DNA, cDNA, amplified cDNA, RNA, amplified RNA, proteins, *etc.*, as noted herein. In one aspect, the sample is derived from a mammal such as a human patient.

[0184] Optionally, system components for interfacing with a user are provided. For example, the systems can include a user viewable display for viewing an output of computer-implemented system instructions, user input devices (*e.g.*, keyboards or pointing devices such as a mouse) for inputting user commands and activating the system, *etc.* Typically, the system of interest includes a computer, wherein the various computer-implemented system instructions are embodied in computer software, *e.g.*, stored on computer readable media.

[0185] Standard desktop applications such as word processing software (*e.g.*, Microsoft Word™ or Corel WordPerfect™) and database software (*e.g.*, spreadsheet software such as Microsoft Excel™, Corel Quattro Pro™, or database programs such as Microsoft Access™ or Sequel™, Oracle™, Paradox™) can be adapted to the present invention by inputting a character string corresponding to an allele herein, or an association between an allele and a phenotype. For example, the systems can include software having the appropriate character string information, *e.g.*, used in conjunction with a user interface

(*e.g.*, a GUI in a standard operating system such as a Windows, Macintosh or LINUX system) to manipulate strings of characters. Specialized sequence alignment programs such as BLAST can also be incorporated into the systems of the invention for alignment of nucleic acids or proteins (or corresponding character strings) *e.g.*, for identifying and relating multiple alleles.

[0186] As noted, systems can include a computer with an appropriate database and an allele sequence or correlation of the invention. Software for aligning sequences, as well as data sets entered into the software system comprising any of the sequences herein can be a feature of the invention. The computer can be, *e.g.*, a PC (Intel x86 or Pentium chip-compatible DOS™, OS2™ WINDOWS™ WINDOWS NT™, WINDOWS95™, WINDOWS98™ , WINDOWS2000, WINDOWSME, or LINUX based machine, a MACINTOSH™, Power PC, or a UNIX based (*e.g.*, SUN™ work station or LINUX based machine) or other commercially common computer which is known to one of skill. Software for entering and aligning or otherwise manipulating sequences is available, *e.g.*, BLASTP and BLASTN, or can easily be constructed by one of skill using a standard programming language such as Visualbasic, Fortran, Basic, Java, or the like.

METHODS OF IDENTIFYING MODULATORS

[0187] In addition to providing various diagnostic and prognostic markers for identifying addiction predisposition, *etc.*, the invention also provides methods of identifying modulators of addiction phenotypes. In the methods, a potential modulator is contacted to a relevant protein corresponding to a loci in Table 1, or to a nucleic acid that encodes such a protein. An effect of the potential modulator on the gene or gene product is detected, thereby identifying whether the potential modulator modulates the underlying molecular basis for the phenotype.

[0188] In addition, the methods can include, *e.g.*, administering one or more putative modulator to an individual that displays a relevant phenotype and determining whether the putative modulator modulates the phenotype in the individual, *e.g.*, in the context of a clinical trial or treatment. This, in turn, determines whether the putative modulator is clinically useful.

[0189] The gene or gene product that is contacted by the modulator can include any allelic form noted herein. Allelic forms, whether genes, RNAs or proteins, that positively correlate to undesirable phenotypes are preferred targets for modulator screening.

[0190] Effects of interest that can be screened for include: (a) increased or decreased expression of a gene or gene product in Table 1 in the presence of the modulator; (b) a change in the timing or location of expression, or otherwise altered expression pattern of a gene in Table 1 and/or RNA or protein products thereof; (c) increased or decreased activity of the gene product of a gene in Table 1 in the presence of the modulator; (d) or a change in localization, or otherwise altered expression pattern of the RNA and/or proteins encoded by the loci of Table 1 in the presence of the modulator.

[0191] The precise format of the modulator screen will, of course, vary, depending on the effect(s) being detected and the equipment available. Northern analysis, quantitative RT-PCR and/or array-based detection formats can be used to distinguish expression levels or patterns of genes noted above. Protein expression levels can also be detected using available methods, such as western blotting, ELISA analysis, antibody hybridization, BIAcore, or the like. Any of these methods can be used to distinguish changes in expression levels of the loci of Table 1 or the RNA or proteins encoded therein that result from a potential modulator.

[0192] Accordingly, one may screen for potential modulators of the genes of Table 1 and/or the RNA and protein encoded therein for activity or expression. For example, potential modulators (small molecules, RNAs (*e.g.*, RNAi), organic molecules, inorganic molecules, proteins, hormones, transcription factors, or the like) can be contacted to a cell comprising an allele of interest and an effect on activity or expression (or both) of a gene, RNA or protein corresponding to a loci in Table 1. For example, expression of any of the genes of Table 1 can be detected, *e.g.*, *via* northern analysis or quantitative (optionally real time) RT-PCR, before and after application of potential expression modulators. Similarly, promoter regions of the various genes (*e.g.*, generally sequences in the region of the start site of transcription, *e.g.*, within 5 KB of the start site, *e.g.*, 1KB, or less *e.g.*, within 500BP or 250BP or 100 BP of the start site) can be coupled to reporter constructs (CAT, beta-galactosidase, luciferase or any other available reporter) and can be similarly be tested for expression activity modulation by the potential modulator. In either case, the assays can be performed in a high-throughput fashion, *e.g.*, using automated fluid handling and/or detection systems, in serial or parallel fashion. Similarly, activity modulators can be tested by contacting a potential modulator to an appropriate cell using any of the activity detection methods herein, regardless of whether the activity that is detected is the result of activity modulation, expression modulation or both. These assays can be *in vitro*, cell-based, or can

be screens for modulator activity performed on laboratory animals such as knock-out transgenic mice comprising a gene of interest.

[0193] Biosensors for detecting modulator activity detection are also a feature of the invention. These include devices or systems that comprise a gene or gene product corresponding to a loci of Table 1 coupled to a readout that measures or displays one or more activity of the gene or product. Thus, any of the above described assay components can be configured as a biosensor by operably coupling the appropriate assay components to a readout. The readout can be optical (*e.g.*, to detect cell markers or cell survival) electrical (*e.g.*, coupled to a FET, a BIAcore, or any of a variety of others), spectrographic, or the like, and can optionally include a user-viewable display (*e.g.*, a CRT or optical viewing station). The biosensor can be coupled to robotics or other automation, *e.g.*, microfluidic systems, that direct contact of the putative modulators to the proteins of the invention, *e.g.*, for automated high-throughput analysis of putative modulator activity. A large variety of automated systems that can be adapted to use with the biosensors of the invention are commercially available. For example, automated systems have been made to assess a variety of biological phenomena, including, *e.g.*, expression levels of genes in response to selected stimuli (Service (1998) "Microchips Arrays Put DNA on the Spot" Science 282:396-399). Laboratory systems can also perform, *e.g.*, repetitive fluid handling operations (*e.g.*, pipetting) for transferring material to or from reagent storage systems that comprise arrays, such as microtiter trays or other chip trays, which are used as basic container elements for a variety of automated laboratory methods. Similarly, the systems manipulate, *e.g.*, microtiter trays and control a variety of environmental conditions such as temperature, exposure to light or air, and the like. Many such automated systems are commercially available and are described herein, including those described above. These include various Zymate systems, ORCA® robots, microfluidic devices, *etc.* For example, the LabMicrofluidic device® high throughput screening system (HTS) by Caliper Technologies, Mountain View, CA can be adapted for use in the present invention to screen for modulator activity.

[0194] In general, methods and sensors for detecting protein expression level and activity are available, including those taught in the various references above, including R. Scopes, Protein Purification, Springer-Verlag, N.Y. (1982); Deutscher, Methods in Enzymology Vol. 182: Guide to Protein Purification, Academic Press, Inc. N.Y. (1990); Sandana (1997) Bioseparation of Proteins, Academic Press, Inc.; Bollag *et al.* (1996) Protein Methods, 2nd Edition Wiley-Liss, NY; Walker (1996) The Protein Protocols Handbook

Humana Press, NJ, Harris and Angal (1990) Protein Purification Applications: A Practical Approach IRL Press at Oxford, Oxford, England; Harris and Angal Protein Purification Methods: A Practical Approach IRL Press at Oxford, Oxford, England; Scopes (1993) Protein Purification: Principles and Practice 3rd Edition Springer Verlag, NY; Janson and Ryden (1998) Protein Purification: Principles, High Resolution Methods and Applications, Second Edition Wiley-VCH, NY; and Walker (1998) Protein Protocols on CD-ROM Humana Press, NJ; and Satinder Ahuja ed., Handbook of Bioseparations, Academic Press (2000). "Proteomic" detection methods, which detect many proteins simultaneously have been described and are also noted above, including various multidimensional electrophoresis methods (*e.g.*, 2-d gel electrophoresis), mass spectrometry based methods (*e.g.*, SELDI, MALDI, electrospray, *etc.*), or surface plasmon reasonance methods. These can also be used to track protein activity and/or expression level.

[0195] Similarly, nucleic acid expression levels (*e.g.*, mRNA) can be detected using any available method, including northern analysis, quantitative RT-PCR, or the like. References sufficient to guide one of skill through these methods are readily available, including Ausubel, Sambrook and Berger.

[0196] Whole animal assays can also be used to assess the effects of modulators on cells or whole animals (*e.g.*, transgenic knock-out mice), *e.g.*, by monitoring an effect on a cell-based phenomenon, a change in displayed animal phenotype, or the like.

[0197] Potential modulator libraries to be screened for effects on expression and/or activity are available. These libraries can be random, or can be targeted. For example, a modulator library may be screened for effects on expression of, *e.g.*, any of the genes of Table 1.

[0198] Targeted libraries include those designed using any form of a rational design technique that selects scaffolds or building blocks to generate combinatorial libraries. These techniques include a number of methods for the design and combinatorial synthesis of target-focused libraries, including morphing with bioisosteric transformations, analysis of target-specific privileged structures, and the like. In general, where information regarding structure of Table 1 genes or gene products is available, likely binding partners can be designed, *e.g.*, using flexible docking approaches, or the like. Similarly, random libraries exist for a variety of basic chemical scaffolds. In either case, many thousands of scaffolds and building blocks for chemical libraries are available, including those with polypeptide, nucleic acid,

carbohydrate, and other backbones. Commercially available libraries and library design services include those offered by Chemical Diversity (San Diego, CA), Affymetrix (Santa Clara, CA), Sigma (St. Louis MO), ChemBridge Research Laboratories (San Diego, CA), TimTec (Newark, DE), Nuevolution A/S (Copenhagen, Denmark) and many others.

[0199] Kits for treatment of addiction phenotypes can include a modulator identified as noted above and instructions for administering the compound to a patient to prevent or treat addiction.

CELL RESCUE AND THERAPEUTIC ADMINISTRATION

[0200] In one aspect, the invention includes rescue of a cell that is defective in function of one or more endogenous genes of Table 1 or gene products thereof (thus conferring the relevant phenotype of interest, *e.g.*, addiction susceptibility or resistance, *etc.*). This can be accomplished simply by introducing a new copy of the gene (or a heterologous nucleic acid that expresses the relevant protein), *i.e.*, a gene having an allele that is desired, into the cell. Other approaches, such as homologous recombination to repair the defective gene (*e.g.*, *via* chimeraplasty) can also be performed. In any event, rescue of function can be measured, *e.g.*, in any of the assays noted herein. Indeed, this method can be used as a general method of screening cells *in vitro* for expression or activity of any gene of Table 1 or gene products thereof. Accordingly, *in vitro* rescue of function is useful in this context for the myriad *in vitro* screening methods noted above. The cells that are rescued can include cells in culture, (including primary or secondary cell culture from patients, as well as cultures of well-established cells). Where the cells are isolated from a patient, this has additional diagnostic utility in establishing which gene or gene product is defective in a patient that presents with a relevant phenotype.

[0201] In another aspect, the cell rescue occurs in a patient, *e.g.*, a human, *e.g.*, to remedy a defect. Thus, one aspect of the invention is gene therapy to remedy defects. In these applications, the nucleic acids of the invention are optionally cloned into appropriate gene therapy vectors (and/or are simply delivered as naked or liposome-conjugated nucleic acids), which are then delivered, optionally in combination with appropriate carriers or delivery agents. Proteins can also be delivered directly, but delivery of the nucleic acid is typically preferred in applications where stable expression is desired. Similarly, modulators of any defect identified by the methods herein can be used therapeutically.

[0202] Compositions for administration, *e.g.*, comprise a therapeutically effective amount of the modulator, gene therapy vector or other relevant nucleic acid, and a pharmaceutically acceptable carrier or excipient. Such a carrier or excipient includes, but is not limited to, saline, buffered saline, dextrose, water, glycerol, ethanol, and/or combinations thereof. The formulation is made to suit the mode of administration. In general, methods of administering gene therapy vectors for topical use are well known in the art and can be applied to administration of the nucleic acids of the invention.

[0203] Therapeutic compositions comprising one or more modulator or gene therapy nucleic acid of the invention are optionally tested in one or more appropriate *in vitro* and/or *in vivo* animal model of disease, to confirm efficacy, tissue metabolism, and to estimate dosages, according to methods well known in the art. In particular, dosages can initially be determined by activity, stability or other suitable measures of the formulation.

[0204] Administration is by any of the routes normally used for introducing a molecule into ultimate contact with cells. Modulators and/or nucleic acids that encode a relevant sequence (*e.g.*, any gene of Table 1) can be administered in any suitable manner, optionally with one or more pharmaceutically acceptable carriers. Suitable methods of administering such nucleic acids in the context of the present invention to a patient are available, and, although more than one route can be used to administer a particular composition, a particular route can often provide a more immediate and more effective action or reaction than another route.

[0205] Pharmaceutically acceptable carriers are determined in part by the particular composition being administered, as well as by the particular method used to administer the composition. Accordingly, there is a wide variety of suitable formulations of pharmaceutical compositions of the present invention. Compositions can be administered by a number of routes including, but not limited to: oral, intravenous, intraperitoneal, intramuscular, transdermal, subcutaneous, topical, sublingual, or rectal administration. Compositions can be administered *via* liposomes (*e.g.*, topically), or *via* topical delivery of naked DNA or viral vectors. Such administration routes and appropriate formulations are generally known to those of skill in the art.

[0206] The compositions, alone or in combination with other suitable components, can also be made into aerosol formulations (*i.e.*, they can be "nebulized") to be administered *via* inhalation. Aerosol formulations can be placed into pressurized acceptable propellants,

such as dichlorodifluoromethane, propane, nitrogen, and the like. Formulations suitable for parenteral administration, such as, for example, by intraarticular (in the joints), intravenous, intramuscular, intradermal, intraperitoneal, and subcutaneous routes, include aqueous and non-aqueous, isotonic sterile injection solutions, which can contain antioxidants, buffers, bacteriostats, and solutes that render the formulation isotonic with the blood of the intended recipient, and aqueous and non-aqueous sterile suspensions that can include suspending agents, solubilizers, thickening agents, stabilizers, and preservatives. The formulations of packaged nucleic acid can be presented in unit-dose or multi-dose sealed containers, such as ampules and vials.

[0207] The dose administered to a patient, in the context of the present invention, is sufficient to effect a beneficial prophylactic and/or therapeutic response in the patient over time. The dose is determined by the efficacy of the particular vector, or other formulation, and the activity, stability or serum half-life of the polypeptide or other gene product which is expressed, and the condition of the patient, as well as the body weight or surface area of the patient to be treated. The size of the dose is also determined by the existence, nature, and extent of any adverse side-effects that accompany the administration of a particular vector, formulation, or the like in a particular patient. In determining the effective amount of the vector or formulation to be administered in the treatment of disease (*e.g.*, addiction), the physician evaluates local expression, or circulating plasma levels, formulation toxicities, progression of the relevant disease, and/or where relevant, the production of antibodies to proteins encoded by the polynucleotides. The dose administered, *e.g.*, to a 70 kilogram patient are typically in the range equivalent to dosages of currently-used therapeutic proteins, etc., adjusted for the altered activity or serum half-life of the relevant composition. The vectors of this invention can supplement treatment conditions by any known conventional therapy.

[0208] For administration, formulations of the present invention are administered at a rate determined by the LD-50 of the relevant formulation, and/or observation of any side-effects of the vectors of the invention at various concentrations, *e.g.*, as applied to the mass or topical delivery area and overall health of the patient. Administration can be accomplished *via* single or divided doses.

[0209] If a patient undergoing treatment develops fevers, chills, or muscle aches, he/she receives the appropriate dose of aspirin, ibuprofen, acetaminophen or other pain/fever controlling drug. Patients who experience reactions to the compositions, such as fever,

muscle aches, and chills are premedicated 30 minutes prior to the future infusions with either aspirin, acetaminophen, or, *e.g.*, diphenhydramine. Meperidine is used for more severe chills and muscle aches that do not quickly respond to antipyretics and antihistamines. Treatment is slowed or discontinued depending upon the severity of the reaction.

EXAMPLES

[0210] The following examples are offered to illustrate, but not to limit the claimed invention. One of skill will recognize a variety of non-critical parameters that can be altered within the scope of the invention.

EXAMPLE 1: STRATEGIES FOR IDENTIFICATION OF ADDICTION MARKERS

Introduction: Identifying common genetic variants

[0211] The aim of the study was to identify genetic markers and determinants of addiction. There are important applications to public health in the identification of addiction marker alleles. Where genetic variation is due to many loci, risks to individuals vary widely, depending upon the number of high-risk alleles inherited at susceptibility loci. Common genetic variants that confer modest degrees of risk have individually important effects at the population level. Genes that are identified as being correlated to addiction risk can be used for estimation of associated and individual risks. (*See, e.g.*, USSN 10/956,224, filed September 30, 2004, entitled "Methods for Genetic Analysis," and PCT application no. US2005/007375, filed March 3, 2005, entitled "Methods for Genetic Analysis.") The practical consequences of this risk estimation are substantial. In addition, if the variant indicates a feasible mechanism for intervention, this also provides novel possibilities for targeted prevention.

[0212] In addition to these practical outcomes, the identification of addiction susceptibility loci and genes helps to clarify mechanisms of the development of addiction and other related diseases and disorders (*e.g.*, nicotine addiction, *etc.*) Extending beyond known candidates to a whole genome search has the great advantage that totally novel mechanisms emerge. These mechanisms also provide new therapeutic targets.

[0213] Finally, knowledge of susceptibility genes allows clarification of the effects of lifestyle risk factors by studying the effects of genes and these risk factors in combination, using for example the cohort described herein.

Study design

[0214] An efficient design to identify common low risk alleles is a case/control study. Variants that were associated with addiction were identified by their occurrence at a significantly higher frequency in cases than in controls matched for genetic background. In this study, the variants were single nucleotide polymorphisms (SNPs).

[0215] The case-control association study approach has been used previously on a "candidate gene" basis. However, there are serious limitations to a candidate gene approach. It is slow and relatively expensive, being dependent on developing assays on a SNP by SNP basis for each gene to be tested; it is incomplete in its coverage even of the candidate genes, in particular ignoring, in most cases, potential regulatory variation; and it is restricted by current knowledge of the biology of the disease. The genome-wide search used in this study, by contrast, had the potential to identify active common variants without any prior knowledge of function or location.

[0216] In this study, pooled genotyping for ~2.4 million single nucleotide polymorphisms (SNPs) was performed using 482 "cases" (chronic nicotine users whose Fagerstrom Test of Nicotine Dependence (FTND) score was at least a 3) and 466 "controls" (chronic nicotine users whose FTND score was 0). Based in part on the results of the pooled genotyping, 44,454 were chosen for individual genotyping in the same set of cases and controls, as well as an additional 568 cases and 413 controls. The positive associations found after individual genotyping are shown in Table 1.

Laboratory set up for sample collection, processing and SNP genotyping.

[0217] In brief, the laboratory set up was as follows. All patients read and signed informed consent forms before their samples were used in this study. All samples were barcoded and patient information was entered into an electronic database at the collection site. The samples were uniquely tied to the patients from whom they were collected, and each sample container was uniquely identifiable. The barcoded samples were provided to the genotyping laboratory, and within the laboratory, samples were tracked with a Laboratory Information Management System (Thermo, Altringham UK). Amplification of the whole genome was performed on the sample DNAs, and these samples were subsequently subjected to PCR and pooled and/or individual genotyping as described above. Genotypes were exported to a database and linked to the phenotypic data on each subject. Control genotypes were tested for departure from Hardy-Weinberg equilibrium as a quality control step.

RESEARCH DESIGN

[0218] The study was organized in phases:

[0219] Phase 1. The full set of ~2.4 million SNPs were analyzed in 482 addiction cases and 466 controls using a pooled genotyping methodology.

[0220] Phase 2. A set of 44,454 SNPs (*e.g.*, those that showed a significant difference in frequency between the addiction cases and controls in the pooled genotyping) were evaluated in the original cases and controls, as well as in a further 568 addiction cases and 413 controls. Approximately 4000 SNPs were identified as associated with the nicotine addiction phenotype, and these SNPs are listed in Table 1.

Rationale for the research design

[0221] The phased design was chosen to minimize the amount of genotyping required, while retaining a high power to detect SNPs with a modest effect on risk. Calculations have shown that such a phased design is very efficient compared with genotyping all samples for all SNPs (Satagopan JM *et al.* (2002) "Two-staged designs for gene-disease association studies." *Biometrics* 58:163-170).

Scan quality control

[0222] The samples were each genotyped individually on a genome-wide platform of ~2.4 million SNPs tiled on high-density oligonucleotide microarrays. The scans for each sample were subjected to standard quality criteria, which include a high call rate, high consistency in calls across microarrays for overlapping SNPs, and other measures. Good quality data was obtained in this manner.

Individual Genotype Reporting

[0223] The majority of the SNPs included on the custom individual genotyping (IG) chip were selected from the pooled genotyping, while other SNPs were added to cover candidate gene regions and for other specific reasons. An additional 311 stratification SNPs and a number of QC SNPs were also tiled on the chip to help estimate population structure and genomic control corrections. Table 2 outlines the counts of SNPs in the different categories in a descending order of exclusion (*i.e.*, if a SNP is already covered by any of the categories above the given category it is not counted in the given category – to prevent double counting of SNPs). Many selection criteria were applied to this set of SNPs to arrive at a set of 35,673 reliable SNPs that were reported together with their genotypes.

Table 2

SNP origin	number of SNPs
candidate gene	4901
from pooled genotyping	39213
custom chosen	39
stratification SNPs	301
QC SNPs	1888

[0224] Table 3 shows the split of number of samples between the pooled genotyping (PG) samples (1/0 or Y/N) and replication samples (the additional samples that were individually genotyped, but not subjected to pooled genotyping), case control status and gender:

Table 3

is PG sample	case control status	gender	number of samples
0	C	F	313
0	C	M	255
0	T	F	283
0	T	M	130
1	C	F	272
1	C	M	210
1	T	F	328
1	T	M	138

Trend score analysis

[0225] Trend scores were computed separately for the PG samples (round 1) and replication samples as well as for the combined set. The following outlines the computation of the Armitage's trend score χ^2:

$$\chi^2 = \frac{(\Delta p)^2}{Var(\Delta p)}$$

$$Var(\Delta p) = \left(p_1 + P_{11} - 2p_1^2\right)\left(\frac{1}{2n_T} + \frac{1}{2n_C}\right)$$

Where Δp is the observed allele frequency difference between cases and controls, p_1 is the overall population prevalence of the arbitrary designated "1" allele, P_{11} is the fraction of samples that have two copies of allele "1", n_C and n_T are the number of case and control samples, respectively.

GC correction

[0226] The trend scores were corrected using GC correction. The GC correction for both the round 1 samples and the full set of samples was computed over the set of QC and

stratification SNPs that were selected independent of the pooled study and the candidate gene regions. These SNPs therefore provide unbiased estimate of the GC correction in the round 1 and in the full set of samples. For replication samples, all the SNPs were used for the GC estimate and the large number of SNPs permitted use of a regression to better distribute the GC correction between SNPs with varying reliability of the allele frequency difference estimate. The reliability of the allele frequency differences of SNPs was estimated by the absolute values of deltas between allele frequency difference between cases and controls computed from filtered and unfiltered genotypes. The larger the delta between the allele frequency difference of unfiltered versus filtered genotypes, the larger is the possible distortion of the allele frequency difference in the filtered genotypes caused by the genotype filtering. The regression of the trend score values against the deltas of the allele frequency differences was done using log link and Gamma distribution. This procedure allows better distribution of the power hit from the GC correction between SNPs based on their reliability of the delta allele frequency between cases and controls. The regression therefore yielded a GC correction specific to each SNP computed from the SNP's delta.

[0227] For sex-linked SNPs the GC correction variance inflation factor λ was corrected for the smaller number of chromosomes due to the presence of males among the samples:

$$\lambda_{corr,X} = 1 + \frac{\lambda - 1}{R} \cdot R_X$$
$$\lambda_{corr,Y} = 1 + \frac{\lambda - 1}{R} \cdot R_Y$$

Where:

$$R = \frac{1}{\frac{1}{2(n_{C,F}+n_{C,M})} + \frac{1}{2(n_{T,F}+n_{T,M})}}$$
$$R_X = \frac{1}{\frac{1}{2n_{C,F}+n_{C,M}} + \frac{1}{2n_{T,F}+n_{T,M}}}$$
$$R_Y = \frac{1}{\frac{1}{n_{C,M}} + \frac{1}{n_{T,M}}}$$

and where $n_{C,F}$, $n_{C,M}$, $n_{T,F}$, $n_{T,M}$ are number of female cases, number of male cases, number of female controls and number of male controls, respectively. The $\lambda_{corr,X}$ and $\lambda_{corr,Y}$ are the corrected λ for chromosome X and chromosome Y sex-linked SNPs, respectively.

RESULTS:

Applied tests

[0228] The round 1 samples yielded GC correction variance inflation factor of 0.881 and therefore no GC correction was applied to the trend scores and their p-values.

[0229] The replication samples yielded GC correction variance inflation factor of 1.070, however the individual GC correction variance inflation factors were computed using the regression procedure outlined above. The regression of the trend score values against the deltas of the allele frequency differences using log link and Gamma distribution did yield positive slope, indicating as expected that the larger the delta between the allele frequency difference computed from unfiltered and filtered genotypes, the more inflated the trend scores tend to be. These GC correction variance inflation factors were further corrected for the smaller number of chromosomes for sex-linked SNPs due to the presence on males among the samples as outlined above.

[0230] The full sample set yielded GC correction variance inflation factor 1.026 and due to the limited number of SNPs from which the variance inflation factor was estimated the more robust correction procedure that effectively divides each trend score by the variance inflation factor was used.

[0231] Another set of p-values was computed using linear and logistic regressions. Different models were evaluated for significance of association with the phenotype. The various complexity models evaluated significance of different covariate inclusions:

model	ANOVA evaluated covariate	ANOVA p-value
gender	gender	4.26E-10
gender + age	age	1.48E-03
gender + factor(site)	factor(site)	4.80E-23
gender + factor(site) + age	age	7.90E-01
gender + factor(site) + age + gender:factor(site)	gender:factor(site)	6.30E-01

Table 4

[0232] The ANOVA p-values indicate that only gender and site explain significant phenotype variance. Site 3 and 4 turned out to be responsible for most of the association. The significance of the gender and site is expected from the non-homogeneous distribution of cases and controls between different genders and sites. The inclusion of gender and site to the model lowers the possible association of genotype with the phenotype only by the extent of the correlation between the genotype and any of the covariates. There might be some random correlations that will decrease the power to detect genotype associations, but they should not have a great effect. The model also contained an interaction between gender and genotype,

because it is conceivable that the genotype effect might have different slopes for different genders (*i.e.*, the strength of association might be different between the two genders). Therefore the following model was fitted using both logistic regression (using the binary case control assignment) and the quantitative FTND trait was fitted using linear regression:

Phenotype ~ gender + factor(site) + genotype + gender:genotype.

[0233] The Q-Q plots in figures 1-6 show that the regressions do yield distributions of statistics corresponding well to the expected null distribution. The statistics for both the round 1 set of samples and the full set of samples were taken only from the stratification and QC SNPs that are expected to be null distributed.

Analysis of candidate gene region

[0234] The candidate gene region consisting of 4901 CG SNPs and 39 custom added SNPs was analyzed separately, as agreed from our discussions. The region yielded 4222 reliable SNPs. No SNP in the candidate gene region is strictly significant at the level of 0.05 corrected by Bonferroni for the 4222 tested SNPs (which corresponds to uncorrected p-value of 1.2e-5). However, 8 SNPs show p-values from the linear regression in the e-5 range and 2 SNPs have p-values from the logistic regression in the e-5 range. Bonferroni correction is also likely to be too conservative as there are regions of LD that will lower the effective number of independent tests.

[0235] False discovery rate (FDR) q-values were computed using Storey procedure separately for the candidate gene region. The FDR q-values were computed from both the p-values obtained from trend scores of the full set of samples and from the p-values from the linear and logistic regressions. The top 6 SNPs in the candidate gene region have q-values computed from the logistic regression < 10% and 591 SNPs have q-value < 50%. The plot in Figure 7 shows the FDR q-values in an ordered set of SNPs by their logistic regression p-values. The zoomed-in section of the first 600 SNPs is shown in Figure 8.

[0236] The linear regression provided 15 SNPs with FDR q-value < 10% and 234 SNPs with FDR q-value < 50%. The plots in Figures 9 and 10 show their ordered distribution, with Figure 10 depicting the zoomed-in section of the first 300 SNPs.

Analysis of the pooled SNPs

[0237] The pooled SNPs yielded 31,162 reliable SNPs. No SNP showed genome-wide significant p-value from either the logistic or linear regression from the round 1 IG or

from the full set of samples. No SNP is also significant in the replication sample set with p-value corrected only for the number of SNPs from PG ($p < 0.05/31162$).

[0238] Inspection of the sign agreement between the round 1 allele frequency differences between cases and controls and replication allele frequency differences shows somewhat higher sign agreement among the top SNPs sorted by the round 1 trend score p-values. Figure 11 shows the sign agreement over a sliding window of 21 SNPs. The first about 20 SNPs do show above average agreement of the delta allele frequency signs, as shown in Figure 11. The agreement is very significant, as the p-value from binomial distribution of obtaining 19 agreements out of 21 trials is 1.04e-5. Therefore the probability that the first bin composed of the 21 most significant SNPs will have by chance 19 agreements is 1.04e-5. The agreement deteriorates quickly though, as the plot with window size 101 in Figure 12 shows. From this plot is seems that about first 75 to 100 SNPs are still enriched for agreement between round 1 and replication.

[0239] FDR cannot be computed for the pooled SNPs and the samples that were used in the PG as the SNPs are selected from the PG and therefore SNPs showing any population differences between the PG samples that are not related to the phenotype are selected here as well. Therefore the SNPs are expected to be enriched for small p-values that will show in that set of samples. However, there is no such expectation for the replication samples that did not participate in the SNP selection and therefore FDR can be computed from that set. FDR q-values computed from both linear and logistic regression p-values have rather large values – linear regression provides smallest q-value 0.57 and the logistic regression smallest q-value is 0.43.

EXAMPLE 2: ADDICTION MARKERS

[0240] The SNPs set forth in Table 1 were identified as being associated with nicotine addiction risk based on the individual genotyping results from the study. Sequences for the given dbSNP rsID numbers are found at on the internet at www.ncbi.nlm.nih.gov/SNP/. Positions refer to NCBI Build 35 of the human genome. Allele frequencies in cases and controls refer to the frequency of an arbitrarily designated reference allele of the SNP.

[0241] The SNPs were selected according to the following criteria: 1) call rate > 80%; 2) HWE p-value in cases and in controls > 1e-15; 3) SNPs with HWE p-value in either cases or controls between 1e-4 and 1e-15 were inspected visually and bad SNPs were excluded; 4) 3 SNPs that show fixed difference between males and females were excluded. The SNPs

were selected as the top SNPs in the two categories (from pooled study or selected for candidate gene region coverage) based on a p-value from Logistic regression ANOVA test, testing for genotype association after excluding the effect of gender and DNA collection site. The columns in Table 1 generally refer to the individual genotyping phase of the study and are described in detail *supra*.

EXAMPLE 3: AN AMINO ACID SUBSTITUTION IN THE α5 nAChR GENE INFLUENCES RISK FOR NICOTINE DEPENDENCE

[0242] A nonsynonymous SNP in the nicotinic receptor gene *CHRNA5* was found to be associated with nicotine dependence and causes a 2-fold increase in risk through a recessive mode of inheritance.

[0243] Nicotine dependence is one of the world's leading causes of preventable death. To discover genetic variants that influence risk for nicotine dependence, over three hundred candidate genes were targeted for genotyping and 3,713 single nucleotide polymorphisms (SNPs) in were analyzed in 1,050 cases and 879 controls. The Fagerström test for nicotine dependence (FTND) was used to assess dependence, where cases were required to have an FTND of 4 or more. The control criterion was strict: control subjects must have smoked at least 100 cigarettes in their lifetimes and had an FTND of 0 during the heaviest period of smoking. After correcting for multiple testing by controlling the false discovery rate, several cholinergic nicotinic receptor (nAChR) genes dominated the top signals. The strongest association was from a SNP representing *CHRNB3*, the beta3 nicotinic receptor subunit gene ($p = 9.4 \times 10^{-5}$). Biologically, the most compelling evidence for a risk variant came from a nonsynonymous SNP in the alpha5 nicotinic receptor subunit gene *CHRNA5* ($p = 6.4 \times 10^{-4}$). This SNP exhibited evidence of a recessive mode of inheritance, resulting in individuals having a two-fold increase in risk of developing nicotine dependence once exposed to cigarette smoking. Other genes among the top signals were *KCNJ6* and *GABRA4*. This example represents one of the most powerful and extensive studies of nicotine dependence, and has found novel risk loci which are optionally confirmed by replication studies.

[0244] The World Health Organization estimates that if current trends continue the annual number of deaths from tobacco-related diseases will double from 5 million in the year 2000 to 10 million in 2020. (1,2) Nicotine, a naturally occurring alkaloid found in tobacco, mimics acetylcholine, and nicotine's ability to bind to nicotinic cholinergic receptors (nAChRs) underlies the molecular basis of nicotine dependence (susceptibility to tobacco

addiction, [MIM 188890]). Chronic nicotine exposure produces long-lasting behavioral and physiological changes that include increased synaptic strength, altered gene expression, and nAChR up-regulation. (3) Although nAChRs are expressed throughout the central nervous system, the addictive effects of nicotine are thought to be mediated through mesocorticolimbic dopamine (DA) pathways. (4) It is believed that the interplay among glutamate, dopamine, and gamma-aminobutyric acid (GABA) systems is critical for the reinforcing effects of nicotine. (3, 5) Cigarettes are the predominant form of tobacco used worldwide (6), and genetic factors are important to the etiology of nicotine dependence, with estimates of the heritability ranging from 44% to 60% (7).

[0245] Efforts to identify susceptibility loci influencing cigarette smoking behavior through association studies have used a candidate gene approach with both case-control and family-based designs. Several candidate genes that may influence smoking have been studied, including nicotinic receptors (8-10), nicotine metabolizing genes (11-13), dopamine system receptors (14-17), GABA receptors (18), and other neurotransmitters and receptors (19-21). There appears to be very little concordance among linkage findings and association findings in candidate genes (reviewed in 22). One genome-wide association study (GWAS) paper to date is by Bierut *et al.* (23), which was conducted in parallel with the current example study and used the same case-control sample.

[0246] The approach of this example was to target an extensive set of candidate genes for SNP genotyping to detect variants associated with nicotine dependence using a case-control design. Over three-hundred genes for genotyping were targeted, with a design that allowed for approximately 4,000 SNPs. These included the gene families encoding nicotinic receptors, dopaminergic receptors and gamma-aminobutyric acid receptors, which are known to be part of the biological pathways involved in dependence. This was done in conjunction with a genome-wide association study (GWAS), *see* Example 4, and Bierut (23). Both studies used a large sample of cases and controls of European descent. The 1,050 nicotine dependent cases were contrasted with a unique control sample of 879 individuals who are non-dependent smokers. The size of the sample and strict control criteria should provide ample power to detect variants influencing nicotine dependence, but the depth of the coverage of known candidate genes is ambitious and requires delicate handling to deal with the complex issue of multiple testing. The false discovery rate (FDR) was used to limit the effects of multiple testing (23,24), and to report on the top FDR-controlled list of associations.

Results of Example 3

[0247] The list of candidate genes of the example initially numbered 448, and was divided into categories "A" and "B." All category 55 "A" genes were targeted for SNP genotyping, but because it was beyond easy resources to target all of the remaining 393 category "B" genes, these were prioritized for SNP genotyping according to the results of the pooled genotyping in a parallel GWAS (*see*, Bierut (23) and Example 4). Table 5 shows a summary of the results of the pooled genotyping in the candidate genes. Out of the 393 category "B" genes considered for SNP selection, 296 were targeted for individual genotyping in the candidate gene study. These were chosen using the lowest corrected minimum *p*-values, as defined in Equation 1 (*see below*), where the cutoff was approximately $p \leq 0.95$. 4,309 SNPs in these candidate genes were individually genotyped, and after quality control filtering, 3,713 SNPs were tested for association. There were 515 SNPs tested for 52 Category A genes and 3,198 SNPs tested for 296 Category B genes.

Table 5

Category	Candidate Genes	Genes Tested	SNPs Tested	Corrected Minimum *p*-value (p_{corr})		
				Min	*Max*	$\mu \pm \sigma^a$
A	55	52	1,604	0.0017	0.94	0.33 ±0.28
B	393	367	29,071	0.0021	0.99	0.41 ±0.28
Total	448	419	30,675			

[0248] Table 5 shows results of the pooled genotyping in the candidate genes from the parallel genome-wide association study (GWAS). A total of 2,177,718 SNPs passed quality control (QC) measures and were tested for association. The results were used to rank the category B genes for SNP selection. The "Genes Tested" and "SNPs Tested" columns show the number of genes and number of SNPs in those genes that passed QC and were tested for association. The minimum *p*-value over all SNPs tested for association in the pooled genotyping within a gene is corrected for the number of tests according to equation (1). [a] Mean ± standard deviation.

[0249] In Table 6, top associations with nicotine dependence where the weighted FDR is less than 40% are shown. SNPs from Category "A" genes were weighted 10-fold more heavily than Category "B" genes when estimating FDR. The signals are sorted by the primary 2 degree of freedom *p*-value of adding the genotype term and the genotype by gender interaction term to the base model in the logistic regression. SNPs with function "FP" are

within the footprint of the gene, defined for display purposes as ±10Kb of the transcribed region. Those labeled "LD BIN" are outside of the footprint and were selected for genotyping for being in LD with SNPs near an exon. Genes in parentheses are the candidate genes for which the SNP was selected. The "LD Bin ID" column identifies LD bins; SNPs with the same LD Bin ID effectively produce a single association signal. This reports the minimum correlation between the tag and other SNPs in the bin in the "Min(r^2)" column. The rank is determined by the primary *p*-value in all 3,713 genotyped SNPs. All alleles were reported from the positive strand. The frequency of the risk allele (the allele more frequent in cases than in controls) in cases *p* and controls *q* is reported with the notation *p/q*.

SNP	Gene	Function	Category	Chr	Pos (bp)	LD Bin ID	Min(r^2)	Risk Allele	Primary *p*-value	Rank	FDR
rs6474413	*CHRNB3*	FP	A	8	42,670,221	8-19	0.991	T (0.81/0.76)	9.36E-05	1	0.056
rs10958726	*CHRNB3*	LD BIN	A	8	42,655,066	8-19	0.991	T (0.81/0.76)	1.33E-04	2	0.056
rs578776	*CHRNA3*	UTR	A	15	76,675,455	-	-	G (0.78/0.72)	3.08E-04	3	0.086
rs6517442	*KCNJ6*	FP	B	21	38,211,816	-	-	C (0.34/0.28)	5.62E-04	4	0.344
rs16969968[a]	*CHRNA5*	NONSYN	A	15	76,669,980	15-13	0.989	A (0.38/0.32)	6.42E-04	5	0.134
rs3762611	*GABRA4*	FP	B	4	46,838,216	4-71	0.939	G (0.93/0.91)	9.22E-04	6	0.344
rs1051730	*CHRNA3*	SYNON	A	15	76,681,394	15-13	0.989	A (0.38/0.32)	9.93E-04	7	0.166
rs10508649[b,c]	*PIP5K2A*	SYNON	B	10	22,902,288	-	-	T (1.00/0.99)	1.02E-03	8	0.344
rs17041074[b]	*DAO*	INTRON	B	12	107,794,340	-	-	A (0.27/0.26)	1.12E-03	9	0.344
rs3762607[b]	*GABRA4*	FP	B	4	46,837,266	4-71	0.939	A (0.93/0.91)	1.22E-03	10	0.344
rs2767	*CHRND*	UTR	A	2	233,225,579	2-68	0.887	G (0.39/0.34)	1.50E-03	11	0.209
rs6772197[b]	*DOCK3 (GRM2)*	INTRON	B	3	51,126,839	3-46	0.923	A (0.84/0.83)	1.66E-03	12	0.384
rs3021529[b]	*AVPR1A*	UTR	B	12	61,831,947	12-10	0.842	G (0.86/0.85)	1.73E-03	13	0.384
rs1206549	*CLTCL1*	INTRON	B	22	17,590,414	22-5	0.996	G (0.86/0.82)	1.75E-03	14	0.384
rs637137	*CHRNA5*	INTRON	A	15	76,661,031	15-3	0.801	T (0.81/0.76)	2.82E-03	22	0.336
rs3791729	*CHRND*	INTRON	A	2	233,220,802	2-68	0.887	A (0.36/0.32)	3.39E-03	25	0.344
rs4531	*DBH*	NONSYN	A	9	133,538,924	-	-	G (0.93/0.91)	5.10E-03	30	0.344
rs3025382[a]	*DBH*	INTRON	A	9	133,531,875	-	-	G (0.90/0.88)	5.14E-03	31	0.344
rs7877	*FMO1*	UTR	A	1	167,986,548	1-60	0.890	C (0.74/0.70)	6.33E-03	38	0.344
rs6320[b]	*HTR5A*	SYNON	A	7	154,300,269	-	-	T (0.72/0.71)	6.50E-03	39	0.344
rs4802100[b]	*CYP2B6*	FP	A	19	46,187,865	19-4	0.995	G (0.10/0.08)	6.76E-03	41	0.344
rs2304297	*CHRNA6*	UTR	A	8	42,727,356	8-52	0.830	G (0.79/0.75)	6.91E-03	42	0.344
rs3760657	*CYP2B6*	FP	A	19	46,187,273	19-4	0.995	G (0.10/0.08)	6.98E-03	43	0.344
rs2276560	*CHRNG*	LD BIN	A	2	233,276,424	2-63	0.931	T (0.77/0.74)	7.42E-03	44	0.344
rs742350	*FMO1*	SYNON	A	1	167,981,702	1-7	0.971	C (0.87/0.84)	8.45E-03	48	0.344
rs684513	*CHRNA5*	INTRON	A	15	76,645,455	15-3	0.801	C (0.82/0.78)	8.72E-03	49	0.344
rs510769[a]	*OPRM1*	INTRON	A	6	154,454,133	-	-	T (0.27/0.24)	9.84E-03	58	0.344
rs4245150[b]	*DRD2*	LD BIN	A	11	112,869,857	11-8	0.998	G (0.37/0.36)	1.08E-02	61	0.344

rs3743078	*CHRNA3*	INTRON	A	15	76,681,814	15-3	0.801	G (0.83/0.79)	1.10E-02	63	0.344
rs1657273[b]	*HTR5A*	LD BIN	A	7	154,317,817	7-29	0.976	G (0.69/0.68)	1.11E-02	64	0.344
rs17602038	*DRD2*	LD BIN	A	11	112,869,901	11-8	0.998	C (0.37/0.36)	1.17E-02	69	0.344
rs3813567	*CHRNB4*	FP	A	15	76,721,606	-	-	A (0.83/0.79)	1.18E-02	70	0.344
rs893109	*HTR5A*	LD BIN	A	7	154,330,522	7-29	0.976	G (0.69/0.68)	1.24E-02	73	0.344
rs16864387	*FMO4*	UTR	A	1	168,015,501	1-7	0.971	T (0.87/0.84)	1.28E-02	74	0.344
rs6045733[b]	*PDYN*	LD BIN	A	20	1,898,858	20-32	0.810	G (0.66/0.65)	1.55E-02	84	0.384
rs4953	*CHRNB3*	SYNON	A	8	42,706,816	8-13	1.000	G (0.97/0.95)	1.61E-02	85	0.384
rs4952	*CHRNB3*	SYNON	A	8	42,706,222	8-13	1.000	C (0.97/0.95)	1.63E-02	87	0.384
rs6749955	*CHRNG*	LD BIN	A	2	233,263,422	2-63	0.931	T (0.77/0.73)	1.70E-02	91	0.384
rs7517376	*FMO1*	SYNON	A	1	167,983,945	1-7	0.971	A (0.87/0.84)	1.80E-02	95	0.384

Table 6

[a] There is significant evidence for a non-multiplicative model, *see* Table 8 (which shows one SNP per LD bin); [b] There is significant evidence for gender-specific risk, *see* Table 9 (which shows 1 SNP per LD bin); [c] Very low minor allele frequency.

[0250] Table 7 shows details of all category "A" genes and any category "B" genes with SNPs among the top signals (that is, SNPs that appear in Table 6). The column "SNPs tested" refers to the number of SNPs tested for association, and the column "SNPS in Top Signals" refers to the SNPs that appear in Table 6. Some SNPs represent multiple genes, particularly when two genes are near each other; hence there is overlap between genes for the SNPs represented by these two columns. Genes with SNPs in our top signals are shown in boldface.

Table 7

Gene	Chr	5' Position (Mb)	Size (Kb)	Strand	SNPs Tested	SNPs Tested per Kb	SNPs in Top Signals
			Category A				
ADRBK2	22	24.286	159	+	5	0.0	0
ANKK1	11	112.764	12.6	+	23	1.8	0
ARRB2	17	4.561	11.0	+	3	0.3	0
BDNF	11	27.700	66.8	-	10	0.1	0
CCK	3	42.281	6.9	-	13	1.9	0
CHRNA1	2	175.455	16.6	-	3	0.2	0
CHRNA10	11	3.649	5.8	-	3	0.5	0
CHRNA2	8	27.393	18.5	-	17	0.9	0
CHRNA3	15	76.700	25.7	-	18	0.7	5
CHRNA4	20	61.463	16.7	-	8	0.5	0
CHRNA5	15	76.645	28.6	+	18	0.6	6
CHRNA6	8	42.743	15.8	-	4	0.3	1
CHRNA7	15	30.11	138.5	+	13	0.1	0
CHRNA9	4	40.178	19.5	+	11	0.6	0
CHRNB1	17	7.289	12.5	+	10	0.8	0
CHRNB2	1	151.353	8.8	+	4	0.5	0

CHRNB3	8	42.672	39.6	+	6	0.2	5
CHRNB4	15	76.721	17.0	-	14	0.8	5
CHRND	2	233.216	9.3	+	3	0.3	2
CHRNE	17	4.747	5.3	-	3	0.6	0
CHRNG	2	233.23	6.0	+	6	1.0	4
CNR1	6	88.912	5.5	-	9	1.6	0
COMT	22	18.304	27.2	+	13	0.5	0
CYP2A6	19	46.048	6.9	-	3	0.4	0
CYP2B6	19	46.189	27.1	+	14	0.5	2
DBH	9	133.531	23.0	+	10	0.4	2
DDC	7	50.386	85.7	-	30	0.4	0
DRD1	5	174.804	3.1	-	4	1.3	0
DRD2	11	112.851	65.6	-	29	0.4	2
DRD3	3	115.38	50.2	-	8	0.2	0
DRD5	4	9.460	2.0	+	4	2.0	0
FAAH	1	46.572	19.5	+	5	0.3	0
FMO1	1	167.949	37.5	+	14	0.4	4
FMO3	1	167.792	26.9	+	23	0.9	0
GABRB2	5	160.908	254.3	-	14	0.1	0
GPR51	9	98.551	421.1	-	29	0.1	0
HTR1A	5	63.293	1.3	-	5	3.9	0
HTR2A	13	46.368	62.7	-	20	0.3	0
HTR5A	7	154.3	13.6	+	13	1.0	3
MAOA	23	43.272	90.7	+	5	0.1	0
MAOB	23	43.498	115.8	-	10	0.1	0
NPY	7	24.097	7.7	+	22	2.9	0
OPRD1	1	28.959	51.6	+	1	0.0	0
OPRK1	8	54.327	22.2	-	12	0.5	0
OPRM1	6	154.453	80.1	+	12	0.1	1
PDYN	20	1.923	15.3	-	11	0.7	1
PENK	8	57.521	5.1	-	6	1.2	0
POMC	2	25.303	7.7	-	2	0.3	0
SLC6A3	5	1.499	52.6	-	5	0.1	0
SLC6A4	17	25.587	37.8	-	8	0.2	0
TH	11	2.150	7.9	-	6	0.8	0
TPH1	11	18.019	19.8	-	14	0.7	0
			Category B				
AVPR1A	12	61.833	6.4	-	15	2.4	1
CLTCL1	22	17.654	112.2	-	15	0.1	1
DAO	12	107.776	20.8	+	7	0.3	1
FMO4	1	168.015	27.7	+	12	0.4	4
GABRA4	4	46.837	74.7	-	29	0.4	2
GRM2	3	51.718	9.1	+	2	0.2	1
KCNJ6	21	38.211	291.9	-	18	0.1	1
PIP5K2A	10	23.043	177.7	-	15	0.1	1

[0251] In the individual genotyping for the candidate genes, the ten smallest *p*-values from the primary association analysis ranged from 9.36×10^{-5} to 1.22×10^{-3}. There were 39

SNPs with an FDR less than 40%, indicating the presence of about 24 true signals (Tables 5 and 6 and Figure 13). These top 39 signals were dominated by nicotinic receptor genes (Figures 14 and 15). The top 5 FDR values corresponded to the genes *CHRNB3*, *CHRNA3* and *CHRNA5* and ranged from 0.056 to 0.166. The best evidence was that four of these five signals were from genuine associations and were not due to random effects. The permutation FDR estimates were roughly the same as the FDR, differing by no more than 0.02, with a minimum permutation FDR of 0.07 at the SNP *rs6474413*. After selecting a single SNP from each linkage disequilibrium (LD) bin, three of these 39 SNPs showed significant evidence of a non-multiplicative model (Table 8) and several SNPs were found to have a significant gender by genotype interaction (Table 9; also, *see* Table 14 for a list of all SNPs from Table 6 showing gender by genotype *p*-values and gender-specific odds ratios). Figure 13 shows results of the candidate gene association analysis. The *p*-values from the primary analysis are plotted for each chromosome below an ideogram using the $-\log_{10}(p)$ transformation. The bottom axis is $p=1$ and the top axis is $p=10^{-3}$. Category "A" genes are shown below the plots in red and Category "B" genes are shown in cyan below the Category "A" genes. Regions on chromosomes 8 and 15, which are shown in more detail in Figure 14, are highlighted in red. Figure 15 shows Linkage disequilibrium (LD) between markers in (A) the *CHRNB3-CHRNA6* and (B) *CHRNA5-CHRNA3-CHRNB4* clusters of nicotinic receptor genes.

[0252] The β3 nicotinic receptor subunit gene *CHRNB3*, located on chromosome 8, accounted for the two strongest signals from the analysis: *rs6474413* and *rs10958726* (Figure 14A). These 2 SNPs effectively contributed a single signal since they were in very high LD with an r^2 correlation ≥ 0.99. They are both in the putative 5′ promoter region; the SNP *rs6474413* is within 2 Kb of the first 5′ promoter and the SNP *rs10958726* is an additional 15 Kb upstream. Two other SNPs in *CHRNB3*, *rs4953* and *rs4952*, were also among the top signals. These are synonymous SNPs in exon 5 and are the only known coding SNPs for *CHRNB3* (dbSNP build 125, internet at www.ncbi.nlm.nih.gov/SNP). Again, these represent a single signal as their genotypes were completely correlated. Figure 14 shows detailed results for the top association signals. (A) The top 2 signals are near the *CHRNB3* nicotinic receptor gene on chromosome 8. (B) The nonsynonymous SNP *rs16969968* and the *CHRNA5-CHRNA3-CHRNB4* cluster of nicotinic receptor genes on chromosome 15. SNPs that appear in Table 6 are labeled with dbSNP rs IDs. The track "UCSC Most Conserved" (on the internet at genome.ucsc.edu, May 2004 build, table "phastConsElements17way") highlights regions conserved between human and other species including the mouse, rat and

chicken; the maximum conservation score is 1000. Primary *p*-values are plotted in red using the -log(*p*) transformation. The "LD Bins" track displays the distribution of SNPs from the "SNPs" track into LD bins where all SNPs have $r^2 \geq 0.8$ in both cases and controls with the tag SNP. Only bins with more than 2 SNPs are shown, and bins are annotated with number of SNPs *N*, the minimum r^2 of the tag with the other SNPs in the bin, the range of allele frequencies in the bin, and the tag SNP. (C) A legend indicating the color scheme.

[0253] The next group of SNPs among the top signals is in the *CHRNA5-CHRNA3-CHRNB4* cluster of nicotinic receptor genes on chromosome 15 (Figure 14B). The third most significant signal was the SNP *rs578776* in the 3′ untranslated region (UTR) of *CHRNA3*, the α3 nicotinic receptor subunit gene (Figure 14B). Approximately 5 Kb downstream from *CHRNA3* is the fifth strongest signal *rs16969968*, a nonsynonymous coding SNP in exon 5 of *CHRNA5*, the α5 nicotinic receptor subunit gene. This SNP was in very strong LD with *rs1051730*, a synonymous coding SNP in *CHRNA3*, with an r^2 correlation ≥ 0.99.

[0254] The most interesting signal appears to be the nonsynonymous SNP *rs16969968* in *CHRNA5*, though as discussed above, it is completely correlated with a SNP in the *CHRNA3* gene (Figure 14B). Allele A of *rs16969968* has a frequency of 38% in cases and 32% in controls. There is convincing evidence for a recessive mode of inheritance for this SNP (Table 8). Compared to having no copies, the odds ratio for having 1 copy and 2 copies of the A allele was 1.1 (95% CI 0.9-1.4) and 1.9 (95% CI 1.4-2.6), respectively. That is, compared to individuals with other genotypes, individuals with the AA genotype were nearly twice as likely to have symptoms of nicotine dependence. Table 8 shows SNPs exhibiting significant deviation from a multiplicative genetic model. The SNP with the smallest primary *p*-value was selected from each LD bin in Table 10. The multiplicative *p*-value is from the 1 degree of freedom test for the significance of the heterozygote term *H* in equation (3). We only show SNPs with $p < 0.05$. The last two columns show the odds ratios and 95% confidence intervals for the relative risk between genotypes. The SNP *rs16969968* clearly follows a recessive pattern where individuals carrying two copies of the A allele are nearly twice as likely to have symptoms of nicotine dependence compared with those with 0 or 1 copies.

Table 8

SNP	Gene	Non-multiplicative *p*-value	One Risk Allele Odds Ratio	Two Risk Alleles Odds Ratio

rs16969968	*CHRNA5*	4.04E-02	1.1 (0.9-1.4) AG/GG	1.9 (1.4-2.6) AA/GG
rs3025382	*DBH*	2.24E-02	0.6 (0.3-1.3) AG/AA	0.9 (0.4-2.0) GG/AA
rs510769	*OPRM1*	4.16E-04	1.5 (1.3-1.9) CT/CC	1.0 (0.7-1.4) TT/CC

Discussion of Example 3

[0255] Nicotine addiction from tobacco smoking is responsible for over 3 million deaths annually making it the leading cause of preventable mortality in the world (1). In the United States in 2003, 21.6% of adults were smokers, where 24% of men and 19% of women were smokers (26). Previous association studies have been limited to narrowly focused candidate gene studies. This candidate gene study was more extensive, genotyping 3,713 SNPs for 348 candidate in 1,050 nicotine dependent cases and 879 non-dependent smokers, where the control group definition was particularly strict.

[0256] The top FDR-controlled findings were dominated by nicotinic receptor genes. The positive association findings for the α5 and β3 nicotinic receptor subunits are novel. Most human genetic and biological studies of the nicotinic receptors and nicotine dependence have focused on the α4 and β2 subunits since they co-occur in high-affinity receptors and are widely expressed in the brain (27). However, mouse studies have demonstrated that of the α4β2 containing receptors that mediate dopamine release, a substantial proportion contain α5 as well (28). This is consistent with the current evidence for an important role of α5 in nicotine dependence susceptibility. Furthermore, in a brain α4β2 receptor, an α5 or β3 subunit can take the fifth position in the pentamer corresponding to β1 of muscle. Although neither α5 nor β3 is thought to participate in forming binding sites, they are able to affect channel properties and influence agonist potency because they participate in the conformational changes associated with activation and desensitization (27).

[0257] The most compelling biological evidence of a risk factor for nicotine dependence is from the nonsynonymous SNP *rs16969968* in *CHRNA5*. This SNP causes a change in amino acid 398 from asparagine (encoded by the G allele) to aspartic acid (encoded by A, the risk allele), which results in a change in the charge of the amino acid in the second intracellular loop of the α5 subunit (29). The risk allele appeared to act in a recessive mode, where individuals who were homozygous for the A allele are at a 2 fold risk to develop nicotine dependence. While the α5 subunit has not been studied extensively, and there are no reports of known functional effects of this polymorphism, it is striking that a non-synonymous charge-altering polymorphism in the corresponding intracellular loop of the α4

nAChR subunit has been shown to alter nAChR function in mice in response to nicotine exposure (30-33). This variant is common in the populations of European descent (allele frequency of A allele approximately 42%) but uncommon in populations of Asian or African descent (< 5%, data from International HapMap project, on the internet at www.hapmap.org).

[0258] Also among the top 39 FDR-controlled signals were the genes *KCNJ6* (a.k.a. *GIRK2*) and *GABRA4*. These were the only other genes besides nicotinic receptors with SNPs that had *p*-values less than 0.001. *KCNJ6* belongs to the inwardly rectifying potassium channel (GIRK) family of genes. GIRK provides a common link between numerous neurotransmitter receptors and the regulation of synaptic transmission (34). GABA is the major inhibitory neurotransmitter in the mammalian central nervous system, and is critical for the reinforcing effects of nicotine (3,5). Significant evidence was found that the risk due to genotype is much stronger in men than in women (Table 9), where the male odds ratio was 2.2 (95% CI 1.4-3.3).

[0259] Previously reported findings in other nicotinic receptors were not among the most significant findings. In prior studies of *CHRNA4*, nominal association with nicotine dependence measures was reported for the SNPs *rs2236196* and *rs3787137* in African-American families and *rs2273504* and *rs1044396* in European Americans, but only *rs2236196* in African-Americans remained after multiple testing correction (9). Also in *CHRNA4*, *rs1044396* and *rs1044397* were associated with both FTND score and qualitative nicotine dependence in a family-based sample of Asian male smokers (8). In this sample of European descent, 11 SNPs were tested for *CHRNA4* including the above mentioned SNPs except *rs2273504*, which did not pass the stringent quality control standards. The lowest primary *p*-value across all 11 SNPs was 0.026 for *rs2236196* (study-wide rank = 132); this particular result may be considered a single test given the specific prior finding for this SNP, and thus provides modest evidence for replication. The remaining four previously reported SNPs that were analyzed showed *p*-values greater than 0.8. Contrasts in these results are possibly due in part to the different ethnicities of the respective samples.

[0260] A recent study of smoking initiation and severity of nicotine dependence in Israeli women (10) analyzed 39 SNPs in 11 nicotinic receptor subunit genes. Their single SNP analyses also did not detect association to SNPs in α4, including *rs2236196*, *rs1044396* and *rs1044397*, while finding nominal significance in the α7, α9, β2 and β3 subunits. Their study did not include the same SNPs in the β3 subunit and α5-α3-β4 cluster comprising the

four strongest associations in nicotinic receptor genes of this example; they did analyze the fifth ranking nicotinic receptor of the example, SNP *rs1051730*, and found a suggestive *p*-value of 0.08 when comparing "high" nicotine dependent subjects to "low" nicotine dependent subjects, in a much smaller sample than herein.

[0261] This study was unable to corroborate reported association findings of Beuten and colleagues (18) for the β2 subunit of the $GABA_B$ receptor *GABBR2* (a.k.a. *GABABR2*, *GABAB2* and *GPR51*). 32 SNPs in *GABBR2* were genotyped including five SNPs reported by Beuten and colleagues (18), three of which were the most significant in European Americans by at least one test in that study. The primary *p*-value in the study herein was greater than 0.07 for all 32 SNPs, and greater than 0.3 for the five previously reported SNPs.

[0262] Similarly, no evidence for nominal association was found in the primary test of the 31 SNPs that were genotyped for the *DDC* gene, which includes a SNP previously reported significant in European-Americans (35). And of the 11 SNPs covering the gene *BDNF*, three (*rs6265, rs2030324, rs7934165*) were previously reported as associated in European-American males (21); these three were not significant in the present sample (primary $p = 0.86$, 0.088 and 0.12 respectively), and the lowest primary *p*-value among the remaining 8 SNPs was 0.02, which does not survive correction for the six LD bins covering the gene. Note that the primary test uses a log-additive model, while previous reports sometimes found their strongest results under other models (*e.g.*, recessive, dominant); however, for these previously reported associations, the present tests for departure from the log-additive model did not find evidence for improvement under alternative modes of inheritance.

[0263] The primary association analysis in this example was a two degree of freedom test of the significance of adding genotype and genotype by gender interaction terms to the base predictors sex and site. This approach helps to ensure detection of associations that are significantly influenced by gender. The disadvantage is that the extra degree of freedom makes associations with insignificant gender interaction appear to be less significant overall.

[0264] Because the controls herein were highly selected, and could even be considered "protected" against susceptibility to nicotine dependence, interpretation of the results must consider the possibility that an association signal from the study may actually represent protective rather than risk effects. The allele more frequent was used in cases for reporting these data as a convention to facilitate comparison of the odds ratios among SNPs;

this should not be viewed as a conclusion of how a particular variant influences the risk for nicotine dependence. The precise determination of the mechanism by which a variant alters risk can only come from functional studies.

[0265] Additional tests for association were performed using only the individuals from the United States sample to determine if the primary conclusions still hold in this subset of 797 cases and 813 controls (the Australian sample alone is too small to test for association, with only 253 cases and 66 controls). The same logistic regression method was used as for the entire sample except for the omission of the term "site." The Spearman rank-order correlation of the *p*-values between the two tests for association was 0.87. Table 15 shows the results of the U.S.-only analysis for the 39 SNPs from the list of top associations (Table 6), with the original ordering and FDR filtering, side by side with results from the U.S. sample. Table 16 describes the result of completely starting over and using only the U.S. sample to order by *p*-value, filter by FDR < 40%, and compute LD bins. In this case, 30/39 (77%) of the SNPs in the original set of top signals (Table 6) appeared in the list of top signals in the U.S.-only analysis (Table 16), which includes the genes *CHRNA5* and *CHRNB3*, the top genes from the initial analysis. Hence, while there were some changes in the order of the results, the primary conclusion of association with the nicotinic receptors *CHRNB3* and *CHRNA5* remains valid when the analysis is performed on the United States subsample.

[0266] As a companion to the candidate gene study, a genome wide association study (GWAS) was carried out in parallel (*See below* and Bierut (23)). Approximately 2.4 million SNPs were genotyped across the human genome in a two stage design that began with pooled genotyping in a portion of the sample and followed with individual genotyping of the entire sample for the top 40,000 signals. The twenty-first strongest signal from the GWAS was due to a SNP 3 Kb upstream of the first 5´ promoter of *CHRNB3*, the gene with the strongest signal from the candidate gene study. This signal came from the SNP *rs13277254* (genotyped only for the GWAS and not for this candidate gene study) and had a *p*-value of 6.52×10^{-5}. This convergence from two different study designs provides further support that the signals in this gene are not random effects.

[0267] In conclusion, several genetic variants were identified as being associated with nicotine dependence in candidate genes, the majority of which are nicotinic receptor genes. One of the SNPs implicated has a number of biologically relevant consequences, making it a particularly plausible candidate for influencing smoking behavior. These variants should be

considered potential sources of genetic risk. Additional research in addition to that of the present application is contemplated to further examine replication and expand on their role in the pharmacogenetics of response to nicotine dosing as well as to treatments for nicotine dependence.

Materials and Methods for Example 3

Subjects

[0268] All subjects (Table 10) were selected from two ongoing studies. The Collaborative Genetic Study of Nicotine Dependence (U.S.) recruited subjects from three urban areas in the United States and the Nicotine Addiction Genetics (Australian) study collected subjects of European ancestry from Australia. Both studies used community-based recruitment and equivalent assessments were performed. Subjects that were identified as being smokers, using the criteria that they had smoked 100 or more cigarettes in their lifetimes, were queried in more detail using the FTND questionnaire. The U.S. samples were enrolled at sites in St. Louis, Detroit, and Minneapolis, where a telephone screening of community based subjects was used to determine if subjects met criteria for case (current FTND $\geq$ 4) or control status. The study participants for the Australian sample were enrolled at the Queensland Institute of Medical Research in Australia, where families were identified from two cohorts of the Australian Twin Panel, which included spouses of the older of these two cohorts, for a total of approximately 12,500 families with information about smoking. The ancestry of the Australian samples is predominantly Anglo-Celtic and Northern European. The Institutional Review Boards approved both studies and all subjects provided informed consent to participate. Blood samples were collected from each subject for DNA analysis and were submitted, together with electronic phenotypic and genetic data for both studies, to the National Institute on Drug Abuse (NIDA) Center for Genetic Studies, which manages the sharing of research data according to the guidelines of the National Institutes of Health.

[0269] Case subjects were required to score 4 or more on the Fagerström Test for Nicotine Dependence (FTND) (36) during the heaviest period of cigarette smoking (the largest possible score is 10). This is a common criterion for defining nicotine dependence. Control subjects must have smoked 100 or more cigarettes in their lifetimes, yet never exhibited symptoms of nicotine dependence: they were smokers that scored 0 on the FTND during the heaviest period of smoking. By selecting controls that had a significant history of

smoking, the genetic effects that are specific to nicotine dependence can be examined. Additional data from the Australian twin panels supports this designation of a control status (*see* next Example and (23)). In the U.S. study, using the sample of 15,086 subjects which were determined to be smokers (smoked 100 or more cigarettes lifetime) during the screening process, the prevalence of "nicotine dependence" (FTND was greater than or equal to 4) was 46.4%, and the prevalence of "smoking without nicotine dependence" (FTND = 0) was 20.1%.

Candidate Gene Selection

[0270] The criteria for the selection of the candidate genes were based on known biology, correlations between nicotine dependence and other phenotypes, and previous reports on the genetics of nicotine dependence and related traits. Genes were nominated by an expert committee of investigators from the NIDA Genetics Consortium (on the internet at zork.wustl.edu/nida) with expertise in the study of nicotine and other substance dependence. These included classic genes that respond to nicotine, such as the nicotinic receptors, and other genes involved in the addictive process.

[0271] In all, 448 genes were considered for SNP genotyping. The genes were divided into 2 categories: "A" and "B." Category "A" genes, which included the nicotinic and dopaminergic receptors, were considered to have a higher prior probability of association, and were guaranteed to be targeted for genotyping. Since the study design allowed for individual genotyping of approximately 4,000 single nucleotide polymorphisms (SNPs), the category "B" genes were too numerous to receive adequate SNP coverage once the "A" genes had been sufficiently covered. Therefore the category "B" genes were prioritized using the results of the pooled genotyping from the companion GWAS study (below and (23)). Genes exhibiting the most evidence for association with nicotine dependence were prioritized for coverage. Some genes are larger than others and therefore may receive more SNPs. These genes may therefore appear more significant due to the increased number of tests performed. Hence, correction for multiple testing was done as follows. For a given candidate gene on the "B" list, if p_{min} is the minimum p-value found in the pooled genotyping of stage I of the GWAS for all the SNPs genotyped in the gene, and N is the number of SNPs tested, then the corrected minimum p-value p_{corr} was computed using the formula

$$p_{corr} = 1 - (1 - p_{min})^{\frac{N+1}{2}} \quad (1)$$

Since roughly 50% of the SNPs in any chromosomal region are in high linkage disequilibrium (LD) (37), (N+1)/2 was used as the exponent. The Category "B" genes were then ranked by these corrected minimum p-values and SNPs were selected from the top of the ranked list until the resources were exhausted.

SNP Selection

[0272] All SNPs within exons were chosen, regardless of allele frequency, and all SNPs within +/- 2kb of annotated gene promoters where the European American minor allele frequency was at least 4%. Tag SNPs were then chosen for all European American LD bins (38) crossing the exons of the candidate genes, with 2 SNPs for each bin with 3 or more SNPs. SNPs meeting these criteria were chosen first from those selected for individual genotyping in the companion pooled study (below and (23)), and then to cover the physical regions as uniformly as possible if there was choice available for the other SNPs. In addition, specific SNPs were included which have been reported in the literature as being associated with nicotine dependence (8, 9, 18, 34).

Pooled Genotyping

[0273] See below and Bierut (23) for a description of the pooled genotyping.

Individual Genotyping

[0274] For individual genotyping, custom high-density oligonucleotide arrays were designed to interrogate SNPs selected from candidate genes, as well quality control SNPs. Each SNP was interrogated by twenty-four 25mer oligonucleotide probes synthesized on a glass substrate. The twenty-four features comprise 4 sets of 6 features interrogating the neighborhoods of SNP reference and alternate alleles on forward and reference strands. Each allele and strand is represented by five offsets: -2, -1, 0, 1, and 2 indicating the position of the SNP within the 25-mer, with zero being at the thirteenth base. At offset 0 a quartet was tiled, which includes the perfect match to reference and alternate SNP alleles and the two remaining nucleotides as mismatch probes. When possible, the mismatch features were selected as purine nucleotide substitution for purine perfect match nucleotide and a pyrimidine nucleotide substitution for a pyrimidine perfect match nucleotide. Thus, each strand and allele tiling consisted of 6 features comprising five perfect match probes and one mismatch.

Individual Genotype Cleaning

[0275] Individual genotypes were cleaned using a supervised prediction algorithm for the genotyping quality, compiled from 15 input metrics that describe the quality of the SNP and the genotype. The genotyping quality metric correlates with a probability of having a discordant call between the Perlegen platform and outside genotyping platforms (*i.e.*, non-Perlegen HapMap project genotypes). A system of 10 bootstrap aggregated regression trees was trained using an independent data set of concordance data between Perlegen genotypes and HapMap project genotypes. The trained predictor was then used to predict the genotyping quality for each of the genotypes in this data set (*see below* for more information regarding cleaning).

Population Stratification Analysis

[0276] In order to avoid false positives due to population stratification, an analysis was performed using the STRUCTURE software (39). This program identifies subpopulations of individuals who are genetically similar through a Markov chain Monte Carlo sampling procedure using markers selected across the genome. Genotype data for 289 high performance SNPs were analyzed across all 1,929 samples. This analysis revealed no evidence for population admixture.

Genetic Association Analysis

[0277] An ANOVA analysis testing the predictive power of various phenotypes indicated that gender and site (U.S.A. or Australian) were the most informative, and that age and other demographic variables did not account for significant additional trait variance (Table 11). The primary method of analysis was based on a logistic regression: if p is the probability of being a case, then the linear logistic model has the form

$$\log\left(\frac{p}{1-p}\right) = \alpha + \beta_1 g + \beta_2 s + \beta_3 G + \beta_4 gG \qquad (2)$$

where α is the intercept, g is gender coded 0 or 1 for males or females, respectively, and s is site coded as 0 or 1 for U.S.A. or Australian, respectively. The variable G represents genotype and is coded as the number of copies of the risk allele, defined as the allele more common in cases than in controls. It follows from equation (2) that the risk due to genotype is being modeled using a log-linear (*i.e.*, multiplicative) scale rather than an additive scale.

Maximum likelihood estimates for the coefficients and confidence intervals for odds ratios were computed using the SAS software package (40).

[0278] The predictors of the base model were gender and site. Whether the addition of genotype and gender by genotype interaction to the base model significantly increased the predictive power was then tested, and used the resulting 2 degree of freedom chi-squared statistic to rank the SNPs by the corresponding *p*-values. Table 12 shows the formulas for the odds ratios in terms of the coefficients.

[0279] Following these primary analyses, the top ranked SNPs were further analyzed for significant evidence of dominant or recessive modes of inheritance. This was done using a logistic regression of the form

$$\log\left(\frac{p}{1-p}\right) = \alpha + \beta_1 g + \beta_2 s + \beta_3 G + \beta_4 H \qquad (3)$$

where H is 1 for heterozygotes and 0 otherwise. When H is significant the interpretation is that the genetic effect deviates significantly from the log-linear model. Odds ratios for dominant and recessive models are then computed as described in Table 13.

Linkage Disequilibrium

[0280] An estimated r^2 correlation was done separately in cases and controls for all pairs of SNPs within 1 Mb windows using an EM algorithm as implemented in the computer program Haploview (version 3.2, on the internet at www.broad.mit.edu/mpg/haploview) (41). The final measure of LD is the minimum r^2 from the two samples. Following the algorithm in Hinds *et al.* (38) and Carlson *et al.* (42), SNPs were grouped into bins where every bin contains at least one "tag SNP" satisfying $\min(r^2) \geq 0.8$ with every SNP in the bin. The group of association signals from such an LD bin can be viewed essentially as a single signal.

Correcting for Multiple Testing

[0281] To account for multiple testing the False Discovery Rate (FDR) was estimated (24, 25) to control the proportion of false positives among the reported signals. Since Category "A" genes were considered to have a higher prior probability of association, the recommendations of Roeder *et al.* (43) were followed and Category "A" gene SNPs were weighted a moderate 10-fold more heavily. Therefore, the Category "B" genes must have stronger association signals for inclusion in the list of FDR-filtered top signals. For each *p*-value p, a weighted *p*-value p_w was computed using the formula

$$p_w = \begin{cases} wp & \text{Category "A" genes} \\ 10wp & \text{Category "B" genes} \end{cases}$$

where w was defined so that the average of the weights is 1 (this depends on the number of SNPs selected for "A" and "B" genes). For every weighted p-value p_{w0} a q-value q_{w0} was computed that has the property that the FDR is no greater than q_{w0} among all SNPs with $q_w <$ q_{w0} (25, 44). This was done using the computer program QVALUE (version 1.1, on the internet at faculty.washington.edu/jstorey/qvalue) (45). The estimates of the FDR are based on the q-values.

[0282] This method of estimating the FDR does not take into account LD. Therefore, as an additional measure to correct for multiple testing and assess statistical significance, the FDR was estimated using permutations and p-values weighted for "A" and "B" genes, which preserves the LD structure. This was done by performing 1,000 random permutations of the case-control status and testing the permuted data for association. The significance of a p-value from the original data was assessed by counting the number of times a more significant weighted p-value occurs in the random permutations, where the weights were the same as those used for the FDR estimates.

Supplementary Materials for Example 3

DNA Preparation

[0283] DNA was extracted from whole blood and EBV transformed cell lines on an AutoPure LS automated DNA extractor using the PuraGene Reagent System (GENTRA Systems). RNase was added to the WBC lysis stage with isopropanol precipitation of the DNA and resuspension in 1X TE Buffer (pH 8.0). DNA was quantified by optical density (OD) at 260nm on a DU-640 spectrophotometer (Beckman) and OD 260/280 absorbance ratios were between 1.8-2.0. DNA was aliquoted and stored frozen at -80^{0}C until distributed to the genotyping labs.

Individual Genotype Cleaning

[0284] Concordance is computed independently for both reference and alternate allele feature sets, then a maximum is taken of the two values. For each allele at each offset for both the forward and reverse strand feature sets the identity of the brightest feature is noted. The concordance for a particular allele is computed as a ratio of the number of times the perfect match feature is the brightest to the total number of offsets over the forward and

reverse strands. In the 24 feature SNP tiling each allele is represented by 6 features, distributed along 5 offsets and forward and reverse strands, with five perfect match probes and one mismatch. If N_{PM}^{X} is the number of times for allele X when the perfect match feature was brighter than the mismatch feature over all offsets and both strands, then:

$$concordance = \max\left(\frac{N_{PM}^{Ref}}{10}, \frac{N_{PM}^{Alt}}{10}\right)$$

SNP feature sets with concordance < 0.9 were discarded from further evaluation.

[0285] Let I^{TM} be the trimmed mean of perfect match intensities for a given allele and strand denoted by the subscript. The trimmed mean disregards the highest and the lowest intensity from the 5 perfect match intensities in the 24-feature tilings before computing the arithmetic mean. Let I^{M} be the mean of the mismatch intensity; since there is only one mismatch for each allele and strand no trimming is performed. Signal to background ratio (signal/background) is then defined to be the ratio between the amplitude of signal, computed from trimmed means of perfect match feature intensities, and amplitude of background, computed from means of mismatch feature intensities. The signal and background are computed as follows:

$$signal = \sqrt{((I_{PM,Ref,Fwd}^{TM} + I_{PM,Ref,Rev}^{TM})/2)^2 + ((I_{PM,Alt,Fwd}^{TM} + I_{PM,Alt,Rev}^{TM})/2)^2}$$

$$background = \sqrt{((I_{MM,Ref,Fwd}^{M} + I_{MM,Ref,Rev}^{M})/2)^2 + ((I_{MM,Alt,Fwd}^{M} + I_{MM,Alt,Rev}^{M})/2)^2}$$

SNP feature sets with signal/background < 1.5 were discarded from further evaluations. The number of saturated features was computed as the number of features that reached the highest intensity possible for the digitized numeric intensity value. SNPs with a nonzero number of saturated features were discarded from further evaluations.

[0286] As a final test, SNPs were tested for Hardy-Weinberg equilibrium (HWE). Those SNPs with an exact HWE *p*-value of less than 10^{-15} in either the cases or controls were discarded. SNPs with a HWE *p*-value between 10^{-15} and 10^{-4} were visually inspected and were discarded when problems with clustering were detected.

[0287] Table 14 shows Gender-specific odds ratios and 95% confidence intervals for SNPs in Table 6. The odds ratios are based on the coefficient of the genotype term *G* in

equation (2) and represent the increase in risk for every unit increase in *G*; *i.e.*, the risk follows a log-linear model (*see* Table 12).

SNP	Gene	Primary p-value	Rank	Gender * Genotype *p*-value	Male OR	Female OR
rs6474413	*CHRNB3*	9.36E-05	1	1.12E-01	1.2 (0.9-1.5)	1.5 (1.3-1.9)
rs10958726	*CHRNB3*	1.33E-04	2	1.04E-01	1.2 (0.9-1.5)	1.5 (1.2-1.9)
rs578776	*CHRNA3*	3.08E-04	3	4.12E-01	1.5 (1.2-1.9)	1.3 (1.1-1.6)
rs6517442	*KCNJ6*	5.62E-04	4	6.17E-01	1.4 (1.1-1.7)	1.3 (1.1-1.5)
rs16969968	*CHRNA5*	6.42E-04	5	8.13E-01	1.3 (1.1-1.7)	1.3 (1.1-1.5)
rs3762611	*GABRA4*	9.22E-04	6	7.50E-02	2.1 (1.4-3.2)	1.3 (0.9-1.8)
rs1051730	*CHRNA3*	9.93E-04	7	1.00E+00	1.3 (1.0-1.6)	1.3 (1.1-1.5)
rs10508649	*PIP5K2A*	1.02E-03	8	1.09E-02	9.7 (2.1-44.2)	1.0 (0.3-3.1)
rs17041074	*DAO*	1.12E-03	9	3.70E-04	0.8 (0.6-1.0)	1.3 (1.1-1.6)
rs3762607	*GABRA4*	1.22E-03	10	3.43E-02	2.2 (1.4-3.3)	1.2 (0.9-1.6)
rs2767	*CHRND*	1.50E-03	11	1.08E-01	1.5 (1.2-1.8)	1.1 (1.0-1.4)
rs6772197	*DOCK3 (GRM2)*	1.66E-03	12	6.35E-04	1.6 (1.2-2.2)	0.9 (0.7-1.1)
rs3021529	*AVPR1A*	1.73E-03	13	8.96E-04	0.8 (0.5-1.0)	1.5 (1.1-1.9)
rs1206549	*CLTCL1*	1.75E-03	14	9.11E-01	1.4 (1.1-1.9)	1.4 (1.1-1.7)
rs637137	*CHRNA5*	2.82E-03	22	3.18E-01	1.5 (1.1-1.9)	1.2 (1.0-1.5)
rs3791729	*CHRND*	3.39E-03	25	3.10E-01	1.4 (1.1-1.7)	1.2 (1.0-1.4)
rs4531	*DBH*	5.10E-03	30	9.11E-01	1.5 (1.0-2.1)	1.5 (1.1-2.0)
rs3025382	*DBH*	5.14E-03	31	1.82E-01	1.6 (1.2-2.3)	1.2 (0.9-1.6)
rs7877	*FMO1*	6.33E-03	38	8.81E-01	1.3 (1.0-1.6)	1.3 (1.1-1.6)
rs6320	*HTR5A*	6.50E-03	39	1.61E-03	0.7 (0.6-1.0)	1.2 (1.0-1.5)
rs4802100	*CYP2B6*	6.76E-03	41	2.82E-02	0.9 (0.6-1.4)	1.6 (1.2-2.1)
rs2304297	*CHRNA6*	6.91E-03	42	1.59E-01	1.1 (0.8-1.4)	1.4 (1.1-1.7)
rs3760657	*CYP2B6*	6.98E-03	43	3.38E-02	0.9 (0.7-1.4)	1.6 (1.2-2.1)
rs2276560	*CHRNG*	7.42E-03	44	8.58E-02	1.5 (1.1-1.9)	1.1 (0.9-1.3)
rs742350	*FMO1*	8.45E-03	48	2.67E-01	1.2 (0.9-1.6)	1.5 (1.1-1.9)
rs684513	*CHRNA5*	8.72E-03	49	1.72E-01	1.5 (1.1-1.9)	1.2 (0.9-1.4)
rs510769	*OPRM1*	9.84E-03	58	1.38E-01	1.1 (0.8-1.4)	1.3 (1.1-1.6)
rs4245150	*DRD2*	1.08E-02	61	2.79E-03	0.8 (0.6-1.0)	1.2 (1.0-1.4)
rs3743078	*CHRNA3*	1.10E-02	63	1.54E-01	1.5 (1.1-2.0)	1.2 (0.9-1.4)
rs1657273	*HTR5A*	1.11E-02	64	3.06E-03	0.8 (0.6-1.0)	1.2 (1.0-1.5)
rs17602038	*DRD2*	1.17E-02	69	3.13E-03	0.8 (0.6-1.0)	1.2 (1.0-1.4)
rs3813567	*CHRNB4*	1.18E-02	70	9.10E-02	1.5 (1.1-2.0)	1.1 (0.9-1.4)
rs893109	*HTR5A*	1.24E-02	73	3.46E-03	0.8 (0.6-1.0)	1.2 (1.0-1.5)
rs16864387	*FMO4*	1.28E-02	74	3.82E-01	1.2 (0.9-1.7)	1.4 (1.1-1.9)
rs6045733	*PDYN*	1.55E-02	84	4.25E-03	1.3 (1.1-1.7)	0.9 (0.7-1.0)
rs4953	*CHRNB3*	1.61E-02	85	1.00E+00	1.6 (0.9-2.8)	1.7 (1.1-2.5)
rs4952	*CHRNB3*	1.63E-02	87	1.00E+00	1.6 (0.9-2.8)	1.7 (1.1-2.5)
rs6749955	*CHRNG*	1.70E-02	91	1.67E-01	1.4 (1.1-1.8)	1.1 (0.9-1.4)
rs7517376	*FMO1*	1.80E-02	95	3.78E-01	1.2 (0.9-1.6)	1.4 (1.1-1.8)

Table 14

[0288] Table 15 shows top associations with nicotine dependence showing results from the primary analysis side by side with results based on the U.S. sample only. The conventions are the same as for Table 6.

SNP	Gene	Function	Cat [a]	Risk Allele	US-only Risk Allele	Primary p-value	US-only p-value	Primary Rank	US-only Rank	Primary FDR	US-only FDR
rs6474413	*CHRNB3*	*FP*	A	T (0.81/0.76)	T (0.81/0.76)	9.36E-05	3.23E-03	1	19	0.056	0.228
rs10958726	*CHRNB3*	*LD BIN*	A	T (0.81/0.76)	T (0.81/0.77)	1.33E-04	4.69E-03	2	27	0.056	0.228
rs578776	*CHRNA3*	*UTR*	A	G (0.78/0.72)	G (0.78/0.71)	3.08E-04	8.48E-05	3	1	0.086	0.071
rs6517442	*KCNJ6*	*FP*	B	C (0.34/0.28)	C (0.35/0.28)	5.62E-04	6.93E-04	4	5	0.344	0.228
rs16969968	*CHRNA5*	*NONSYN*	A	A (0.38/0.32)	A (0.38/0.32)	6.42E-04	7.32E-04	5	7	0.134	0.176
rs3762611	*GABRA4*	*FP*	B	G (0.93/0.91)	G (0.94/0.91)	9.22E-04	5.29E-03	6	31	0.344	0.533
rs1051730	*CHRNA3*	*SYNON*	A	A (0.38/0.32)	A (0.38/0.32)	9.93E-04	8.41E-04	7	10	0.166	0.176
rs10508649	*PIP5K2A*	*SYNON*	B	T (1.00/0.99)	T (1.00/0.99)	1.02E-03	3.44E-04	8	2	0.344	0.228
rs17041074	*DAO*	*INTRON*	B	A (0.27/0.26)	A (0.27/0.27)	1.12E-03	1.90E-03	9	13	0.344	0.349
rs3762607	*GABRA4*	*FP*	B	A (0.93/0.91)	A (0.94/0.91)	1.22E-03	6.16E-03	10	40	0.344	0.565
rs2767	*CHRND*	*UTR*	A	G (0.39/0.34)	G (0.39/0.34)	1.50E-03	4.87E-03	11	28	0.209	0.228
rs6772197	*(GRM2)*	*INTRON*	B	A (0.84/0.83)	A (0.85/0.83)	1.66E-03	7.39E-03	12	47	0.384	0.599
rs3021529	*AVPR1A*	*UTR*	B	G (0.86/0.85)	G (0.87/0.86)	1.73E-03	5.96E-02	13	298	0.384	0.867
rs1206549	*CLTCL1*	*INTRON*	B	G (0.86/0.82)	G (0.87/0.82)	1.75E-03	4.35E-04	14	3	0.384	0.228
rs637137	*CHRNA5*	*INTRON*	A	T (0.81/0.76)	T (0.80/0.75)	2.82E-03	2.80E-03	22	16	0.336	0.228
rs3791729	*CHRND*	*INTRON*	A	A (0.36/0.32)	A (0.37/0.32)	3.39E-03	1.70E-02	25	113	0.344	0.325
rs4531	*DBH*	*NONSYN*	A	G (0.93/0.91)	G (0.93/0.91)	5.10E-03	2.34E-02	30	143	0.344	0.383
rs3025382	*DBH*	*INTRON*	A	G (0.9/0.88)	G (0.92/0.88)	5.14E-03	8.17E-04	31	9	0.344	0.176
rs7877	*FMO1*	*UTR*	A	C (0.74/0.70)	C (0.74/0.70)	6.33E-03	8.46E-03	38	59	0.344	0.228
rs6320	*HTR5A*	*SYNON*	A	T (0.72/0.71)	T (0.72/0.71)	6.50E-03	6.04E-03	39	38	0.344	0.228
rs4802100	*CYP2A7P1*	*FP*	A	G (0.10/0.08)	G (0.10/0.09)	6.76E-03	5.28E-02	41	263	0.344	0.533
rs2304297	*CHRNA6*	*UTR*	A	G (0.79/0.75)	G (0.79/0.75)	6.91E-03	1.38E-02	42	95	0.344	0.295
rs3760657	*CYP2A7P1*	*FP*	A	G (0.10/0.08)	G (0.10/0.09)	6.98E-03	5.50E-02	43	277	0.344	0.540
rs2276560	*CHRNG*	*LD BIN*	A	T (0.77/0.74)	T (0.77/0.74)	7.42E-03	1.04E-02	44	72	0.344	0.256
rs742350	*FMO1*	*SYNON*	A	C (0.87/0.84)	C (0.87/0.84)	8.45E-03	5.51E-03	48	33	0.344	0.228
rs684513	*CHRNA5*	*INTRON*	A	C (0.82/0.78)	C (0.81/0.77)	8.72E-03	8.15E-03	49	54	0.344	0.228
rs510769	*OPRM1*	*INTRON*	A	T (0.27/0.24)	T (0.27/0.24)	9.84E-03	2.84E-02	58	167	0.344	0.410
rs4245150	*DRD2*	*LD BIN*	A	G (0.37/0.36)	G (0.37/0.36)	1.08E-02	1.29E-02	61	87	0.344	0.284
rs3743078	*CHRNA3*	*INTRON*	A	G (0.83/0.79)	G (0.82/0.79)	1.10E-02	1.98E-02	63	128	0.344	0.349
rs1657273	*HTR5A*	*LD BIN*	A	G (0.69/0.68)	G (0.69/0.68)	1.11E-02	7.74E-03	64	50	0.344	0.228
rs17602038	*DRD2*	*LD BIN*	A	C (0.37/0.36)	C (0.37/0.36)	1.17E-02	1.43E-02	69	98	0.344	0.298
rs3813567	*CHRNB4*	*FP*	A	A (0.83/0.79)	A (0.83/0.79)	1.18E-02	1.18E-02	70	81	0.344	0.274
rs893109	*HTR5A*	*LD BIN*	A	G (0.69/0.68)	G (0.69/0.68)	1.24E-02	7.84E-03	73	52	0.344	0.228
rs16864387	*FMO4*	*UTR*	A	T (0.87/0.84)	T (0.88/0.84)	1.28E-02	7.58E-03	74	48	0.344	0.228
rs6045733	*PDYN*	*LD BIN*	A	G (0.66/0.65)	G (0.66/0.65)	1.55E-02	1.56E-02	84	108	0.384	0.318
rs4953	*CHRNB3*	*SYNON*	A	G (0.97/0.95)	G (0.97/0.95)	1.61E-02	2.67E-02	85	160	0.384	0.410
rs4952	*CHRNB3*	*SYNON*	A	C (0.97/0.95)	C (0.97/0.95)	1.63E-02	2.71E-02	87	163	0.384	0.410
rs6749955	*CHRNG*	*LD BIN*	A	T (0.77/0.73)	T (0.77/0.73)	1.70E-02	2.09E-02	91	135	0.384	0.349
rs7517376	*FMO1*	*SYNON*	A	A (0.87/0.84)	A (0.88/0.84)	1.80E-02	7.74E-03	95	51	0.384	0.228

a Category

Table 15

[0289] Table 16 shows top associations with nicotine dependence based on the U.S. sample only. The *p*-value for the U.S. sample uses the same logistic regression model as for the primary analysis with the "site" term omitted. Only results where the weighted FDR in the U.S. sample is less than 40% are shown. LD estimates used for bins are from the U.S. sample. The conventions are the same as for Table 6.

SNP	Gene	Function	Cat [a]	LD Bin ID	Min r^2	U.S.-only Risk Allele	U.S.-only p-value	Primary p-value	U.S.-only Rank	Primary Rank	U.S.-only FDR	Primary FDR
rs578776	*CHRNA3*	*UTR*	A	.	.	G (0.78/0.71)	8.48E-05	3.08E-04	1	3	0.071	0.086
rs10508649	*PIP5K2A*	*SYNON*	B		.	T (1.00/0.99)	3.44E-04	1.02E-03	2	8	0.228	0.344
rs1206549	*CLTCL1*	*INTRON*	B	22-5	0.994	G (0.87/0.82)	4.35E-04	1.75E-03	3	14	0.228	0.384
rs807429	*CLTCL1*	*INTRON*	B	22-5	0.994	A (0.87/0.82)	4.89E-04	1.93E-03	4	15	0.228	0.402
rs6517442	*KCNJ6*	*FP*	B		.	C (0.35/0.28)	6.93E-04	5.62E-04	5	4	0.228	0.344
rs2180529	*SNX5*	*LD BIN*	B	20-6	0.920	T (0.30/0.27)	7.28E-04	4.87E-03	6	28	0.228	0.505
rs16969968	*CHRNA5*	*NONSYN*	A	15-12	0.989	A (0.38/0.32)	7.32E-04	6.42E-04	7	5	0.176	0.134
rs10246819	*CHRM2*	*LD BIN*	B	7-49	0.867	C (0.56/0.54)	7.99E-04	3.33E-03	8	24	0.228	0.471
rs3025382	*DBH*	*INTRON*	A		.	G (0.92/0.88)	8.17E-04	5.14E-03	9	31	0.176	0.344
rs1051730	*CHRNA3*	*SYNON*	A	15-12	0.989	A (0.38/0.32)	8.41E-04	9.93E-04	10	7	0.176	0.166
rs1061418	*GABRE*	*UTR-*	B		.	A (0.14/0.12)	8.43E-04	6.15E-03	11	36	0.228	0.570
rs1378650	*CHRM2*	*LD BIN*	B		.	G (0.56/0.51)	1.67E-03	1.78E-02	12	93	0.325	0.744
rs17041074	*DAO*	*INTRON*	B		.	A (0.27/0.27)	1.90E-03	1.12E-03	13	9	0.349	0.344
rs17636651	*CAMK2D*	*FP*	B		.	G (0.95/0.93)	2.02E-03	1.39E-02	14	79	0.349	0.693
rs3803431	*ALDH1A3*	*SYNON*	B		.	C (0.97/0.95)	2.51E-03	2.78E-02	15	137	0.398	0.783
rs637137	*CHRNA5*	*INTRON*	A	15-3	0.805	T (0.80/0.75)	2.80E-03	2.82E-03	16	22	0.228	0.336
rs16143	*NPY*	*UTR*	A	7-1	0.803	T (0.28/0.26)	3.21E-03	2.49E-02	18	126	0.228	0.446
rs6474413	*CHRNB3*	*FP*	A	8-21	0.988	T (0.81/0.76)	3.23E-03	9.36E-05	19	1	0.228	0.056
rs16142	*NPY*	*UTR*	A	7-1	0.803	G (0.28/0.26)	4.46E-03	3.31E-02	26	173	0.228	0.471
rs10958726	*CHRNB3*	*LD BIN*	A	8-21	0.988	T (0.81/0.77)	4.69E-03	1.33E-04	27	2	0.228	0.056
rs2767	*CHRND*	*UTR*	A	2-68	0.877	G (0.39/0.34)	4.87E-03	1.50E-03	28	11	0.228	0.209
rs16478	*NPY*	*UTR*	A	7-1	0.803	A (0.28/0.26)	5.31E-03	3.80E-02	32	194	0.228	0.495
rs742350	*FMO1*	*SYNON*	A	1-7	0.974	C (0.87/0.84)	5.51E-03	8.45E-03	33	48	0.228	0.344
rs2302761	*CHRNB1*	*INTRON*	A	17-8	0.933	C (0.83/0.78)	5.64E-03	4.61E-02	34	238	0.228	0.504
rs7210231	*CHRNB1*	*INTRON*	A	17-8	0.933	C (0.82/0.77)	5.74E-03	4.18E-02	35	218	0.228	0.498
rs6320	*HTR5A*	*SYNON*	A		.	T (0.72/0.71)	6.04E-03	6.50E-03	38	39	0.228	0.344
rs16149	*NPY*	*FP*	A	7-1	0.803	A (0.28/0.26)	6.12E-03	3.51E-02	39	183	0.228	0.480
rs16138	*NPY*	*INTRON*	A		.	C (0.28/0.26)	6.19E-03	4.42E-02	41	227	0.228	0.504
rs2236196	*CHRNA4*	*UTR*	A		.	G (0.28/0.23)	6.68E-03	2.63E-02	42	132	0.228	0.446
rs16864387	*FMO4*	*UTR*	A	1-7	0.974	T (0.88/0.84)	7.58E-03	1.28E-02	48	74	0.228	0.344
rs1657273	*HTR5A*	*LD BIN*	A	7-29	0.974	G (0.69/0.68)	7.74E-03	1.11E-02	50	64	0.228	0.344
rs7517376	*FMO1*	*SYNON*	A	1-7	0.974	A (0.88/0.84)	7.74E-03	1.80E-02	51	95	0.228	0.384
rs893109	*HTR5A*	*LD BIN*	A	7-29	0.974	G (0.69/0.68)	7.84E-03	1.24E-02	52	73	0.228	0.344
rs684513	*CHRNA5*	*INTRON*	A	15-3	0.805	C (0.81/0.77)	8.15E-03	8.72E-03	54	49	0.228	0.344
rs7877	*FMO1*	*UTR*	A	1-62	0.887	C (0.74/0.70)	8.46E-03	6.33E-03	59	38	0.228	0.344

rs740602	*COMT*	*SYNON*	A		.	G (1.00/0.99)	9.53E-03	3.43E-02	62	180	0.249	0.477
rs16159	*NPY*	*LD BIN*	A	7-1	0.803	T (0.31/0.29)	9.83E-03	7.43E-02	63	373	0.249	0.614
rs2276560	*CHRNG*	*LD BIN*	A	2-63	0.931	T (0.77/0.74)	1.04E-02	7.42E-03	72	44	0.256	0.344
rs7215056	*CHRNB1*	*INTRON*	A	17-8	0.933	C (0.82/0.78)	1.07E-02	6.09E-02	73	295	0.256	0.570
rs3813567	*CHRNB4*	*FP*	A		.	A (0.83/0.79)	1.18E-02	1.18E-02	81	70	0.274	0.344
rs17149039	*NPY*	*LD BIN*	A	7-1	0.803	G (0.33/0.31)	1.27E-02	8.45E-02	85	428	0.284	0.632
rs4245150	*DRD2*	*LD BIN*	A	11-8	0.997	G (0.37/0.36)	1.29E-02	1.08E-02	87	61	0.284	0.344
rs2304297	*CHRNA6*	*UTR*	A	8-52	0.830	G (0.79/0.75)	1.38E-02	6.91E-03	95	42	0.295	0.344
rs17602038	*DRD2*	*LD BIN*	A	11-8	0.997	C (0.37/0.36)	1.43E-02	1.17E-02	98	69	0.298	0.344
rs6045733	*PDYN*	*LD BIN*	A	20-34	0.803	G (0.66/0.65)	1.56E-02	1.55E-02	108	84	0.318	0.384
rs3791729	*CHRND*	*INTRON*	A	2-68	0.877	A (0.37/0.32)	1.70E-02	3.39E-03	113	25	0.325	0.344
rs12056414	*OPRK1*	*INTRON*	A	8-14	1.000	A (0.09/0.07)	1.71E-02	3.71E-02	116	191	0.325	0.492
rs3743078	*CHRNA3*	*INTRON*	A	15-3	0.805	G (0.82/0.79)	1.98E-02	1.10E-02	128	63	0.349	0.344
rs16148	*NPY*	*FP*	A	7-1	0.803	C (0.35/0.33)	2.01E-02	1.14E-01	130	556	0.349	0.676
rs6045819	*PDYN*	*SYNON*	A	20-29	0.859	A (0.90/0.88)	2.05E-02	2.98E-02	133	159	0.349	0.470
rs6749955	*CHRNG*	*LD BIN*	A	2-63	0.931	T (0.77/0.73)	2.09E-02	1.70E-02	135	91	0.349	0.384
rs4531	*DBH*	*NONSYN*	A		.	G (0.93/0.91)	2.34E-02	5.10E-03	143	30	0.383	0.344
rs12056411	*OPRK1*	*INTRON*	A	8-14	1.000	A (0.09/0.07)	2.53E-02	5.21E-02	154	263	0.398	0.522

[a] Category

[0290] Table 9. Gender-specific odds ratios and 95% confidence intervals for SNPs in Table 6. Only SNPs where the gender by genotype interaction was significant ($p < 0.05$) are shown, and the SNP with the most significant primary p-value was selected from each LD bin. The odds ratios are based on the coefficient of the genotype term G in equation (2) and represents the increase in risk for every unit increase in G; i.e., the risk follows a log-linear model (*see* Tables 12 and 13).

Table 9.

SNP	Gene	Primary p-value	Rank	Gender * Genotype p-value	Male Odds Ratio	Female Odds Ratio
rs10508649	*PIP5K2A*	1.02E-03	8	1.09E-02	9.7 (2.1-44.2)	1.0 (0.3-3.1)
rs17041074	*DAO*	1.12E-03	9	3.70E-04	0.8 (0.6-1.0)	1.3 (1.1-1.6)
rs3762607	*GABRA4*	1.22E-03	10	3.43E-02	2.2 (1.4-3.3)	1.2 (0.9-1.6)
rs6772197	*DOCK3 (GRM2)*	1.66E-03	12	6.35E-04	1.6 (1.2-2.2)	0.9 (0.7-1.1)
rs3021529	*AVPR1A*	1.73E-03	13	8.96E-04	0.8 (0.5-1.0)	1.5 (1.1-1.9)
rs6320	*HTR5A*	6.50E-03	39	1.61E-03	0.7 (0.6-1.0)	1.2 (1.0-1.5)
rs4802100	*CYP2A7P1*	6.76E-03	41	2.82E-02	0.9 (0.6-1.4)	1.6 (1.2-2.1)
rs4245150	*DRD2*	1.08E-02	61	2.79E-03	0.8 (0.6-1.0)	1.2 (1.0-1.4)
rs1657273	*HTR5A*	1.11E-02	64	3.06E-03	0.8 (0.6-1.0)	1.2 (1.0-1.5)
rs6045733	*PDYN*	1.55E-02	84	4.25E-03	1.3 (1.1-1.7)	0.9 (0.7-1.0)

[0291] **Table 10.** A summary of covariates and FTND scores in the sample. By definition, all control subjects scored 0 on the Fagerström test for nicotine dependence (FTND) (34).

Table 10

		Cases		Controls	
		U.S.A.	Australia	U.S.A.	Australia
Males	*N*	351	114	251	17
	Age				
	range	25-44	30-82	25-44	34-82
	$\mu \pm \sigma$[a]	36.8 ± 5.3	39.4 ± 9.8	35.3 ± 5.5	55.1 ± 15.4
	FTND				
	range	4-10	4-10	-	-
	$\mu \pm \sigma$	6.4 ± 1.7	6.1 ± 1.6	-	-
Females	*N*	446	139	562	49
	Age				
	range	25-45	27-79	25-44	27-78
	$\mu \pm \sigma$	37.1 ± 5.2	40.4 ± 10.3	35.9 ± 5.5	46.4 ± 14.0
	FTND				
	range	4-10	4-10	-	-
	$\mu \pm \sigma$	6.4 ± 1.8	6.0 ± 1.6	-	-
Combined	*N*	797	253	813	66
	Total	1,050		879	

[a] Mean ± standard deviation.

[0292] Table 11. ANOVA analysis of covariates. Logistic regression, modeling the probability of being a case, was performed for the indicated covariates. The χ^2 statistic is from the formula $-2(\Delta \log L)$ where $\Delta \log L$ is the change in likelihood in the logistic regression. The variable "site" has two levels: U.S.A. and Australia.

Table 11

Model	ANOVA Evaluated Covariate	χ^2 (1df)	*p*-value
gender	gender	40.0	4.2×10^{-10}
gender + age	age	10.3	1.3×10^{-03}
gender + site	site	100.4	1.2×10^{-23}
gender + site + age	age	0.25	0.62
gender + site + gender*site	gender*site	0.84	0.36

[0293] Tables 12 and 13. (12) Coding of the gender term *g* and the genotype term *G* used in the primary logistic regression model. The allele *a* is the risk allele, the allele more common in cases than in controls. The variable *G* is defined as the number of copies of the

risk allele, and *g* is 0 or 1 for male or female, respectively. The last column shows the expression for the gender-specific odds ratio for a given genotype compared to the *AA* genotype, which follows directly from the logistic regression model in equation (2). (13) Codings used for the secondary logistic regression model. The odds ratios follow directly from equation (3). Note that for a dominant model the two odds ratios are equal, and for a recessive model the odds ratio for *aA* is 1.

Table 12

Table 13

Genotype	*g*	*G*	Odds Ratio
AA	0	0	-
aA	0	1	e^{β_3}
aa	0	2	$e^{2\beta_3}$
AA	1	0	-
aA	1	1	$e^{\beta_3}e^{\beta_4}$
aa	1	2	$e^{2\beta_3}e^{2\beta_4}$

Genotype	*G*	*H*	Odds Ratio
AA	0	0	-
aA	1	1	$e^{\beta_3}e^{\beta_4}$
aa	2	0	$e^{2\beta_3}$

[0294] References for Example 3:

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EXAMPLE 4: VARIANTS IN NOVEL GENES INFLUENCE NICOTINE DEPENDENCE

[0295] Tobacco use is a leading contributor to disability and death worldwide, and genetic factors contribute in part to the development of nicotine dependence. To identify novel genes for which natural variation contributes to the development of nicotine dependence, we performed a comprehensive genome wide association study using nicotine dependent smokers as cases and non-dependent smokers as controls. To allow the efficient, rapid, and cost effective screen of the genome, the study was carried out using a two-stage design. In the first stage, genotyping of over 2.4 million SNPs was completed in case and control pools. In the second stage, we selected SNPs for individual genotyping based on the

most significant allele frequency differences between cases and controls from the pooled results. Individual genotyping was performed in 1050 cases and 879 controls using 31,960 selected SNPs. The primary analysis, a logistic regression model with covariates of age, gender, genotype and gender by genotype interaction, identified 35 SNPs with *p*-values less than 10^{-4} (minimum *p*-value 1.53 X 10^{-6}). Although none of the individual findings is statistically significant after correcting for multiple tests, additional statistical analyses support the existence of true findings in this group. Our study nominates several novel genes, such as Neurexin 1 *(NRXN1),* in the development of nicotine dependence while also identifying a known candidate gene, the β3 nicotinic cholinergic receptor.

[0296] Tobacco use, primarily through cigarette smoking, is responsible for about 5 million deaths annually, making it the largest cause of preventable mortality in the world (1), and nicotine is the component in tobacco that is responsible for the maintenance of smoking. Because of increasing tobacco use in developing nations, it is predicted that the death toll worldwide will rise to more than 10 million per year by 2020.

[0297] In the United States, 21% of adults were current smokers in 2004, with 23% of men and 19% of women smoking (2). Each year, approximately 440,000 people die of a smoking related illness (3). The economic burden of smoking is correspondingly high. Annual costs are estimated at $75 billion in direct medical expenses and $92 billion in lost productivity. The prevalence of cigarette smoking has decreased over the last 30 years in the U.S., primarily through smokers' successful efforts to quit. Yet, the rate of smoking cessation among adults has been slowing since the mid-1990's underscoring the limitations of current treatments for smoking. In addition, adolescents continue to initiate cigarette use, with 21% of high school students reporting cigarette smoking in the last month (4).

[0298] Smoking behaviors, including onset of smoking, smoking persistence (current smoking versus past smoking), and nicotine dependence, cluster in families (5), and large twin studies indicate that this clustering reflects genetic factors (6-10). Previous approaches have used genetic linkage studies (11-14) and candidate gene tests (15-17) to identify chromosomal regions and specific genetic variants suspected to be involved in smoking and nicotine dependence. We have extended the search for genetic factors by performing a high-density whole genome association study using a case-control design in unrelated individuals to identify common genetic variants that contribute to the transition from cigarette smoking to the development of nicotine dependence.

Results for Example 4

[0299] The final sample of 1,050 nicotine dependent case subjects and 879 non-dependent controls who smoked was examined for population stratification, and no evidence of admixture was observed. Quality control measures were applied to the individually genotyped SNPs and 31,960 SNPs were available for analysis.

[0300] The most significant findings are presented in Table 17 for those SNPs with a p value of less than 10^{-4}. Several genes not previously implicated in the development of nicotine dependence are listed and their hypothesized mechanism of involvement is discussed below. The most significant result was observed with *rs2836823* (p-value = 1.53×10^{-6}). This SNP is intergenic, as are several of the top findings. A SNP was defined as "intergenic" if it was not physically in a gene or within 10kb of a known transcribed region. *See* Figure 16 for an overview of the individual genotyping results. In Figure 16, P values of genome-wide association scan for genes that affect the risk of developing nicotine dependence. $-\log_{10}$ (p) is plotted for each SNP in chromosomal order. The spacing between SNPs on the plot is based on physical map length. The horizontal lines show P values for logistic analysis. The vertical lines show chromosomal boundaries. Black diamonds represent SNPs that result in non-synonymous amino acid changes.

[0301] Because of the dense genome-wide scope of our study, the interpretation of these p-values was complicated by the large number of statistical tests. Approximately 2.4 million SNPs were examined in the pooled screening stage. Although this is a large sample with nearly 2,000 subjects, no SNP showed a genome-wide significant p-value after Bonferroni correction for multiple tests. Yet, several independent lines of evidence provided support that true genetic associations were identified in this top group of SNPs.

[0302] We used the agreement of direction of effect for the top SNPs in the Stage I samples (those included in the pooled genotyping, N=948) as compared with those samples added in Stage II (N=981) as a measure of evidence for real associations within the dataset. If there were no true associations in the data, the expectation would be a random assortment of effect direction between the two sample sets. In contrast, 30 of the top 35 SNPs in the Stage I samples show the same direction of effect in the additional Stage II sample set. This level of agreement was highly significant, with a p-value of 1.1×10^{-5} from the binomial distribution indicating the error rate associated with rejecting the hypothesis of chance

agreement. Thus, our top SNPs were enriched for real and reproducible allele.frequency differences between cases and controls.

[0303] Further evidence for the presence of true associations came from comparison of these results with a candidate gene study conducted simultaneously [described above and in Saccone 18]. The β3 nicotinic receptor candidate gene, *CHRNB3*, the most significant finding in the candidate gene study, was also tagged by SNPs identified in the genome wide association study. This gene has a strong prior probability of a relationship with nicotine dependence, and the likelihood of any of the candidate genes in the above example being selected in the top group of SNPs in the genome wide association study is less than 5%.

[0304] To investigate the accuracy of pooled genotyping estimates of the allele frequency differences between cases and controls, we examined the relationship between the pooled and individual genotyping results. The pooled genotyping indeed enriched the selected set of SNPs for sizable allele frequency differences between cases and controls included in the pooled study. When p-values were computed from individual genotypes using only Stage I samples, there is a strong enrichment of small p-values (*see* Figure 17a). If the pooled genotyping was not at all successful, the distribution of p-values would be uniform, and if the pooling was completely accurate, then only small p-values would be present in the individual genotyping stage assessed in this sample subset. As seen in Figure 17a, our results lie between these extremes. We also examined the p-values of the samples added into the Stage II that were not in the pooling step. Because these Stage II samples are an independent random sample from the case and control populations, they are not expected to show the same allele frequency differences as Stage I samples where those differences are due to sampling error. Thus, their p-values should be uniformly distributed except for possible real associations, which would be consistent between the two sets of samples. This is seen in Figure 17b. The graph is fairly uniform with only a slight increase in small p-values. In Figure 17, Panel A shows distribution of p-values from the Stage I sample of the 31,960 individually genotyped SNPs that were selected from pooled genotyping stage. The distribution shows that the pooled genotyping produced an enrichment of SNPs with small p-values. A uniform distribution from 0-1 would be expected if there were no correlation between pooled genotyping and individual genotyping. Panel B in Figure 17 shows distribution of p-values from the additional samples added in Stage II. The distribution is fairly uniform with only a slight enrichment of small p-values.

[0305] In addition, we directly compared allele frequency estimates based on the pooled genotyping with those based on individual genotyping. As seen in Figure 18, the majority of the allele frequency estimates from the pooled and individual genotyping results lie along the diagonal. A similar finding is seen if case or control samples are examined separately. We computed a correlation of 87% between allele frequencies estimated from the case pooled genotyping and allele frequencies computed in the individual genotyping sample of cases from Stage I (case subjects N=482). Similarly, there was an 84% correlation of allele frequencies seen in the comparison of the pooled and individual genotyping in the control sample from Stage I (control subjects N=466). When we compared the allele frequency differences between cases and controls in pools (which is implicitly large because the SNPs were selected for individual genotyping) with the difference between cases and controls in the individual genotyping, we found a 58% correlation. This indicates a high level of concordance between the pooled and individual genotyping results; thus, the pooled genotyping was successful in identifying SNPs that would show allele frequency differences in individually genotyped case and control subjects. Figure 18 shows a scatter plot of the allele frequencies from pooling and individual genotyping from the Stage I sample.

[0306] Lastly, we examined potential differences between the U. S. and Australian samples. A comparison of cases and controls from the two populations did not show any significant differences by gender or stratification results.

Discussion of Example 4

[0307] Smoking contributes to the morbidity and mortality of a large component of the population, and twin studies provide strong evidence that genetic factors contribute substantially to the risk of developing nicotine dependence. This is the first high density, genome wide association study with the goal to identify common susceptibility or resistance gene variants for nicotine dependence.

[0308] Several novel genes were identified in this study as potential contributors to the development of nicotine dependence, such as Neurexin 1 (*NRXN1*). There were at least two signals in *NRXN1*. *See* Table 18. The SNP *rs10490162* is weakly correlated with the other two SNPs that were genotyped in the gene (maximum pair wise correlation is $r^2 = 0.45$ with the other two SNPs, which were found to be in strong disequilibrium with each other). Interestingly, another neurexin gene, Neurexin 3 (*NRXN3*), was reported as a susceptibility gene for polysubstance addiction in a pooled genome wide association study by Uhl and

colleagues (19). In addition, the most significant SNP in *NRXN3* in our study, *rs2221299*, had a p-value of 0.0034. While there was substantially less evidence for association with *NRXN3* in our study, the fact that two independent studies of substance dependence found evidence of association with neurexin genes merits further investigation.

[0309] The neurexin gene family is a group of polymorphic cell surface proteins expressed primarily in neurons that function in cell-cell interactions and are required for normal neurotransmitter release (20). Neurexins are important factors in GABAergic and glutamatergic synapse genesis and are the only known factors reported to induce GABAergic postsynaptic differentiation. *NRXN1* and *NRXN3* are among the largest known human genes, and they utilize at least two promoters and alternatively spliced exons to produce thousands of distinct mRNA transcripts and protein isoforms. It is hypothesized that differential expression of neurexin isoforms by GABAergic and glutamatergic neurons contribute to the local induction of postsynaptic specialization. Because substance dependence is modeled as a relative imbalance of excitatory and inhibitory neurotransmission (or related to "disinhibition")(1), the neurexin genes are plausible new candidate genes that contribute to the neurobiology of dependence through the regulated choice between excitatory or inhibitory pathways. Biological characterization of these genes may define a role of neural development or neurotransmitter release and dependence.

[0310] This study also identified a vacuolar sorting protein, *VPS13A*, as a potential contributor to nicotine dependence. Interestingly, three independent genetic linkage studies of smoking (11-13) identified a region on chromosome 9 near this gene. This gene appears to control the cycling of proteins through the cell membrane, and there are numerous alternative transcripts. Variants in the *VPS13A* gene cause progressive neurodegeneration and red cell acanthocytosis (22). Another novel gene for further study is *TRPC7* (transient receptor potential canonical) channel which encodes a subunit of multimeric calcium channels (23). A recent study using animal model indicated that TRPC channels can functionally regulate nicotine-induced neuronal activity in the locomotion circuitry (24).

[0311] There are several other genes tagged by the top SNPs. An alpha catenin gene, *CTNNA3*, inhibits Wnt signaling and has variants that affect the levels of plasma amyloid beta protein (Abeta42) in Alzheimer's disease families (25), though other reports fail to find an association with Alzheimer's disease (26). The *CLCA1* gene encodes a calcium-activated chloride channel that may contribute to the pathogenesis of asthma (27) and chronic obstructive pulmonary disease (28). While none of these genes has a known relationship to

nicotine metabolism or mechanism of action, they are involved in brain and lung function and therefore have plausible biological relationships to smoking behavior and dependence.

[0312] In addition to the novel genes implicated in the genome wide association study, a classic candidate gene, the β3 nicotinic receptor (*CHRNB3*) is among the top group. The nicotinic receptors are a family of ligand-gated ion channels that mediate fast signal transmission at synapses. Nicotine is an agonist of these receptors that produce physiological responses.

[0313] The SNPs were tested for varying gender effects as part of the primary analytic model. Several of the top SNPs had significantly different odds ratios for men and women (Table 17). It is clear from epidemiological data that there are significant gender differences in the risk for the development of dependence, and this study provides evidence that separate genes may contribute to the development of nicotine dependence in men and women. Following the primary analyses, we further analyzed the top ranked SNPs to determine if there was evidence for other modes of transmission, such as recessive or dominant models. There was no evidence for improvement in the fit for either of these models for any of the SNPs in the top group.

[0314] The maximum effect size for these top associated SNPs is an odds ratio of 2.53. These estimates are likely to be overestimates of the true population values due to the "jackpot effect" of many multiple comparisons. Several alternatives exist for correction of these estimates, but have not been applied to these data. The effect size estimates are consistent with multiple genes of modest effect contributing to the development of dependence.

[0315] This genome wide association study is a first step in a large-scale genetic examination of nicotine dependence. Our analytic plan was determined *a priori* so that we would be able to interpret the results most clearly. We purposefully chose to examine the entire sample as the primary analysis, rather than use a split sample design because we felt that this had the greatest power to detect true findings (29).

[0316] Several other issues are optionally contemplated in examination of these data. For example, smoking and nicotine dependence are correlated with many other disorders, such as alcohol dependence and major depressive disorder (30-33). Preliminary analyses of our sample have confirmed that this clustering of other disorders with nicotine dependence is present in our sample. In addition, nicotine dependence can be defined by other measures,

such as the American Psychiatric Association criteria in the Diagnostic and Statistical Manual, Version IV (DSM-IV) (34). Previous work has shown that though different measures of nicotine dependence are correlated, there is not perfect overlap because the FTND and DSM-IV definitions focus on different features of dependence (35). The FTND is a measure that focuses on physiological dependence, whereas the DSM-IV dependence includes cognitive and behavioral aspects of dependence. Different classification by FTND and DSM-IV nicotine dependence is also seen in our sample with 75% of our cases (FTND $\geq$ 4) and 24% of our controls (FTND=0) affected with DSM-IV nicotine dependence. It is also contemplated that comorbid disorders and varying definitions of nicotine dependence can be examined to explicate some of the individual features that contribute to these findings of association.

[0317] In summary, efforts to understand nicotine dependence are important so that new approaches can be developed to reduce tobacco use, especially cigarette smoking. This systematic survey of the genome nominates novel genes, such as *NRXN1*, that increase an individual's risk of transitioning from smoking to nicotine dependence. The genetic and biological characterization of these genes helps in understanding the underlining causality of nicotine dependence and can optionally provide novel drug development targets for smoking cessation. These variants are also optionally involved in addictive behavior in general. The current pharmacological treatments for nicotine dependence continue to produce only limited abstinence success, and the tailoring of medications to promote smoking cessation to an individual's genetic background (e.g., via the current invention) may significantly increase the efficacy of treatment. Our work can optionally facilitate personalized approaches in the practice of medicine through large-scale study of genetic variants. Novel targets can now be studied and hopefully will facilitate the development of improved treatment options to alleviate this major health burden and reduce smoking related deaths.

Materials and Methods for Example 4

[0318] The purpose of this study was to identify genes contributing to the progression from smoking to the development of nicotine dependence. As a result, the study examined the phenotypic contrast between nicotine dependent subjects and individuals who smoked but never developed nicotine dependence.

Subjects

[0319] All subjects (1050 cases and 879 controls) were selected from two ongoing studies: the Collaborative Genetic Study of Nicotine Dependence, a United States based sample (St. Louis, Detroit, and Minneapolis), and the Nicotine Addiction Genetics study, an Australian based, European-Ancestry sample. The United States sample was recruited through telephone screening of community based subjects to determine eligibility for recruitment as case (current FTND $\geq$ 4) or control status. Qualifying subjects were invited to participate in the genetic study. The Australian participants were enrolled at the Queensland Institute of Medical Research as families and spouses of the Australian Twin Panel.

[0320] The Institutional Review Board approved both studies, and all subjects provided informed consent to participate. Blood samples were collected from each subject for DNA analysis and submitted together with electronic phenotypic data to the NIDA Center for Genetic Studies, which manages the sharing of research data in accordance with NIH guidelines. All subjects were self-identified as being of European descent. *See* Table 19 for further demographic details.

Phenotype Data

[0321] Equivalent assessments were performed at both sites. A personal interview that comprehensively assessed nicotine dependence using several different criteria such as the Fagerström Test for Nicotine Dependence (36) and the Diagnostic and Statistical Manual of Mental Disorders-IV (34) was administered.

Case Definitions of Nicotine Dependence

[0322] The focus of this example was a case-control design of unrelated individuals for a genetic association study of nicotine dependence. Cases were defined by a commonly used definition of nicotine dependence, a Fagerström Test for Nicotine Dependence (FTND) score of 4 or more when smoking the most (maximum score of 10) (36). No significant difference was observed in FTND score between the U.S. and Australian samples (mean FTND: 6.43 for U.S. and 6.06 for Australian cases).

Control Definitions

[0323] Control subject status was defined as an individual who smoked (defined by smoking at least 100 cigarettes during their lifetime), yet never became dependent (lifetime FTND=0). Historically, the threshold of smoking 100 or more cigarettes has been used in survey research as a definition of a "smoker." With the selection of controls who smoked, the study focused on those genetic effects related to the transition from smoking to the

development of nicotine dependence. Additional data from the Australian twin panels supports this designation of a control status. Among monozygotic twins who smoked, the rate of nicotine dependence, defined as a score of 4 or more using the Heavy Smoking Index (HSI- an abbreviated version of the FTND) (37), was lowest in those whose co-twin had an HSI score of 0; lower even than in those whose co-twin had experimented with cigarettes, but never became a smoker, or those whose co-twin had never smoked even a single cigarette (see Table 20).

DNA Preparation

[0324] DNA was extracted from whole blood and EBV transformed cell lines and was aliquoted and stored frozen at -80^{0}C until distributed to the genotyping labs.

Study Design

[0325] To allow the efficient, rapid, and cost-effective screening of over 2.4 million SNPs, we performed a whole genome association study using a two-stage design.

Stage I – Pooled Genotyping High-density Oligonucleotide Genotyping Arrays:

[0326] In Stage I, 482 case and 466 control DNA samples from U.S. and Australian subjects of European ancestry were selected for study. To examine potential population stratification, we performed a STRUCTURE analysis (38) using 295 individually genotyped SNPs. The selected SNPs were roughly evenly spaced across the autosomes and were selected for stratification analyses (39). The STRUCTURE program identifies subpopulations of individuals who are genetically similar through a Markov chain Monte Carlo sampling procedure using markers selected across the genome. There was no evidence of population admixture. Cases and controls were then placed in pools for genotyping of 2.4 million SNPs, and estimates of allele frequency differences between case and control pools were determined.

[0327] Pooled genotyping was performed using 8 case and 8 control pools. DNA was quantified using Pico Green. The concentrations were normalized and verified to within a coefficient of variation of < 10%. Equimolar amounts of DNA from approximately 60 individuals were placed into each of the 16 pools. An individual's sample was included in only one pool. The 16 pools were hybridized to 49 chip designs to interrogate 2,427,354 SNPs across the whole genome.

Determination of Pooled Allele Frequency Estimates:

[0328] Allele frequencies were approximated using the intensities collected from the high-density oligonucleotide arrays. A SNP's allele frequency p was a ratio of the relative amount of the DNA with reference allele to the total amount of DNA, and thus can have values between 0 and 1:

$$p = \frac{C_{\text{Ref}}}{C_{\text{Ref}} + C_{\text{Alt}}}$$

where C_{Ref} and C_{Alt} are the concentrations of reference allele and alternate allele, respectively. As probe intensities were directly related to the concentrations of the SNP alleles, the $\hat{p}$ computed from the intensities of reference and alternate features was a good approximation of the true allele frequency p. The $\hat{p}$ value was computed from the trimmed mean intensities of perfect match features, after subtracting a measure of background computed from trimmed means of intensities of mismatch features:

$$\hat{p} = \frac{I^{TM}_{PM,\text{Ref}} - I^{TM}_{MM}}{(I^{TM}_{PM,\text{Ref}} - I^{TM}_{MM}) + (I^{TM}_{PM,Alt} - I^{TM}_{MM})}$$

where

$$I^{TM}_{MM} = (I^{TM}_{MM,\text{Ref},Fwd} + I^{TM}_{MM,\text{Ref},\text{Rev}} + I^{TM}_{MM,Alt,Fwd} + I^{TM}_{MM,Alt,\text{Rev}})/4$$

$$I^{TM}_{PM,\text{Ref}} = (I^{TM}_{PM,\text{Ref},Fwd} + I^{TM}_{PM,\text{Ref},\text{Rev}})/2$$

$$I^{TM}_{PM,Alt} = (I^{TM}_{PM,Alt,Fwd} + I^{TM}_{PM,Alt,\text{Rev}})/2$$

I^{TM} was the trimmed mean of perfect match or mismatch intensities for a given allele and strand denoted by the subscript. The trimmed mean disregarded the highest and the lowest intensity from the 5 perfect match intensities and also from the 5 mismatch intensities in the 40-feature tilings before computing the arithmetic mean.

[0329] Three quality control metrics were developed to assess the reliability of the intensities for a SNP on an array scan. The first metric, concordance, evaluated the presence of a target for a SNP. The second metric, signal to background ratio, related the amount of specific and non-specific binding, estimated from the intensities of perfect match and mismatch features. The third metric tracked the number of features in each SNP tiling that had saturated intensities. Cutoffs were applied to all three metrics, and SNP feature sets that did not pass were discarded from further evaluation.

[0330] Concordance was computed independently for both reference and alternate allele feature sets, then a maximum was taken of the two values. For each allele at each offset for both the forward and reverse strand feature sets, the identity of the brightest feature was noted. The concordance for a particular allele was computed as a ratio of the number of times the perfect match feature was the brightest to the total number of offsets over the forward and reverse strands. In the 40 feature SNP tiling each allele was represented by 20 features, distributed along 5 offsets and forward and reverse strands. If N_{PM}^{X} was the number of times for allele X when the perfect match feature was brighter than the mismatch feature over all offsets and both strands, then:

$$concordance = \max\left(\frac{N_{PM}^{Ref}}{10}, \frac{N_{PM}^{Alt}}{10}\right)$$

SNP feature sets with concordance < 0.9 were discarded from further evaluation.

[0331] Signal to background ratio was the ratio between the amplitude of signal, computed from trimmed means of perfect match feature intensities, and amplitude of background, computed from trimmed means of mismatch feature intensities. The signal and background were computed as follows:

$$signal = \sqrt{((I_{PM,Ref,Fwd}^{TM} + I_{PM,Ref,Rev}^{TM})/2)^2 + ((I_{PM,Alt,Fwd}^{TM} + I_{PM,Alt,Rev}^{TM})/2)^2}$$

$$background = \sqrt{((I_{MM,Ref,Fwd}^{TM} + I_{MM,Ref,Rev}^{TM})/2)^2 + ((I_{MM,Alt,Fwd}^{TM} + I_{MM,Alt,Rev}^{TM})/2)^2}$$

The trimmed mean intensities I^{TM} for both the perfect match and mismatch feature sets were obtained as described above. SNP feature sets with signal/background < 1.5 were discarded from further evaluations.

[0332] The number of saturated features was computed as the number of features that reached the highest intensity possible for the digitized numeric intensity value. SNPs with number of saturated features > 0 were discarded from further evaluations.

Stage II SNP Selection:

Computation of empirical p-values to evaluate each SNP's association independently

[0333] Corrected t-test P-values were computed similarly to regular t-test P-values. For testing of the difference between average case $\hat{p}$ and average control $\hat{p}$, the standard error was corrected by a chip design-specific additive constant. The additive constant was obtained by

minimizing the coefficient of variation of the t-tests for each chip design. This standard error additive constant ensured that SNP selection was not biased to low or high standard errors, as there was no prior evidence that SNPs with low or high standard errors were more or less likely to be associated with the phenotype. The empirical P-values were computed from ranks of the corrected t-test P-values for each chip design by dividing the rank by the total number of passing SNPs on the chip design. See Figure 19 for a distribution of standard errors.

SNP selection criteria

[0334] The SNPs were selected from among SNPs that had at least two passing $\hat{p}$ values for cases and controls. Selected SNPs mapped onto human genome build 35 and had successfully designed assays. An empiral P-value cutoff of 0.0196 was used to select SNPs.

Stage II Individual genotyping

[0335] For individual genotyping, we designed a custom array to interrogate 41,402 SNPs that included SNPs selected from the pooled genotyping (39,213) and stratification and quality control SNPs (2,189). In Stage II, we performed individual genotyping on the original case and control samples and additional case and control subjects of European descent, for a final sample size of 1,929 individuals (1,050 cases and 879 controls).

[0336] Individual genotypes were determined by clustering all SNP scans in the 2-dimensional space defined by reference and alternate perfect match trimmed mean intensities. Trimmed mean intensities were computed as described above in section "Determination of Pooled Allele Frequency Estimates". The genotype clustering procedure was an iterative algorithm developed as a combination of K-means and constrained multiple linear regressions. The K-means at each step reevaluated the cluster membership representing distinct diploid genotypes. The multiple linear regressions minimized the variance in $\hat{p}$ within each cluster while optimizing the regression lines' common intersect. The common intersect defined a measure of common background that was used to adjust the allele frequencies for the next step of K-means. The K-means and multiple linear regression steps were iterated until the cluster membership and background estimates converged. The best number of clusters was selected by maximizing the total likelihood over the possible cluster counts of 1, 2 and 3 (representing the combinations of the 3 possible diploid genotypes). The total likelihood was composed of data likelihood and model likelihood. The data likelihood was determined using a normal mixture model for the distribution of $\hat{p}$ around the cluster means. The model likelihood was calculated using a prior distribution of expected cluster

positions, resulting in optimal $\hat{p}$ positions of 0.8 for the homozygous reference cluster, 0.5 for the heterozygous cluster and 0.2 for the homozygous alternate cluster.

[0337] A genotyping quality metric was compiled for each genotype from 15 input metrics that described the quality of the SNP and the genotype. The genotyping quality metric correlated with a probability of having a discordant call between the Perlegen platform and outside genotyping platforms (i.e., non-Perlegen HapMap project genotypes). A system of 10 bootstrap aggregated regression trees was trained using an independent data set of concordance data between Perlegen genotypes and HapMap project genotypes. The trained predictor was then used to predict the genotyping quality for each of the genotypes in this data set.

[0338] Figure 19 shows a plot of distributions of standard errors of SNPs selected using different criteria. The plot illustrates that delta $\hat{p}$ cutoff selects preferentially SNPs with high standard errors of delta $\hat{p}$, regular t-test preferentially selects SNPs with low standard errors and the corrected t-test is centered on the standard error distribution from all SNPs.

Hardy Weinberg Equilibrium

[0339] Hardy Weinberg Equilibrium (HWE) was tested separately for cases and controls. SNPs that did not follow HWE at a level of p-value < 10^{-15} in either cases or controls were discarded. There were 859 and 797 autosomal SNPs excluded because of this extreme disequilibrium in cases and controls, respectively, and 765 of these SNPs were common to both groups. This level of deviation from HWE indicates issues with SNP genotyping and clustering. Because association with the phenotype can result in SNPs not being in HWE, SNPs with HWE p-values between 10^{-4} and 10^{-15} were visually inspected, and where problems with clustering were detected, the SNP was discarded from further analysis. This results in 31,960 SNPs available for analysis.

Population Stratification

[0340] In order to avoid false positive results due to cryptic population stratification in the larger sample, we repeated a STRUCTURE analysis in the expanded sample of 1929 subjects (38) using genotype data for 289 well performing SNPs (39). This again revealed no evidence of population admixture. Additionally, the non-inflated Q-Q plot of test statistics in the Stage II only samples (Figure 20) indicates a lack of population admixture correlated with case control status. Figure 20 shows Q-Q plot of logistic regression ANOVA deviance

produced from samples added to Stage I samples at Stage II. Because these samples are independent of Stage I samples used for the SNP selection from pooled genotyping the test statistic is expected to largely follow the null distribution (Chi-square distribution with 2 degrees of freedom). Due to the lower power of this sample set compared to the combined set of samples and the small effect sizes found in this study, any possible associations are not expected to cluster together at low p-values, thereby changing the linear shape of this Q-Q plot. The dotted line represents 95% point-wise confidence envelope of expected null distribution.

Covariate analysis

[0341] The covariates available for individuals were sex, age, site (U.S. or Australia) and sample (first or second). Prior to performing genetic analyses, inspection of the data indicated that the covariates of gender and recruitment site were important predictors of case and control status and were used as covariates in the logistic regression model.

Genetic association

[0342] We developed an *a priori* analytic strategy so that we could then interpret our results and avoid issues of multiple testing from using varying methods of analysis. We chose to examine the total sample of 1929 individuals in the primary analysis because this had the greatest power to detect true findings (29). For our primary single SNP association analyses, we used logistic regression to incorporate the significant covariates sex and site (U.S., Australia), and tested the effect of genotype together with a genotype-by-sex interaction term using a standard likelihood-ratio chi-squared statistic with 2 degrees of freedom. This approach allowed us to detect SNPs having gender-specific effects as well as SNPs with similar effects in males and females. For these primary analyses, we coded genotype according to the number of "risk" alleles (0, 1 or 2) where the risk allele was defined to be the allele having higher frequency in cases than in controls. This coding was additive on the log scale and thus corresponded to a multiplicative genetic model. The full model was compared to a reduced model including gender and recruitment site only, and significance was assessed by a chi square test with 2 degrees of freedom. The resulting p-values were used to rank the SNPs.

[0343] Following these primary analyses, we further analyzed the top ranked SNPs to determine if there was significant evidence for alternative modes of transmission such as dominant or recessive models.

Table 17. SNPs with primary model p-value < 0.0001. Listed genes are within 10kb of the SNP position.

SNP	Gene	Chr	Pos(bp)	Risk Allele [h]	Primary p-value	Male odds ratio (95%CI)	Female odds ratio (95% CI)
rs2836823		21	39,302,119	T (0.48/0.4)	1.53E-06	1.35 (1.08-1.68)	1.46 (1.23-1.73)
rs4142041	*CTNNA3*	10[a]	68,310,957	G (0.41/0.34)	5.64E-06	1.73 (1.37-2.2)*	1.14 (0.97-1.35)*
rs999[i]	*GPSM3, AGPAT1, NOTCH4, RNF5, AGER, PBX2, AGER*	6	32,261,864	C (0.96/0.94)	1.42E-05	1.92 (1.06-3.45)	2.53 (1.62-3.95)
rs12623467	*NRXN1*	2[g]	51,136,740	C (0.96/0.92)	1.48E-05	2.42 (1.51-3.88)	1.57 (1.14-2.16)
rs1782159		14[b]	40,826,319	C (0.25/0.2)	1.87E-05	1.97 (1.46-2.65)*	1.09 (0.87-1.36)*
rs12380218	*VPS13A*	9[c]	77,165,214	G (0.24/0.19)	2.09E-05	1.18 (0.9-1.55)	1.56 (1.28-1.91)
rs2022443	*VPS13A*	9[c]	77,099,406	G (0.24/0.19)	2.49E-05	1.12 (0.86-1.45)*	1.57 (1.29-1.91)*
rs2673931	*TRPC7*	5[d]	135,717,335	T (0.66/0.61)	3.89E-05	1.68 (1.34-2.12)*	1.04 (0.87-1.24)*
rs4142603		9[c]	76,998,948	C (0.25/0.19)	4.05E-05	1.15 (0.9-1.47)	1.52 (1.26-1.84)
rs1031006		5	14,040,103	A (0.67/0.62)	4.30E-05	0.98 (0.78-1.24)*	1.49 (1.25-1.78)*
rs2791480	*CLCA1*	1	86,680,605	G (0.78/0.72)	4.38E-05	1.53 (1.19-1.97)	1.33 (1.1-1.61)
rs10049135		3	72,731,670	A (0.89/0.86)	4.65E-05	2.09 (1.51-2.91)*	0.96 (0.75-1.24)*
rs11145381	*VPS13A*	9[c]	77,144,695	C (0.23/0.18)	4.72E-05	1.19 (0.91-1.57)	1.54 (1.26-1.88)
rs2798983		14[b]	40,841,983	C (0.28/0.22)	4.77E-05	1.63 (1.25-2.13)	1.28 (1.05-1.55)
rs2546657	*TRPC7*	5[d]	135,711,634	A (0.66/0.62)	4.96E-05	1.67 (1.33-2.09)*	1.01 (0.85-1.2)*
rs1782182		14[b]	40,766,891	G (0.31/0.25)	5.28E-05	1.72 (1.33-2.22)*	1.14 (0.95-1.38)*
rs10490162	*NRXN1*	2	51,159,308	T (0.91/0.86)	5.66E-05	1.92 (1.34-2.75)	1.39 (1.08-1.79)
rs11694463		2	12,732,219	C (0.12/0.09)	6.10E-05	2.1 (1.4-3.15)	1.37 (1.05-1.78)
rs17706334		11[e]	108,486,074	A (0.97/0.94)	6.38E-05	1.71 (1.05-2.8)	2.19 (1.44-3.33)
rs17706299		11[e]	108,486,027	C (0.97/0.94)	6.51E-05	1.71 (1.05-2.79)	2.19 (1.44-3.33)
rs13277254	*CHRNB3*	8[f]	42,669,139	A (0.81/0.76)	6.54E-05	1.19 (0.92-1.55)	1.55 (1.26-1.91)
rs12467557	*NRXN1*	2[g]	51,153,921	A (0.96/0.93)	6.88E-05	2.53 (1.48-4.31)	1.62 (1.14-2.3)
rs17633258		11[e]	108,491,084	C (0.97/0.94)	7.31E-05	1.9 (1.14-3.15)	2.11 (1.38-3.23)
rs4859365		4	35,345,098	G (0.52/0.45)	7.72E-05	1.49 (1.2-1.86)	1.24 (1.04-1.47)
rs10793832	*FBXL17*	5	107,348,129	C (0.32/0.26)	8.13E-05	1.11 (0.87-1.41)	1.47 (1.23-1.76)
rs1782134		14[b]	40,785,318	T (0.3/0.25)	8.18E-05	1.68 (1.3-2.18)*	1.15 (0.96-1.39)*
rs11157219		14[b]	40,852,451	G (0.3/0.24)	8.78E-05	1.7 (1.31-2.2)*	1.16 (0.96-1.4)*
rs2302673	*FTO*	16	52,625,622	T (0.87/0.84)	8.85E-05	1.04 (0.76-1.44)*	1.69 (1.33-2.16)*
rs1612945		14[b]	40,805,691	C (0.3/0.24)	8.91E-05	1.66 (1.29-2.15)*	1.18 (0.98-1.42)*
rs1782145		14[b]	40,800,126	C (0.3/0.24)	9.06E-05	1.65 (1.28-2.14)*	1.18 (0.98-1.42)*
rs1782141		14[b]	40,795,921	A (0.3/0.25)	9.20E-05	1.68 (1.3-2.16)*	1.15 (0.96-1.39)*
rs17633211		11[e]	108,490,715	T (0.97/0.94)	9.33E-05	1.9 (1.14-3.15)	2.09 (1.37-3.19)
rs6474413	*CHRNB3*	8[f]	42,670,221	T (0.81/0.76)	9.36E-05	1.18 (0.91-1.53)	1.54 (1.25-1.9)
rs9332406	*CTNNA3*	10[a]	68,340,205	A (0.4/0.34)	9.71E-05	1.63 (1.28-2.06)*	1.11 (0.94-1.32)*
rs1782144		14[b]	40,799,523	G (0.3/0.24)	9.88E-05	1.65 (1.28-2.14)*	1.18 (0.98-1.43)*

Legend for Table 17:

*Significantly different Odds Ratio for men and women.

[a]Two Chr 10 SNPs with r^2 correlation of 0.89

[b]Nine Chr 14 SNPs with minimum pair-wise r^2 correlation of >0.85

[c]Four Chr 9 SNPs with minimum pair-wise r^2 correlation of >0.85

[d]Two Chr 5 SNPs with r^2 correlation of 0.99 (the other two Chr 5 SNPs are uncorrelated)

[e]Four Chr 11 SNPs with minimum pair-wise r^2 correlation of >0.95

[f]Two Chr 8 SNPs with r^2 correlation of 1

[g]Two Chr 2 SNPs with r^2 correlation of 0.91 (the other two Chr 2 SNPs have pair-wise correlations of <50%).

[h] The risk allele is chosen arbitrarily to be the allele more prevalent in cases to facilitate comparison of effect sizes across SNPs. This does not imply that the effect of the variant is known in any case; the other allele could be protective. In addition, the alleles could be complementary to those reported in dbSNP (see online SNP information).

[i] The allele frequency for rs999 is quite different in these data than reported in dbSNP; this may represent a failure to accurately genotype this SNP in this study.

Table 18. All SNPs individually genotyped in the genes *NRNX1* and *VPS13A*

SNP ID	Chr[a]	Position	Minor Allele Frequency	Risk Allele	*p*-value[b]	Male Odds Ratio (95% CI)	Female Odds Ratio (95% CI)
NRXN1							
afd1260848	2	50,088,115	0.0111	T	0.306199180	1.16 (0.43-3.13)	1.91 (0.81-4.50)
rs1400882	2	50,371,747	0.4237	G	0.366666760	1.02 (0.82-1.27)	1.13 (0.95-1.33)
afd743424	2	50,673,793	0.0285	C	0.339442817	1.5 (0.84-2.79)	1.13 (0.68-1.88)
rs17040897	2	50,751,878	0.0010	T	0.435646837	0.0	2.63 (0.21-33.00)
rs17041112	2	51,064,107	0.0278	A	0.041036238	2.27 (1.04-4.95)	1.40 (0.88-2.24)
afd737192	2	51,065,341	0.0117	T	0.038498276	3.28 (0.96-11.27)	1.83 (0.87-3.86)
rs12623467	2	51,136,740	0.0607	C	0.000014776	2.42 (1.51-3.88)	1.57 (1.14-2.16)
rs12467557	2	51,153,921	0.0547	A	0.000068795	2.53 (1.48-4.31)	1.62 (1.14-2.30)
rs10490162	2	51,159,308	0.1126	T	0.000056606	1.92 (1.34-2.75)	1.39 (1.08-1.79)
afd736936	2	51,173,172	0.0161	C	0.007967325	3.50 (1.27-9.67)	1.79 (0.94-3.39)
VPS13A							
rs10869910	9	77,053,556	0.1982	T	0.000490786	1.11 (0.84-1.46)	1.48 (1.21-1.82)
rs2022443	9	77,099,406	0.2200	G	0.000024860	1.12 (0.86-1.45)	1.57 (1.29-1.91)
rs7864334	9	77,134,110	0.4888	C	0.004466534	0.95 (0.76-1.18)	1.31 (1.11-1.55)
rs11145381	9	77,144,695	0.2093	C	0.000047241	1.19 (0.91-1.57)	1.54 (1.26-1.88)
rs17423381	9	77,147,214	0.0850	G	0.365266659	1.30 (0.89-1.90)	0.96 (0.71-1.30)
rs12380218	9	77,165,214	0.2155	G	0.000020915	1.18 (0.90-1.55)	1.56 (1.28-1.91)
rs11145388	9	77,179,410	0.1857	T	0.001001859	1.11 (0.84-1.47)	1.47 (1.19-1.82)
rs11145410	9	77,241,954	0.1909	A	0.000785556	1.19 (9.90-1.57)	1.45 (1.18-1.78)

[a] Chromosome; [b] Primary 2df *p*-value from the logistic regression analysis

Table 19. Distribution of sex, age, FTND score, and recruitment site in cases and controls

	CASES (N=1050)	Controls (N=879)

SEX		
Males	44.2%	30.4%
Females	55.8%	69.6%
AGE (YEARS)		
Mean ± SD	37.7 ± 6.9	36.7 ± 7.5
Range	25 – 82	25 - 82
FTND		
Mean ± SD	6.3 ± 1.7	0
SITE		
U.S.	797	713
Australia	253	66

Table 20. Prevalence of nicotine dependence in monozygotic twins

Co-Twin Smoking History	Respondent % Nicotine Dependent Among Smokers
Never Smoked	16.67%
Smoked 1-2 Times	4.84%
Smoked 3-20 Times	4.17%
Smoked 21-99 Times	6.52%
Smoked 100 Times or More, HSI=0	1.63%
Smoked 100 Times or More, HSI=1	2.47%
Smoked 100 Times or More, HSI=2	4.79%
Smoked 100 Times or More, HSI=3	5.06%
Smoked 100 Times or More, HSI=4	50.78%
Smoked 100 Times or More, HSI=5	68.42%
Smoked 100 Times or More, HSI=6	72.73%

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[0344]

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EXAMPLE 5: Nicotine Dependence Risk and the alpha 5 Nicotinic Receptor

[0345] Cigarette smoking is a major public health problem that contributes to nearly 5 million deaths every year (WHO, 2006). Despite knowledge of the adverse health effects, 65 million adults in the U.S. continue to smoke and about half of these individuals are dependent on nicotine (Grant et al., 2004). Nicotine is the component in cigarettes that is responsible for the maintenance of smoking, and the physiological effects of nicotine are mediated largely through the neuronal nicotinic acetylcholine receptors (nAChRs).

[0346] Our group recently completed a large-scale genome wide association and candidate gene study of nicotine dependence that focused on the contrast between smokers who smoked at least 100 cigarettes in their lifetime, but never developed any symptoms of dependence (See above and Bierut et al, 2007; Saccone et al, 2007). This study design focused on the genetic factors that contribute to this transition from smoking to nicotine dependence. A compelling association finding for follow-up was the identification of genetic variants that results in an amino acid change in the α 5 nicotinic receptor (*CHRNA5*).

[0347] The purpose of this study was to further define the genetic contribution of variants in the α 5 nicotinic receptor to nicotine dependence, to test if this finding of association replicated in an independent dataset, and to determine if this amino acid change resulted in functional change of the nicotinic receptor.

Materials and Methods

Human Genetic Studies

[0348] Two independent datasets were used: NICSNP, a nicotine dependent case and non-dependent smoking controls series and the Collaborative Study of the Genetics of Alcoholism (COGA), a family based study of alcohol dependence, which had high rates of smoking and allowed for the genetic study of heavy and light smoking contrast groups.

NICSNP

Subjects

[0349] Subjects (1050 cases and 879 controls) were selected from two ongoing studies: the Collaborative Genetic Study of Nicotine Dependence, a United States based sample (St. Louis, Detroit, and Minneapolis), and the Nicotine Addiction Genetics study, an Australian based, European-Ancestry sample.

[0350] The Institutional Review Board approved both studies, and all subjects provided informed consent to participate. Blood samples were collected from each subject for DNA analysis and submitted together with electronic phenotypic data to the NIDA Center for Genetic Studies, which manages the sharing of research data in accordance with NIH guidelines. All subjects were self-identified as being of European descent.

Phenotype Data

[0351] Cases were defined by a commonly used definition of nicotine dependence, a Fagerström Test for Nicotine Dependence (FTND) score of 4 or more when smoking the most (maximum score of 10) (Heatherton et al., 1981). Control subject status was defined as an individual who smoked (defined by smoking at least 100 cigarettes during their lifetime), yet never became dependent (lifetime FTND=0).

SNP genotyping

[0352] A custom array to interrogate SNPs in the *CHRNA5* gene were selected and genotyped as described as above and in Bierut et al, 2007 and Saccone et al, 2007. Additional quality control measures were put into place with a specification of call rates greater than 95%. The clustering plots for all SNPs were visually inspected to insure discrimination between genotypes. Hardy Weinberg Equilibrium (HWE) was tested separately for cases and controls.

Population Stratification

[0353] In order to avoid false positive results due to cryptic population stratification, we performed a STRUCTURE analysis using genotype data for 289 well performing SNPs. This revealed no evidence of population admixture.

Statistical Analysis

[0354] For our primary single SNP association analyses, we used logistic regression to incorporate the significant covariates sex and site (U.S., Australia), and tested the effect of genotype together with a genotype-by-sex interaction term using a standard likelihood-ratio chi-squared statistic with 2 degrees of freedom. The full model was compared to a reduced model including gender and recruitment site only, and significance was assessed by a chi square test with 2 degrees of freedom. See above and Saccone et al., 2007 for additional details.

Treescan

[0355] Treescanning is an evolutionary tree based method for association analysis and can aid in the interpretation of genetic association results. The software PHASE was used to estimate haplotype phase in 1050 cases and 879 controls for the SNPs covering *CHRNA5* (Stephens M et al, AJHG. 2003). PHASE estimated 33 unique haplotypes in this sample. Extremely rare haplotypes (frequencies of less than

0.1%) were removed, then the haplotype network was examined using statistical parsimony in the TCS program (Clement et al., Mol Ecol. 2000). Haplotypes that showed significant evidence of recombination were then removed (Templeton AR et al, Genetics. 1992). The resulting network was used to assess the association of haplotypes in *CHRNA5* with nicotine dependence (Templeton AR et al, Genetics. 2005).

Collaborative Study on the Genetics of Alcoholism

Sample

[0356] The Collaborative Study on the Genetics of Alcoholism (COGA) is a multi-site study recruiting families at six centers across the United States: Indiana University, State University of New York Health Science Center, University of Connecticut, University of Iowa, University of California/San Diego, and Washington University, St. Louis (Begleiter et al., 1995; Reich et al., 1998; and Foroud et al., 2000). The institutional review boards of all participating institutions approved the study.

[0357] Alcohol dependent probands were identified through inpatient or outpatient chemical dependency treatment programs. Probands and their families were administered a poly-diagnostic instrument, the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA) interview (Bucholz et al. 1994; Hesselbrock et al. 1999). The families that participated in the genetic phase of this study included a proband and at least two first-degree relatives who met both DSM-IIIR criteria (American Psychiatric Association 1987) for alcohol dependence and Feighner et al. (Feighner et al. 1972) criteria for definite alcoholism.

[0358] Though smoking history was assessed, the FTND was not administered, and so comparable nicotine phenotypes were developed. Case status was defined as habitual smoking when an individual smoked at least one pack a day for 6 months or more (Bierut et al., 2004), which was equivalent to at least a score of 3 or more on an FTND scale. A light smoking phenotype was defined as a smoker (smoking daily for at least one month or 100 cigarettes lifetime) who never smoked more than 10 cigarettes daily. Those who never smoked or did not meet the affected or unaffected status were considered "unknown" phenotypically in the analyses.

SNP genotyping

[0359] We used MassArray spectrometry technology was used for genotyping the COGA dataset. PCR primers, termination mixes, and multiplexing capabilities were determined with Sequenom Spectro Designer software v2.00.17. Standard PCR procedures were used to amplify PCR products. All unincorporated nucleotides in the PCR product were deactivated with shrimp alkaline phosphatase. A primer extension reaction was then carried out with the mass extension primer and the appropriate termination mix. The primer extension products were then cleaned with resin and spotted onto a silicon SpectroChip. The chip was scanned with a mass spectrometry workstation (Bruker) and the resulting genotype spectra were analyzed with the Sequenom SpectroTYPER software.

[0360] All SNP genotypes were checked for Mendelian inheritance using the program PEDCHECK (O'Connell and Weeks 1998). Marker allele frequencies and heterozygosities were computed separately in the Caucasian and African American families using the program USERM13 (Boehnke 1991). Call rates of greater than 90% and HWE were set as quality control measures.

Statistical analyses

[0361] Statistical analyses were performed using a suite of SAS Macros that utilize SAS/STAT software (SAS 2003) to fit generalized linear mixed models. Because we were analyzing heritable traits, we expected the individuals within a pedigree to be correlated in phenotype as well as genotype. Treating all individuals as unrelated could lead to a bias in the data, especially with respect to large pedigrees. Therefore, we used kinship coefficients weighted by the estimated heritability as the random-effects covariance matrix for this model (Yu et al., 2006). In addition to controlling for the expected correlation between phenotypes, age and gender were incorporated into analyses.

Functional Studies of CHRNA5 Genetic Variant

Cell culture

[0362] HEK293T cells were maintained at 37°C in a humidified, 5% CO_2 environment in Dulbecco's modified Eagle's medium (high glucose, no pyruvate) (DMEM), 10% heat-inactivated fetal bovine serum and antibiotic/antimycotic (100 U/mL penicillin, 100 μg/mL streptomycin and 0.25 μg/mL amphotericin B).

Culture reagents were purchased from either Biowhittaker (East Rutherford, NJ, USA) or Invitrogen (Carlsbad, CA, USA).

Measurement of intracellular calcium

[0363] Agonist-evoked changes in intracellular calcium was performed using an aequorin-based luminescence assay as previously described (Karadsheh et al., 2004). HEK293T cells were seeded onto six-well plates (1.5×10^6 cells/well) and were transfected the following day with plasmids (0.25 μg/well for each plasmid) containing a human codon-optimized aequorin cDNA (Vernon and Printen 2002), the mouse α4 and β2 cDNAs and either the wild-type mouse α5 cDNA (D398) or a mouse α5 cDNA in which D398 was mutated to N398. Transfection was performed using either the LipofectAmine Plus Reagent (Invitrogen) or Fugene HD transfection reagent (Roche, Indianapolis, IN) as recommended by the manufacturers. Approximately 48 h following transfection, culture media was replaced with DMEM + 0.1% fetal bovine serum and 2.5 μM coelenterizine-hcp (Invitrogen) and the cells were incubated for 3 h at 37°C in a humidified 5% CO_2 incubator. Following the coelenterizine incubation, cells were gently aspirated from the culture dishes and transferred to 2 ml tubes. The cells were then pelleted by centrifugation at 4°C for 5 min at 800 *g*, the supernatant was discarded, and the cells were resuspended in 1× assay buffer (Hank's Balanced Salt Solution (Cambrex, East Rutherford, NJ) supplemented to 10 mM $CaCl_2$). Half the cells were removed for ligand binding, and the remaining cells were again pelleted and subsequently resuspended in fresh 1× assay buffer (500μl/sample) and incubated for 1 h at 4°C prior to initiating the assay. Sample size was n = 12 for each nAChR variant (12 separate transfections per variant from 3 independent experiments).

[0364] For the epibatidine concentration–response curves, 50 μL of cells were added to each well of a 96-well opaque white plate and placed in a Victor3V plate reader (Perkin Elmer). Following a 1 second baseline read, 50 μl epibatidine was injected onto each sample and luminescence was recorded at 0.2 s intervals for 20 s immediately following the addition of agonist. At the completion of the agonist stimulation, 100 μL of a solution containing 0.1% Triton X-100 and 100 mM $CaCl_2$ was injected into each well and luminescence was recorded for 5 s at 0.1 s intervals. In order to control for differences in cell number per well as well as variation in

transfection efficiency and coelenterazine loading, agonist responses were normalized by dividing the maximal peak value for the agonist-stimulated luminescence (L) by the total peak luminescence value (L_{max}) (maximal peak agonist-stimulated luminescence + maximal peak luminescence resulting from cell lysis in the presence of high calcium).

[^{125}I]-epibatidine binding

[0365] Membrane fractions were prepared from samples as previously described (Marks *et al.* 1998), with the exception that a 15 minute incubation at 37°C with 50 μg/mL DNAse was performed prior to the first centrifugation. The binding of [^{125}I]-epibatidine to the membrane fractions was performed essentailly as desribed previously (Marks et al., 1998) in a 30 μL reaction that included binding buffer (118 mM NaCl, 4.8 mM KCl, 2.5 mM $CaCl_2$, 1.2 mM Mg_2SO_4 and 20 mM HEPES pH 7.5) and 200 pM [^{125}I]-epibatidine. Non-specific binding was determined by the inclusion of 10 μM cytisine in the reaction. Ligand binding was performed with an amount of homogenate that did not produce ligand depletion. Homogenate protein levels were determined by the method of Lowry (Lowry *et al.* 1951).

Data analysis

[0366] Epibatidine-evoked responses were normalized by dividing the funtional response (L/L_{max}) by the fmol of nAChR per sample well. This normalization provides a response per receptor value. The EC_{50} and maximal response values for the concentration response curves were calculated using a four parameter logistic equation in Graphpad Prism 3.0 software (San Diego, CA). Concentration response curves for the two nAChR populations were evaluated using 2-way ANOVA for epibatidine concentration and receptor variant. Maximal response and EC_{50} values between the α4β2α5D398 and α4β2α5N398 were compared using Student's t-test.

RESULTS

Single SNP Association

[0367] There was strong evidence of two independent genetic association findings in *CHRNA5* with nicotine dependence in the NICSNP sample and habitual smoking in the COGA sample. See Table 21 for results. The most compelling finding was *rs6969968*, which increased the risk of nicotine dependence in both

samples (OR=1.56 (1.28 -1.95) p < 0.0001 in NICSNP; OR=1.31 (1.14-1.54) p=0.0001). This SNP was common with a minor allele frequency (MAF) of 34-35%, and it marked an amino acid change from aspartic acid (G) to asparagine (A).

[0368] A second finding was seen in this gene at *rs684513*, which decreased the risk of developing nicotine dependence (OR=0.79 (0.66-0.94)) in the NICSNP sample. The SNP *rs905739* is in high linkage disequilibrium with *rs684513* ($r^2 = 0.9$) and it also showed association. Figure 21 for linkage disequilibrium across the gene. There was a trend of association with habitual smoking and these SNPs in the COGA sample.

[0369] To further investigate these findings of association, TREESCAN was performed. The treescan identified two main branches, which marked significant association with nicotine addiction (see Figure 22). The branch A between H4 and H5 is defined by the amino acid change at *rs16969968*. A transition from G to A defined a haplotype group with increased risk for nicotine addiction, and the association at the branch marked was very strong (p=0.0001). This effect remained when conditioning upon the effects defined by branch E (p=0.004). The second haplotype grouping demonstrated a decreased risk for nicotine addiction. The reduced risk haplotype group was on the "protective" G allele background for *rs16969968* (p values p.014-p.0074). After conditioning on the effects of the A branch, this association was no longer significant, though this may be due to a loss of power. Thus, two genetic effects in the a5 nicotinic receptor that may contribute to nicotine dependence were identified – the amino acid change at *rs16969968* which is a risk variant and a second protective haplotype group.

[0370] We further examined *rs16969968* across species using bioinformatics databases (Reference). See Figure 23. The aspartic acid residue at amino acid position 398 was highly conserved further suggesting its functional importance. To assess the distribution of the minor allele, A allele, of *rs16969968* across multiple populations, we typed this SNP in the HGDP-CEPH Human Genome Diversity Cell Line Panel, which includes 995 individuals representing 52 different populations (Cann et al., 2002). In Caucasian populations, the A allele ranged from 21% to 50% with the exception of Yakut population (MAF=0.06). The A allele was not detected or uncommon in African and Asian population. See Figure 24 for a geographic distribution of allele frequencies.

[0371] To establish whether the D398N polymorphism altered nAChR function, nicotinic agonist-evoked changes in intracellular calcium were measured from HEK293T cells that heterologously expressed either α4β2α5D398 or α4β2α5N398 nAChRs. Receptor levels were determined for each sample in order to normalize agonist responses to receptor numbers. Two-way ANOVA indicated that the concentration response curves for the nicotinic agonist epibatidine were significantly different between the α4β2α5N398 and α4β2α5D398 nAChR variants ($p < 0.0001$). The maximal response to agonist per receptor was found to be over two-fold higher for the α4β2α5N398 nAChR variant relative to the α4β2α5D398 nAChR variant (0.356 ± 0.022 and 0.147 ± 0.01, respectively; $p < 0.0005$) (Figure 24). This difference in concentration-responses curves and maximal response to agonist was not due to a shift in sensitivity to activation by epibatidine between the nAChR variants as their EC_{50} values did not differ (α4β2α5D398 $EC_{50} = 25.9 \pm 1.5$ pM; α4β2α5N398 $EC_{50} = 19.1 \pm 1.4$ pM, $p = 0.25$).

DISCUSSION

[0372] This study demonstrated that an amino acid change in the α 5 nicotinic receptor increased a smoker's risk of transitioning to dependence, and this finding was replicated in an independent sample. In addition, this amino acid change results in altered function of the nicotinic receptor.

[0373] The frequency of this amino acid change varies across the different ethnic/racial group. The "at risk" genotype is predominantly seen in populations of European descent and was uncommon or non-existent in populations of Asian or African origin. These findings suggest that this SNP is a much more significant risk factor for nicotine dependence among populations of European origin compared to other populations and different genetic risk factors play a more important role in other ethnic/racial groups.

[0374] The region where this amino acid change lies in the α 5 receptor is highly conserved across species from mouse, rat, chicken, monkey, and chimpanzee with an aspartic acid in this location. In man, the amino acid may be either an aspartic acid or asparagine. The asparagine substitution resulted in an increased response of the α4β2α5 receptors in *in vitro* studies and was associated with the increase risk of developing nicotine dependence.

[0375] The α5 subunit combines with α4β2 receptors to form the pentameric receptor which is expressed in dopamine cells in the striatum. This region of the brain is associated with the reward pathway involved in dependence and the neurotransmitter dopamine plays a crucial role in the development of dependence. This converging biologic data adds additional support to our findings of the important role of *CHRNA5* in the development of nicotine dependence.

[0376] There is evidence of a second genetic variant occurring with this gene that is a "protective" variant. It is unknown what the functional role this variant may be. It is also important to note that these associated SNPs are in strong linkage disequilibrium with SNPs in the alpha 3 gene, and so the functional effect may be in the alpha 3 gene.

[0377] In summary, this example provides strong evidence for an amino acid change in the alpha 5 nicotinic receptor results in functional changes, which increase an individual's risk of transitioning from being a smoker to becoming dependent on nicotine. This variant is common in populations of European descent and increases the risk of developing nicotine dependence, or conversely the ancestral variant protects against transitioning from smoking to dependence. These results support the role of the alpha 5 nicotinic receptor in the pharmacogenetic response to nicotine, which leads to dependence and provide further biologic insights into the development of dependence

Summary of Logistirc Regression Analyses* of CHRNA5 SNPs with Nicotine Dependence in NICSNP and Habitual Smoking in COGA.

			NICSNP			COGA Kinmix		
SNP	Position	Risk Allele[1]	MAF	OR (95% CI)	p	MAF	OR (95% CI)	p
rs1979906	76629344	G				0.44	0.89 (0.73-1.08)	0.2270
rs880395	76631411	A	0.42	0.95 (0.82-1.09)	0.4591	0.43	0.86 (0.70-1.07)	0.1776
rs7164030	76631716	G	0.43	0.94 (0.81-1.08)	0.3748	0.43	0.85 (0.69-1.06)	0.1499
rs905739	76632165	C	0.22	0.77 (0.65-0.91)	0.0030	0.23	0.87 (0.68-1.10)	0.2406
rs2036527	76638670	T	0.36	1.29 (1.11-1.50)	0.0007	0.33	1.34 (1.07-1.67)	0.0103
rs3841324	76644877	WT					1.15 (0.94-1.29)	0.1823
rs503464	76644951	A	0.07	0.86 (0.62-1.20)	0.3776	0.23	0.82 (0.65-1.03)	0.0811
rs684513	76645455	G	0.21	0.79 (0.66-0.94)	0.0082	0.21	0.85 (0.66-1.08)	0.1830
rs667282	76650527	G	0.22	0.76 (0.64-0.91)	0.0022	0.24	0.81 (0.65-1.01)	0.0650
rs6495306	76652948	G	0.43	0.95 (0.82-1.09)	0.4716			
rs17486278	76654537	C				0.32	1.43 (1.14-1.79)	0.0019

rs601079	76656634	T	0.43	0.95 (0.82-1.09)	0.4756	0.43	0.89 (0.73-1.09)	0.2554
rs680244	76658343	A				0.43	0.92 (0.76-1.13)	0.4427
rs621849	76659916	G				0.43	0.91 (0.75-1.11)	0.3597
rs569207	76660174	A				0.24	0.78 (0.62-0.98)	0.0314
rs637137	76661031	A	0.22	0.75 (0.63-0.89)	0.0010			
rs692780	76663560	G				0.37	0.94 (0.77-1.15)	0.5639
rs10519205	76665846	T				0.00	1.16 (0.16-8.36)	0.8812
rs2229961	76667807	A	0.02	1.65 (0.96-2.84)	0.0706			
rs16969968	76669980	A	0.35	1.31 (1.13-1.52)	0.0003	0.33	1.47 (1.18-1.83)	0.0006
rs514743	76671282	A	0.37	1.01 (0.87-1.17)	0.9180	0.37	0.94 (0.77-1.15)	0.5576

SNP effects modeled using KINMIX in COGA Families. Blank table entries under NICSNP and COGA indicate that the SNP was not genotyped in the correpsonding dataset.

[1] The common allele is the reference allele and the minor allele is the risk allele.

[2] rs3841324 is an indel; the 22 base-pair deletion is the reference and the wild type is the risk.

References for Example 5

1. Karadsheh, M. S., Shah, M. S., Tang, X., Macdonald, R. L., & Stitzel, J. A. Functional characterization of mouse alpha4beta2 nicotinic acetylcholine receptors stably expressed in HEK293T cells. *J.Neurochem.* **91**, 1138-1150 (2004).

2. Lowry, O. H., Rosebrough, N. J., Farr, A. L., & Randall, R. J. Protein measurement with the Folin phenol reagent. *J.Biol.Chem.* **193**, 265-275 (1951).

3. Marks, M. J., Smith, K. W., & Collins, A. C. Differential agonist inhibition identifies multiple epibatidine binding sites in mouse brain. *J.Pharmacol.Exp.Ther.* **285**, 377-386 (1998).

4. Vernon, W. I. & Printen, J. A. Assay for intracellular calcium using a codon-optimized aequorin. *Biotechniques* **33**, 730, 732, 734 (2002).

[0378] While the foregoing invention has been described in some detail for purposes of clarity and understanding, it will be clear to one skilled in the art from a reading of this disclosure that various changes in form and detail can be made without departing from the true scope of the invention. For example, all the techniques and apparatus described above can be used in various combinations. All publications, patents, patent applications, and/or other documents cited in this application are incorporated by reference in their entirety for all purposes to the same extent as if each individual publication, patent, patent application, and/or other document were individually indicated to be incorporated by reference for all purposes.

WHAT IS CLAIMED IS:

1. A method of identifying an addiction phenotype for an organism or biological sample derived therefrom, the method comprising:

detecting, in the organism or biological sample, a polymorphism or a locus closely linked thereto, the polymorphism being selected from a polymorphism of Table 1, wherein the polymorphism is associated with a addiction phenotype; and,

correlating the polymorphism to the phenotype.

2. The method of claim 1, wherein the organism is a mammal, or the biological sample is derived from a mammal.

3. The method of claim 1, wherein the organism is a human patient, or the biological sample is derived from a human patient.

4. The method of claim 1, wherein the detecting comprises amplifying the polymorphism, the linked locus, or a sequence associated therewith and detecting the resulting amplicon.

5. The method of claim 4, wherein the amplifying comprises:

a) admixing an amplification primer or amplification primer pair with a nucleic acid template isolated from the organism or biological sample, wherein the primer or primer pair is complementary or partially complementary to a region proximal to or including the polymorphism or linked locus, and is capable of initiating nucleic acid polymerization by a polymerase on the nucleic acid template; and,

b) extending the primer or primer pair in a DNA polymerization reaction comprising a polymerase and the template nucleic acid to generate the amplicon.

6. The method of claim 4, wherein the amplicon is detected by a process that includes one or more of: hybridizing the amplicon to an array, digesting the amplicon with a restriction enzyme, or real-time PCR analysis.

7. The method of claim 4, comprising partially or fully sequencing the amplicon.

8. The method of claim 4, wherein the amplifying comprises performing a polymerase chain reaction (PCR), reverse transcriptase PCR (RT-PCR), or ligase chain

reaction (LCR) using nucleic acid isolated from the organism or biological sample as a template in the PCR, RT-PCR, or LCR.

9. The method of claim 1, wherein the polymorphism is a SNP.

10. The method of claim 1, wherein the polymorphism comprises an allele selected from the group consisting of those listed in Table 1.

11. The method of claim 1, wherein the locus closely linked thereto is about 5 cM or less from the polymorphism.

12. The method of claim 1, wherein correlating the polymorphism comprises referencing a look up table that comprises correlations between alleles of the polymorphism and the phenotype.

13. A method of identifying an additction phenotype for an organism or biological sample derived therefrom, the method comprising:

detecting in the organism or biological sample, a polymorphism or a locus closely linked thereto, such polymorphism showing a >80% cosegregation correlation with a polymorphism selected from Table 1, wherein the polymorphism selected from Table 1 is associated with an addiction phenotype; and,

correlating the polymorphism to the phenotype.

14. The method of claim 13, wherein the polymorphism shows at least about 85% cosegregation correlation, at least 90% cosegregation correlation, at least 91% cosegregation correlation 92%, at least 93% cosegregation correlation, at least 94% cosegregation correlation, at least 95% cosegregation correlation, at least 96% cosegregation correlation, at least 97% cosegregation correlation, at least 98% cosegregation correlation, at least 99% cosegregation correlation, at least 99.5% cosegregation correlation, at least 99.75% cosegregation correlation, or at least 99.90% or more cosegregation correlation with a polymorphism selected from Table 1.

15. A method of identifying a potential modulator of an addiction phenotype, the method comprising:

contacting a putative potential modulator to a gene or gene product, wherein the gene or gene product is closely linked to a polymorphism of Table 1; and,

monitoring for an effect of the putative potential modulator on the gene or gene product, thereby identifying whether the putative potential modulator modulates the gene or gene product and is therefore a potetial modulator of an addiction phenotype.

16. A method of identifying a modulator of an addition phenotype, the method comprising:

administering a potential modulator of an addiction phenotype of claim 15 to a subject;

monitoring the subject for a decrease or prevention of an addition phenotype, thereby identifying a modulator of an addiction phenotype.

17. The method of claim 15 or 16, wherein the gene or gene product comprises a polymorphism selected from those listed in Table 1.

18. The method of claim 15 or 16, wherein the effect is selected from:

(a) increased or decreased expression of the gene or gene product in the presence of the modulator;

(b) increased or decreased activity of the gene product in the presence of the modulator; and,

(c) an altered expression pattern of the gene or gene product in the presence of the modulator.

19. A kit for treatment of an addiction phenotype, the kit comprising a potential modulator identified by the method of claim 15 and/or a modulator of claim 16, and instructions for administering the modulator and/or potential modulator to a patient to treat the phenotype.

20. A system for identifying an addiction phenotype for an organism or biological sample derived therefrom, the system comprising:

a) a set of marker probes and/or primers configured to detect at least one allele of one or more polymorphism or locus linked thereto, wherein the polymorphism is selected from the polymorphisms of Table 1;

b) a detector that is configured to detect one or more signal outputs from the set of marker probes and/or primers, or an amplicon produced from the set of marker probes and/or primers, thereby identifying the presence or absence of the allele; and,

c) system instructions that correlate the presence or absence of the allele with a predicted phenotype.

21. The system of claim 20, wherein the set of marker probes and/or primers comprises a nucleotide sequence of Table 1.

22. The system of claim 20, wherein the detector detects one or more light emission, wherein the light emission is indicative of the presence or absence of the allele.

23. The system of claim 20, wherein the instructions comprise at least one look-up table that includes a correlation between the presence or absence of the allele and the phenotype.

24. The system of claim 20, wherein the system comprises a sample.

25. The system of claim 24, wherein the sample comprises genomic DNA, amplified genomic DNA, cDNA, amplified cDNA, RNA, or amplified RNA.

26. The system of claim 24, wherein the sample is derived from a mammal.

27. A method of identifying an addiction phenotype for an organism or biological sample derived therefrom, the method comprising:

detecting, in the organism or biological sample, a polymorphism or a locus closely linked thereto, the polymorphism being selected from a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9

, wherein the polymorphism is associated with a addiction phenotype; and,

correlating the polymorphism to the phenotype.

28. The method of claim 27, wherein the polymorphism comprises an allele selected from the group consisting of a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9.

29. A method of identifying an additction phenotype for an organism or biological sample derived therefrom, the method comprising:

detecting in the organism or biological sample, a polymorphism or a locus closely linked thereto, such polymorphism showing a >80% cosegregation correlation with a polymorphism selected from a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9;

, wherein the polymorphism so selected is associated with an addiction phenotype; and,

correlating the polymorphism to the phenotype.

30. A method of identifying a potential modulator of an addiction phenotype, the method comprising:

contacting a putative potential modulator to a gene or gene product, wherein the gene or gene product is closely linked to a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9

; and,

monitoring for an effect of the putative potential modulator on the gene or gene product, thereby identifying whether the putative potential modulator modulates the gene or gene product and is therefore a potetial modulator of an addiction phenotype.

31. A method of identifying a modulator of an addition phenotype, the method comprising:

administering a potential modulator of an addiction phenotype of claim 30 to a subject;

monitoring the subject for a decrease or prevention of an addition phenotype, thereby identifying a modulator of an addiction phenotype.

32. The method of claim 30 or 31, wherein the gene or gene product comprises a polymorphism selected from those listed in Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a

polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9.

33. A system for identifying an addiction phenotype for an organism or biological sample derived therefrom, the system comprising:

a) a set of marker probes and/or primers configured to detect at least one allele of one or more polymorphism or locus linked thereto, wherein the polymorphism is selected from the a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9;

b) a detector that is configured to detect one or more signal outputs from the set of marker probes and/or primers, or an amplicon produced from the set of marker probes and/or primers, thereby identifying the presence or absence of the allele; and,

c) system instructions that correlate the presence or absence of the allele with a predicted phenotype.

34. The system of claim 33, wherein the set of marker probes and/or primers comprises a nucleotide sequence of a polymorphism of Table 21, a polymorphism of an alpha 5 nicotinic receptor gene, rs16969968 or a polymorphism in linkage disequilibrium with such or any haplotype comprising such as illustrated in Figure 22, a polymorphism of Table 17, a polymorphism of Table 18, a polymorphism of NRXN1 of Table 18, a polymorphism of VPS13A of Table 18, a polymorphism of VPS13A, a polymorphism of TRPC7, a polymorphism of CTNNA3, a polymorphism of CLCA1, a polymorphism of Table 6, a polymorphism of CHRNB3 and/or CHRNA3, a polymorphism of a gene selected from CHRNB3, CHRNA3, KCNJ6, CHRNA5, GABRA4, CHRNA3, and PIP5K2A, a

polymorphism selected from rs6474413, rs10958726, rs578766, rs6517442, rs16969968, rs3762611, rs1051730 and rs10508649, or a polymorphism of Table 9

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Figure 1

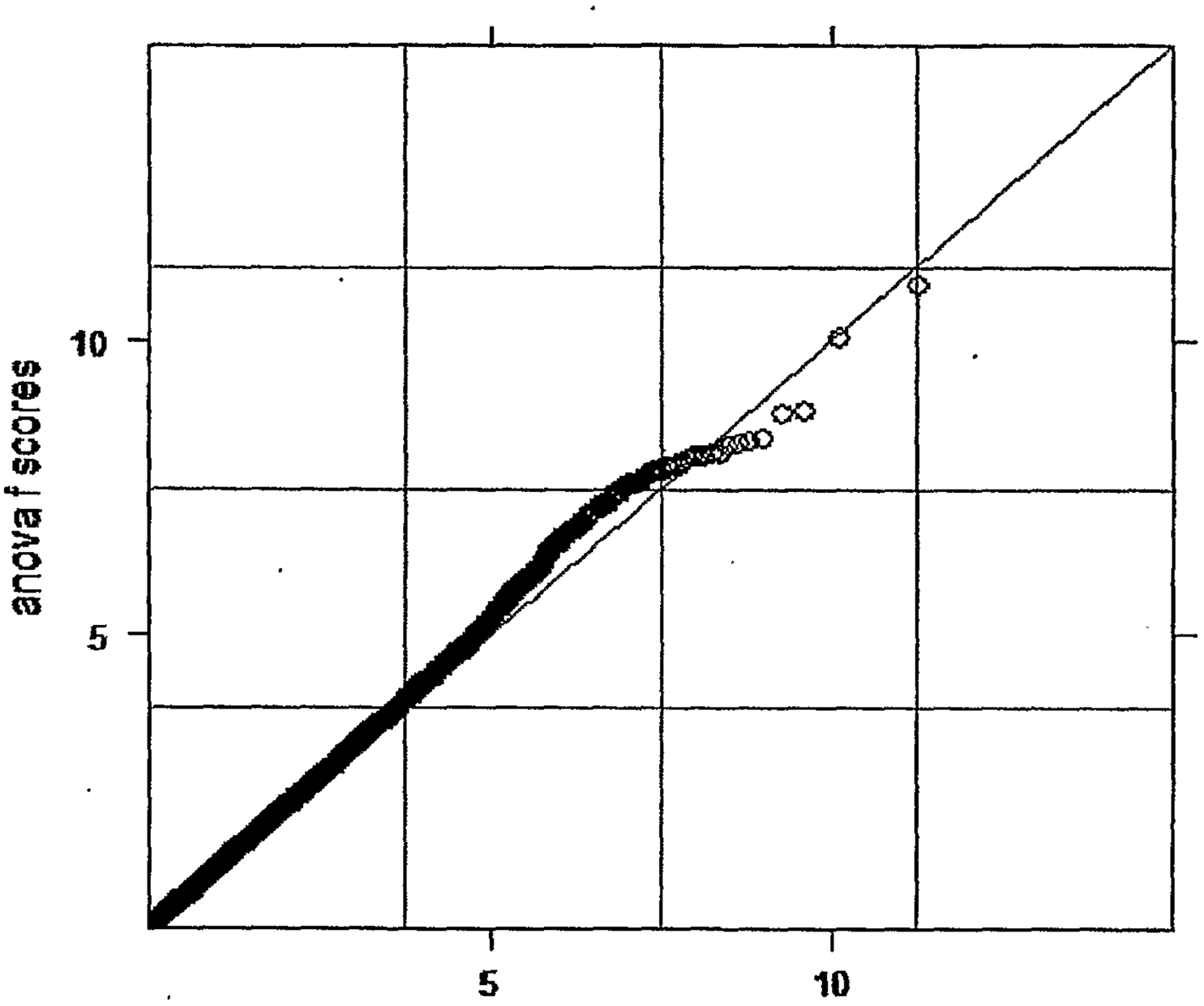

Q-Q plot for NDA_01 replication, linear model
anova f scores
5
10
5
10
quantiles of F-test distribution with df=(2,700)

Figure 2

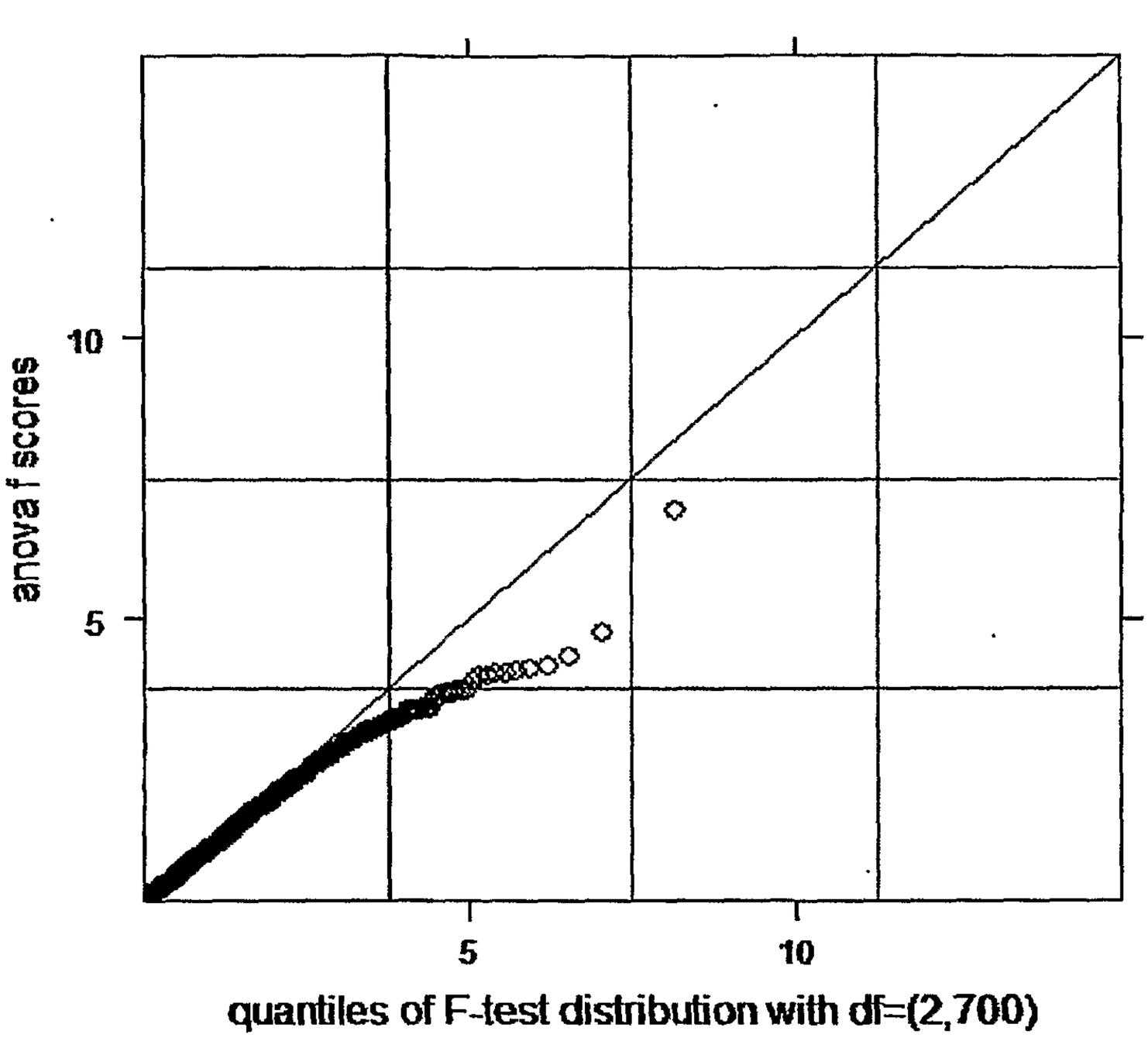

Q-Q plot for NDA_01 round 1, linear model
anova f scores
5
10
5
10
quantiles of F-test distribution with df=(2,700)

Figure 3

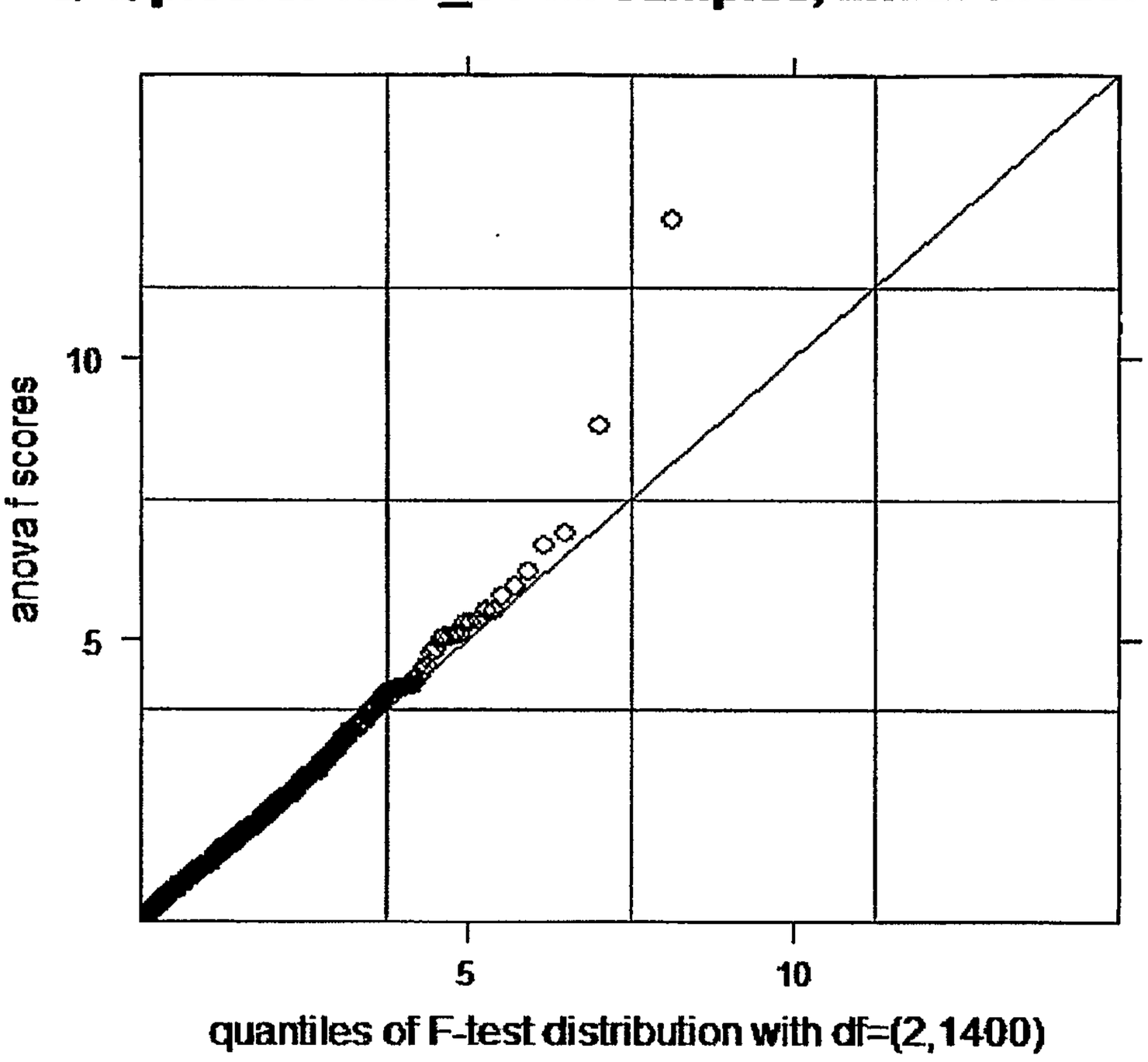

Q-Q plot for NDA_01 all samples, linear model
anova f scores
10
5
5
10
quantiles of F-test distribution with df=(2,1400)

Figure 4

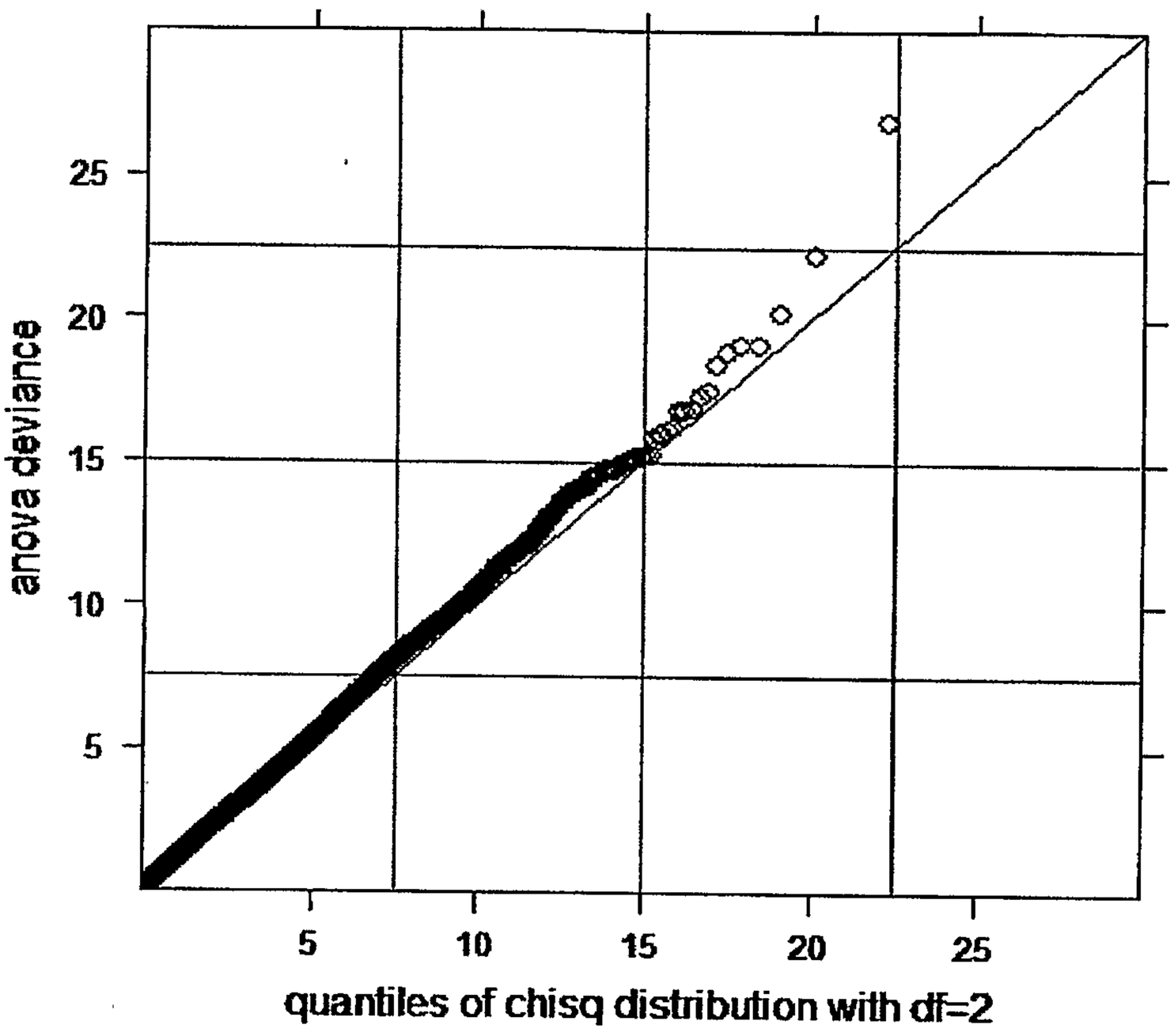

Q-Q plot for NDA_01 replication, logistic regression
anova deviance
quantiles of chisq distribution with df=2
5
10
15
20
25

Figure 5

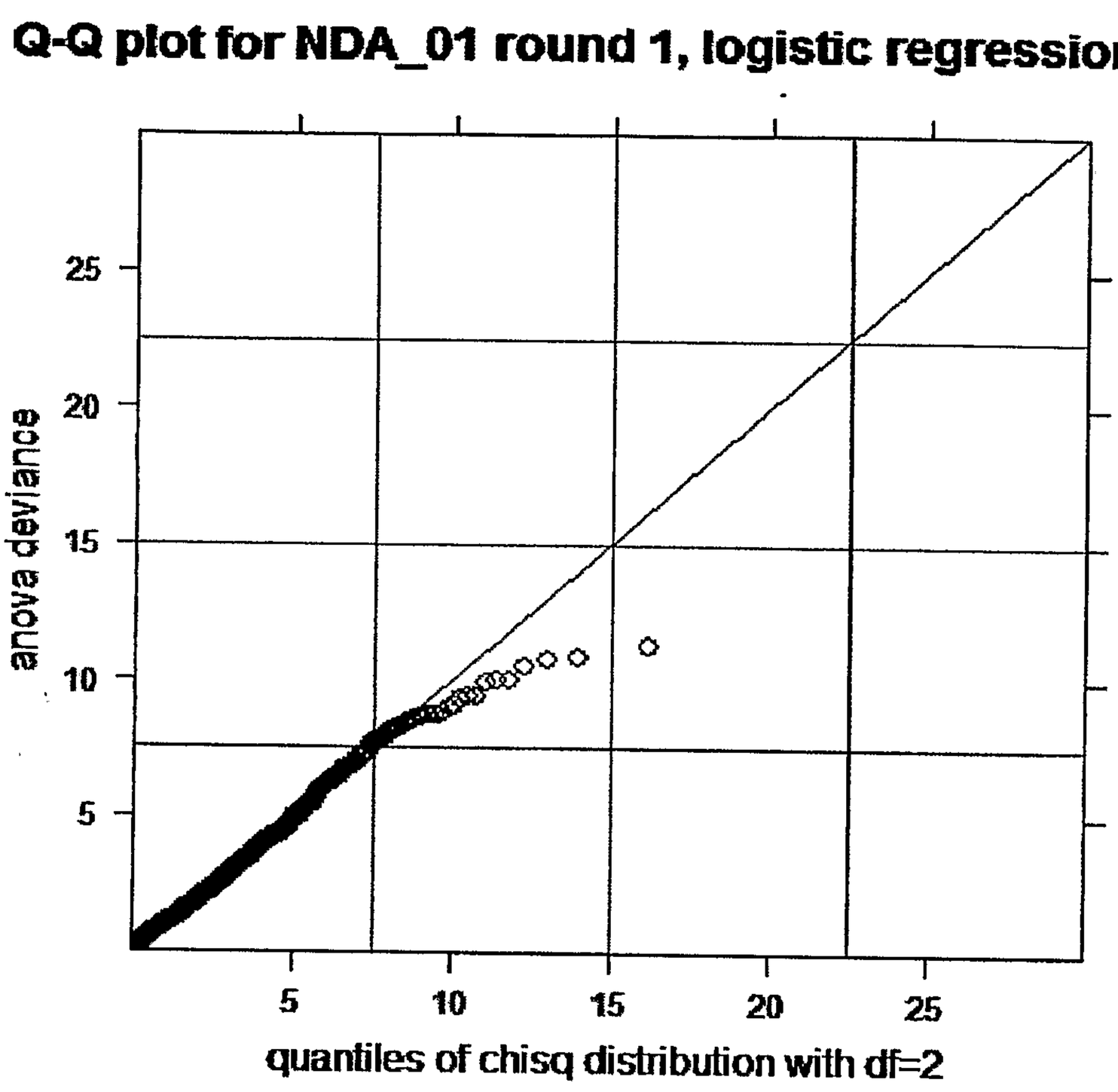

Q-Q plot for NDA_01 round 1, logistic regression
anova deviance
quantiles of chisq distribution with df=2
5
10
15
20
25

Figure 6

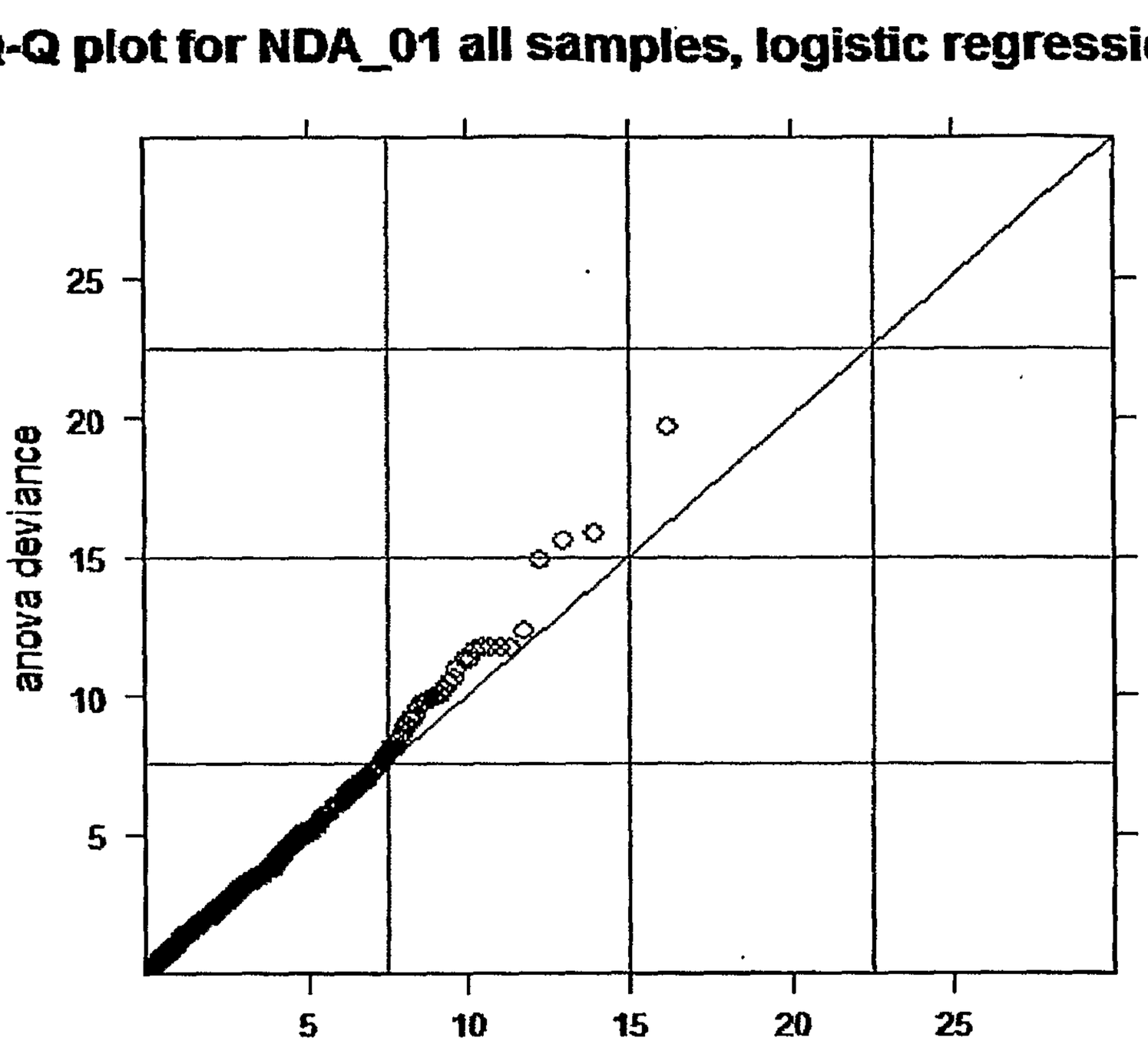

Q-Q plot for NDA_01 all samples, logistic regression
anova deviance
quantiles of chisq distribution with df=2
5
10
15
20
25

Figure 7


sorted FDR from logistic regression
q-value
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0
1000
2000
3000
4000
snp rank

Figure 8

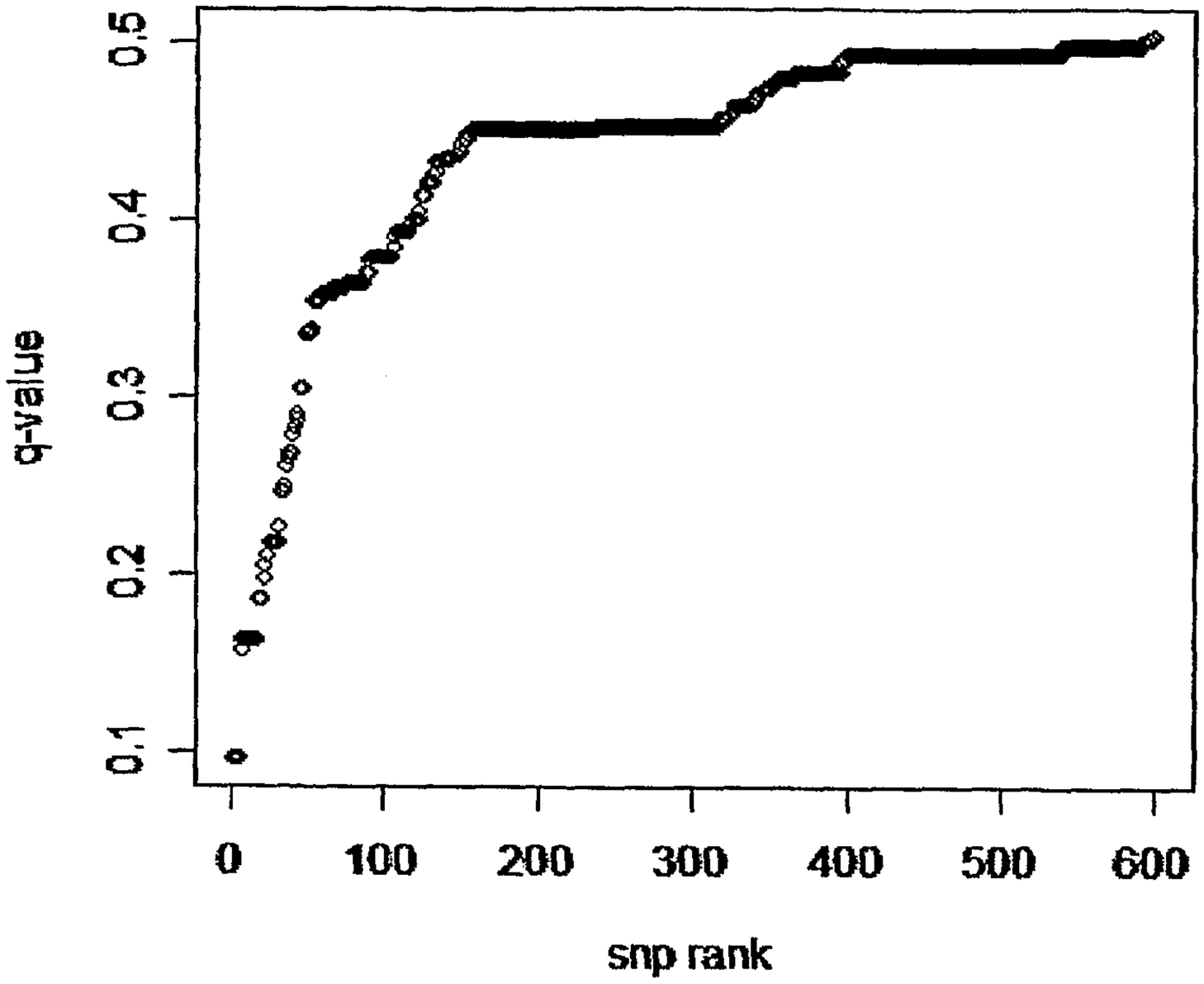

sorted FDR from logistic regression
q-value
0.1
0.2
0.3
0.4
0.5
0
100
200
300
400
500
600
snp rank

Figure 9

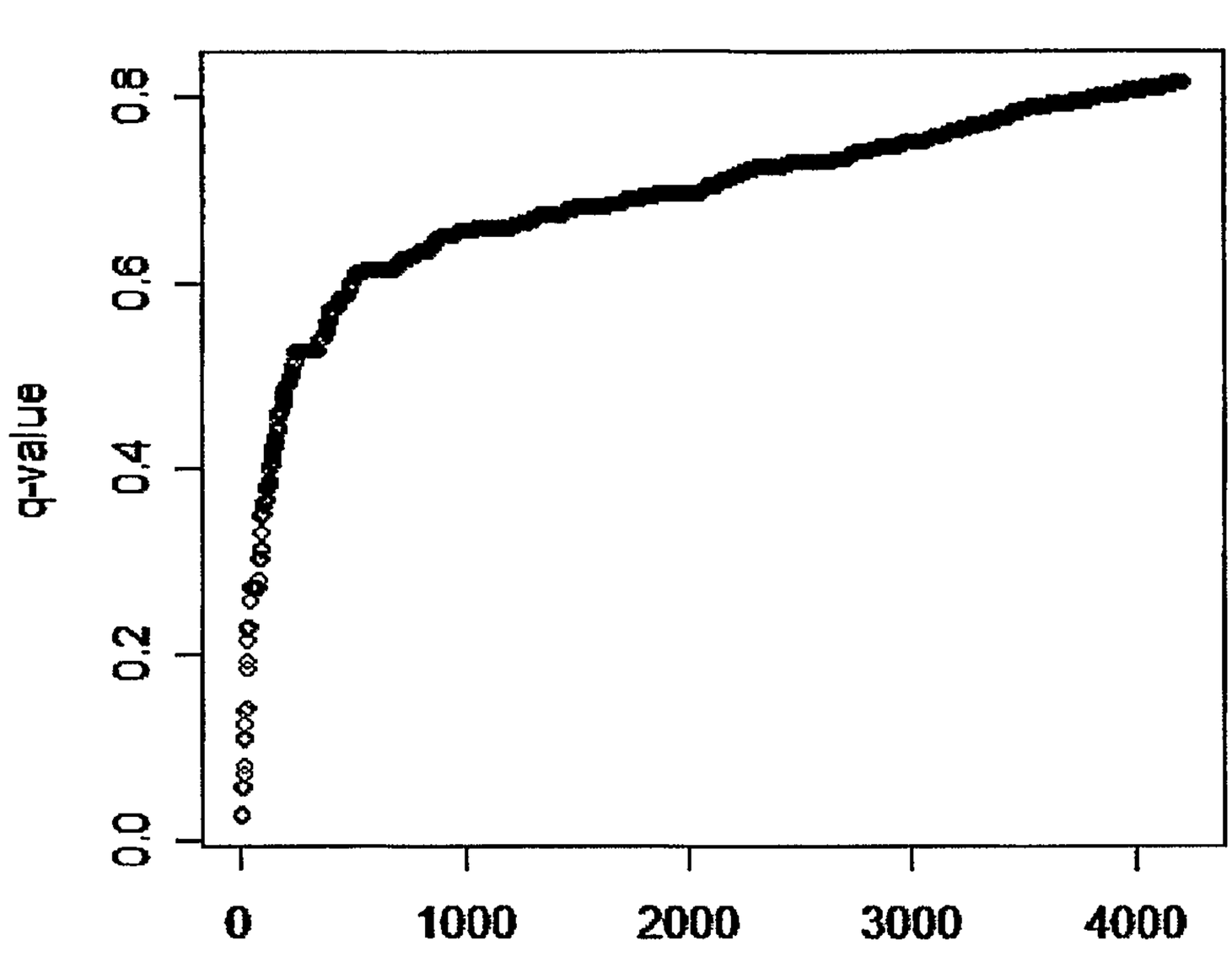

sorted FDR from linear regression
q-value
0.0
0.2
0.4
0.6
0.8
0
1000
2000
3000
4000
snp rank

Figure 10

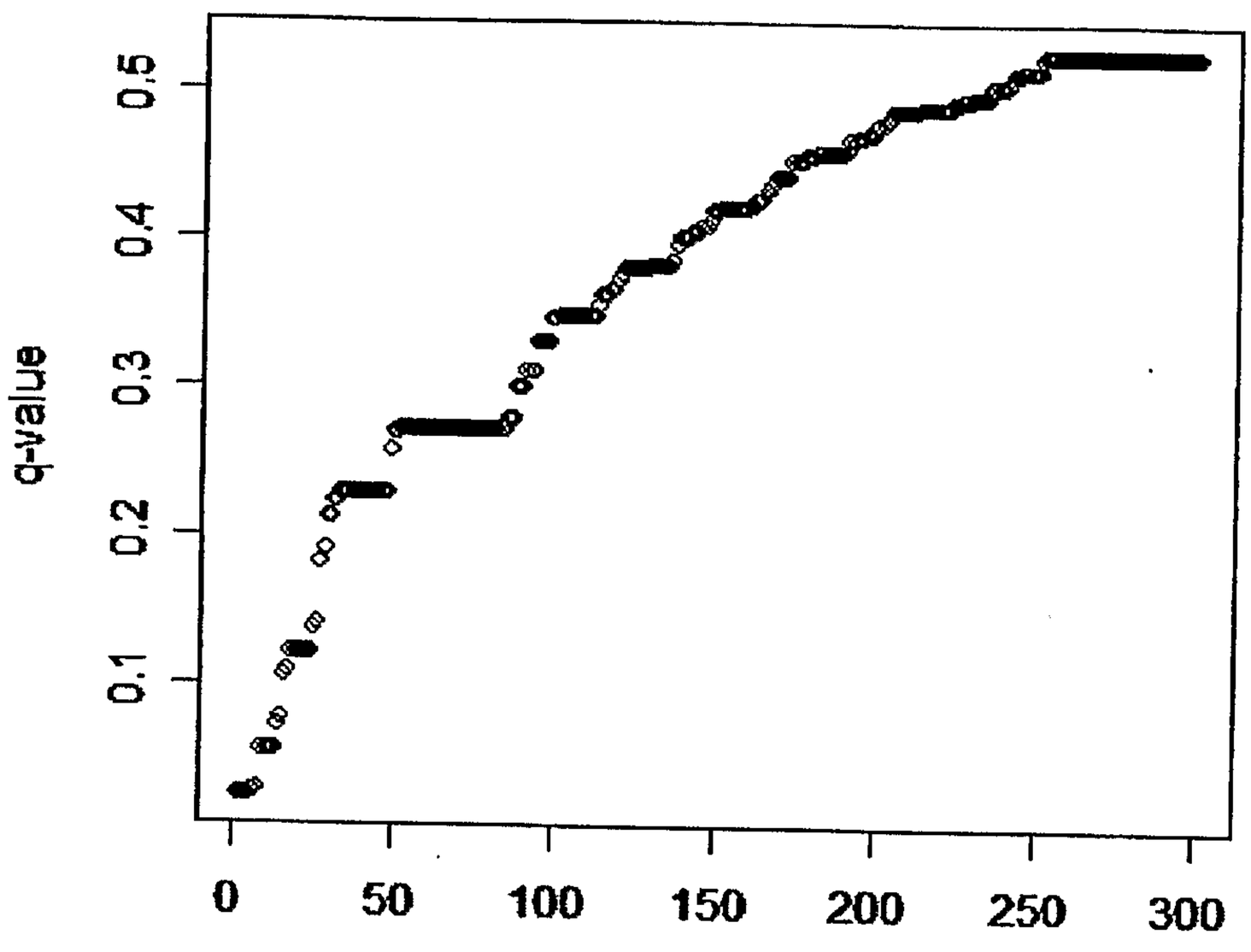

sorted FDR from linear regression
q-value
0.1
0.2
0.3
0.4
0.5
0
50
100
150
200
250
300
snp rank

Figure 11

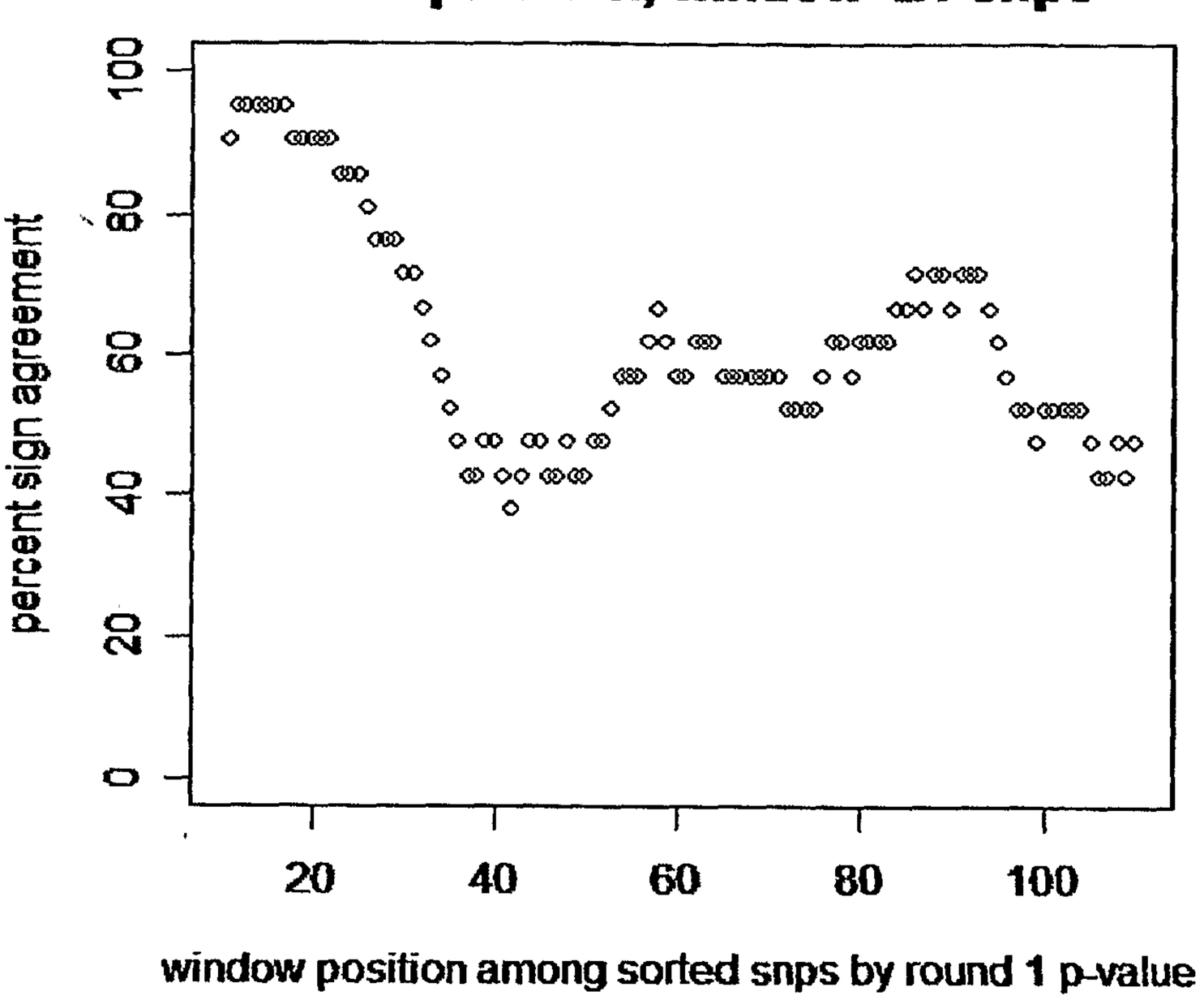

effect sign agreement between round 1 and replication, window=21 snps
percent sign agreement
0
20
40
60
80
100
20
40
60
80
100
window position among sorted snps by round 1 p-value

Figure 12

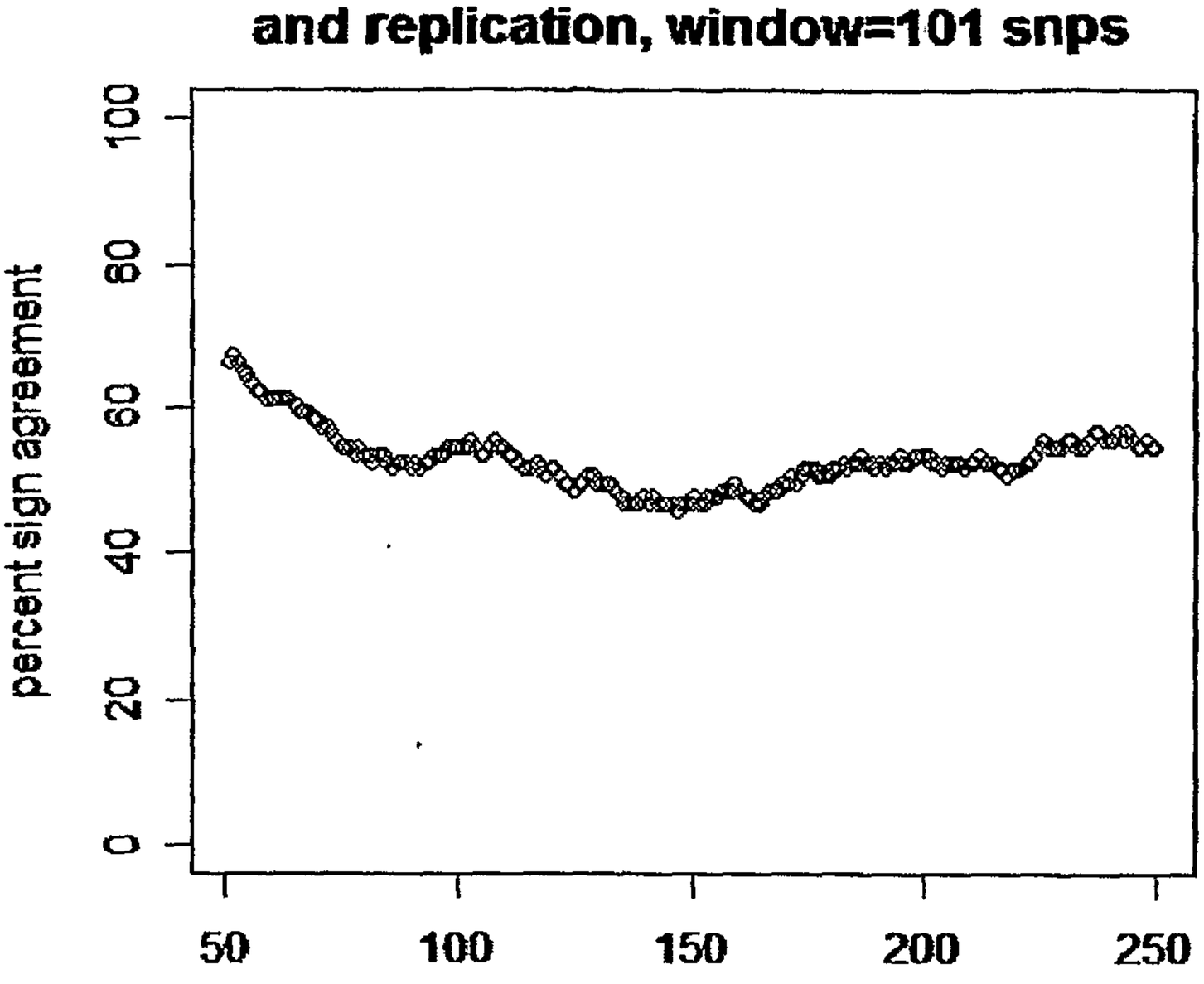

effect sign agreement between round 1
and replication, window=101 snps
percent sign agreement
0
20
40
60
80
100
50
100
150
200
250
window position among sorted snps by round 1 p-value

Figure 13.

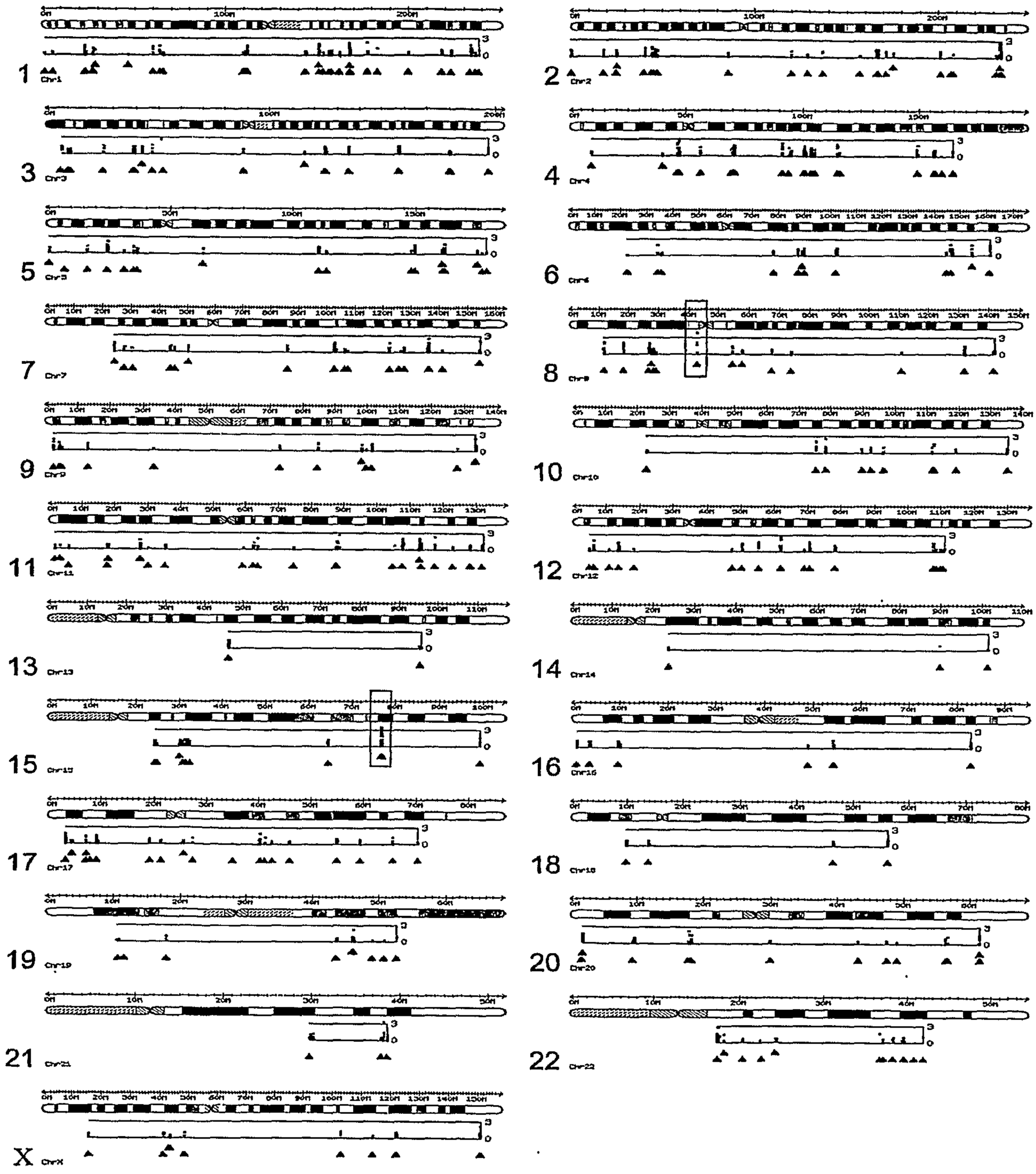

1 Chr1
2 Chr2
3 Chr3
4 Chr4
5 Chr5
6 Chr6
7 Chr7
8 Chr8
9 Chr9
10 Chr10
11 Chr11
12 Chr12
13 Chr13
14 Chr14
15 Chr15
16 Chr16
17 Chr17
18 Chr18
19 Chr19
20 Chr20
21 Chr21
22 Chr22
X ChrX

FIGURE 14a

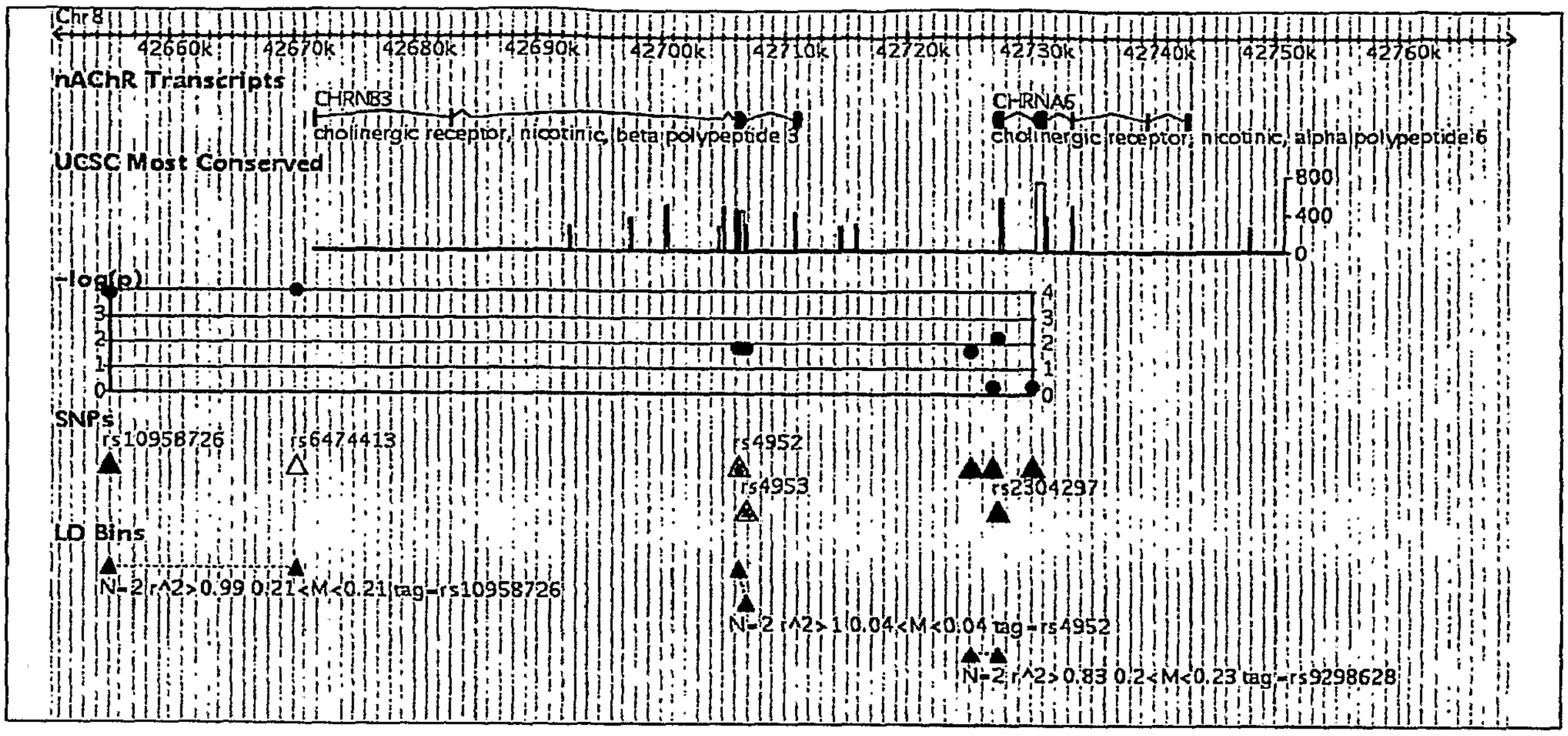
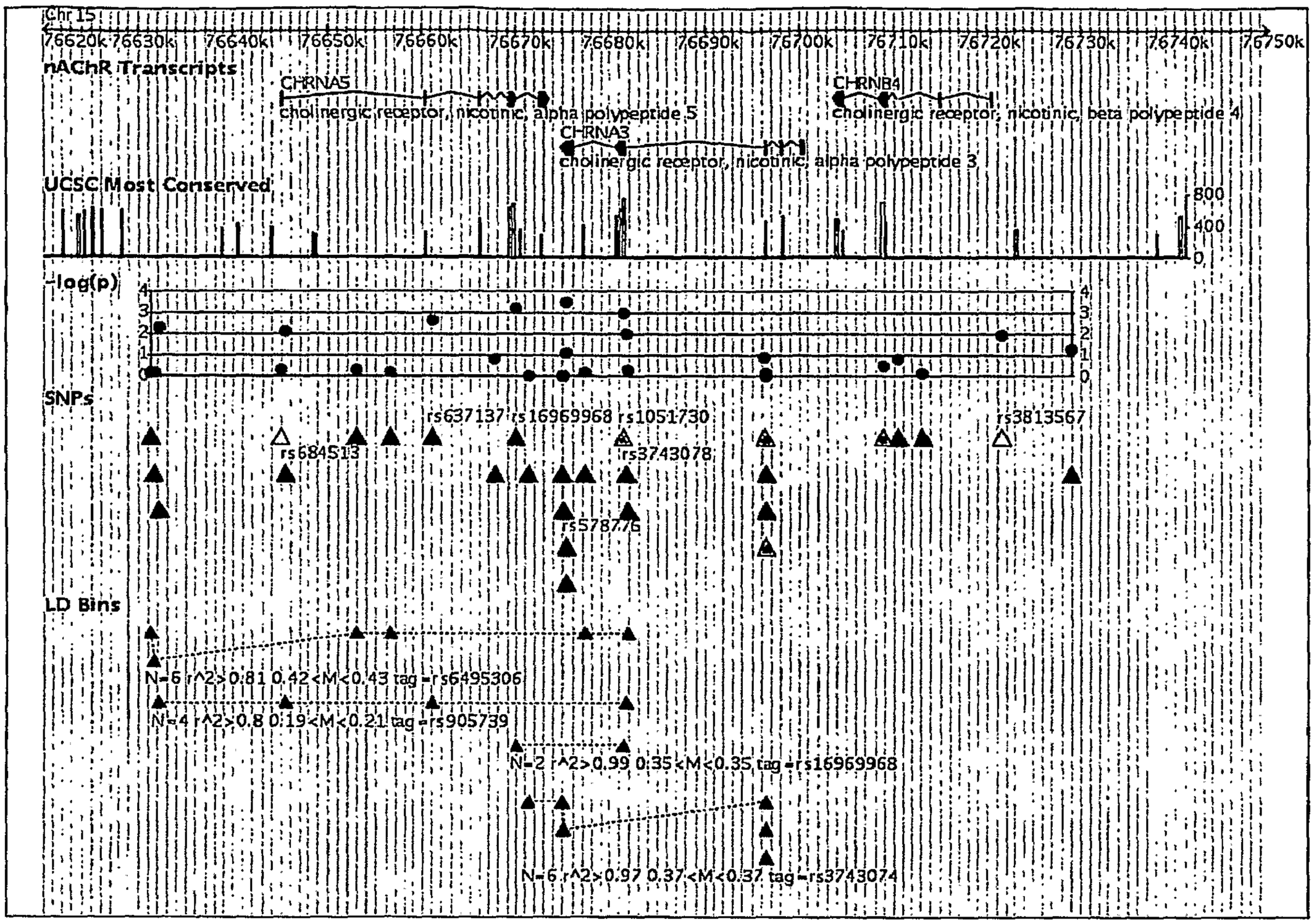

Chr 8
42660k
42670k
42680k
42690k
42700k
42710k
42720k
42730k
42740k
42750k
42760k
nAChR Transcripts
CHRNB3
cholinergic receptor, nicotinic, beta polypeptide 3
CHRNA6
cholinergic receptor, nicotinic, alpha polypeptide 6
UCSC Most Conserved
800
400
0
-log(p)
4
3
2
1
0
SNPs
rs10958726
rs6474413
rs4952
rs4953
rs2304297
LD Bins
N=2 r^2>0.99 0.21<M<0.21 tag=rs10958726
N=2 r^2>1 0.04<M<0.04 tag=rs4952
N=2 r^2>0.83 0.2<M<0.23 tag=rs9298628

Figure 14b and c.

(B)



(C)

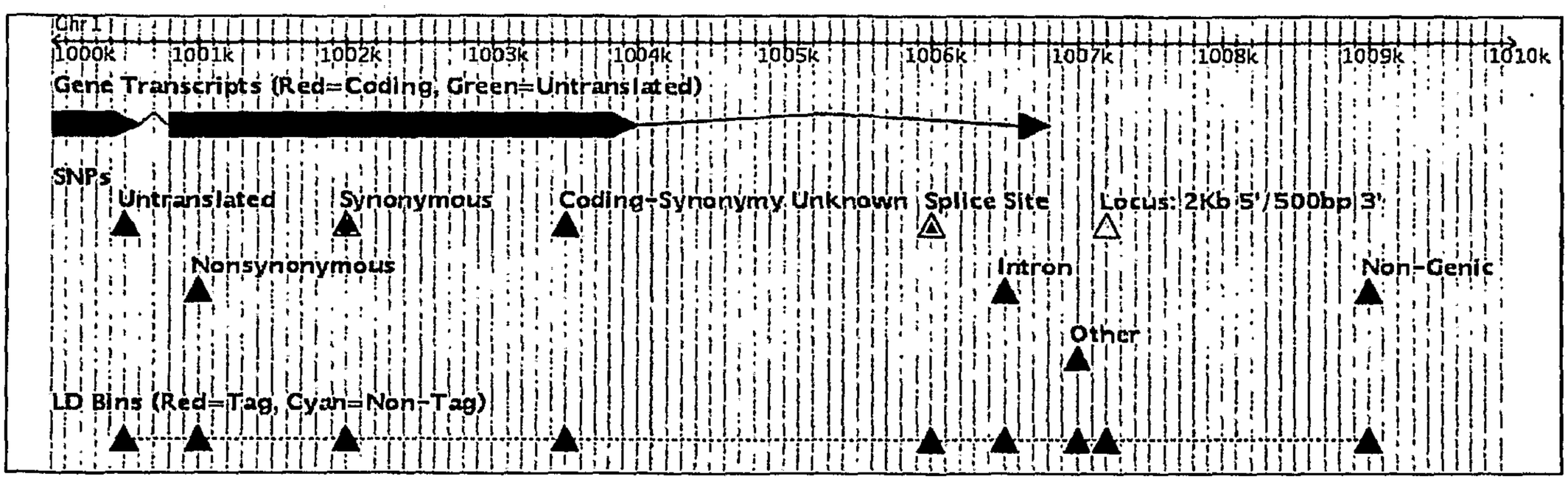


Figure 15.

(A)

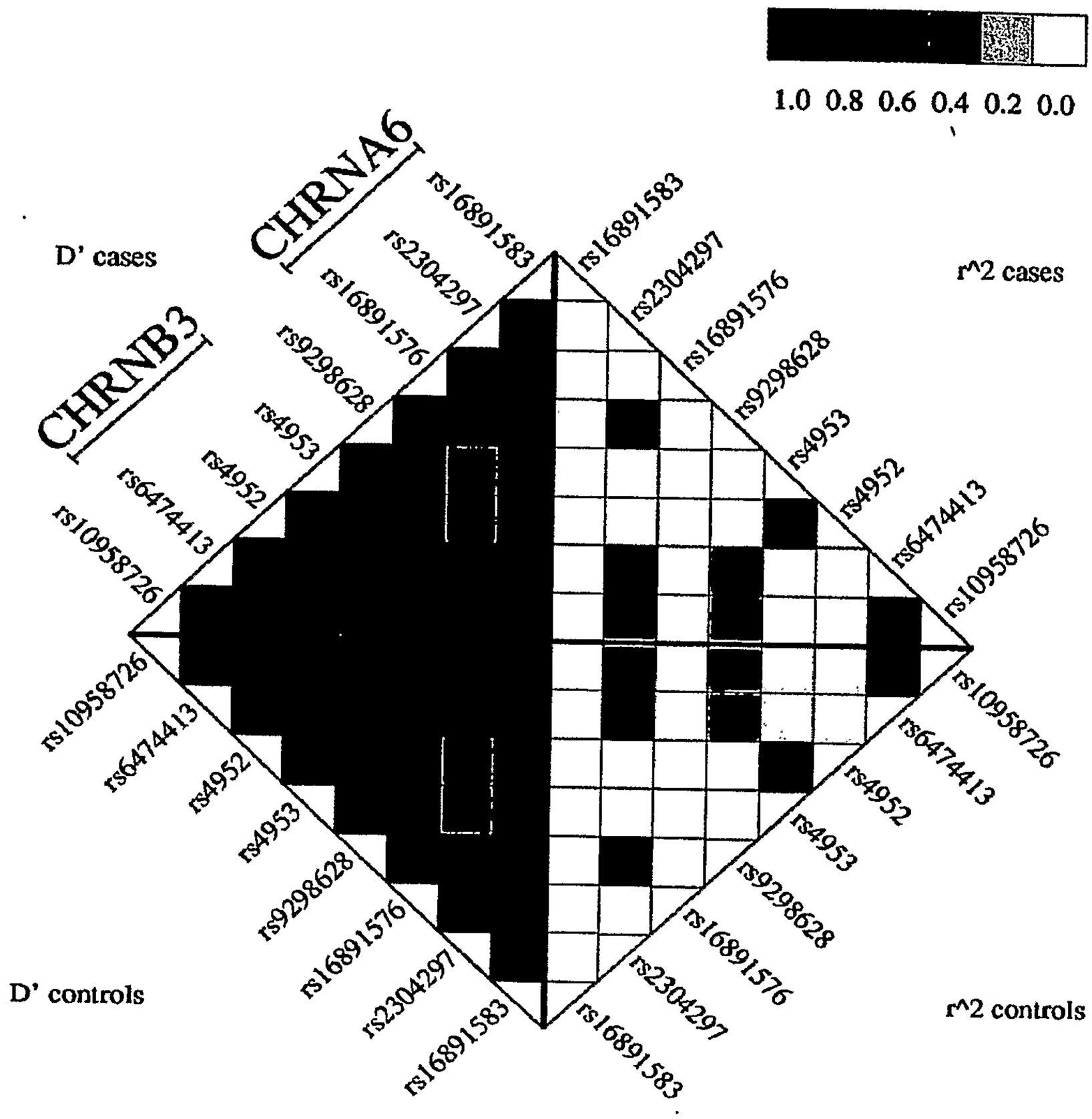
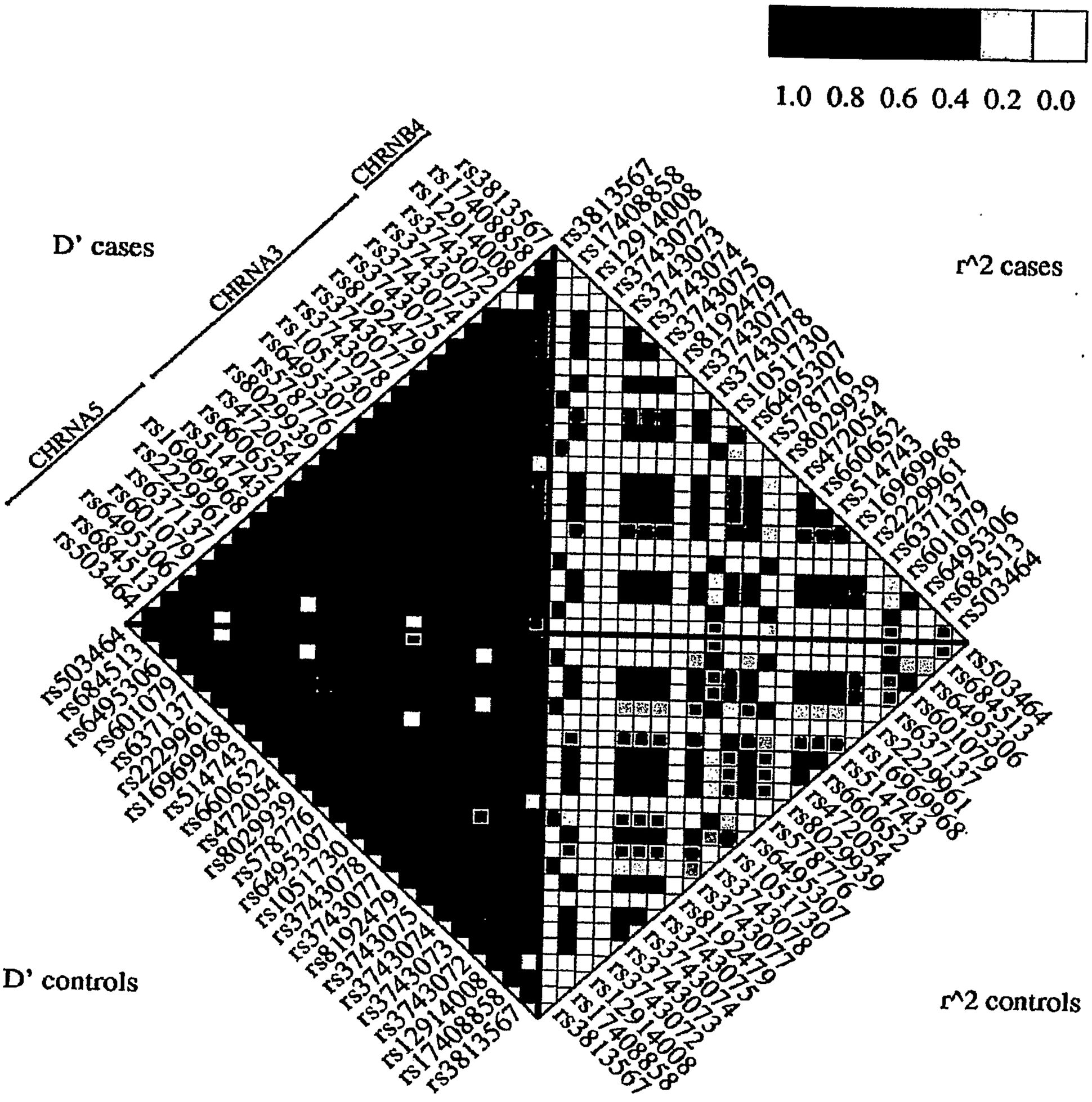

1.0 0.8 0.6 0.4 0.2 0.0
D' cases
r^2 cases
CHRNA6
CHRNB3
rs16891583
rs2304297
rs16891576
rs9298628
rs4953
rs4952
rs6474413
rs10958726
D' controls
r^2 controls

Figure15.

(B)


1.0 0.8 0.6 0.4 0.2 0.0
D' cases
r^2 cases
CHRNB4
CHRNA3
CHRNA5
rs3813567
rs17408858
rs12914008
rs3743072
rs3743073
rs3743074
rs3743075
rs8192479
rs3743077
rs3743078
rs1051730
rs6495307
rs578776
rs8029939
rs472054
rs660652
rs514743
rs16969968
rs2229961
rs637137
rs601079
rs6495306
rs684513
rs503464
D' controls
r^2 controls

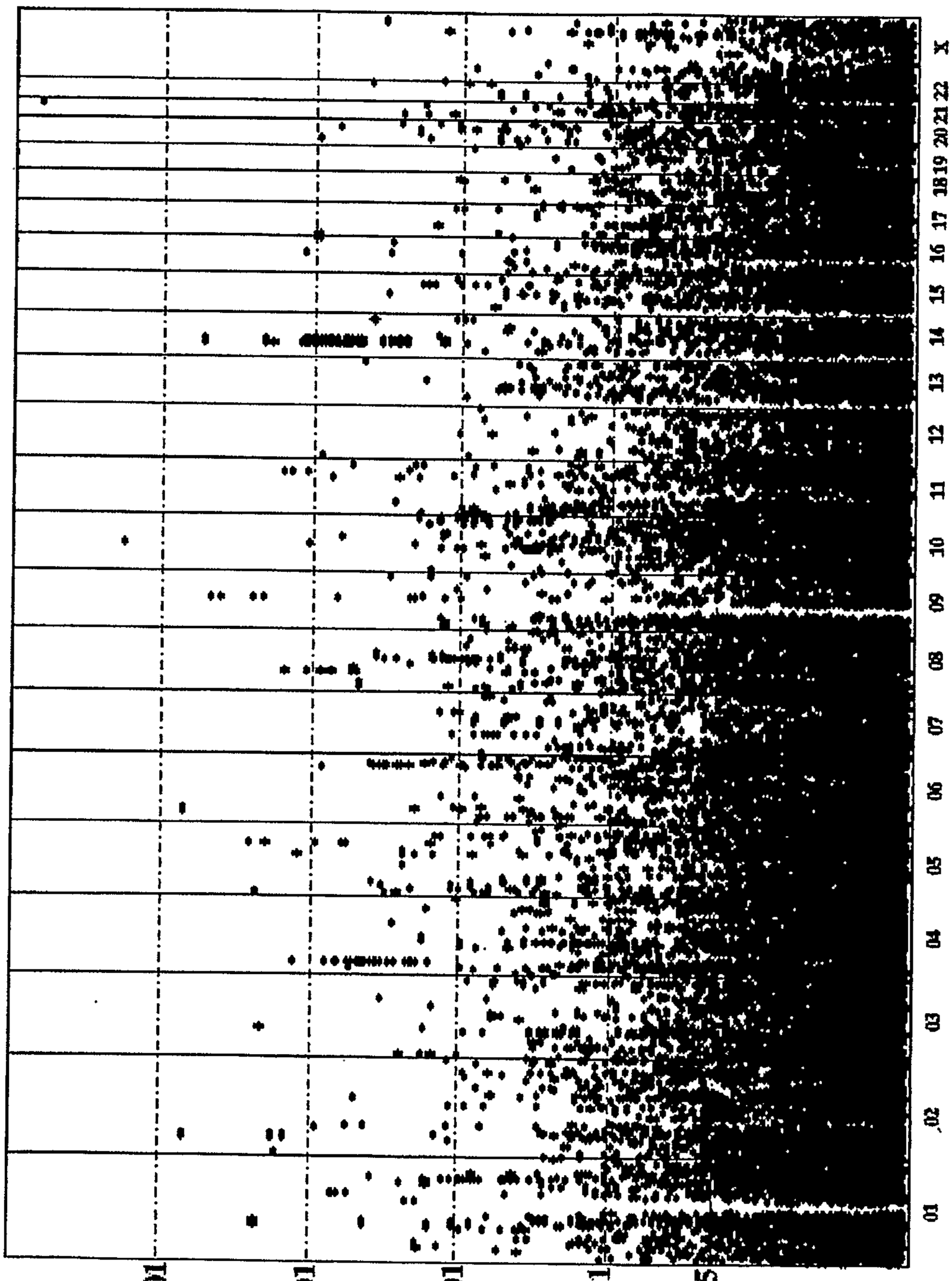

X
22
21
20
19
18
17
16
15
14
13
12
11
10
09
08
07
06
05
04
03
02
01
p = 0.00001
p = 0.0001
p = 0.001
p = 0.01
p = 0.05

Figure 16

Figure 17a

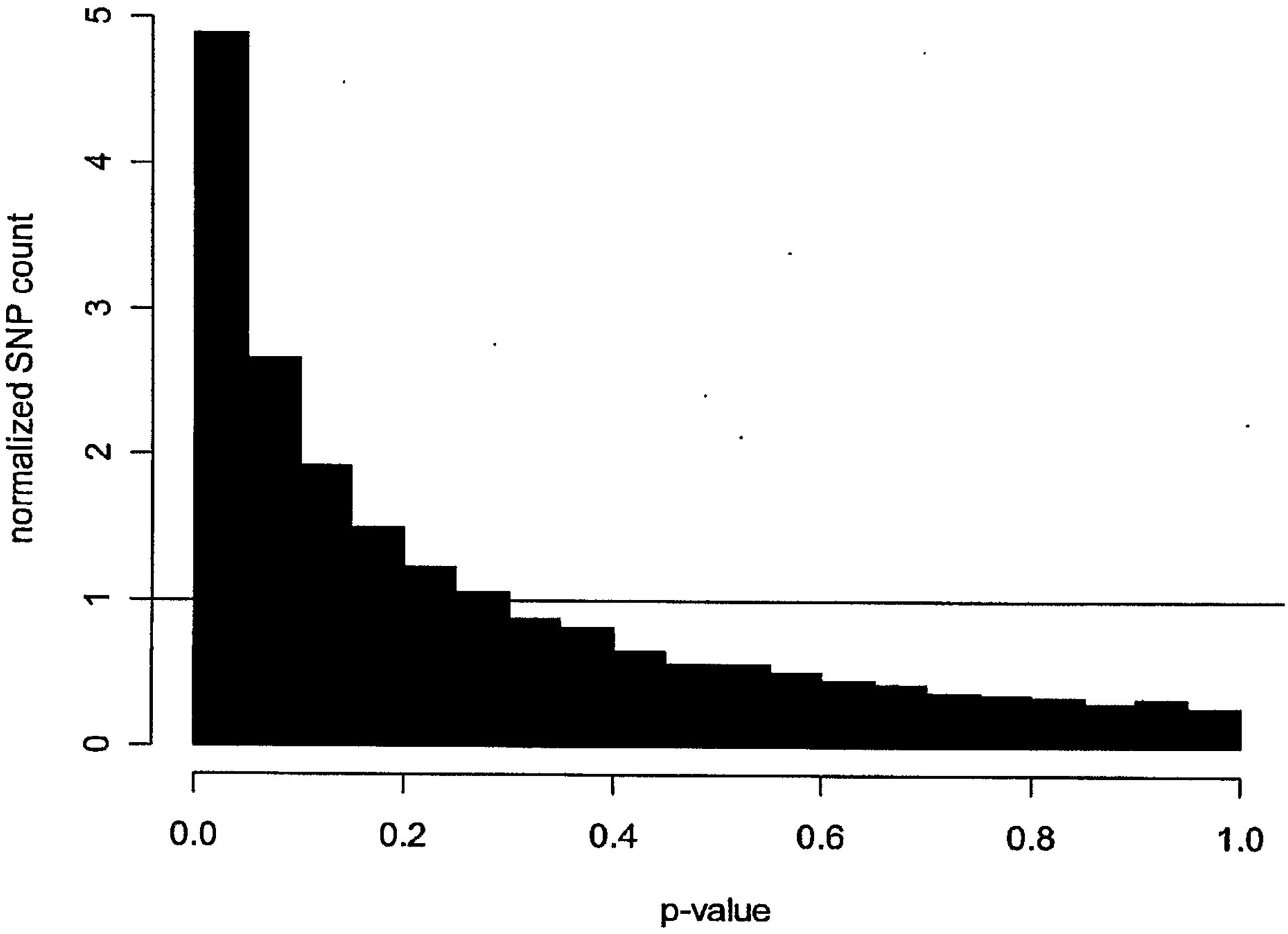


Figure 17b

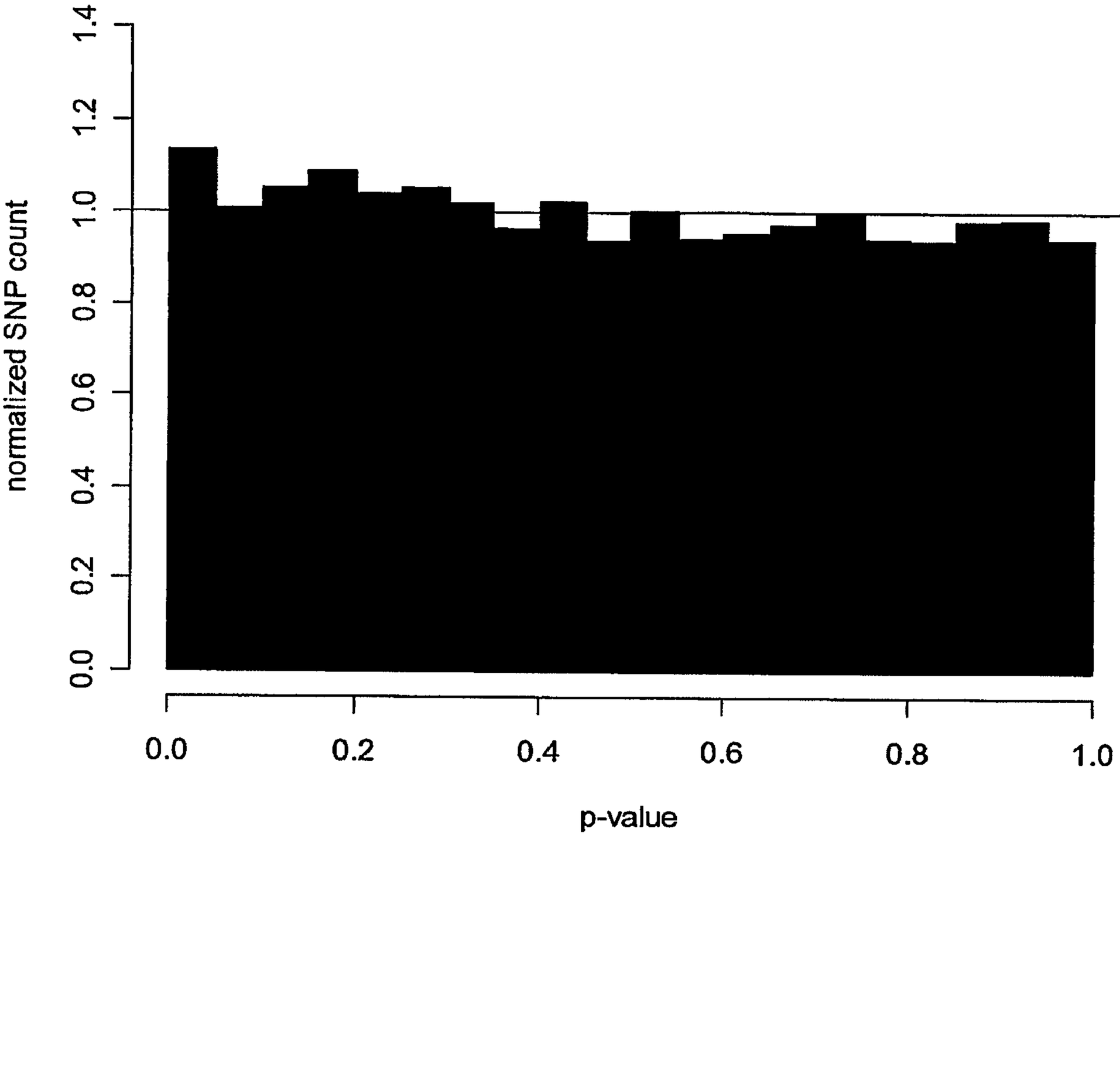

normalized SNP count
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0.0
0.2
0.4
0.6
0.8
1.0
p-value

Figure 18

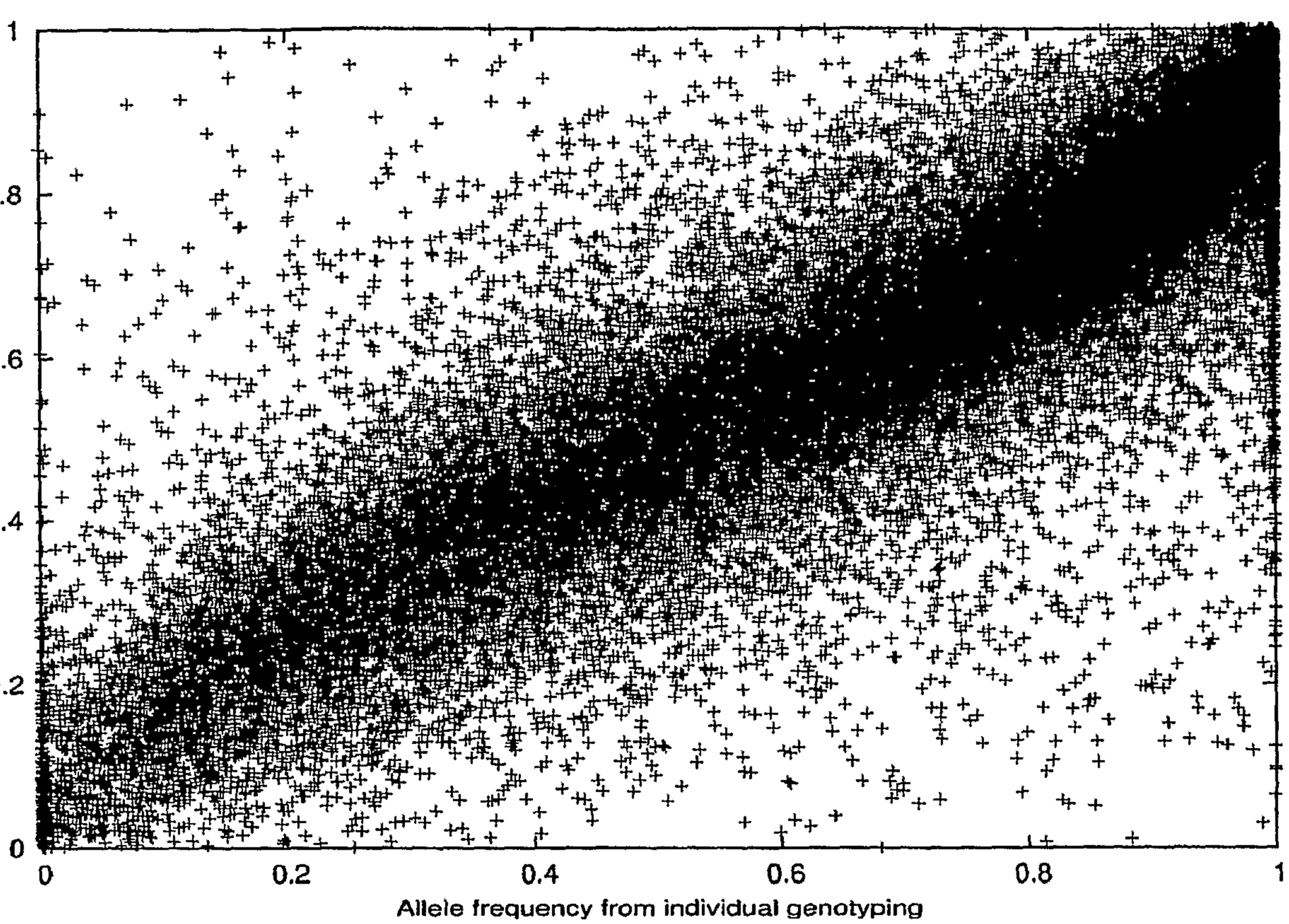

Allele frequency estimate from pooled genotyping
0
0.2
0.4
0.6
0.8
1
0
0.2
0.4
0.6
0.8
1
Allele frequency from individual genotyping

Figure 19

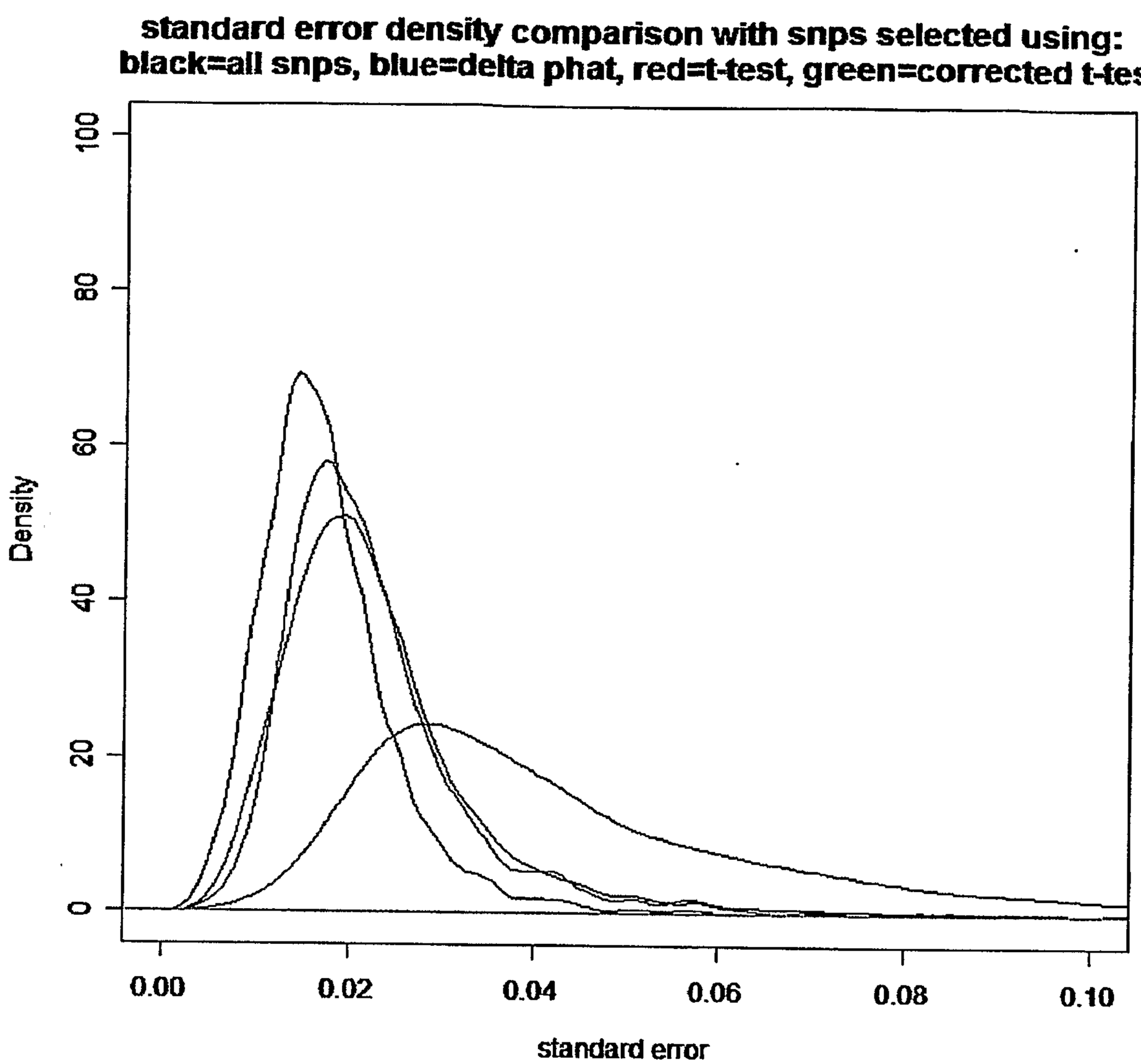
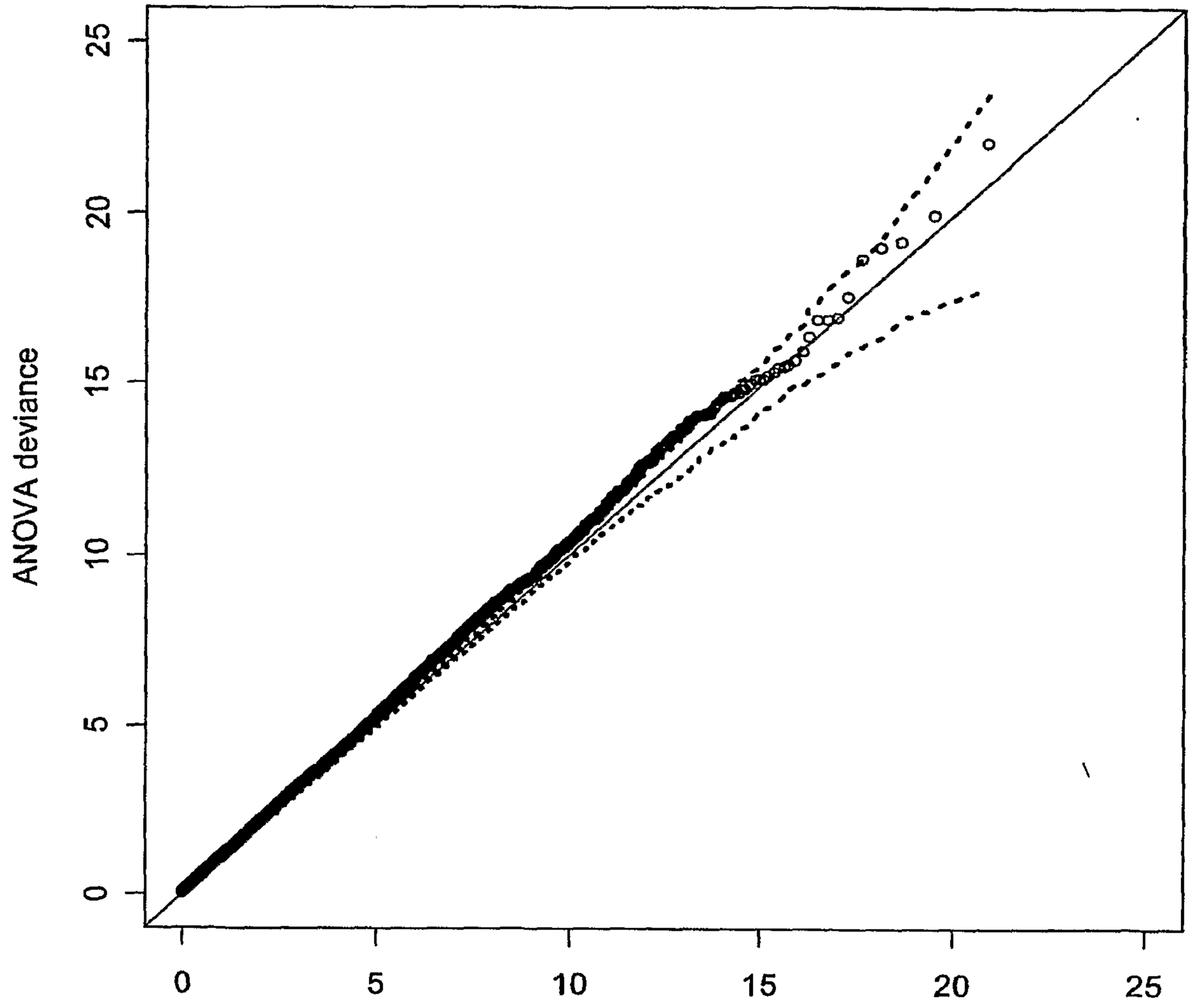
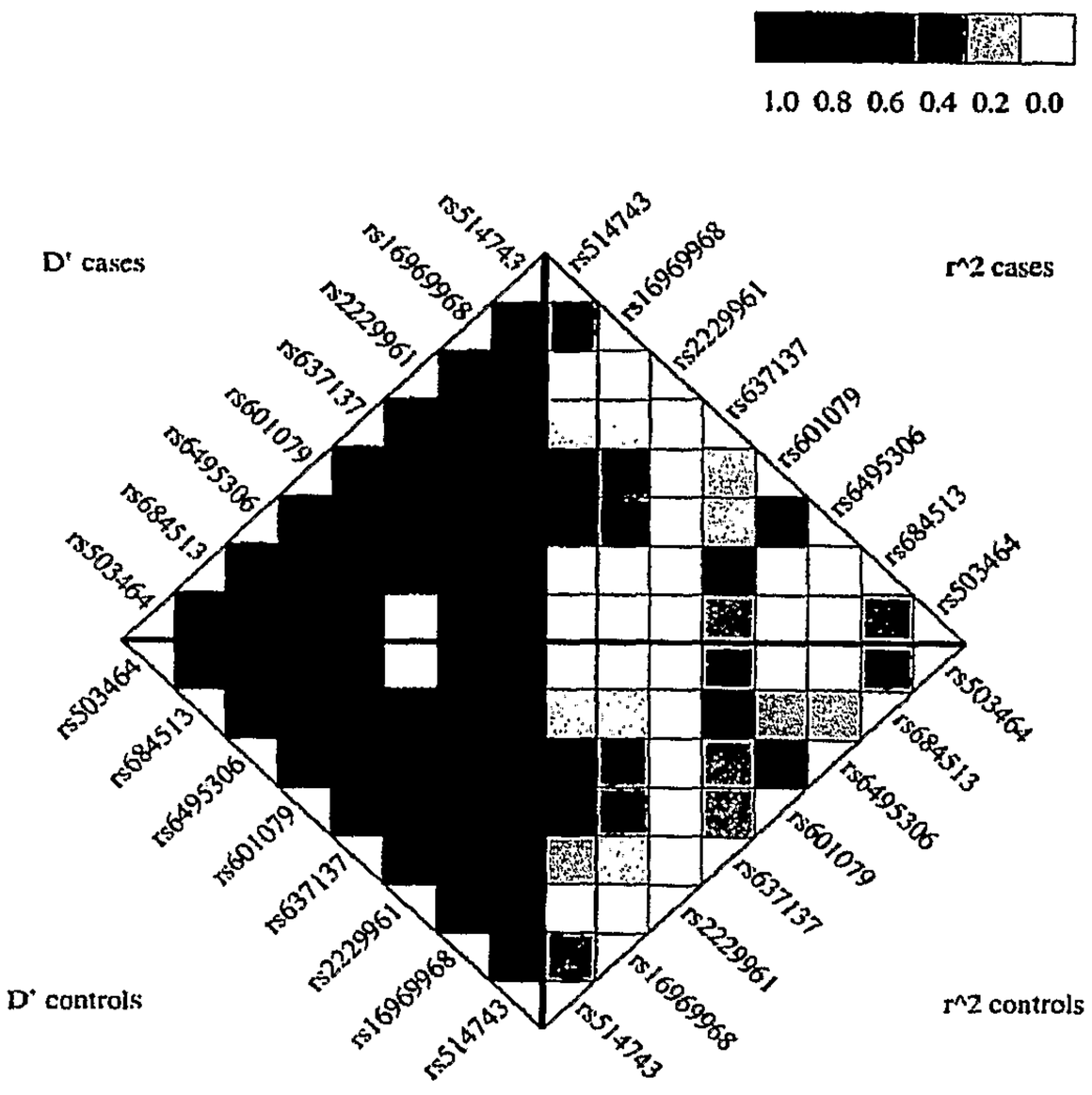

standard error density comparison with snps selected using:
black=all snps, blue=delta phat, red=t-test, green=corrected t-test
Density
0
20
40
60
80
100
0.00
0.02
0.04
0.06
0.08
0.10
standard error

Figure 20

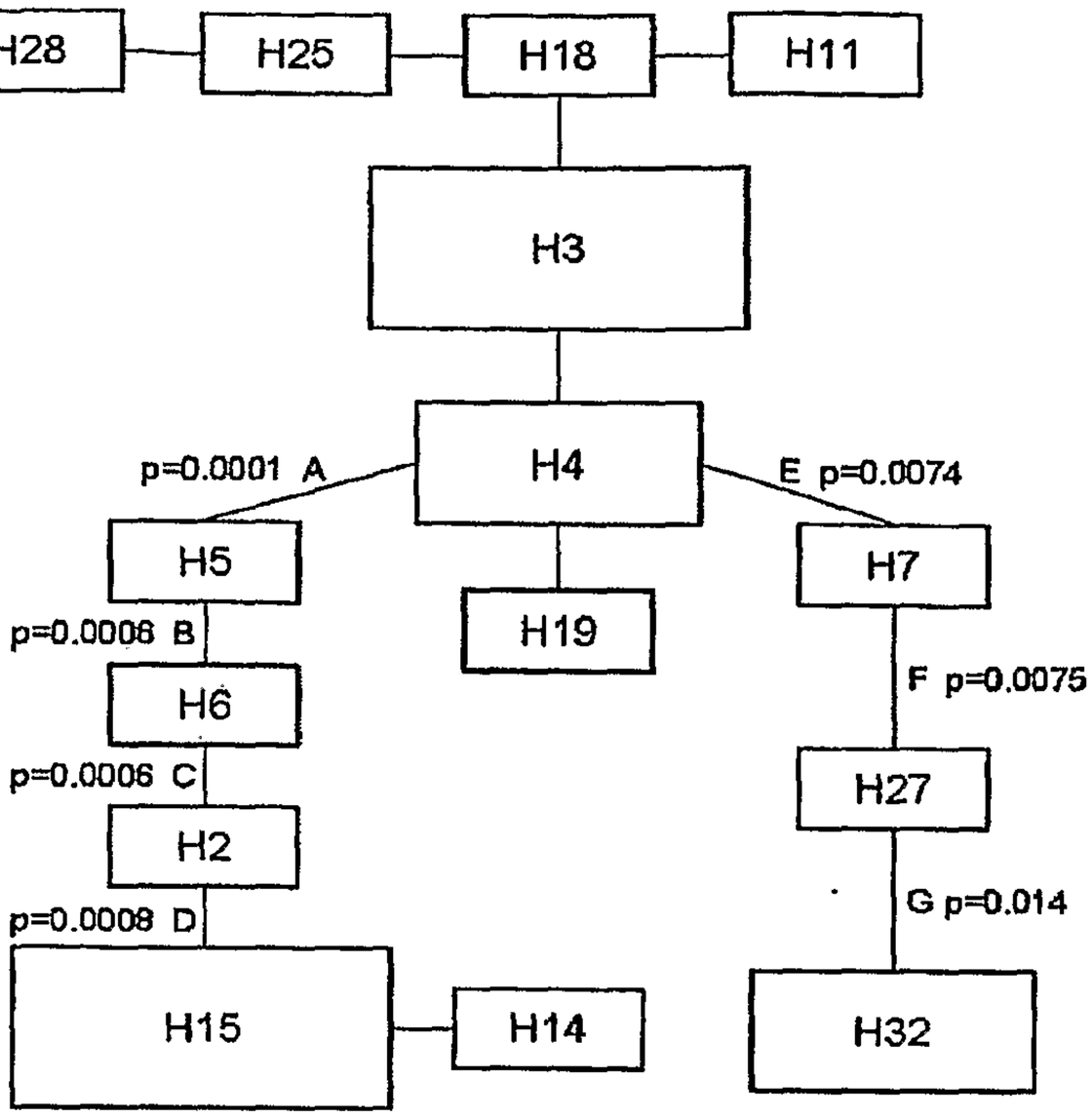




CHRNA5, Chromsome 15

Figure 21. Linkage disequilibrium and r^2 among SNPs in CHRNA5 nicotinic receptor gene.

Figure 22. Haplotype network for CHRNA5.



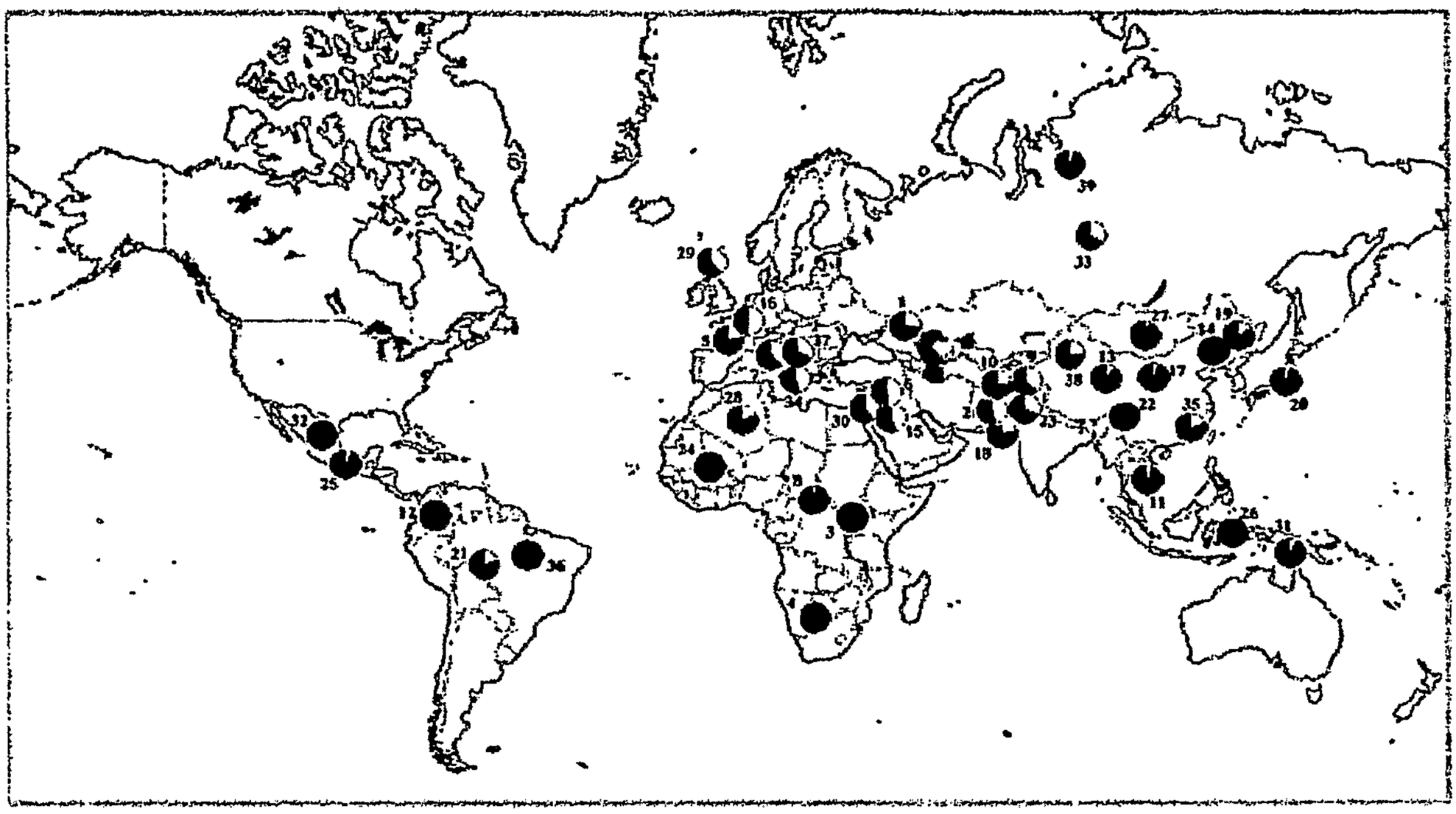
Boxes represent haplotypes and roughly correlate with haplotype counts; small boxes have frequencies of below 2%, medium between 2% and 5%, medium-large between 5% and 25%, and large boxes above 25%. Branch A is marked by a change from G in H4 to A in H5 at rs16969968. Branch B is marked by a change from C in H5 to A in H6 at rs601079. Branch C is marked by a change from C in H6 to T in H2 at rs2036527. Branch D is marked by a change from A in H2 to G in H15 at rs880395. Branch E is marked by a change from C in H4 to A in H7 at rs601079 and a change from T in H4 to A in H7 at rs637137. Branch F is marked by a change from A in H7 to G in H32 at both rs 880395 and rs905739. Branch G is marked by a change from C in H7 to G in H32 at rs684513. P-values from the treescan at these branches are also provided.

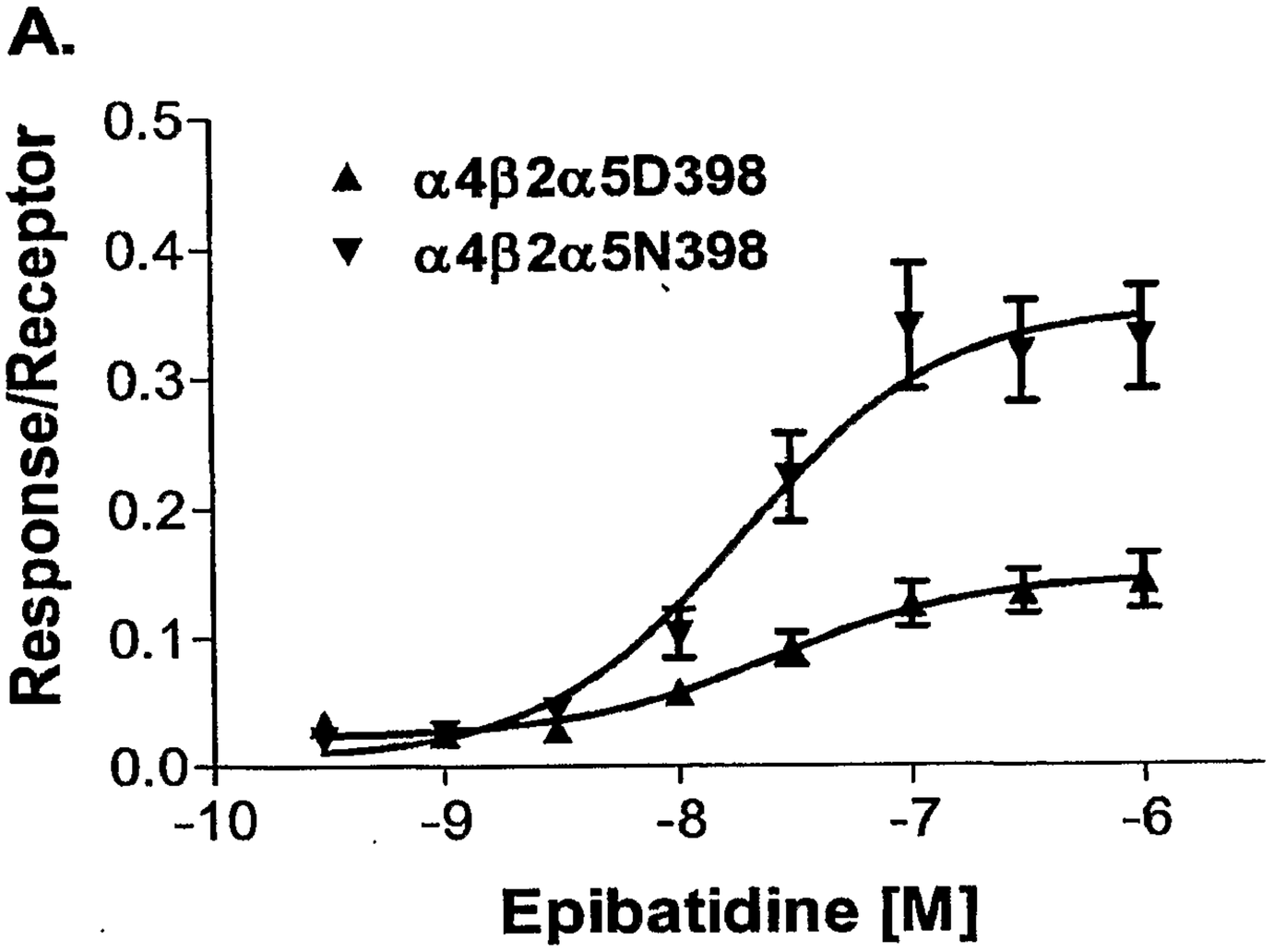
Figure 23. Comparative sequence analysis of the α 5 nicotinic receptor across species

KEETESGSGPKSSRNTLEAALDSIRYITRHIMKENDVREVVEDW	human
KEETESGSGPKSSRNTLEAALDSVRCITRHIMKENDVREVVEDW	chimpanzee
EQTGSGGGPESSRNTMEAALDSIRYITRHIVKENAVREVVEDW	Bolivian squirrel monkey
KEEARSSRGPRSSRNALEAALDSVRYITRHVMKETDVREVVEDW	cattle
REEAESGAGPKSRNTLEAALDCIRYITRHVVKENDVREVVEDW	rat
REEAEKDGGPKSRNTLEAALDCIRYITRHVVKENDVREVVEDW	mouse
KEEKGNMSGSESSRNTLEAALDSIRYITRHVMKENEVREVVEDW	Gallus gallus (chicken)

D: Aspartic Acid (GAU, GAC)
N: Asparagine (AAU, AAC)

Figure 24. Distribution of A allele of *rs16969968*





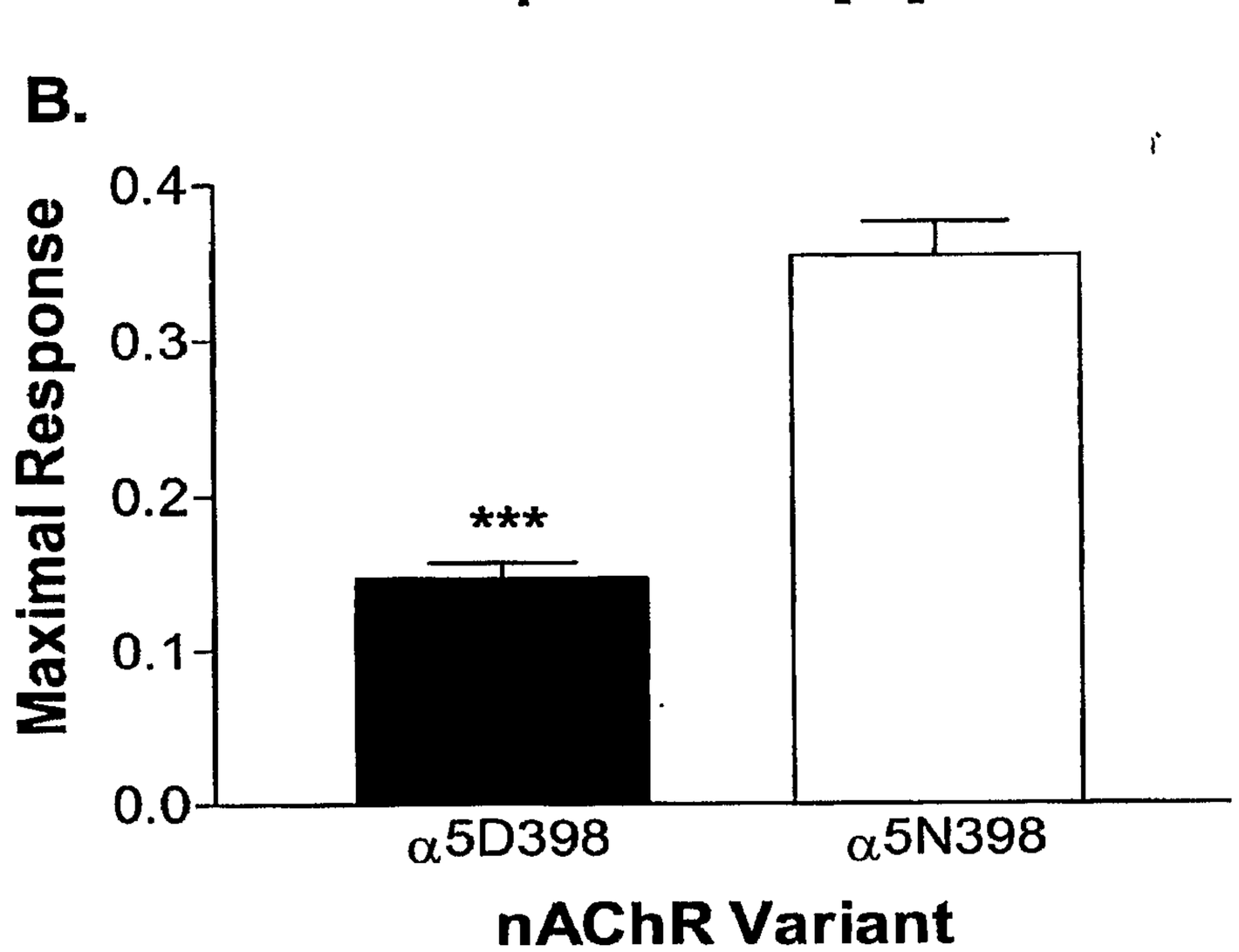


Figure 25. The CHRNA5 D398N polymorphism affects nAChR function. A. Concentration-response curves for epibatidine-evoked changes in intracellular calcium were measured from HEK293T cells transfected with plasmids containing a calcium-sensing aequorin cDNA, α4 and β2 cDNAs and either α5D398 or α5N398 cDNA. Receptor levels also were determined for each sample using [^{125}I] epibatidine and agonist responses were normalized per fmol receptor. B. nAChRs possessing the N398 variant of α5 exhibited a significantly greater maximal response to epibatidine as compared to nAChRs containing the D398 variant. The variant nAChR populations did not differ in EC_{50} values for epibatidine. N = 12 for each nAChR variant. Data shown are mean ± SEM. *** $p < 0.0005$.

FIGURE 26

NOTE:

The column headers correspond to the format [table name].[column name] from the access database: NDA01_all_result-Mar-01-06.mdb
Only report=1 snps were considered for this SNP list. The report column is in table nda01_all_result and labels snps that were checked by QC criteria.

COLUMN	TITLE	SAMPLES ANALYZED	MEANING
A	SNP_ID		
B	refsnp_ID		
C	nda01_all_result.CASES_P	ALL SAMPLES	case allele frequency
D	nda01_all_result.CTRLS_P	ALL SAMPLES	control allele frequency
E	nda01_all_result.DELTA_P	ALL SAMPLES	delta allele frequency
F	nda01_all_result.CALL_RATE	ALL SAMPLES	call rate (in all samples)
G	nda01_all_result.HWE_P_VALUE_CTRLS	ALL SAMPLES	HWE p-value for controls only (nothing less than E-4)
H	nda01_all_result.GC_TREND_SCORE_P	ALL SAMPLES	Genomic control corrected trend score p-value
I	nda01_all_result.TREND_SCORE_FWER	ALL SAMPLES	Familywise error rate computed from candidate gene trend scores
J	nda01_all_result_sex_strat.TREND_SCORE_P_SEX_STRAT	ALL SAMPLES	gender stratified trend score p-value
K	nda01_regression_result.ALL_GLM_P_VALUE	ALL SAMPLES	Logistic regression on case/control ANOVA p-value
L	nda01_regression_result.ALL_LM_P_VALUE	ALL SAMPLES	Linear regression on FTND score ANOVA p-value
M	nda01_ig_result.CASES_P	Pooled samples only	case allele frequency
N	nda01_ig_result.CTRLS_P	Pooled samples only	control allele frequency
O	nda01_ig_result.DELTA_P	Pooled samples only	delta allele frequency
P	nda01_ig_result.CALL_RATE	Pooled samples only	call rate (in PG samples)
Q	nda01_ig_result.HWE_P_VALUE_CTRLS	Pooled samples only	HWE p-value for controls only
R	nda01_ig_result.TREND_SCORE_P	Pooled samples only	uncorrected p-vlaue for trend score
S	nda01_ig_result_sex_strat.TREND_SCORE_P_SEX_STRAT	Pooled samples only	gender stratified trend score p-value
T	nda01_regression_result.IG_GLM_P_VALUE	Pooled samples only	Logistic regression on case/control ANOVA p-value
U	nda01_regression_result.IG_LM_P_VALUE	Pooled samples only	Linear regression on FTND score ANOVA p-value
V	nda01_rep_result.CASES_P	validation samples only	case allele frequency
W	nda01_rep_result.CTRLS_P	validation samples only	control allele frequency
X	nda01_rep_result.DELTA_P	validation samples only	delta allele frequency
Y	nda01_rep_result.CALL_RATE	validation samples only	call rate (in replication samples)
Z	nda01_rep_result.HWE_P_VALUE_CTRLS	validation samples only	HWE p-value for controls only
AA	nda01_rep_result.GC_TREND_SCORE_P	validation samples only	Genomic control corrected trend score p-value
AB	nda01_rep_result_sex_strat.TREND_SCORE_P_SEX_STRAT	validation samples only	gender stratified trend score p-value
AC	nda01_regression_result.REP_GLM_P_VALUE	validation samples only	Logistic regression on case/control ANOVA p-value
AD	nda01_regression_result.REP_LM_P_VALUE	validation samples only	Linear regression on FTND score ANOVA p-value
AE	CHROMOSOME_ID		chromosome
AF	contig		contig
AG	POSITION		position on the chromosome
AH	gene_name		gene symbol
AI	gene_hyperlink		hyperlink to GENE database
AJ	HIT_TYPE		intron, exon, upstream, downstream, etc.
AK	SYNONYMOUS		yes = synonymous, no = non-synonymous
AL	Is_candidate_region		1 if snp is selected from candidate gene region SNPs, 0 if snp is selected from pooled SNPs
AM	comment		

WO 2007/100919 PCT/US2007/005411 CA 02644475 2008-08-28

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
83237	2836823	0.517241	0.59805	-0.08081	0.993261	0.481347	9.24E-07	
811165	4142041	0.594762	0.658884	-0.06412	0.999482	0.259867	6.76E-05	
4496443	999	0.964921	0.939433	0.025488	0.897356	0.104698	0.000348	
4496443	999	0.964921	0.939433	0.025488	0.897356	0.104698	0.000348	
4496443	999	0.964921	0.939433	0.025488	0.897356	0.104698	0.000348	
4496443	999	0.964921	0.939433	0.025488	0.897356	0.104698	0.000348	
4496443	999	0.964921	0.939433	0.025488	0.897356	0.104698	0.000348	
1446001	1782159	0.745109	0.798419	-0.05331	0.843961	0.090292	0.000278	
872808	12380218	0.759542	0.814351	-0.05481	0.998445	0.03355	7.22E-05	
4501073	2022443	0.755958	0.808656	-0.0527	0.998963	0.037622	0.000148	
736995	12623467	0.958253	0.916856	0.041397	0.995334	6.82E-09	1.17E-06	
2452235	4142603	0.751198	0.806286	-0.05509	0.994298	8.14E-05	0.000157	
872831	11145381	0.766667	0.819333	-0.05267	0.98704	0.01618	0.000128	
3318178	2673931	0.661877	0.611498	0.050379	0.987558	0.351109	0.001299	
1445885	1782182	0.690599	0.746914	-0.05631	0.921721	0.710066	0.000342	
736943	10490162	0.910269	0.86016	0.050109	0.994298	0.262633	2.27E-06	
2631830	1031006	0.667943	0.615034	0.052908	0.99689	0.721522	0.000721	
3318169	2546657	0.662059	0.617179	0.04488	0.999482	0.617609	0.004045	
702419	2791480	0.223496	0.283276	-0.05978	0.998445	0.213367	3.47E-05	
811194	9332406	0.603053	0.658257	-0.0552	0.995334	0.651572	0.000584	
2379416	10049135	0.892176	0.86317	0.029006	0.997926	0.7758	0.006591	
1446029	2798983	0.715875	0.778395	-0.06252	0.932608	0.76079	3.45E-05	
4319486	4859365	0.521956	0.450182	0.071774	0.946086	0.672682	2.23E-05	
3702837	2361573	0.401429	0.464733	-0.0633	1	1	9.18E-05	
1445915	1782134	0.702857	0.754556	-0.0517	0.999482	0.41255	0.00041	
1749243	17706334	0.966667	0.936291	0.030375	1	0.774462	1.75E-05	
1749244	17706299	0.966635	0.936291	0.030344	0.999482	0.774462	1.80E-05	
3311454	10793832	0.684637	0.739749	-0.05511	0.998445	0.539743	0.000303	
1749237	17633258	0.968571	0.938567	0.030005	1	0.563457	1.38E-05	
3702834	7209096	0.401335	0.461845	-0.06051	0.998963	0.587372	0.00017	
1445945	1782141	0.701621	0.753417	-0.0518	0.998963	0.58619	0.000421	
736949	12467557	0.960915	0.926538	0.034378	0.998963	0.459459	4.42E-06	
1445953	1782145	0.704286	0.758248	-0.05396	1	0.269824	0.00021	
410868	6081761	0.685285	0.61859	0.066695	0.886988	0.111317	0.000106	
4205013	1612945	0.296845	0.242563	0.054282	0.995334	0.269323	0.000201	
1445934	1782139	0.702483	0.753706	-0.05122	0.997408	0.649091	0.000495	
1446047	11157219	0.703382	0.755814	-0.05243	0.982374	0.196411	0.000353	
971425	2302673	0.874633	0.837709	0.036924	0.963712	0.799583	0.00174	
2452239	10869902	0.739027	0.790102	-0.05108	0.998963	0.153828	0.000334	
1445952	1782144	0.703828	0.757714	-0.05389	0.995334	0.269488	0.00022	
1227452	11694463	0.880248	0.9121	-0.03185	0.997408	0.834004	0.001613	
4237765	3015437	0.398281	0.339408	0.058873	0.997926	0.050691	0.00015	
1749239	17633211	0.968571	0.939066	0.029505	0.999482	0.556975	1.84E-05	
2012929	12425606	0.714641	0.783914	-0.06927	0.952307	0.759384	1.51E-06	
1732526	7113885	0.798057	0.844975	-0.04692	0.930016	0.504808	0.000362	
1911997	7829966	0.831237	0.783396	0.047841	0.909798	0.917216	0.000328	
1445933	1778401	0.702767	0.753136	-0.05037	0.997926	0.586043	0.00061	
1863818	2409665	0.609195	0.54333	0.065866	0.995853	0.276443	6.76E-05	
1448301	1779521	0.297426	0.246871	0.050555	0.999482	0.586168	0.000574	
4349212	1491377	0.668582	0.608124	0.060459	0.994298	0.434893	0.000158	
3318164	4976489	0.337619	0.380844	-0.04322	0.998963	0.567443	0.005593	
1445892	1779534	0.702209	0.752288	-0.05008	0.992742	0.716467	0.000684	
1445954	1779517	0.73659	0.789954	-0.05336	0.995334	0.264201	0.000254	
4355001	6814075	0.481748	0.550058	-0.06831	0.99015	0.493399	3.58E-05	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1445914	1778392	0.70326	0.75286	-0.0496	0.993779	0.585914	0.000753	
1445929	1778400	0.702961	0.753129	-0.05017	0.998445	0.586168	0.000638	
1445979	1782155	0.701144	0.754286	-0.05314	0.997408	0.171475	0.000281	
415665	11086322	0.512882	0.578375	-0.06549	0.996371	0.944725	7.93E-05	
1445900	1779528	0.702857	0.753417	-0.05056	0.999482	0.71671	0.000575	
1126176	2027290	0.385973	0.321957	0.064017	0.998963	0.537389	4.11E-05	
1445881	1782181	0.702767	0.752847	-0.05008	0.998445	0.586161	0.000642	
1126166	7550193	0.385387	0.321143	0.064244	0.996371	0.485167	4.14E-05	
1762509	1893010	0.902604	0.937931	-0.03533	0.988595	0.01373	0.000115	
1445873	2799789	0.792382	0.843061	-0.05068	0.882841	1	0.000186	
1445925	1778399	0.702574	0.753129	-0.05055	0.999482	0.716682	0.000584	
1126170	7517505	0.385167	0.321143	0.064025	0.995334	0.58721	4.20E-05	
1445878	1782180	0.702574	0.75256	-0.04999	0.999482	0.526847	0.000651	
4107752	4934119	0.030505	0.054039	-0.02353	0.999482	1	0.000277	
1445904	1611914	0.702574	0.752278	-0.0497	0.998963	0.65114	0.000713	
4031270	317026	0.501429	0.56549	-0.06406	0.999482	0.945307	7.59E-05	
3455452	10517352	0.475048	0.544622	-0.06957	0.993261	0.633073	2.46E-05	
3455466	6836555	0.474187	0.543528	-0.06934	0.994816	0.785093	2.41E-05	
1273588	3732300	0.801625	0.847554	-0.04593	0.997926	0.434115	0.000202	
3318145	10070699	0.338894	0.382688	-0.04379	0.998963	0.567621	0.00498	
3318142	4976485	0.339048	0.382253	-0.0432	1	0.567827	0.005561	
1936542	6472851	0.365643	0.417431	-0.05179	0.992224	0.443768	0.00117	
1445995	2799787	0.702199	0.754276	-0.05208	0.99689	0.121106	0.00036	
1126179	10800021	0.385864	0.323059	0.062805	0.99689	0.588866	5.85E-05	
1445897	1779530	0.703051	0.752566	-0.04952	0.998445	0.716697	0.000751	
1445917	1782135	0.703244	0.75256	-0.04932	0.998963	0.651315	0.000772	
2803739	1499764	0.339048	0.382554	-0.04351	0.998963	0.567681	0.005276	
1446025	2802067	0.701813	0.752847	-0.05103	0.998445	0.124087	0.000471	
4031288	6531380	0.475167	0.54385	-0.06868	0.997926	0.891773	2.73E-05	
1445884	1778379	0.704004	0.753986	-0.04998	0.998963	0.524016	0.000636	
2752035	1425465	0.475481	0.544355	-0.06887	0.989114	0.537952	3.15E-05	
1446011	1431041	0.697331	0.748578	-0.05125	0.999482	0.719983	0.000577	
3455457	11942729	0.475143	0.54333	-0.06819	0.99689	0.683208	3.33E-05	
4264889	4498148	0.517686	0.450512	0.067174	0.997926	0.633611	4.37E-05	
4001715	4525630	0.34387	0.383429	-0.03956	0.994816	0.316663	0.013742	
4031284	4859305	0.516362	0.449483	0.066879	0.99015	0.493932	5.31E-05	
1446053	7160688	0.703349	0.754577	-0.05123	0.994816	0.121391	0.000443	
2960222	317028	0.499522	0.435576	0.063947	0.997408	1	8.40E-05	
1446007	1652920	0.702097	0.753136	-0.05104	0.998445	0.145926	0.000472	
3640928	17019859	0.891179	0.850917	0.040262	0.992742	0.503649	0.000298	
3455256	4613591	0.479703	0.547676	-0.06797	0.958528	0.069879	7.01E-05	
4612615	4859306	0.514328	0.445294	0.069034	0.965267	0.145335	4.56E-05	
3640896	6547333	0.86511	0.823094	0.042015	0.999482	0.019886	0.000603	
4264888	5002773	0.516272	0.447619	0.068653	0.96112	0.081041	5.94E-05	
227553	2180813	0.819179	0.872717	-0.05354	0.997408	0.021841	9.14E-06	
227553	2180813	0.819179	0.872717	-0.05354	0.997408	0.021841	9.14E-06	
4355000	7659440	0.474261	0.541572	-0.06731	0.998963	0.838624	4.08E-05	
3130336	9289666	0.091516	0.112628	-0.02111	0.999482	0.125595	0.03485	
4031272	960740	0.481589	0.548724	-0.06713	0.981856	1	4.56E-05	
4424141	5002776	0.517686	0.451025	0.066661	0.997408	0.633969	5.09E-05	
4031282	7664882	0.48466	0.551606	-0.06695	0.992742	0.73217	4.81E-05	
147505	742977	0.405263	0.351831	0.053432	0.994816	0.940866	0.000809	
4295763	317047	0.500952	0.564994	-0.06404	0.998963	0.783647	8.42E-05	
4429642	5904713	0.944343	0.902685	0.041658	1	0.82317	0.000144	
702417	1028575	0.197807	0.254556	-0.05675	0.998963	1	3.75E-05	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
4031278	6531367	0.485096	0.550575	-0.06548	0.99015	0.272918	8.32E-05	
4597259	4532255	0.482742	0.54811	-0.06537	0.993261	0.452297	7.82E-05	
3455150	317031	0.496187	0.433447	0.06274	0.999482	0.945238	0.00011	
1445833	1782167	0.705263	0.750284	-0.04502	0.997408	0.41862	0.002129	
4031285	4349619	0.516698	0.451025	0.065673	0.998445	0.540407	6.57E-05	
3112694	704034	0.867969	0.821551	0.046419	0.998445	0.730208	8.73E-05	
3112694	704034	0.867969	0.821551	0.046419	0.998445	0.730208	8.73E-05	
3455286	6827035	0.473709	0.540433	-0.06672	0.997408	1	4.58E-05	
3691936	253922	0.543457	0.594988	-0.05153	0.975635	0.831938	0.001822	
922730		0.782946	0.730363	0.052582	0.97719	0.191922	0.000183	
2452272	10869910	0.78215	0.825461	-0.04331	0.99015	0.033097	0.001345	
1159322	17435204	0.984211	0.966857	0.017353	0.995334	0.619592	0.000446	
1159322	17435204	0.984211	0.966857	0.017353	0.995334	0.619592	0.000446	
1159322	17435204	0.984211	0.966857	0.017353	0.995334	0.619592	0.000446	
1446051	1431031	0.703527	0.752847	-0.04932	0.998963	0.124087	0.000679	
4031277	6531365	0.482857	0.54675	-0.06389	0.998963	0.633353	0.000102	
1938140	2977343	0.060476	0.075654	-0.01518	1	0.330715	0.070502	
1102839	12072533	0.980458	0.964082	0.016375	0.998445	0.307356	0.002218	
1943718	17582647	0.829361	0.858362	-0.029	0.999482	0.128603	0.012551	
305507	844604	0.320476	0.340547	-0.02007	0.999482	0.153574	0.187162	
1732521	16922195	0.793582	0.837356	-0.04377	0.992224	0.803387	0.000654	
971422	13331869	0.879048	0.846985	0.032062	1	0.51567	0.004873	
4031279	4566673	0.483654	0.547921	-0.06427	0.988077	0.337358	0.000109	
1446018	1778369	0.704394	0.753129	-0.04874	0.998445	0.14619	0.000777	
4264886	6531366	0.483317	0.546804	-0.06349	0.997926	0.682693	0.000111	
1102827	716703	0.980952	0.965183	0.01577	0.998445	0.281127	0.002831	
1921801	11993480	0.1931	0.142944	0.050156	0.929497	0.04556	0.000139	
305495	844613	0.319352	0.341297	-0.02195	0.999482	0.17696	0.149301	
305479	844574	0.326667	0.348347	-0.02168	0.998963	0.3722	0.157659	
4119073	6578882	0.610476	0.576792	0.033684	1	0.300324	0.041362	
305473	844568	0.330468	0.348347	-0.01788	0.997408	0.2978	0.244699	
1445986	1782156	0.701076	0.75059	-0.04951	0.969414	0.233957	0.000885	
1539926	7753810	0.671429	0.72919	-0.05776	0.998963	0.73279	0.000149	
451335	4811895	0.452245	0.517694	-0.06545	0.99689	0.892362	8.51E-05	
3528817	17012484	0.970897	0.955899	0.014998	0.995853	0.682045	0.013841	
3128544	17292523	0.676724	0.636884	0.03984	0.993779	0.941655	0.010066	
3128543		0.677143	0.637088	0.040055	1	0.94193	0.009597	
1446005	1782163	0.701857	0.753546	-0.05169	0.968896	0.459413	0.000545	
3128548	10055489	0.63489	0.590547	0.044344	0.998963	1	0.005131	
305487	1944645	0.32	0.340547	-0.02055	0.999482	0.153574	0.177003	
1936454	7846006	0.534286	0.480068	0.054217	0.999482	0.499214	0.000855	
1446009	1778365	0.698284	0.746303	-0.04802	0.999482	0.211964	0.001052	
3192712	11150081	0.304202	0.366021	-0.06182	0.997408	0.771028	6.00E-05	
4653612	4292865	0.957106	0.973277	-0.01617	0.949715	1	0.195	
2131217	17087443	0.833682	0.804266	0.029416	0.908761	0.822014	0.028353	
811158	1880046	0.557143	0.497722	0.059421	0.999482	0.458278	0.000285	
3311467	12514413	0.740883	0.784247	-0.04336	0.994298	0.548804	0.002624	
4653663	1655124	0.24044	0.193493	0.046947	0.996371	0.331061	0.000511	
619262	16930094	0.930958	0.899596	0.031362	0.850181	0.539752	0.001533	
2452120	7046144	0.047939	0.070771	-0.02283	0.991187	0.017256	0.00227	
1446035	11157218	0.698853	0.746303	-0.04745	0.997926	0.211964	0.00122	
14485	2249100	0.294651	0.352105	-0.05745	0.998445	0.824505	0.000198	
4562552	2889900	0.21619	0.263667	-0.04748	0.999482	0.794286	0.00068	
1445956	1778408	0.698473	0.746303	-0.04783	0.998963	0.211964	0.001122	
846061	506598	0.607796	0.659884	-0.05209	0.984448	0.323783	0.001362	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
423081	2067008	0.632031	0.683163	-0.05113	0.999482	0.640798	0.001129	
4128695	526257	0.097235	0.065415	0.03182	0.999482	0.026809	0.000491	
4549229	4301139	0.503964	0.43599	0.067974	0.952307	0.179531	6.89E-05	
3549778	4430687	0.617337	0.555936	0.061401	0.995334	0.94551	0.000159	
4031274	4422432	0.482692	0.546605	-0.06391	0.989632	0.681273	0.000111	
4382562	317045	0.500958	0.562144	-0.06119	0.995853	1	0.000167	
4254746	325127	0.290196	0.237308	0.052888	0.967859	0.128258	0.000478	
305505	702354	0.319484	0.34	-0.02052	0.996371	0.176026	0.178313	
1732515	11606101	0.791905	0.834282	-0.04238	0.999482	1	0.000937	
3594053	153585	0.543021	0.593249	-0.05023	0.995334	0.483262	0.002062	
4513177	2594995	0.154286	0.194761	-0.04048	0.999482	0.161214	0.001186	
2314734	11969056	0.475996	0.422372	0.053624	0.931571	0.519058	0.001321	
2333502	2594978	0.154433	0.194761	-0.04033	0.998963	0.161214	0.001241	
735006	17644588	0.875954	0.899083	-0.02313	0.995334	0.452467	0.030241	
2510849	885624	0.679524	0.729761	-0.05024	0.998963	0.304917	0.001049	
3430979	17016316	0.948571	0.931663	0.016909	0.999482	0.592781	0.029742	
1936458	4310196	0.468034	0.521665	-0.05363	0.997926	0.543255	0.000979	
3106977	6763338	0.90045	0.930233	-0.02978	0.839813	0.041328	0.001848	
3142587	10819563	0.909742	0.940435	-0.03069	0.995334	0.224391	0.000482	
872763	11145410	0.7898	0.832196	-0.0424	0.999482	0.015518	0.001356	
1147469	16833847	0.924808	0.953089	-0.02828	0.994298	0.431025	0.000492	
4391433	2724432	0.820782	0.773606	0.047175	0.999482	0.178311	0.000367	
1936526	7819969	0.466507	0.520642	-0.05414	0.993779	0.415728	0.000882	
1936509	7813767	0.543893	0.489749	0.054144	0.998445	0.588981	0.000862	
3686775	17839323	0.937023	0.962815	-0.02579	0.996371	1	0.000348	
1762513	488582	0.923755	0.952323	-0.02857	0.923795	0.001489	0.000764	
3329660	29854	0.233556	0.185649	0.047907	0.998963	1	0.000376	
305485	844577	0.322519	0.341686	-0.01917	0.998445	0.229884	0.210824	
3455495	11096778	0.469378	0.535885	-0.06651	0.949715	0.677078	7.66E-05	
2308727	11198069	0.739524	0.788965	-0.04944	1	0.612285	0.000434	
856310	7021597	0.723973	0.776196	-0.05222	0.997926	0.437297	0.00035	
1021341	751442	0.276392	0.310997	-0.03461	0.992742	0.635731	0.019864	
1936441	9298238	0.542954	0.490196	0.052758	0.986522	0.7859	0.001304	
1563255	4916992	0.370921	0.417426	-0.0465	0.995334	0.728631	0.004171	
872797	11145388	0.796473	0.835609	-0.03914	0.999482	0.139487	0.002581	
4063495	981146	0.444066	0.398618	0.045449	0.982893	0.887469	0.005988	
4552825	3967768	0.785033	0.821388	-0.03635	0.999482	0.066616	0.006834	
2199802	7100211	0.81381	0.861048	-0.04724	0.999482	0.258398	0.000151	
1153560	16842730	0.95314	0.954598	-0.00146	0.987558	0.251491	0.831055	
1861590	373204	0.378482	0.437428	-0.05895	0.991187	0.408598	0.000275	
410870	11908323	0.649519	0.590173	0.059346	0.987558	0.574283	0.000213	
2571667	907978	0.483654	0.547235	-0.06358	0.989114	0.493653	0.000124	
4257794	2216640	0.344019	0.387743	-0.04372	0.994298	0.830648	0.006059	
1153868	16843093	0.961905	0.963595	-0.00169	1	0.624201	0.784413	
3311440	11744308	0.679524	0.72779	-0.04827	0.999482	0.307459	0.001645	
3330103	154101	0.230326	0.180619	0.049707	0.992224	0.647643	0.000207	
1003694	16833203	0.744762	0.788483	-0.04372	0.998963	0.840197	0.001647	
2307201	2615891	0.406578	0.463026	-0.05645	0.999482	0.049272	0.000566	
14495	2249443	0.295714	0.352105	-0.05639	1	0.824505	0.000263	
1939068	16939329	0.826648	0.870582	-0.04393	0.997408	0.547771	0.000138	
1936457	3780014	0.559273	0.504005	0.055269	0.995334	0.021522	0.001202	
2379413	1490504	0.892857	0.870307	0.02255	1	1	0.030623	
2333506	2606742	0.155863	0.195108	-0.03925	0.999482	0.162751	0.001718	
2420377	17175889	0.817613	0.86	-0.04239	0.992224	0.400902	0.000721	
4428297	6099690	0.248095	0.303082	-0.05499	0.998445	0.575851	0.000206	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2316685	10794077	0.225312	0.177011	0.0483	0.991706	0.816872	0.000278	
1319552	17049483	0.792183	0.830866	-0.03868	0.998963	0.904371	0.003006	
1540523	13208542	0.704004	0.745154	-0.04115	0.998445	0.477113	0.005097	
1054574	17097681	0.942381	0.912969	0.029412	1	0.197014	0.000543	
1054574	17097681	0.942381	0.912969	0.029412	1	0.197014	0.000543	
1936433	13269312	0.543375	0.490868	0.052507	0.997926	0.839273	0.001291	
3671398	8042108	0.915789	0.910653	0.005137	0.994298	1	0.581447	
1487495	1536701	0.744275	0.791667	-0.04739	0.997408	0.473289	0.000654	
1487495	1536701	0.744275	0.791667	-0.04739	0.997408	0.473289	0.000654	
3640828	6547332	0.874266	0.833527	0.040739	0.976672	0.218999	0.000673	
1936504	4469448	0.544286	0.491468	0.052818	1	0.589566	0.001156	
2333493	2606747	0.15425	0.193052	-0.0388	0.997926	0.128545	0.00188	
1153511	1475423	0.948	0.949575	-0.00157	0.945049	0.715945	0.830647	
4118528	1655129	0.242366	0.19533	0.047036	0.998445	0.519535	0.000524	
1936435	10504576	0.533365	0.481229	0.052136	0.999482	0.499252	0.001341	
1936508	10098296	0.543851	0.492027	0.051824	0.998963	0.589056	0.001413	
2482448	17629798	0.78122	0.81058	-0.02936	0.999482	0.82616	0.027787	
4316711	1897224	0.701355	0.746528	-0.04517	0.983411	0.207864	0.002165	
4527851	4077057	0.989022	0.97503	0.013992	0.955417	1	0.00128	
180409	17128434	0.995714	0.982935	0.012779	1	0.023555	0.000198	
668929	10753308	0.342967	0.299544	0.043423	0.993261	0.421117	0.00481	
1667931	16911639	0.861429	0.887941	-0.02651	1	0.865603	0.015255	
1735053	7124287	0.477598	0.425968	0.05163	0.998963	0.022712	0.001649	
3332027	4958726	0.463775	0.503986	-0.04021	0.998963	0.050184	0.012139	
1939059	10504631	0.827767	0.869738	-0.04197	0.998963	0.457778	0.000265	
3107163	17536666	0.955153	0.925884	0.029269	0.997926	3.35E-10	0.000577	
1665061	11026030	0.980458	0.966439	0.014018	0.999482	0.013646	0.010224	
4205765	7153633	0.698935	0.745675	-0.04674	0.984966	0.244007	0.001526	
2054015	2468406	0.902765	0.86545	0.037314	0.998445	0.665173	0.000307	
3157430	12607636	0.511927	0.525597	-0.01367	0.998963	0.839308	0.404165	
2465808	7031588	0.79	0.81813	-0.02813	0.998963	0.052795	0.032812	
1936455	4492365	0.468421	0.520595	-0.05217	0.994816	0.635372	0.001412	
4560781	1806590	0.770154	0.781465	-0.01131	0.993261	4.39E-05	0.434201	
1319539	17519343	0.793613	0.832574	-0.03896	0.998963	0.808591	0.002771	
2314728	9369005	0.500959	0.447821	0.053138	0.992742	0.583961	0.001461	
4118525	1655125	0.241905	0.195677	0.046228	1	0.519846	0.000645	
1538955	389674	0.290508	0.24102	0.049488	0.988077	0.265462	0.00087	
4501130	1628111	0.241659	0.19533	0.046328	0.998963	0.519535	0.000632	
1143832	284046	0.07619	0.055239	0.020951	0.999482	0.743785	0.009325	
2493329	1858030	0.670952	0.623007	0.047946	0.999482	0.719726	0.002322	
141997	16995232	0.998081	0.997706	0.000374	0.992224	1	0.803029	
2317636		0.994737	0.983466	0.01127	0.996371	0.20967	0.000921	
1563270	692647	0.3738	0.417995	-0.0442	0.995334	0.889701	0.006412	
4118526	1655126	0.242381	0.196815	0.045566	1	0.593665	0.000787	
1445838	1782169	0.678298	0.72	-0.0417	0.995853	0.73727	0.006297	
806537	7101281	0.171935	0.177918	-0.00598	0.994298	0.299754	0.634806	
702428	1321687	0.464286	0.518793	-0.05451	0.999482	0.250526	0.001054	
3142596	4837408	0.908484	0.939066	-0.03058	0.998963	0.365447	0.000532	
2433695	10511829	0.714149	0.757991	-0.04384	0.996371	1	0.003106	
3443757	10938953	0.742381	0.688851	0.05353	1	0.529829	0.000343	
702429	1321686	0.463298	0.518203	-0.0549	0.999482	0.224616	0.000961	
305440	844625	0.323445	0.343607	-0.02016	0.995853	0.294393	0.187937	
1741309	1938843	0.622857	0.564351	0.058506	0.999482	0.373227	0.000302	
1936517	10283076	0.532381	0.481756	0.050625	0.998963	0.498807	0.001825	
4307834	718307	0.247619	0.30137	-0.05375	0.998445	0.470893	0.000292	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
388261	3092084	0.899428	0.859339	0.040089	0.998963	0.20766	0.000173	
3110942	17465965	0.85796	0.893629	-0.03567	0.999482	0.032881	0.001004	
1541993	790919	0.487619	0.426521	0.061098	0.995853	0.781761	0.000203	
1153814	16843001	0.951767	0.95496	-0.00319	0.997408	0.251789	0.640429	
2843790	1341260	0.797994	0.745434	0.05256	0.99689	0.476097	0.000183	
2255211	1622626	0.770952	0.808305	-0.03735	1	0.326617	0.006552	
2255210	1622669	0.770952	0.808305	-0.03735	1	0.326617	0.006552	
3332032	11167669	0.467017	0.505701	-0.03868	0.99689	0.042839	0.015956	
4503391	1703681	0.231286	0.183566	0.04772	0.984966	0.305494	0.000337	
1759424	11218725	0.60086	0.645642	-0.04478	0.994298	0.088996	0.005197	
2493331	11077694	0.669847	0.622298	0.047549	0.998963	0.7742	0.002537	
4556247	1490635	0.439885	0.396473	0.043412	0.998963	0.9438	0.008106	
3687986	16894266	0.993295	0.998849	-0.00555	0.991706	1	0.008827	
4441758	6583832	0.950718	0.971396	-0.02068	0.994816	1	0.001032	
3142414	1533968	0.365201	0.329532	0.035668	0.99689	0.400418	0.024351	
2314048	845104	0.50715	0.451595	0.055555	0.998963	0.22067	0.00088	
14496	2249449	0.337309	0.392491	-0.05518	0.998963	0.943642	0.000559	
1153292	17583313	0.427143	0.485177	-0.05803	0.998963	0.735567	0.000496	
909305	7132921	0.61381	0.560865	0.052945	1	0.170744	0.000813	
252196	11847777	0.808696	0.766055	0.042641	0.988595	0.396612	0.001358	
1409707	3754819	0.826025	0.799544	0.02648	0.998963	0.113644	0.038091	
4136353	1334934	0.428571	0.480454	-0.05188	0.897356	0.075215	0.002011	
1153301	10922332	0.602151	0.550459	0.051692	0.982374	0.631907	0.001967	
1054391	1146647	0.943756	0.914009	0.029747	0.998963	0.131792	0.000434	
1054391	1146647	0.943756	0.914009	0.029747	0.998963	0.131792	0.000434	
1837931	683979	0.650817	0.603763	0.047054	0.994298	0.887731	0.002749	
1175953	4655330	0.326699	0.26905	0.057649	0.976153	0.383739	0.000231	
4383961	1683743	0.042381	0.061433	-0.01905	1	1	0.007618	
1576257	10480852	0.844961	0.806582	0.038379	0.983929	0.913225	0.002149	
811209	12773625	0.538114	0.477968	0.060146	0.940384	0.160703	0.000438	
811209	12773625	0.538114	0.477968	0.060146	0.940384	0.160703	0.000438	
146136	8140725	0.999046	0.995449	0.003596	0.998963	1	0.030885	
3495263	17195412	0.938036	0.96132	-0.02328	0.999482	1	0.00115	
547858	17152264	0.872259	0.82992	0.042339	0.999482	0.904818	0.000298	
1928492	13275016	0.864762	0.899317	-0.03456	1	0.037351	0.001283	
1153287	6667492	0.404286	0.458951	-0.05467	0.998963	0.891821	0.000951	
3332025	889029	0.463602	0.502854	-0.03925	0.995334	0.04254	0.014581	
4057734	1202311	0.715116	0.768886	-0.05377	0.895283	0.763553	0.000513	
1861899	11249877	0.861429	0.896355	-0.03493	0.999482	0.855176	0.001211	
1563271	931262	0.482347	0.523322	-0.04097	0.998963	0.498947	0.013999	
4655804	4698179	0.634286	0.680887	-0.0466	1	0.485299	0.00289	
646901	16894824	0.633843	0.680524	-0.04668	0.997408	0.485742	0.002886	
1541978	712241	0.486551	0.42637	0.060182	0.993779	0.782582	0.000259	
1651826	16924076	0.834128	0.790671	0.043457	0.999482	0.414835	0.000601	
328667		0.934387	0.903539	0.030848	0.995334	1	0.000505	
2335619	9840982	0.832857	0.795791	0.037066	1	0.255195	0.003523	
4331763	1627161	0.243528	0.197143	0.046385	0.994298	0.830942	0.000825	
1928490	13275245	0.868295	0.903207	-0.03491	0.993779	0.031413	0.001042	
4554895	4714516	0.253116	0.205645	0.047471	0.990669	1	0.000699	
2308731	1337327	0.325382	0.382821	-0.05744	0.998963	0.284622	0.00024	
702426	1321688	0.464252	0.518203	-0.05395	0.999482	0.224616	0.001177	
302106	1202309	0.698761	0.748009	-0.04925	0.999482	0.421396	0.000771	
252184	17310148	0.800095	0.755986	0.044109	0.997926	0.71527	0.001104	
547844	17152281	0.869291	0.82679	0.042501	0.982374	0.722171	0.000328	
388243	928485	0.898855	0.860319	0.038536	0.997926	0.161535	0.000297	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3311439	13164327	0.736892	0.777335	-0.04044	0.998963	0.380755	0.005133	
4095654	1366962	0.993314	0.998852	-0.00554	0.994298	1	0.013623	
4078944	723977	0.371783	0.415813	-0.04403	0.999482	0.835015	0.006518	
1845314	17319617	0.769084	0.820819	-0.05174	0.998963	0.565877	8.81E-05	
4640016	1982451	0.795781	0.834668	-0.03889	0.993779	0.713948	0.002728	
4504945	4073794	0.967588	0.953925	0.013663	0.999482	0.106657	0.0331	
478419	10276256	0.563333	0.52226	0.041073	0.998445	1	0.012207	
856325	6476090	0.73	0.782212	-0.05221	0.998963	0.488643	0.000324	
654689		0.980706	0.962173	0.018532	0.847071	0.618286	0.001301	
1563265	17632445	0.372259	0.415621	-0.04336	0.998445	0.889425	0.007487	
4068129	6933569	0.733779	0.782139	-0.04836	0.998963	0.374721	0.000576	
3336289	17717503	0.975691	0.960751	0.01494	0.999482	0.639371	0.007667	
1153563	10494769	0.951905	0.954442	-0.00254	0.999482	0.251364	0.710676	
971443	16952906	0.921429	0.896473	0.024955	1	1	0.008289	
1651825	16924074	0.833333	0.790194	0.043139	0.998963	0.540915	0.000681	
1912217	2119397	0.886711	0.845848	0.040864	0.997926	0.069853	0.000292	
854358	17369029	0.81584	0.769714	0.046125	0.99689	0.445904	0.000481	
1410126	1370371	0.381423	0.331948	0.049475	0.96112	0.213621	0.001989	
1153315	10754238	0.467143	0.522779	-0.05564	0.999482	0.58873	0.000929	
3332030	10057369	0.468541	0.505701	-0.03716	0.998445	0.042839	0.020643	
863760	546228	0.452958	0.41217	0.040788	0.986003	0.576212	0.013557	
3155726	2667709	0.721319	0.77081	-0.04949	0.99689	0.181679	0.000685	
305465	844563	0.322148	0.341743	-0.0196	0.992742	0.152816	0.200117	
252174	11627966	0.800286	0.756264	0.044022	0.998963	0.927028	0.001139	
1563252	4917093	0.757156	0.716078	0.041079	0.997926	1	0.00443	
4061467	6597301	0.548744	0.49271	0.056034	0.942457	0.443428	0.000862	
152530	17093108	0.92	0.933941	-0.01394	0.999482	0.263586	0.106812	
3903038	12014973	0.791615	0.737982	0.053633	0.987558	0.211531	0.004994	
4275016	4913459	0.904671	0.86959	0.035081	0.998963	0.882201	0.000599	
456030	205907	0.738713	0.68578	0.052933	0.991706	0.272215	0.000461	
1373899	17427473	0.671498	0.654429	0.017069	0.981337	0.93988	0.271981	
2465811	7030799	0.796784	0.822338	-0.02555	0.979782	0.007391	0.053985	
3083527	2862312	0.885605	0.848692	0.036914	0.999482	0.19061	0.001088	
4565468	4913460	0.903754	0.868542	0.035212	0.99015	0.882109	0.000629	
4070998	1417056	0.69205	0.642694	0.049356	0.995334	0.508234	0.001281	
3416532	3796902	0.857347	0.841866	0.015482	0.998963	0.076465	0.189872	
3128565	12651958	0.727359	0.687001	0.040358	0.998445	0.694762	0.00617	
2082229	4764931	0.810888	0.853881	-0.04299	0.99689	0.22531	0.000476	
4256979	1817150	0.632151	0.58265	0.049501	0.832556	0.223873	0.003697	
3546173	2290332	0.880611	0.83504	0.045571	0.998445	0.177463	7.51E-05	
4560858	1550773	0.773959	0.811201	-0.03724	0.984448	0.182592	0.007211	
1433875	7609123	0.795238	0.829727	-0.03449	0.999482	0.904874	0.006587	
2374613	17044911	0.967588	0.978953	-0.01137	0.999482	1	0.030751	
512092	7798970	0.486138	0.430034	0.056104	0.997926	0.408892	0.000532	
2411666	10812315	0.316794	0.280502	0.036292	0.997926	0.738142	0.01539	
1054633	4949682	0.942857	0.914579	0.028279	0.999482	0.275361	0.000792	
1851503	11992884	0.754059	0.70605	0.048009	0.99689	0.514748	0.001114	
2308721	10886113	0.362726	0.421323	-0.0586	0.998445	0.061848	0.000235	
3671397	9630453	0.914204	0.906712	0.007492	0.999482	0.841844	0.426378	
3128531	11133773	0.512857	0.561503	-0.04865	0.999482	0.680963	0.002725	
597850	1364494	0.695424	0.646689	0.048735	0.997926	0.208775	0.001733	
4170138	4060716	0.92381	0.893629	0.03018	1	0.596049	0.001102	
1357673	16839597	0.582459	0.634396	-0.05194	0.998963	0.42362	0.001342	
2316808	4447083	0.80381	0.846811	-0.043	0.999482	0.153815	0.000674	
4118531	1703680	0.23138	0.188657	0.042723	0.969933	0.656284	0.001856	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
114485	10427777	0.927481	0.897494	0.029987	0.998445	0.016821	0.00155	
2702119	1366492	0.733079	0.687144	0.045935	0.999482	0.638292	0.002239	
3128561	9312858	0.714218	0.677309	0.036909	0.997926	0.354346	0.013509	
200207	1004477	0.978095	0.961802	0.016294	0.998963	0.632406	0.002807	
1960745	2248609	0.648095	0.688927	-0.04083	0.998445	1	0.007578	
3443746	16873950	0.741412	0.689636	0.051777	0.998445	0.693923	0.000497	
302078	1931801	0.720952	0.767084	-0.04613	0.999482	0.850117	0.001308	
1986413	10091164	0.691429	0.739477	-0.04805	1	0.38103	0.001125	
2238567	3004260	0.386364	0.431193	-0.04483	0.988077	1	0.006386	
2371591	17068881	0.997619	0.986917	0.010702	1	0.135655	0.000197	
302108	1202285	0.69914	0.74744	-0.0483	0.998445	0.531597	0.000979	
4483774	7806958	0.481888	0.520525	-0.03864	0.998445	0.543438	0.020569	
1083050	2494067	0.431298	0.394767	0.036531	0.998963	0.289638	0.022535	
4264758	2882513	0.583492	0.634703	-0.05121	0.997408	0.382086	0.001603	
4394986	3741370	0.882381	0.853811	0.02857	1	0.225042	0.008926	
1912251	7834013	0.908484	0.872014	0.036471	0.999482	0.172476	0.000393	
3688309	6452345	0.219256	0.1843	0.034956	0.999482	0.822309	0.008125	
2803733	1499768	0.377291	0.412334	-0.03504	0.937792	0.565857	0.031591	
3114506	17295298	0.631429	0.675399	-0.04397	0.999482	0.488957	0.00588	
2725137	1393068	0.941317	0.954494	-0.01318	0.998963	1	0.074438	
1864240	10087767	0.741659	0.703535	0.038124	0.998445	0.808088	0.008755	
2117709	17461079	0.930887	0.961187	-0.0303	0.997926	0.377451	6.08E-05	
1576232	1881541	0.866063	0.832574	0.033489	0.998963	1	0.004109	
811205	7094030	0.56816	0.515376	0.052784	0.998963	0.735476	0.001311	
811205	7094030	0.56816	0.515376	0.052784	0.998963	0.735476	0.001311	
1703956	1792139	0.45977	0.412	0.04777	0.994816	0.834405	0.003475	
4372792	7216916	0.617001	0.572893	0.044108	0.997926	0.240893	0.00656	
924230	17647647	0.755258	0.794419	-0.03916	0.997408	0.409445	0.005007	
1079209	11184448	0.977598	0.988041	-0.01044	0.998963	1	0.014681	
2303867	1338006	0.052431	0.080479	-0.02805	0.997926	0.256267	0.000568	
554092	1718074	0.920877	0.892491	0.028386	0.999482	0.596763	0.002575	
1079217	11184446	0.977576	0.988055	-0.01048	0.998963	1	0.014344	
64620	2833604	0.396568	0.349261	0.047308	0.999482	0.940838	0.002831	
811212	1925583	0.552381	0.499431	0.05295	1	0.380452	0.00125	
811212	1925583	0.552381	0.499431	0.05295	1	0.380452	0.00125	
3152763	6790274	0.92183	0.948178	-0.02635	0.998963	0.502529	0.001105	
388245	3092414	0.900767	0.863636	0.037131	0.991187	0.111071	0.000473	
208249	12897003	0.854913	0.896601	-0.04169	0.814412	0.684984	0.000417	
410726	12480480	0.838263	0.811503	0.02676	0.998445	0.271954	-0.029794	
3715893	17841334	0.108095	0.077361	0.030735	1	0.473278	0.001285	
1153278	10801633	0.436485	0.494299	-0.05781	0.997408	0.94615	0.000484	
3565525	8033972	0.290097	0.345687	-0.05559	0.866252	0.062361	0.000556	
554091	1358079	0.920476	0.891923	0.028554	1	0.597905	0.002466	
2393077	10511193	0.944286	0.914107	0.030179	1	0.669017	0.000278	
4554829	424405	0.298095	0.251139	0.046956	0.999482	0.78778	0.001492	
554095	1724535	0.919924	0.891354	0.02857	0.999482	0.488647	0.002511	
732905	13420006	0.659954	0.726639	-0.06668	0.822188	0.77837	6.37E-05	
1963915	543736	0.680412	0.639334	0.041078	0.923276	0.542417	0.009429	
4650579	884945	0.694093	0.740434	-0.04634	0.897875	0.780887	0.00322	
2393743	9868604	0.317483	0.368843	-0.05136	0.992224	0.560833	0.001139	
4507739	527123	0.35645	0.325836	0.030614	0.983929	0.063931	0.054483	
1906165	1530847	0.135057	0.170273	-0.03522	0.996371	1	0.002611	
554083	1639489	0.918017	0.889078	0.028939	0.999482	0.865308	0.002614	
554086	1724527	0.918017	0.889078	0.028939	0.999482	0.865308	0.002614	
1153561	16842733	0.949952	0.95268	-0.00273	0.998445	0.253619	0.695205	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1054672	1438175	0.942803	0.915813	0.026989	0.999482	0.268052	0.001316	
2117572	9525805	0.900858	0.925484	-0.02463	0.999482	0.219905	0.008036	
2393785	13063842	0.319352	0.370876	-0.05152	0.999482	0.772593	0.001025	
433444	6140549	0.642582	0.586982	0.0556	0.988077	0.058593	0.000478	
4118524	1655123	0.24044	0.196469	0.043971	0.997408	0.454943	0.001169	
253770	10143569	0.785033	0.829352	-0.04432	0.999482	0.905274	0.000649	
105437	5993581	0.634937	0.680233	-0.0453	0.896838	0.409933	0.006026	
1153490	10494765	0.94	0.941847	-0.00185	0.998963	0.762113	0.808783	
388240	3092461	0.898095	0.860478	0.037617	0.999482	0.161082	0.000426	
3699030	17138199	0.99381	0.984073	0.009737	1	0.196231	0.004497	
4254750	844562	0.400952	0.422639	-0.02169	1	0.29979	0.174503	
863343	7039966	0.261905	0.21754	0.044365	0.999482	0.060214	0.001881	
1054621	12405994	0.942803	0.914857	0.027946	0.997408	0.272356	0.000919	
4101470	1387293	0.975691	0.96132	0.014371	0.999482	1	0.010698	
3155723	2667713	0.722169	0.769932	-0.04776	0.995334	0.070529	0.001141	
1126178	2027289	0.448755	0.391908	0.056847	0.989632	0.392064	0.000459	
1523367	9481408	0.680952	0.713554	-0.0326	0.999482	0.620814	0.031837	
436336	670562	0.194948	0.156428	0.03852	0.999482	0.522692	0.002412	
4234843	1832650	0.69084	0.643345	0.047495	0.998963	0.508691	0.001905	
2289461	11187665	0.527143	0.576792	-0.04965	1	1	0.002423	
2808120	1505124	0.468444	0.530956	-0.06251	0.861586	0.606491	0.000512	
4161965	1364199	0.614245	0.656036	-0.04179	0.997408	1	0.007709	
1708823	1790545	0.086273	0.109215	-0.02294	0.999482	0.162772	0.015611	
2393733	9882198	0.319524	0.370307	-0.05078	1	0.71799	0.001207	
1845316	17319624	0.768351	0.819113	-0.05076	0.999482	0.571196	0.000129	
513312	10487133	0.098943	0.133409	-0.03447	0.994298	0.558497	0.000915	
1837929	10503128	0.388836	0.433941	-0.0451	0.998445	0.945242	0.004824	
3477130	10009646	0.416111	0.372437	0.043673	0.998963	0.516286	0.006588	
4070997	17840329	0.69084	0.643345	0.047495	0.998963	0.508691	0.001905	
1054650	1438176	0.943279	0.916762	0.026518	0.998445	0.184496	0.001542	
4635871	2395544	0.849741	0.890968	-0.04123	0.902022	0.461919	0.000444	
305456	844557	0.399905	0.421502	-0.0216	0.999482	0.333751	0.176155	
1622821	9302842	0.384762	0.43686	-0.0521	1	0.680825	0.001268	
4614024	6536719	0.734032	0.779613	-0.04558	0.998963	0.168461	0.001785	
3115460	7708369	0.434637	0.497722	-0.06308	0.998445	0.946245	0.000127	
2306710	10510008	0.572519	0.620592	-0.04807	0.998963	0.942975	0.003352	
709873	3766424	0.545758	0.566629	-0.02087	0.998963	1	0.210304	
2575113	913930	0.382999	0.323462	0.059537	0.997926	1	0.000139	
1153572	16842754	0.949905	0.952218	-0.00231	0.998963	0.255389	0.739998	
1479348	2782185	0.278837	0.234322	0.044515	0.998445	0.777593	0.001936	
3702526		0.76145	0.710946	0.050504	0.997926	0.742912	0.000559	
4367494	2125666	0.77619	0.723549	0.052641	1	0.151375	0.000223	
1563278	691785	0.375239	0.416856	-0.04162	0.997408	0.889565	0.010274	
780646	1533509	0.676527	0.624005	0.052522	0.998963	0.388912	0.000794	
1939245	16939355	0.881566	0.916096	-0.03453	0.99689	0.266014	0.000443	
3079337	2416501	0.257416	0.211429	0.045988	0.995334	0.042685	0.00096	
172638	7493183	0.588825	0.539863	0.048962	0.997926	0.17441	0.00288	
1963914	543674	0.653149	0.612443	0.040706	0.997408	0.66929	0.00915	
348164	17682748	0.971878	0.95165	0.020228	0.999482	0.716008	0.000998	
4562253	4131709	0.316619	0.358857	-0.04224	0.996371	0.419942	0.006074	
1963129	4734633	0.476667	0.525597	-0.04893	1	0.250462	0.00273	
1563277	12672770	0.76479	0.72779	0.037	0.998445	0.733698	0.009767	
856272	6476086	0.721851	0.768793	-0.04694	0.998445	0.568998	0.001416	
512099	2374094	0.487094	0.431663	0.055431	0.997408	0.582063	0.000632	
1542023	1772941	0.332378	0.287913	0.044465	0.997408	0.869131	0.003268	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3396048	11725639	0.73381	0.699317	0.034493	0.999482	1	0.019836	
1396900	13399212	0.5796	0.623576	-0.04398	0.998963	1	0.005691	
2216075	3928773	0.834762	0.787258	0.047504	1	0.686878	0.000291	
4475011	8067243	0.946673	0.970964	-0.02429	0.976153	0.519315	0.000243	
4049796	2968277	0.160134	0.198857	-0.03872	0.995853	0.055403	0.002519	
764773	2284927	0.675095	0.715831	-0.04074	0.998445	0.319583	0.008343	
253207	10484229	0.545324	0.57574	-0.03042	0.998445	1	0.058982	
3476349	17030610	0.995234	0.984642	0.010592	0.999482	1	0.000879	
302076	2206219	0.721163	0.765643	-0.04448	0.999482	0.707762	0.001936	
305458	702353	0.403333	0.422551	-0.01922	0.999482	0.300032	0.229291	
4357007	2503097	0.822519	0.788965	0.033554	0.998963	0.26453	0.007961	
1888946	7015698	0.775912	0.735126	0.040786	0.993261	0.487794	0.003601	
1982689	7000142	0.90381	0.934016	-0.03021	1	0.093703	0.000812	
2089203	4767100	0.999047	0.994292	0.004754	0.997926	1	0.009261	
1928493	13276328	0.865807	0.899203	-0.0334	0.997926	0.062449	0.001808	
1352334	4664744	0.133937	0.110353	0.023584	0.999482	0.39266	0.030838	
3686641	16888553	0.983575	0.967517	0.016057	0.983411	0.223687	0.001603	
3153840	10513809	0.948999	0.935649	0.01335	0.998963	0.397742	0.081763	
3153840	10513809	0.948999	0.935649	0.01335	0.998963	0.397742	0.081763	
4228143	6749054	0.589524	0.547267	0.042257	0.999482	0.414139	0.009934	
2356514	7635496	0.930277	0.948747	-0.01847	0.997926	0.279216	0.018831	
4158818	1899420	0.15205	0.11959	0.03246	0.998963	0.748635	0.004436	
1662329	1994406	0.100287	0.133827	-0.03354	0.997926	0.663694	0.001534	
410877	6075577	0.500482	0.447941	0.052541	0.991187	0.891248	0.001628	
2169031	2095606	0.644084	0.588838	0.055246	0.998445	0.081543	0.000598	
4551064	342956	0.675819	0.638665	0.037154	0.988595	0.713461	0.017348	
4385791	2184948	0.865238	0.899317	-0.03408	1	0.853512	0.001648	
1741254	11605037	0.677134	0.62079	0.056345	0.974598	0.002343	0.000845	
1906161	13280301	0.1341	0.168578	-0.03448	0.993261	0.904379	0.003143	
811214	2394314	0.554286	0.502847	0.051438	0.999482	0.345176	0.001754	
811214	2394314	0.554286	0.502847	0.051438	0.999482	0.345176	0.001754	
4389156	2590357	0.769895	0.806099	-0.0362	0.991187	0.19193	0.009253	
4389156	2590357	0.769895	0.806099	-0.0362	0.991187	0.19193	0.009253	
3164185	17082721	0.99	0.99033	-0.00033	1	1	0.91836	
302079	12665363	0.723231	0.767429	-0.0442	0.995853	0.705437	0.002039	
938209	16955953	0.961832	0.973744	-0.01191	0.997408	1	0.039654	
4417563	4743850	0.208696	0.217919	-0.00922	0.984966	0.319362	0.503389	
4664591	3823310	0.317445	0.368151	-0.05071	0.997926	0.309135	0.001342	
4205225	2332169	0.702574	0.744014	-0.04144	0.998445	0.37535	0.004835	
2266635	827330	0.124631	0.122353	0.002278	0.966822	0.42713	0.837217	
3311361	17371964	0.737572	0.776196	-0.03862	0.997408	0.437297	0.007574	
4265866	4410655	0.480439	0.440571	0.039868	0.99689	0.631373	0.015006	
1667831	10500964	0.860687	0.88984	-0.02915	0.997408	0.729857	0.007964	
1172153	12022739	0.871881	0.834286	0.037595	0.993779	1.03E-12	0.003333	
646897	11943516	0.399236	0.355353	0.043883	0.997926	0.768321	0.006039	
709838	17402448	0.421053	0.443493	-0.02244	0.995853	0.27378	0.173675	
1410131	4547467	0.390744	0.349089	0.041655	0.998445	0.882047	0.00754	
856345	6476092	0.739504	0.785552	-0.04605	0.998963	0.616638	0.001335	
4397074	3781236	0.951442	0.970218	-0.01878	0.991706	1	0.002957	
1153316	1909507	0.838617	0.808535	0.030082	0.989114	0.826177	0.018463	
2022728	1031301	0.191905	0.164391	0.027513	1	0.902761	0.029238	
3152760	9869444	0.922233	0.949201	-0.02697	0.997408	0.484811	0.000809	
856284	7042990	0.715714	0.762258	-0.04654	0.998963	0.780176	0.001674	
259789	6903494	0.726145	0.673493	0.052652	0.998963	0.167196	0.000549	
3548370	16966320	0.969524	0.948805	0.020718	1	0.722209	0.001069	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
4195519	240179	0.941311	0.940084	0.001227	0.805599	0.001661	0.519424	
3272632	17495922	0.594949	0.649573	-0.05462	0.937792	0.282372	0.00059	
811224	1925576	0.552381	0.503991	0.04839	0.998963	0.787034	0.003165	
811224	1925576	0.552381	0.503991	0.04839	0.998963	0.787034	0.003165	
3571309	16966318	0.969495	0.948805	0.020689	0.999482	0.722209	0.001092	
2245478	4935616	0.999522	0.994286	0.005236	0.995334	1	0.002845	
4551528	4444771	0.265355	0.226122	0.039233	0.990669	0.771234	0.005596	
4497793	7920092	0.425501	0.380274	0.045228	0.997408	0.56657	0.005285	
1662272	2702633	0.899808	0.865585	0.034223	0.988077	0.769731	0.001213	
1535572	11964275	0.739504	0.786446	-0.04694	0.998445	0.615375	0.000775	
451309	2073145	0.2898	0.340753	-0.05095	0.997926	0.499319	0.000828	
3128552	10035925	0.741611	0.702395	0.039216	0.995334	0.627817	0.007032	
410874	6136853	0.502871	0.450512	0.052359	0.997408	0.785293	0.001597	
4455481	7160174	0.97598	0.989535	-0.01355	0.974598	1	0.001855	
1890912	2014617	0.201429	0.248009	-0.04658	1	0.123723	0.000525	
3296241	17833789	0.532857	0.579338	-0.04648	0.998445	0.406034	0.004812	
4081491	1358565	0.170476	0.210046	-0.03957	0.998445	0.414872	0.001871	
3708834	4792148	0.708015	0.741752	-0.03374	0.998963	0.290363	0.021737	
4116863	1128559	0.156788	0.201254	-0.04447	0.99689	0.172594	0.00045	
4150145	2739851	0.949952	0.961276	-0.01132	0.998963	0.635726	0.09557	
1276916	7604514	0.595238	0.550626	0.044612	1	0.945721	0.006163	
4117799	728104	0.194762	0.156428	0.038334	1	0.798444	0.001922	
3706358		0.486952	0.547254	-0.0603	0.90254	0.007651	0.000872	
3155360	6444400	0.077216	0.05879	0.018426	0.997926	1	0.025889	
1874644	17632167	0.739048	0.794084	-0.05504	1	1	7.82E-05	
2347779	17699515	0.969495	0.98066	-0.01117	0.999482	0.277713	0.033578	
4353567	2322437	0.689885	0.645051	0.044834	0.998963	0.508014	0.00327	
3491369	17148482	0.865477	0.899538	-0.03406	0.986522	1	0.001535	
2117600	9316045	0.889524	0.918089	-0.02856	1	1	0.003769	
1153567	12407433	0.949519	0.951049	-0.00153	0.983929	0.257649	0.828904	
2140930	4883894	0.862381	0.883694	-0.02131	0.998963	0.186549	0.058525	
1712457	1015201	0.98381	0.97099	0.01282	1	0.526126	0.00854	
1576230	1528391	0.870353	0.840935	0.029418	0.998445	0.801326	0.010717	
302104	1202307	0.761429	0.802392	-0.04096	0.999482	0.109781	0.003056	
3430366	10004614	0.962381	0.947668	0.014713	1	0.506397	0.028421	
2004718	17598411	0.829048	0.864465	-0.03542	0.999482	0.250701	0.003058	
3379927	9313330	0.822688	0.784983	0.037705	0.999482	0.195327	0.004039	
272614	9294693	0.791188	0.822691	-0.0315	0.995853	0.203785	0.015447	
2452230	1329622	0.528095	0.578588	-0.05049	0.999482	0.00854	0.002756	
2118114	10507524	0.917939	0.893957	0.023982	0.997926	0.596296	0.011448	
2324640	974516	0.81232	0.797235	0.015085	0.988595	0.035254	0.263543	
834574	10491314	0.805238	0.839408	-0.03417	0.999482	0.131612	0.007504	
294697	2071556	0.615348	0.564278	0.05107	0.999482	0.492915	0.001829	
997783	4655129	0.723282	0.760523	-0.03724	0.998963	0.404612	0.010421	
1662350	2729873	0.099714	0.133106	-0.03339	0.998963	0.883785	0.001487	
1662350	2729873	0.099714	0.133106	-0.03339	0.998963	0.883785	0.001487	
1443058	1952619	0.978407	0.973563	0.004844	0.991187	1	0.328259	
2598562	342945	0.32729	0.363844	-0.03655	0.996371	0.558748	0.018964	
1357693	16839578	0.619752	0.671786	-0.05203	0.998963	0.702808	0.001012	
4021059	1388639	0.881905	0.849261	0.032644	1	0.895398	0.003159	
1912255	16917962	0.909828	0.875427	0.034402	0.998963	0.166154	0.000691	
1063378	673998	0.666667	0.632688	0.033979	0.997926	1	0.030311	
302102	1202306	0.761678	0.802392	-0.04071	0.998963	0.109781	0.003247	
1924196	12548859	0.602772	0.551881	0.050891	0.99689	0.065139	0.001553	
2276303	412733	0.486641	0.442483	0.044158	0.998445	0.244957	0.006129	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
302058	12529614	0.722328	0.765376	-0.04305	0.998445	0.851252	0.002717	
2438991	10511924	0.926667	0.92719	-0.00052	1	0.21446	0.951554	
1524990	7752256	0.643333	0.59532	0.048014	0.998445	0.10699	0.002832	
4309678	2105220	0.767398	0.802048	-0.03465	0.999482	0.242546	0.012468	
1138256	3845412	0.375714	0.428815	-0.0531	0.999482	0.008798	0.000722	
1479345	970356	0.277725	0.234018	0.043706	0.996371	0.777501	0.002338	
388286	960518	0.891429	0.856086	0.035342	1	0.216148	0.001237	
603038	4565373	0.595588	0.547841	0.047747	0.973043	0.629291	0.003757	
1750016	17111116	0.8085	0.763667	0.044833	0.997926	0.049093	0.000996	
4009500	6431305	0.299522	0.254296	0.045226	0.994298	0.721268	0.002001	
3403776	13137704	0.767653	0.719818	0.047835	0.998445	0.154777	0.000724	
1524982	6901244	0.374008	0.332353	0.041655	0.963193	0.216311	0.009641	
2600644	959266	0.840476	0.805239	0.035237	0.999482	0.450812	0.005027	
302077	2744353	0.725728	0.769009	-0.04328	0.983929	0.848849	0.002617	
4110513	4440927	0.647581	0.592832	0.054749	0.966304	0.776778	0.000792	
2118285	4942302	0.513889	0.481164	0.032725	0.995334	0.017883	0.040284	
1948729	971807	0.344614	0.305809	0.038805	0.998963	0.112665	0.011982	
856351	10968740	0.731649	0.779295	-0.04765	0.999482	0.432443	0.001042	
3476282	17030413	0.995238	0.98521	0.010028	1	1	0.001403	
806459	2590313	0.765865	0.80023	-0.03436	0.990669	0.288532	0.013811	
4108353	2440847	0.767619	0.802048	-0.03443	1	0.242546	0.013009	
3476366		0.995234	0.985143	0.010091	0.997408	1	0.001349	
2410491	2152850	0.317913	0.270108	0.047805	0.958528	0.792559	0.001718	
2165316	1540461	0.713671	0.753706	-0.04003	0.99689	0.586521	0.005589	
253720	6572224	0.248527	0.298932	-0.05041	0.964749	1	0.000731	
82089		0.988084	0.991468	-0.00338	0.999482	1	0.305586	
1063967	2297139	0.785852	0.813501	-0.02765	0.991706	0.504261	0.033611	
689141	9803946	0.566667	0.512514	0.054152	1	0.543632	0.000709	
1063276	7540084	0.207143	0.169511	0.037632	1	0.093289	0.003414	
3115540	3806870	0.439788	0.501152	-0.06136	0.988077	0.786207	0.000212	
3115540	3806870	0.439788	0.501152	-0.06136	0.988077	0.786207	0.000212	
1662355	2729874	0.100572	0.133257	-0.03269	0.998963	0.883876	0.001898	
1662355	2729874	0.100572	0.133257	-0.03269	0.998963	0.883876	0.001898	
4234841	1890832	0.688751	0.644406	0.044345	0.997926	0.50755	0.003676	
2134625	12430087	0.942803	0.916951	0.025852	0.999482	0.114696	0.002198	
1522544	17074552	0.838894	0.803754	0.03514	0.999482	0.054057	0.005785	
3128553	10038542	0.741659	0.703535	0.038124	0.998445	0.685597	0.008579	
3382513		0.981393	0.967008	0.014385	0.998963	0.619699	0.004571	
4070986	1890831	0.687679	0.643429	0.044251	0.996371	0.556167	0.003803	
2316703	6597757	0.864156	0.899317	-0.03516	0.999482	0.707957	0.001066	
3645440	2030368	0.938036	0.908987	0.029049	0.999482	1	0.000794	
579188	1019233	0.79437	0.787827	0.006543	0.998963	0.840067	0.618218	
3332018	6580067	0.38871	0.422053	-0.03334	0.891135	0.883944	0.05004	
1373789	3821093	0.798524	0.833797	-0.03527	0.829445	0.059187	0.012525	
73583	2835150	0.324905	0.368151	-0.04325	0.997408	0.000821	0.008239	
3396584	17177036	0.538571	0.574516	-0.03595	1	1	0.027667	
4269304	4746568	0.65062	0.595563	0.055056	0.999482	0.944241	0.000589	
253799	17212603	0.816565	0.850649	-0.03408	0.949196	0.786426	0.006603	
2550354	750137	0.513862	0.56	-0.04614	0.995853	0.731721	0.004468	
3336540	17645003	0.975668	0.962243	0.013425	0.996371	0.629633	0.01564	
4161264	6499598	0.938571	0.929465	0.009106	1	0.032661	0.270845	
3318195	10515479	0.916587	0.938567	-0.02198	0.999482	0.563457	0.008953	
3396591	11733297	0.538608	0.574601	-0.03599	0.998963	0.730064	0.027134	
734864	17643402	0.873689	0.892491	-0.0188	0.999482	0.72548	0.078958	
3524275	11721741	0.765714	0.730638	0.035076	0.999482	0.390927	0.014364	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
634940	1157871	0.797619	0.840547	-0.04293	0.999482	0.37712	0.000855	
4520585	1630731	0.767143	0.801822	-0.03468	0.999482	0.167638	0.012665	
1662325	16936829	0.900952	0.870729	0.030223	0.999482	0.653724	0.00381	
806493	2590370	0.768571	0.802617	-0.03405	1	0.240823	0.014025	
4004015	4662834	0.432057	0.386598	0.045459	0.994298	0.15341	0.004904	
4571345	7208247	0.940952	0.96132	-0.02037	1	1	0.005006	
4571345	7208247	0.940952	0.96132	-0.02037	1	1	0.005006	
3480332	11938367	0.667143	0.618316	0.048827	1	0.886522	0.001864	
3673676	17600836	0.826149	0.861556	-0.03541	0.994298	0.672196	0.003466	
4408841	4320664	0.377943	0.411444	-0.0335	0.98704	0.173875	0.014023	
631626	17235422	0.953721	0.934016	0.019705	0.998963	0.578011	0.007342	
36229	1699669	0.723988	0.735805	-0.01182	0.985485	0.539741	0.426948	
1667873	11027387	0.861405	0.890607	-0.0292	0.991187	0.729563	0.007964	
689186	1337551	0.568421	0.51479	0.053632	0.997408	0.735701	0.000909	
4198223	2385715	0.4326	0.470824	-0.03822	0.995334	0.945942	0.019417	
2004789	17658005	0.756435	0.799204	-0.04277	0.999482	0.247602	0.001981	
1703960	1785818	0.918841	0.894309	0.024532	0.982893	0.469209	0.009434	
3125964	10513097	0.788847	0.816059	-0.02721	0.998963	1	0.040374	
4553243	2193977	0.317096	0.348123	-0.03103	0.998445	1	0.042131	
1662361	10500850	0.899048	0.865757	0.033291	1	1	0.00158	
1662361	10500850	0.899048	0.865757	0.033291	1	1	0.00158	
2420481	10960468	0.742857	0.784169	-0.04131	0.999482	0.765219	0.003545	
935067	7982220	0.853333	0.877702	-0.02437	1	0.154627	0.034154	
2205669	17143715	0.981411	0.965831	0.015579	0.998963	0.619411	0.00262	
1924177	10504347	0.602099	0.551822	0.050277	0.998445	0.076108	0.001774	
1609516	7247952	0.660766	0.697714	-0.03695	0.995334	0.470798	0.014956	
4257049	2009315	0.642788	0.598485	0.044303	0.980301	0.088325	0.004704	
2289458	12356127	0.537249	0.585324	-0.04807	0.998445	0.889707	0.003105	
4101616	7864334	0.474187	0.506271	-0.03208	0.99689	0.224006	0.052345	
3148719	13085643	0.654067	0.702055	-0.04799	0.995853	0.375086	0.001936	
2133374	9570966	0.803247	0.782782	0.020465	0.997408	1	0.123824	
4108356	2253192	0.768607	0.802048	-0.03344	0.998963	0.242546	0.015737	
4468619	7835613	0.759312	0.752283	0.007029	0.99689	0.856059	0.617156	
3123299	7734272	0.355577	0.390661	-0.03508	0.998963	0.023398	0.031179	
410867	4814904	0.51393	0.465294	0.048636	0.961638	0.448232	0.003747	
789726	6441818	0.647172	0.596663	0.050509	0.991187	0.481128	0.001392	
4568052	4313785	0.27732	0.226002	0.051317	0.929497	1	0.000513	
1522529	4142935	0.839048	0.8041	0.034947	0.999482	0.053183	0.00605	
1266242	13021875	0.841277	0.877714	-0.03644	0.997408	0.752695	0.001464	
4437976	6487779	0.2343	0.276042	-0.04174	0.984448	0.609494	0.003608	
2371256		0.158874	0.175029	-0.01615	0.997926	0.907236	0.184867	
1924217	2084799	0.596759	0.547267	0.049492	0.998963	0.065858	0.002137	
1266235	17030568	0.841905	0.878271	-0.03637	1	0.751979	0.001417	
3867091	17247100	0.911873	0.934899	-0.02303	0.999482	0.457773	0.107017	
2624694	994244	0.659524	0.605802	0.053722	1	0.525778	0.000834	
3396588	6813758	0.54037	0.575472	-0.0351	0.972525	0.573999	0.035892	
1576259	12540330	0.840974	0.806064	0.03491	0.995853	1	0.005114	
1963911	595227	0.653626	0.615472	0.038154	0.998963	0.433125	0.014132	
295854	3756814	0.62166	0.574201	0.047459	0.997408	0.944953	0.00272	
295854	3756814	0.62166	0.574201	0.047459	0.997408	0.944953	0.00272	
4365922	2590340	0.769415	0.804472	-0.03506	0.992742	0.161142	0.011783	
4560856	2790219	0.768386	0.802048	-0.03366	0.998445	0.242546	0.015244	
1153456		0.941683	0.945915	-0.00423	0.992742	1	0.571062	
4372459	1941671	0.599237	0.546857	0.052379	0.99689	0.246969	0.001267	
1155279	1337721	0.407266	0.366246	0.04102	0.993779	0.883949	0.011087	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3332286	27597	0.44	0.483504	-0.0435	1	0.176727	0.007213	
4118404	1823327	0.5465	0.510328	0.036172	0.945049	0.006499	0.037625	
253319	17243607	0.802113	0.809989	-0.00788	0.991187	0.741153	0.547784	
1662271	2632040	0.900858	0.869021	0.031837	0.998963	0.882186	0.002306	
1924205	4454265	0.60086	0.550683	0.050177	0.997408	0.076425	0.001878	
4097821	2043421	0.015448	0.030895	-0.01545	0.914463	1	0.002102	
1864209	2898256	0.486473	0.44925	0.037223	0.986003	0.945284	0.024124	
454247	16984240	0.901429	0.873151	0.028277	1	1	0.006149	
926241	2779514	0.321878	0.359466	-0.03759	0.981856	0.657484	0.015591	
1266290	12992296	0.836034	0.872014	-0.03598	0.999482	0.763697	0.001706	
1401237	6434848	0.04	0.025028	0.014972	1	0.098264	0.011355	
4561552	4548513	0.649524	0.595672	0.053852	0.999482	1	0.00077	
2377219	4855413	0.75619	0.739749	0.016441	0.999482	0.860909	0.245658	
4653871	1832655	0.692651	0.646531	0.04612	0.955417	0.596585	0.00382	
1374648	7580589	0.888252	0.854618	0.033634	0.997408	0.275897	0.001769	
1539929	13211840	0.850334	0.880274	-0.02994	0.998445	1	0.007569	
4248215	7904839	0.993327	0.998862	-0.00554	0.999482	1	0.008515	
4186477	2302997	0.952109	0.959623	-0.00751	0.839813	0.626011	0.296034	
689128	2064664	0.564824	0.51139	0.053434	0.998963	0.499374	0.000817	
3559003	12442882	0.986667	0.972696	0.01397	1	1	0.001963	
4389154	2590339	0.768642	0.802048	-0.03341	0.997926	0.242546	0.016063	
535603	17369851	0.923737	0.951025	-0.02729	0.998963	0.45841	0.000679	
2459885	1443365	0.111429	0.088168	0.02326	1	0.672347	0.018924	
1937502	2943553	0.598189	0.594071	0.004118	0.998445	0.29414	0.800269	
1264004	13385999	0.916111	0.948237	-0.03213	0.999482	0.502039	0.000147	
1264004	13385999	0.916111	0.948237	-0.03213	0.999482	0.502039	0.000147	
959095	216163	0.728789	0.699659	0.029131	0.999482	0.296629	0.051481	
1937500	2943551	0.598189	0.593857	0.004332	0.999482	0.328083	0.789899	
3311455	4144479	0.561127	0.605923	-0.0448	0.997926	0.83214	0.006246	
1651196	3116379	0.464218	0.498294	-0.03408	0.998963	0.068448	0.041837	
603737	6957735	0.780651	0.818337	-0.03769	0.996371	0.306735	0.004188	
171375	417245	0.394269	0.435142	-0.04087	0.96423	0.834275	0.013299	
1963912	596631	0.654103	0.615604	0.038499	0.998445	0.43344	0.01325	
4100743	728840	0.280138	0.248824	0.031315	0.965267	0.783597	0.031523	
1623469		0.99857	0.993166	0.005404	0.998963	0.037127	0.012818	
2247777	10508968	0.7851	0.761959	0.023141	0.997926	0.926127	0.09144	
1651218	2741784	0.464252	0.498294	-0.03404	0.999482	0.068448	0.041944	
3403779	9994569	0.767143	0.720137	0.047006	1	0.154949	0.000884	
3403780	16872124	0.767143	0.720137	0.047006	1	0.154949	0.000884	
2114789	2483424	0.372615	0.333523	0.039091	0.997926	0.287426	0.012767	
1144211	625912	0.889524	0.905467	-0.01594	0.999482	0.426686	0.114319	
3325523	3213858	0.823333	0.850228	-0.02689	0.999482	0.062326	0.025737	
3115503	4308491	0.440949	0.502326	-0.06138	0.981337	0.413628	0.000251	
4327107	724073	0.933683	0.95382	-0.02014	0.997926	0.706971	0.009082	
3987721	2095790	0.780476	0.820615	-0.04014	0.999482	0.493706	0.002061	
4490369	1571255	0.004294	0	0.004294	0.998445	1	0.006664	
3562833	12441154	0.99381	0.984624	0.009185	0.999482	0.183686	0.008132	
922157	12871645	0.93416	0.951081	-0.01692	0.998963	1	0.027071	
4124892	7305542	0.674723	0.682198	-0.00748	0.948678	0.425253	0.631757	
404139	1225883	0.745455	0.787026	-0.04157	0.993261	0.839865	0.002747	
1264139	13401780	0.904286	0.939135	-0.03485	1	0.365239	0.00013	
3426068	392667	0.290686	0.328306	-0.03762	0.975635	0.216734	0.015581	
4199573	5907558	0.627087	0.56998	0.057107	0.99015	0.406284	0.000956	
3260119	6549411	0.188751	0.226027	-0.03728	0.997926	0.100794	0.003915	
1662287	2702725	0.128571	0.159841	-0.03127	1	0.451453	0.005632	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2347091	17020402	0.729962	0.772779	-0.04282	0.998445	0.923407	0.002798	
4642008	9800669	0.861773	0.823094	0.038679	0.999482	0.417625	0.001324	
4118405	2595456	0.535817	0.501142	0.034675	0.99689	0.042787	0.038899	
579167	2041579	0.511429	0.519362	-0.00793	0.999482	0.279481	0.633495	
1937498	2943549	0.598565	0.593426	0.005139	0.991187	0.231495	0.753239	
1667885	11027393	0.85939	0.887941	-0.02855	0.999482	0.611202	0.009501	
1141114	16860810	0.912381	0.898402	0.013979	0.998445	0.35306	0.139175	
4502903	4607959	0.649475	0.59589	0.053584	0.99689	1	0.000839	
3403777	13103030	0.766953	0.719818	0.047135	0.997926	0.154777	0.000869	
1651889	10839761	0.702427	0.654734	0.047693	0.982893	0.367829	0.002054	
3524274	17345994	0.734032	0.694761	0.039272	0.998963	0.524339	0.008316	
1410093	12614048	0.38873	0.349261	0.039469	0.998445	0.823805	0.01133	
4237443	2241875	0.297619	0.253714	0.043905	0.997926	0.721525	0.002646	
2518667	2007195	0.460915	0.410592	0.050323	0.998963	0.108636	0.001775	
4228719	1658903	0.992798	0.983209	0.009589	0.920684	1	0.008267	
423038	16987905	0.865238	0.841866	0.023372	1	0.310598	0.043185	
3491379	17148467	0.864286	0.897377	-0.03309	0.998963	0.853929	0.002016	
3549786	8032831	0.821905	0.857224	-0.03532	1	1	0.003372	
62443	2833253	0.651862	0.615297	0.036566	0.99689	0.775231	0.020289	
1741450	1939460	0.705714	0.663056	0.042658	0.998963	0.650174	0.005105	
4373840	7208059	0.944179	0.962984	-0.0188	0.998445	1	0.00817	
4373840	7208059	0.944179	0.962984	-0.0188	0.998445	1	0.00817	
2143016	8001012	0.082459	0.108646	-0.02619	0.999482	0.296919	0.006138	
1741423	2186609	0.705714	0.663626	0.042088	0.998963	0.650562	0.005677	
2319654	17013465	0.92	0.94653	-0.02653	1	0.305529	0.001376	
180585	7143921	0.995714	0.985779	0.009935	1	0.158918	0.00157	
1174293	12065249	0.960476	0.941411	0.019065	1	0.762082	0.0062	
1217714	12995496	0.53292	0.560433	-0.02751	0.997926	0.033683	0.093226	
2316829	10901566	0.810628	0.849307	-0.03868	0.985485	0.109509	0.002221	
922162	17074145	0.934223	0.950456	-0.01623	0.998963	1	0.034286	
2318810	7639393	0.564361	0.617984	-0.05362	0.992224	0.56647	0.000806	
481295	10223990	0.558429	0.601831	-0.0434	0.994298	0.887729	0.007201	
46302	162495	0.385387	0.338453	0.046934	0.998445	0.012944	0.002585	
447224	6091885	0.999048	0.992605	0.006442	1	0.043703	0.002988	
3484543	17083648	0.969524	0.95325	0.016274	0.998963	0.713828	0.009494	
1674741	16918650	0.839559	0.858124	-0.01856	0.994298	0.050275	0.119042	
1338575	1441456	0.344614	0.305587	0.039027	0.998445	0.130529	0.009953	
1023595	7531253	0.730476	0.774175	-0.0437	1	0.630347	0.002324	
341911	16879295	0.974261	0.957289	0.016972	0.998963	1	0.003988	
4551070	6856442	0.976901	0.961494	0.015407	0.989632	0.633251	0.005473	
2194622		0.99381	0.984624	0.009185	0.999482	1	0.005468	
2371302	6806142	0.161582	0.178043	-0.01646	0.999482	0.644458	0.18414	
4397093	3782077	0.799141	0.789954	0.009187	0.997408	0.307991	0.48446	
2403034	2951800	0.081506	0.102506	-0.021	0.998963	1	0.026536	
1667879	11027392	0.860554	0.888952	-0.0284	0.997926	0.731292	0.009778	
326273	2773339	0.760406	0.774699	-0.01429	0.940902	0.012659	0.323633	
1215592	6760522	0.845238	0.879977	-0.03474	1	0.748943	0.002	
4655574	2496409	0.373926	0.33847	0.035455	0.99689	0.174558	0.023138	
535636	198273	0.712776	0.758857	-0.04608	0.993261	1	0.001702	
333576	13190691	0.632984	0.5876	0.045384	0.999482	0.329831	0.00431	
2433808	498619	0.258571	0.225256	0.033315	1	0.43915	0.019475	
2420472	10960477	0.745472	0.786121	-0.04065	0.999482	0.615707	0.003844	
3426070	433657	0.325837	0.363844	-0.03801	0.994816	0.558748	0.015116	
1986776	4471017	0.330598	0.304651	0.025947	0.982893	0.872107	0.094301	
1370324	836669	0.816969	0.775313	0.041656	0.999482	0.121139	0.00127	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3596272	6874537	0.268164	0.222919	0.045245	0.99689	0.024974	0.001512	
1066611	17130852	0.91	0.932878	-0.02288	1	0.027222	0.008135	
1066611	17130852	0.91	0.932878	-0.02288	1	0.027222	0.008135	
1667849	11027372	0.859524	0.886803	-0.02728	1	1	0.013697	
2255235	1199101	0.770154	0.803307	-0.03315	0.994816	0.199599	0.016876	
1874652	17632179	0.739752	0.791572	-0.05182	0.998963	1	0.000219	
2007122	1160458	0.429457	0.38984	0.039616	0.997926	0.065269	0.01162	
4446955	6939926	0.970729	0.979287	-0.00856	0.990669	1	0.094089	
1651197	2741790	0.464218	0.498282	-0.03406	0.995853	0.057951	0.042405	
2281341	1912278	0.154909	0.178246	-0.02334	0.998963	0.730283	0.05699	
1667877	11027390	0.861032	0.888826	-0.02779	0.997408	0.611518	0.011441	
603759	10488668	0.780744	0.817975	-0.03723	0.999482	0.307179	0.004597	
1357486	2141234	0.904671	0.924346	-0.01967	0.999482	0.810248	0.031866	
2421221	10961344	0.444286	0.48066	-0.03637	1	0.787326	0.027311	
4628096	2123822	0.933237	0.900229	0.033008	0.991706	0.089042	0.000182	
2316803	11244905	0.196854	0.158134	0.03872	0.999482	0.128564	0.00229	
788846	10490760	1	0.996014	0.003986	0.997926	1	0.004332	
1879474	7011083	0.573333	0.51934	0.053993	1	0.079414	0.001212	
341908	12528249	0.974738	0.958428	0.01631	0.998963	0.394613	0.004809	
4108354	1999997	0.767208	0.801833	-0.03462	0.994816	0.337163	0.0127	
3597588	17446920	0.857143	0.891354	-0.03421	1	0.296919	0.001575	
1662279	2729880	0.899524	0.867882	0.031642	0.999482	1	0.002659	
1165285	6696979	0.108844	0.141163	-0.03232	0.970451	0.087026	0.004304	
4122642	6591333	0.418416	0.464652	-0.04624	0.997926	0.587322	0.004772	
582125	6977786	0.765491	0.803185	-0.03769	0.999482	0.91505	0.004919	
2056926	17109801	0.763108	0.712415	0.050693	0.998963	0.248559	0.000386	
4107083	2787345	1	0.995935	0.004065	0.970969	1	0.004618	
4107083	2787345	1	0.995935	0.004065	0.970969	1	0.004618	
3596268	12188415	0.26813	0.222981	0.045149	0.998963	0.024937	0.001524	
40228	2829662	0.933333	0.911263	0.022071	1	0.674216	0.01133	
754656	17011356	0.637143	0.67426	-0.03712	0.999482	0.357716	0.016741	
1063376	550766	0.665553	0.633106	0.032448	0.998963	1	0.038583	
1750018	17728641	0.808389	0.764505	0.043884	0.999482	0.060618	0.001235	
1651225	2595468	0.465172	0.498292	-0.03312	0.998445	0.058962	0.048283	
3416529	2278782	0.859943	0.845714	0.014228	0.995853	0.193961	0.224004	
1651229	2595466	0.465205	0.498294	-0.03309	0.999482	0.068448	0.048039	
2262590	1462814	0.349657	0.389741	-0.04008	0.968896	0.170427	0.011623	
2380173	291535	0.428367	0.374427	0.05394	0.994816	1	0.000846	
1539928	17084886	0.850476	0.880546	-0.03007	1	0.630014	0.007363	
554099	1358083	0.899905	0.871281	0.028623	0.99689	0.226323	0.005245	
1667889	16911592	0.858716	0.886705	-0.02799	0.989632	0.395762	0.011502	
4636236	1905305	0.255632	0.220259	0.035373	0.969414	0.23201	0.012415	
4056256	4576181	0.730219	0.775114	-0.04489	0.997926	0.175148	0.001838	
1013766	2296456	0.821635	0.841279	-0.01964	0.984966	0.608988	0.115281	
1013766	2296456	0.821635	0.841279	-0.01964	0.984966	0.608988	0.115281	
1651206	3116376	0.464661	0.498858	-0.0342	0.99689	0.058673	0.041572	
4606035	4764465	0.857483	0.844141	0.013342	0.999482	0.897834	0.249836	
1409659	17538271	0.971347	0.986348	-0.015	0.998445	0.147113	0.002012	
1409659	17538271	0.971347	0.986348	-0.015	0.998445	0.147113	0.002012	
153610	4982644	0.63467	0.602623	0.032048	0.997408	0.397481	0.041276	
566540	1525289	0.48381	0.528441	-0.04463	1	1	0.006922	
2197186	10794861	0.576813	0.628555	-0.05174	0.998963	0.278492	0.001294	
1982566	2326427	0.897521	0.92849	-0.03097	0.99689	0.796471	0.000836	
4035208	7682895	0.417625	0.419633	-0.00201	0.992742	0.531393	0.901322	
4556891	1878478	0.837619	0.799204	0.038415	1	0.206958	0.001932	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1924195	12548819	0.601248	0.55137	0.049878	0.994298	0.055925	0.001979	
3444012	12641370	0.820782	0.783429	0.037353	0.997408	0.618364	0.004501	
1928439	12676935	0.515729	0.56422	-0.04849	0.995853	0.302471	0.003174	
4605840	7482560	0.61355	0.578018	0.035531	0.998445	0.406681	0.024404	
4056259	2169942	0.731429	0.776451	-0.04502	1	0.024998	0.001585	
4230064	1339548	0.696446	0.65265	0.043796	0.989632	0.29443	0.004439	
2786212	1479206	0.268386	0.222919	0.045467	0.997408	0.024974	0.001429	
302099	1202305	0.766925	0.806936	-0.04001	0.984448	0.037677	0.003937	
4174855	1507731	0.593422	0.541002	0.05242	0.998963	0.945824	0.001496	
1264011	13387710	0.914681	0.945961	-0.03128	0.999482	0.313417	0.000294	
1264011	13387710	0.914681	0.945961	-0.03128	0.999482	0.313417	0.000294	
535644	2642265	0.744286	0.786121	-0.04183	1	1	0.002926	
4269305	7899712	0.653623	0.601039	0.052584	0.985485	0.887328	0.00114	
811137	17231483	0.631202	0.582574	0.048628	0.998445	0.071413	0.002831	
1749235	17706480	0.950287	0.924087	0.0262	0.996371	0.81025	0.001113	
2271977	2579174	0.664272	0.608496	0.055776	0.992742	0.227132	0.000458	
2347087	6780382	0.729266	0.77081	-0.04154	0.998445	1	0.003729	
1667872	16911583	0.861324	0.888699	-0.02737	0.994298	0.865752	0.013078	
1708815	1540124	0.130144	0.150857	-0.02071	0.995334	0.510323	0.063201	
1937852	2922784	0.368648	0.375716	-0.00707	0.993261	0.427312	0.657463	
3451676	17744152	0.999035	0.993582	0.005452	0.981337	1	0.004821	
4037433	478914	0.702574	0.663429	0.039145	0.997408	0.290257	0.011306	
1507441	1321794	0.898475	0.875427	0.023048	0.999482	0.643173	0.025375	
1511555	6912818	0.592734	0.564645	0.028089	0.995334	0.731348	0.081636	
1157702	10800749	0.544583	0.505727	0.038856	0.993261	0.010116	0.014996	
349763	2987298	0.187143	0.158314	0.028829	0.999482	0.310984	0.021465	
3675807	16949442	0.848427	0.828588	0.019839	0.998963	0.634112	0.101494	
2371225	2367789	0.165238	0.185438	-0.0202	1	0.911011	0.103865	
922193	12874827	0.935115	0.950512	-0.0154	0.998963	1	0.043856	
4118403	2595457	0.532819	0.496508	0.036311	0.982374	0.219232	0.0304	
754666	2281549	0.636797	0.674061	-0.03726	0.999482	0.282688	0.016032	
2348404	17723471	0.966635	0.949943	0.016692	0.999482	1	0.009637	
1221271	6728093	0.950859	0.923208	0.027651	0.998963	0.342851	0.000514	
2292931	2182169	0.662214	0.635535	0.026678	0.998445	0.216528	0.092117	
4067583	672955	0.847992	0.807208	0.040784	0.995334	0.913471	0.001114	
4034951	7691393	0.443794	0.5	-0.05621	0.812856	0.549277	0.001778	
2310656	4611123	0.21381	0.180524	0.033286	0.999482	1	0.010705	
810602	17222371	0.89619	0.873576	0.022614	0.999482	0.878705	0.030451	
1925176	1367811	0.827931	0.793615	0.034317	0.998445	0.179813	0.007834	
3317940	2346361	0.566634	0.526744	0.03989	0.978745	0.584184	0.016029	
3560001	17032776	0.839524	0.871298	-0.03177	0.999482	0.651391	0.006077	
3901762	6631371	0.854868	0.895091	-0.04022	0.998445	0.526793	0.000806	
3709754	3785721	0.40783	0.454382	-0.04655	0.954899	0.576529	0.005764	
4387016	2440851	0.764678	0.797909	-0.03323	0.984966	0.292274	0.017809	
3167441	17086151	1	0.995418	0.004582	0.993779	0.015977	0.006302	
2331931	2244864	0.27958	0.305936	-0.02636	0.997408	0.633416	0.08072	
2134626	17088789	0.942326	0.91752	0.024806	0.999482	0.075217	0.003298	
3133420	4837062	0.639546	0.68943	-0.04988	0.962157	0.295225	0.00218	
2400088	7431784	0.707081	0.743931	-0.03685	0.982893	0.090221	0.010704	
4214983	6575328	0.28861	0.31475	-0.02614	0.983411	0.52791	0.083291	
4467380	7809080	0.783127	0.742321	0.040806	0.999482	0.05215	0.003198	
4339929	5935872	0.46875	0.515782	-0.04703	0.998445	0.746573	0.003387	
780655	950219	0.691977	0.643836	0.048141	0.99689	0.507182	0.001917	
3186579	9314170	0.474147	0.522167	-0.04802	0.92224	0.139848	0.005729	
935033		0.853194	0.877133	-0.02394	0.999482	0.040975	0.0376	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1268447	1641481	0.71306	0.667047	0.046013	0.998445	0.128849	0.002559	
171383	4473086	0.569807	0.521825	0.047982	0.848626	0.343633	0.006121	
765965	17815996	0.164599	0.123436	0.041164	0.998963	0.117298	0.000351	
4185865	6128108	0.868923	0.828588	0.040335	0.998963	0.032154	0.000731	
3454425		0.822688	0.789863	0.032825	0.998963	0.083822	0.009781	
1667839	11027363	0.859524	0.887372	-0.02785	1	0.865753	0.011617	
1667842	12225726	0.859524	0.887372	-0.02785	1	0.865753	0.011617	
2081213	844066	0.05619	0.0439	0.012291	0.998963	1	0.083938	
4353546	1320799	0.41723	0.383065	0.034165	0.846034	0.030061	0.04517	
3901764	5025353	0.855917	0.895161	-0.03924	0.997408	1	0.000983	
1667874	11027388	0.861509	0.889078	-0.02757	0.998445	0.731188	0.01199	
3146801		0.78837	0.759681	0.028689	0.998963	0.407019	0.03328	
3548657	4924588	0.612857	0.663803	-0.05095	0.99689	0.448118	0.001279	
3454436	4146265	0.819352	0.785959	0.033393	0.997926	0.365604	0.009892	
1762483	17689621	0.915238	0.93508	-0.01984	0.999482	0.780265	0.022166	
736936		0.989981	0.976651	0.013329	0.998445	0.380002	0.001375	
303902	17541037	0.880248	0.853811	0.026437	0.998963	0.346416	0.016568	
146375	133482	0.045933	0.07151	-0.02558	0.994816	0.438668	0.000877	
4504973	720756	0.946667	0.962415	-0.01575	0.999482	1	0.022806	
4100748	7855257	0.267874	0.236064	0.03181	0.999482	0.640192	0.02475	
449790	6014820	0.761111	0.794082	-0.03297	0.942457	0.089915	0.016032	
3426085	374175	0.325359	0.362227	-0.03687	0.993261	0.340328	0.018955	
1735752	4287307	0.342493	0.38109	-0.0386	0.975117	0.347754	0.01697	
1566297	6965752	0.337941	0.302166	0.035774	0.998445	0.37825	0.021319	
2433733	1438473	0.718034	0.759386	-0.04135	0.998963	0.711958	0.005213	
959796	11642806	0.685238	0.640661	0.044578	0.999482	0.714072	0.004638	
819412	12600751	0.730476	0.761959	-0.03148	0.999482	0.050605	0.026063	
819412	12600751	0.730476	0.761959	-0.03148	0.999482	0.050605	0.026063	
21125	11910013	0.927342	0.947881	-0.02054	0.994816	0.505002	0.011101	
4592899	692389	0.537655	0.502867	0.034788	0.995853	0.34294	0.033087	
3426080	409621	0.292871	0.329519	-0.03665	0.991187	0.283981	0.017596	
3637132	11672575	0.64	0.596701	0.043299	1	0.833493	0.006449	
570396	10231345	0.752896	0.776437	-0.02354	0.988077	0.769649	0.093958	
4161656	8039669	0.924528	0.905797	0.018731	0.95127	0.06513	0.049989	
2168258	4544109	0.85501	0.826365	0.028645	0.984448	0.634595	0.018544	
4475960	8082504	0.798187	0.753417	0.04477	0.998445	0.71671	0.001019	
929107	17642587	0.940783	0.918379	0.022404	0.99689	1	0.007218	
1964833	2441907	0.322488	0.364679	-0.04219	0.993779	0.826481	0.00636	
4391596	2727721	0.510963	0.455011	0.055951	0.998963	0.891747	0.000737	
3670446	16940599	0.868243	0.835458	0.032786	0.984448	0.035209	0.006674	
1338556	2165506	0.339542	0.302526	0.037016	0.994298	0.229245	0.014736	
2701905	177273	0.575714	0.609909	-0.03419	0.999482	0.62024	0.032736	
1978960	11996156	0.727836	0.677879	0.049957	0.998445	0.486471	0.000922	
3492601	16846687	0.744681	0.718421	0.02626	0.881286	0.210086	0.088054	
3192838	4888805	0.211759	0.257403	-0.04564	0.997408	0.597404	0.001074	
1312181	6749937	0.910391	0.875995	0.034395	0.999482	0.534671	0.000747	
1002650	6685390	0.803537	0.764	0.039537	0.995853	0.640424	0.003366	
4032339	2215630	0.769048	0.730944	0.038103	1	0.606737	0.006461	
2371188	6767034	0.164442	0.18451	-0.02007	0.998963	0.737148	0.105416	
2004462	17647473	0.840649	0.86405	-0.0234	0.998963	0.008933	0.050813	
689161	6593658	0.564176	0.512673	0.051503	0.991187	0.68418	0.001439	
620768	10891112	0.76479	0.720705	0.044085	0.998963	0.018746	0.00261	
2427725	16937963	0.94689	0.925884	0.021006	0.996371	0.80743	0.007622	
807342	2140386	0.741429	0.780182	-0.03875	0.999482	0.168063	0.005208	
1535537	11962730	0.79	0.829727	-0.03973	0.999482	0.633273	0.00211	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3704399	6497755	0.382857	0.436219	-0.05336	0.999482	0.891028	0.001001	
3704399	6497755	0.382857	0.436219	-0.05336	0.999482	0.891028	0.001001	
1924036	10808723	0.489494	0.444255	0.045239	0.998445	0.412364	0.006234	
1837941	17078670	0.790831	0.817198	-0.02637	0.997926	0.428517	0.044817	
4300555	6453225	0.010057	0.018879	-0.00882	0.994298	1	0.021793	
1393025	16829086	0.793774	0.75731	0.036464	0.976153	0.641705	0.008758	
3689009	17523511	0.901567	0.923256	-0.02169	0.975117	0.468566	0.020254	
328090	7767843	0.85148	0.821185	0.030296	0.997926	0.205223	0.010431	
4174852	1237497	0.599237	0.549544	0.049692	0.998445	0.276265	0.002204	
1021331	2485993	0.273033	0.300808	-0.02778	0.989114	0.258286	0.058573	
4201727	436653	0.968499	0.975494	-0.00699	0.987558	0.398284	0.062403	
1270613	4671894	0.337464	0.286121	0.051344	0.999482	0.934223	0.000654	
200378	1548687	0.7755	0.739477	0.036024	0.999482	0.432056	0.010332	
2015179	969235	0.170324	0.178246	-0.00792	0.998445	0.644628	0.528781	
4290935	3773047	0.93041	0.947608	-0.0172	0.998963	0.506357	0.029844	
1268446	1673440	0.713263	0.668373	0.04489	0.998963	0.080539	0.003173	
3525966	17753750	0.897045	0.871868	0.025177	0.998963	0.129256	0.01376	
1896453		0.990403	0.984	0.006403	0.993779	1	0.077866	
689169	12736698	0.564717	0.513683	0.051034	0.995334	0.41742	0.001463	
346055	10485052	0.867969	0.899088	-0.03112	0.998445	1	0.003149	
1396149	16833155	0.984286	0.973265	0.011021	1	1	0.018579	
2371241	13080581	0.16619	0.185649	-0.01946	0.999482	0.911034	0.118857	
4084748	1894753	0.329961	0.382217	-0.05226	0.98704	0.773471	0.000885	
1157413	10753891	0.741546	0.711944	0.029602	0.979264	0.359106	0.041142	
1644664	4888649	0.109048	0.086462	0.022586	1	0.669215	0.021747	
4070999	2036105	0.688541	0.645737	0.042803	0.979264	0.504417	0.005493	
1677725	7952591	0.791706	0.815131	-0.02342	0.999482	0.433124	0.072116	
1162131	2275325	0.724665	0.742009	-0.01734	0.996371	0.133274	0.241424	
3455406	13142636	0.441794	0.491458	-0.04966	0.998445	0.735636	0.001913	
4495432	2053286	0.931448	0.950688	-0.01924	0.992742	0.716794	0.014175	
4012653	2053287	0.932886	0.949085	-0.0162	0.993779	1	0.038655	
1276458	684128	0.381792	0.353242	0.02855	0.999482	0.941286	0.069725	
1676375	750780	0.814109	0.768223	0.045885	0.998963	0.635399	0.000533	
3175062	2584283	0.014286	0.030148	-0.01586	1	0.554297	0.000876	
122929	8139890	0.949612	0.948454	0.001159	0.987558	0.722813	0.87224	
122929	8139890	0.949612	0.948454	0.001159	0.987558	0.722813	0.87224	
3114558	16872401	0.512919	0.546233	-0.03331	0.995853	0.195419	0.043291	
1741437	17746310	0.707685	0.668033	0.039652	0.975635	0.877624	0.010479	
4402734	4130686	0.649048	0.604784	0.044264	0.999482	0.179615	0.005	
3152850	12492399	0.241659	0.279932	-0.03827	0.998445	0.558656	0.007184	
1034779	6588641	0.523923	0.490286	0.033638	0.995334	0.735269	0.042523	
1850277	17415676	0.444498	0.486239	-0.04174	0.993779	0.945951	0.010875	
2124575	9536779	0.364813	0.320571	0.044242	0.994298	0.120736	0.005295	
4228002	7225663	0.4	0.44515	-0.04515	0.980301	0.679731	0.005601	
3870140	4145774	0.11682	0.14698	-0.03016	1	0.865766	0.00284	
849980	1468673	0.444976	0.400228	0.044748	0.996371	0.888134	0.005883	
1351075	10497047	0.941905	0.921323	0.020582	0.998963	1	0.013193	
4440207	6544968	0.857143	0.861714	-0.00457	0.994298	0.887685	0.69216	
1279727	11127018	0.117731	0.108646	0.009085	0.999482	0.0341	0.39197	
764588	3731973	0.861905	0.848519	0.013385	0.999482	0.895448	0.24189	
98519	2839120	0.806992	0.829128	-0.02214	0.993261	0.81138	0.081076	
98519	2839120	0.806992	0.829128	-0.02214	0.993261	0.81138	0.081076	
98519	2839120	0.806992	0.829128	-0.02214	0.993261	0.81138	0.081076	
4637785	2791944	0.545894	0.501153	0.04474	0.986003	0.066873	0.006482	
2089126	10850143	0.916185	0.886651	0.029534	0.988595	0.234344	0.002159	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1314716	961459	0.550287	0.49258	0.057707	0.995334	0.01016	0.000327	
3416760	17043066	0.959524	0.978385	-0.01886	1	1	0.001179	
921855	1262720	0.882269	0.859499	0.022769	0.999482	0.48383	0.040555	
789724	9839994	0.638247	0.589655	0.048591	0.989114	0.575141	0.002259	
4054583	1582433	0.316141	0.344394	-0.02825	0.995853	0.82264	0.063314	
6850	2822998	0.870829	0.833333	0.037496	0.999482	0.331593	0.001188	
539229	1001594	0.445238	0.490888	-0.04565	0.999482	0.417702	0.005629	
3333533	244979	0.613333	0.562714	0.05062	0.998963	1	0.001805	
1650600	1395558	0.351905	0.331058	0.020847	1	0.594002	0.183881	
1953380	16914980	0.771905	0.726394	0.045511	1	0.553186	0.001284	
1409055	11685684	0.721684	0.67664	0.045045	0.986003	0.140819	0.002856	
1535549	2096283	0.791985	0.83105	-0.03907	0.997408	0.547544	0.002337	
2527197	766785	0.943008	0.916856	0.026151	0.996371	0.505415	0.001601	
950452	9584783	0.980952	0.965262	0.01569	0.999482	1	0.002664	
4070970	793979	0.898281	0.865868	0.032413	0.99689	0.884961	0.002154	
2105911	2182928	0.240688	0.281143	-0.04046	0.996371	1	0.005936	
3709752	3785722	0.412046	0.45615	-0.0441	0.997408	0.683134	0.007264	
3688961	17524924	0.908961	0.927107	-0.01815	0.998963	0.310778	0.044472	
2951656	428954	0.325962	0.362286	-0.03632	0.992742	0.464443	0.020885	
1264052	10084445	0.912297	0.944255	-0.03196	0.999482	0.183474	0.00028	
2099466	464457	0.560476	0.610353	-0.04988	1	0.887234	0.001681	
1886698	906247	0.653771	0.679623	-0.02585	0.969414	0.69345	0.09727	
3192834	10871351	0.208414	0.253165	-0.04475	0.986522	0.47267	0.001396	
1703958	1785819	0.904967	0.88041	0.024557	0.997926	0.334786	0.013091	
1518282	17461258	0.974714	0.986872	-0.01216	0.997408	1	0.007183	
1834812	644221	0.524286	0.482366	0.041919	1	0.104894	0.009746	
1264158	10193260	0.915157	0.94653	-0.03137	0.999482	0.095998	0.000231	
2371122	10866064	0.165385	0.187285	-0.0219	0.991706	0.001815	0.095423	
4122636	2075626	0.781592	0.741297	0.040296	0.952825	0.277981	0.005457	
4122636	2075626	0.781592	0.741297	0.040296	0.952825	0.277981	0.005457	
4122636	2075626	0.781592	0.741297	0.040296	0.952825	0.277981	0.005457	
2816496	2251107	0.547278	0.490308	0.05697	0.997408	0.417587	0.000665	
3192814	2667572	0.833492	0.795325	0.038167	0.997926	0.917736	0.002831	
1672372	12269966	0.878352	0.847652	0.030701	0.993779	0.43445	0.005705	
2242719	7911009	0.845567	0.872437	-0.02687	0.998963	0.286343	0.019263	
3857487	5948754	0.359069	0.380121	-0.02105	0.997926	0.097948	0.042971	
3123070	10513041	0.742381	0.780432	-0.03805	1	0.023586	0.007537	
557875	16868110	0.943279	0.923208	0.020071	0.999482	0.810934	0.013079	
717950	12738348	0.576145	0.529909	0.046236	0.885433	0.070309	0.006302	
641536	7699940	0.770115	0.731524	0.038591	0.99015	0.603941	0.006158	
2136111	17501974	0.958571	0.97099	-0.01242	1	0.526126	0.043696	
1176018	11120298	0.345567	0.296928	0.048639	0.999482	1	0.001809	
2165330	2296910	0.597036	0.546804	0.050233	0.996371	0.891614	0.001938	
3426071	402196	0.326108	0.363532	-0.03742	0.99015	0.420721	0.017491	
1268450	1641488	0.192308	0.191648	0.00066	0.992224	0.100557	0.960301	
1732522	11021217	0.622723	0.671412	-0.04869	0.995853	0.491726	0.001801	
2111337	1508486	0.754294	0.736602	0.017692	0.997926	0.067446	0.207526	
1352344	969912	0.107143	0.086462	0.020681	1	0.082057	0.035484	
1376059	10210546	0.881202	0.850057	0.031145	0.997926	0.425557	0.004906	
1697239	10501371	0.919924	0.918565	0.001359	0.998963	0.64871	0.877492	
793080	360460	0.444498	0.398053	0.046445	0.994298	0.480339	0.004156	
2808037	1504549	0.349093	0.395786	-0.04669	0.997926	0.832572	0.00347	
132403	11089836	0.280267	0.251429	0.028838	0.997408	0.473217	0.044947	
3589727	13128870	0.392755	0.350797	0.041958	0.998963	0.710995	0.007923	
1034777	10889006	0.524309	0.490857	0.033452	0.997408	0.684928	0.043485	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1886710	17053594	0.658397	0.681093	-0.0227	0.998445	0.756327	0.138913	
3454438		0.820917	0.788396	0.032521	0.998445	0.156904	0.01086	
4150317	7331532	0.659692	0.637086	0.022606	0.862105	0.238066	0.17529	
1640509	889561	0.207259	0.247434	-0.04018	0.997408	0.320033	0.00324	
2939986	2031480	0.667619	0.63683	0.030789	0.998963	0.827028	0.049212	
3640774	6419992	0.260234	0.290254	-0.03002	0.810264	0.413135	0.064929	
4663410	1586026	0.099565	0.075597	0.023968	0.867289	0.303113	0.014741	
4008044	2720110	0.515714	0.461758	0.053956	0.998445	0.308322	0.001019	
1651892	1487874	0.699237	0.65529	0.043947	0.999482	0.370325	0.004131	
539249	17816879	0.449427	0.494292	-0.04486	0.997408	0.379548	0.006533	
4514284	1161356	0.920738	0.897467	0.023271	0.949715	0.348452	0.017815	
2433740	10757761	0.729485	0.77366	-0.04418	0.997926	0.699748	0.002419	
2222123	12252439	0.733302	0.768793	-0.03549	0.998445	0.849436	0.012936	
4347308	662276	0.223258	0.261737	-0.03848	0.969933	0.790266	0.007253	
3589724	4526028	0.392857	0.350398	0.042459	1	0.711136	0.007169	
1002652	6702829	0.803435	0.765643	0.037792	0.998963	0.707762	0.005091	
2622006	990217	0.671905	0.624573	0.047331	1	0.94269	0.002238	
3447545	17574467	0.866762	0.898741	-0.03198	0.995853	0.57851	0.002693	
180617	12432729	0.382634	0.433447	-0.05081	0.998963	0.731262	0.001629	
4152608	1399195	0.456023	0.423777	0.032246	0.997926	0.944968	0.04521	
871448	7036403	0	0.003432	-0.00343	0.993779	1	0.00824	
329646	9401163	0.609442	0.654731	-0.04529	0.888543	0.384107	0.006964	
1034784	11206890	0.52381	0.490868	0.032942	0.998445	0.787204	0.046442	
1063372	597630	0.665858	0.633835	0.032023	0.981856	0.659858	0.044542	
1622895	2346608	0.351145	0.392491	-0.04135	0.998963	0.723738	0.008526	
3198073	7823	0.362118	0.39818	-0.03606	0.998963	0.231605	0.024753	
1037711	835361	0.660476	0.674061	-0.01359	1	0.817916	0.382702	
4550305	6832657	0.442121	0.493597	-0.05148	0.978227	0.374927	0.002335	
1176012	4655336	0.345567	0.297497	0.04807	0.999482	0.935792	0.002042	
1668480	4631879	0.35367	0.332192	0.021478	0.997926	0.0328	0.179326	
3558254	17826767	0.972381	0.982935	-0.01055	1	1	0.029096	
116325	6005266	0.722381	0.75711	-0.03473	1	0.409688	0.014693	
1068926	912794	0.575786	0.53303	0.042757	0.998963	0.057598	0.007534	
4121282	1499048	0.77027	0.811525	-0.04125	0.949715	0.000391	0.004947	
2371268	1376482	0.157453	0.169856	-0.0124	0.958528	0.221448	0.328915	
689172	6692957	0.563992	0.513667	0.050325	0.997926	0.458234	0.001669	
3455668	16991525	0.803333	0.835609	-0.03228	1	0.541468	0.009554	
2713890	1379856	0.250952	0.22748	0.023472	0.998963	0.149362	0.094669	
3869003	5911095	0.767014	0.752183	0.014831	0.997926	0.916766	0.968593	
2379955	17011123	0.935714	0.947668	-0.01195	1	1	0.121662	
764731	17219514	0.648051	0.687654	-0.0396	0.911871	0.252756	0.016424	
4166035	7501488	0.270734	0.240571	0.030163	0.997408	0.079255	0.033732	
959126		0.831871	0.810811	0.021061	0.973043	0.007004	0.105703	
3670448	16940607	0.865238	0.832765	0.032474	1	0.11654	0.006585	
4429015	5748657	0.439275	0.475087	-0.03581	0.976672	1	0.030417	
1522576	7453961	0.82395	0.794622	0.029328	0.996371	0.022588	0.025748	
4600176	2537832	0.255248	0.296359	-0.04111	0.998963	0.571163	0.005686	
3687300	10461807	0.479981	0.525656	-0.04567	0.998445	0.684719	0.005055	
3128617	16903022	0.699618	0.669511	0.030107	0.998445	0.593653	0.045016	
1264054	17046569	0.912774	0.944255	-0.03148	0.999482	0.183474	0.000338	
1640503	7118	0.789599	0.750569	0.03903	0.998445	0.279003	0.004234	
3455338	4317221	0.439261	0.489486	-0.05022	0.97719	0.784817	0.002051	
1269187	11126105	0.840324	0.870582	-0.03026	0.998445	0.654034	0.008865	
1176017	9308435	0.34542	0.297836	0.047584	0.998445	0.935746	0.002283	
3327771	17710942	0.887882	0.857306	0.030576	0.997408	0.491909	0.004869	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1232539	4494744	1	0.996579	0.003421	0.997926	1	0.008197	
4088765	2335478	0.035403	0.027297	0.008106	0.865215	1	0.18691	
1874501	6587039	0.571429	0.618885	-0.04746	1	0.520719	0.00302	
839735	3749713	0.950859	0.933941	0.016918	0.998445	0.578177	0.02436	
4598409	6550166	0.190544	0.22774	-0.0372	0.99689	0.034119	0.004494	
2347378	2581168	0.71592	0.755973	-0.04005	0.999482	0.465195	0.005824	
4324133	6877739	0.732982	0.775685	-0.0427	0.994816	0.019742	0.002784	
3443756	10517017	0.670802	0.623429	0.047373	0.99689	0.942592	0.002306	
2896198	1921887	0.211759	0.238339	-0.02658	0.997926	0.926053	0.050004	
1652761	11041966	0.882745	0.851936	0.030809	0.998963	0.001181	0.007238	
4296556	7026141	0	0.003413	-0.00341	1	1	0.00821	
4479661	6706578	0.611377	0.651083	-0.03971	0.99689	0.94084	0.011618	
516167	17325265	0.411907	0.460345	-0.04844	0.986522	0.453031	0.003027	
2333571	2442780	0.167462	0.198747	-0.03129	0.998445	0.137086	0.013967	
2483827	4794814	0.26875	0.237847	0.030903	0.98704	0.159176	0.031046	
451331	6128106	0.180952	0.213311	-0.03236	1	0.919993	0.012881	
1535548	2096284	0.791429	0.829909	-0.03848	0.998445	0.811603	0.002857	
1741261	2154991	0.693994	0.646189	0.047805	0.999482	0.337466	0.001907	
1069448	1761375	0.669209	0.716155	-0.04695	0.999482	0.319315	0.002079	
2413825	17496153	0.881316	0.906712	-0.0254	0.999482	0.841844	0.012247	
3148708	10936674	0.666188	0.711494	-0.04531	0.992224	0.509041	0.003279	
4124996	541969	0.53	0.496014	0.033986	0.999482	0.946179	0.038602	
2271883	2673493	0.302857	0.289294	0.013563	0.999482	0.622469	0.363883	
3869006	6648784	0.766361	0.750672	0.015689	0.999482	1	0.984491	
722877		0.940952	0.961845	-0.02089	0.999482	0.362201	0.003563	
2393742	1546208	0.296084	0.337529	-0.04144	0.995853	0.705749	0.007061	
4664996	4147777	0.805181	0.765481	0.0397	0.893727	0.008459	0.007288	
4664996	4147777	0.805181	0.765481	0.0397	0.893727	0.008459	0.007288	
4664996	4147777	0.805181	0.765481	0.0397	0.893727	0.008459	0.007288	
2776341	425642	0.30051	0.338433	-0.03792	0.931571	0.242059	0.018435	
2859641	1994716	0.22848	0.201823	0.026657	0.885951	0.655539	0.056531	
533097	11661783	0.666508	0.70605	-0.03954	0.997408	0.122528	0.0096	
4108352	2440845	0.770813	0.802166	-0.03135	0.996371	0.241274	0.023714	
3180792	17207373	0.986177	0.976055	0.010123	0.998445	0.395179	0.022465	
3995054	1364056	0.017653	0.008542	0.009111	0.998445	1	0.017484	
2483830	11655531	0.271033	0.239749	0.031283	0.997408	0.138144	0.028272	
1023683	11580609	0.576585	0.531903	0.044683	0.978227	0.538307	0.006569	
1023683	11580609	0.576585	0.531903	0.044683	0.978227	0.538307	0.006569	
4635620	2019647	0.302567	0.349045	-0.04648	0.959565	0.129146	0.003364	
328095	2503100	0.85081	0.821551	0.02926	0.998445	0.204831	0.013377	
4042214	4416513	0.142517	0.156997	-0.01448	0.999482	0.201076	0.218657	
1176015	10465697	0.345238	0.297497	0.047741	1	0.935792	0.002186	
2450765	13294994	0.909524	0.93451	-0.02499	0.999482	0.575659	0.004764	
4404407	4237598	0.191905	0.16041	0.031495	1	0.003632	0.016018	
1069019	949915	0.437989	0.392715	0.045274	0.855365	0.126929	0.006609	
4001626	1028218	0.106667	0.086462	0.020205	1	0.082057	0.039189	
3443754	13146636	0.67065	0.62357	0.04708	0.995334	0.828988	0.002397	
4048836	2407720	0.65613	0.687001	-0.03087	0.995853	1	0.045826	
3426074	6842681	0.672875	0.636105	0.03677	0.997926	0.511705	0.018779	
4087940	2099981	0.998565	0.996583	0.001981	0.99689	1	0.210806	
3339889	10515858	0.968571	0.947668	0.020904	1	1	0.001589	
3339878	12653044	0.968571	0.947668	0.020904	1	1	0.001589	
803269	10787605	0.450533	0.491935	-0.0414	0.984448	0.001798	0.013379	
1268445	1641480	0.712092	0.667623	0.044469	0.991706	0.16992	0.003756	
309873	2626116	0.817529	0.843822	-0.02629	0.994298	0.798574	0.036147	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
4155519	3935634	0.289599	0.306157	-0.01656	0.997926	0.690971	0.275178	
1678832	11033784	0.928095	0.910125	0.01797	1	0.53485	0.040209	
524776	17140956	0.98381	0.988055	-0.00425	1	0.000144	0.312238	
4214212	4900450	0.039197	0.060571	-0.02137	0.995853	1	0.002781	
2104240	6491036	0.002381	0.007964	-0.00558	1	1	0.014753	
2758656	244991	0.613073	0.563781	0.049291	0.998445	1	0.002366	
806456	2790237	0.778487	0.813161	-0.03467	0.968896	0.041674	0.013146	
211483	224995	0.160476	0.130137	0.030339	0.998445	0.764672	0.00906	
160768	12589225	0.669048	0.712173	-0.04313	1	0.869284	0.004864	
3079474	2416804	0.449857	0.407175	0.042681	0.997926	0.442613	0.009308	
2314679		0.506232	0.462113	0.04412	0.992224	0.220318	0.009067	
2314679		0.506232	0.462113	0.04412	0.992224	0.220318	0.009067	
520005	11976223	0.563931	0.532534	0.031397	0.997408	0.786084	0.053685	
4129497	4356237	0.614762	0.581911	0.032851	1	0.446664	0.037151	
4081729	28896	0.358037	0.392032	-0.034	0.987558	0.943159	0.031254	
842333	2964184	0.074762	0.095563	-0.0208	1	0.695045	0.022934	
2776344	342944	0.265238	0.296804	-0.03157	0.998445	0.871744	0.032602	
2317585	455635	0.567271	0.515945	0.051326	0.998445	0.63667	0.001484	
709874	1537430	0.42755	0.44559	-0.01804	0.996371	0.337801	0.278736	
1804163	307114	0.868571	0.82537	0.043202	1	0.159398	0.000306	
1023594	12139364	0.541547	0.494279	0.047268	0.995853	0.588266	0.00394	
1651881	11041297	0.699237	0.656428	0.04281	0.999482	0.262561	0.005117	
2276312	386526	0.493738	0.458046	0.035692	0.989114	0.306284	0.032962	
2718967	425196	0.326978	0.36374	-0.03676	0.998445	0.466246	0.018791	
2432374	1888380	0.582459	0.546804	0.035656	0.997926	0.275619	0.031212	
4478416	842159	0.01479	0.024571	-0.00978	0.99689	0.001243	0.037835	
516132	113877	0.587355	0.537399	0.049956	0.987558	0.219751	0.002364	
702416	2246583	0.241643	0.2876	-0.04596	0.994298	0.80407	0.001501	
1964847	2511553	0.316969	0.357224	-0.04026	0.999482	0.941437	0.008938	
1939161	7838141	0.87334	0.902778	-0.02944	0.918092	0.418062	0.006063	
4319947	1023330	0.627751	0.659404	-0.03165	0.993779	0.706128	0.042844	
1228364	10495620	0.946667	0.926052	0.020614	1	0.465705	0.009971	
101371	17115302	0.831268	0.850967	-0.0197	0.999482	0.594867	0.09551	
842351	2910601	0.075238	0.095563	-0.02033	1	0.695045	0.026412	
1804175	16972681	0.870476	0.828392	0.042084	0.998963	0.341179	0.000377	
806500	16912090	0.910491	0.935335	-0.02484	0.987558	0.395997	0.004801	
2947678	2117069	0.803333	0.834852	-0.03152	0.999482	0.327116	0.01173	
1841387	1463248	0.977033	0.961187	0.015846	0.995853	0.635994	0.0042	
516178	3823979	0.414622	0.465762	-0.05114	0.967341	0.09739	0.002222	
516178	3823979	0.414622	0.465762	-0.05114	0.967341	0.09739	0.002222	
982447	10915578	0.665076	0.624429	0.040647	0.997408	0.773205	0.009912	
4056257	4429884	0.733941	0.777205	-0.04326	0.993261	0.031149	0.002407	
4613905	1603188	0.999524	0.994881	0.004643	1	1	0.005301	
2114792	7338450	0.377268	0.348519	0.028749	0.997926	0.45722	0.066935	
2657954	1530642	0.335646	0.301197	0.034449	0.875583	0.489403	0.03688	
4233173	3179542	0.660526	0.71	-0.04947	0.907206	0.048099	0.002821	
4233173	3179542	0.660526	0.71	-0.04947	0.907206	0.048099	0.002821	
2080303	7968092	0.340344	0.329338	0.011006	0.996371	0.359243	0.474816	
4573686	2110231	0.178122	0.218384	-0.04026	0.978227	0.764561	0.002228	
4387330	2298509	0.615348	0.583144	0.032204	0.998963	0.487486	0.041216	
4613665	1569347	0.707259	0.746005	-0.03875	0.99689	0.532959	0.009236	
1441438	17098165	0.998567	0.994851	0.003716	0.995853	1	0.042305	
1515237	6902513	0.556039	0.533565	0.022474	0.984448	0.11586	0.165431	
1640485	17771642	0.789599	0.751139	0.03846	0.998445	0.278931	0.004822	
4259986	2087194	0.57619	0.533561	0.04263	1	0.042217	0.007703	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1953369	16914964	0.747855	0.703072	0.044783	0.999482	0.746618	0.001998	
3115499	6870018	0.456584	0.513652	-0.05707	0.998963	1	0.000533	
4514817	2132433	0.631453	0.588737	0.042716	0.997926	0.186412	0.006933	
2238971	7906484	0.932316	0.953872	-0.02156	0.998963	0.251494	0.004609	
4613807	1038490	0.501429	0.468679	0.03275	0.999482	0.30959	0.04626	
4442073	6557013	0.076327	0.104849	-0.02852	0.864178	0.001647	0.003191	
4332876	537497	0.416831	0.442399	-0.02557	0.963193	0.5763	0.119441	
172140	10483521	0.946565	0.962457	-0.01589	0.998963	0.118285	0.023182	
4396675	3770069	0.17	0.159635	0.010365	0.998963	0.256303	0.399325	
4396675	3770069	0.17	0.159635	0.010365	0.998963	0.256303	0.399325	
1128988	12095265	0.995714	0.999431	-0.00372	0.999482	1	0.025668	
1128988	12095265	0.995714	0.999431	-0.00372	0.999482	1	0.025668	
1352350	12477261	0.106972	0.085893	0.021079	0.998445	0.131417	0.031023	
3484325	17502660	0.965484	0.950924	0.01456	0.989632	0.145165	0.0279	
154120	2854809	0.103152	0.081342	0.021809	0.998445	0.823036	0.023553	
2325330	13100718	0.432729	0.387372	0.045357	0.998963	0.319959	0.005251	
2346708	10510592	0.712572	0.755695	-0.04312	0.995334	1	0.003021	
1805031	8089802	0.529048	0.483504	0.045544	1	0.050331	0.006414	
768211	17210341	0.921429	0.943052	-0.02162	0.999482	0.519769	0.009998	
929014	1409585	0.542857	0.523349	0.019509	0.999482	0.091036	0.240105	
3455682	16991546	0.957538	0.971494	-0.01396	0.997926	1	0.02113	
3076563	2412717	0.655863	0.6959	-0.04004	0.998963	0.750409	0.010184	
2928463	2049283	0.234733	0.274175	-0.03944	0.998963	0.445455	0.004965	
3989945	1431978	0.905534	0.876564	0.02897	0.998963	0.756643	0.003948	
3381084	17664670	0.815238	0.849658	-0.03442	0.999482	0.426932	0.005446	
3381084	17664670	0.815238	0.849658	-0.03442	0.999482	0.426932	0.005446	
3702792	4968158	0.705653	0.746208	-0.04055	0.976153	0.928105	0.005775	
3868994	7891055	0.825046	0.812795	0.012251	0.996371	0.898454	0.956671	
2776340	375432	0.32935	0.366021	-0.03667	0.99689	0.423949	0.01953	
2285119	1815338	0.889603	0.884715	0.004888	0.883878	0.109413	0.664966	
1921798	9298040	0.256938	0.22523	0.031707	0.991706	0.205616	0.023556	
4499932	1007164	0.853623	0.841067	0.012556	0.983411	0.609638	0.298843	
2416366	16928185	0.860365	0.89118	-0.03082	0.992742	0.860847	0.004511	
3645733	17746947	0.924952	0.949772	-0.02482	0.996371	0.47592	0.001832	
1647649	7925271	0.705714	0.747153	-0.04144	0.999482	0.245121	0.004896	
1647649	7925271	0.705714	0.747153	-0.04144	0.999482	0.245121	0.004896	
1834862	605818	0.520992	0.477816	0.043177	0.998963	0.120547	0.007798	
4445370	6749631	0.998092	1	-0.00191	0.997408	1	0.070993	
806467	2790168	0.778537	0.808635	-0.0301	0.975635	0.439361	0.02799	
806467	2790168	0.778537	0.808635	-0.0301	0.975635	0.439361	0.02799	
2197189	7080110	0.577512	0.626286	-0.04877	0.995334	0.278512	0.002448	
939155	9545937	0.809933	0.844394	-0.03446	0.995853	0.698998	0.004774	
579165	917815	0.386559	0.403079	-0.01652	0.998445	0.140911	0.308172	
1535532	10499213	0.791508	0.829352	-0.03784	0.998963	0.633388	0.003284	
803751	12414388	0.789751	0.765411	0.02434	0.995334	0.008238	0.069437	
717945	2019634	0.600476	0.557714	0.042762	0.997926	0.631386	0.008935	
35298	2828596	0.870281	0.846821	0.02346	0.983929	0.357655	0.039495	
1601703	710955	0.438159	0.488506	-0.05035	0.991706	0.635536	0.002473	
1601703	710955	0.438159	0.488506	-0.05035	0.991706	0.635536	0.002473	
1269198	17032810	0.842734	0.871445	-0.02871	0.997926	1	0.012372	
3455987	11934389	0.65425	0.694635	-0.04038	0.99689	0.9367	0.009925	
1511175	3748085	0.144762	0.175768	-0.03101	1	0.560058	0.01002	
192868	10047825	0.751916	0.712974	0.038942	0.992742	0.868452	0.006691	
929105	17715372	0.939466	0.918089	0.021377	0.999482	0.825118	0.01061	
4575514	2143570	0.745463	0.706621	0.038842	0.99689	0.221631	0.008677	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3670413		0.860476	0.828214	0.032262	1	0.635155	0.007113	
4193400	2038182	0.744519	0.706485	0.038034	0.999482	0.254588	0.010114	
2114790	7335905	0.378236	0.348519	0.029716	0.995853	0.45722	0.058222	
780658	3771052	0.681231	0.633452	0.047779	0.959046	0.940871	0.00305	
2238569	3004261	0.404876	0.439636	-0.03476	0.997408	0.244906	0.031627	
491059	2041497	0.174929	0.214448	-0.03952	0.999482	0.616638	0.002517	
306798	1999860	0.06619	0.04835	0.01784	1	0.716008	0.019675	
1619043	408552	0.729048	0.687713	0.041334	1	0.583334	0.005467	
1750022	969680	0.781189	0.739976	0.041213	0.971488	0.009619	0.004662	
256381	16872592	0.903149	0.881849	0.0213	0.997408	0.518728	0.034034	
2393805	1440778	0.737369	0.694761	0.042608	0.998963	0.811604	0.003455	
4370533	6502187	0.227316	0.255137	-0.02782	0.99689	0.859036	0.046979	
959526	6499596	0.958095	0.953356	0.004739	1	0.114355	0.484237	
4423401	4815389	0.74522	0.70672	0.0385	0.997408	0.222531	0.009335	
4005633	4241231	0.52381	0.491458	0.032352	0.999482	1	0.048714	
3169851	4577184	0.98999	0.980091	0.009899	0.999482	0.291957	0.012542	
3446337	17460101	0.914658	0.895833	0.018824	0.985485	0.582335	0.051554	
4424381	5015847	0.175755	0.145218	0.030536	0.971488	1	0.013101	
3524230	17403789	0.774286	0.751991	0.022295	1	0.651102	0.110899	
4320452	2097550	0.73619	0.770193	-0.034	1	0.703403	0.015205	
3590004	12649083	0.843362	0.806948	0.036414	0.997926	0.234855	0.002898	
1151679	17636466	0.94619	0.920843	0.025348	0.999482	0.815319	0.001757	
3115548	3776423	0.455153	0.511986	-0.05683	0.997408	0.892413	0.000573	
3115548	3776423	0.455153	0.511986	-0.05683	0.997408	0.892413	0.000573	
907977	560859	0.141555	0.161494	-0.01994	0.991187	0.078471	0.097356	
2346690	1445112	0.715443	0.757127	-0.04168	0.998445	0.927103	0.003996	
3114237	11738553	0.969495	0.955631	0.013863	0.999482	0.686668	0.025176	
4608485	6508915	0.175405	0.213879	-0.03847	0.999482	0.548784	0.003019	
1338574	10207124	0.819656	0.839408	-0.01975	0.998445	0.70788	0.108298	
4011547	6550165	0.190431	0.227117	-0.03669	0.994816	0.0544	0.005195	
3997454	4852800	0.184461	0.157355	0.027107	0.998445	0.89906	0.028887	
2039033	10876164	0.750242	0.71857	0.031672	0.986003	0.801653	0.029385	
3192851	12716855	0.212786	0.257127	-0.04434	0.997926	0.479779	0.001532	
1594915		0.471972	0.516867	-0.0449	0.94816	0.445117	0.007332	
1607672	11878732	0.888095	0.859909	0.028186	0.999482	0.325126	0.009813	
1863821	1835491	0.56101	0.519932	0.041079	0.998963	0.892502	0.013167	
2318829	9872695	0.657266	0.603193	0.054073	0.99689	0.888006	0.000656	
4593353	473223	0.250239	0.247434	0.002805	0.996371	0.416042	0.841067	
856423	824247	0.90251	0.928241	-0.02573	0.984966	0.034366	0.005917	
1063452	11161517	0.796279	0.77423	0.022048	0.997926	1	0.108486	
1215608	6548243	0.679561	0.718928	-0.03937	0.997408	0.616796	0.00904	
1215608	6548243	0.679561	0.718928	-0.03937	0.997408	0.616796	0.00904	
1180845	4339925	0.492359	0.532992	-0.04063	0.998445	0.542569	0.012317	
1357588	17236969	0.821088	0.851936	-0.03085	0.998445	0.68757	0.010629	
1769691	8090152	0.749048	0.745165	0.003883	1	0.130615	0.778983	
784000	7595826	0.910391	0.930603	-0.02021	0.999482	0.301081	0.027141	
4132250	1872635	0.703721	0.675799	0.027922	0.997408	0.24721	0.061756	
1640519	1170438	0.210249	0.248856	-0.03861	0.994298	0.415158	0.004838	
34448	2828393	0.916667	0.94198	-0.02531	1	0.52796	0.00291	
34484	2828402	0.916667	0.94198	-0.02531	1	0.52796	0.00291	
1640510	889560	0.211207	0.248853	-0.03765	0.993261	0.318881	0.005971	
4516329	2267831	0.998571	0.994299	0.004273	0.998963	1	0.024426	
2212832	10906740	0.663489	0.635381	0.028108	0.999482	0.034708	0.068759	
512545	9655741	0.439048	0.463026	-0.02398	1	0.786165	0.138557	
1318491	6431023	0.448095	0.406712	0.041383	1	0.069152	0.009847	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
4081737	891484	0.997143	0.992036	0.005106	1	1	0.029638	
1043954	12097652	0.767464	0.800687	-0.03322	0.994298	0.831918	0.014963	
1673872	12272419	0.973863	0.961538	0.012324	0.98704	0.633128	0.03031	
4351960	1451223	0.992545	0.982895	0.009651	0.880767	1	0.010108	
4351960	1451223	0.992545	0.982895	0.009651	0.880767	1	0.010108	
1197384	16851270	0.889524	0.859909	0.029615	0.999482	0.20551	0.0067	
4028797	996404	0.764678	0.720504	0.044174	0.991187	0.130971	0.001885	
1176008	3767842	0.346851	0.299204	0.047648	0.998963	0.809857	0.002248	
1540502	9397330	0.386082	0.428653	-0.04257	0.997926	0.629224	0.008162	
4106551	7903758	0.818875	0.856328	-0.03745	0.998445	0.410958	0.002414	
4637543	6700622	0.513836	0.484624	0.029212	0.998445	0.418146	0.076509	
4226964	3737186	0.94619	0.967008	-0.02082	1	0.241469	0.001823	
4226964	3737186	0.94619	0.967008	-0.02082	1	0.241469	0.001823	
4226964	3737186	0.94619	0.967008	-0.02082	1	0.241469	0.001823	
2393802	345585	0.734812	0.692352	0.04246	0.991706	0.874011	0.003972	
345388	9355270	0.393035	0.4375	-0.04447	0.956454	0.888501	0.006888	
4070990	2132435	0.712583	0.672355	0.040228	0.999482	0.358541	0.007233	
3494267	4574378	0.287417	0.289863	-0.00245	0.998963	1	0.870664	
1068925	733012	0.575786	0.53303	0.042757	0.998963	0.041903	0.007469	
3593349	17140134	0.953333	0.930034	0.023299	1	0.031202	0.003044	
4292393	2221299	0.004294	0.007395	-0.0031	0.998963	1	0.207917	
96864	9977470	0.944019	0.962729	-0.01871	0.993779	1	0.008074	
96864	9977470	0.944019	0.962729	-0.01871	0.993779	1	0.008074	
1123611	12403169	0.950429	0.972127	-0.0217	0.999482	1	0.000705	
4625952	1868897	0.343718	0.301444	0.042274	0.93831	0.004997	0.009339	
4054003	4510571	0.361259	0.408269	-0.04701	0.886988	0.552265	0.006138	
1741213	17743562	0.693595	0.647092	0.046502	0.99689	0.375717	0.002549	
2403069	9848625	0.08103	0.095211	-0.01418	0.998445	0.845719	0.128682	
3324196	6869382	0.677342	0.657175	0.020167	0.997408	0.060937	0.200479	
4495387	771184	0.739524	0.69397	0.045553	1	0.578265	0.002104	
481289	1034805	0.64204	0.6843	-0.04226	0.999482	0.035311	0.00564	
4237885	952321	0.66555	0.617714	0.047836	0.995334	0.283111	0.002027	
2315741	2017040	0.719536	0.673364	0.046172	0.987558	0.758117	0.00235	
306796	1890200	0.066317	0.048919	0.017398	0.998963	0.716575	0.023294	
491461	17156874	0.826648	0.860731	-0.03408	0.99689	0.259153	0.004671	
1852316	6558951	0.30916	0.356492	-0.04733	0.998445	0.768543	0.002162	
2158291	10507994	0.950476	0.969248	-0.01877	0.999482	0.568577	0.003392	
819435	2338800	0.729008	0.758562	-0.02955	0.997408	0.079141	0.037456	
1984049	1482188	0.666826	0.678246	-0.01142	0.997408	0.877138	0.456716	
2150273	9318824	0.810772	0.844178	-0.03341	0.997926	0.443479	0.005949	
1478534	3846948	0.906667	0.897494	0.009172	0.999482	0.465473	0.346367	
4628108	907615	0.621905	0.673493	-0.05159	1	0.167196	0.001205	
819427	9892055	0.729743	0.758837	-0.02909	0.998445	0.07911	0.040109	
1430148	2894601	0.748509	0.722222	0.026287	0.960083	0.103235	0.082995	
3128616	16903021	0.699524	0.669327	0.030197	0.998963	0.59354	0.044602	
4526061	2474430	0.417619	0.46587	-0.04825	1	0.587678	0.003528	
4621341	8087002	0.997132	1	-0.00287	0.997926	1	0.026569	
1707526		0.97009	0.983471	-0.01338	0.959046	1	0.008662	
3130399	10513205	0.648378	0.629014	0.019364	0.995334	0.942155	0.229061	
3361829	2030005	0.858029	0.896669	-0.03864	0.988595	0.504461	0.001307	
328082	9376752	0.85	0.821754	0.028246	0.999482	0.13364	0.016705	
1092230	2798659	0.547919	0.580552	-0.03263	0.986003	0.036656	0.052445	
3455983	6554328	0.654103	0.694191	-0.04009	0.998445	0.93663	0.010372	
3443753	10938951	0.67	0.623858	0.046142	0.998445	0.942622	0.002951	
2418293	10959025	0.913314	0.944064	-0.03075	0.995334	0.047457	0.000407	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1129858	1389778	0.449905	0.495449	-0.04554	0.998963	0.224548	0.006756	
324968	910391	0.373742	0.334928	0.038814	0.948678	0.393721	0.016269	
324968	910391	0.373742	0.334928	0.038814	0.948678	0.393721	0.016269	
4207857	1953906	0.070476	0.089875	-0.0194	1	0.05913	0.031894	
1092427	1286232	0.0913	0.064147	0.027154	0.994816	1	0.001973	
275301	233926	0.603908	0.593394	0.010514	0.998963	0.050518	0.508262	
2098866	4769180	0.732092	0.765376	-0.03328	0.997926	0.925106	0.022185	
1736160	17130480	0.748095	0.776451	-0.02836	1	0.331223	0.043932	
1532704		0.877026	0.880979	-0.00395	0.998963	0.871746	0.714729	
4556357	1111547	0.241905	0.215017	0.026888	1	0.764904	0.047502	
3327770	17654574	0.886559	0.855353	0.031206	0.998963	0.414467	0.004161	
2615814	981272	0.442857	0.491458	-0.0486	0.999482	0.787433	0.003293	
1068919	7517541	0.575382	0.533561	0.041821	0.998963	0.042217	0.008946	
1036280	1325453	0.543935	0.493743	0.050192	0.998445	1	0.002354	
2564603	896744	0.294847	0.328962	-0.03412	0.997926	0.54076	0.025965	
1190044	12751161	0.774809	0.796105	-0.0213	0.995853	0.53293	0.116359	
2303037	4525160	0.303435	0.348744	-0.04531	0.997408	0.551749	0.003166	
2150270	9601775	0.81	0.843394	-0.03339	0.999482	0.609354	0.006151	
4470179	7878715	0.791794	0.82953	-0.03774	0.999482	0.031766	0.010553	
3484336	17687429	0.959962	0.942548	0.017414	0.999482	0.200326	0.013785	
2288999	2140553	0.828095	0.793515	0.03458	1	0.354394	0.007117	
4099607	7036485	0.774071	0.815131	-0.04106	0.999482	0.737096	0.002126	
89619	2837871	0.367969	0.320819	0.04715	0.999482	0.394911	0.002486	
1153298	4915135	0.621387	0.577998	0.04339	0.983411	0.401717	0.009179	
1068923	745793	0.575382	0.533676	0.041706	0.997408	0.057246	0.009253	
332097	16878991	0.978927	0.965792	0.013135	0.995853	0.619415	0.01337	
4070991	2132434	0.713467	0.674458	0.039009	0.997408	0.191051	0.00875	
3549838	8036544	0.852969	0.82646	0.026509	0.993779	1	0.028589	
3548285	17678138	0.630019	0.67426	-0.04424	0.997408	0.248889	0.005447	
1994405	10092658	0.932665	0.95615	-0.02349	0.997926	1	0.002158	
871797	1930047	0.635471	0.665037	-0.02957	0.92535	0.084084	0.079546	
2069140	17012307	0.620476	0.668373	-0.0479	1	0.819904	0.00243	
152209	723879	0.761429	0.794185	-0.03276	0.998963	0.836739	0.015546	
3692366	638875	0.965172	0.977247	-0.01208	0.998963	0.364869	0.028111	
2861423	1876006	0.600196	0.642608	-0.04241	0.975635	0.710835	0.007742	
4473187	8098537	0.256435	0.222665	0.03377	0.998963	0.92241	0.016852	
4541886	847080	0.997143	0.996583	0.00056	0.999482	0.008532	0.776219	
754618	1366812	0.259771	0.294653	-0.03488	0.999482	0.122964	0.019896	
2090173	11067228	0.53619	0.561433	-0.02524	1	0.171348	0.122602	
2375375	17808417	0.896172	0.86682	0.029353	0.993261	0.769843	0.005285	
1750035	17728834	0.791508	0.750569	0.040938	0.998445	0.070963	0.003244	
2104844	4770950	0.400962	0.366782	0.03418	0.988595	1	0.032551	
1953606	7018123	0.708294	0.671233	0.037061	0.997926	1	0.013884	
4189623	592889	0.203051	0.167617	0.035434	0.998445	0.546086	0.006353	
2281878	874758	0.175598	0.212329	-0.03673	0.995853	0.189435	0.004984	
205560	3813549	0.645315	0.687144	-0.04183	0.997926	0.753983	0.007102	
389517	6100712	0.988539	0.977221	0.011318	0.997926	1	0.00743	
1384120	16866729	0.896568	0.911832	-0.01526	0.999482	0.835522	0.121217	
495011		0.847619	0.812073	0.035546	0.999482	0.825038	0.004082	
2545061	867416	0.67	0.624287	0.045713	0.998963	0.942676	0.003219	
3674585	17651361	0.259048	0.294084	-0.03504	1	0.871077	0.016995	
152205	10483264	0.761745	0.794755	-0.03301	0.995334	1	0.014952	
2159718	9524189	0.425024	0.414107	0.010917	0.998445	0.728528	0.502181	
3171682	16874991	0.79123	0.762286	0.028944	0.997408	0.006816	0.031791	
838169	4705732	0.644775	0.599656	0.045118	0.993261	0.832564	0.004801	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
546299	2961249	0.572068	0.523409	0.048658	0.953344	0.060652	0.004716	
1396693	6750360	0.431884	0.390625	0.041259	0.984448	0.721057	0.010027	
2005382	7815070	1	0.996579	0.003421	0.998445	1	0.008167	
1476900	16872650	0.901905	0.878702	0.023203	0.999482	0.750748	0.021988	
3496590	17001589	0.070067	0.055302	0.014765	0.998445	1	0.066096	
4046072	4254915	0.934289	0.945678	-0.01139	0.968377	1	0.149565	
1037703	835393	0.660612	0.672394	-0.01178	0.994816	1	0.449551	
2816497	2251110	0.509653	0.452381	0.057272	0.983411	0.191108	0.000606	
2025750	4486709	0.608252	0.647436	-0.03918	0.978745	0.134508	0.015809	
1386913	2696352	0.854536	0.884798	-0.03026	0.962157	0.735831	0.007858	
1601702	4450527	0.440896	0.489749	-0.04885	0.998963	0.637044	0.003242	
1601702	4450527	0.440896	0.489749	-0.04885	0.998963	0.637044	0.003242	
3494273	13353732	0.283668	0.287185	-0.00352	0.995853	0.741476	0.814878	
1674942	11602851	0.837851	0.855991	-0.01814	0.985485	0.054642	0.129211	
2483832	1619021	0.270734	0.240888	0.029846	0.998963	0.230128	0.0367	
4263996	7706400	0.756459	0.790857	-0.0344	0.995334	0.152865	0.012107	
2338634	9835911	0.717287	0.680365	0.036922	0.99689	0.393277	0.015498	
1688190	17181088	0.984747	0.97099	0.013758	0.999482	0.526126	0.004356	
4074504	4424147	0.812023	0.774857	0.037166	0.99689	0.922782	0.006354	
2099468	119649	0.563892	0.61194	-0.04805	0.98704	0.943113	0.002703	
3309026	629496	0.802669	0.836177	-0.03351	0.999482	1	0.008011	
4161476	933812	0.555927	0.592825	-0.0369	0.997408	0.575918	0.022302	
3318140	10042289	0.444233	0.480638	-0.03641	0.998963	0.310845	0.024395	
3151394	13093519	0.83269	0.850174	-0.01748	0.983929	0.081168	0.153707	
3670389	11853783	0.84766	0.814562	0.033098	0.998445	0.433792	0.007545	
2171274	9519630	0.28128	0.317406	-0.03613	0.998445	0.586392	0.016328	
1511067	9344946	0.145714	0.175768	-0.03005	1	0.560058	0.012615	
1292012	17681315	0.857824	0.829352	0.028473	0.998963	0.05552	0.017062	
1925399	1149476	0.473785	0.432878	0.040906	0.999482	0.192373	0.012675	
202295	2270073	0.455981	0.499425	-0.04344	0.992742	0.197541	0.006798	
341452	17056983	0.702199	0.735968	-0.03377	0.994816	0.861719	0.023527	
4113762	897109	0.713942	0.662844	0.051098	0.991187	0.879815	0.000784	
4225517	2429992	0.979962	0.988014	-0.00805	0.997408	1	0.051231	
2338632	574141	0.678435	0.716724	-0.03829	0.998963	0.455278	0.010954	
2611368	974847	0.514508	0.560049	-0.04554	0.923276	0.72248	0.007877	
512546	11563909	0.439351	0.464082	-0.02473	0.997408	0.838679	0.127884	
1108825	156305	0.212034	0.177143	0.034892	0.996371	1	0.007687	
2322083	1488745	0.534828	0.580866	-0.04604	0.998445	0.579723	0.004084	
1637920	1862724	0.941691	0.948884	-0.00719	0.974598	0.478073	0.345424	
1626812	7204517	0.730583	0.691686	0.038897	0.982893	0.473283	0.010224	
929091	17642971	0.939408	0.918658	0.020751	0.998963	1	0.013028	
34440	2828390	0.917064	0.94198	-0.02492	0.999482	0.52796	0.003354	
1279810	6740228	0.170162	0.159841	0.010321	0.999482	0.258009	0.401191	
4327019	4540437	0.244986	0.212984	0.032002	0.997926	0.190873	0.020342	
3396567	17832709	0.528122	0.563781	-0.03566	0.998963	1	0.029863	
641538	10004694	0.772684	0.73777	0.034914	0.998445	0.727476	0.012497	
1123737	10759	0.709247	0.671982	0.037265	0.998963	0.011575	0.015811	
1886027	2979682	0.382409	0.343429	0.038981	0.995853	0.499755	0.014302	
1741283	11601702	0.691092	0.645382	0.04571	0.995853	0.376509	0.00306	
2428115	17832099	0.752622	0.796359	-0.04374	0.999482	0.755051	0.001578	
182701	1504610	0.705153	0.731078	-0.02593	0.995334	0.302133	0.086107	
4267677	2724418	0.61079	0.569381	0.041409	0.99015	0.269051	0.011922	
1503062	3005504	0.340497	0.300228	0.040268	0.99689	0.520309	0.010485	
3482898	17614318	0.343034	0.370413	-0.02738	0.995334	0.884518	0.08289	
4310545	758425	0.714218	0.736602	-0.02238	0.997926	0.861812	0.127088	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2210294	17152403	0.905714	0.930034	-0.02432	1	0.79308	0.007179	
2701016	1364881	0.809866	0.833523	-0.02366	0.995853	1	0.061849	
1640495	11648314	0.789524	0.751991	0.037533	1	0.319566	0.005891	
2431975	10967445	0.073403	0.060865	0.012539	0.999482	1	0.126476	
4072577	996329	0.818618	0.844394	-0.02578	0.993261	0.698998	0.039532	
4607458	4314026	0.965616	0.944824	0.020792	0.998445	0.042836	0.00229	
2171276	7992054	0.281905	0.317768	-0.03586	0.999482	0.586809	0.017175	
1266255	17030734	0.839064	0.873007	-0.03394	0.997926	0.761265	0.003122	
3704864	11074718	0.290307	0.304696	-0.01439	0.992742	0.749683	0.343623	
1838161	4891689	0.787356	0.815279	-0.02792	0.995853	0.91091	0.032716	
666933		0.994269	0.997722	-0.00345	0.997926	1	0.101073	
1777754	6505717	0.335878	0.375571	-0.03969	0.997408	0.313069	0.011093	
2296879	6584634	0.648713	0.614595	0.034118	0.998445	0.830662	0.032799	
3416748		0.821053	0.856735	-0.03568	0.995853	0.334969	0.003274	
3327773	11740002	0.889423	0.860789	0.028634	0.986003	1	0.008759	
1136340	16853590	0.823165	0.856086	-0.03292	0.999482	0.336421	0.005229	
1524928	4585596	0.607722	0.653364	-0.04564	0.998445	0.709412	0.003935	
2159710	10851340	0.424214	0.411631	0.012583	0.998445	0.576961	0.437901	
4411673	4527204	0.607553	0.626002	-0.01845	0.994816	0.112477	0.256925	
4269985	4398082	0.727055	0.720068	0.006987	0.99689	0.802127	0.633971	
2222124	10828340	0.733556	0.767349	-0.03379	0.999482	0.777206	0.018016	
634729	714213	0.988084	0.977247	0.010837	0.999482	0.069987	0.012058	
1527056	5005571	0.145813	0.170091	-0.02428	0.992742	1.28E-07	0.060911	
630657	17249126	0.955195	0.934016	0.021179	0.999482	0.420192	0.004907	
275302	233927	0.604862	0.593394	0.011468	0.998963	0.050518	0.470398	
2776342	426005	0.297619	0.332953	-0.03533	0.998963	0.322834	0.021848	
1536341	9373304	0.262813	0.237206	0.025607	0.809746	0.837046	0.096511	
2481359	17191673	0.4766	0.433371	0.043229	0.997926	1	0.008208	
1837945	17792853	0.662813	0.693456	-0.03064	0.989632	0.20218	0.044009	
2259438	12249410	0.92522	0.89637	0.02885	0.973043	0.040568	0.002876	
1373798	3770448	0.737958	0.765178	-0.02722	0.990669	0.572961	0.055373	
2292932	2147896	0.65616	0.629693	0.026468	0.998445	0.219448	0.095515	
4591896	4448104	0.820782	0.820046	0.000736	0.998963	0.303113	0.953967	
2171293	7319832	0.28128	0.317198	-0.03592	0.997926	0.585498	0.017006	
4081727	2283053	0.805344	0.822526	-0.01718	0.998963	0.729739	0.174011	
2202013	11257244	0.988095	0.97554	0.012555	1	1	0.003332	
1641102	16958718	1	0.997156	0.002844	1	1	0.015829	
2296906	12765671	0.969943	0.982916	-0.01297	0.998445	1	0.010737	
1068905	1487536	0.57395	0.533599	0.040351	0.998445	0.049173	0.011595	
1206923	1998352	0.875399	0.838624	0.036775	0.878694	0.787817	0.002475	
4554584	6913161	0.728146	0.760669	-0.03252	0.989114	3.49E-07	0.037761	
4177170	2911003	0.30277	0.334286	-0.03152	0.996371	0.110908	0.039587	
481293	10250414	0.563422	0.601415	-0.03799	0.966822	0.830124	0.020262	
2315786	9328554	0.19381	0.212742	-0.01893	1	0.615791	0.148447	
4207008	7147416	0.976608	0.988992	-0.01238	0.979264	1	0.00427	
1940929	2195687	0.691429	0.715586	-0.02416	1	0.408244	0.110417	
795780	6776547	0.865586	0.842255	0.023331	0.998963	0.610795	0.044871	
2133361	9570964	0.792706	0.774341	0.018365	0.992742	0.026081	0.192603	
1617548	12462484	0.624642	0.640251	-0.01561	0.997408	0.463502	0.322287	
4192876	6071786	0.402288	0.355188	0.0471	0.998445	0.825368	0.003152	
3488172	6838523	0.740476	0.701254	0.039222	0.998963	0.935752	0.007882	
4661310	2744605	0.945611	0.967503	-0.02189	0.997926	0.22998	0.001149	
4661310	2744605	0.945611	0.967503	-0.02189	0.997926	0.22998	0.001149	
4136616	2014342	0.76631	0.733645	0.032665	0.976153	0.662832	0.022119	
1852056	10106878	0.877863	0.905575	-0.02771	0.998963	0.558842	0.006963	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1804184	16972688	0.872849	0.832763	0.040086	0.996371	0.544124	0.000624	
539236	886666	0.451381	0.493082	-0.0417	0.881286	0.943444	0.018382	
4532516	176085	0.724286	0.746014	-0.02173	0.999482	0.929205	0.137467	
1936436	13277749	0.597712	0.559293	0.038419	0.998445	0.945399	0.017863	
4103377	917770	0.628462	0.593356	0.035106	0.995334	0.440519	0.028276	
2281886	10788490	0.175238	0.210706	-0.03547	0.999482	0.41712	0.006363	
146866	5771713	0.116523	0.145069	-0.02855	0.994816	0.337923	0.010375	
2023276	16931930	1	0.997153	0.002847	0.999482	1	0.01577	
1037696	835382	0.659789	0.673341	-0.01355	0.993261	0.938698	0.385454	
4113764	897111	0.707729	0.656069	0.05166	0.984966	0.821184	0.000794	
1217693	10176343	0.515296	0.52968	-0.01438	0.996371	0.103543	0.384488	
1217693	10176343	0.515296	0.52968	-0.01438	0.996371	0.103543	0.384488	
261921	6930663	0.952857	0.931172	0.021685	1	1	0.004303	
4199684	931266	0.637882	0.61016	0.027722	0.997408	0.355706	0.077193	
3602064	12514901	0.917064	0.889714	0.02735	0.997408	0.605623	0.004646	
4071000	7750917	0.630497	0.588838	0.041659	0.997408	0.264805	0.008596	
3222716	16851537	0.857483	0.894647	-0.03716	0.998963	0.858553	0.000706	
3670394	11634595	0.857347	0.826112	0.031236	0.997926	0.12699	0.010359	
2390434	844257	0.767123	0.739232	0.027892	0.975117	0.016906	0.062862	
4300871	2770123	0.567143	0.605835	-0.03869	0.997408	0.321374	0.017998	
3596421	4956445	0.804015	0.790046	0.01397	0.995334	0.262526	0.294619	
1524936	17835729	0.76791	0.726107	0.041802	0.973043	0.345036	0.004274	
3857512	17308662	0.638089	0.645638	-0.00755	0.998963	0.419183	0.631608	
1982621	7835799	0.895615	0.923208	-0.02759	0.999482	0.342851	0.003453	
257047	9383386	0.769598	0.725513	0.044086	0.997408	1	0.001929	
1603935	1807159	0.949476	0.924346	0.02513	0.999482	0.330715	0.001612	
3154718	7645379	0.008571	0.01934	-0.01077	1	1	0.004143	
449720	13041946	0.934866	0.953287	-0.01842	0.990669	0.251646	0.012711	
4523947	2296566	0.998565	0.998852	-0.00029	0.993261	1	0.808579	
342851	16881428	0.954898	0.96947	-0.01457	0.984448	0.041316	0.023852	
1640459	12925177	0.21381	0.251708	-0.0379	0.999482	0.369968	0.005695	
4106955	2905069	0.302193	0.335421	-0.03323	0.998963	0.225688	0.029878	
1543849	17086048	0.884762	0.914009	-0.02925	0.999482	0.389839	0.002565	
4071839	4255001	0.11	0.084852	0.025148	0.999482	0.667128	0.008886	
4300424	4389719	0.734509	0.775626	-0.04112	0.998963	0.01972	0.003785	
422990	16987872	0.91022	0.884396	0.025823	0.997926	1	0.008833	
1524175	6939630	0.74021	0.695776	0.044434	0.99689	0.425588	0.002771	
1827609	17683991	0.642694	0.593172	0.049522	0.818559	0.118175	0.004225	
309867	2753153	0.816492	0.842435	-0.02594	0.999482	0.52708	0.037975	
3699019	17415179	0.995229	0.986348	0.008881	0.998963	1	0.003646	
80922	2836391	0.757619	0.794653	-0.03703	1	0.148715	0.007559	
3317887	13189180	0.514454	0.543928	-0.02947	0.885433	0.310976	0.100412	
2330986	1488795	0.269048	0.287827	-0.01878	1	0.217482	0.189547	
3549773	4471623	0.779314	0.750285	0.029029	0.998445	0.787536	0.038674	
71255	2834794	0.86657	0.837745	0.028826	0.988595	0.901076	0.011757	
100950	2065333	0.591126	0.617446	-0.02632	0.997926	0.616887	0.103528	
3548264	17677991	0.627985	0.671982	-0.044	0.997926	0.193424	0.005815	
3483439	9998152	0.699331	0.73322	-0.03389	0.997926	0.490229	0.023092	
3385347	6887241	0.600097	0.642449	-0.04235	0.989114	0.376821	0.009277	
341906	16879286	0.97381	0.95881	0.014999	0.997408	1	0.011147	
1750701	7113329	0.573206	0.526226	0.04698	0.996371	0.892292	0.004508	
2357698	6773576	0.202381	0.182594	0.019787	1	1	0.123032	
4109937	2419089	0.4326	0.398973	0.033628	0.996371	0.48117	0.037075	
1184138	3933749	0.699519	0.699085	0.000435	0.992224	0.630352	0.976772	
3206615	4283240	0.508095	0.551881	-0.04379	0.998963	0.056337	0.007942	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
4514982	2279382	0.869073	0.83376	0.035314	0.88647	0.001098	0.006505	
4514982	2279382	0.869073	0.83376	0.035314	0.88647	0.001098	0.006505	
1852336	13264559	0.309342	0.356655	-0.04731	0.999482	0.713526	0.002125	
4468913	7768862	0.480947	0.480817	0.000131	0.92224	0.778072	0.993882	
1953607	7820708	0.706979	0.671608	0.035371	0.99689	1	0.018889	
4186567	754118	0.371415	0.35274	0.018675	0.996371	0.031733	0.224786	
257719	7743315	0.743553	0.787844	-0.04429	0.994816	0.612186	0.0017	
1399116	11676079	0.823305	0.830673	-0.00737	0.997408	0.278898	0.547905	
1804181	172596	0.869524	0.828588	0.040936	0.999482	0.475191	0.000531	
3491627	7442462	0.921608	0.892473	0.029135	0.949715	0.068755	0.003614	
3446473	7682250	0.955739	0.970245	-0.01451	0.97719	0.535398	0.020976	
1623879	17674530	0.899809	0.925968	-0.02616	0.998445	0.317095	0.005388	
863787	528374	0.466029	0.426352	0.039677	0.992224	0.835202	0.016236	
3108947	13160629	0.904762	0.882688	0.022074	0.999482	0.744311	0.029435	
341457	9386808	0.703051	0.737686	-0.03464	0.996371	0.861368	0.019961	
548955	11977071	0.89	0.870876	0.019124	1	0.547602	0.070389	
1622775	12922217	0.654728	0.696246	-0.04152	0.998445	0.231348	0.006311	
516171	12705177	0.231064	0.270833	-0.03977	0.988595	0.491156	0.00463	
3297520	8077818	0.844137	0.809795	0.034342	0.998963	0.380093	0.006323	
2150269	9318822	0.810296	0.843394	-0.0331	0.998963	0.609354	0.006623	
1804187	7226402	0.870952	0.830866	0.040087	0.999482	0.472118	0.000651	
3548461	17679450	0.638267	0.684859	-0.04659	0.97408	0.112119	0.00374	
3548461	17679450	0.638267	0.684859	-0.04659	0.97408	0.112119	0.00374	
410865	6081756	0.651052	0.608646	0.042405	0.997926	0.478816	0.00745	
2122278	1327647	0.99619	0.989192	0.006998	1	1	0.010191	
4432866	6141755	0.747748	0.783929	-0.03618	0.953344	0.103512	0.009463	
3327743	17654687	0.885714	0.855353	0.030361	0.999482	0.586923	0.00544	
2348985	4680860	0.400478	0.357631	0.042847	0.99689	0.713415	0.008338	
1277749	17020607	0.999524	0.996018	0.003506	1	1	0.018619	
1800552	890545	0.001905	0.002275	-0.00037	1	0.003414	0.823875	
3699796	10521044	0.875238	0.897494	-0.02226	0.999482	0.016821	0.037529	
1741903	11225177	0.635496	0.678449	-0.04295	0.997926	0.39569	0.004833	
3148969	6787381	0.62619	0.666098	-0.03991	1	0.704597	0.01083	
3426098	439128	0.299141	0.333902	-0.03476	0.998963	0.36334	0.023616	
4238270	7333413	0.601429	0.569966	0.031463	1	0.033119	0.053235	
4306118	1462815	0.394276	0.438472	-0.0442	0.810264	0.002244	0.020328	
4259987	3131814	0.574976	0.534738	0.040238	0.997926	0.049073	0.011921	
4259987	3131814	0.574976	0.534738	0.040238	0.997926	0.049073	0.011921	
3549811	12913366	0.660992	0.708721	-0.04773	0.978745	0.247865	0.002557	
3192836	12933259	0.495224	0.543379	-0.04815	0.99689	1	0.003245	
98520	2839121	0.807471	0.828358	-0.02089	0.992742	0.81146	0.100487	
98520	2839121	0.807471	0.828358	-0.02089	0.992742	0.81146	0.100487	
98520	2839121	0.807471	0.828358	-0.02089	0.992742	0.81146	0.100487	
4605679	797482	0.118129	0.140443	-0.02231	0.982374	0.570856	0.046108	
2072073	17016769	0.952541	0.93135	0.021191	0.993779	0.79087	0.004796	
1352325	1028216	0.102317	0.082373	0.019943	0.98704	0.038217	0.040872	
1708822	1785823	0.235687	0.266819	-0.03113	0.997926	0.388215	0.027083	
92348	17004530	0.948902	0.953196	-0.00429	0.99689	0.430453	0.547822	
3277985	17836780	0.769048	0.810011	-0.04096	1	0.913087	0.002262	
3674586	12440948	0.259295	0.293615	-0.03432	0.998445	0.807437	0.019524	
719280	2991717	0.512894	0.503417	0.009477	0.997926	0.311815	0.568388	
4385915	3219489	0.725386	0.764019	-0.03863	0.980819	1	0.008395	
4385915	3219489	0.725386	0.764019	-0.03863	0.980819	1	0.008395	
4385915	3219489	0.725386	0.764019	-0.03863	0.980819	1	0.008395	
3457651	17088642	0.907619	0.879841	0.027779	0.999482	0.152663	0.005981	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2292958	4488133	0.655238	0.629693	0.025545	1	0.219448	0.107867	
1279817	4832249	0.169685	0.159841	0.009845	0.999482	0.258009	0.422284	
647583	17258682	0.975668	0.957859	0.017809	0.998445	0.663269	0.002387	
4605055	1390503	0.63994	0.59843	0.04151	0.949715	0.61321	0.011993	
1458475	11629100	0.658723	0.620848	0.037875	0.996371	0.518062	0.016099	
1688685	7124508	0.557784	0.604452	-0.04667	0.99689	0.943663	0.004216	
4406785	4355871	0.705238	0.734357	-0.02912	1	0.260803	0.051719	
546295	2358162	0.571905	0.526735	0.04517	1	0.417048	0.006164	
2394275	9845347	0.813333	0.80091	0.012423	1	0.203843	0.342844	
523166	2073560	0.805529	0.822526	-0.017	0.999482	0.729739	0.178551	
2297331	7916802	0.905922	0.927759	-0.02184	0.998445	0.207693	0.01772	
311108	17178297	0.677543	0.642449	0.035095	0.993261	0.768329	0.02555	
1617152		0.959291	0.946796	0.012495	0.994298	0.506116	0.068849	
3447520	17574336	0.866507	0.89726	-0.03075	0.995853	0.853968	0.003965	
1675552	7127075	0.955238	0.93508	0.020158	0.999482	1	0.006093	
2393144	16844885	0.886026	0.881037	0.004989	0.963193	0.325113	0.649233	
524882	3757797	0.985224	0.989749	-0.00453	0.998963	1	0.21491	
1452029	17252372	0.912297	0.927759	-0.01546	0.999482	0.799692	0.088032	
216975	3850388	0.017241	0.026765	-0.00952	0.996371	0.020993	0.051628	
4240548	717627	0.676864	0.698857	-0.02199	0.995853	0.376949	0.151444	
4664350	3743024	0.64204	0.68508	-0.04304	0.998963	0.348759	0.006095	
4664350	3743024	0.64204	0.68508	-0.04304	0.998963	0.348759	0.006095	
735076	17038027	0.953765	0.964733	-0.01097	0.999482	0.620932	0.093957	
1384130	10497539	0.895238	0.911263	-0.01602	1	1	0.104822	
3645090	2288118	0.170639	0.160592	0.010046	0.998963	0.131612	0.416914	
3192819	2738694	0.831107	0.794653	0.036454	0.998963	0.917682	0.004307	
2009513	3217870	0.355238	0.384835	-0.0296	0.998963	0.475864	0.064303	
3174579	2584280	0.014804	0.029613	-0.01481	0.997926	0.540703	0.001928	
1210926	10754637	0.739484	0.701149	0.038334	0.993261	0.195218	0.00969	
3142601	17418275	0.95	0.92719	0.02281	1	0.801927	0.003653	
1777723	7243248	0.336034	0.374858	-0.03882	0.999482	0.313576	0.012744	
1936419	6992221	0.597619	0.559158	0.038461	1	0.891181	0.017681	
3524231	17403845	0.774809	0.752566	0.022244	0.997926	0.716697	0.112185	
4594656	4413730	0.938571	0.9562	-0.01763	1	0.680444	0.017051	
1136347	3766635	0.822996	0.855518	-0.03252	0.998963	0.275783	0.005838	
3994732	6718532	0.480976	0.438534	0.042441	0.969933	0.364815	0.01061	
34433	2828388	0.916587	0.941411	-0.02482	0.999482	0.532845	0.003563	
3590033	17048885	0.954198	0.947608	0.00659	0.998445	0.727061	0.351953	
2308728	2041222	0.448424	0.492588	-0.04416	0.997408	0.120474	0.006656	
2106994	7999898	0.832698	0.811503	0.021194	0.998963	0.509599	0.095832	
3154473	6444269	0.597209	0.556507	0.040702	0.992742	0.631857	0.011849	
2814368	1511786	0.663011	0.711924	-0.04891	0.959046	0.111234	0.002328	
1673170	7950335	0.583333	0.620023	-0.03669	1	0.07345	0.018357	
1396685	1973068	0.432793	0.392694	0.040099	0.997926	0.43574	0.011281	
850036	10760129	0.464251	0.420653	0.043597	0.973561	0.779175	0.008364	
4639859	4663102	0.438766	0.478513	-0.03975	0.983929	0.732729	0.016817	
4440826	6577524	0.166031	0.18379	-0.01776	0.997408	0.91046	0.152494	
2769985	1838701	0.626851	0.580778	0.046073	0.964749	0.672622	0.005176	
4469074	7844691	0.851764	0.84738	0.004383	0.998963	0.066342	0.706181	
2496003	4789533	0.945081	0.926621	0.01846	0.998445	0.616268	0.019919	
4055100	919260	0.383954	0.431015	-0.04706	0.997408	0.730726	0.003099	
1276905	2862290	0.71582	0.688448	0.027372	0.975117	0.873812	0.068285	
4588117	6812997	0.66937	0.624857	0.044513	0.997926	0.829018	0.004274	
570392	7796407	0.750479	0.772989	-0.02251	0.992224	0.923225	0.108034	
1721737	16913638	0.718095	0.751991	-0.0339	1	0.717969	0.019202	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
839793	17441847	0.695424	0.719568	-0.02414	0.999482	0.67593	0.106134	
4056535	2436760	0.037619	0.019954	0.017665	0.998963	0.042854	0.00154	
870719	2812314	0.112225	0.140251	-0.02803	0.997408	0.121797	0.011097	
3144607	4856766	0.414599	0.444571	-0.02997	0.99689	0.584199	0.06769	
1355944	713119	0.599617	0.627138	-0.02752	0.995853	0.563727	0.088841	
3700156		0.927073	0.933447	-0.00637	0.999482	0.169467	0.441397	
2850294	1863309	0.660936	0.70605	-0.04511	0.99689	0.223036	0.002616	
954095		0.99761	0.996583	0.001027	0.997408	1	0.557036	
1552807	706041	0.337941	0.323261	0.01468	0.998445	0.440062	0.343542	
395969	6141319	0.642517	0.68244	-0.03992	0.998445	0.212511	0.008859	
1023572	17395553	0.726667	0.765376	-0.03871	0.999482	0.707596	0.007447	
4213933	2115801	0.548141	0.579157	-0.03102	0.998963	0.488698	0.054447	
2325270	1444212	0.634286	0.677309	-0.04302	0.998963	1	0.005804	
2027110	12809847	0.855491	0.819908	0.035583	0.988595	0.205303	0.004144	
34422	2828386	0.916667	0.941411	-0.02474	1	0.532845	0.003656	
4100747	729364	0.289398	0.259217	0.030182	0.992742	0.929557	0.039227	
776667	17047552	0.71902	0.735763	-0.01674	0.994816	0.192672	0.251746	
4234844	2036104	0.630601	0.588838	0.041762	0.998963	0.209641	0.008294	
1804156	12960377	0.870229	0.829727	0.040502	0.998445	0.402831	0.000601	
838220	759814	0.88	0.852506	0.027494	0.999482	1	0.015167	
4048535	37523	0.067143	0.086462	-0.01932	1	0.51993	0.027146	
75784	2835477	0.654909	0.622437	0.032472	0.998963	0.037164	0.042327	
325064	1204798	0.748332	0.707053	0.041278	0.999482	0.87071	0.00494	
2496004	16970810	0.944179	0.924743	0.019436	0.997926	0.142397	0.01836	
3403751	11736107	0.36368	0.330479	0.0332	0.997926	0.004708	0.029193	
1524173	6900545	0.739048	0.694761	0.044287	0.999482	0.524339	0.002803	
1885820	2307041	0.36368	0.31549	0.04819	0.998963	0.241243	0.002133	
1125349	17375463	0.944762	0.958998	-0.01424	0.999482	1	0.045458	
1507645	369309	0.446687	0.48767	-0.04098	0.921203	0.003946	0.013282	
434254	16995121	0.879524	0.899886	-0.02036	1	0.190261	0.045309	
397218	17124810	0.996667	0.998862	-0.0022	1	1	0.164329	
3901773	6631375	0.856177	0.892617	-0.03644	0.997408	0.674596	0.00259	
2315739	4962296	0.721264	0.676739	0.044525	0.995853	1	0.002947	
3327748	17711038	0.885714	0.855518	0.030197	1	0.587033	0.005673	
4501328	1848179	0.879886	0.907745	-0.02786	0.998963	0.310671	0.006493	
4318227	705087	0.715344	0.665365	0.049979	0.888025	0.465782	0.001764	
3688288	17485885	0.7149	0.678449	0.03645	0.997408	0.642283	0.016969	
4197691	7878048	0.984709	0.978523	0.006186	1	1	0.665736	
4031951	2037549	0.145349	0.119907	0.025442	0.980301	0.871112	0.025708	
1023624	2055145	0.743333	0.781891	-0.03856	0.999482	0.767408	0.006199	
2483788	755500	0.269561	0.240046	0.029516	0.998963	0.052386	0.036971	
2483788	755500	0.269561	0.240046	0.029516	0.998963	0.052386	0.036971	
341456	2031821	0.703051	0.736902	-0.03385	0.998963	0.86176	0.022813	
1576276	2247480	0.839524	0.808874	0.03065	1	1	0.013308	
198892	1209228	0.367969	0.390785	-0.02282	0.999482	0.671257	0.142974	
2374399	17831815	0.634542	0.671233	-0.03669	0.997408	0.939131	0.020123	
2374399	17831815	0.634542	0.671233	-0.03669	0.997408	0.939131	0.020123	
1641495	16959043	1	0.997156	0.002844	0.999482	1	0.015879	
1749953	10891079	0.627143	0.581342	0.0458	1	0.889952	0.004427	
3524269	13135003	0.771989	0.750857	0.021131	0.995853	0.588445	0.131394	
2310845	2463134	0.1	0.125998	-0.026	0.998963	0.218619	0.013975	
1940932	10504666	0.716667	0.743166	-0.0265	0.999482	0.215867	0.074578	
4306393	2105758	0.59876	0.644	-0.04524	0.99689	0.555447	0.004449	
4072207	440883	0.604385	0.593501	0.010885	0.998445	0.04234	0.493354	
329625	1417844	0.592028	0.63631	-0.04428	0.967859	0.021858	0.007406	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3332282	149103	0.303912	0.341116	-0.0372	0.998445	0.051209	0.013803	
1471109	4905554	0.879048	0.907281	-0.02823	1	1	0.004763	
34416	2828385	0.917064	0.941913	-0.02485	0.998963	0.528219	0.003456	
2117452	7999017	0.759065	0.720705	0.03836	0.998963	0.45153	0.008085	
2222116	10828338	0.732792	0.765678	-0.03289	0.99689	0.707336	0.021559	
1370327	1823117	0.766921	0.726962	0.039958	0.999482	0.733959	0.004143	
3384796	17743059	0.592168	0.622717	-0.03055	0.99689	0.773591	0.054578	
1782628	1865307	0.552381	0.519932	0.032449	0.999482	0.588802	0.044797	
64117	204738	0.683333	0.724629	-0.0413	0.998963	0.554018	0.005806	
3524265	17345605	0.772164	0.752278	0.019886	0.998963	0.65114	0.155362	
950445	7997235	0.868571	0.840728	0.027843	1	0.011117	0.018756	
1412933	16847491	0.960952	0.978953	-0.018	1	0.320842	0.001678	
4450974	7023291	0.957143	0.944255	0.012888	1	0.74763	0.065352	
2317520	2055314	0.446139	0.493743	-0.0476	0.999482	0.685868	0.003295	
803242	875376	0.455672	0.496018	-0.04035	0.999482	0.002377	0.015219	
696219	2064421	0.5165	0.555423	-0.03892	0.953344	0.035926	0.024649	
4192543	742428	0.713803	0.750861	-0.03706	0.988595	0.277898	0.011913	
4192543	742428	0.713803	0.750861	-0.03706	0.988595	0.277898	0.011913	
3139723	16823183	0.421279	0.375995	0.045283	0.998963	0.614817	0.00541	
1190043	10495219	0.775763	0.796928	-0.02116	0.998963	0.533471	0.117639	
1804169	307078	0.868321	0.826879	0.041441	0.998445	0.287819	0.000494	
619113	482322	0.726794	0.693843	0.032952	0.996371	0.690971	0.031129	
1912715	10504143	0.964252	0.943558	0.020694	0.998445	0.350506	0.002563	
2428542	10811582	0.391388	0.354119	0.037269	0.994816	0.209573	0.019951	
3417420	6833604	0.779524	0.81699	-0.03747	0.998963	0.571955	0.004649	
618986	2022318	0.365201	0.403649	-0.03845	0.99689	0.673997	0.016729	
3335727	17055805	0.977121	0.960182	0.016939	0.999482	1	0.002767	
803810	1980535	0.419355	0.37351	0.045845	0.87351	0.534225	0.006903	
734066	7596749	0.609195	0.551091	0.058105	0.992742	0.000165	0.000714	
710968	10489829	0.65792	0.616438	0.041481	0.997408	0.721043	0.00797	
1524929	9320706	0.608779	0.652794	-0.04401	0.997926	0.765681	0.005404	
691158	516656	0.834128	0.855923	-0.02179	0.998963	0.785223	0.063266	
701616	1149062	0.561181	0.509186	0.051995	0.88647	0.191872	0.002157	
4561494	7909775	0.742284	0.763975	-0.02169	0.921203	0.494632	0.13093	
1267986	6546125	0.821258	0.787827	0.033431	0.999482	0.364603	0.011004	
1267986	6546125	0.821258	0.787827	0.033431	0.999482	0.364603	0.011004	
1564690	17135248	0.689524	0.720705	-0.03118	1	0.357493	0.038088	
4490276	1077715	0.270952	0.242027	0.028925	0.999482	0.097406	0.042254	
1944894	7829925	0.831584	0.860571	-0.02899	0.99689	0.672854	0.014139	
922169	17363026	0.924474	0.937215	-0.01274	0.996371	0.770179	0.128524	
2114787	2496406	0.375605	0.343103	0.032502	0.986522	0.547509	0.041443	
3524624	6576889	0.409438	0.453872	-0.04443	0.998963	0.34068	0.006292	
3715699	13333562	0.888942	0.914009	-0.02507	0.998963	0.389839	0.01026	
270004	2092058	0.913759	0.889741	0.024018	0.959565	0.052961	0.018169	
332282	17735590	0.865458	0.83713	0.028328	0.998445	0.45979	0.01575	
3455148	1849675	0.682775	0.724118	-0.04134	0.997408	0.272546	0.004741	
3394179	2980088	0.342466	0.307186	0.03528	0.962675	0.000181	0.033544	
4109714	805524	0.779693	0.810997	-0.0313	0.993779	0.580516	0.015995	
2618960	430658	0.299713	0.334479	-0.03477	0.994816	0.361437	0.024347	
3508850	10404746	0.089609	0.107877	-0.01827	0.997926	1	0.061448	
4306202	1556400	1	0.997146	0.002854	0.994816	1	0.016	
2117653	9590779	0.695424	0.658676	0.036748	0.997926	1	0.01667	
3548137	17677199	0.626667	0.669704	-0.04304	0.999482	0.126927	0.0072	
3548137	17677199	0.626667	0.669704	-0.04304	0.999482	0.126927	0.0072	
1708820	1785824	0.229704	0.257127	-0.02742	0.997408	0.250326	0.048547	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
332082	1359982	0.977338	0.963542	0.013797	0.985485	0.623196	0.012227	
4031267	1372160	0.689706	0.733176	-0.04347	0.967859	1	0.003781	
4583001	1270874	0.250498	0.270366	-0.01987	0.959565	0.018453	0.167518	
1982625	7845888	0.895992	0.923033	-0.02704	0.997926	0.343838	0.004177	
2297329	7099278	0.908309	0.927759	-0.01945	0.998445	0.207693	0.033067	
3337737	4479880	0.521469	0.486857	0.034612	0.99689	0.498763	0.03296	
710971	17627858	0.644976	0.60274	0.042236	0.995853	0.040639	0.010026	
1829055	17835394	0.86654	0.894647	-0.02811	0.998963	0.374233	0.009351	
3496577	3853188	0.070476	0.056314	0.014162	1	1	0.078908	
3448675	17653404	0.893708	0.91752	-0.02381	0.999482	0.262335	0.014728	
3121027	16881644	0.978571	0.973834	0.004738	1	0.114598	0.345628	
3210307	17176239	0.633269	0.592571	0.040698	0.994298	0.779713	0.011806	
4353570	1845805	0.629327	0.588235	0.041092	0.988595	0.2929	0.01002	
3443743	16873945	0.669694	0.625142	0.044552	0.997926	0.942696	0.004154	
4049548	1390638	0.239255	0.211276	0.027979	0.997926	0.761118	0.037502	
174568	1952853	0.840119	0.808473	0.031647	0.956454	0.1476	0.01074	
4024964	1466847	0.261678	0.3041	-0.04242	0.998963	0.810883	0.004114	
3561769	16968083	0.743333	0.709898	0.033436	1	0.512701	0.022829	
4259992	67530	0.713663	0.76171	-0.04805	0.977709	1	0.001207	
2426946	10811061	0.726406	0.767694	-0.04129	0.997926	0.296977	0.004627	
976255	8061364	0.976168	0.960751	0.015417	0.999482	0.144546	0.007127	
325110	1204848	0.749521	0.708571	0.04095	0.994816	1	0.005454	
2432797	10812652	0.659828	0.689066	-0.02924	0.998445	0.636607	0.060986	
3982327	1771551	0.272727	0.233993	0.038734	0.981337	0.77525	0.007685	
2748593	300192	0.492366	0.451595	0.040772	0.998445	0.94567	0.011968	
1396632	17412094	0.568225	0.606043	-0.03782	0.997926	0.436512	0.01696	
3339759	2544938	0.492857	0.452164	0.040693	0.999482	1	0.012244	
4340717	8109745	0.95389	0.96	-0.00611	0.993261	0.393034	0.350022	
1422210	6436224	0.901663	0.880896	0.020767	0.969414	0.51198	0.043308	
309882	1015247	0.77619	0.804892	-0.0287	1	1	0.034581	
4320611	6553167	0.133005	0.159763	-0.02676	0.96423	0.039231	0.02807	
4572365	8069074	0.166667	0.145051	0.021615	1	0.586768	0.070014	
1963777	2253218	0.462309	0.420662	0.041647	0.997408	0.62748	0.010575	
4367139	4539348	0.25794	0.298044	-0.0401	0.989114	0.41868	0.006076	
4367139	4539348	0.25794	0.298044	-0.0401	0.989114	0.41868	0.006076	
1352307	2139425	0.622841	0.578767	0.044074	0.994298	0.188207	0.006458	
1963800	7013362	0.565238	0.531286	0.033953	1	0.892468	0.037736	
3259853	11708931	0.597923	0.636848	-0.03893	0.961638	0.157291	0.021257	
1172620	17017716	0.958095	0.939135	0.01896	1	0.035959	0.010557	
2481360	1865391	0.471662	0.430206	0.041456	0.992742	1	0.011584	
4384500	2014340	0.771374	0.741954	0.02942	0.990669	0.859487	0.037033	
3426079	400023	0.297903	0.331813	-0.03391	0.998445	0.25404	0.028023	
4555262	2029871	0.631077	0.590547	0.040531	0.998963	0.209708	0.01024	
1566293	7800974	0.371538	0.33656	0.034977	0.997926	0.545526	0.027593	
2675632	1559706	0.769877	0.801189	-0.03131	0.855365	0.012062	0.027526	
2418438	11789169	0.91701	0.949689	-0.03268	0.920166	0.446858	0.000234	
2150275	9318825	0.810707	0.842825	-0.03212	0.997408	0.609789	0.008469	
1804219	9949000	0.870952	0.831627	0.039326	1	0.469427	0.000814	
1166684	11811181	0.749523	0.777588	-0.02807	0.998963	0.435344	0.042281	
1166684	11811181	0.749523	0.777588	-0.02807	0.998963	0.435344	0.042281	
2410240	3772731	0.677173	0.624715	0.052458	0.997926	0.615172	0.000754	
4287364	1915275	0.832857	0.860478	-0.02762	0.999482	0.673048	0.01835	
3455470		0.829051	0.862007	-0.03296	0.958528	0.560295	0.00803	
2297800	10509801	0.98999	0.993736	-0.00375	0.998963	1	0.206097	
838094	265422	0.935516	0.915592	0.019924	0.964749	0.002801	0.017152	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3483440	13136543	0.700096	0.733485	-0.03339	0.997926	0.490282	0.025045	
1940944	13282172	0.719595	0.746512	-0.02692	0.982893	0.125202	0.072242	
1396684	4273251	0.43295	0.392078	0.040872	0.992742	0.618928	0.01024	
1940933	13276287	0.689358	0.712717	-0.02336	0.989114	0.561156	0.124906	
929614	685884	0.281489	0.244596	0.036892	0.998963	0.784583	0.011006	
98610	17293705	0.987619	0.976109	0.01151	1	1	0.007111	
4192665	6037034	0.74283	0.706956	0.035874	0.99689	0.221365	0.015689	
884984	4765734	0.901811	0.884528	0.017283	0.999482	0.869326	0.090539	
4392969	7055738	0.907305	0.924681	-0.01738	0.99689	0.787444	0.021049	
2315789	11812922	0.805238	0.787016	0.018222	0.999482	0.763274	0.16526	
1352242	10497070.	0.912691	0.933219	-0.02053	0.997408	1	0.01982	
4417943	4748376	0.787417	0.751425	0.035991	0.998445	0.367586	0.010311	
2144828	17677985	0.842761	0.81699	0.025772	0.995334	0.734549	0.038101	
3403141	7655472	0.099619	0.126993	-0.02737	0.998963	0.225532	0.008307	
436335	526819	0.201621	0.167804	0.033816	0.999482	0.548021	0.008989	
3496574	17001604	0.070067	0.056571	0.013495	0.997408	1	0.094377	
4317438	249637	0.064717	0.085812	-0.0211	0.993779	0.82794	0.014626	
400726	7269357	0.397981	0.448125	-0.05014	0.90254	0.010003	0.003993	
400726	7269357	0.397981	0.448125	-0.05014	0.90254	0.010003	0.003993	
1804160	307112	0.868571	0.827822	0.040749	0.998963	0.343342	0.00059	
3857501	7065288	0.639706	0.647177	-0.00747	0.998445	0.279958	0.648805	
2814265	1511450	0.672619	0.626635	0.045984	0.958528	0.507093	0.004042	
3484271	7692208	0.467112	0.429465	0.037646	0.999482	0.216281	0.022602	
1507652	1184570	0.467868	0.512295	-0.04443	0.975117	0.004073	0.006135	
1276457	560737	0.387775	0.361617	0.026157	0.997926	1	0.0982	
4128099	754410	0.625984	0.677476	-0.05149	0.966304	0.009413	0.001737	
4055875	4324677	0.917	0.907647	0.009353	0.959046	0.00032	0.344896	
1749942	12225829	0.62834	0.585324	0.043015	0.998963	0.889707	0.007154	
871796	1930046	0.63918	0.665906	-0.02673	0.998445	0.820009	0.090842	
1351433	16826568	0.988038	0.996014	-0.00798	0.99689	1	0.007254	
4220623	16887396	0.99761	0.993729	0.003881	0.99689	1	0.065611	
2483828	7503069	0.272031	0.243959	0.028072	0.991706	0.118411	0.050221	
2468541	16922637	0.801905	0.837699	-0.03579	0.999482	0.901158	0.00469	
1452031	17252378	0.912857	0.928328	-0.01547	1	1	0.08483	
311165	10901020	0.575714	0.537628	0.038086	0.998963	0.277093	0.019283	
4360126	2534849	0.071905	0.092719	-0.02081	1	0.160821	0.022093	
1254354	2888881	0.261472	0.217466	0.044007	0.996371	0.765832	0.00178	
3192817	2667573	0.83174	0.796785	0.034955	0.993779	1	0.006309	
1222683	4484010	0.915553	0.889522	0.026032	0.998445	0.730362	0.007195	
3897699	5926266	0.641104	0.591946	0.049158	0.998445	0.867991	0.015727	
2428560	7469727	0.530476	0.49033	0.040146	1	0.73585	0.014295	
1940973	12681488	0.734032	0.754266	-0.02023	0.999482	0.275748	0.16423	
764770	9653332	0.632984	0.663254	-0.03027	0.999482	0.17385	0.061155	
2009517	3217882	0.434097	0.458428	-0.02433	0.997926	0.734289	0.137367	
2238478	2796568	0.766507	0.797836	-0.03133	0.99689	0.346853	0.017238	
1256033	17391103	0.962786	0.97779	-0.015	0.998445	1	0.008389	
4350303	2463447	0.002863	0.00057	0.002292	0.997926	1	0.100613	
142680	8142685	0.853119	0.881773	-0.02865	0.936236	0.738721	0.010975	
976262	6500030	0.977906	0.962729	0.015177	0.991706	0.112251	0.006704	
2718968	432755	0.298571	0.333904	-0.03533	0.998445	0.224007	0.022306	
2009515	3217874	0.597889	0.571922	0.025967	0.990669	0.367709	0.112638	
1579154	10267740	0.781818	0.749145	0.032673	0.996371	0.720154	0.020637	
4667654	6828842	0.01813	0.033105	-0.01498	0.997408	0.064095	0.004514	
146867	130106	0.115238	0.144482	-0.02924	1	0.681635	0.008015	
4092165	4737565	0.257143	0.226962	0.03018	1	0.443053	0.031125	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1396658	4853574	0.433333	0.393629	0.039704	1	0.397281	0.012055	
4139504	708891	0.877143	0.850398	0.026745	1	0.894819	0.016464	
1514726	17711202	0.790353	0.814139	-0.02379	0.997408	0.656711	0.068865	
3685318	12652544	0.680723	0.637515	0.043208	0.946086	0.024197	0.009087	
819447	632202	0.727316	0.754587	-0.02727	0.994816	0.043822	0.055228	
1373961	979957	0.565992	0.538728	0.027264	0.986522	0.412327	0.09751	
3529205	1216377	0.025238	0.018793	0.006445	0.999482	1	0.183159	
1683587	17392289	0.908874	0.929465	-0.02059	0.998963	0.433021	0.025263	
929021	1326721	0.449707	0.432056	0.017651	0.97719	0.404583	0.28253	
3166098	4302137	0.626311	0.621868	0.004443	0.998963	0.565855	0.776882	
2297322	11192382	0.907054	0.927759	-0.0207	0.999482	0.207693	0.024103	
4405658	4411829	0.042857	0.059158	-0.0163	1	0.762314	0.02151	
4372203	3744320	0.883333	0.900342	-0.01701	0.999482	1	0.09416	
4372203	3744320	0.883333	0.900342	-0.01701	0.999482	1	0.09416	
1023452	3219463	0.727359	0.76484	-0.03748	0.997926	0.707353	0.009542	
1023452	3219463	0.727359	0.76484	-0.03748	0.997926	0.707353	0.009542	
1023452	3219463	0.727359	0.76484	-0.03748	0.997926	0.707353	0.009542	
3986301	2204602	0.540631	0.587229	-0.0466	0.99689	0.443799	0.00457	
4624074	1497201	0.364277	0.321277	0.043001	0.806636	0.119834	0.015134	
959064	215573	0.345091	0.313993	0.031097	0.999482	0.937756	0.045267	
1420172	17655003	0.902857	0.89123	0.011627	0.999482	0.861192	0.239021	
1420172	17655003	0.902857	0.89123	0.011627	0.999482	0.861192	0.239021	
1741335	12283905	0.646132	0.604214	0.041918	0.997926	0.777729	0.008868	
1119657		0.664756	0.700229	-0.03547	0.995853	0.035919	0.018969	
721436	733498	0.872259	0.847554	0.024705	0.999482	0.602416	0.029313	
221721	9743533	0.990991	0.98102	0.009971	0.954899	1	0.009686	
4423201	4862696	0.58	0.533178	0.046822	0.976672	0.303773	0.004798	
3353072	986343	0.637646	0.645638	-0.00799	0.998963	0.323455	0.669475	
1396690	6434462	0.432729	0.393508	0.039221	0.998445	0.436736	0.013203	
539238	12113820	0.449612	0.49238	-0.04277	0.97719	0.945435	0.010978	
2347089	10510597	0.724762	0.760523	-0.03576	1	0.711386	0.012379	
4069886	7762008	0.880173	0.849885	0.030289	0.987558	0.08402	0.008192	
3353073	986344	0.638821	0.645707	-0.00689	0.993779	0.206944	0.634211	
3564740	11070679	0.215855	0.258837	-0.04298	0.997408	0.724691	0.002113	
2924874	2042616	0.907619	0.879841	0.027779	0.999482	0.152663	0.005981	
547859	757843	0.419048	0.374858	0.04419	1	0.885549	0.00648	
634725	10488932	0.987619	0.977247	0.010372	1	0.364869	0.015372	
3596463	10857384	0.803146	0.790102	0.013043	0.999482	0.308558	0.326576	
777150	11695259	0.409702	0.389782	0.01992	0.991187	0.175926	0.215298	
3127736	40209	0.067684	0.085991	-0.01831	0.998963	0.828794	0.035771	
795910	2573302	0.719052	0.737024	-0.01797	0.985485	0.010849	0.239015	
2842042	13573	0.214286	0.243166	-0.02888	0.999482	0.359209	0.035418	
4190385	6417404	0.177885	0.147766	0.030118	0.991706	1	0.014679	
2072815	722459	0.91937	0.939704	-0.02033	0.998963	0.361858	0.014091	
664366	479282	0.235694	0.270239	-0.03455	0.989114	0.304917	0.016134	
4093228	6471997	0.457685	0.421022	0.036663	0.979264	0.401421	0.025753	
3327740	17711098	0.886342	0.857143	0.029199	0.996371	0.680346	0.007458	
3989135	2144298	0.189704	0.215753	-0.02605	0.997926	0.689401	0.047759	
3127521	7735334	0.912752	0.891753	0.020999	0.993261	0.296553	0.034937	
724810	1453816	0.029131	0.018836	0.010295	0.99689	0.264411	0.044183	
1738000		0.973785	0.985779	-0.01199	0.999482	1	0.009502	
2483813	11078897	0.270554	0.24289	0.027665	0.997926	0.053804	0.050961	
2483813	11078897	0.270554	0.24289	0.027665	0.997926	0.053804	0.050961	
4098278	4382510	0.33871	0.380783	-0.04207	0.967341	0.028529	0.00707	
4653563	1959546	0.071973	0.089875	-0.0179	0.999482	0.05913	0.048536	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1071271	291593	0.7	0.744596	-0.0446	1	1	0.00282	
2112279	17053267	1	0.998294	0.001706	1	1	0.061668	
2453702	7029826	0.913333	0.890216	0.023117	1	0.604389	0.017888	
3639979	11734195	0.84498	0.838863	0.006118	0.96423	1	0.616249	
1673175	10734389	0.584527	0.620592	-0.03606	0.998445	0.085439	0.020594	
1638886	12929833	0.589524	0.562073	0.027451	0.999482	0.945367	0.088381	
1036640	17495152	0.969417	0.983759	-0.01434	0.980819	1	0.004208	
3590515	2925179	0.770121	0.738295	0.031825	0.947123	0.653881	0.029263	
4430114	6050348	0.739733	0.702503	0.03723	0.998445	0.19647	0.012651	
2053179	3850599	0.907266	0.926941	-0.01967	0.996371	1	0.031995	
696208	2796534	0.514395	0.551032	-0.03664	0.992224	0.217897	0.028077	
436328	127733	0.198058	0.164733	0.033325	0.980819	0.264571	0.010862	
4573380	6510580	0.460915	0.502278	-0.04136	0.998963	0.499645	0.012984	
4240385	6037033	0.744275	0.70672	0.037555	0.998445	0.166832	0.011468	
3869000	16996096	0.832618	0.808883	0.023735	0.997926	0.801294	0.343895	
2322146	2600052	0.481853	0.436	0.045853	0.996371	0.409709	0.004961	
1940980	11997760	0.73445	0.754566	-0.02012	0.995853	0.273284	0.167185	
1912031	6473691	0.965649	0.947099	0.01855	0.998963	0.729728	0.005074	
4499093	285164	0.831735	0.802405	0.02933	0.993261	1	0.020029	
1804243	965043	0.094801	0.124845	-0.03004	0.925868	0.104026	0.004851	
3327732	10515631	0.886082	0.856492	0.02959	0.998963	0.491891	0.006543	
1330050	13389642	0.781966	0.742321	0.039645	0.998963	0.332018	0.00557	
3899136	5944564	0.581595	0.608199	-0.0266	0.997926	0.34327	0.507844	
2297327	12264321	0.907143	0.927759	-0.02062	1	0.207693	0.024651	
4195217	1797020	0.895285	0.858871	0.036414	0.998963	0.509419	0.003848	
2145631	17067747	0.805927	0.840571	-0.03464	0.995853	0.254946	0.005792	
3532338	17021490	0.967619	0.974886	-0.00727	0.998445	0.098839	0.188748	
4258053	2228547	0.887734	0.855709	0.032025	0.911871	0.062416	0.004728	
4258053	2228547	0.887734	0.855709	0.032025	0.911871	0.062416	0.004728	
2483798	602688	0.730219	0.757973	-0.02775	0.998963	0.065401	0.049802	
1752376	11214626	0.654785	0.661366	-0.00658	0.970969	0.81823	0.675763	
4270050	7195570	0.475267	0.505794	-0.03053	0.981856	0.54036	0.065343	
1886020	2979684	0.381792	0.343786	0.038007	0.998445	0.454058	0.016835	
795800	16859708	0.876431	0.850967	0.025464	0.998963	0.351892	0.024946	
4319098	2060770	0.714076	0.751756	-0.03768	0.973043	0.141857	0.012585	
3192881	7206439	0.139524	0.169134	-0.02961	0.999482	0.63162	0.012821	
4473868	8046108	0.376072	0.357062	0.019011	0.998963	0.883199	0.228929	
3192868	4888811	0.138704	0.168757	-0.03005	0.998445	0.809695	0.011354	
2305403	17769979	0.610105	0.653364	-0.04326	0.998445	0.117477	0.007189	
1511076	4706345	0.152381	0.179019	-0.02664	0.998963	0.300343	0.029037	
2268662	2675677	0.771947	0.734055	0.037892	0.998445	0.544979	0.007458	
3105288	374647	0.299809	0.332765	-0.03296	0.999482	0.403419	0.032041	
348496	9443960	0.407692	0.44559	-0.0379	0.991706	0.273304	0.018493	
2800188	1495519	0.099142	0.125998	-0.02686	0.998445	0.538482	0.00931	
3491502	17148328	0.850334	0.878702	-0.02837	0.998963	0.152523	0.01057	
4395124	3014899	0.176218	0.150911	0.025307	0.997926	0.291896	0.040391	
4395124	3014899	0.176218	0.150911	0.025307	0.997926	0.291896	0.040391	
3605868	17520081	0.93613	0.955011	-0.01888	0.998963	0.69336	0.012243	
3198222	7184259	0.03619	0.051763	-0.01557	1	0.006342	0.02304	
3496916	17254217	0.889524	0.915813	-0.02629	1	0.508	0.007355	
3524264	17345577	0.771947	0.752278	0.019669	0.998445	0.65114	0.160652	
4072696	875785	0.917143	0.940774	-0.02363	0.999482	0.538486	0.004999	
1704943	11823971	0.910952	0.907745	0.003208	0.999482	0.83933	0.733132	
1704943	11823971	0.910952	0.907745	0.003208	0.999482	0.83933	0.733132	
1852893	7826418	0.447569	0.471526	-0.02396	0.998963	0.786781	0.139538	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1177825	2797237	0.04381	0.060364	-0.01655	0.999482	1	0.021413	
2433736	12005156	0.735714	0.775313	-0.0396	1	0.628235	0.006243	
3857497	4824347	0.638991	0.650169	-0.01118	0.992224	0.365129	0.805166	
1740625	7931676	0.709661	0.666456	0.043204	0.9155	0.689536	0.007318	
3268736	17533589	0.864286	0.863584	0.000701	0.998445	0.666192	0.950938	
3712172	8082455	0.680476	0.715262	-0.03479	0.999482	0.86877	0.022213	
459832	16985267	0.912645	0.909249	0.003396	0.985485	0.409587	0.716744	
4426233	4965458	0.178265	0.142938	0.035327	0.998963	0.491709	0.003516	
1900917	10216620	0.923033	0.895317	0.027716	0.831001	4.66E-08	0.013493	
4425217	4947796	0.200429	0.167722	0.032707	0.893209	0.029687	0.018427	
1396676	12623156	0.432665	0.393387	0.039278	0.997408	0.437082	0.013163	
1266270	6746166	0.674384	0.715569	-0.04118	0.959046	0.002145	0.009916	
4174270	3940647	0.837367	0.809633	0.027734	0.987558	1	0.027376	
1651859	960647	0.712776	0.672967	0.039809	0.992224	0.488985	0.009184	
1071293	2056048	0.508789	0.558275	-0.04949	0.975635	0.299363	0.003403	
2428561	10811589	0.530476	0.490857	0.039619	0.997926	0.786779	0.015693	
343296	9363197	0.905922	0.880979	0.024942	0.997926	0.62811	0.01401	
1673184	9299997	0.584366	0.621005	-0.03664	0.997926	0.072794	0.018752	
3868998	17282918	0.842009	0.821477	0.020532	0.998963	1	0.451889	
1940977	4346982	0.734986	0.754835	-0.01985	0.999482	0.273884	0.17241	
806515	2590292	0.891813	0.916959	-0.02515	0.975117	0.650176	0.01076	
4411555	4456819	0.467017	0.509112	-0.04209	0.997408	0.839739	0.009235	
2432908	3904255	0.566858	0.532992	0.033866	0.998445	0.542569	0.036573	
4205674	1951549	0.46708	0.511377	-0.0443	0.998963	0.499841	0.007468	
2217213	7923885	0.493282	0.450115	0.043167	0.992224	1	0.00861	
2325272	1318250	0.636364	0.677918	-0.04155	0.994816	0.876852	0.007689	
3403146	12499967	0.099524	0.12628	-0.02676	1	0.540329	0.009389	
1850048	1217537	0.541117	0.577251	-0.03613	0.936755	0.431915	0.029325	
2356516	17306848	0.71374	0.67975	0.033991	0.998963	0.698407	0.023354	
1412469	10183757	0.571497	0.525656	0.045841	0.998445	0.839053	0.005704	
1963785	2458290	0.460439	0.419521	0.040918	0.997926	0.677798	0.011911	
1673178	10767635	0.583652	0.619292	-0.03564	0.996371	0.073116	0.022331	
4623974	2057042	0.739943	0.700229	0.039714	0.994298	0.171346	0.007923	
1412477	6759039	0.571088	0.525597	0.045491	0.998963	0.892416	0.006029	
3195249		0.990415	0.97903	0.011385	0.882322	1	0.006387	
1737325	10892840	0.560379	0.516524	0.043855	0.942976	0.233671	0.008504	
4160583	8029775	0.685261	0.712637	-0.02738	0.933126	0.496237	0.081011	
4160583	8029775	0.685261	0.712637	-0.02738	0.933126	0.496237	0.081011	
3192858	2738716	0.139313	0.168942	-0.02963	0.998963	0.810366	0.012582	
2483794	801426	0.730439	0.75945	-0.02901	0.995853	0.094924	0.041071	
3595777	7180612	0.867366	0.839408	0.027959	0.998445	0.104479	0.013997	
526237		0.97619	0.989761	-0.01357	1	1	0.001513	
1264074	6715980	0.909524	0.939704	-0.03018	1	0.123245	0.000771	
3982326	1826691	0.726178	0.761665	-0.03549	0.906169	0.203033	0.017468	
790570	17065729	0.882663	0.860412	0.022251	0.994298	0.323374	0.039907	
4157592	283799	0.913645	0.933941	-0.0203	0.998445	0.786775	0.020643	
202293	2270074	0.457416	0.499427	-0.04201	0.994298	0.250304	0.008938	
4113763	897110	0.708612	0.657714	0.050898	0.995334	0.599595	0.00091	
1885819	902848	0.364027	0.316781	0.047246	0.997408	0.211818	0.002648	
1940983	13278412	0.734509	0.754556	-0.02005	0.998963	0.274165	0.168345	
4293001	3219472	0.727099	0.763936	-0.03684	0.998963	0.779151	0.010775	
4293001	3219472	0.727099	0.763936	-0.03684	0.998963	0.779151	0.010775	
4293001	3219472	0.727099	0.763936	-0.03684	0.998963	0.779151	0.010775	
4293001	3219472	0.727099	0.763936	-0.03684	0.998963	0.779151	0.010775	
4659605	1411212	0.363854	0.405093	-0.04124	0.988595	0.396949	0.01105	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3192807	2738690	0.831905	0.796359	0.035545	1	1	0.005221	
897219	10774410	0.554745	0.594913	-0.04017	0.914982	0.012981	0.013593	
4425828	4903921	0.156775	0.140423	0.016352	0.965267	0.254141	0.175457	
1044481	2993612	0.838894	0.867161	-0.02827	0.998445	0.65957	0.015061	
2117645	9533571	0.693518	0.656606	0.036912	0.998963	0.94042	0.016592	
328926	2813563	0.802669	0.773606	0.029063	0.999482	0.847467	0.030854	
4454733	7138444	0.680079	0.70307	-0.02299	0.967341	0.460169	0.136728	
4600800	223203	0.641563	0.676941	-0.03538	0.997926	0.315474	0.024123	
4016004	4858833	0.000477	0.004561	-0.00408	0.997926	1	0.0099	
1160392	16850840	0.980476	0.964733	0.015744	1	1	0.002802	
385441	4811455	0.911905	0.934361	-0.02246	0.998445	0.045507	0.010764	
382850	17398769	0.612764	0.653272	-0.04051	0.991706	1	0.010852	
1352316	10176716	0.912391	0.93649	-0.0241	0.984448	1	0.006282	
1994414	17194571	0.932665	0.955631	-0.02297	0.998445	0.686668	0.002735	
1940968	13282586	0.734986	0.755125	-0.02014	0.998963	0.236839	0.16584	
1083031	4384261	0.399789	0.440959	-0.04117	0.912908	0.477672	0.017104	
3313917	17548087	0.94381	0.956769	-0.01296	1	1	0.069037	
3426092	385104	0.300573	0.333143	-0.03257	0.99689	0.287761	0.034624	
2446231	12349090	0.956979	0.951081	0.005898	0.997926	0.45803	0.397336	
4442127	6557787	0.383111	0.345672	0.037439	0.998445	0.296447	0.01887	
3877173	17002209	0.983405	0.975741	0.007664	0.996371	0.026782	0.02776	
1155269	2812259	0.383333	0.424915	-0.04158	1	0.78247	0.010089	
1973007	7463631	0.356459	0.31865	0.037809	0.994816	0.139256	0.014446	
2299187	1336976	0.5	0.457094	0.042906	0.995334	0.838307	0.009623	
4258056	6926543	0.371306	0.349261	0.022045	0.999482	0.063404	0.171816	
415163	16995294	0.534549	0.509153	0.025396	0.993261	0.155875	0.137361	
2814709	1512313	0.852717	0.883959	-0.03124	0.999482	1	0.004932	
3332204	2443529	0.328244	0.352338	-0.02409	0.997926	0.208576	0.114542	
994350	17397875	0.9108	0.895282	0.015518	0.988077	0.066946	0.121505	
2246238	10995366	0.772381	0.73322	0.039161	1	0.490229	0.004875	
4568591	691667	0.963052	0.977195	-0.01414	0.994816	1	0.014884	
3455349		0.7245	0.730944	-0.00644	0.999482	0.49248	0.657313	
3455349		0.7245	0.730944	-0.00644	0.999482	0.49248	0.657313	
702956	17599080	0.657416	0.694191	-0.03678	0.99689	0.341153	0.017355	
1370287	12471704	0.173611	0.207143	-0.03353	0.958009	0.294123	0.011411	
1500082	1111703	0.183254	0.154994	0.028259	0.993261	0.897384	0.023683	
1510965	17506515	0.864633	0.837884	0.026749	0.999482	0.384007	0.021987	
2281957	2253941	0.916667	0.890785	0.025882	1	0.729637	0.007413	
1384140	10497540	0.916249	0.93012	-0.01387	0.947123	0.28129	0.134774	
174467	17704663	0.994192	0.989643	0.004548	0.986003	1	0.117641	
2338558	905945	0.2898	0.256279	0.033521	0.997926	0.859305	0.02296	
4168218	2289153	0.806133	0.833729	-0.0276	0.960601	1	0.031975	
1787358		0.939655	0.947489	-0.00783	0.995334	0.727328	0.30908	
4362005	2043991	0.489952	0.451669	0.038284	0.992224	0.732032	0.020048	
2281963	2607850	0.917064	0.891354	0.02571	0.999482	0.729866	0.007727	
871661	7469938	0.650771	0.680925	-0.03015	0.986522	0.875838	0.055178	
1462864	2371353	0.128694	0.109909	0.018785	0.998963	0.862959	0.078183	
546343	2215652	0.536225	0.577055	-0.04083	0.997926	0.835757	0.012921	
1514327	13196543	0.853194	0.872717	-0.01952	0.997926	0.761696	0.090752	
3192840	2738710	0.140476	0.17008	-0.0296	1	0.719787	0.013114	
4115754	1890631	0.765656	0.722222	0.043433	0.973043	0.443042	0.002843	
89610	2210279	0.370311	0.326623	0.043687	0.882841	0.163382	0.009607	
2862605	1877281	0.201144	0.238339	-0.0372	0.999482	0.457416	0.006368	
2305398	11196344	0.612011	0.654721	-0.04271	0.999482	0.179203	0.007735	
2117623	7985489	0.308317	0.345103	-0.03679	0.997408	0.709354	0.017601	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
766702		0.927143	0.909556	0.017587	1	0.53598	0.048574	
4070988	1340081	0.632507	0.592255	0.040252	0.998963	0.142175	0.010829	
256375	6899673	0.913327	0.894932	0.018395	0.936755	0.133124	0.06571	
3324240	11167923	0.911175	0.888383	0.022792	0.997926	0.058395	0.021279	
2484225	8074557	0.80659	0.83504	-0.02845	0.998445	0.462074	0.026713	
3289011	1263893	0.852381	0.84471	0.007671	1	1	0.511476	
1275888	10496223	0.728789	0.682802	0.045988	0.998963	1	0.002355	
3903769	3006092	0.168823	0.203241	-0.03442	0.993779	0.714651	0.0706	
4666428	7969794	0.701429	0.663043	0.038385	0.997408	0.226442	0.011413	
32009	7278900	0.870829	0.895336	-0.02451	0.999482	0.469859	0.019638	
4267727	4439581	0.702857	0.664579	0.038279	0.999482	0.198528	0.011372	
3383305	4868173	0.472753	0.518244	-0.04549	0.99689	0.042375	0.005149	
437504	17261379	0.893333	0.920364	-0.02703	1	0.353771	0.003942	
1224576	3845752	0.667478	0.706257	-0.03878	0.979782	0.286482	0.012396	
3819195	6623655	0.899571	0.922715	-0.02314	0.998963	0.777836	0.035142	
4399437	3848236	0.560172	0.514237	0.045935	0.997926	0.079432	0.004271	
1773348	8095008	0.42755	0.479522	-0.05197	0.999482	0.500072	0.001304	
3979806	946598	0.511677	0.551201	-0.03952	0.898393	0.773921	0.021988	
2062607	7957473	0.082459	0.107877	-0.02542	0.997926	0.726202	0.008175	
976269	1582598	0.975691	0.960661	0.01503	0.998445	0.145263	0.009622	
3426091	380632	0.299618	0.332571	-0.03295	0.99689	0.3607	0.032226	
3260117	9812198	0.584527	0.577055	0.007472	0.99689	0.677865	0.647695	
3608379		0.983794	0.991468	-0.00767	0.999482	1	0.035453	
4434478	6459677	0.309961	0.336237	-0.02628	0.982374	0.818846	0.090816	
4570142	8038492	0.727273	0.720387	0.006885	0.99689	0.737466	0.637587	
3455162	4859352	0.685115	0.724687	-0.03957	0.998963	0.236283	0.006633	
971411		0.961868	0.95553	0.006338	0.998445	0.409002	0.325733	
1750024	7930181	0.726667	0.689066	0.037601	0.999482	0.156315	0.012125	
4497389	30510	0.007626	0.005688	0.001938	0.999482	1	0.468319	
3989859	1544196	0.776504	0.797497	-0.02099	0.998445	0.601517	0.118954	
3160152	10513910	0.951859	0.958428	-0.00657	0.998963	1	0.328733	
1137332	10913938	0.169048	0.133409	0.035638	0.998963	0.190108	0.002703	
2001427	9792216	0.90275	0.927494	-0.02474	0.974598	1	0.008273	
982448	10915579	0.663324	0.62643	0.036894	0.995853	0.717854	0.019373	
1051517	1838658	0.663489	0.621729	0.04176	0.999482	0.82987	0.007629	
1348821	12691759	0.472355	0.510262	-0.03791	0.998445	0.636326	0.020334	
150622	3827907	0.585482	0.615604	-0.03012	0.997926	0.568292	0.060927	
1068887	1542685	0.574234	0.535348	0.038886	0.995853	0.057411	0.015362	
1068887	1542685	0.574234	0.535348	0.038886	0.995853	0.057411	0.015362	
1718429	11234408	0.969971	0.95165	0.018322	0.999482	0.139533	0.004445	
966890	17530359	0.992816	0.989726	0.00309	0.995334	1	0.305828	
1741498	4548585	0.770038	0.732916	0.037122	0.998445	1	0.008667	
2281972	1870167	0.129048	0.156428	-0.02738	1	0.250096	0.019284	
2093924	7303417	0.883582	0.855516	0.028067	0.953344	0.482778	0.013677	
1177894	12021518	0.785987	0.806598	-0.02061	0.999482	0.914128	0.126204	
3205763	8058306	0.999523	0.996009	0.003514	0.998445	1	0.018519	
976263	17185893	0.977619	0.963026	0.014593	1	0.333737	0.008253	
4281550	1131384	0.949048	0.930603	0.018445	1	1	0.017374	
4281550	1131384	0.949048	0.930603	0.018445	1	1	0.017374	
4281550	1131384	0.949048	0.930603	0.018445	1	1	0.017374	
4281550	1131384	0.949048	0.930603	0.018445	1	1	0.017374	
4512783	1349267	0.825073	0.802217	0.022856	0.977709	0.009451	0.084878	
582200	17635852	0.955672	0.969283	-0.01361	0.999482	1	0.028089	
2481380	2117389	0.32619	0.283922	0.042268	0.998963	0.36218	0.004982	
4274993	1879381	0.374166	0.326879	0.047287	0.998963	0.701715	0.002036	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2680174	1566653	0.727273	0.762117	-0.03484	0.87973	0.622267	0.025765	
4099125	277586	0.356256	0.397042	-0.04079	0.998445	0.832888	0.010601	
801772	2694777	0.228313	0.202503	0.02581	0.999482	0.601517	0.052806	
3670396	11856519	0.857619	0.829532	0.028087	0.998963	0.282511	0.020045	
1449349		0.997129	0.994299	0.00283	0.996371	1	0.179503	
3708579	9913094	0.998086	1	-0.00191	0.995334	1	0.070749	
4631433	4471227	0.264356	0.231808	0.032549	0.965267	0.335654	0.027677	
1673169	10082679	0.583889	0.61661	-0.03272	0.999482	0.045971	0.035603	
2415883	7863871	0.106667	0.13041	-0.02374	0.999482	0.457715	0.023253	
3674578	9920336	0.260267	0.293615	-0.03335	0.997408	0.807437	0.023319	
1750645	10891249	0.65348	0.618151	0.035329	0.997926	0.474083	0.025459	
2343706	17013266	0.898571	0.91752	-0.01895	1	1	0.045236	
2481378	1369103	0.328794	0.285463	0.043331	0.975117	0.501902	0.00463	
4566687	2668235	0.686124	0.642776	0.043349	0.997408	0.270385	0.00596	
4208108	1123492	1	0.997156	0.002844	1	1	0.015829	
3455175	4859356	0.682078	0.722981	-0.0409	0.999482	0.238343	0.005244	
4124157	2155179	0.423518	0.464123	-0.0406	0.997408	0.03533	0.015098	
634737	1377055	0.987595	0.977714	0.009881	0.99689	0.351433	0.020444	
1485687	12527264	0.87	0.896473	-0.02647	1	0.360875	0.013671	
709884	562408	0.422488	0.433941	-0.01145	0.99689	0.33644	0.488689	
2217208	7898858	0.492374	0.449829	0.042545	0.998445	0.891479	0.009057	
1373849	12620126	0.735322	0.767509	-0.03219	0.99015	0.634876	0.022612	
824904	16943588	0.882745	0.892369	-0.00962	0.998963	1	0.34902	
1080892	11184882	0.401905	0.375143	0.026762	0.998963	0.280182	0.097207	
906426	12230929	0.821735	0.84795	-0.02621	0.998963	0.794816	0.034642	
3483416	13102873	0.699905	0.732346	-0.03244	0.998445	0.547079	0.029993	
514006	42069	0.158571	0.124573	0.033998	1	0.089271	0.00263	
363841	9444679	0.893232	0.864465	0.028767	0.998963	0.388522	0.006582	
888603	4768826	0.227836	0.24744	-0.0196	0.999482	0.526847	0.158736	
3286385	12948015	0.479008	0.51139	-0.03238	0.998445	0.637074	0.048408	
1515646	7771851	0.510057	0.54811	-0.03805	0.993779	0.034096	0.023006	
4095026	921550	0.686246	0.709898	-0.02365	0.998445	0.805988	0.120634	
2516949	3846684	0.618217	0.580513	0.037704	0.979264	0.574749	0.021192	
3455165	4859353	0.684461	0.724629	-0.04017	0.998445	0.235959	0.006006	
3508852	8102703	0.090086	0.107306	-0.01722	0.997926	1	0.077879	
415188	718050	0.394561	0.372582	0.021979	0.998963	0.051265	0.161107	
415188	718050	0.394561	0.372582	0.021979	0.998963	0.051265	0.161107	
4261532	1524116	0.013333	0.023322	-0.00999	1	1	0.022248	
4281535	1975078	0.162633	0.194573	-0.03194	0.984448	0.664193	0.011866	
1247261	7565087	0.01	0.008542	0.001458	0.999482	1	0.651128	
3403144	7675173	0.099524	0.125854	-0.02633	0.999482	0.538247	0.010561	
4377970	2940804	0.258111	0.224118	0.033992	0.998963	0.49687	0.01556	
2165626	7989852	0.378107	0.428164	-0.05006	0.99689	0.945078	0.00173	
1601704	8104468	0.51767	0.557452	-0.03978	0.998445	0.632203	0.015572	
1601704	8104468	0.51767	0.557452	-0.03978	0.998445	0.632203	0.015572	
3317881	2302038	0.517143	0.484624	0.032519	0.999482	1	0.049243	
4445879	6657666	0.012857	0.02164	-0.00878	0.999482	1	0.038807	
585058		0.996113	0.997691	-0.00158	0.982374	1	0.39463	
929018	4883972	0.522246	0.501236	0.02101	0.908761	1	0.213682	
2483797	588193	0.73	0.75711	-0.02711	1	0.053804	0.055491	
2371003	6773762	0.124044	0.14332	-0.01928	0.874028	0.039669	0.12035	
1750544	11213800	0.739367	0.769643	-0.03028	0.959565	0.627142	0.035453	
1879671	1021435	0.419447	0.452787	-0.03334	0.999482	0.683411	0.04017	
3448293	6833080	0.620821	0.579429	0.041393	0.996371	0.33145	0.009851	
3322305	2398659	0.744966	0.736541	0.008426	0.993261	0.257879	0.561877	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2926028	2044453	0.634837	0.591801	0.043035	0.989114	0.673302	0.006853	
4194595	2240430	0.480383	0.435576	0.044807	0.996371	0.33644	0.006066	
4194595	2240430	0.480383	0.435576	0.044807	0.996371	0.33644	0.006066	
1093265	7523839	0.221367	0.261494	-0.04013	0.989632	0.113718	0.004207	
1608811	12983177	0.834128	0.819429	0.014699	0.997408	0.169484	0.226002	
770019	6435356	0.26361	0.230068	0.033542	0.997926	0.340716	0.016778	
758796	6716954	0.381389	0.342166	0.039223	0.987558	0.940028	0.014447	
641535	980797	0.769341	0.736301	0.03304	0.99689	0.794247	0.018566	
1740647	4469857	0.304892	0.351541	-0.04665	0.825816	1	0.006311	
4390467	2964608	0.642653	0.598062	0.044591	0.997926	0.623587	0.004678	
4641241	1909855	0.873333	0.882118	-0.00879	0.999482	0.253185	0.41825	
4541969	2693718	0.422784	0.467577	-0.04479	0.999482	0.541985	0.006755	
1247000	11893960	0.585238	0.614595	-0.02936	0.998963	0.022577	0.063523	
1697756	1892866	0.475214	0.447099	0.028116	0.999482	0.375785	0.079754	
157586	7147789	0.808612	0.791334	0.017278	0.996371	0.838468	0.187303	
4348433	7366124	0.013384	0.023429	-0.01004	0.995853	1	0.022057	
4317400	1127773	0.434637	0.448747	-0.01411	0.998445	0.539564	0.384701	
795791	2048253	0.856393	0.829727	0.026666	0.998445	0.550136	0.025932	
2104040	6650259	0.770952	0.741183	0.029769	1	0.218319	0.033984	
2553386	753032	0.861987	0.893143	-0.03116	0.996371	0.595924	0.003784	
1266285	2118480	0.632507	0.66953	-0.03702	0.996371	0.359068	0.017621	
3879553		0.998777	0.995302	0.003475	1	1	0.033614	
1153619	16842660	0.969031	0.970868	-0.00184	0.954899	1	0.744626	
1013629	17499125	0.783127	0.796359	-0.01323	0.999482	0.060531	0.315517	
1674566	2959111	0.381202	0.334471	0.046731	0.998963	0.324649	0.003393	
891909		1	0.998286	0.001714	0.997408	1	0.0612	
1813512	2270435	0.92052	0.901961	0.018559	0.987558	0.703911	0.050032	
971426		0.962857	0.955581	0.007276	0.999482	0.408825	0.256099	
4008050	2720106	0.545192	0.5	0.045192	0.991187	0.249491	0.005738	
1065796	17472758	0.838141	0.804205	0.033936	0.87973	0.010931	0.008475	
3384899	4867788	0.361538	0.320231	0.041307	0.987558	0.085515	0.009318	
395643	2235900	0.573628	0.61194	-0.03831	0.99015	0.225004	0.019356	
42155	2830034	0.324402	0.357469	-0.03307	0.996371	0.557107	0.032933	
3522271	17007477	0.899048	0.877133	0.021915	1	0.755709	0.032472	
3866050		0.996942	1	-0.00306	1	1	0.054706	
1036277	6699815	0.547188	0.59236	-0.04517	0.998445	0.834082	0.005279	
2382865	1353217	0.828708	0.81756	0.011148	0.996371	0.498568	0.371219	
634733	17005120	0.987607	0.977816	0.009792	0.999482	0.350125	0.021259	
4649597	7180036	0.98619	0.97554	0.01065	1	0.409291	0.01688	
3130098	17342444	0.855439	0.865757	-0.01032	0.998963	0.56046	0.369488	
3192883	2738726	0.138889	0.167429	-0.02854	0.994816	0.716083	0.016132	
3669070	2584164	0.827931	0.797497	0.030434	0.999482	0.676457	0.017122	
4463577	7666123	0.957143	0.972696	-0.01555	1	1	0.009247	
4585109	565791	0.252408	0.283487	-0.03108	0.98704	0.558939	0.032866	
1683039	7940811	0.828859	0.789714	0.039145	0.994298	0.221196	0.002389	
1221273	1918050	0.946667	0.922463	0.024204	0.998963	0.350817	0.00277	
328917	2813557	0.802857	0.774487	0.02837	0.999482	0.923229	0.034764	
4233587	6930532	0.860476	0.834094	0.026383	0.998963	0.541299	0.024238	
2239075	2999279	0.474237	0.437998	0.036239	0.998963	0.272841	0.027719	
274947	1018374	0.855577	0.881684	-0.02611	0.999482	0.196388	0.01605	
2282568	7097745	0.56619	0.589977	-0.02379	0.999482	0.328626	0.134196	
1886028	11135835	0.381566	0.344926	0.03664	0.997408	0.41112	0.021241	
1912858	2060864	0.741795	0.704937	0.036859	0.988595	0.254041	0.013193	
2427767	7018634	0.841277	0.872014	-0.03074	0.999482	0.365465	0.007682	
192634	8007618	0.99857	0.994875	0.003695	0.998963	1	0.042793	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2377224	10510984	0.937143	0.91752	0.019623	1	0.824932	0.019474	
3867342	5957096	0.996139	0.988677	0.007462	0.947641	1	0.010492	
4618851	654261	0.872493	0.895667	-0.02317	0.997408	0.586775	0.02988	
2248748	16937216	0.942289	0.956419	-0.01413	0.974598	1	0.0501	
3636946		0.765238	0.726651	0.038587	0.999482	0.932429	0.007013	
1319360	12618326	0.76479	0.731735	0.033055	0.997408	0.49171	0.020183	
1396657	4853466	0.43327	0.394165	0.039105	0.99689	0.357621	0.013537	
4463866	7613154	0.429866	0.387941	0.041926	0.998963	0.355784	0.011282	
2092068	3851646	0.540448	0.582367	-0.04192	0.978745	0.207708	0.009105	
696217	2796495	0.513823	0.548461	-0.03464	0.998445	0.339862	0.036442	
353050	1885127	0.095806	0.07631	0.019496	0.998963	0.052317	0.031024	
4617178	4737738	0.163168	0.137656	0.025512	0.998963	0.022255	0.034703	
1750554	11213802	0.74	0.769625	-0.02962	1	0.924413	0.034903	
3282538	2938787	0.804762	0.78303	0.021732	0.999482	0.691871	0.103254	
792617	9716	0.713527	0.740093	-0.02657	0.981337	0.375093	0.072966	
3127728	7721512	0.594258	0.6374	-0.04314	0.996371	0.71492	0.007459	
623793	7942993	0.547755	0.585714	-0.03796	0.996371	0.889399	0.020055	
3403136	11734872	0.097992	0.125	-0.02701	0.996371	0.441667	0.008611	
1940954	11778405	0.717703	0.743959	-0.02626	0.992224	0.285553	0.07666	
3564707	2305195	0.216873	0.258267	-0.04139	0.998445	0.659703	0.003054	
1940971	6473097	0.74619	0.767084	-0.02089	0.999482	0.157777	0.14611	
1352360	970307	0.128217	0.105802	0.022415	0.999482	0.281586	0.037754	
710990	12742451	0.657593	0.617882	0.039712	0.997926	0.775364	0.011156	
846067	16878325	0.976168	0.963595	0.012573	0.999482	0.624201	0.022733	
1211895	17622574	0.832061	0.860478	-0.02842	0.998445	0.673048	0.014955	
3426622	13112030	0.264045	0.302071	-0.03803	0.933126	0.025227	0.010104	
2821210	1519943	0.249285	0.217861	0.031424	0.999482	0.277677	0.024928	
2451149	4552981	0.464661	0.494305	-0.02964	0.997926	0.380758	0.072732	
257710	17713154	0.85224	0.885097	-0.03286	0.999482	0.739888	0.002965	
1071315	11165783	0.700952	0.743736	-0.04278	0.999482	1	0.004179	
4329127	4522268	0.684286	0.70672	-0.02243	0.999482	0.415477	0.138292	
621604	4944370	0.654433	0.687144	-0.03271	0.999482	0.638292	0.0344	
1266227	4672396	0.728053	0.697263	0.03079	0.997926	0.471656	0.038468	
4218374	3111476	0.949524	0.933447	0.016077	1	0.268219	0.036069	
4307084	6581025	0.684938	0.706956	-0.02202	0.998445	0.415645	0.14567	
2984732	2178403	0.2689	0.231207	0.037692	0.99689	1	0.008365	
4587567	7434086	0.467526	0.507964	-0.04044	0.998445	0.685613	0.012245	
1941696	10504687	0.959048	0.973804	-0.01476	0.999482	1	0.011753	
1069426	553608	0.187081	0.220068	-0.03299	0.996371	0.62295	0.012879	
1175741	17021745	0.978571	0.964733	0.013839	1	0.019364	0.012861	
3064127	2390275	0.87911	0.90625	-0.02714	0.983929	0.041918	0.009335	
4285357	1426581	0.645208	0.608746	0.036462	0.986003	0.618093	0.022028	
4596905	7764221	0.122605	0.107877	0.014729	0.995334	0.726202	0.166668	
3817053	17325969	0.978593	0.963087	0.015506	1	1	0.0031	
4618531	1332706	0.476168	0.444698	0.03147	0.998445	0.732625	0.05486	
1921767	16926407	0.284828	0.256849	0.027979	0.997408	0.791082	0.055916	
928183	17060651	0.905238	0.892369	0.012869	0.999482	0.377096	0.192424	
1266269	6759651	0.670191	0.708483	-0.03829	0.948678	0.015051	0.017474	
2236331	1192641	0.27979	0.281072	-0.00128	0.998445	1	0.930163	
1412456	1851170	0.499494	0.548005	-0.04851	0.927942	0.568612	0.004609	
4158166	2414152	0.804119	0.840779	-0.03666	0.993779	0.526767	0.003944	
2248876	1904057	0.158382	0.130715	0.027667	0.97408	0.364793	0.019075	
2169874	7981829	0.999042	0.998294	0.000749	0.99689	1	0.5262	
1318509	12991269	0.403626	0.367161	0.036465	0.997926	0.245613	0.021749	
3857478	5952130	0.637032	0.644966	-0.00793	0.998963	0.281302	0.684932	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
838166	11950355	0.694338	0.651826	0.042511	0.994298	0.502769	0.006516	
838166	11950355	0.694338	0.651826	0.042511	0.994298	0.502769	0.006516	
819255	10491127	0.566796	0.523727	0.043069	0.983411	0.585739	0.009029	
819255	10491127	0.566796	0.523727	0.043069	0.983411	0.585739	0.009029	
1886077	17052966	0.902122	0.884795	0.017326	0.980819	0.739596	0.087774	
1640567	12918865	0.214422	0.25	-0.03558	0.995853	0.47027	0.009709	
1351083	1196670	0.143266	0.117312	0.025954	0.997926	1	0.017555	
1268136	4671647	0.692271	0.725513	-0.03324	0.998445	0.350991	0.025583	
2381611	17798930	0.880839	0.899772	-0.01893	0.998963	0.578453	0.065167	
641533	4697069	0.774762	0.743458	0.031303	1	0.658878	0.023888	
2483800	634365	0.730696	0.757679	-0.02698	0.999482	0.054058	0.056732	
1940941	7826146	0.71872	0.743444	-0.02472	0.997408	0.28774	0.094619	
806496	16912088	0.907619	0.929465	-0.02185	1	0.61349	0.014323	
1510963	17506550	0.864504	0.838838	0.025666	0.998445	0.383985	0.027956	
3688335	7733099	0.705141	0.668397	0.036744	0.983929	0.399358	0.018203	
302845	7765836	0.446411	0.431507	0.014905	0.995853	0.535297	0.357625	
4507436	277589	0.364593	0.404571	-0.03998	0.995334	0.623241	0.012971	
4158841	8051134	0.376549	0.357793	0.018756	0.999482	0.825939	0.235255	
2959675	2137096	0.14	0.168942	-0.02894	1	0.810366	0.01498	
1507677	287822	0.309048	0.347206	-0.03816	0.998963	0.118139	0.01142	
770895	16845518	0.805529	0.82992	-0.02439	0.999482	0.12015	0.051253	
770963	10490564	0.808571	0.832765	-0.02419	1	0.088741	0.054144	
1023472	9429072	0.723282	0.759954	-0.03667	0.998963	0.711401	0.011541	
1023472	9429072	0.723282	0.759954	-0.03667	0.998963	0.711401	0.011541	
1023472	9429072	0.723282	0.759954	-0.03667	0.998963	0.711401	0.011541	
2453697	7022420	0.909048	0.886803	0.022244	1	0.398372	0.02532	
1960729	2469665	0.667464	0.7	-0.03254	0.995334	0.809582	0.02992	
1608810	10410407	0.834288	0.819222	0.015066	0.995853	0.108781	0.214157	
1940942	17408682	0.717765	0.743458	-0.02569	0.998445	0.288494	0.082098	
3604930		0.95	0.958476	-0.00848	1	0.394567	0.217248	
4097392	1932237	0.490449	0.454857	0.035592	0.996371	0.586006	0.030278	
2084183	10778325	0.210325	0.180571	0.029754	0.995853	0.108701	0.021312	
3350809	756839	0.468961	0.46936	-0.0004	0.995334	0.251744	0.332823	
2318688	17259769	0.837464	0.802048	0.035416	0.999482	0.088498	0.004282	
1497031	3904083	0.709538	0.693013	0.016525	0.990669	0.873826	0.271845	
795802	6792567	0.856667	0.830296	0.026371	0.999482	0.548652	0.027151	
3174489	9959976	0.986164	0.972096	0.014068	0.998445	1	0.002109	
4194146	4821826	0.178265	0.157175	0.02109	0.998963	0.52568	0.085373	
1609812	6510489	0.770515	0.791572	-0.02106	0.998445	0.065894	0.107927	
465946	17145767	1	0.99829	0.00171	0.997926	1	0.06162	
4530156	2023059	0.207282	0.2194	-0.01212	0.982893	0.766715	0.375479	
823674	11657437	0.898095	0.873151	0.024944	1	0.761057	0.018132	
2622386	990515	0.023333	0.03413	-0.0108	1	1	0.047771	
2072819	10777240	0.944688	0.963528	-0.01884	0.864178	0.618242	0.011678	
3403772	12502633	0.632022	0.670485	-0.03846	0.846034	0.045886	0.020888	
3274915	2241003	0.384357	0.344926	0.039431	0.994816	0.331352	0.014466	
3274915	2241003	0.384357	0.344926	0.039431	0.994816	0.331352	0.014466	
4261682	4388194	0.697318	0.721077	-0.02376	0.993779	0.932996	0.111751	
1859965	17155246	0.999048	0.998294	0.000754	1	1	0.52199	
434985	6039390	0.2	0.170648	0.029352	1	0.284499	0.022645	
4360709	2080144	1	0.998292	0.001708	0.998445	1	0.061768	
871769	10968214	0.651573	0.681663	-0.03009	0.998963	0.876508	0.054056	
2314165	1557614	0.639135	0.586867	0.052268	0.846553	0.7033	0.002262	
2143399	17063294	0.86033	0.894299	-0.03397	0.970969	0.854644	0.002119	
4111262	4747221	0.124164	0.152397	-0.02823	0.99689	0.694241	0.012588	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
4497848	5917175	0.001881	0	0.001881	0.97719	.	1	0.116775
2321841		0.99381	0.992597	0.001213	0.999482		1	0.649986
3417425	6819908	0.782235	0.81642	-0.03418	0.997408	0.573633	0.00957	
4428388	6007388	0.557784	0.597826	-0.04004	0.995853	0.041331	0.015806	
3918207	12687129	0.710866	0.671141	0.039725	0.998445	0.168894	0.018273	
1603927	7245883	0.824595	0.782212	0.042383	0.998445	0.427504	0.001053	
4515348	920388	0.94381	0.920273	0.023536	0.999482	0.35386	0.003844	
1006134	2453244	0.555821	0.600114	-0.04429	0.998963	1	0.006499	
2289460	4531389	0.468065	0.513113	-0.04505	0.998445	1	0.006209	
585005	11769577	0.317225	0.281393	0.035832	0.995853	0.802102	0.017688	
1683050	10837344	0.827125	0.788175	0.038951	0.994298	0.156327	0.002637	
790476	11711607	0.20877	0.186788	0.021982	0.998963	0.824067	0.089691	
4606490	2186659	0.427515	0.469679	-0.04216	0.961638	0.015481	0.013636	
1524952	9489811	0.596449	0.557078	0.039372	0.994298	0.217864	0.015643	
1610505	7246739	0.454589	0.495327	-0.04074	0.980301	0.374064	0.015006	
2333481	2594969	0.140969	0.166225	-0.02526	0.862105	0.292552	0.048323	
1672411	11029660	0.945611	0.927511	0.018099	0.997408	1	0.021359	
306614	867056	0.311366	0.275371	0.035995	0.997408	0.271788	0.017631	
3296760	17301591	0.782381	0.812287	-0.02991	1	0.223252	0.02286	
2079236	7966393	0.998095	0.995449	0.002646	1	1	0.146398	
3108971	17671362	0.903241	0.885535	0.017706	0.998963	1	0.078616	
1496831	9353682	0.298472	0.316059	-0.01759	0.997926	0.754785	0.248271	
1651833	12576021	0.710476	0.671786	0.03869	1	0.444179	0.011203	
806487	2790190	0.880476	0.905575	-0.0251	1	0.84523	0.01305	
4065240	643672	0.29409	0.311149	-0.01706	0.999482	0.693938	0.254038	
3136209	16862286	0.960439	0.973265	-0.01283	0.999482	1	0.031267	
4309403	1727307	0.304961	0.355389	-0.05043	0.839813	0.333153	0.00238	
3124065	11737939	0.811404	0.84521	-0.03381	0.975635	0.513534	0.007964	
4617722	9591608	0.36068	0.319908	0.040772	0.984448	0.08644	0.010719	
1352256		0.911344	0.931015	-0.01967	0.998445	0.294443	0.028344	
1790156	16946152	0.923737	0.897042	0.026695	0.999482	1	0.004027	
1617538	7260623	0.626311	0.64123	-0.01492	0.998963	0.419693	0.341492	
1617538	7260623	0.626311	0.64123	-0.01492	0.998963	0.419693	0.341492	
2055973	11178367	0.913424	0.888112	0.025312	0.977709	0.016	0.012901	
1155319	2786738	0.386233	0.425484	-0.03925	0.997926	0.679564	0.015395	
3548070	17676742	0.628217	0.669511	-0.04129	0.999482	0.127791	0.009639	
805567	5009752	0.687798	0.728881	-0.04108	0.997926	0.732637	0.005577	
2297416	9419986	0.275024	0.285877	-0.01085	0.998963	0.619819	0.458465	
2294084	12218075	0.901429	0.927759	-0.02633	1	0.799692	0.004503	
2294084	12218075	0.901429	0.927759	-0.02633	1	0.799692	0.004503	
906966	11176923	0.934223	0.904328	0.029895	0.998963	0.433511	0.000927	
277727	17717962	0.968095	0.981229	-0.01313	1	0.034106	0.015087	
2358174	7648681	0.618321	0.601375	0.016946	0.995853	0.396832	0.294988	
1391023	16826360	0.998567	1	-0.00143	0.995334	1	0.118408	
3192825	2667579	0.817271	0.780432	0.036839	0.998963	0.921574	0.004983	
3328069	17654854	0.879048	0.850398	0.028649	1	0.595289	0.010045	
3604908	16961611	0.948522	0.958476	-0.00995	0.999482	0.394567	0.150463	
3133720	7648125	0.532505	0.482877	0.049628	0.996371	0.379085	0.002853	
1940949	7016573	0.71878	0.743166	-0.02439	0.998963	0.288792	0.098836	
3172472	16875905	0.970897	0.982326	-0.01143	0.997926	0.026893	0.028709	
620931	11213476	0.411652	0.429465	-0.01781	0.998445	0.730687	0.265034	
1768133	13381899	0.867493	0.848519	0.018973	0.998963	0.235848	0.094087	
713245	7545496	0.926864	0.9124	0.014464	0.997926	0.529046	0.10933	
3669064	2679098	0.827931	0.797605	0.030326	0.998445	0.402606	0.017791	
791211	33483	0.551001	0.517123	0.033878	0.997926	0.198564	0.040042	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1146055	1031076	0.54107	0.585324	-0.04425	0.998445	0.626625	0.006935	
522345	17159180	0.977906	0.96789	0.010016	0.991706	0.219839	0.063045	
888574	10783204	0.415473	0.380274	0.035199	0.997408	0.151847	0.030648	
795783	16859748	0.857759	0.831243	0.026516	0.995853	0.470017	0.026398	
3688330	4607321	0.703527	0.666477	0.037051	0.998445	0.595485	0.016016	
2288338	7894223	0.720513	0.764563	-0.04405	0.932608	0.052465	0.003947	
1924151	1451841	0.492704	0.455224	0.03748	0.984448	0.132751	0.022702	
4467207	7743767	0.441781	0.456243	-0.01446	0.97408	0.783091	0.37851	
4577994	1028582	0.011429	0.017634	-0.00621	1	0.236001	0.114163	
2228768	10826574	0.565196	0.601432	-0.03624	0.95127	0.773661	0.031159	
4026469	1687230	0.416023	0.381307	0.034716	0.989114	0.56582	0.033673	
1155263	2812258	0.383222	0.423033	-0.03981	0.998445	0.782166	0.014002	
2288336	10882204	0.814885	0.854691	-0.03981	0.996371	0.339753	0.001179	
2428662	10118262	0.490926	0.455063	0.035864	0.998445	0.586863	0.0286	
3140039		0.996187	0.988584	0.007602	0.997926	1	0.006234	
4232534	1465791	0.976667	0.963595	0.013072	1	0.319983	0.018413	
533065	977143	0.654388	0.699482	-0.04509	0.878694	0.199899	0.005657	
3901780	7065457	0.857318	0.892545	-0.03523	0.998963	0.674596	0.002528	
947574	7323647	0.111905	0.128132	-0.01623	0.999482	0.448747	0.129069	
1789354	1692506	0.339847	0.329352	0.010496	0.999482	0.108788	0.496628	
620933	11213477	0.412857	0.431741	-0.01888	1	0.73122	0.23774	
2314133	7090367	0.666508	0.628702	0.037806	0.998445	1	0.015171	
1940953	7833808	0.71878	0.743458	-0.02468	0.999482	0.288494	0.094738	
4014861	2363667	0.457102	0.415904	0.041198	0.99689	1	0.011085	
3196804		0.999523	0.995444	0.004079	0.998445	1	0.009952	
925241	749170	0.700573	0.657175	0.043398	0.997926	0.016575	0.004187	
3140041		0.99618	0.988584	0.007595	0.99689	1	0.006334	
1175118	17021237	0.545854	0.492477	0.053377	0.979264	0.94582	0.001379	
1000976	12043321	0.864762	0.87372	-0.00896	1	0.759468	0.416646	
1222666	6760279	0.91619	0.890982	0.025209	0.998445	0.729695	0.009002	
1634147	8056740	0.998571	0.997725	0.000847	1	1	0.543233	
493980	17186189	0.957214	0.968421	-0.01121	0.96423	0.578536	0.08045	
4436657	6506062	0.814356	0.830378	-0.01602	0.962157	0.06666	0.215142	
3711032	10521236	0.958055	0.972096	-0.01404	0.998963	1	0.018495	
873650	7024163	0.283838	0.318884	-0.03505	0.949715	0.096424	0.018344	
4352553	2970992	0.481986	0.522067	-0.04008	0.978745	0.837946	0.015726	
4248475	2323924	0.000476	0.003982	-0.00351	1	0.011918	0.035366	
3993754	2878075	0.144561	0.170843	-0.02628	0.998445	0.284986	0.028633	
2432048	17692355	0.794847	0.827055	-0.03221	0.997408	0.239526	0.01222	
1597046	4804063	0.838894	0.80467	0.034224	0.998963	0.334141	0.008005	
795792	751784	0.857483	0.831243	0.02624	0.998445	0.630061	0.027512	
884663	11062577	0.909804	0.934086	-0.02428	0.965267	0.39965	0.006962	
4514546	2123451	0.335465	0.300676	0.034789	0.829445	0.600056	0.039261	
1726713	10501747	0.922784	0.918565	0.004219	0.998963	0.504082	0.628475	
4261653	7702166	0.099619	0.079727	0.019892	0.998963	0.645091	0.034099	
2364401	4246675	0.383477	0.345143	0.038334	0.996371	0.765234	0.014559	
1337169	17384189	0.923114	0.937856	-0.01474	0.997408	0.768074	0.078023	
3553036	16963293	0.778681	0.805587	-0.02691	0.99689	0.066054	0.047147	
1286770	11682765	0.085714	0.062073	0.023641	0.999482	1	0.005486	
1036145	2802906	0.650242	0.605869	0.044373	0.98704	0.477946	0.005801	
4031676	2130928	0.144423	0.116041	0.028382	0.999482	0.624856	0.010037	
1351074	1196671	0.14381	0.117882	0.025928	0.999482	1	0.017724	
2238486	702374	0.773855	0.803185	-0.02933	0.998963	0.239928	0.024002	
1806472	1970655	0.701144	0.710137	-0.00899	0.998963	0.682477	0.546099	
2242272	12768718	0.903736	0.928164	-0.02443	0.995853	0.202271	0.010372	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3423675	11737784	0.811366	0.822691	-0.01133	0.997408	1	0.370075	
485522	17150357	0.816015	0.789294	0.026721	0.998963	0.41712	0.041773	
4373217	2654572	0.06286	0.059264	0.003596	0.990669	1	0.658364	
593300	4425686	0.894938	0.916287	-0.02135	0.997926	0.379216	0.027411	
1366193	16850033	0.933683	0.9124	0.021283	0.998963	1	0.01431	
1043946	1548038	0.832698	0.861775	-0.02908	0.999482	0.481825	0.015059	
795678	4894940	0.433752	0.39093	0.042822	0.987558	0.776378	0.008849	
4408244	4388990	0.684461	0.707192	-0.02273	0.997926	0.369264	0.132738	
1790158	10502523	0.923333	0.897042	0.026291	1	1	0.004642	
1836796	17077902	0.959485	0.974972	-0.01549	0.999482	1	0.008561	
1742546	17099501	0.862118	0.851197	0.010921	0.997926	0.594843	0.338924	
3650122	10520552	0.891905	0.899317	-0.00741	1	0.260748	0.463395	
3455680	12163721	0.822632	0.853014	-0.03038	0.913945	0.001096	0.021403	
3548378	17678552	0.636797	0.678612	-0.04182	0.999482	0.163804	0.008377	
3548378	17678552	0.636797	0.678612	-0.04182	0.999482	0.163804	0.008377	
31929	2827885	0.874159	0.897126	-0.02297	0.990669	0.579794	0.028066	
976261	1582602	0.977143	0.963026	0.014117	1	0.333737	0.010918	
499144	17172183	0.813931	0.777588	0.036343	0.998963	0.040836	0.006749	
437375	17261351	0.943912	0.962471	-0.01856	0.989632	0.340444	0.008127	
4100691	7038278	0.880077	0.851445	0.028632	0.984448	0.180042	0.01116	
1741069	10501985	0.593011	0.554974	0.038037	0.878175	0.04035	0.024104	
1068555	11165300	0.796618	0.758324	0.038295	0.988077	0.016229	0.0069	
1091919	3007012	0.103053	0.12116	-0.01811	0.998963	0.152494	0.076839	
1355950	13022898	0.637452	0.664571	-0.02712	0.994816	0.007976	0.089459	
1980311	10955868	0.763333	0.723549	0.039784	1	0.238995	0.00517	
2136072	17081140	0.97381	0.958998	0.014812	0.999482	1	0.010676	
4484184	1043821	0.565238	0.523375	0.041863	0.998963	0.839081	0.010798	
4484184	1043821	0.565238	0.523375	0.041863	0.998963	0.839081	0.010798	
2451140	17666536	0.464762	0.495449	-0.03069	1	0.499885	0.061383	
1236206	10495705	0.37297	0.412969	-0.04	0.998445	0.210669	0.013981	
4453533	7101687	0.000477	0.004551	-0.00407	0.999482	1	0.00996	
1003784	7519256	0.843715	0.869737	-0.02602	0.860031	1	0.037678	
1899826	2579894	0.785506	0.803899	-0.01839	0.984966	0.282277	0.164939	
1352366	1519757	0.894185	0.915718	-0.02153	0.998963	0.120159	0.028661	
2259039	7098633	0.947957	0.967213	-0.01926	0.975635	0.226836	0.006198	
2433723	7022705	0.776291	0.815789	-0.0395	0.995334	1	0.003278	
2281901	7073232	0.114976	0.13993	-0.02495	0.979264	0.086364	0.02784	
73602	2835152	0.280651	0.309008	-0.02836	0.995853	0.937107	0.058064	
790519	17065829	0.893708	0.871298	0.02241	0.998963	0.547069	0.031798	
1206808	596280	0.78381	0.746864	0.036945	0.998963	0.531633	0.008778	
1500671	17692395	0.937143	0.928734	0.008409	0.998963	0.796126	0.302724	
1647698	12574901	0.77	0.805461	-0.03546	1	1	0.00915	
2093897	17433217	0.87381	0.84471	0.0291	1	0.79775	0.010996	
2171282	4238241	0.104862	0.125711	-0.02085	0.999482	1	0.044461	
3025369	2313212	0.447996	0.419134	0.028862	0.998445	1	0.073031	
1874606	2705088	0.7617	0.8041	-0.0424	0.997926	1	0.001729	
3528807		0.995714	0.990319	0.005395	0.999482	1	0.043625	
1250438	6724093	0.741601	0.714454	0.027147	0.965785	0.674477	0.069653	
516161	3808015	0.228789	0.265945	-0.03716	0.998963	0.665506	0.007684	
2073325	2711637	0.879524	0.905467	-0.02594	0.999482	0.166167	0.010661	
1374326	12692995	0.78694	0.815131	-0.02819	0.999482	0.654635	0.032408	
4232694	4534750	0.861032	0.833333	0.027698	0.99689	0.113052	0.020563	
4232694	4534750	0.861032	0.833333	0.027698	0.99689	0.113052	0.020563	
2117635	17460812	0.3085	0.343572	-0.03507	0.998445	0.764821	0.023228	
2447712	10156647	0.838894	0.812856	0.026039	0.999482	0.824342	0.035849	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1836800	17077895	0.959447	0.974914	-0.01547	0.997926	1	0.008744	
1939094	1433955	0.753582	0.788965	-0.03538	0.998445	1	0.009855	
4337526	4246319	0.201243	0.187713	0.01353	0.997926	0.376228	0.297547	
1660699	17539593	0.93184	0.908314	0.023525	0.998963	0.688739	0.007595	
2407451	6774960	0.539637	0.498862	0.040775	0.998445	0.224564	0.014996	
1229637	13007387	0.948325	0.934211	0.014115	0.994816	0.414647	0.065718	
725278	3771687	0.139101	0.122146	0.016955	0.996371	0.007065	0.146451	
976267	1117306	0.977121	0.963026	0.014095	0.999482	0.333737	0.011079	
2099449	9580361	0.699714	0.73861	-0.0389	0.998963	0.294627	0.008811	
1229577	1829066	0.839959	0.866343	-0.02638	0.9352	0.015627	0.034644	
1396637	17412239	0.569856	0.605802	-0.03595	0.997408	0.396614	0.023118	
3857498	12558599	0.638259	0.64698	-0.00872	0.998445	0.321967	0.731669	
1983961	16892972	0.884653	0.903559	-0.01891	0.988595	0.327922	0.059023	
1674634	4922814	0.386473	0.345657	0.040816	0.978227	0.033851	0.013227	
395641	2235898	0.569113	0.606613	-0.0375	0.998445	0.257475	0.021283	
1820403	10502913	0.761996	0.748268	0.013728	0.989114	0.856826	0.327467	
4122268	7131343	0.706864	0.682594	0.02427	0.999482	1	0.104316	
69995		0.961429	0.9562	0.005228	1	0.404708	0.419921	
1056249	17100524	0.861296	0.89306	-0.03176	0.999482	1	0.003658	
3687665	16892262	0.942693	0.961231	-0.01854	0.997408	1	0.010146	
434261	16995137	0.883365	0.903429	-0.02006	0.995853	0.32903	0.046654	
1396584	13035132	0.569179	0.605233	-0.03605	0.998963	0.525246	0.022875	
570410	17673790	0.768199	0.788571	-0.02037	0.994816	0.839632	0.135375	
4632601	1560796	0.373444	0.356234	0.01721	0.907206	0.119669	0.311075	
3299691	9898327	0.999524	0.996583	0.002941	0.999482	0.008532	0.062986	
1276910	1897771	0.687619	0.656997	0.030622	1	0.822442	0.044401	
4582970	7173377	0.430887	0.396689	0.034197	0.997926	0.323105	0.03387	
2314178	10794619	0.57483	0.531324	0.043506	0.972006	0.447903	0.007777	
2001305	7386230	0.888571	0.913538	-0.02497	1	0.390612	0.010406	
3549659	16973182	0.997433	1	-0.00257	0.925868	1	0.043753	
1004339	912216	0.506673	0.481735	0.024938	0.997926	0.49897	0.125907	
635948	16876855	0.915238	0.932878	-0.01764	1	0.027222	0.039871	
1059913	10874260	0.640838	0.621637	0.019201	0.975117	0.024212	0.241916	
3564693	11070677	0.216138	0.258382	-0.04224	0.988077	0.859102	0.002572	
3857481	4824344	0.63792	0.644489	-0.00657	0.999482	0.281741	0.642107	
3131103	10441748	0.734032	0.705347	0.028685	0.999482	0.56996	0.050439	
1434516	17199543	0.963938	0.949708	0.01423	0.975117	0.159769	0.035542	
2246222	10995322	0.767398	0.730944	0.036453	0.999482	0.731495	0.008894	
1094739	2244501	0.870706	0.843964	0.026743	0.998445	0.443111	0.018947	
358510	11153616	0.692455	0.650513	0.041942	0.997408	0.265075	0.006009	
2388477	7648351	0.688751	0.659841	0.02891	0.999482	0.367072	0.061727	
1490545	2496371	0.12038	0.093381	0.026999	0.957491	0.30572	0.010112	
2451139	13283747	0.464728	0.494869	-0.03014	0.998445	0.417624	0.066433	
3292513	17741548	0.680648	0.714367	-0.03372	0.998445	0.562992	0.028027	
2456381	12339554	0.765267	0.730331	0.034937	0.997926	0.797483	0.014454	
1175719	13376660	0.979465	0.96697	0.012495	0.997926	0.241875	0.01798	
1445927		0.957471	0.956921	0.00055	0.81804	0.634127	0.938837	
2682956	1571569	0.75933	0.731735	0.027595	0.995853	0.863515	0.052943	
306850	559087	0.564347	0.589875	-0.02553	0.999482	0.780415	0.120916	
1721029	755738	0.970869	0.958094	0.012775	0.994298	0.394965	0.032499	
1270631	6746740	0.429866	0.385097	0.04477	0.998963	0.176024	0.005418	
1536307	2328202	0.381792	0.339408	0.042384	0.998963	0.821326	0.007454	
1906867	13250858	0.319007	0.287671	0.031335	0.99689	0.934354	0.038688	
2463287	802918	0.630414	0.66955	-0.03914	0.988077	0.592023	0.013518	
3588609	17581594	0.926295	0.948609	-0.02231	0.949196	0.266473	0.007573	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1211888	9428455	0.832381	0.859909	-0.02753	0.999482	0.67361	0.018359	
585018	9642083	0.316794	0.280502	0.036292	0.997926	0.616038	0.016165	
4307967	6515600	0.739961	0.701397	0.038564	0.974598	0.166965	0.010691	
1835027	550749	0.680344	0.639111	0.041233	0.997926	0.770062	0.00872	
1146019	1782560	0.540515	0.584755	-0.04424	0.999482	0.532545	0.007031	
3706052	11078682	0.770476	0.738339	0.032137	1	0.384181	0.019905	
3706052	11078682	0.770476	0.738339	0.032137	1	0.384181	0.019905	
2398065	428321	0.089524	0.071104	0.01842	1	0.613427	0.040461	
4096244	7461756	0.85653	0.883959	-0.02743	0.999482	0.624856	0.014212	
1963907	582100	0.518147	0.482818	0.035329	0.995334	0.416023	0.029268	
3564961	577659	0.191905	0.235462	-0.04356	0.998963	0.639844	0.001219	
1677423	10836409	0.773333	0.805587	-0.03225	0.998963	0.282505	0.019123	
287530	17311358	0.95	0.969283	-0.01928	1	0.194074	0.003048	
386642	16989691	0.998093	0.994851	0.003242	0.99689	1	0.088298	
4390527	2861184	0.115458	0.092719	0.022739	0.998963	0.840439	0.025215	
1671123	10834855	0.260973	0.302617	-0.04164	0.998963	0.37982	0.00497	
4161473	8038620	0.296562	0.328018	-0.03146	0.997926	1	0.039245	
4657544	874243	0.774809	0.788155	-0.01335	0.998445	0.156818	0.316505	
4657544	874243	0.774809	0.788155	-0.01335	0.998445	0.156818	0.316505	
1804220	749166	0.129789	0.167431	-0.03764	0.993261	0.273935	0.001476	
3421938		0.990944	0.980046	0.010898	0.998445	0.292526	0.006107	
815165	17774110	0.944762	0.923121	0.021641	0.999482	0.343343	0.00796	
1078127	2149601	0.608198	0.576879	0.031319	0.998963	0.678803	0.050863	
1043914	893073	0.256692	0.222349	0.034343	0.99689	0.117999	0.015931	
4515437	1809659	0.483043	0.495354	-0.01231	0.981337	0.495862	0.450175	
950451	1536901	0.124523	0.149602	-0.02508	0.998963	0.691685	0.026126	
4308059	17718237	0.200476	0.187713	0.012763	1	0.376228	0.325076	
4069982	6568892	0.222099	0.213398	0.008702	0.844479	0.02711	0.569274	
2707537	1372670	0.5	0.54401	-0.04401	0.936236	0.359445	0.008145	
2217206	2148186	0.492844	0.451595	0.041249	0.998445	0.89177	0.011571	
3599883	17016170	0.901435	0.875854	0.025581	0.99689	0.641065	0.013009	
1080901	10437044	0.364669	0.334793	0.029876	0.916019	0.811969	0.06779	
4156143	1107858	0.633588	0.673121	-0.03953	0.998445	0.124956	0.013428	
639358	215410	0.659524	0.667804	-0.00828	1	0.287666	0.597494	
1146085	1185314	0.540896	0.585664	-0.04477	0.97719	0.23171	0.007452	
3491429	6831455	0.85224	0.879271	-0.02703	0.998963	0.152291	0.014356	
1500074	6932044	0.185714	0.16041	0.025305	1	0.802113	0.043078	
3706050	4627421	0.770257	0.738041	0.032216	0.998963	0.383798	0.019688	
3706050	4627421	0.770257	0.738041	0.032216	0.998963	0.383798	0.019688	
2012979	16910478	0.88255	0.856651	0.025899	0.992742	1	0.020373	
3638404	17326700	0.896667	0.872	0.024667	0.997926	0.287112	0.020036	
1351100	2270332	0.942857	0.927346	0.015512	0.997408	1	0.056006	
4352922	2093302	0.014818	0.013699	0.00112	0.996371	1	0.772251	
1737327	4754592	0.56673	0.52901	0.03772	0.999482	0.155107	0.01917	
1409892	17652774	0.586124	0.559497	0.026628	0.994816	0.837187	0.104767	
3666785	7179070	0.293301	0.297035	-0.00373	0.996371	0.124432	0.802403	
516159	11773168	0.229485	0.265945	-0.03646	0.998445	0.665506	0.008824	
863793	10809848	0.435345	0.397377	0.037967	0.995853	0.621966	0.020055	
2121274	11842662	0.989524	0.979522	0.010002	1	1	0.01305	
1608808	16968334	0.833174	0.819113	0.014062	0.999482	0.139257	0.248233	
928983	1536400	0.397031	0.368815	0.028216	0.991706	0.662571	0.07494	
3138413	842051	0.527645	0.568828	-0.04118	0.999482	0.679993	0.01195	
3138413	842051	0.527645	0.568828	-0.04118	0.999482	0.679993	0.01195	
1675561	1522086	0.774547	0.806598	-0.03205	0.999482	0.386703	0.017128	
2754630	1428155	0.358095	0.402162	-0.04407	1	0.944068	0.005441	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
209372	2113574	0.038645	0.052632	-0.01399	0.996371	0.164229	0.035353	
123772	16990066	0.990594	0.992308	-0.00171	0.961638	1	0.57741	
4035953	1514405	0.851764	0.87884	-0.02708	0.999482	0.152494	0.014249	
1940947	7824168	0.718243	0.744292	-0.02605	0.99689	0.328563	0.077969	
63802	2833463	0.599048	0.633827	-0.03478	0.999482	0.007136	0.025321	
570395	17617087	0.821429	0.84258	-0.02115	0.816485	1	0.119454	
758814	16856098	0.386082	0.347777	0.038305	0.998445	0.940655	0.016377	
1137923	10914066	0.980476	0.972127	0.008349	1	0.497426	0.091264	
2024296	1489078	0.429866	0.463595	-0.03373	0.998963	0.838815	0.0391	
3488223	10021655	0.517771	0.561494	-0.04372	0.990669	0.629859	0.007366	
1155274	1337718	0.386082	0.425399	-0.03932	0.998963	0.782531	0.015281	
1595665	17704510	0.984747	0.989168	-0.00442	0.998445	1	0.235088	
553615	17170125	0.704004	0.673121	0.030883	0.998963	1	0.044172	
1688715	11038382	0.688454	0.72862	-0.04017	0.997926	0.494375	0.007229	
1675529	17767323	0.779048	0.808305	-0.02926	1	0.326617	0.029221	
3112926	6889051	0.998569	0.993166	0.005402	0.998445	0.000478	0.018681	
1266259	17030793	0.670977	0.707429	-0.03645	0.994816	0.07239	0.018159	
3375140	17738975	0.974396	0.986159	-0.01176	0.986003	1	0.010584	
2668930	3867596	0.770734	0.73861	0.032124	0.998963	0.431489	0.02004	
2668930	3867596	0.770734	0.73861	0.032124	0.998963	0.431489	0.02004	
2093895	16948204	0.874046	0.845279	0.028767	0.998963	1	0.01175	
3153222	4148579	0.446991	0.419704	0.027288	0.997926	1	0.090364	
1572831	1918427	0.247847	0.220387	0.02746	0.99689	0.624265	0.052345	
1487488	1536703	0.425643	0.467577	-0.04193	0.999482	0.309428	0.011599	
1357589	1520339	0.318834	0.282857	0.035977	0.995853	1	0.017574	
830054	6890244	0.527672	0.546128	-0.01846	0.998445	0.056632	0.264172	
1836863	2218416	0.036667	0.022184	0.014482	1	1	0.009867	
857497	10283755	0.806482	0.772779	0.033703	0.998963	0.124086	0.010846	
4400842	3884186	0.704569	0.738208	-0.03364	0.950233	0.478219	0.025986	
1548226	7793159	0.675263	0.643101	0.032161	0.997408	0.658875	0.041985	
3482521	4691102	0.11619	0.135535	-0.01934	0.999482	0.885375	0.074978	
2651459	1599855	0.292919	0.293779	-0.00086	0.984448	0.287683	0.953906	
2651459	1599855	0.292919	0.293779	-0.00086	0.984448	0.287683	0.953906	
1806252	12458257	0.752381	0.785552	-0.03317	1	0.841518	0.015032	
4070985	2322439	0.656788	0.619863	0.036925	0.996371	0.942946	0.018478	
4040737	4862528	0.080952	0.105802	-0.02485	1	0.720092	0.009166	
4040737	4862528	0.080952	0.105802	-0.02485	1	0.720092	0.009166	
2447706	1328158	0.837941	0.812287	0.025654	0.999482	0.658166	0.038831	
641549	758948	0.77693	0.746583	0.030347	0.998963	0.858603	0.028807	
1177185	2841615	0.512381	0.47779	0.034591	0.999482	0.735418	0.034954	
2495905	16970721	0.888571	0.901368	-0.0128	0.998963	0.704499	0.204693	
439437	4813081	0.723092	0.679623	0.043469	0.969933	0.156938	0.004399	
92440	535024	0.470041	0.510455	-0.04041	0.923276	0.399822	0.022071	
1266258	1467068	0.671115	0.707526	-0.03641	0.998445	0.142387	0.017731	
1473850	9503571	0.585283	0.580796	0.004486	0.974598	0.888417	0.7883	
171186	8011680	0.32958	0.369898	-0.04032	0.912908	0.001274	0.00958	
3309071	13169254	0.200303	0.164109	0.036194	0.952825	0.078776	0.006409	
3280700	10514856	0.806405	0.78653	0.019876	0.996371	0.919972	0.132668	
4346507	1449009	0.260571	0.264266	-0.00369	0.835148	0.393622	0.820567	
4623488	720202	0.518625	0.549488	-0.03086	0.998445	0.682799	0.05727	
1536310	1360816	0.379397	0.341608	0.037789	0.954381	0.702891	0.019426	
1960553	2978107	0.174125	0.190643	-0.01652	0.976153	0.824811	0.195591	
1184104	17591243	0.918269	0.900344	0.017926	0.991706	0.448054	0.055717	
562221	6976421	0.677481	0.712415	-0.03493	0.998445	0.934495	0.02202	
174646	17121404	0.97	0.980091	-0.01009	1	1	0.047396	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
253826	7140373	0.735442	0.774673	-0.03923	0.952307	0.029415	0.007423	
2297824	17119578	0.99044	0.993714	-0.00327	0.995853	1	0.262971	
4327911	4737110	0.906853	0.910526	-0.00367	0.980301	0.534168	0.694931	
3522282	9991444	0.908008	0.886803	0.021204	0.999482	0.866095	0.030438	
802284	4752255	0.476644	0.505701	-0.02906	0.998445	0.137561	0.073565	
4384635	1020719	0.781429	0.818907	-0.03748	0.999482	0.42733	0.00451	
4450017	6926565	0.743308	0.736602	0.006706	0.99689	0.794352	0.638946	
1180984	2815211	0.477077	0.515429	-0.03835	0.996371	0.498562	0.017292	
819430	8069451	0.734286	0.758817	-0.02453	1	0.065716	0.082303	
1192798	930999	0.215714	0.246864	-0.03115	0.998963	0.525115	0.025086	
4043597	389412	0.740952	0.765643	-0.02469	1	0.453199	0.07783	
2463794	13300278	0.721905	0.765376	-0.04347	0.999482	0.397456	0.002797	
3642857	4328860	0.18619	0.220957	-0.03477	0.999482	0.239165	0.008538	
4366412	2207664	0.388196	0.347477	0.040719	0.992224	0.550709	0.00902	
3443969	13120568	0.71306	0.676538	0.036522	0.998963	0.700062	0.01427	
3502899	17632712	0.878715	0.906644	-0.02793	0.993261	0.547889	0.007007	
3324068	442708	0.167619	0.195677	-0.02806	1	0.165028	0.023261	
1769136		0.988571	0.97836	0.010212	0.999482	1	0.012566	
4271581	6446239	0.027619	0.037543	-0.00992	1	0.347637	0.088629	
2299263	7907690	0.484286	0.439704	0.044582	1	1	0.006508	
1651836	10839755	0.291985	0.329352	-0.03737	0.998963	0.400991	0.014381	
3640760	8752	0.410867	0.447099	-0.03623	0.999482	0.00413	0.031777	
4646156	1522438	0.752385	0.713714	0.038671	0.99689	0.320565	0.008549	
4437165	6481519	0.49	0.501706	-0.01171	1	0.280897	0.467148	
3857480	4824343	0.639093	0.645638	-0.00654	0.998963	0.281302	0.654382	
4127779	2724436	0.609569	0.571754	0.037815	0.99689	0.40879	0.020565	
1244474	17010231	0.948046	0.934932	0.013114	0.997926	0.168614	0.080355	
291443	9267169	0.915714	0.930034	-0.01432	1	1	0.100655	
3301434	7715122	0.580645	0.615478	-0.03483	0.926905	0.883328	0.034904	
257691	17707331	0.852717	0.884966	-0.03225	0.998963	0.739911	0.003538	
257691	17707331	0.852717	0.884966	-0.03225	0.998963	0.739911	0.003538	
1080905	6670948	0.36368	0.337699	0.02598	0.998963	0.651493	0.098366	
3998041	870309	0.609733	0.649543	-0.03981	0.997408	0.137505	0.010423	
1940940	7825706	0.718182	0.74225	-0.02407	0.993261	0.287815	0.104696	
1270614	7600326	0.419771	0.374711	0.045059	0.991706	0.277575	0.005231	
2297810	9663666	0.990476	0.993743	-0.00327	1	1	0.262129	
2382846	2642381	0.172381	0.182232	-0.00985	0.999482	0.498118	0.428019	
3557923	17270048	0.839524	0.860068	-0.02054	1	0.88835	0.075162	
884661	3741947	0.887882	0.914954	-0.02707	0.997408	0.826729	0.005504	
1480990	11756574	0.85	0.875995	-0.026	1	1	0.021898	
516293	4729974	0.748095	0.712173	0.035922	1	0.365976	0.011878	
2288582	7068778	0.812381	0.851536	-0.03915	1	0.503868	0.001431	
1933665	12234934	0.87834	0.904462	-0.02612	0.996371	0.431036	0.011157	
4561506	7067769	0.358437	0.393508	-0.03507	0.998963	0.288867	0.024124	
3121811	1805972	0.991313	0.985092	0.006221	0.989114	0.172317	0.081993	
1796679	17636752	0.997608	1	-0.00239	0.993779	1	0.043675	
964800	17839542	0.998571	0.994881	0.003691	1	1	0.042828	
487197		0.998524	1	-0.00148	0.969933	1	0.11671	
1615277	4802552	0.581983	0.624715	-0.04273	0.998963	0.281271	0.00787	
342489	7771563	0.241889	0.214448	0.027441	0.998963	0.367505	0.044497	
3506065	3775755	0.851905	0.87884	-0.02693	1	0.152494	0.014723	
3506065	3775755	0.851905	0.87884	-0.02693	1	0.152494	0.014723	
4272518	6971892	0.604572	0.642445	-0.03787	0.982374	0.657414	0.01858	
3847523	5966981	1	0.997284	0.002716	0.993261	1	0.029826	
1640447	698716	0.216332	0.251425	-0.03509	0.997408	0.369776	0.010683	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1631345	16960930	0.977619	0.963595	0.014024	1	0.319983	0.010801	
1093259	4839463	0.221851	0.260251	-0.0384	0.998445	0.114292	0.005935	
2447701	10118380	0.552857	0.516496	0.036361	1	0.156484	0.029662	
2322101	2729305	0.547414	0.586384	-0.03897	0.994298	0.209284	0.014923	
1936424	3739345	0.64741	0.679809	-0.0324	0.954381	0.302435	0.039968	
1885992	2979697	0.382775	0.346682	0.036093	0.994816	0.370872	0.023649	
1623005	17561543	0.43381	0.394077	0.039732	0.999482	0.104072	0.014983	
1179108	4456154	0.989524	0.981797	0.007726	1	1	0.043286	
3547476	8029656	0.936627	0.915264	0.021362	0.950752	1	0.013968	
1846080	17066250	0.876667	0.897494	-0.02083	0.999482	0.853891	0.041663	
4023351	520254	0.422159	0.389588	0.03257	0.995853	0.943427	0.042973	
245511	17122241	0.99857	1	-0.00143	0.998445	1	0.11792	
1500666	17692261	0.93744	0.929385	0.008055	0.997926	0.79446	0.322368	
1348810	1438866	0.499523	0.533637	-0.03411	0.998445	0.683943	0.036291	
479924	10952130	0.195714	0.230375	-0.03466	1	0.217673	0.009496	
794246	2193880	0.449761	0.414662	0.035099	0.994298	0.403687	0.030531	
4254278	2083199	0.825859	0.850857	-0.025	0.99689	0.689099	0.042196	
4551781	6899179	0.710891	0.753614	-0.04272	0.953862	0.400149	0.005012	
4074810	2249426	0.47851	0.490297	-0.01179	0.99689	0.498953	0.465062	
4476194	8086594	0.547297	0.579977	-0.03268	0.987558	0.944496	0.048081	
788450	16858320	0.897143	0.869738	0.027405	1	0.370393	0.010574	
3549819	12440118	0.87	0.840183	0.029817	0.998445	1	0.009467	
2415779	1472534	0.818875	0.84738	-0.02851	0.998963	0.794586	0.019345	
4587309	4951540	0.537379	0.582847	-0.04547	0.978227	0.439561	0.00622	
1737321	4754589	0.566317	0.52901	0.037307	0.998963	0.155107	0.020532	
13229	2039246	0.203244	0.169704	0.03354	0.998445	0.041292	0.010203	
1750223	321346	0.00143	0	0.00143	0.998963	1	0.117711	
3455222	12506719	0.667782	0.709143	-0.04136	0.995853	0.286521	0.005796	
1651845	10500688	0.708453	0.670676	0.037778	0.992224	0.357677	0.013704	
4587922	1561370	0.183508	0.218109	-0.0346	0.998963	0.552393	0.009088	
4267002	2053486	0.92605	0.941411	-0.01536	0.998963	1	0.063394	
586177	7797476	0.852772	0.822121	0.030652	0.99689	0.730297	0.011295	
888604	4768825	0.227143	0.245714	-0.01857	0.997926	0.52391	0.181676	
1536266	1452989	0.382156	0.341324	0.040832	0.997408	0.707092	0.00987	
1651828	2346804	0.289398	0.328018	-0.03862	0.997926	0.491161	0.010985	
3670106		0.987584	0.996009	-0.00843	0.997408	1	0.005194	
131521	12171125	0.85653	0.845279	0.011251	0.999482	0.43924	0.344482	
1234757	16985798	0.352099	0.380298	-0.0282	0.995853	0.196619	0.072008	
132617		1	0.997725	0.002275	1	1	0.030934	
937365	9590768	0.741905	0.707053	0.034851	1	0.87071	0.017761	
2415765	1392507	0.805714	0.835234	-0.02952	0.998963	0.805876	0.019172	
1373947	6433310	1	0.997149	0.002851	0.998445	1	0.01576	
1916984	7841873	0.921421	0.8977	0.023722	0.946086	0.055029	0.01444	
530408	17743047	0.958055	0.973265	-0.01521	0.999482	0.468306	0.01204	
329631	9481954	0.600668	0.639932	-0.03926	0.998963	0.107564	0.014743	
3385846	17629575	0.712089	0.668944	0.043145	0.906169	0.025897	0.00547	
3699020	17499976	0.995229	0.987356	0.007873	0.994298	1	0.008236	
3029607	2322706	0.901811	0.876283	0.025528	0.998445	0.639318	0.013024	
2024306	4931123	0.429048	0.462286	-0.03324	0.997926	1	0.042641	
994409	17394154	0.732381	0.773143	-0.04076	0.997926	0.923237	0.004725	
1921819	7842389	0.268356	0.238825	0.029531	0.907206	0.023655	0.044665	
1971701	4282540	0.906829	0.88734	0.019489	0.977709	0.024654	0.059185	
680507	241017	0.916746	0.894077	0.022669	0.99689	0.473451	0.018518	
4071575	17840296	0.681862	0.65265	0.029213	0.984448	0.006971	0.065838	
1475740	270377	0.454813	0.417729	0.037085	0.975117	0.624884	0.025266	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
971284	9888758	0.982364	0.973804	0.00856	0.998963	0.454012	0.072489	
1051549	707444	0.828885	0.800114	0.028771	0.998963	0.673441	0.026253	
546331	13438104	0.521469	0.563212	-0.04174	0.998445	1	0.010885	
2428709	1345022	0.489894	0.455899	0.033995	0.991187	0.116825	0.041656	
2723114	1390630	0.657443	0.620867	0.036576	0.997926	0.566689	0.020972	
1286208	1542179	0.718269	0.681609	0.03666	0.99015	1	0.014771	
4018378	1391419	0.716954	0.754857	-0.0379	0.994816	0.360693	0.009095	
261304	4946251	0.659048	0.68301	-0.02396	0.998963	1	0.12105	
2093904	16948193	0.874166	0.845848	0.028318	0.999482	1	0.013047	
2280226	1891655	0.826129	0.854286	-0.02816	0.993261	0.892038	0.018743	
4403227	4133123	0.893708	0.907281	-0.01357	0.999482	0.314807	0.164788	
31923	2827882	0.871183	0.8918	-0.02062	0.998445	0.860593	0.051733	
3996807	1074138	0.830769	0.866263	-0.03549	0.857439	0.039042	0.006737	
3072089	2404300	0.468541	0.470387	-0.00185	0.998963	0.223143	0.909532	
2787054	1842381	0.609048	0.563709	0.045339	1	0.243728	0.0059	
3457653	17088644	0.908961	0.885535	0.023426	0.998963	0.316752	0.019161	
2321263	155390	0.342231	0.376283	-0.03405	0.998445	0.942638	0.02842	
2308736	12218538	0.550095	0.595563	-0.04547	0.998963	0.363163	0.004795	
3669063	2679099	0.838095	0.809795	0.0283	0.999482	0.510432	0.023833	
3363842	2189672	0.604665	0.56393	0.040735	0.99689	0.934756	0.070066	
200286	10132956	0.98999	0.981797	0.008193	0.999482	1	0.030669	
1410622	17674573	0.692308	0.731707	-0.0394	0.937273	0.374338	0.011439	
3297584	2233908	0.842381	0.810934	0.031447	0.999482	0.321465	0.012406	
1455379	8013067	0.40643	0.426032	-0.0196	0.992224	0.489093	0.218833	
2288680	10882212	0.642653	0.670648	-0.028	0.998963	0.146816	0.074078	
711029	1006223	0.623062	0.57907	0.043992	0.980819	0.944255	0.006329	
809058	3865770	0.795889	0.81927	-0.02338	0.99689	0.909426	0.074162	
4447949	6797178	0.638359	0.673493	-0.03513	0.998963	0.357219	0.025568	
1366223	6730413	0.936606	0.916951	0.019655	0.999482	1	0.021627	
4624836	753294	0.858302	0.82992	0.028381	0.998963	0.811556	0.016256	
725273	3771689	0.131905	0.117747	0.014157	1	0.746051	0.194826	
2117649	9594987	0.562378	0.522754	0.039624	0.976153	0.891261	0.017451	
4285435	4237597	0.132634	0.108646	0.023987	0.998963	0.004743	0.029813	
2067922	10862582	0.876555	0.906036	-0.02948	0.99689	0.166143	0.004497	
1640499	7188253	0.788591	0.75464	0.03395	0.987558	0.926813	0.015373	
4290168	6128110	0.124376	0.142943	-0.01857	0.948678	0.155748	0.108743	
1510954	17584290	0.864156	0.840159	0.023997	0.999482	0.314886	0.0392	
3107176	4679387	0.218243	0.245444	-0.0272	0.997926	0.584577	0.047254	
2304578	12098574	0.705153	0.746014	-0.04086	0.998445	0.656889	0.005606	
2304578	12098574	0.705153	0.746014	-0.04086	0.998445	0.656889	0.005606	
1244480	12613578	0.94	0.926052	0.013948	1	0.618135	0.082656	
1004343	4949297	0.506196	0.481186	0.025011	0.998445	0.542662	0.124586	
928958	9543671	0.49142	0.471559	0.019862	0.999482	0.839242	0.224388	
2037670	17833343	0.997143	0.996587	0.000556	1	1	0.760213	
174640	17772811	0.859867	0.831627	0.02824	0.999482	0.06977	0.013589	
3984258	6582960	0.559104	0.540956	0.018148	0.999482	0.945848	0.267045	
4054002	1331984	0.642857	0.605233	0.037624	1	0.323486	0.019615	
395640	4911546	0.571973	0.609339	-0.03737	0.998963	0.321465	0.02148	
1888941	12677733	0.913727	0.88851	0.025218	0.999482	0.17153	0.010848	
4532354	7466687	0.361505	0.397536	-0.03603	0.875065	0.880499	0.032548	
906431	437249	0.980934	0.968146	0.012789	0.999482	0.217202	0.013081	
189839	1951210	0.927143	0.910694	0.016449	1	0.006584	0.071017	
2007569	11989847	0.818792	0.787585	0.031207	0.995853	0.614759	0.01528	
3496578	3866354	0.068401	0.056701	0.0117	0.990669	1	0.144338	
2314154	11248546	0.578646	0.536405	0.042241	0.999482	0.945943	0.009086	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
823245	9893566	0.999047	0.99886	0.000187	0.998445	1	0.859385	
2288906	7903726	0.878571	0.903868	-0.0253	1	0.55902	0.012344	
1318466	3892040	0.928503	0.948689	-0.02019	0.998445	0.493544	0.010767	
3639255	7677902	0.128217	0.11661	0.011608	0.999482	1	0.278202	
31985	17004319	0.87166	0.89306	-0.0214	0.998963	0.375824	0.041918	
3557922	17270055	0.812361	0.83288	-0.02052	0.847071	0.184085	0.11869	
4136450	1482295	0.744031	0.712087	0.031944	0.997408	0.285425	0.027673	
3134984	7647171	0.947143	0.935722	0.01142	1	0.043299	0.123931	
1631349	16960931	0.98	0.967008	0.012992	1	0.241469	0.013289	
4499975	2883369	0.666349	0.650685	0.015664	0.997926	0.881872	0.315566	
1856179	2738124	0.672464	0.711806	-0.03934	0.984448	0.562396	0.01031	
2374442	4856937	0.002381	0.00967	-0.00729	1	0.002248	0.006514	
3860309	5934730	0.541325	0.586987	-0.04566	0.958009	0.061543	0.021144	
1906909	6999664	0.319524	0.287827	0.031697	1	1	0.036272	
788448	2571444	0.895714	0.868601	0.027114	1	0.239549	0.012101	
3153136	17543340	0.893505	0.898064	-0.00456	0.997926	0.460986	0.652076	
758819	16855521	0.385714	0.347554	0.03816	1	0.882028	0.016562	
1211902	2353424	0.832698	0.859909	-0.02721	0.998963	0.67361	0.019741	
3123297	4512088	0.37923	0.408297	-0.02907	0.800415	0.057904	0.090851	
3130251	6440168	0.562739	0.591533	-0.02879	0.994298	0.944239	0.076264	
747552	10490286	0.999524	0.998294	0.00123	1	1	0.243042	
725276	3771688	0.131554	0.117312	0.014242	0.998963	0.744311	0.192059	
1396703	17413907	0.431775	0.394044	0.037731	0.995853	0.394954	0.017172	
3308514	4269268	0.869876	0.890661	-0.02078	0.998963	1	0.051071	
2117646	7331003	0.42968	0.470012	-0.04033	0.983929	0.945723	0.01547	
1507746	287837	0.467143	0.505119	-0.03798	1	0.079608	0.0192	
1813528	1035279	0.916111	0.899203	0.016908	0.998963	1	0.076384	
1878709	10503649	0.950828	0.931235	0.019592	0.97719	0.027685	0.009148	
2432045	17754132	0.820268	0.852673	-0.03241	0.997926	0.893197	0.00835	
3329521	4958487	0.555291	0.592825	-0.03753	0.998963	0.442613	0.020142	
360452	7762788	0.707817	0.734055	-0.02624	0.998963	0.194366	0.072809	
1737324	4754590	0.565903	0.529043	0.036859	0.997926	0.15536	0.022174	
718067		0.41126	0.448747	-0.03749	0.998445	0.585293	0.023942	
3249293	9858774	0.450144	0.420843	0.029301	0.995853	0.729504	0.070336	
2154655	17708995	0.982857	0.968714	0.014143	1	0.20549	0.004918	
108495	5757144	0.986177	0.988027	-0.00185	0.998445	1	0.615767	
2375216	4856859	0.927143	0.907281	0.019862	1	0.314807	0.029855	
3317630	4527593	0.211445	0.23979	-0.02834	0.978745	0.575016	0.044019	
1366199	16850038	0.932793	0.9124	0.020393	0.999482	1	0.019618	
3563103	17471252	0.633877	0.591743	0.042134	0.992224	0.944134	0.008241	
755987	12987381	0.667143	0.663254	0.003889	1	0.939958	0.802457	
4143841	7338440	0.637405	0.67959	-0.04218	0.997926	0.642196	0.007194	
1523884	12210062	0.785285	0.75089	0.034396	0.954899	0.079987	0.016317	
341382	17056938	0.943279	0.958381	-0.0151	0.998445	0.658151	0.036614	
493085	7779875	0.663471	0.624142	0.039329	0.993779	0.03043	0.011078	
2239798	17389211	0.79619	0.819113	-0.02292	1	0.909819	0.079431	
2117643	17538959	0.70398	0.669664	0.034316	0.953344	0.117888	0.031678	
3880397	546072	0.47622	0.510288	-0.03407	0.97719	0.120939	0.019503	
4414205	4573256	0.392823	0.435576	-0.04275	0.996371	0.450164	0.008624	
2289591	12571030	0.753831	0.786613	-0.03278	0.994298	0.365547	0.015813	
803762	10490927	0.378274	0.33702	0.041254	0.979782	0.760017	0.008489	
2335962	5746199	0.988539	0.983466	0.005072	0.997408	1	0.181569	
3605123	17151774	0.968065	0.977816	-0.00975	0.999482	0.350125	0.075725	
3152620	2129825	0.836283	0.813589	0.022694	0.973561	0.072185	0.080407	
211329	9652381	0.755238	0.769625	-0.01439	1	0.15478	0.295997	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
325786	10456556	0.611984	0.651568	-0.03958	0.97408	0.822073	0.012798	
1622904	8060406	0.68006	0.650538	0.029522	0.956454	0.362461	0.058905	
984448	17031111	0.864838	0.845571	0.019267	0.97408	0.359678	0.104828	
1634877	288645	0.297233	0.262799	0.034434	0.998963	0.339547	0.018995	
1212354	17623453	0.958015	0.938567	0.019449	0.998963	0.245292	0.006383	
3309082	17157492	0.933746	0.911263	0.022484	0.999482	0.296809	0.009035	
3451647	6846941	0.468034	0.471526	-0.00349	0.998445	0.223455	0.829975	
2320706	1353821	0.845897	0.815279	0.030618	0.997926	0.653648	0.013715	
2072803	17836972	0.930952	0.949943	-0.01899	1	0.161355	0.013667	
1435457	909431	0.741182	0.774744	-0.03356	0.999482	1	0.015822	
3498325	17002760	0.747137	0.710946	0.036191	0.997926	1	0.013822	
4372878	2849402	0.69341	0.657745	0.035665	0.997926	1	0.020152	
2723189	1390263	0.102002	0.127418	-0.02542	0.999482	0.546677	0.014366	
3858624	5956071	0.72093	0.731494	-0.01056	0.998445	0.915439	0.758391	
4581070	340608	1	0.997156	0.002844	0.998963	0.005687	0.041646	
1301652	13385444	0.908571	0.885097	0.023475	1	0.618813	0.017688	
1888854	505138	0.098095	0.114903	-0.01681	1	0.407292	0.093007	
4241477	7406210	0.837954	0.866438	-0.02848	0.996371	0.884067	0.014953	
1473810	11759126	0.637274	0.625285	0.011989	0.998963	0.942585	0.458448	
3130592	17636071	0.934286	0.936291	-0.00201	1	0.774462	0.804323	
1412972	16847554	0.961318	0.97836	-0.01704	0.997926	0.335759	0.002984	
2378952	704299	0.842857	0.810011	0.032846	1	0.5103	0.007724	
2297804	10509803	0.99	0.993174	-0.00317	1	1	0.290685	
2233107	2777508	0.887405	0.912969	-0.02556	0.998963	0.66984	0.008745	
182616	17092571	0.822042	0.784738	0.037304	0.998445	0.920676	0.003748	
162461		0.999047	0.998862	0.000184	0.999482	1	0.86116	
739034	2861284	0.167143	0.138794	0.028349	1	0.571726	0.016255	
1982938	6469910	0.554842	0.596812	-0.04197	0.963712	0.284977	0.010492	
2288996	7075880	0.842857	0.813212	0.029645	0.999482	0.318721	0.016633	
976256	17258066	0.977121	0.963554	0.013568	0.998963	0.320478	0.014135	
1577163	17158505	0.916031	0.897042	0.018988	0.998963	0.854378	0.046091	
4171310	497820	0.956459	0.934558	0.021901	0.993261	1	0.002743	
3706285	3744252	0.907767	0.887791	0.019976	0.979782	0.611146	0.043484	
3706285	3744252	0.907767	0.887791	0.019976	0.979782	0.611146	0.043484	
3706285	3744252	0.907767	0.887791	0.019976	0.979782	0.611146	0.043484	
3706285	3744252	0.907767	0.887791	0.019976	0.979782	0.611146	0.043484	
4191711	928064	0.766667	0.805239	-0.03857	0.999482	0.830268	0.003987	
137611	17003621	0.972381	0.960751	0.01163	1	0.390036	0.048363	
2013357	11056836	0.736667	0.701824	0.034842	0.998963	0.043438	0.015443	
929670	538390	0.349854	0.309133	0.040721	0.976153	0.74856	0.009107	
1674981	326766	0.85	0.830254	0.019746	0.988077	0.809343	0.103383	
3563382	17811291	0.969378	0.95752	0.011858	0.993261	0.063962	0.055722	
2222562	6482266	0.563454	0.594071	-0.03062	0.997926	0.674405	0.060821	
2305549	911700	0.836988	0.809361	0.027627	0.997926	0.036862	0.024149	
2305549	911700	0.836988	0.809361	0.027627	0.997926	0.036862	0.024149	
3553439	17777925	0.85381	0.881684	-0.02787	1	1	0.013968	
3982818	1414485	0.950952	0.934585	0.016368	1	1	0.030449	
2093868	17512198	0.874523	0.846416	0.028107	0.998963	0.897223	0.013688	
31968	2827911	0.871783	0.89306	-0.02128	0.999482	0.375824	0.042494	
1412965	16847551	0.962822	0.979522	-0.0167	0.999482	1	0.00273	
2441044	735740	0.868798	0.888383	-0.01958	0.998445	1	0.067138	
2108786	532568	0.055767	0.074772	-0.019	0.997926	0.620982	0.018856	
3491434	17148378	0.85224	0.87884	-0.0266	0.999482	0.152494	0.015991	
3491434	17148378	0.85224	0.87884	-0.0266	0.999482	0.152494	0.015991	
3056695	2375494	0.667302	0.707859	-0.04056	0.998963	0.36949	0.006803	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
363840	9444678	0.893607	0.866021	0.027586	0.997926	0.664022	0.008701	
2093889	16948197	0.873333	0.845279	0.028055	1	1	0.014015	
3286304	8076178	0.964762	0.95165	0.013112	1	0.450293	0.046574	
4033313	6833032	0.970446	0.963329	0.007116	0.980301	0.62351	0.219335	
1200546	13313027	0.954719	0.940774	0.013944	0.998963	0.762329	0.05576	
4530044	155141	0.108987	0.131429	-0.02244	0.995853	1	0.03396	
3845164	10746860	0.024309	0.035308	-0.011	0.998963	0.019437	0.057714	
2289046	1880260	0.47	0.518771	-0.04877	1	0.458093	0.002987	
4083859	1579343	0.666018	0.667654	-0.00164	0.969933	0.815958	0.917647	
4237444	2241873	0.355439	0.31492	0.040519	0.998445	0.240464	0.008469	
474076	12538431	0.953765	0.934585	0.019181	0.999482	0.25895	0.011135	
2216005	12256421	0.4375	0.474108	-0.03661	0.993779	0.017229	0.02646	
4602597	4148863	0.274286	0.317768	-0.04348	0.999482	0.244077	0.003233	
3168846	457127	0.327931	0.362187	-0.03426	0.998963	0.466026	0.026533	
276748	6912404	0.88	0.905575	-0.02557	1	0.326855	0.012404	
617881	17147371	0.809819	0.788155	0.021664	0.998963	0.105413	0.094157	
2194925	17159676	0.950952	0.966439	-0.01549	1	0.619322	0.016735	
4045672	4130113	0.43613	0.411263	0.024867	0.999482	0.83479	0.120839	
342855	16881433	0.950952	0.966439	-0.01549	1	0.069215	0.019734	
1912872	10089067	0.743295	0.710436	0.032859	0.993261	0.411461	0.024843	
1384169	16866742	0.896667	0.908419	-0.01175	1	0.420674	0.22826	
1355282	1435024	0.141087	0.158676	-0.01759	0.997926	0.206347	0.131615	
2432234	12236850	0.95311	0.965675	-0.01257	0.994816	0.268962	0.061904	
3192846	2738712	0.139657	0.167426	-0.02777	0.998963	0.716924	0.019491	
1837960	4300760	0.784557	0.803551	-0.01899	0.996371	0.336511	0.156325	
1928953	13271692	0.719943	0.686219	0.033724	0.998445	0.183	0.026567	
725221	13010687	0.112381	0.100114	0.012267	1	0.450871	0.231635	
4353573	1874710	0.175405	0.205011	-0.02961	0.998963	1	0.021165	
4434595	6431550	0.56447	0.525143	0.039327	0.996371	1	0.016267	
3132713	16857688	1	0.997647	0.002353	0.973043	1	0.029984	
2288583	7068905	0.812857	0.851367	-0.03851	0.999482	0.504102	0.001716	
2581622	1109003	0.569113	0.59065	-0.02154	0.998445	0.834082	0.185092	
1115894	12118214	0.827404	0.801952	0.025452	0.990669	0.164639	0.050047	
2282397	4934279	0.605	0.61976	-0.01476	0.95127	0.462691	0.379224	
3897731	5926269	0.734231	0.687919	0.046312	0.998963	0.710418	0.006213	
1558847	12701832	0.662006	0.671642	-0.00964	0.989114	0.489486	0.534244	
1069165	2785599	0.12818	0.098256	0.029924	0.975635	0.561121	0.004256	
4301530	2726518	0.436242	0.46445	-0.02821	0.992742	0.785794	0.086914	
4301530	2726518	0.436242	0.46445	-0.02821	0.992742	0.785794	0.086914	
406994	981662	0.621068	0.65205	-0.03098	0.998963	0.372588	0.048547	
1928979	1404600	0.722753	0.688356	0.034397	0.996371	0.271069	0.023039	
808861	12355291	0.621242	0.601636	0.019606	0.978227	0.354207	0.219636	
3901789	5927822	0.838235	0.807796	0.03044	0.998445	0.348415	0.014651	
3708637	41188	0.709369	0.736064	-0.02669	0.997926	0.018911	0.075835	
4031275	907980	0.670172	0.709714	-0.03954	0.995853	0.36774	0.008238	
3327725	17711165	0.879923	0.852129	0.027794	0.99015	0.501004	0.012384	
2111633	9530685	0.794847	0.830866	-0.03602	0.998445	0.00263	0.007027	
395642	2235899	0.568834	0.605353	-0.03652	0.997408	0.20346	0.025032	
2057850	12809071	0.565072	0.588101	-0.02303	0.994816	0.442459	0.16455	
1069162	2492894	0.125238	0.095103	0.030136	0.999482	0.558329	0.003272	
3522290	17007438	0.907443	0.886674	0.020768	0.998445	0.866137	0.034334	
2406877	10511392	0.885167	0.900798	-0.01563	0.996371	1	0.129287	
2406877	10511392	0.885167	0.900798	-0.01563	0.996371	1	0.129287	
1129391	12076837	0.767874	0.732346	0.035528	0.998963	0.438753	0.011968	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2569055	904035	0.403056	0.412271	-0.00921	0.994816	0.402399	0.566705	
1552618	10257504	0.695798	0.66041	0.035388	0.998445	0.763736	0.019046	
499146	17172182	0.813155	0.777588	0.035567	0.999482	0.040836	0.008113	
2388453	13100529	0.688995	0.660388	0.028607	0.995853	0.292245	0.064981	
1451969	17123863	0.914762	0.926052	-0.01129	1	0.465705	0.209974	
2428117	10511689	0.770734	0.807736	-0.037	0.999482	0.828187	0.005592	
359689	797151	0.862118	0.830489	0.031629	0.998963	0.093289	0.006641	
1433878	11903702	0.779048	0.802392	-0.02334	0.999482	0.241032	0.080443	
1146050	1171372	0.541306	0.584096	-0.04279	0.992742	0.625943	0.009271	
4007491	1400884	0.171115	0.146925	0.024191	0.998963	0.686929	0.044509	
2162503	9585063	0.902101	0.90273	-0.00063	0.998445	0.332938	0.948683	
1805083	1368782	0.444611	0.487319	-0.04271	0.948678	0.330065	0.01102	
1184075	17526109	0.915311	0.897377	0.017934	0.996371	0.355923	0.05781	
4302400	7035931	0.689704	0.726394	-0.03669	0.999482	0.308341	0.014851	
620940	10891144	0.409702	0.427662	-0.01796	0.987558	0.94459	0.264538	
2297758	17119469	0.988095	0.991458	-0.00336	0.999482	1	0.308651	
4017022	1514441	0.636098	0.602594	0.033503	0.970969	0.389836	0.039281	
1094747	2764861	0.869482	0.84307	0.026412	0.992742	0.442763	0.021415	
4637251	640586	0.003813	0.003413	0.0004	0.999482	1	0.838783	
2057819	12820426	0.563515	0.584755	-0.02124	0.998445	0.835201	0.193149	
4031842	4687435	0.203455	0.243135	-0.03968	0.993261	0.926974	0.003585	
2101052	7323498	0.724762	0.704442	0.02032	0.999482	0.745711	0.173161	
17263	926990	0.511985	0.470554	0.04143	0.989632	0.495203	0.013113	
4659780	6415479	0.35933	0.399656	-0.04033	0.993779	0.230175	0.012723	
662809	6697844	0.541985	0.585991	-0.04401	0.998445	0.164093	0.006167	
1539433	1317171	0.341701	0.391842	-0.05014	0.92535	0.003971	0.00322	
2483920	2517956	0.334604	0.3157	0.018905	0.999482	0.937899	0.223888	
4099595	4556173	0.602197	0.561433	0.040763	0.998445	0.100677	0.014163	
1076644	2245163	0.202392	0.237327	-0.03493	0.991706	0.189171	0.010222	
3559950	16943109	0.974762	0.98521	-0.01045	1	1	0.022943	
1961890	16867973	0.839524	0.865188	-0.02566	1	0.384863	0.027589	
2428675	6475576	0.489971	0.455429	0.034543	0.996371	0.453873	0.035877	
245053	4898698	0.734733	0.696815	0.037918	0.998963	0.522987	0.010557	
2046886	10877447	0.833174	0.857224	-0.02405	0.999482	0.018125	0.046516	
1229446	2380595	0.918426	0.902509	0.015918	0.994816	0.846932	0.090445	
2172346	9587054	0.148236	0.177474	-0.02924	0.999482	0.729739	0.014768	
2432232	10812510	0.955195	0.968109	-0.01291	0.998963	1	0.04186	
2432232	10812510	0.955195	0.968109	-0.01291	0.998963	1	0.04186	
4534584	1543115	0.685932	0.715426	-0.02949	0.865215	0.420511	0.062748	
2454916	11139275	0.91381	0.934135	-0.02033	0.99689	1	0.020065	
2633258	1032818	0.575264	0.576087	-0.00082	0.993779	0.268518	0.959772	
2350839	347158	0.495714	0.530182	-0.03447	0.999482	0.017764	0.03485	
2418530	4741032	0.135238	0.164391	-0.02915	1	0.714015	0.013034	
4131920	1580828	0.121227	0.155452	-0.03423	0.979264	0.603134	0.003065	
1972386	989848	0.42402	0.460749	-0.03673	0.958009	0.624791	0.024646	
328766	3020409	0.04933	0.031854	0.017475	0.99689	1	0.007015	
1145908		0.920324	0.917426	0.002898	0.998445	0.653263	0.747877	
1894451	2033671	0.445134	0.476678	-0.03154	0.998963	0.311103	0.050601	
466173		0.999524	0.996018	0.003506	1	1	0.018619	
2288597	17108360	0.798279	0.836374	-0.03809	0.99689	0.537123	0.002722	
976257	17258073	0.977055	0.96347	0.013585	0.996371	0.103338	0.015147	
55432	2245023	0.271896	0.306897	-0.035	0.989632	1	0.018962	
1997482	16904642	0.899616	0.877586	0.02203	0.990669	0.874764	0.032689	
4509851	1113342	0.78619	0.75711	0.02908	1	0.313477	0.032508	
1659426	1792549	0.64	0.676169	-0.03617	0.998963	0.189786	0.017941	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
516499	17390895	0.651923	0.660138	-0.00822	0.989114	0.545678	0.601273	
2307281	7087674	0.822857	0.835609	-0.01275	1	1	0.309755	
3107225	4679382	0.218571	0.245734	-0.02716	1	0.585726	0.047637	
652287	676969	0.151429	0.171217	-0.01979	1	0.554445	0.103378	
4511583	1097705	0.722169	0.680778	0.041391	0.993261	0.391804	0.005367	
2084193	4537826	0.210878	0.182857	0.028021	0.99689	0.113327	0.03018	
3328068	17711241	0.879048	0.852105	0.026943	1	0.687488	0.015307	
3342450	11949873	0.844762	0.874002	-0.02924	0.998963	0.218619	0.012057	
3591378	174046	0.183333	0.217861	-0.03453	1	0.691964	0.007399	
1072990	6698430	0.703544	0.679977	0.023567	0.989114	0.639083	0.121669	
3426879	10031752	0.738004	0.766398	-0.02839	0.990669	0.343593	0.045438	
4126787	1483512	0.695238	0.723549	-0.02831	1	0.501251	0.062975	
2297809	17119534	0.99233	0.994299	-0.00197	0.995334	1	0.463039	
3029593	2322961	0.102381	0.127418	-0.02504	1	0.546677	0.015917	
2692498	1354357	0.458935	0.491569	-0.03263	0.86677	0.428072	0.067042	
4553970	4267900	0.740191	0.776765	-0.03657	0.99689	0.024904	0.00996	
4615453	981124	0.638227	0.600683	0.037544	0.999482	0.439158	0.019461	
2208800	10905930	0.597712	0.56314	0.034572	0.999482	0.410669	0.031619	
3174618	17057956	0.985224	0.971968	0.013256	0.99689	1	0.00427	
1980035	2468151	0.914204	0.887941	0.026263	0.999482	0.865603	0.007627	
4308958	1195748	0.001431	0.000569	0.000862	0.998963	1	0.413528	
4040519	1112943	0.537214	0.571185	-0.03397	0.998445	0.038676	0.033856	
2082497	7131840	0.992381	0.986917	0.005464	1	1	0.09386	
2232620	12252214	0.812798	0.782286	0.030513	0.996371	0.842769	0.021551	
2446956	1493050	0.6	0.556571	0.043429	0.997926	0.731977	0.007603	
4554812	4245478	0.231614	0.200913	0.030701	0.99689	0.752089	0.022386	
4638332	336008	0.125599	0.115034	0.010565	0.995853	0.61911	0.326742	
4012318	1398712	0.428161	0.47089	-0.04273	0.995334	0.089948	0.008875	
4515058	1615717	0.617902	0.584765	0.033137	0.991187	0.675802	0.038013	
4454111	7007588	0.621524	0.642169	-0.02064	0.933644	0.596976	0.215616	
2093877	17512219	0.874286	0.846416	0.027869	1	0.897223	0.014262	
906633		0.340957	0.310411	0.030546	0.890617	0.111345	0.054911	
2846467	1858353	0.681948	0.723235	-0.04129	0.997926	0.447813	0.007312	
3056692	2375491	0.666826	0.708096	-0.04127	0.99689	0.369876	0.005957	
566544	705308	0.513862	0.56	-0.04614	0.995853	0.583243	0.004815	
1928981	1404601	0.72063	0.687571	0.033059	0.997408	0.239364	0.029293	
3403127	16870934	0.993321	0.986348	0.006972	0.998963	1	0.035128	
2944508	297811	0.247378	0.211845	0.035533	0.998963	0.362864	0.00987	
3984038	6664465	0.013359	0.022831	-0.00947	0.997408	1	0.029463	
806586	10826205	0.539675	0.553695	-0.01402	0.991187	0.130266	0.385218	
4234517	6722544	0.744752	0.778157	-0.03341	0.998963	1	0.016936	
1980310	7834609	0.765014	0.726651	0.038363	0.998963	0.30768	0.006894	
3029590	2322958	0.098659	0.122847	-0.02419	0.992742	0.346809	0.01865	
2288688	787667	0.494275	0.526286	-0.03201	0.99689	0.025233	0.056266	
1685080	17534594	0.971429	0.9562	0.015228	1	0.079285	0.014501	
4534835	1935642	0.665706	0.685143	-0.01944	0.993261	0.93767	0.213903	
478407	10273651	0.530057	0.500571	0.029486	0.997408	0.735738	0.075875	
1336315	11676304	0.737143	0.723235	0.013908	0.999482	0.866432	0.339455	
4589881	6605550	0.50286	0.465831	0.037028	0.998963	0.684062	0.021449	
630524	17034131	0.586437	0.552452	0.033986	0.997408	0.733245	0.037577	
3857178	9919114	0.911711	0.92349	-0.01178	0.998963	0.787694	0.064238	
3529133	2249730	0.877863	0.907429	-0.02957	0.99689	0.688393	0.003584	
357368	13213431	0.948999	0.965301	-0.0163	0.999482	1	0.015723	
2093925	7965350	0.87381	0.846066	0.027743	0.998963	0.897446	0.015066	
377510	12211442	0.970476	0.953925	0.016551	1	0.42362	0.008608	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1846079	17066246	0.877502	0.896925	-0.01942	0.998963	0.854434	0.056741	
345417	9482772	0.534533	0.581986	-0.04745	0.981856	0.624962	0.004832	
360286	12196947	0.806773	0.822738	-0.01597	0.944531	0.403498	0.229152	
2061907	17043380	0.991795	0.983256	0.008539	0.986003	1	0.017281	
4491031	1105856	0.435468	0.473804	-0.03834	0.997408	0.839068	0.01962	
1501790	1339228	0.836511	0.812856	0.023655	0.999482	1	0.055551	
3689636	2956551	0.784762	0.756542	0.02822	1	0.31345	0.03804	
4174833	1939949	0.433683	0.399203	0.03448	0.998445	0.573745	0.035639	
3292498	4793770	0.676667	0.710466	-0.0338	1	0.511711	0.02826	
609708	10734409	0.457143	0.43508	0.022063	0.999482	0.731353	0.177392	
993314	1341305	0.990944	0.980091	0.010853	0.999482	0.291957	0.005382	
312841	17656494	0.932793	0.915051	0.017742	0.998445	0.123837	0.04346	
2159707	7139537	0.681208	0.680827	0.000381	0.992224	0.311604	0.979985	
1754060	10790077	0.607143	0.652794	-0.04565	0.998963	0.136062	0.004604	
1651891	1487875	0.413333	0.453356	-0.04002	1	0.024904	0.013099	
4567801	6497112	0.846191	0.851101	-0.00491	0.984966	0.893067	0.677953	
1918975	3903445	0.395138	0.437286	-0.04215	0.998445	0.492534	0.009533	
4516548	3828755	0.495584	0.533097	-0.03751	0.966822	0.628996	0.026287	
4373012	4267276	0.422964	0.38766	0.035304	0.973561	0.566043	0.03051	
1943825	2305319	0.814585	0.840935	-0.02635	0.998445	0.375832	0.030106	
2545800	745075	0.857347	0.885405	-0.02806	0.997926	1	0.011466	
4010889	2044235	0.844828	0.875431	-0.0306	0.992742	0.876331	0.007315	
3292942	16897810	0.955714	0.949317	0.006398	0.999482	0.01978	0.361939	
182596	17092549	0.82	0.784414	0.035586	1	0.841831	0.005764	
1013666	17499824	0.777137	0.790564	-0.01343	0.99015	0.259139	0.315755	
1013666	17499824	0.777137	0.790564	-0.01343	0.99015	0.259139	0.315755	
1013666	17499824	0.777137	0.790564	-0.01343	0.99015	0.259139	0.315755	
1975099	1397965	0.899905	0.924915	-0.02501	0.999482	0.325499	0.007475	
1265975	17049286	0.93913	0.956192	-0.01706	0.980301	0.073129	0.022147	
1266268	842767	0.537763	0.500569	0.037193	0.997408	0.418442	0.023185	
2024305	17837370	0.420594	0.456098	-0.0355	0.931052	1	0.035766	
1023625	781058	0.465238	0.505688	-0.04045	1	0.156835	0.012674	
4004384	2167788	0.710476	0.667808	0.042668	0.998445	0.878916	0.005181	
570737	17628318	0.762997	0.792441	-0.02944	0.926905	0.915167	0.036733	
2761847	1436528	0.764762	0.79385	-0.02909	0.999482	0.063054	0.029443	
4573612	1976629	0.10687	0.08713	0.01974	0.998445	0.139744	0.036571	
5386	2822756	0.791905	0.756542	0.035363	1	0.200874	0.010715	
2571619	907944	0.289048	0.250285	0.038763	0.998963	0.718987	0.007496	
929611	9515163	0.714762	0.749147	-0.03438	1	0.928469	0.017619	
2246231	10995345	0.783397	0.749145	0.034252	0.997926	1	0.012812	
1897971	7464053	0.390162	0.431015	-0.04085	0.997408	0.836405	0.012493	
2165380	9585760	0.92619	0.906143	0.020047	1	0.689963	0.025946	
4140032	7307052	0.999047	0.998855	0.000192	0.996371	1	0.855824	
305402	702329	0.162369	0.18379	-0.02142	0.99689	0.498886	0.081593	
2324465	1499088	0.545542	0.508631	0.036911	0.991187	0.277558	0.025882	
2873406	1999921	0.216619	0.243429	-0.02681	0.993261	0.462646	0.051451	
725223	3771710	0.112381	0.100342	0.012039	0.998963	0.258001	0.242153	
2033633	17091551	0.732092	0.776196	-0.0441	0.997926	0.2851	0.001599	
4282494	1450380	0.004803	0.009174	-0.00437	0.991706	1	0.104688	
4125187	4762937	0.384909	0.351027	0.033882	0.99689	0.656562	0.033377	
53858	2831934	0.872015	0.86374	0.008275	0.997408	0.885651	0.456329	
509395	10227657	0.57619	0.610922	-0.03473	1	0.287062	0.029823	
2349384	9822985	0.327916	0.329268	-0.00135	0.988595	0.757825	0.930088	
1963921	1512348	0.545238	0.513098	0.03214	0.999482	0.787414	0.048597	
2842041	1338543	0.218511	0.244863	-0.02635	0.997408	0.522894	0.055062	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
395645	2235902	0.569524	0.605353	-0.03583	0.999482	0.20346	0.027889	
4277964	7010579	0.708413	0.724118	-0.01571	0.997926	0.398619	0.294029	
1577482	17316197	0.928095	0.909611	0.018484	0.997408	0.144413	0.042123	
2283367	17334741	0.744042	0.710706	0.033336	0.998963	0.934641	0.021429	
4601180	2423219	0.476802	0.441833	0.034968	0.966304	0.001739	0.04084	
509396	7785365	0.576263	0.610922	-0.03466	0.999482	0.287062	0.030242	
1884559		0.963595	0.942797	0.020798	0.822706	0.159114	0.004834	
503555	3779347	0.77	0.788965	-0.01896	1	0.127913	0.171711	
1547099	4722439	0.442803	0.410592	0.03221	0.998963	0.265116	0.050621	
4374195	2361075	0.280861	0.242303	0.038558	0.996371	0.782772	0.008256	
4016240	6803293	0.529215	0.567122	-0.03791	0.99689	0.680162	0.019914	
1422398	17413382	0.850886	0.876593	-0.02571	0.97408	0.529846	0.026905	
1408094	7603162	0.67782	0.641714	0.036106	0.995853	0.713193	0.020905	
830031	6888210	0.65381	0.642531	0.011278	0.998963	0.65968	0.465513	
1874602	2705090	0.762381	0.8041	-0.04172	0.999482	0.914974	0.002093	
2348386	6549943	0.070952	0.059226	0.011727	0.999482	0.222098	0.153075	
1919001	6984439	0.392823	0.43406	-0.04124	0.993779	0.730376	0.011052	
3419461	2635299	0.42619	0.40785	0.018341	1	0.944321	0.265931	
3650111	10027859	0.144762	0.159272	-0.01451	1	0.376895	0.218259	
3650111	10027859	0.144762	0.159272	-0.01451	1	0.376895	0.218259	
285033	2981984	0.322937	0.292906	0.03003	0.993261	0.683102	0.046472	
285033	2981984	0.322937	0.292906	0.03003	0.993261	0.683102	0.046472	
1836580	17187922	0.929524	0.908987	0.020536	1	0.837455	0.020242	
1181082	2815223	0.2149	0.244596	-0.0297	0.998445	0.200817	0.028001	
2981316	2172882	0.102857	0.127418	-0.02456	1	0.546677	0.018407	
4612368	6726974	0.521561	0.472117	0.049444	0.913945	0.063307	0.004529	
1536316	1335304	0.341159	0.308014	0.033144	0.952307	0.088266	0.039383	
4497147	17773866	0.884175	0.905467	-0.02129	0.998963	0.326786	0.032723	
314078	7747720	0.420952	0.461276	-0.04032	0.999482	1	0.013522	
4362021	300625	0.001496	0	0.001496	0.950233	1	0.119792	
761671	4674110	0.402195	0.416287	-0.01409	0.998445	0.267412	0.381588	
494176	740623	0.739276	0.774175	-0.0349	0.999482	0.100871	0.012114	
494176	740623	0.739276	0.774175	-0.0349	0.999482	0.100871	0.012114	
1308738	17005394	1	0.997722	0.002278	0.998963	1	0.030918	
2439338	10814443	0.522879	0.560433	-0.03755	0.998445	0.945401	0.021978	
807649	4622161	0.50451	0.496533	0.007977	0.833593	0.179889	0.659185	
2428566	751173	0.458055	0.426621	0.031434	0.999482	0.168276	0.052951	
2428620	2891159	0.489027	0.454494	0.034533	0.998963	0.541048	0.035383	
3457649	574375	0.904762	0.878271	0.026491	1	0.267914	0.009962	
830041	16902166	0.653956	0.642207	0.011749	0.999482	0.713975	0.446818	
2378951	704298	0.88	0.853242	0.026758	1	0.501446	0.016038	
782735	4851110	0.750238	0.790671	-0.04043	0.999482	0.918895	0.003852	
4610533	4536096	0.285714	0.306713	-0.021	0.984966	0.298187	0.168241	
3901738	6527109	0.865279	0.898522	-0.03324	0.998963	0.661251	0.003361	
4241097	1111824	0.255758	0.293379	-0.03762	0.994298	0.050287	0.009157	
2217201	10764440	0.49571	0.455581	0.040129	0.998963	0.733703	0.0145	
2255713	12767372	0.885542	0.87651	0.009032	0.859513	0.610153	0.431869	
4501988	4074776	0.344943	0.306598	0.038344	0.998963	0.633991	0.01278	
817046	16967818	0.797143	0.767918	0.029225	1	0.705601	0.02953	
3028697	2320767	0.458891	0.496552	-0.03766	0.993261	0.249503	0.023725	
2302958	17762956	0.824118	0.848692	-0.02457	0.999482	0.693293	0.043565	
1708777	1619953	0.241659	0.273038	-0.03138	0.999482	0.610171	0.026961	
3192787	2667555	0.825548	0.791096	0.034452	0.997926	0.4738	0.008681	
4235515	2391895	0.252422	0.238399	0.014023	0.981856	0.260695	0.331124	
1486709	4714353	0.59542	0.632118	-0.0367	0.998445	0.771642	0.021161	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3688293	13177712	0.70999	0.678488	0.031502	0.980301	0.43458	0.042064	
2364391	17235564	0.707061	0.737172	-0.03011	0.997926	0.930674	0.040516	
4636290	1442048	0.903333	0.884396	0.018937	0.999482	0.183692	0.059579	
4529678	1856715	0.633911	0.597335	0.036576	0.985485	0.178777	0.021465	
79047	1539901	0.680344	0.641391	0.038952	0.997926	0.557002	0.012564	
1932847	12679412	0.341603	0.372582	-0.03098	0.998963	0.348215	0.048985	
3455271	12504059	0.667619	0.706621	-0.039	0.998445	0.415354	0.009351	
1264097	11125554	0.922307	0.947668	-0.02536	0.999482	0.08282	0.002365	
3324198	4143869	0.909048	0.887813	0.021234	0.999482	0.091576	0.032062	
2117636	4942242	0.43327	0.472096	-0.03883	0.998963	0.839293	0.018095	
4041069	1566347	0.310476	0.33713	-0.02665	0.999482	0.096531	0.084647	
2314167	1571423	0.756925	0.726962	0.029962	0.998445	0.269927	0.039355	
2305534	2302374	0.807729	0.782212	0.025517	0.997926	0.092904	0.047876	
615364	183395	0.563394	0.609464	-0.04607	0.998445	0.887174	0.004413	
3132827	7866443	0.740403	0.770379	-0.02998	0.991706	0.848104	0.032276	
2256173	17773268	0.918095	0.939135	-0.02104	1	0.127719	0.013554	
3482384	4610290	0.462927	0.50348	-0.04055	0.978227	0.196003	0.016306	
3476722	17301314	0.525238	0.572241	-0.047	1	0.038702	0.005032	
1431790	1715826	0.538645	0.560934	-0.02229	0.998445	0.337932	0.165095	
3455194	12506326	0.667462	0.708	-0.04054	0.99689	0.413363	0.006922	
803756	4933789	0.376699	0.336616	0.040083	0.981337	0.322273	0.009535	
2165634	3858790	0.353391	0.398518	-0.04513	0.997408	0.778365	0.00395	
314080	7740233	0.420952	0.461276	-0.04032	0.999482	1	0.013522	
1375689	12053389	0.563102	0.60199	-0.03889	0.901503	0.303044	0.019642	
3124547	17645980	0.797233	0.763367	0.033865	0.998963	0.640422	0.012734	
2057849	10506653	0.559104	0.582098	-0.02299	0.998445	0.944655	0.160311	
435322	2179321	0.522402	0.494869	0.027533	0.998445	0.839575	0.091501	
1750949	3867465	0.661891	0.694761	-0.03287	0.997926	0.633013	0.03219	
3359435	6543460	0.511577	0.482005	0.029571	0.87351	0.518664	0.085263	
3324223	6883675	0.909524	0.88851	0.021014	1	0.17153	0.032989	
637906	17468153	0.867969	0.838269	0.029701	0.998963	0.618327	0.010763	
1911788	7817996	0.896371	0.914676	-0.01831	0.998445	0.127092	0.060684	
2938816	2063722	0.419924	0.384703	0.035221	0.997926	0.567933	0.028552	
3107249	6772299	0.214563	0.239814	-0.02525	0.979264	0.160343	0.069409	
2221772	10508645	1	0.997722	0.002278	0.998963	1	0.030918	
550291	2718023	0.39255	0.352338	0.040213	0.997408	0.18297	0.011974	
1242972	10200936	0.540553	0.572406	-0.03185	0.997926	0.408022	0.05001	
4107568	129945	0.987619	0.976678	0.010941	1	1	0.009962	
1430146	13398058	0.38599	0.413271	-0.02728	0.981856	0.106025	0.089053	
1885568	7834775	0.169524	0.202164	-0.03264	0.999482	0.83418	0.011146	
423444		0.999522	0.996014	0.003508	0.997408	1	0.018819	
4554927	3889597	0.664919	0.618421	0.046498	0.99689	0.82974	0.003334	
3173393	2278239	0.933688	0.916859	0.016829	0.984448	1	0.053037	
3418443	10516615	0.857143	0.883959	-0.02682	1	0.508842	0.014781	
2428605	1414241	0.488561	0.454442	0.034119	0.998963	0.540219	0.037747	
902187	16910317	0.915076	0.89818	0.016897	0.998963	0.460588	0.077692	
902187	16910317	0.915076	0.89818	0.016897	0.998963	0.460588	0.077692	
902187	16910317	0.915076	0.89818	0.016897	0.998963	0.460588	0.077692	
2269266	9299525	0.582061	0.571672	0.010389	0.998963	0.147982	0.527883	
2269266	9299525	0.582061	0.571672	0.010389	0.998963	0.147982	0.527883	
3077567	2414155	0.803333	0.837315	-0.03398	1	0.709869	0.007718	
3546444	17707912	0.803333	0.837315	-0.03398	1	0.709869	0.007718	
1413226	10177771	0.981411	0.97099	0.010421	0.999482	0.526126	0.035165	
3297141	2333025	0.82729	0.801253	0.026037	0.998445	0.055813	0.046521	
795789	16859737	0.925714	0.90262	0.023095	0.999482	0.562017	0.011525	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3480150	17039504	0.911821	0.886234	0.025586	0.999482	0.866627	0.009833	
2080106		0.993702	0.986705	0.006996	0.983411	1	0.028247	
2283288	1426621	0.320952	0.341505	-0.02055	0.998963	0.153572	0.189558	
4436488	6475568	0.49	0.455631	0.034369	1	0.634422	0.036321	
424983		0.998092	0.998292	-0.0002	0.998445	1	0.886006	
518283	10487261	0.882381	0.911263	-0.02888	1	0.836504	0.004187	
2851999	244967	0.912214	0.887813	0.024401	0.998445	0.734238	0.013043	
2093873	17440433	0.874166	0.846416	0.027749	0.999482	0.897223	0.014723	
3557701	17029100	0.997619	0.99258	0.005039	0.998445	0.04385	0.032315	
209452	17108230	0.995714	0.988055	0.00766	1	1	0.007592	
2097859	7995773	0.769452	0.797933	-0.02848	0.991187	0.599779	0.037317	
3107290	9870428	0.217143	0.244875	-0.02773	0.999482	0.412719	0.043195	
4131482	790575	0.808173	0.780892	0.027281	0.992224	0.323021	0.042322	
4131482	790575	0.808173	0.780892	0.027281	0.992224	0.323021	0.042322	
4131482	790575	0.808173	0.780892	0.027281	0.992224	0.323021	0.042322	
3649794		0.994914	0.988957	0.005956	0.932089	1	0.045166	
3348669	4851532	0.866063	0.843003	0.02306	0.999482	0.443624	0.044855	
696243	857147	0.516876	0.549711	-0.03284	0.986003	0.243122	0.049261	
696243	857147	0.516876	0.549711	-0.03284	0.986003	0.243122	0.049261	
4038939	6837365	0.765014	0.737172	0.027842	0.998445	0.794102	0.052079	
494186	17776257	0.740229	0.773918	-0.03369	0.998963	0.100789	0.015328	
494186	17776257	0.740229	0.773918	-0.03369	0.998963	0.100789	0.015328	
1408096	4673278	0.677788	0.642207	0.035581	0.999482	0.713975	0.022472	
1912014	7837165	0.964728	0.948237	0.016492	0.999482	0.724418	0.012102	
3107244	7615139	0.21872	0.246014	-0.02729	0.997926	0.467866	0.047188	
1804153	307108	0.880611	0.845103	0.035509	0.997926	1	0.001609	
4619654	7477912	0.804805	0.832339	-0.02753	0.952307	0.386728	0.0394	
2993710	2194138	0.438815	0.406393	0.032422	0.996371	0.529279	0.043975	
1366183	16850027	0.933333	0.91287	0.020463	0.999482	1	0.018906	
80907	2836387	0.595329	0.562073	0.033256	0.998963	0.783999	0.038302	
767881	4674886	0.759771	0.791572	-0.0318	0.998963	0.124205	0.023027	
4055099	466173	0.34261	0.381443	-0.03883	0.992742	0.615594	0.013791	
1003786	10915049	0.796465	0.826947	-0.03048	0.932608	0.712085	0.021752	
1804242	8092348	0.893028	0.8626	0.030428	0.997408	0.200364	0.00476	
3385901	17627536	0.756573	0.721704	0.034869	0.976672	0.395452	0.01536	
1205598	12143070	0.816969	0.811859	0.00511	0.998445	0.658638	0.688255	
2797304	1492448	0.110687	0.118857	-0.00817	0.99689	0.035799	0.440843	
724834	4850557	0.123333	0.096132	0.027201	1	0.845866	0.007318	
4110484	2168719	0.765238	0.748292	0.016947	0.999482	0.209275	0.223431	
2249237	351833	0.851622	0.821551	0.030071	0.997926	0.249122	0.013336	
1340307	7595586	1	0.997722	0.002278	0.998963	1	0.030918	
2317948	3821435	0.407426	0.44143	-0.034	0.930016	0.721782	0.044487	
530317	1978179	0.735435	0.770286	-0.03485	0.996371	0.567697	0.015078	
1184076	17591724	0.915076	0.897611	0.017465	0.998963	0.355562	0.0643	
2639563	936078	0.210579	0.238124	-0.02755	0.945049	0.053846	0.052576	
3599880	10012476	0.906096	0.884571	0.021526	0.97408	0.867147	0.033865	
1769787	16949439	0.985167	0.97709	0.008077	0.994298	1	0.073613	
3600106	11855586	0.766731	0.728784	0.037947	0.986522	0.668291	0.007923	
4589935	7817160	0.847474	0.83713	0.010344	0.998963	0.709962	0.391813	
2114793	7338488	0.35499	0.326781	0.028208	0.920684	0.13003	0.074772	
2468530	16922634	0.788719	0.821388	-0.03267	0.997926	0.730235	0.012321	
3309802	17396486	0.953333	0.968714	-0.01538	1	1	0.014773	
3642866	4417917	0.183031	0.216895	-0.03386	0.997926	0.195343	0.010079	
1083554	12725346	0.735462	0.770193	-0.03473	0.999482	0.567865	0.013191	
1978040	799868	0.831107	0.850057	-0.01895	0.997926	0.425557	0.113602	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2281956	2253710	0.916667	0.892938	0.023728	0.999482	0.59616	0.013488	
3527844	17131428	0.893607	0.914107	-0.0205	0.998963	0.82869	0.037327	
3706084	17732878	0.80381	0.774744	0.029065	1	0.561835	0.027421	
3706084	17732878	0.80381	0.774744	0.029065	1	0.561835	0.027421	
4070982	1417057	0.65631	0.621437	0.034873	0.99689	1	0.025725	
1117169	11584887	0.91109	0.886545	0.024545	0.99689	0.738854	0.012179	
1117169	11584887	0.91109	0.886545	0.024545	0.99689	0.738854	0.012179	
4644713	1206057	0.677312	0.705581	-0.02827	0.998963	1	0.062288	
1762638	10750256	0.447042	0.408884	0.038158	0.998445	0.124469	0.02091	
233904		0.99596	0.989609	0.006351	0.937273	1	0.023207	
3107239	9850300	0.219048	0.245734	-0.02669	1	0.467412	0.052024	
3601990	17149263	0.882184	0.853617	0.028567	0.992742	0.17334	0.010791	
538466	17170388	0.952381	0.932878	0.019503	1	0.584369	0.011431	
3339800	300205	0.565261	0.589133	-0.02387	0.940902	0.665354	0.143579	
1789752	12964887	0.832381	0.799772	0.032608	1	0.401277	0.009116	
1627512	16963755	1	0.997722	0.002278	0.995334	1	0.031481	
1125272	17366417	0.94	0.953925	-0.01392	1	0.251488	0.058642	
4493241	1953896	0.866635	0.892816	-0.02618	0.99689	0.596182	0.014075	
1068562	2046736	0.788095	0.751991	0.036104	1	0.104256	0.010408	
2283436	17336288	0.748332	0.715262	0.03307	0.998963	0.361809	0.024237	
3321621	7712624	0.990196	0.996471	-0.00627	0.969414	1	0.022871	
2911180	1946868	0.851145	0.823094	0.028051	0.998963	0.728284	0.021042	
3303200	151830	0.426583	0.400463	0.026121	0.988077	0.670714	0.112925	
3303200	151830	0.426583	0.400463	0.026121	0.988077	0.670714	0.112925	
4040712	3806823	0.57799	0.614106	-0.03612	0.993779	0.353203	0.023553	
4083279	2214086	0.652299	0.658857	-0.00656	0.994816	0.328588	0.67399	
153492	17118980	0.91619	0.890785	0.025405	1	0.488476	0.008053	
3311391	4957728	0.21306	0.191781	0.021279	0.997926	0.514901	0.109543	
2246259	10822139	0.737846	0.702395	0.035451	0.998445	0.375537	0.014961	
4587624	2862401	0.979465	0.968037	0.011429	0.99689	1	0.025905	
4311250	3817666	0.98137	0.983112	-0.00174	0.944531	1	0.693465	
4311250	3817666	0.98137	0.983112	-0.00174	0.944531	1	0.693465	
4311250	3817666	0.98137	0.983112	-0.00174	0.944531	1	0.693465	
4311250	3817666	0.98137	0.983112	-0.00174	0.944531	1	0.693465	
1951128	10094327	0.642857	0.601936	0.040921	0.999482	0.122032	0.011157	
3285406	16953461	0.798856	0.811927	-0.01307	0.995853	0.095777	0.309462	
1741862	11225160	0.628462	0.663813	-0.03535	0.99689	0.324968	0.020876	
3200322	12149926	0.805077	0.802059	0.003017	0.994298	0.20206	0.813494	
2354891	12493939	0.534585	0.556792	-0.02221	0.967341	0.16544	0.188141	
1798478		0.996654	0.992605	0.004049	0.997926	1	0.085146	
3107188	9877328	0.219048	0.245444	-0.0264	0.999482	0.584577	0.054351	
3203213	9931086	0.854418	0.824761	0.029657	0.949715	0.030613	0.018972	
3203213	9931086	0.854418	0.824761	0.029657	0.949715	0.030613	0.018972	
2087936	4964759	0.563454	0.582005	-0.01855	0.998445	0.11073	0.254877	
1997472	2896654	0.923664	0.903299	0.020365	0.998963	0.846235	0.025414	
3455872	1714081	0.405714	0.448178	-0.04246	0.999482	0.016911	0.008448	
1461731		0.970349	0.976808	-0.00646	0.825816	1	0.259259	
1622927	2346611	0.477051	0.434884	0.042167	0.976672	0.018241	0.011599	
4258466	6716351	0.748092	0.716724	0.031368	0.998963	0.244611	0.028584	
795784	1039829	0.92612	0.903299	0.022821	0.999482	0.70033	0.012051	
1946940		0.600705	0.643535	-0.04283	0.951788	0.099334	0.009583	
2172342	4441125	0.147901	0.177143	-0.02924	0.99689	0.727813	0.014876	
1653025	4910441	0.90381	0.885666	0.018144	1	0.242622	0.075691	
1653025	4910441	0.90381	0.885666	0.018144	1	0.242622	0.075691	
4072417	6605549	0.50191	0.466401	0.035509	0.997926	0.541688	0.027127	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2483927	1810132	0.681775	0.698747	-0.01697	0.998445	0.471793	0.265149	
2314166	9423354	0.577143	0.536446	0.040696	0.999482	0.945994	0.011946	
837520	17528550	0.912857	0.93686	-0.024	1	0.570451	0.006322	
1626974		0.979008	0.977247	0.001761	0.998963	1	0.70979	
2117644	17460861	0.692748	0.659635	0.033113	0.997926	0.821843	0.031639	
2295339	10883728	0.688275	0.653584	0.034691	0.999482	0.823337	0.022231	
2295339	10883728	0.688275	0.653584	0.034691	0.999482	0.823337	0.022231	
4279427	6466556	0.934286	0.9124	0.021885	1	0.296299	0.012226	
188308	17098879	0.978571	0.987472	-0.0089	0.999482	1	0.041943	
5481	2822775	0.750476	0.707859	0.042617	0.999482	0.514072	0.003723	
809244	12767608	0.797233	0.82574	-0.02851	0.998445	0.413173	0.029714	
3455311	7691138	0.808389	0.836746	-0.02836	0.999482	0.216552	0.023835	
3706056	8075218	0.770774	0.740297	0.030477	0.99689	0.538352	0.027545	
3111502	525408	0.215714	0.235731	-0.02002	0.998445	0.640199	0.146529	
2305415	11196347	0.519807	0.562646	-0.04284	0.979264	0.297049	0.010792	
4598740	4933961	0.834924	0.856492	-0.02157	0.998445	0.012738	0.063111	
4040721	3797026	0.833174	0.801479	0.031695	0.999482	0.915785	0.012064	
4040721	3797026	0.833174	0.801479	0.031695	0.999482	0.915785	0.012064	
1519639	17495678	0.961429	0.944191	0.017237	0.999482	1	0.011904	
342880	16881450	0.951905	0.967008	-0.0151	1	0.241469	0.021914	
3070393	2400891	0.525262	0.5439	-0.01864	0.998445	1	0.255688	
76656	2835655	0.675714	0.705815	-0.0301	0.998963	0.122247	0.043101	
709403	6593652	0.374762	0.33959	0.035171	1	0.763736	0.024758	
4298570	6449116	0.333503	0.291819	0.041683	0.9352	0.011094	0.009801	
2412727	1888650	0.868798	0.840935	0.027863	0.997926	0.163536	0.016937	
4251766	7692154	0.663958	0.701714	-0.03776	0.995853	0.374732	0.012212	
1407216	17533546	0.948046	0.965301	-0.01726	0.999482	1	0.011963	
1407216	17533546	0.948046	0.965301	-0.01726	0.999482	1	0.011963	
1407216	17533546	0.948046	0.965301	-0.01726	0.999482	1	0.011963	
2288339	4143255	0.798664	0.836187	-0.03752	0.997408	0.537416	0.003142	
4529154	1594982	0.99	0.980091	0.009909	1	1	0.01091	
1521510	1279599	0.127874	0.105505	0.022369	0.993261	0.278163	0.035038	
1939427	4388434	0.026667	0.014221	0.012446	1	1	0.008233	
1827695	930344	0.734957	0.696674	0.038283	0.994816	1	0.009422	
306010	566359	0.39675	0.425143	-0.02839	0.995853	0.111497	0.078282	
278049	7753273	0.323305	0.290194	0.033111	0.997408	0.412367	0.031728	
2377872	805469	0.116142	0.12761	-0.01147	0.973561	0.759379	0.291563	
3984476	4950058	0.558571	0.578588	-0.02002	0.999482	0.239414	0.205591	
1181141	1391285	0.218989	0.246303	-0.02731	0.998963	0.146165	0.044625	
2654112	1472896	0.411905	0.390216	0.021689	1	0.047156	0.188135	
3490312	17368459	0.809547	0.835664	-0.02612	0.971488	0.804225	0.038861	
3311560	12332109	0.583254	0.613455	-0.0302	0.996371	1	0.060694	
4660968	7208760	0	0.002844	-0.00284	1	1	0.015829	
4488038	2102301	0.664914	0.693052	-0.02814	0.997408	0.303325	0.065925	
3381858	262841	0.839713	0.861556	-0.02184	0.994816	0.32376	0.058964	
341439	9320281	0.692455	0.721714	-0.02926	0.996371	0.007007	0.060981	
3549810	17237515	0.680952	0.721843	-0.04089	1	0.502041	0.007843	
1660804	11023922	0.930887	0.908884	0.022003	0.998963	0.837508	0.012949	
4129336	2954143	0.817445	0.841297	-0.02385	0.999482	0.899402	0.052886	
906331	2058768	0.113924	0.139697	-0.02577	0.977709	0.392812	0.02145	
717961	544371	0.450429	0.483504	-0.03308	0.999482	0.735876	0.04469	
2371367	6445340	0.395138	0.365188	0.029951	0.999482	0.166732	0.063487	
388093	6018008	1	0.997156	0.002844	0.999482	1	0.015879	
2364396	6802458	0.370937	0.338084	0.032853	0.99689	0.546786	0.034358	
1888864	537220	0.098095	0.114025	-0.01593	0.998963	0.401238	0.111161	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2407361	16831134	0.974714	0.965301	0.009412	0.998963	0.619947	0.088175	
2295349	7912901	0.688095	0.653364	0.034731	0.998963	0.82308	0.022129	
2010950	11053689	0.924762	0.942417	-0.01766	0.998963	0.354015	0.031071	
870989	3829087	0.806006	0.796928	0.009077	0.999482	0.145038	0.483664	
2283440	10509550	0.75381	0.718999	0.034811	1	0.867519	0.014866	
3412660	17533020	0.857211	0.885405	-0.02819	0.997408	1	0.011287	
4055098	466611	0.343511	0.382253	-0.03874	0.998963	0.47517	0.013367	
1918178	10092970	0.165238	0.148464	0.016774	1	0.181805	0.155174	
705307	17365315	0.906578	0.882118	0.024459	0.998963	0.746283	0.014526	
3297488	2586085	0.186246	0.167812	0.018434	0.995334	1	0.147365	
3416566	12503217	0.915714	0.898064	0.017651	0.999482	0.853551	0.061743	
1519641	17495623	0.961429	0.944255	0.017174	1	1	0.012173	
934090	9572779	0.907958	0.924799	-0.01684	0.992224	0.468077	0.061369	
1352455	4664875	0.243269	0.214203	0.029066	0.988077	0.068683	0.038535	
1640173	9788810	0.434223	0.446408	-0.01219	0.998445	0.73291	0.452818	
4174830	7506072	0.665076	0.692833	-0.02776	0.998963	0.383454	0.069698	
2410261	10934664	0.665392	0.626849	0.038543	0.997926	0.516561	0.015511	
2428659	1414257	0.488095	0.455063	0.033033	1	0.586863	0.04361	
1877265	1492290	0.387512	0.375429	0.012083	0.997408	0.564446	0.440375	
1804150	8091511	0.881429	0.846811	0.034618	0.999482	0.602485	0.001897	
3260089	704293	0.838432	0.80879	0.029642	0.996371	0.913047	0.018602	
2262676	4746544	0.40792	0.444761	-0.03684	0.998445	0.733045	0.021456	
2440886	11792859	0.845714	0.868032	-0.02232	1	0.239938	0.050515	
2239797	11594522	0.796367	0.819113	-0.02275	0.997926	0.909819	0.082093	
803757	12161690	0.809569	0.782609	0.026961	0.994816	0.016679	0.037777	
4546209	6438885	0.219524	0.246303	-0.02678	1	0.524649	0.051241	
744981	17399334	0.886719	0.889277	-0.00256	0.975635	0.056912	0.803883	
2754408	1428224	0.92755	0.912301	0.015249	0.998963	0.833678	0.086333	
2284538	10509566	0.92381	0.902162	0.021648	1	0.178339	0.020404	
4097388	7043827	0.489524	0.455581	0.033943	0.999482	0.633868	0.038894	
182607	10483678	0.819828	0.784414	0.035414	0.999482	0.841831	0.00602	
2069887	10863047	0.700191	0.721843	-0.02165	0.999482	0.274679	0.146355	
1553051	17136741	0.868956	0.850521	0.018434	0.983411	0.594699	0.110517	
1726982		0.982841	0.981229	0.001612	0.999482	1	0.707962	
584821	3778798	0.6875	0.722096	-0.0346	0.998445	0.556735	0.022663	
532845	760196	0.193455	0.173387	0.020068	0.988595	0.813047	0.11649	
2244331	4631830	0.597235	0.571266	0.02597	0.998445	0.836136	0.106083	
801759	2694788	0.193994	0.169511	0.024483	0.999482	0.151	0.04864	
1153752	7529123	0.941376	0.951991	-0.01061	0.977709	0.715666	0.15064	
3351443	886543	0.749077	0.704973	0.044104	0.996371	0.251319	0.017569	
865545	524126	0.336667	0.299316	0.037351	0.998963	0.809458	0.014408	
4392046	2891164	0.456625	0.426052	0.030573	0.999482	0.190676	0.059126	
1079297	6667576	0.959009	0.976082	-0.01707	0.998963	0.394824	0.003656	
4224143	12947	0.204286	0.19397	0.010315	1	0.914094	0.423304	
4615613	7783815	0.993804	0.986348	0.007455	0.999482	1	0.019095	
3638536	17057202	0.971905	0.980638	-0.00873	0.999482	0.277985	0.082073	
4274205	7048004	0.583969	0.611392	-0.02742	0.884914	0.653592	0.105695	
275833	962107	0.649182	0.680412	-0.03123	0.991187	0.214049	0.044018	
4560786	2296590	0.685059	0.649942	0.035116	0.980301	0.411527	0.023598	
4560786	2296590	0.685059	0.649942	0.035116	0.980301	0.411527	0.023598	
4092190	7005678	0.872832	0.85168	0.021152	0.985485	0.787365	0.067836	
1146666		0.994059	0.995897	-0.00184	0.965785	1	0.437652	
4276284	6475564	0.488061	0.45496	0.033101	0.997408	0.63407	0.043933	
42081	2830021	0.632984	0.668373	-0.03539	0.999482	0.647918	0.02692	
2297273	17204499	0.869048	0.899317	-0.03027	1	1	0.004065	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
382303	17073830	0.953065	0.961054	-0.00799	0.993779	0.636403	0.221628	
3546450	17707941	0.803622	0.837315	-0.03369	0.999482	0.709869	0.008261	
4653500	1007252	0.819838	0.850185	-0.03035	0.932608	0.410408	0.016325	
3142597	2241271	0.75956	0.794185	-0.03462	0.99689	0.46921	0.012141	
1609816	17705450	0.772901	0.793515	-0.02061	0.998963	0.098901	0.11448	
1305201	2422239	0.435407	0.474286	-0.03888	0.995334	0.587648	0.019741	
1742588	17099562	0.967112	0.959044	0.008067	0.999482	1	0.191063	
3382335		0.88	0.859749	0.020251	0.998963	0.023915	0.063041	
92421	564779	0.479479	0.516999	-0.03752	0.960083	0.064059	0.023241	
1466068	4325488	0.261309	0.298963	-0.03765	0.988595	0.007541	0.009574	
897208	887475	0.502385	0.534169	-0.03178	0.998445	0.378577	0.053826	
3153443	17822086	0.95619	0.970421	-0.01423	1	0.540284	0.02329	
4255647	3772578	0.342407	0.373288	-0.03088	0.99689	0.312773	0.057264	
2069871	10863049	0.700191	0.721843	-0.02165	0.999482	0.274679	0.146355	
1552662	17680292	0.704131	0.669714	0.034416	0.993261	0.359161	0.021997	
897212	11829968	0.50478	0.535877	-0.0311	0.997408	0.541363	0.059636	
4457915	7301102	0.685468	0.704675	-0.01921	0.99689	0.417163	0.204598	
3637104	17333359	0.989524	0.990888	-0.00136	0.999482	1	0.671786	
1265675	13394969	0.918494	0.904328	0.014166	0.998963	1	0.124784	
2305722	3814231	0.75	0.722412	0.027588	0.998963	0.023076	0.050698	
3127731	12517077	0.598086	0.6374	-0.03931	0.996371	0.71492	0.014651	
3602324	12914170	0.419924	0.384966	0.034958	0.998963	0.569364	0.029577	
2723190	1390262	0.101622	0.125858	-0.02424	0.996371	0.537149	0.019491	
292408	17495626	0.856734	0.880708	-0.02397	0.99689	0.077124	0.033608	
3510779	257655	0.302392	0.329519	-0.02713	0.994816	0.646133	0.074719	
683958	17477654	0.734256	0.77221	-0.03795	0.998445	0.564792	0.007953	
3559899	16957814	0.996172	0.990286	0.005887	0.995334	1	0.025423	
2024309	11353424	0.421393	0.452607	-0.03121	0.958528	0.834968	0.062003	
1982933	6985324	0.547143	0.587229	-0.04009	0.998963	0.163575	0.012633	
662208	17279525	0.861905	0.883124	-0.02122	0.998963	0.624384	0.052696	
2449478	10869233	0.627546	0.614668	0.012878	0.979782	0.829165	0.421673	
2449478	10869233	0.627546	0.614668	0.012878	0.979782	0.829165	0.421673	
1650886	2555150	0.546279	0.521071	0.025208	0.998445	0.946115	0.121387	
2331523	11131140	0.205263	0.23918	-0.03392	0.99689	0.711689	0.012389	
824045	16975797	0.908008	0.930034	-0.02203	0.999482	0.017222	0.013361	
4111852	4385821	0.652024	0.690898	-0.03887	0.963712	0.469247	0.012588	
2022132	7302541	0.590952	0.561503	0.029449	0.999482	0.945399	0.067767	
3455281	13127425	0.668099	0.707859	-0.03976	0.997926	0.462843	0.008109	
1789873	1406437	0.82817	0.794931	0.03324	0.985485	0.297521	0.009159	
703252	1961519	0.995229	0.989192	0.006037	0.998963	1	0.032495	
92435	592109	0.587598	0.623384	-0.03579	0.967859	0.826954	0.029349	
4366014	6485832	0.382184	0.413813	-0.03163	0.995334	0.443579	0.048544	
1260394	17178439	0.952611	0.956019	-0.00341	0.983929	0.225179	0.625944	
725418	17604548	0.979504	0.99033	-0.01083	0.999482	1	0.009315	
1175114	17021236	0.540038	0.489738	0.0503	0.998445	0.946146	0.002358	
3602325	8036290	0.419924	0.385405	0.034519	0.998445	0.617778	0.031717	
870967	17481822	0.807619	0.798066	0.009553	1	0.173744	0.459008	
2863269	1877748	0.41897	0.384966	0.034005	0.998963	0.569364	0.034231	
3288367	1445995	0.884429	0.853042	0.031387	0.987558	0.057757	0.006543	
2160952	6491294	0.536877	0.574772	-0.03789	0.995334	0.213505	0.01907	
4368276	1732501	0.100764	0.123858	-0.02309	0.99689	0.534559	0.026156	
777450		0.890744	0.8626	0.028145	0.997926	0.014655	0.007606	
3709787		0.955195	0.957859	-0.00266	0.998963	0.195591	0.689421	
1349190	1424946	0.680249	0.711738	-0.03149	0.991187	0.137287	0.03733	
4618565	1114756	0.649809	0.612128	0.037681	0.996371	0.775699	0.017424	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
765491	6541987	0.439048	0.480091	-0.04104	1	0.251534	0.012966	
3192994	2941954	0.268827	0.307736	-0.03891	0.999482	0.014013	0.010079	
2432117	12335816	0.397521	0.434016	-0.03649	0.999482	0.680339	0.023296	
3107316	2292803	0.218182	0.244875	-0.02669	0.99689	0.524037	0.051662	
2093843	17440336	0.872259	0.84471	0.027549	0.999482	0.79775	0.016704	
4072719	1784582	0.615714	0.583144	0.032571	0.999482	0.578594	0.040924	
4416381	4674236	0.145853	0.121143	0.02471	0.997408	0.523723	0.030635	
1652416	9665778	0.10622	0.084668	0.021552	0.994816	1	0.02638	
2295323	13287	0.687321	0.652446	0.034875	0.999482	0.709925	0.021749	
2295323	13287	0.687321	0.652446	0.034875	0.999482	0.709925	0.021749	
4558890	38893	0.959009	0.969852	-0.01084	0.999482	0.554297	0.077043	
2091994	12829280	0.562977	0.525028	0.037949	0.998963	0.155511	0.021886	
1918982	1023650	0.395494	0.437714	-0.04222	0.994298	0.409737	0.009767	
1525545	12528356	0.984645	0.973112	0.011533	0.993261	1	0.012644	
4536923	2281921	0.795714	0.828783	-0.03307	1	0.633992	0.009648	
1708809	1790561	0.229008	0.258542	-0.02953	0.998445	0.334314	0.034045	
2262649	7074696	0.40792	0.445268	-0.03735	0.997926	0.732623	0.019617	
3152215	17674483	0.534615	0.554085	-0.01947	0.989632	0.890801	0.237373	
2852000	244966	0.644222	0.603193	0.041029	0.997408	0.778206	0.010249	
2295351	7090034	0.687798	0.653539	0.034259	0.997926	0.881667	0.023933	
2090650	1426427	0.494269	0.526286	-0.03202	0.996371	0.057676	0.0493	
1930976	1155965	0.502865	0.478335	0.02453	0.997408	0.786622	0.13876	
3587790	4705804	0.259295	0.302617	-0.04332	0.999482	0.150078	0.002964	
2295340	10786671	0.687798	0.653364	0.034434	0.998445	0.82308	0.023323	
2295340	10786671	0.687798	0.653364	0.034434	0.998445	0.82308	0.023323	
790553	7637898	0.219733	0.200796	0.018937	0.999482	0.400698	0.149049	
3702663	12948820	0.563576	0.595103	-0.03153	0.997408	0.401001	0.055064	
1754883	11602880	0.834128	0.805461	0.028667	0.999482	0.91421	0.023097	
617835	873491	0.809048	0.788155	0.020893	0.999482	0.105413	0.106454	
860004	17554172	0.931363	0.912301	0.019063	0.998963	0.296847	0.032237	
1536373	6570460	0.337981	0.303653	0.034328	0.993261	0.631594	0.026207	
1048702	2784822	0.019066	0.011973	0.007093	0.998445	1	0.080741	
4481465	1288542	0.492218	0.530697	-0.03848	0.972006	0.167563	0.018996	
4554541	1890170	0.323165	0.290102	0.033063	0.999482	0.512701	0.031525	
4428324	6002939	0.583413	0.603311	-0.0199	0.997926	0.359048	0.209655	
5470	1569360	0.746176	0.702055	0.044121	0.996371	0.035571	0.003485	
2258905	1530439	0.679218	0.702164	-0.02295	0.998963	1	0.136993	
66629	2833964	0.247619	0.219568	0.028051	1	1	0.045809	
3986299	1148609	0.199618	0.225143	-0.02552	0.996371	0.207506	0.061231	
1622923	8051129	0.47469	0.433371	0.041318	0.997926	0.099178	0.011653	
493760	977590	0.062381	0.080774	-0.01839	1	0.64697	0.02825	
3107268	9857356	0.217827	0.245165	-0.02734	0.999482	0.465786	0.046248	
264445	6915740	0.467757	0.4748	-0.00704	0.991187	0.135402	0.672489	
1427327	2629047	0.599134	0.632217	-0.03308	0.987558	0.124678	0.04345	
3844734	5905437	0.389467	0.407258	-0.01779	0.998963	0.799469	0.132572	
2216094	11254598	0.788571	0.76223	0.026342	1	0.114197	0.056074	
2396216	4894931	0.325513	0.295508	0.030005	0.968896	0.082775	0.050482	
1885815	1352950	0.388676	0.345361	0.043315	0.992742	2.39E-10	0.011955	
803745	7920474	0.386927	0.350797	0.03613	0.998445	0.60394	0.020613	
1912921	16918231	0.955067	0.935429	0.019638	0.995853	0.082585	0.008927	
3143327	9878126	0.677342	0.705815	-0.02847	0.99689	0.416235	0.062695	
3107222	6767136	0.218571	0.245444	-0.02687	0.999482	0.584577	0.050135	
3455247	16991143	0.66381	0.702503	-0.03869	1	0.294695	0.009922	
93620	2248918	0.99761	0.999426	-0.00182	0.993779	1	0.161961	
3107161	12695453	0.218571	0.246005	-0.02743	0.998445	0.466654	0.046042	

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1906162	13277254	0.190658	0.241714	-0.05106	0.997408	0.580878	0.000145	0.251
1906158	6474413	0.1915	0.241458	-0.04996	0.997926	0.713351	0.0002	0.332
1906160	13277524	0.191092	0.241419	-0.05033	0.994298	0.579592	0.00019	0.314
1906169	10958726	0.190909	0.23918	-0.04827	0.99689	0.926079	0.000312	0.469
1906163	1955185	0.1915	0.240297	-0.0488	0.99689	0.644133	0.000282	0.438
1906159	6474412	0.191683	0.239726	-0.04804	0.996371	0.780889	0.000343	0.507
3583851	578776	0.22022	0.281441	-0.06122	0.942457	0.795726	2.85E-05	0.056
3583851	578776	0.22022	0.281441	-0.06122	0.942457	0.795726	2.85E-05	0.056
78896	6517442	0.339847	0.282212	0.057635	0.998445	0.50486	0.000195	0.322
3449500	3762611	0.934286	0.908987	0.025298	1	0.100466	0.003192	1
3564463	17405217	0.627202	0.689858	-0.06266	0.969414	0.422099	8.56E-05	0.162
3564517	17484235	0.629541	0.692132	-0.06259	0.99689	0.579008	7.58E-05	0.141
3869888	12559898	0.670552	0.623315	0.047237	0.99689	1	0.020735	1
3564788	16969968	0.616778	0.68187	-0.06509	0.998445	0.312286	4.14E-05	0.083
3564788	16969968	0.616778	0.68187	-0.06509	0.998445	0.312286	4.14E-05	0.083
4545409	2595211	0.772581	0.708651	0.063929	0.88958	0.195882	1.95E-05	0.035
3564462	17483548	0.630601	0.692264	-0.06166	0.999482	0.527319	9.27E-05	0.169
5523025	3762607	0.933746	0.910125	0.023621	0.999482	0.29869	0.006038	1
515694	2283029	0.8551	0.812287	0.042813	0.999482	1	0.000391	0.552
2221869	10508649	0.995714	0.98861	0.007104	0.999482	0.103644	0.014977	1
2088029	17041074	0.729048	0.738339	-0.00929	1	0.793325	0.521167	1
3564773	1051730	0.617816	0.681507	-0.06369	0.995334	0.24322	5.85E-05	0.111
4540158	3021529	0.86021	0.854214	0.005996	0.998445	1	0.604562	1
3564466	17483686	0.626787	0.686219	-0.05943	0.998963	0.433302	0.000173	0.301
4014524	6772197	0.159676	0.166857	-0.00718	0.997408	0.014349	0.56423	1
3564832	17487223	0.593511	0.656036	-0.06252	0.998445	0.203734	9.98E-05	0.182
1435501	2767	0.612595	0.659453	-0.04686	0.998445	0.408901	0.003074	1
1435501	2767	0.612595	0.659453	-0.04686	0.998445	0.408901	0.003074	1
3362992	2157293	0.702141	0.657695	0.044446	0.975635	0.411286	0.016624	1
105391	1206549	0.861429	0.823462	0.037966	0.999482	0.130733	0.001727	0.979
4124501	1942486	0.64061	0.688851	-0.04824	0.999482	0.693938	0.001841	0.984
1723519	17792911	0.640476	0.688497	-0.04802	0.999482	0.753583	0.001953	0.988
105417	807429	0.861509	0.824032	0.037477	0.997926	0.12919	0.001989	0.988
4271580	7627266	0.15	0.159272	-0.00927	1	0.031921	0.445722	1
7933520	11174811	0.86333	0.860116	0.003215	0.98704	0.777057	0.78114	1
6351658	11731576	0.915157	0.889647	0.02551	0.999482	0.122463	0.007315	1
2270689	4639876	0.305344	0.276256	0.029088	0.997408	0.447436	0.051245	1
3449497	2280072	0.915157	0.890091	0.025066	0.998963	0.164207	0.008572	1
1752798	1185027	0.458373	0.402286	0.056087	0.995334	0.778521	0.000581	0.706
1906267	5005909	0.161553	0.198513	-0.03696	0.993779	0.002769	0.004378	1
4600058	9764	0.714218	0.757697	-0.04348	0.997926	0.232215	0.00349	1
3564617	8034191	0.618547	0.676941	-0.05839	0.996371	0.643142	0.000243	0.394
3564812	637137	0.192564	0.241733	-0.04917	0.998445	0.358156	0.000246	0.4
598296	10246819	0.449664	0.457998	-0.00833	0.991187	0.245363	0.614295	1
4619535	3803107	0.85576	0.853318	0.002442	0.980819	0.495108	0.837822	1
3988043	6700216	0.993276	0.996571	-0.0033	0.993261	1	0.162978	1
1435497	3791729	0.635496	0.681507	-0.04601	0.997408	0.483954	0.003318	1
1435497	3791729	0.635496	0.681507	-0.04601	0.997408	0.483954	0.003318	1
2258179	2271271	0.244995	0.289294	-0.0443	0.998963	0.367001	0.00273	0.999
2258179	2271271	0.244995	0.289294	-0.0443	0.998963	0.367001	0.00273	0.999
2258179	2271271	0.244995	0.289294	-0.0443	0.998963	0.367001	0.00273	0.999
2921437	2035268	0.939048	0.927107	0.011941	0.999482	0.802091	0.142565	1
3869893	17259295	0.702636	0.665547	0.037089	0.998445	1	0.059538	1
515904	7808549	0.164279	0.199201	-0.03492	0.99689	0.916055	0.00633	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3448989	279858	0.552605	0.592683	-0.04008	0.942457	0.514998	0.015748	1
408126	2180529	0.709119	0.735669	-0.02655	0.901503	0.003314	0.095861	1
660340	7877	0.741182	0.697143	0.044039	0.997408	0.149963	0.0025	0.996
2268594	2242256	0.21381	0.254276	-0.04047	0.998963	1	0.003747	1
4090194	6320	0.717765	0.709714	0.008051	0.996371	0.511412	0.588104	1
414139	13433293	0.844317	0.801253	0.043064	0.997926	0.6714	0.000589	0.708
5974942	10877969	0.899691	0.900507	-0.00082	0.912908	0.025726	0.939024	1
4127583	1472828	0.785578	0.744014	0.041564	0.997408	1	0.00278	1
1756365	11216799	0.912136	0.898593	0.013543	0.976153	0.851867	0.161091	1
4591337	6589377	0.369628	0.361048	0.00858	0.997926	0.883714	0.592087	1
3869898	5911548	0.671779	0.638198	0.033581	0.997408	0.793762	0.134508	1
4527910	1061418	0.867116	0.880296	-0.01318	0.998445	0.586986	0.046975	1
7237789	3025382	0.90332	0.88019	0.023131	0.967859	0.870209	0.028886	1
3869914	4825841	0.883507	0.909396	-0.02589	0.998963	0.800168	0.113207	1
2570284	905739	0.811546	0.765945	0.0456	0.998445	0.300047	0.0006	0.718
1906295	2304297	0.790076	0.750571	0.039506	0.997408	0.206157	0.003712	1
632473	13128368	0.706387	0.754846	-0.04846	0.998445	0.649394	0.00095	0.876
4775809	4531	0.927412	0.905006	0.022406	0.998445	0.692962	0.015082	1
1435635	2276560	0.227143	0.263936	-0.03679	1	0.165444	0.008906	1
1752374	4245150	0.368522	0.36	0.008522	0.993779	1	0.595753	1
4508970	742351	0.873448	0.843216	0.030232	0.997408	0.200259	0.006621	1
7198756	592955	0.456123	0.420534	0.03559	0.984448	0.529654	0.03189	1
7241763	4802100	0.897521	0.918089	-0.02057	0.999482	0.111428	0.028975	1
790047	175634	0.860076	0.857631	0.002445	0.997926	0.680498	0.833702	1
1752375	17602038	0.629665	0.638794	-0.00913	0.997408	0.941858	0.568957	1
5114454	3760657	0.896667	0.918089	-0.02142	1	0.111428	0.02315	1
1906300	892413	0.818398	0.790764	0.027635	0.998445	0.102064	0.02988	1
4560282	4841601	0.650143	0.655467	-0.00532	0.998963	0.940425	0.731917	1
4560282	4841601	0.650143	0.655467	-0.00532	0.998963	0.940425	0.731917	1
1111262	12029542	0.764286	0.798975	-0.03469	0.999482	1	0.010637	1
4660959	742350	0.87166	0.841116	0.030544	0.998445	0.25443	0.006356	1
2814813	5529	0.999048	0.993743	0.005305	1	0.030984	0.009266	1
3448925	573400	0.553861	0.584282	-0.03042	0.998963	0.944689	0.06245	1
1865009	1293320	0.655534	0.655822	-0.00029	0.997408	0.822601	0.985191	1
1865009	1293320	0.655534	0.655822	-0.00029	0.997408	0.822601	0.985191	1
632472	13146211	0.709213	0.756849	-0.04764	0.994298	0.854265	0.001097	0.91
2411758	7859993	0.953677	0.931093	0.022584	0.997926	0.293947	0.003034	1
1876293	4271002	0.87	0.888952	-0.01895	0.999482	0.085588	0.082113	1
515715	2237635	0.635844	0.592825	0.043019	0.998963	0.093227	0.006302	1
3027989	332012	0.821429	0.851936	-0.03051	0.999482	0.010956	0.014461	1
337622	9390374	0.680952	0.721843	-0.04089	1	0.093339	0.007555	1
1906305	10087172	0.817445	0.789954	0.027491	0.997926	0.22107	0.032073	1
4090221	1657273	0.693117	0.68187	0.011247	0.99689	0.640423	0.461952	1
3603994	17228571	0.605338	0.654897	-0.04956	0.998963	0.55022	0.001568	0.974
2265226	12413039	0.767619	0.7281	0.039519	1	0.394633	0.006492	1
2265226	12413039	0.767619	0.7281	0.039519	1	0.394633	0.006492	1
2268666	2675674	0.780952	0.742321	0.038632	1	0.860229	0.005994	1
2268660	2688617	0.781429	0.74289	0.038539	1	0.929624	0.006111	1
3490801	4148276	0.74619	0.760251	-0.01406	0.999482	0.194652	0.308344	1
1546737	1488	0.383111	0.342255	0.040856	0.998445	0.652931	0.010023	1
835771	10491329	0.849857	0.870729	-0.02087	0.998963	0.454939	0.069387	1
4122441	2070232	0.927004	0.926538	0.000466	0.998445	0.616375	0.956233	1
4122441	2070232	0.927004	0.926538	0.000466	0.998445	0.616375	0.956233	1
4090415	893109	0.692607	0.680233	0.012374	0.978745	0.937548	0.419187	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
346359	510769	0.728531	0.763936	-0.03541	0.998963	0.019039	0.012856	1
632606	10488895	0.978011	0.968073	0.009938	0.99689	1	0.058603	1
4253707	960385	0.682297	0.722349	-0.04005	0.996371	0.09185	0.009001	1
1876300	1799931	0.971429	0.984642	-0.01321	1	1	0.007318	1
2268663	2675676	0.780534	0.742321	0.038214	0.998963	0.860229	0.006593	1
6127569	1383914	0.508596	0.532992	-0.0244	0.998445	0.006679	0.144808	1
4149780	684513	0.82	0.778474	0.041526	0.999482	0.493139	0.00149	0.969
3564772	3743078	0.169184	0.207407	-0.03822	0.934681	0.005426	0.002553	0.997
3564772	3743078	0.169184	0.207407	-0.03822	0.934681	0.005426	0.002553	0.997
5052913	1229982	0.176125	0.185748	-0.00962	0.973561	0.572358	0.462027	1
4149788	3813567	0.172084	0.206956	-0.03487	0.99689	0.051047	0.005867	1
510803	17676277	0.764395	0.807692	-0.0433	0.991706	0.585072	0.001547	0.972
408213	2328231	0.69378	0.721264	-0.02748	0.992742	0.354584	0.068622	1
408213	2328231	0.69378	0.721264	-0.02748	0.992742	0.354584	0.068622	1
1906307	1072003	0.835714	0.803754	0.03196	1	0.108382	0.009784	1
660359	16864387	0.872611	0.841139	0.031472	0.897875	0.5063	0.007878	1
7354612	8067254	0.861429	0.891354	-0.02993	1	0.115201	0.006736	1
7354612	8067254	0.861429	0.891354	-0.02993	1	0.115201	0.006736	1
7354612	8067254	0.861429	0.891354	-0.02993	1	0.115201	0.006736	1
4429999	6045733	0.660134	0.653096	0.007038	0.994298	0.70872	0.65383	1
2757287	2572324	0.311538	0.273095	0.038444	0.988077	0.304081	0.010083	1
1864995	3258	0.657116	0.664368	-0.00725	0.993779	0.703865	0.637726	1
1864995	3258	0.657116	0.664368	-0.00725	0.993779	0.703865	0.637726	1
1546764	4709491	0.142994	0.116494	0.026501	0.989632	0.41303	0.016232	1
5764035	3218711	0.990944	0.994312	-0.00337	0.999482	0.025408	0.248337	1
5764035	3218711	0.990944	0.994312	-0.00337	0.999482	0.025408	0.248337	1
4767136	4559074	0.055238	0.036405	0.018833	1	1	0.006103	1
4071759	2314379	0.580939	0.542383	0.038556	0.993779	0.682521	0.019149	1
5766001	3756923	0.995238	0.990888	0.00435	0.999482	1	0.103739	1
2043438	2958153	0.266221	0.283105	-0.01688	0.997408	0.453551	0.244563	1
1208733	2010033	0.721525	0.677252	0.044273	0.986003	0.756395	0.003146	1
4784253	4953	0.967619	0.951595	0.016025	0.999482	0.71602	0.012296	1
4779534	4952	0.967619	0.95165	0.015969	1	0.716008	0.012549	1
828163	17633288	0.994275	0.998862	-0.00459	0.998963	1	0.019848	1
896573	2240867	0.828394	0.820046	0.008348	0.997408	1	0.499275	1
896573	2240867	0.828394	0.820046	0.008348	0.997408	1	0.499275	1
598285	1378650	0.449904	0.48037	-0.03047	0.98704	1	0.064774	1
2057491	11179002	0.718303	0.724943	-0.00664	0.998963	0.672307	0.650668	1
1435618	6749955	0.231173	0.267349	-0.03618	0.999482	0.547298	0.011014	1
835776	17060112	0.848077	0.868542	-0.02046	0.990669	0.552637	0.078685	1
1752395	12361003	0.65205	0.662486	-0.01044	0.998445	0.93984	0.498663	1
636828	17636651	0.956023	0.935281	0.020742	0.994816	0.083019	0.005617	1
2057498	10879345	0.442748	0.443686	-0.00094	0.998963	0.075974	0.954272	1
3328131	4958469	0.67765	0.722096	-0.04445	0.997926	0.400259	0.003361	1
1906292	9298628	0.812857	0.78157	0.031287	1	0.374097	0.0164	1
1906293	9298629	0.815062	0.783352	0.03171	0.998445	0.273176	0.014003	1
1673510	10835210	0.566794	0.527936	0.038858	0.997926	0.456426	0.018359	1
660330	7517376	0.872587	0.844074	0.028513	0.987558	0.365963	0.011236	1
728652	13001457	0.712776	0.748856	-0.03608	0.992742	0.857579	0.014424	1
6881361	8119991	0.694737	0.720252	-0.02551	0.994816	0.355891	0.090392	1
6881361	8119991	0.694737	0.720252	-0.02551	0.994816	0.355891	0.090392	1
1722770	10501681	0.922381	0.944824	-0.02244	1	0.510665	0.006175	1
632454	11098193	0.774286	0.734357	0.039928	1	0.02482	0.004261	1
998036	9787309	0.273594	0.283352	-0.00976	0.998445	0.06713	0.500951	1
3433849	7672511	0.68381	0.662685	0.021125	1	0.082478	0.165524	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
105372	2854643	0.379771	0.351536	0.028235	0.998963	0.605322	0.073192	1
1111214	1218585	0.225621	0.236902	-0.01128	0.997408	0.400517	0.415359	1
1111214	1218585	0.225621	0.236902	-0.01128	0.997408	0.400517	0.415359	1
1673498	11030101	0.544335	0.511876	0.032458	0.962675	0.629995	0.052955	1
1673498	11030101	0.544335	0.511876	0.032458	0.962675	0.629995	0.052955	1
679157	570059	0.875364	0.856647	0.018716	0.982893	0.578773	0.095099	1
1366690	997508	0.377874	0.411832	-0.03396	0.99689	0.727703	0.030418	1
3328132	4958467	0.67765	0.722032	-0.04438	0.99689	0.399671	0.003472	1
2039268	12301486	1	0.998292	0.001708	0.999482	1	0.061521	1
408220	7271350	0.694073	0.718607	-0.02453	0.996371	0.358064	0.103318	1
408220	7271350	0.694073	0.718607	-0.02453	0.996371	0.358064	0.103318	1
2088011	11114085	0.843661	0.84471	-0.00105	0.999482	0.608367	0.930482	1
515510	17286505	0.509048	0.554795	-0.04575	0.998445	0.218118	0.006184	1
611923	228589	0.545802	0.578107	-0.03231	0.997926	0.333348	0.050373	1
611923	228589	0.545802	0.578107	-0.03231	0.997926	0.333348	0.050373	1
1888822	13274396	0.230696	0.255695	-0.025	0.998963	0.534853	0.076359	1
3328134	6885505	0.62	0.663626	-0.04363	0.998963	0.405266	0.005619	1
3007596	1801260	0.724451	0.730375	-0.00592	0.998445	0.441124	0.683174	1
3007596	1801260	0.724451	0.730375	-0.00592	0.998445	0.441124	0.683174	1
2345260	17527765	0.826501	0.83656	-0.01006	0.998963	0.901702	0.417869	1
4526667	761459	0.013333	0.022184	-0.00885	1	1	0.037017	1
3328127	17712679	0.63279	0.675429	-0.04264	0.994298	0.189667	0.006792	1
3449498	16859834	0.610471	0.64261	-0.03214	0.988595	0.553841	0.043355	1
3430882	2619361	0.290952	0.252278	0.038674	0.999482	0.015464	0.007187	1
3328133	17656349	0.462381	0.418658	0.043723	1	0.579938	0.006746	1
515495	1541329	0.472779	0.513683	-0.0409	0.997408	0.036186	0.015638	1
408182	2236158	0.693994	0.71754	-0.02355	0.998963	0.405745	0.117215	1
4008516	2099489	0.802972	0.783105	0.019867	0.994816	0.485877	0.133294	1
4008516	2099489	0.802972	0.783105	0.019867	0.994816	0.485877	0.133294	1
4008516	2099489	0.802972	0.783105	0.019867	0.994816	0.485877	0.133294	1
632483	17531033	0.770515	0.732082	0.038433	0.998963	0.039316	0.006116	1
1888837	4732682	0.511939	0.530717	-0.01878	0.998445	0.017922	0.259454	1
3455358	17776975	0.7245	0.730375	-0.00588	0.999482	0.441124	0.685847	1
535755	16143	0.722593	0.743166	-0.02057	0.998963	0.426458	0.156849	1
6096417	13355500	0.999043	0.99656	0.002483	0.993779	1	0.097502	1
6096417	13355500	0.999043	0.99656	0.002483	0.993779	1	0.097502	1
1722137	10765551	0.478074	0.515446	-0.03737	0.99689	0.838999	0.022659	1
4583199	2140650	0.263133	0.235495	0.027638	0.998445	0.224159	0.050549	1
4079419	1589872	0.804576	0.769625	0.034951	0.999482	0.086289	0.009361	1
3490732	6843815	0.228095	0.218109	0.009986	0.999482	0.374433	0.468892	1
1581467	39327	0.823473	0.801479	0.021994	0.998963	0.524417	0.083417	1
105381	698423	0.375607	0.347093	0.028514	0.979264	0.499189	0.072537	1
4193165	3026681	0.970392	0.964082	0.006309	0.997408	0.307356	0.27783	1
4225105	1889567	0.674474	0.708238	-0.03376	0.995334	0.413307	0.026385	1
2409445	9840967	0.734986	0.709898	0.025088	0.999482	0.163664	0.082782	1
408228	8120041	0.694656	0.718928	-0.02427	0.997926	0.357841	0.106754	1
408228	8120041	0.694656	0.718928	-0.02427	0.997926	0.357841	0.106754	1
2329981	7611935	0.310772	0.341116	-0.03034	0.998963	0.880943	0.044969	1
4189937	2236196	0.269569	0.234706	0.034864	0.970451	1	0.015284	1
4034992	1349350	0.681905	0.657565	0.024339	1	0.060924	0.110125	1
5083712	2233263	0.979749	0.967779	0.01197	0.988077	1	0.020111	1
690100	7527518	0.725883	0.710706	0.015177	0.997926	0.070688	0.295592	1
3972352	1042640	0.191794	0.216155	-0.02436	0.998963	0.164272	0.069696	1
3972352	1042640	0.191794	0.216155	-0.02436	0.998963	0.164272	0.069696	1
3972352	1042640	0.191794	0.216155	-0.02436	0.998963	0.164272	0.069696	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
3972352	1042640	0.191794	0.216155	-0.02436	0.998963	0.164272	0.069696	1
3972352	1042640	0.191794	0.216155	-0.02436	0.998963	0.164272	0.069696	1
3972352	1042640	0.191794	0.216155	-0.02436	0.998963	0.164272	0.069696	1
3972352	1042640	0.191794	0.216155	-0.02436	0.998963	0.164272	0.069696	1
3972352	1042640	0.191794	0.216155	-0.02436	0.998963	0.164272	0.069696	1
3455181	2070062	0.723231	0.728736	-0.0055	0.993261	0.440163	0.705949	1
4374888	2057106	0.013333	0.021689	-0.00836	0.998445	1	0.047691	1
5864646	6984200	0.746425	0.714448	0.031977	0.999482	0.136392	0.030065	1
901139	890	0.465616	0.517123	-0.05151	0.99689	0.31014	0.001695	0.979
408215	12480850	0.694762	0.718679	-0.02392	0.999482	0.358957	0.111577	1
408215	12480850	0.694762	0.718679	-0.02392	0.999482	0.358957	0.111577	1
2271177	521773	0.178435	0.148233	0.030203	0.997926	0.227198	0.011725	1
3470418	1048004	0.7245	0.731777	-0.00728	0.998963	0.547108	0.616595	1
3470418	1048004	0.7245	0.731777	-0.00728	0.998963	0.547108	0.616595	1
3268522		0.933962	0.946292	-0.01233	0.899948	0.159843	0.121991	1
3268509	17425932	0.903718	0.928815	-0.0251	0.998963	0.796014	0.006073	1
8314531	11499823	0.899524	0.894198	0.005326	1	0.720092	0.594198	1
2345312	17527352	0.825714	0.833333	-0.00762	1	0.715369	0.542218	1
430275	910079	0.735912	0.725513	0.0104	0.997926	0.350991	0.476062	1
3430875	2583985	0.291059	0.253464	0.037595	0.982374	0.039022	0.009671	1
4434018	6455701	0.141905	0.118451	0.023454	0.999482	1	0.031241	1
408249	6111780	0.694762	0.71843	-0.02367	1	0.504594	0.114282	1
2622020	990087	0.291429	0.254266	0.037162	1	0.025924	0.009838	1
7722488	7052352	0.999524	0.998294	0.00123	1	1	0.243042	1
1995668	17248206	0.610105	0.602958	0.007147	0.999482	0.397799	0.651252	1
4016401	2083668	0.614772	0.624196	-0.00942	0.890617	0.194201	0.567947	1
1111213	1218584	0.237619	0.243458	-0.00584	1	0.272877	0.677641	1
1111213	1218584	0.237619	0.243458	-0.00584	1	0.272877	0.677641	1
328518	2024589	0.893505	0.86488	0.028625	0.997408	0.562899	0.007864	1
3430876	2619360	0.29123	0.253986	0.037243	0.998963	0.025983	0.009735	1
3411535	11930100	0.933683	0.930603	0.00308	0.998963	0.181747	0.71408	1
4190166	4809300	0.095329	0.073462	0.021866	0.998963	0.459459	0.017033	1
835040	4705115	0.550096	0.594186	-0.04409	0.983929	0.230325	0.007224	1
835040	4705115	0.550096	0.594186	-0.04409	0.983929	0.230325	0.007224	1
7353343	7668282	0.995706	0.987486	0.00822	0.998963	1	0.004859	1
814089	8974	0.400763	0.40707	-0.00631	0.997926	0.726552	0.696436	1
814089	8974	0.400763	0.40707	-0.00631	0.997926	0.726552	0.696436	1
2707613	1372516	0.291031	0.254556	0.036475	0.998445	0.025904	0.011259	1
4354195	2288741	0.228095	0.218999	0.009096	1	0.489696	0.509903	1
1510988	17504587	0.789524	0.815131	-0.02561	1	0.371049	0.051309	1
4482734	3757021	0.253333	0.224059	0.029274	0.998963	0.381898	0.035306	1
430276	910080	0.74381	0.73322	0.01059	1	0.300577	0.463835	1
5752590	1801682	0.822658	0.825542	-0.00288	0.99689	0.293475	0.818852	1
5752590	1801682	0.822658	0.825542	-0.00288	0.99689	0.293475	0.818852	1
4231355	677652	1	0.997717	0.002283	0.998445	1	0.030648	1
573242	3808033	0.84	0.817406	0.022594	1	0.821984	0.066179	1
679143	506070	0.877041	0.857471	0.01957	0.990669	0.781129	0.080205	1
6519803	1371466	0.378932	0.41106	-0.03213	0.998445	0.780644	0.040997	1
1042971	17391717	0.6875	0.689066	-0.00157	0.998445	0.270251	0.918519	1
535757	16142	0.724023	0.742597	-0.01857	0.998963	0.426591	0.200018	1
1625167	1070488	0.567813	0.611301	-0.04349	0.99689	0.618782	0.007336	1
598272	8191992	0.463263	0.462457	0.000806	0.998963	0.278155	0.961145	1
4764709	7860945	0.958969	0.940639	0.01833	0.997408	0.223008	0.010101	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
4448218	6802490	0.689885	0.645216	0.044669	0.998445	0.768094	0.003759	1
4222559	2235749	0.736842	0.725143	0.011699	0.995334	0.350599	0.423008	1
133251	16998937	1	0.998292	0.001708	0.998445	1	0.061768	1
1111217	1061122	0.230219	0.234589	-0.00437	0.997926	0.396716	0.753091	1
1111217	1061122	0.230219	0.234589	-0.00437	0.997926	0.396716	0.753091	1
3412509	2298753	0.9	0.894077	0.005923	0.999482	0.720209	0.55343	1
2043396	2958155	0.337941	0.36545	-0.02751	0.998445	0.245049	0.076528	1
4815191	16149	0.7245	0.741438	-0.01694	0.997926	0.480674	0.242241	1
2356391	747456	0.59208	0.59532	-0.00324	0.997408	1	0.839986	1
611929	625120	0.547025	0.579793	-0.03277	0.991706	0.265837	0.048209	1
611929	625120	0.547025	0.579793	-0.03277	0.991706	0.265837	0.048209	1
3688463	12654098	0.703333	0.722981	-0.01965	1	0.238343	0.177619	1
740440	6734847	0.236164	0.261661	-0.0255	0.998963	0.86181	0.073117	1
4232865	740602	0.997132	0.990899	0.006233	0.997926	1	0.011501	1
4232865	740602	0.997132	0.990899	0.006233	0.997926	1	0.011501	1
4756526	3803431	0.953889	0.944142	0.009747	0.847071	0.159263	0.199302	1
490835	17156443	0.994286	0.999431	-0.00514	0.999482	1	0.006723	1
515696	17155576	0.831262	0.797714	0.033548	0.995853	0.754164	0.008531	1
4042442	4478137	0.381566	0.344141	0.037425	0.998445	0.708642	0.019478	1
4765715	1805065	0.979048	0.98918	-0.01013	0.999482	1	0.015598	1
7705918	12056414	0.904194	0.924829	-0.02063	0.998963	0.810261	0.023542	1
4755293	6045819	0.890848	0.881115	0.009734	0.999482	1	0.348115	1
2936134	2028535	0.281558	0.246753	0.034805	0.964749	0.020887	0.016623	1
4767125	6747673	0.525743	0.5	0.025743	0.958528	0.032435	0.11676	1
2387916	2938279	0.118684	0.108077	0.010607	0.999482	0.217266	0.306916	1
4633195	2273505	0.942535	0.956344	-0.01381	0.862623	0.043253	0.083811	1
1132757	10912675	0.7343	0.697809	0.036491	0.986003	0.076839	0.013266	1
814077	7219198	0.715649	0.742597	-0.02695	0.998445	0.158722	0.060809	1
814077	7219198	0.715649	0.742597	-0.02695	0.998445	0.158722	0.060809	1
814077	7219198	0.715649	0.742597	-0.02695	0.998445	0.158722	0.060809	1
2622021	990088	0.290353	0.254266	0.036087	0.998445	0.025924	0.012272	1
535756	16478	0.724023	0.742303	-0.01828	0.998445	0.378552	0.206784	1
4035616	2288740	0.590952	0.610034	-0.01908	0.998963	0.256293	0.233908	1
647028	457490	0.418816	0.411162	0.007654	0.997926	0.209641	0.634967	1
8298454	3803189	0.866765	0.873081	-0.00632	0.966304	0.16518	0.580048	1
2302672	3750811	0.672115	0.705882	-0.03377	0.988595	0.566962	0.027677	1
2409435	17295246	0.77177	0.744596	0.027174	0.997408	0.595238	0.049543	1
3998465	2711285	0.657336	0.626874	0.030462	0.986522	0.127852	0.052873	1
7306849	7275707	0.41866	0.376993	0.041667	0.99689	0.314428	0.011531	1
8220514	12205732	0.946667	0.96132	-0.01465	1	1	0.030758	1
3412521	17586023	0.899905	0.893629	0.006276	0.999482	0.721526	0.530338	1
1625149	1448257	0.939539	0.955849	-0.01631	0.992224	0.682314	0.025912	1
1366638	12614399	0.788571	0.755125	0.033446	0.999482	0.200878	0.015446	1
4020275	1137138	0.211856	0.219653	-0.0078	0.981856	0.551434	0.574992	1
4537692	1432324	0.594412	0.611623	-0.01721	0.988595	0.432073	0.287633	1
2039235	17126078	0.924214	0.901481	0.022733	0.998963	1	0.014043	1
1111218	1218587	0.234509	0.240046	-0.00554	0.999482	0.310548	0.690971	1
4474895	8177232	0.999047	0.997725	0.001322	0.999482	0.003414	0.375182	1
1255685	10201401	0.115201	0.127574	-0.01237	0.995334	0.5452	0.254539	1
4614401	6476878	0.309065	0.341801	-0.03274	0.986522	0.820712	0.033474	1
4056387	1372144	0.953765	0.955631	-0.00187	0.999482	0.686668	0.785667	1
414144	16994553	0.86654	0.832765	0.033775	0.999482	0.467026	0.003916	1
7163466	12619604	0.788847	0.755404	0.033443	0.999482	0.171852	0.01544	1
4775001	3026160	0.88381	0.872292	0.011518	0.998963	1	0.274472	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
1187191	6689267	0.884286	0.859179	0.025107	0.998963	0.264378	0.019447	1
6761913	1235416	0.958571	0.973235	-0.01466	0.999482	0.468699	0.01439	1
3490706	17617467	0.748095	0.761661	-0.01357	1	0.780666	0.332406	1
6353598	12199465	0.644305	0.609896	0.034409	0.987558	0.669267	0.028473	1
490796	10245639	0.135367	0.158314	-0.02295	0.998963	0.375066	0.043752	1
4448666	6808569	0.805449	0.800343	0.005106	0.995334	0.525028	0.699297	1
367854	1340272	0.18021	0.171445	0.008765	0.994298	0.339395	0.472858	1
3490305	1849536	0.779512	0.76612	0.013393	0.973561	0.180412	0.343044	1
901009	1468844	0.541508	0.586286	-0.04478	0.99689	0.577156	0.006161	1
3449056	6833452	0.454155	0.424915	0.02924	0.998445	0.580799	0.074543	1
4158827	8059266	0	0.002275	-0.00228	0.999482	1	0.031013	1
3455302	10462028	0.671429	0.67463	-0.0032	1	0.700823	0.835271	1
3455302	10462028	0.671429	0.67463	-0.0032	1	0.700823	0.835271	1
660766	10903	0.788095	0.817198	-0.0291	0.999482	0.367145	0.025133	1
660766	10903	0.788095	0.817198	-0.0291	0.999482	0.367145	0.025133	1
515568	10247465	0.444656	0.492009	-0.04735	0.997408	0.379468	0.003843	1
535763	16138	0.722328	0.738041	-0.01571	0.998445	0.295841	0.278795	1
1366643	2075703	0.78907	0.756293	0.032777	0.993779	0.142034	0.018016	1
2333236	746278	0.740581	0.778934	-0.03835	0.880249	0.174457	0.012576	1
4750374	362936	0.976168	0.986872	-0.0107	0.997926	1	0.017267	1
4233141	3125	0.858571	0.86405	-0.00548	1	0.391976	0.630744	1
1510994	9294425	0.642857	0.608646	0.034211	1	0.571018	0.027793	1
367391	17062395	0.879524	0.844533	0.034991	0.999482	0.797951	0.001897	0.986
2270686	2288839	0.254528	0.222857	0.031671	0.997408	0.696457	0.022743	1
1366637	16850331	0.78837	0.755404	0.032966	0.999482	0.171852	0.016974	1
6564163	12205364	0.641346	0.609518	0.031828	0.991187	0.722088	0.041951	1
1673520	7104207	0.532983	0.501716	0.031267	0.995334	0.892491	0.057161	1
2057477	11178999	0.77177	0.771071	0.0007	0.99689	0.503362	0.959093	1
2039183	2029674	0.064824	0.072241	-0.00742	0.999482	0.799692	0.367315	1
1722189	308779	0.448999	0.485177	-0.03618	0.998445	0.457459	0.027813	1
820285	16940686	0.994944	0.998534	-0.00359	0.81493	1	0.095	1
820285	16940686	0.994944	0.998534	-0.00359	0.81493	1	0.095	1
4497601	2099715	0.922072	0.901392	0.02068	0.982374	1	0.027587	1
6251431	7733450	0.953883	0.935335	0.018549	0.982893	1	0.013228	1
2043433	2290893	0.338418	0.365252	-0.02683	0.995853	0.165214	0.085047	1
2409762	1254401	0.076667	0.10182	-0.02515	1	0.015561	0.008526	1
3688473	13161689	0.704286	0.721209	-0.01692	0.998963	0.355352	0.246483	1
2302671	1042606	0.331553	0.29664	0.034914	0.981337	0.568116	0.023102	1
2557399	3898322	0.988561	0.979499	0.009062	0.998963	1	0.024478	1
5321220	10016918	0.999522	0.996583	0.002938	0.99689	1	0.035542	1
1888844	573542	0.038095	0.054608	-0.01651	1	0.321767	0.016408	1
4023739	4680237	0.461982	0.47264	-0.01066	0.828927	0.087842	0.552797	1
1435514	2853462	0.251908	0.230944	0.020964	0.998963	0.447343	0.137145	1
1435514	2853462	0.251908	0.230944	0.020964	0.998963	0.447343	0.137145	1
1435514	2853462	0.251908	0.230944	0.020964	0.998963	0.447343	0.137145	1
1435514	2853462	0.251908	0.230944	0.020964	0.998963	0.447343	0.137145	1
3670722	4887342	0.462786	0.496005	-0.03322	0.997408	0.786903	0.045481	1
835055	887348	0.550095	0.589875	-0.03978	0.998963	0.163273	0.014844	1
835055	887348	0.550095	0.589875	-0.03978	0.998963	0.163273	0.014844	1
6019749	11571841	0.982857	0.988623	-0.00577	1	1	0.138257	1
690112	2274687	0.836988	0.832765	0.004223	0.999482	0.903717	0.727147	1
3490740	10004047	0.399809	0.399088	0.000721	0.997926	0.439486	0.964011	1
1597536	6872285	0.952767	0.955581	-0.00281	0.998445	0.24182	0.686949	1
670813	7514491	0.161905	0.147494	0.01441	0.999482	0.138131	0.236899	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
6843052	6035100	0.993798	0.987986	0.005811	0.996371	1	0.057629	1
1208748	2618698	0.307729	0.345496	-0.03777	0.997926	0.709526	0.013315	1
1510995	10455503	0.642381	0.608646	0.033735	1	0.571018	0.030179	1
4763446	11572279	0.948571	0.964733	-0.01616	1	0.620932	0.015184	1
7862331	8177313	0.940363	0.950456	-0.01009	0.998445	0.717532	0.173117	1
4767101	4482737	0.014299	0.006279	0.008021	0.997926	1	0.016683	1
7170398	12209447	0.947619	0.96132	-0.0137	1	1	0.042358	1
7140938	12192394	0.642517	0.609339	0.033177	0.998963	0.523462	0.033028	1
1624836	3848323	0.45155	0.496508	-0.04496	0.980301	0.375459	0.006549	1
1748490	12223381	0.602002	0.566553	0.035449	0.999482	0.4931	0.029063	1
4495703	3971872	0.09	0.080205	0.009795	1	0.818705	0.283278	1
6382600	11702683	0.405057	0.366513	0.038544	0.993779	0.306292	0.018728	1
1366678	16850375	0.706304	0.736333	-0.03003	0.997926	0.728417	0.041001	1
4322954	1805124	0.779103	0.743429	0.035674	0.99689	0.658315	0.01053	1
4779139	1229983	0.953721	0.968714	-0.01499	0.998963	0.581837	0.018041	1
4549139	6773976	0.805714	0.799204	0.006511	1	0.599205	0.620823	1
1913006	12056411	0.905148	0.924915	-0.01977	0.999482	0.810281	0.029057	1
4512909	1432317	0.398758	0.398734	2.42E-05	0.993261	0.671847	0.998799	1
6848152	7210231	0.805742	0.777268	0.028474	0.993261	0.921993	0.031542	1
6848152	7210231	0.805742	0.777268	0.028474	0.993261	0.921993	0.031542	1
6848152	7210231	0.805742	0.777268	0.028474	0.993261	0.921993	0.031542	1
814087	17743616	0.749285	0.77911	-0.02982	0.997926	0.769288	0.031564	1
814087	17743616	0.749285	0.77911	-0.02982	0.997926	0.769288	0.031564	1
2928213	2670947	0.39675	0.353311	0.043439	0.996371	0.336489	0.007326	1
835767	211015	0.621998	0.634748	-0.01275	0.991706	0.826593	0.430796	1
346358	1799971	0.878701	0.855353	0.023348	0.997926	1	0.034867	1
2329038	1353829	0.804015	0.834664	-0.03065	0.99689	0.036509	0.018809	1
863456	17756556	0.950476	0.962457	-0.01198	1	0.118285	0.073533	1
4652196	1801279	1	0.998292	0.001708	0.998963	1	0.061644	1
2409767	820446	0.07395	0.096132	-0.02218	0.998963	0.011168	0.018098	1
2409767	820446	0.07395	0.096132	-0.02218	0.998963	0.011168	0.018098	1
1752316	11604671	0.516999	0.483471	0.033528	0.818559	0.504379	0.060192	1
8239901	2233201	0.997619	1	-0.00238	0.999482	1	0.043458	1
8239901	2233201	0.997619	1	-0.00238	0.999482	1	0.043458	1
3490300	12645539	0.772857	0.76082	0.012037	0.999482	0.780747	0.384408	1
3412578	1154458	0.428571	0.399306	0.029266	0.981337	0.478161	0.068434	1
430277	10485703	0.895293	0.884439	0.010854	0.992742	0.740052	0.286795	1
3848168	5945705	0.273729	0.310738	-0.03701	0.999482	0.344815	0.024507	1
2457187	11794393	0.930952	0.90785	0.023103	1	0.420548	0.008692	1
105542	7575	0.884909	0.867731	0.017178	0.997408	0.301354	0.115042	1
105542	7575	0.884909	0.867731	0.017178	0.997408	0.301354	0.115042	1
105542	7575	0.884909	0.867731	0.017178	0.997408	0.301354	0.115042	1
4067212	3734201	0.588207	0.572082	0.016125	0.993779	0.890255	0.312756	1
7817761	2302761	0.810798	0.785465	0.025333	0.978745	0.155897	0.050994	1
7817761	2302761	0.810798	0.785465	0.025333	0.978745	0.155897	0.050994	1
4093643	1025801	0.373448	0.41049	-0.03704	0.997408	0.675478	0.020274	1
863434	17756784	0.938513	0.952218	-0.01371	0.999482	0.130793	0.06602	1
7576359	12575270	0.846569	0.854067	-0.0075	0.962157	0.49036	0.531857	1
4231347	1062613	0.195694	0.226382	-0.03069	0.991706	0.042114	0.023952	1
1752783	1176744	0.704701	0.667637	0.037064	0.974598	0.16646	0.017696	1
794336	17091378	1	0.998862	0.001138	1	1	0.127099	1
901013	2417280	0.544847	0.5879	-0.04305	0.997408	0.576935	0.008187	1
5697539	27453	0.92381	0.940205	-0.0164	0.999482	1	0.045282	1
5697539	27453	0.92381	0.940205	-0.0164	0.999482	1	0.045282	1
1207819	6662736	0.999522	0.997719	0.001802	0.99689	1	0.127179	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
659501	11812044	0.810296	0.810502	-0.00021	0.997926	0.122835	0.987008	1
3328139	10066581	0.165714	0.139522	0.026193	0.999482	0.673048	0.026935	1
659451	2266780	0.810592	0.812073	-0.00148	0.998445	0.096278	0.906859	1
5609186	10053906	0.999523	0.998861	0.000662	0.998445	1	0.469073	1
5609186	10053906	0.999523	0.998861	0.000662	0.998445	1	0.469073	1
1700415	544978	0.715238	0.710466	0.004772	1	0.100729	0.75051	1
4266361	4359773	0.413727	0.415148	-0.00142	0.998963	0.366296	0.929812	1
2467276	17199409	0.805714	0.811718	-0.006	1	0.659811	0.645372	1
3972324	2003569	0.875238	0.897042	-0.0218	1	0.854378	0.035293	1
3972324	2003569	0.875238	0.897042	-0.0218	1	0.854378	0.035293	1
3972324	2003569	0.875238	0.897042	-0.0218	1	0.854378	0.035293	1
3972324	2003569	0.875238	0.897042	-0.0218	1	0.854378	0.035293	1
3972324	2003569	0.875238	0.897042	-0.0218	1	0.854378	0.035293	1
3972324	2003569	0.875238	0.897042	-0.0218	1	0.854378	0.035293	1
3972324	2003569	0.875238	0.897042	-0.0218	1	0.854378	0.035293	1
3972324	2003569	0.875238	0.897042	-0.0218	1	0.854378	0.035293	1
632579	17630384	0.981853	0.973804	0.008049	0.997926	1	0.093363	1
4546731	4459901	0.70448	0.660592	0.043888	0.998963	0.176429	0.003545	1
453149	4812024	0.080076	0.101367	-0.02129	0.998963	0.352964	0.02337	1
659643	10798263	0.663012	0.689498	-0.02649	0.997926	1	0.084685	1
2489520	4497742	0.633111	0.607184	0.025927	0.997926	0.137093	0.107754	1
1208277	7513357	0.132507	0.148464	-0.01596	0.999482	1	0.158777	1
660775		0.789048	0.816629	-0.02758	0.999482	0.367002	0.033772	1
6255454	9289961	0.41126	0.411731	-0.00047	0.998445	0.577357	0.976546	1
4694319	1573496	0.898095	0.87884	0.019256	1	0.112188	0.064778	1
4388383	2518196	0.865421	0.877854	-0.01243	0.995334	1	0.256412	1
3684383	16868635	0.999523	0.997722	0.001801	0.998963	1	0.126679	1
3684383	16868635	0.999523	0.997722	0.001801	0.998963	1	0.126679	1
4309340	7294536	0.910582	0.904762	0.00582	0.903577	0.061332	0.573405	1
2258121	2894040	0.390057	0.425314	-0.03526	0.99689	0.83617	0.029419	1
4258964	1358023	0.682857	0.640661	0.042197	0.999482	0.660278	0.006346	1
3609594	6820751	0.340324	0.374289	-0.03396	0.999482	0.773819	0.029718	1
515457	2215535	0.621068	0.658286	-0.03722	0.997408	0.029154	0.022831	1
4234061	654000	1	0.99828	0.00172	0.995334	1	0.060879	1
1752827	1150226	0.073501	0.091492	-0.01799	0.980819	1	0.04752	1
2222024	11592199	0.629771	0.660775	-0.031	0.997926	0.821297	0.047155	1
4127548	2853047	0.163966	0.189636	-0.02567	0.998963	0.123257	0.034656	1
1830401	8087522	0.694471	0.674061	0.020409	0.999482	0.701191	0.181476	1
847600	2797849	0.35687	0.331435	0.025435	0.998445	0.170357	0.098636	1
1207802	2490350	0.999048	0.996018	0.003029	1	1	0.055086	1
1913493	3808627	0.807912	0.794653	0.013259	0.999482	0.302102	0.31804	1
1563969	11575298	0.874881	0.893629	-0.01875	0.998445	0.375364	0.071036	1
4503980	4605502	0.414436	0.414009	0.000427	0.997408	0.366347	0.978895	1
1331308	17466699	0.741874	0.781714	-0.03984	0.995853	1	0.004789	1
7452933	11780272	0.554119	0.579338	-0.02522	0.995334	0.677828	0.12555	1
3313778	10515428	0.568571	0.598976	-0.0304	1	0.440033	0.063133	1
1089476	2289723	0.998084	1	-0.00192	0.995334	1	0.070454	1
6777250		0.895117	0.918809	-0.02369	0.850181	0.617704	0.025349	1
6777250		0.895117	0.918809	-0.02369	0.850181	0.617704	0.025349	1
4127049	1799978	0.965589	0.971357	-0.00577	0.913427	0.000262	0.36749	1
515257	1008126	0.323333	0.328018	-0.00468	0.999482	0.358261	0.76101	1
794304	9855973	0.824286	0.835991	-0.01171	0.999482	0.389976	0.341236	1
2793744	1488425	0.41126	0.41287	-0.00161	0.998445	0.577519	0.920062	1
659680	10912593	0.671279	0.692833	-0.02155	0.998963	1	0.155814	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
632600	6855671	0.976168	0.968679	0.007489	0.998963	1	0.158785	1
4023740	4359774	0.413645	0.414564	-0.00092	0.995334	0.328813	0.954678	1
1538119	17226422	0.444995	0.417937	0.027058	0.965267	0.482043	0.105324	1
1406391	6745304	0.324376	0.353547	-0.02917	0.993261	0.505321	0.061733	1
1563964	10268819	0.125357	0.106371	0.018987	0.999482	0.375364	0.067493	1
4111339	2244338	0.054919	0.044937	0.009981	0.998445	0.092293	0.175436	1
105374	5746685	0.448891	0.432417	0.016474	0.99015	0.730257	0.306678	1
435790	2206474	0.811905	0.821388	-0.00948	1	0.108232	0.457776	1
660746	9662853	0.787763	0.816934	-0.02917	0.995334	0.367077	0.024962	1
4541820	4845378	0.905754	0.911271	-0.00552	0.954899	0.003917	0.579117	1
4541820	4845378	0.905754	0.911271	-0.00552	0.954899	0.003917	0.579117	1
723782		0.844575	0.836794	0.007781	0.979782	0.456318	0.530573	1
660812	10913582	0.788921	0.816837	-0.02792	0.998445	0.259182	0.03146	1
4601930	7616757	0.825953	0.815337	0.010615	0.925868	0.062138	0.433563	1
901136	1805477	0.000476	0.003982	-0.00351	1	0.011918	0.035366	1
4546736	3811647	0.682252	0.641069	0.041183	0.998963	0.660604	0.00766	1
4392833	2791819	0.864981	0.877423	-0.01244	0.997926	1	0.255852	1
659418	1736554	0.935714	0.947668	-0.01195	1	0.291212	0.125128	1
3609648	17024482	0.954286	0.968146	-0.01386	1	0.595342	0.027549	1
2043359	941208	0.326813	0.342645	-0.01583	0.997926	0.549025	0.308422	1
2043359	941208	0.326813	0.342645	-0.01583	0.997926	0.549025	0.308422	1
2039276	3741705	0.922381	0.904437	0.017944	1	0.845709	0.051974	1
2039276	3741705	0.922381	0.904437	0.017944	1	0.845709	0.051974	1
728627	11902975	0.747378	0.774543	-0.02716	0.997926	1	0.052281	1
5201068	7215056	0.807912	0.781034	0.026878	0.994816	0.921328	0.042225	1
5201068	7215056	0.807912	0.781034	0.026878	0.994816	0.921328	0.042225	1
5201068	7215056	0.807912	0.781034	0.026878	0.994816	0.921328	0.042225	1
4487171	538480	0.996183	0.989726	0.006457	0.997408	1	0.015993	1
4767518	4782905	0.919981	0.914648	0.005332	0.983929	0.666707	0.559951	1
863519	2094806	0.711905	0.72919	-0.01729	0.998963	0.608528	0.234075	1
57867	463360	0.168768	0.142773	0.025995	0.975635	0.023814	0.03474	1
535746	16159	0.690363	0.708428	-0.01807	0.998445	0.935046	0.231585	1
1233304	4832520	0.374283	0.401593	-0.02731	0.997926	0.325787	0.089422	1
660816	11590714	0.790276	0.81813	-0.02785	0.998445	0.306711	0.031728	1
646980	13114343	0.39446	0.399203	-0.00474	0.997926	0.231698	0.766048	1
7621844	6857249	0.008173	0.005734	0.002439	0.991187	1	0.374266	1
3434705	12505322	0.385387	0.368721	0.016665	0.99689	1	0.304047	1
3605980	2676071	0.415789	0.374857	0.040932	0.995334	0.194437	0.012084	1
612617	2587548	0.416268	0.380708	0.03556	0.995853	1	0.029574	1
80202	2000457	0.499048	0.501142	-0.00209	0.998445	0.250572	0.896695	1
80202	2000457	0.499048	0.501142	-0.00209	0.998445	0.250572	0.896695	1
2270696	1897591	0.369399	0.339977	0.029422	0.998963	0.366806	0.057678	1
660805	7556644	0.275763	0.297267	-0.0215	0.998445	0.935733	0.146523	1
3869876	2269551	0.607783	0.632612	-0.02483	0.991187	1	0.327829	1
7062658	13306006	0.984733	0.97774	0.006993	0.997408	1	0.109889	1
2480290	16967070	1	0.997717	0.002283	0.995853	1	0.031046	1
2057496	17110477	0.740229	0.745154	-0.00493	0.998445	0.722236	0.732662	1
3979461	1122096	0.200476	0.202733	-0.00226	0.999482	0.346923	0.863577	1
4225906	6275	0.293446	0.272999	0.020447	0.955936	0.33811	0.18485	1
515561	10265101	0.431363	0.474374	-0.04301	0.998963	0.684653	0.008777	1
3313705	1644501	0.319527	0.291715	0.027811	0.969933	0.457044	0.07155	1
6549328	13306007	0.984762	0.977816	0.006946	1	1	0.111355	1
4299066	1796743	0.67	0.645786	0.024214	0.999482	0.941181	0.118215	1
4042447	5577	0.984762	0.97779	0.006971	0.999482	1	0.11026	1
901468	2192975	0.635148	0.652223	-0.01708	0.997408	0.940655	0.272748	1

snp_id	refsnp_id	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_	nda01_all_
2420865	17273542	0.986667	0.993166	-0.0065	0.999482	1	0.04919	1
1209387	10925500	0.751905	0.724374	0.027531	0.999482	0.800456	0.053139	1
4915119	2278773	0.983317	0.972665	0.010652	0.998963	0.483311	0.025456	1
1888848	737045	0.961905	0.947039	0.014866	0.999482	0.729877	0.028634	1
3477774	3775084	0.467557	0.433219	0.034338	0.997408	0.335522	0.035175	1
2088008	7980427	0.92	0.924829	-0.00483	0.999482	1	0.586652	1
2420816	2274856	0.751714	0.757362	-0.00565	0.969414	0.77946	0.689201	1
2409371	6805611	0.783397	0.769056	0.014341	0.998963	0.924475	0.296919	1
4381275	6671692	1	0.997722	0.002278	0.999482	1	0.030838	1
4667514	6661174	1	0.997722	0.002278	0.999482	1	0.030838	1
3631114	16972317	0.999047	0.994312	0.004735	0.999482	0.025408	0.016272	1
1215237	12714399	0.611111	0.653893	-0.04278	0.930016	0.001588	0.014441	1
1722931	2648640	0.607486	0.617277	-0.00979	0.993261	0.115648	0.545993	1
80266	743297	0.222508	0.237805	-0.0153	0.929497	0.05363	0.278545	1
80266	743297	0.222508	0.237805	-0.0153	0.929497	0.05363	0.278545	1
4323371	4129414	0.396568	0.419795	-0.02323	0.999482	0.406245	0.152805	1
598273	8191993	0.332813	0.338808	-0.006	0.923795	1	0.707582	1
368002	2852614	0.552381	0.584282	-0.0319	0.999482	0.781079	0.049652	1
3865629	16980268	0.998771	1	-0.00123	0.996371	1	0.199851	1
3449911	17599816	0.904671	0.905467	-0.0008	0.998963	0.111748	0.935076	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
83237	3.16E-07	1.56E-06	3.33E-06	0.513598	0.606061	-0.09246	0.991561	0.558655
811165	4.70E-05	2.94E-06	2.07E-07	0.59751	0.65914	-0.06163	0.998945	0.303148
4496443	0.000533	1.42E-05	0.000146	0.933107	0.898058	0.035048	0.899789	0.013796
4496443	0.000533	1.42E-05	0.000146	0.933107	0.898058	0.035048	0.899789	0.013796
4496443	0.000533	1.42E-05	0.000146	0.933107	0.898058	0.035048	0.899789	0.013796
4496443	0.000533	1.42E-05	0.000146	0.933107	0.898058	0.035048	0.899789	0.013796
4496443	0.000533	1.42E-05	0.000146	0.933107	0.898058	0.035048	0.899789	0.013796
1446001	0.000546	1.49E-05	0.001829	0.731458	0.80102	-0.06956	0.825949	0.341082
872808	1.75E-05	1.54E-05	2.30E-06	0.759375	0.812232	-0.05286	0.99789	0.048525
4501073	4.34E-05	1.70E-05	4.74E-06	0.755717	0.808602	-0.05288	0.99789	0.049888
736995	2.69E-06	1.90E-05	1.20E-05	0.959205	0.919355	0.03985	0.994726	0.000255
2452235	6.93E-05	2.87E-05	6.24E-06	0.744283	0.799136	-0.05485	0.995781	0.000728
872831	2.76E-05	3.74E-05	1.11E-05	0.766807	0.819172	-0.05237	0.986287	0.038873
3318178	0.001244	4.08E-05	2.60E-05	0.670478	0.61087	0.059609	0.992616	1
1445885	0.000518	4.17E-05	0.005858	0.687773	0.752809	-0.06504	0.952532	0.523689
736943	5.91E-06	4.36E-05	9.76E-06	0.910526	0.856223	0.054303	0.992616	0.349099
2631830	0.00123	5.13E-05	2.10E-05	0.683054	0.596567	0.086488	0.995781	0.630771
3318169	0.003568	5.18E-05	3.26E-05	0.670124	0.613734	0.056391	1	0.626002
702419	3.57E-05	5.20E-05	0.000876	0.218163	0.293991	-0.07583	0.996835	0.00518
811194	0.000439	5.43E-05	4.23E-06	0.601042	0.659871	-0.05883	0.99789	0.679997
2379416	0.00405	5.71E-05	0.000544	0.900208	0.865302	0.034906	0.996835	1
1446029	3.65E-05	5.78E-05	0.001696	0.700436	0.779446	-0.07901	0.940928	0.674868
4319486	1.01E-05	6.06E-05	0.001194	0.548283	0.436652	0.111632	0.957806	0.384148
3702837	9.22E-05	6.26E-05	0.000116	0.392116	0.472103	-0.07999	1	0.264927
1445915	0.000469	7.05E-05	0.007293	0.688797	0.757511	-0.06871	1	0.313446
1749243	1.29E-05	7.06E-05	0.000175	0.970954	0.937768	0.033186	1	0.408987
1749244	1.32E-05	7.19E-05	0.000179	0.970894	0.937768	0.033126	0.998945	0.408987
3311454	8.14E-05	7.57E-05	0.003509	0.675	0.727957	-0.05296	0.996835	0.482808
1749237	1.01E-05	8.04E-05	0.000191	0.971992	0.938841	0.03315	1	0.240973
3702834	0.000181	8.04E-05	0.000197	0.392116	0.467811	-0.07569	1	0.457495
1445945	0.000506	8.34E-05	0.007983	0.68815	0.758065	-0.06991	0.99789	0.314276
736949	1.25E-05	8.50E-05	4.55E-05	0.959544	0.927039	0.032505	1	0.726281
1445953	0.000253	8.70E-05	0.005234	0.691909	0.76073	-0.06882	1	0.163408
410868	0.000107	8.71E-05	0.000129	0.698297	0.614914	0.083382	0.864979	0.021361
4205013	0.000257	8.73E-05	0.005117	0.308091	0.239741	0.06835	0.996835	0.201335
1445934	0.000597	9.10E-05	0.008512	0.689583	0.758065	-0.06848	0.996835	0.314276
1446047	0.000366	9.26E-05	0.00639	0.689076	0.761538	-0.07246	0.982068	0.155498
971425	0.001973	9.62E-05	0.002118	0.885417	0.854167	0.03125	0.987342	0.85183
2452239	0.000113	9.67E-05	3.81E-05	0.733888	0.781116	-0.04723	0.998945	0.892127
1445952	0.00026	9.96E-05	0.004469	0.691667	0.760259	-0.06859	0.994726	0.201335
1227452	0.000785	1.00E-04	0.000183	0.883333	0.922581	-0.03925	0.996835	0.096992
4237765	0.000176	0.0001	0.001459	0.388309	0.34086	0.047449	0.995781	0.009673
1749239	1.32E-05	0.000101	0.000234	0.971992	0.938841	0.03315	1	0.240973
2012929	1.77E-06	0.000104	0.000801	0.6875	0.742794	-0.05529	0.973629	0.712499
1732526	0.0002	0.000107	0.000711	0.787946	0.859589	-0.07164	0.934599	0.16956
1911997	0.000393	0.000109	0.001148	0.850917	0.788056	0.062861	0.910338	0.773409
1445933	0.000709	0.00011	0.007073	0.68711	0.758065	-0.07095	0.99789	0.314276
1863818	6.72E-05	0.00011	0.000346	0.591476	0.533333	0.058143	0.99789	0.162127
1448301	0.000683	0.000111	0.009864	0.310811	0.242489	0.068322	0.998945	0.313446
4349212	9.01E-05	0.000111	0.000622	0.66805	0.617457	0.050593	0.99789	0.555756
3318164	0.0051	0.000112	6.73E-05	0.330913	0.383871	-0.05296	0.998945	0.769189
1445892	0.000829	0.000116	0.010742	0.688421	0.756494	-0.06807	0.988397	0.449351
1445954	0.000271	0.000117	0.006687	0.728216	0.7897	-0.06148	1	0.889469
4355001	1.45E-05	0.000121	0.002772	0.456159	0.567391	-0.11123	0.990506	0.255922

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1445914	0.000872	0.000122	0.010275	0.689727	0.758621	-0.06889	0.992616	0.374516
1445929	0.000757	0.000124	0.00965	0.689979	0.757511	-0.06753	0.996835	0.313446
1445979	0.000345	0.000124	0.006737	0.686722	0.760259	-0.07354	0.996835	0.201335
415665	0.000192	0.00013	0.001942	0.5	0.570194	-0.07019	0.996835	0.776604
1445900	0.000682	0.000132	0.01061	0.688797	0.757511	-0.06871	1	0.449958
1126176	0.000107	0.000133	4.20E-05	0.380208	0.320815	0.059393	0.99789	0.671104
1445881	0.000768	0.000138	0.010797	0.689189	0.756438	-0.06725	0.998945	0.313725
1126166	1.00E-04	0.00014	3.17E-05	0.378378	0.319654	0.058724	0.995781	0.593103
1762509	0.000158	0.000146	8.70E-06	0.894068	0.946855	-0.05279	0.984177	0.032048
1445873	0.000297	0.000147	0.016184	0.738739	0.815534	-0.0768	0.902954	0.870082
1445925	0.000721	0.000149	0.011696	0.689189	0.757511	-0.06832	0.998945	0.449958
1126170	0.000108	0.000152	4.94E-05	0.379707	0.318966	0.060742	0.993671	0.748407
1445878	0.000781	0.000153	0.011565	0.688797	0.756438	-0.06764	1	0.313725
4107752	0.000134	0.000158	0.000228	0.034304	0.059013	-0.02471	0.998945	0.668589
1445904	0.000848	0.000158	0.012458	0.688797	0.755914	-0.06712	0.998945	0.381855
4031270	3.90E-05	0.00016	0.002668	0.479253	0.581545	-0.10229	1	0.775996
3455452	1.40E-05	0.000165	0.005191	0.447589	0.557112	-0.10952	0.992616	0.452657
3455466	1.28E-05	0.000167	0.004704	0.446985	0.554957	-0.10797	0.996835	0.573161
1273588	0.000201	0.000169	0.000694	0.798958	0.851931	-0.05297	0.99789	0.580224
3318145	0.004382	0.000169	0.000104	0.33368	0.387339	-0.05366	0.998945	0.845381
3318142	0.00489	0.000172	0.000104	0.334025	0.387339	-0.05331	1	0.845381
1936542	0.000688	0.000172	0.000323	0.361635	0.425163	-0.06353	0.989451	0.341176
1445995	0.000436	0.000175	0.009166	0.688542	0.758584	-0.07004	0.99789	0.130679
1126179	0.000146	0.000176	5.81E-05	0.381497	0.321505	0.059992	0.99789	0.67162
1445897	0.000886	0.000178	0.01339	0.689189	0.756466	-0.06728	0.996835	0.449492
1445917	0.000897	0.000181	0.010916	0.68815	0.757511	-0.06936	0.998945	0.313446
2803739	0.004692	0.000183	0.000111	0.334025	0.387097	-0.05307	0.998945	0.844972
1446025	0.000554	0.000188	0.008652	0.68711	0.758584	-0.07147	0.998945	0.130679
4031288	1.48E-05	0.00019	0.005981	0.448852	0.556867	-0.10802	0.996835	0.639551
1445884	0.000751	0.000192	0.013929	0.690229	0.75914	-0.06891	0.99789	0.253358
2752035	1.67E-05	0.000193	0.005316	0.448529	0.557987	-0.10946	0.984177	0.393357
1446011	0.000676	0.000194	0.005596	0.683992	0.755365	-0.07137	0.998945	0.380905
3455457	1.71E-05	0.000194	0.006008	0.448745	0.556034	-0.10729	0.993671	0.511022
4264889	2.01E-05	0.000196	0.003502	0.542708	0.434549	0.108159	0.99789	0.346758
4001715	0.006102	0.000201	0.000862	0.341336	0.40194	-0.0606	0.994726	0.847095
4031284	2.42E-05	0.000204	0.002985	0.543067	0.433983	0.109085	0.989451	0.256756
1446053	0.000502	0.000207	0.010065	0.688679	0.760823	-0.07214	0.990506	0.124391
2960222	4.08E-05	0.000209	0.002898	0.522917	0.420601	0.102316	0.99789	0.635048
1446007	0.00054	0.000211	0.009819	0.68711	0.758065	-0.07095	0.99789	0.130206
3640928	0.000468	0.000216	0.000297	0.895616	0.840173	0.055443	0.993671	0.728441
3455256	2.78E-05	0.000224	0.004224	0.454255	0.562637	-0.10838	0.975738	0.12832
4612615	2.30E-05	0.000224	0.004288	0.537879	0.430155	0.107724	0.96308	0.068253
3640896	0.000479	0.000229	0.001462	0.870332	0.824034	0.046298	1	0.038146
4264888	2.90E-05	0.000239	0.003651	0.541401	0.432967	0.108434	0.976793	0.151978
227553	1.31E-05	0.00024	0.000124	0.828482	0.878495	-0.05001	0.99789	0.030059
227553	1.31E-05	0.00024	0.000124	0.828482	0.878495	-0.05001	0.99789	0.030059
4355000	2.34E-05	0.000242	0.005146	0.446985	0.553648	-0.10666	0.998945	0.574008
3130336	0.040343	0.000245	0.004132	0.081081	0.119099	-0.03802	0.998945	0.271341
4031272	2.01E-05	0.00025	0.003821	0.456933	0.560475	-0.10354	0.990506	0.509613
4424141	2.33E-05	0.000253	0.003902	0.544792	0.435484	0.109308	0.996835	0.39574
4031282	2.21E-05	0.000255	0.00456	0.460251	0.565733	-0.10548	0.993671	0.396087
147505	0.000518	0.000257	0.004435	0.4158	0.367457	0.048344	0.996835	0.765514
4295763	4.63E-05	0.00026	0.004833	0.48029	0.582796	-0.10251	0.998945	0.567678
4429642	0.000177	0.000267	0.000368	0.941645	0.910579	0.031065	1	0.49812
702417	3.75E-05	0.000268	0.002294	0.18815	0.262366	-0.07422	0.99789	0.231733

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
4031278	3.85E-05	0.000268	0.003383	0.458947	0.567245	-0.1083	0.987342	0.106767
4597259	3.47E-05	0.000273	0.004215	0.456933	0.563043	-0.10611	0.987342	0.184641
3455150	5.52E-05	0.000277	0.004082	0.516598	0.416309	0.100288	1	0.702969
1445833	0.002444	0.000282	0.015275	0.692067	0.757511	-0.06544	0.996835	0.207267
4031285	3.16E-05	0.00029	0.004545	0.54262	0.435484	0.107136	0.99789	0.299247
3112694	1.98E-05	0.0003	0.000551	0.861746	0.822581	0.039166	0.99789	0.201624
3112694	1.98E-05	0.0003	0.000551	0.861746	0.822581	0.039166	0.99789	0.201624
3455286	2.75E-05	0.000306	0.006591	0.446764	0.551613	-0.10485	0.995781	0.639886
3691936	0.000473	0.000307	0.000336	0.553419	0.608932	-0.05551	0.977848	0.696019
922730	0.000189	0.000314	0.007397	0.78	0.735033	0.044967	0.976793	0.33281
2452272	0.000721	0.000316	5.25E-05	0.779046	0.827957	-0.04891	0.998945	0.101762
1159322	0.0003	0.000318	0.000301	0.986402	0.966595	0.019807	0.993671	1
1159322	0.0003	0.000318	0.000301	0.986402	0.966595	0.019807	0.993671	1
1159322	0.0003	0.000318	0.000301	0.986402	0.966595	0.019807	0.993671	1
1446051	0.000757	0.000321	0.011361	0.687759	0.758065	-0.07031	0.998945	0.130206
4031277	4.50E-05	0.000326	0.0047	0.457469	0.562366	-0.1049	0.998945	0.25951
1938140	0.087876	0.000329	0.000699	0.056017	0.08691	-0.03089	1	0.767642
1102839	0.002443	0.000331	9.76E-05	0.980249	0.9603	0.019949	0.998945	0.524755
1943718	0.009068	0.000336	0.001042	0.831601	0.863734	-0.03213	0.998945	0.693015
305507	0.216375	0.000339	0.000436	0.298755	0.357296	-0.05854	1	0.225922
1732521	0.000443	0.00034	0.001718	0.779046	0.847312	-0.06827	0.998945	0.279918
971422	0.00547	0.000342	0.006386	0.885892	0.854077	0.031815	1	1
4031279	4.89E-05	0.000345	0.004692	0.457469	0.562771	-0.1053	0.995781	0.219067
1446018	0.000901	0.000354	0.012714	0.68815	0.758584	-0.07043	0.998945	0.130679
4264886	5.05E-05	0.000355	0.005015	0.45842	0.5625	-0.10408	0.996835	0.345596
1102827	0.002329	0.000362	7.67E-05	0.98029	0.960129	0.020161	0.99789	0.526339
1921801	0.000104	0.000367	0.000391	0.22658	0.168539	0.05804	0.953586	0.173461
305495	0.165705	0.000367	0.000431	0.296258	0.358369	-0.06211	0.998945	0.26828
305479	0.185508	0.00038	0.000646	0.303942	0.365591	-0.06165	0.998945	0.425813
4119073	0.030808	0.00038	0.017299	0.613071	0.559013	0.054058	1	0.778884
305473	0.283457	0.000384	0.000777	0.309375	0.366667	-0.05729	0.996835	0.424282
1445986	0.001291	0.000386	0.018902	0.687368	0.755991	-0.06862	0.985232	0.206362
1539926	5.96E-05	0.000388	0.043268	0.681535	0.737124	-0.05559	1	0.056003
451335	8.06E-05	0.00039	0.005015	0.43125	0.511853	-0.0806	0.995781	0.852558
3528817	0.0112	0.0004	0.002248	0.976091	0.945887	0.030204	0.994726	0.386125
3128544	0.014854	0.000404	0.000119	0.690625	0.615551	0.075074	0.994726	1
3128543	0.014171	0.000406	0.00014	0.692946	0.618026	0.07492	1	1
1446005	0.000675	0.000409	0.016423	0.684713	0.758929	-0.07422	0.969409	0.365664
3128548	0.007933	0.000413	0.000107	0.641372	0.575269	0.066103	0.99789	0.924451
305487	0.199837	0.000414	0.000571	0.297718	0.357296	-0.05958	1	0.225922
1936454	0.000588	0.000415	0.001605	0.545643	0.463441	0.082202	0.998945	0.779841
1446009	0.001263	0.000416	0.016915	0.683992	0.753219	-0.06923	0.998945	0.212872
3192712	5.09E-05	0.000416	0.008554	0.286458	0.386266	-0.09981	0.99789	0.495032
4653612	0.097858	0.000419	0.000184	0.942204	0.962387	-0.02018	0.976793	1
2131217	0.033338	0.000421	0.001523	0.819005	0.769676	0.049329	0.921941	0.22181
811158	0.000582	0.000424	0.000431	0.551867	0.48172	0.070147	0.998945	0.577726
3311467	0.00105	0.000437	0.002609	0.730126	0.777419	-0.04729	0.994726	0.89343
4653663	0.000603	0.000439	0.002871	0.259875	0.19181	0.068065	0.996835	0.176112
619262	0.000869	0.000447	0.001589	0.936693	0.909836	0.026856	0.794304	0.516977
2452120	0.006186	0.000449	0.002216	0.044979	0.071584	-0.0266	0.990506	0.153827
1446035	0.001499	0.000451	0.020048	0.685417	0.753219	-0.0678	0.99789	0.212872
14485	9.31E-05	0.000454	0.001294	0.286458	0.346567	-0.06011	0.99789	0.838163
4562552	0.000967	0.000456	0.005775	0.220954	0.282189	-0.06123	1	0.567233
1445956	0.001382	0.000457	0.018707	0.685031	0.753219	-0.06819	0.998945	0.212872
846061	0.001162	0.000458	0.002009	0.595188	0.668845	-0.07366	0.988397	0.342932

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
423081	0.001182	0.000459	6.54E-05	0.630705	0.677039	-0.04633	1	1
4128695	0.000566	0.00046	1.78E-05	0.107069	0.05794	0.049129	0.998945	0.013723
4549229	3.91E-05	0.000461	0.006022	0.531049	0.430769	0.10028	0.972574	0.214416
3549778	0.000212	0.000461	0.000155	0.620833	0.538627	0.082207	0.99789	0.457135
4031274	4.73E-05	0.000464	0.004661	0.458506	0.560475	-0.10197	0.996835	0.396497
4382562	9.16E-05	0.000468	0.008633	0.478079	0.58172	-0.10364	0.995781	0.633898
4254746	0.000771	0.000469	0.000509	0.297669	0.251106	0.046563	0.974684	0.900629
305505	0.207304	0.00047	0.000578	0.298337	0.356681	-0.05834	0.996835	0.265534
1732515	0.000638	0.000475	0.002478	0.779046	0.846567	-0.06752	1	0.283906
3594053	0.002356	0.000478	0.00162	0.559623	0.597192	-0.03757	0.992616	0.287657
4513177	0.000894	0.00048	0.001067	0.147303	0.197849	-0.05055	0.998945	0.027615
2314734	0.000652	0.000481	0.002042	0.48234	0.440045	0.042295	0.944093	0.246472
2333502	0.000968	0.000482	0.001014	0.147609	0.196774	-0.04917	0.99789	0.026598
735006	0.028099	0.000499	0.006472	0.87422	0.902151	-0.02793	0.99789	0.790685
2510849	0.000322	0.000506	0.019996	0.670124	0.714592	-0.04447	1	1
3430979	0.017545	0.000511	0.001138	0.945021	0.935622	0.009398	1	0.425292
1936458	0.000656	0.000512	0.002201	0.45738	0.537716	-0.08034	0.996835	0.852353
3106977	0.001243	0.00052	0.000353	0.889024	0.93408	-0.04506	0.85654	0.400544
3142587	0.000355	0.000533	0.001759	0.898129	0.937365	-0.03924	0.995781	0.410263
872763	0.000617	0.000534	6.15E-05	0.784823	0.830472	-0.04565	0.998945	0.137742
1147469	0.00024	0.000537	0.000338	0.918919	0.956989	-0.03807	0.99789	0.583638
4391433	0.000541	0.000544	0.000428	0.827443	0.755365	0.072078	0.998945	0.079156
1936526	0.000654	0.000544	0.002278	0.456159	0.53556	-0.0794	0.994726	0.925625
1936509	0.000572	0.000545	0.002294	0.556133	0.473118	0.083015	0.99789	0.852898
3686775	0.000175	0.000552	0.004065	0.935685	0.963362	-0.02768	0.99789	1
1762513	0.000823	0.000559	3.67E-05	0.909396	0.958333	-0.04894	0.939873	0.033693
3329660	0.000237	0.00058	0.000699	0.241701	0.193548	0.048153	0.998945	1
305485	0.247818	0.000583	0.000698	0.302083	0.356989	-0.05491	0.996835	0.22638
3455495	4.64E-05	0.000588	0.011746	0.441886	0.54638	-0.10449	0.947257	0.701537
2308727	0.000295	0.000595	0.000398	0.743776	0.783262	-0.03949	1	0.075204
856310	0.000215	0.000597	0.000835	0.719792	0.780645	-0.06085	0.996835	0.135906
1021341	0.019428	0.0006	0.001418	0.258333	0.332974	-0.07464	0.995781	0.209683
1936441	0.000814	0.000608	0.003325	0.554737	0.472944	0.081793	0.988397	0.779592
1563255	0.003502	0.000609	0.000365	0.349687	0.450538	-0.10085	0.995781	1
872797	0.001185	0.000612	9.96E-05	0.788981	0.834764	-0.04578	0.998945	0.176687
4063495	0.005563	0.000613	0.006653	0.433902	0.37961	0.054292	0.981013	0.489302
4552825	0.013341	0.000613	0.000724	0.770747	0.828326	-0.05758	1	0.32649
2199802	0.000301	0.000616	0.000659	0.81639	0.866953	-0.05056	1	0.840136
1153560	0.973441	0.00062	0.001188	0.950422	0.96645	-0.01603	0.987342	1
1861590	0.000277	0.000623	0.000808	0.374739	0.434783	-0.06004	0.990506	0.448551
410870	0.000239	0.000625	0.000447	0.647917	0.573276	0.074641	0.995781	0.297453
2571667	5.87E-05	0.000631	0.005971	0.457806	0.561135	-0.10333	0.983122	0.217194
4257794	0.005995	0.000637	0.000403	0.336798	0.393548	-0.05675	0.99789	0.332334
1153868	0.982818	0.000642	0.002902	0.959544	0.974249	-0.01471	1	1
3311440	0.000526	0.000644	0.018969	0.671162	0.711828	-0.04067	0.998945	0.821054
3330103	0.000145	0.000651	0.000601	0.237006	0.189914	0.047092	0.998945	0.293727
1003694	0.002544	0.000664	0.00339	0.755187	0.799569	-0.04438	0.99789	0.383749
2307201	0.000467	0.000664	0.003567	0.405405	0.475322	-0.06992	0.998945	0.306905
14495	0.000126	0.00067	0.002249	0.289419	0.346567	-0.05715	1	0.838163
1939068	0.000147	0.000675	0.00651	0.819792	0.866667	-0.04688	0.996835	0.544863
1936457	0.000908	0.000678	0.003203	0.571577	0.488095	0.083482	0.995781	0.063224
2379413	0.020412	0.000692	0.003091	0.900415	0.873391	0.027024	1	1
2333506	0.001385	0.000694	0.001083	0.149688	0.197425	-0.04774	0.998945	0.027414
2420377	0.000473	0.000704	0.003508	0.790795	0.869048	-0.07825	0.991561	0.54203
4428297	0.000172	0.000706	0.004374	0.233402	0.296774	-0.06337	0.998945	0.657111

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2316685	0.000257	0.000711	0.000797	0.227557	0.181425	0.046132	0.993671	0.535044
1319552	0.003049	0.000711	0.011127	0.774428	0.829399	-0.05497	0.998945	0.870157
1540523	0.002262	0.000729	0.004563	0.695021	0.733333	-0.03831	0.998945	0.636275
1054574	0.001803	0.000729	0.004504	0.947095	0.912017	0.035078	1	0.384727
1054574	0.001803	0.000729	0.004504	0.947095	0.912017	0.035078	1	0.384727
1936433	0.000866	0.000737	0.002628	0.553015	0.47306	0.079954	0.996835	0.852318
3671398	0.407538	0.000757	0.000764	0.910417	0.912716	-0.0023	0.995781	1
1487495	0.000456	0.00076	0.013929	0.753638	0.799356	-0.04572	0.998945	1
1487495	0.000456	0.00076	0.013929	0.753638	0.799356	-0.04572	0.998945	1
3640828	0.000881	0.000764	0.00168	0.880851	0.835512	0.045339	0.979958	0.60967
1936504	0.000793	0.000768	0.00309	0.556017	0.474249	0.081768	1	0.852641
2333493	0.001462	0.000774	0.001566	0.147917	0.195699	-0.04778	0.996835	0.018211
1153511	0.964386	0.000778	0.000959	0.951883	0.961874	-0.00999	0.988397	1
4118528	0.000625	0.000788	0.003756	0.261458	0.194206	0.067252	0.99789	0.234964
1936435	0.000947	0.000789	0.002697	0.543659	0.465665	0.077994	0.998945	0.779986
1936508	0.000948	0.000793	0.003473	0.554979	0.476395	0.078584	1	0.852664
2482448	0.02003	0.000794	0.012386	0.76971	0.821888	-0.05218	1	1
4316711	0.002765	0.000797	0.02668	0.689076	0.755435	-0.06636	0.987342	0.20631
4527851	0.001453	0.000803	0.000675	0.99442	0.965438	0.028982	0.93038	1
180409	0.000106	0.000814	0.003539	0.998963	0.984979	0.013984	1	0.003361
668929	0.002379	0.000815	0.002977	0.342437	0.29721	0.045227	0.993671	1
1667931	0.012708	0.000816	0.002379	0.846473	0.893777	-0.0473	1	0.629331
1735053	0.001275	0.000819	0.00048	0.482328	0.427957	0.054371	0.99789	0.107054
3332027	0.016144	0.00082	0.00272	0.450207	0.508602	-0.05839	0.998945	0.063795
1939059	0.00025	0.000838	0.0075	0.820539	0.864807	-0.04427	1	0.427577
3107163	0.000959	0.000843	0.002087	0.956341	0.917026	0.039315	0.996835	1.64E-07
1665061	0.004481	0.000844	0.007456	0.983368	0.958155	0.025213	0.998945	0.186141
4205765	0.001788	0.000846	0.024212	0.685381	0.752183	-0.0668	0.981013	0.258429
2054015	0.000189	0.000851	0.000564	0.903527	0.864224	0.039303	0.99789	0.843068
3157430	0.445685	0.000853	0.000557	0.50104	0.530043	-0.029	0.998945	0.710249
2465808	0.031327	0.000863	0.000992	0.789419	0.827586	-0.03817	0.99789	0.513942
1936455	0.000954	0.000865	0.003011	0.45625	0.538793	-0.08254	0.995781	0.925789
4560781	0.356619	0.000866	0.000868	0.768828	0.796336	-0.02751	0.993671	0.114097
1319539	0.002839	0.000873	0.013838	0.774428	0.830108	-0.05568	0.99789	0.869189
2314728	0.001173	0.000879	0.002367	0.492632	0.45098	0.041651	0.985232	0.572053
4118525	0.000775	0.000879	0.004219	0.260373	0.194206	0.066167	1	0.234964
1538955	0.001824	0.000885	0.000766	0.30083	0.25486	0.04597	0.996835	0.713452
4501130	0.000773	0.000888	0.00414	0.259875	0.194206	0.065669	0.998945	0.234964
1143832	0.004658	0.000897	0.014268	0.077801	0.054839	0.022962	0.998945	0.639841
2493329	0.002084	0.000899	0.001122	0.670124	0.628755	0.041369	1	0.84317
141997	0.72208	0.000902	0.047283	0.998954	0.998922	3.16E-05	0.993671	1
2317636	0.000218	0.000904	0.008291	0.997912	0.982796	0.015117	0.995781	0.12298
1563270	0.005325	0.000905	0.000623	0.350312	0.451717	-0.1014	0.998945	0.852111
4118526	0.000906	0.000911	0.004373	0.260373	0.196352	0.064022	1	0.303896
1445838	0.007154	0.000917	0.015433	0.675365	0.734409	-0.05904	0.995781	0.191675
806537	0.441475	0.000932	0.003018	0.173278	0.171336	0.001941	0.994726	0.143914
702428	0.000686	0.000936	0.003868	0.465768	0.521505	-0.05574	0.998945	0.780775
3142596	0.000387	0.00094	0.001974	0.898129	0.936559	-0.03843	0.99789	0.417152
2433695	0.002254	0.000954	0.000929	0.706861	0.760259	-0.0534	0.995781	0.703195
3443757	0.000264	0.000954	0.004813	0.741701	0.689914	0.051787	1	0.515823
702429	0.000643	0.000955	0.003671	0.463617	0.520386	-0.05677	0.998945	0.780637
305440	0.208774	0.000957	0.001316	0.298117	0.360215	-0.0621	0.994726	0.421492
1741309	0.000263	0.000957	0.000533	0.625519	0.556989	0.068529	0.998945	0.45307
1936517	0.001284	0.000962	0.003636	0.542531	0.464516	0.078015	0.998945	0.852266
4307834	0.000243	0.000963	0.005574	0.232365	0.296336	-0.06397	0.99789	0.655932

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
388261	0.000132	0.00097	0.004565	0.910603	0.854839	0.055764	0.99789	0.853567
3110942	0.000567	0.000976	0.00228	0.855509	0.888412	-0.0329	0.998945	0.637445
1541993	0.000232	0.000978	0.013052	0.488589	0.407328	0.081262	0.99789	0.701048
1153814	0.792975	0.000979	0.00116	0.951042	0.962446	-0.0114	0.99789	1
2843790	0.000181	0.000985	0.003518	0.790021	0.752688	0.037333	0.99789	1
2255211	0.009811	0.000986	0.048485	0.770747	0.819742	-0.049	1	0.532567
2255210	0.009811	0.000986	0.048485	0.770747	0.819742	-0.049	1	0.532567
3332032	0.019947	0.000991	0.002806	0.456341	0.510776	-0.05443	0.996835	0.077329
4503391	0.000438	0.000994	0.005628	0.248441	0.180828	0.067613	0.991561	0.269047
1759424	0.00387	0.000995	0.000826	0.589583	0.669913	-0.08033	0.993671	0.598926
2493331	0.00219	0.000998	0.001167	0.66875	0.627682	0.041068	0.99789	0.842813
4556247	0.00749	0.001	0.007619	0.427235	0.378755	0.04848	0.998945	0.554903
3687986	0.008797	0.001001	0.000962	0.991684	0.998927	-0.00724	0.998945	1
4441758	0.002356	0.001015	0.001386	0.945607	0.970779	-0.02517	0.991561	1
3142414	0.017692	0.001016	0.005278	0.370833	0.322961	0.047872	0.99789	0.597717
2314048	0.000594	0.001018	0.002092	0.492723	0.448387	0.044336	0.99789	0.075278
14496	0.000292	0.001036	0.00179	0.324324	0.391631	-0.06731	0.998945	0.770925
1153292	0.000343	0.001037	0.009661	0.399378	0.480645	-0.08127	0.998945	0.40366
909305	0.001112	0.001043	0.000965	0.622407	0.556867	0.06554	1	0.090896
252196	0.000598	0.001048	0.011327	0.804393	0.764009	0.040385	0.993671	0.156828
1409707	0.013032	0.001052	0.006357	0.83264	0.787097	0.045544	0.99789	0.581017
4136353	0.001119	0.001058	0.004059	0.412996	0.475917	-0.06292	0.938819	0.388527
1153301	0.001117	0.001059	0.00495	0.61879	0.543197	0.075594	0.976793	0.401051
1054391	0.001589	0.001069	0.008007	0.950104	0.912903	0.037201	0.99789	0.37629
1054391	0.001589	0.001069	0.008007	0.950104	0.912903	0.037201	0.99789	0.37629
1837931	0.001218	0.001071	0.010771	0.660042	0.594624	0.065418	0.994726	0.700552
1175953	0.000235	0.001077	0.015165	0.326638	0.258772	0.067867	0.979958	0.273067
4383961	0.005784	0.001079	0.005025	0.043568	0.067597	-0.02403	1	1
1576257	0.00164	0.001081	0.007777	0.845666	0.798913	0.046753	0.984177	0.771485
811209	0.000706	0.001101	0.001999	0.549061	0.474026	0.075035	0.992616	0.350858
811209	0.000706	0.001101	0.001999	0.549061	0.474026	0.075035	0.992616	0.350858
146136	0.019577	0.001103	0.007925	0.99896	0.993562	0.005398	0.998945	1
3495263	0.000616	0.001104	0.00094	0.935551	0.957082	-0.02153	0.998945	0.582819
547858	0.000309	0.001105	0.008071	0.883817	0.817597	0.066221	1	0.756373
1928492	0.000481	0.001107	0.000149	0.869295	0.908798	-0.0395	1	0.089146
1153287	0.000709	0.001107	0.004343	0.378631	0.466667	-0.08804	0.998945	0.641332
3332025	0.02058	0.001121	0.003318	0.450837	0.507543	-0.05671	0.993671	0.063043
4057734	0.000555	0.001132	0.023917	0.68022	0.748848	-0.06863	0.937764	0.202042
1861899	0.001173	0.001139	0.000723	0.866183	0.898069	-0.03189	1	0.608895
1563271	0.011323	0.00116	0.000803	0.446985	0.535408	-0.08842	0.998945	0.780675
4655804	0.002397	0.001162	0.006183	0.630705	0.694206	-0.0635	1	0.231546
646901	0.002356	0.001166	0.005335	0.629938	0.693548	-0.06361	0.99789	0.274769
1541978	0.000321	0.001171	0.011064	0.487474	0.408602	0.078872	0.995781	0.632797
1651826	0.000684	0.001175	0.004844	0.851351	0.791845	0.059506	0.998945	0.048925
328667	0.000418	0.001176	0.007146	0.934874	0.899142	0.035732	0.993671	0.605961
2335619	0.003494	0.001176	0.002136	0.837137	0.7897	0.047437	1	0.092772
4331763	0.001113	0.001176	0.006058	0.263048	0.193966	0.069082	0.994726	0.37315
1928490	0.000377	0.001182	0.000137	0.872917	0.910753	-0.03784	0.996835	0.243586
4554895	0.000585	0.00119	0.013903	0.245833	0.196507	0.049327	0.989451	0.659092
2308731	0.000247	0.001205	0.002577	0.308732	0.378755	-0.07002	0.998945	0.094324
702426	0.000761	0.00121	0.004616	0.464657	0.520386	-0.05573	0.998945	0.780637
302106	0.000692	0.001222	0.020694	0.676349	0.741416	-0.06507	1	0.22952
252184	0.000668	0.001226	0.012922	0.801455	0.753763	0.047692	0.99789	0.53171
547844	0.000318	0.001241	0.00939	0.88309	0.821505	0.061584	0.995781	0.637787
388243	0.000215	0.001244	0.004514	0.909563	0.855914	0.053649	0.99789	0.851442

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3311439	0.002132	0.001245	0.009269	0.726141	0.770386	-0.04425	1	0.8961
4095654	0.013675	0.001247	0.016558	0.992723	1	-0.00728	0.995781	1
4078944	0.005738	0.001247	0.000686	0.350622	0.449571	-0.09895	1	1
1845314	0.000185	0.001253	0.000164	0.768672	0.831545	-0.06287	1	1
4640016	0.002725	0.001255	0.018027	0.778361	0.831183	-0.05282	0.992616	0.743307
4504945	0.026811	0.001268	0.009686	0.966736	0.948498	0.018238	0.998945	0.113521
478419	0.003264	0.001268	0.004515	0.570539	0.514039	0.056501	0.996835	0.780289
856325	0.000231	0.001273	0.001968	0.727178	0.790323	-0.06314	0.998945	0.207906
654689	0.001431	0.001276	0.003881	0.985185	0.949198	0.035987	0.82173	0.612398
1563265	0.006437	0.001293	0.000792	0.350312	0.448387	-0.09808	0.99789	0.925452
4068129	0.00064	0.001296	0.008805	0.741667	0.786481	-0.04481	0.99789	0.272102
3336289	0.008559	0.001301	0.00377	0.977131	0.959227	0.017904	0.998945	1
1153563	0.863597	0.001308	0.001535	0.951245	0.963519	-0.01227	1	1
971443	0.009602	0.001311	0.004906	0.935685	0.899142	0.036543	1	0.799929
1651825	0.00074	0.001313	0.005738	0.849585	0.792026	0.057559	0.99789	0.049167
1912217	0.000259	0.001334	0.001349	0.901879	0.85515	0.046729	0.996835	0.059656
854358	0.000366	0.001357	0.002124	0.820166	0.769481	0.050686	0.994726	1
1410126	0.00124	0.001358	0.011115	0.394792	0.346652	0.048139	0.994726	0.918633
1153315	0.000577	0.001362	0.007466	0.445021	0.51824	-0.07322	1	0.403529
3332030	0.025827	0.001362	0.00357	0.455394	0.511828	-0.05643	0.998945	0.078087
863760	0.008639	0.001363	0.000374	0.463002	0.40305	0.059952	0.983122	1
3155726	0.000943	0.001367	0.000524	0.713098	0.769892	-0.05679	0.99789	0.035397
305465	0.231081	0.001374	0.001457	0.301255	0.358065	-0.05681	0.994726	0.225667
252174	0.000627	0.001376	0.011794	0.801455	0.754839	0.046617	0.99789	0.531349
1563252	0.004627	0.001377	0.00478	0.780208	0.677419	0.102789	0.996835	0.832152
4061467	0.000374	0.00138	0.000505	0.566239	0.491011	0.075228	0.96308	0.448742
152530	0.078876	0.001381	0.002834	0.899378	0.930258	-0.03088	1	0.480919
3903038	0.003367	0.001388	0.002135	0.793057	0.737975	0.055083	0.991561	0.203522
4275016	0.000357	0.001389	0.000831	0.905405	0.869892	0.035513	0.99789	0.680332
456030	0.00024	0.001392	0.028465	0.753138	0.672786	0.080352	0.992616	0.247065
1373899	0.282161	0.001398	0.002093	0.668421	0.632743	0.035678	0.977848	0.265502
2465811	0.056912	0.001405	0.001351	0.797441	0.830786	-0.03334	0.977848	0.186196
3083527	0.001233	0.00142	0.003215	0.887734	0.850858	0.036876	0.998945	0.854664
4565468	0.000368	0.001432	0.00086	0.905602	0.869099	0.036503	1	0.682852
4070998	0.001681	0.001436	0.001471	0.705208	0.624731	0.080477	0.996835	0.843213
3416532	0.179412	0.001436	0.004067	0.865904	0.832618	0.033286	0.998945	0.506773
3128565	0.010595	0.001443	0.00032	0.739085	0.674569	0.064516	0.996835	0.750957
2082229	0.000546	0.001453	0.027734	0.813929	0.860215	-0.04629	0.99789	0.332684
4256979	0.005311	0.001458	0.004709	0.672535	0.58774	0.084795	0.888186	0.130128
3546173	0.000114	0.00147	0.005445	0.880208	0.842275	0.037934	0.99789	0.727083
4560858	0.011708	0.001477	0.089644	0.766112	0.825054	-0.05894	0.995781	0.337331
1433875	0.003375	0.001497	0.002252	0.782158	0.831545	-0.04939	1	0.742795
2374613	0.02706	0.00154	0.011277	0.966805	0.98927	-0.02247	1	1
512092	0.000392	0.001559	0.004741	0.475052	0.417382	0.05767	0.998945	0.84942
2411666	0.006924	0.001564	0.000937	0.33368	0.28556	0.048119	0.996835	1
1054633	0.003022	0.001564	0.008663	0.947095	0.913978	0.033117	0.998945	0.764628
1851503	0.000364	0.001574	0.006187	0.752599	0.690987	0.061612	0.998945	0.745304
2308721	0.000212	0.00158	0.003738	0.370062	0.405579	-0.03552	0.998945	0.150872
3671397	0.269758	0.001583	0.002639	0.908714	0.910944	-0.00223	1	1
3128531	0.00549	0.001589	0.002605	0.501037	0.563441	-0.0624	0.998945	1
597850	0.000821	0.001614	0.003457	0.697095	0.649784	0.047311	0.99789	0.221229
4170138	0.001178	0.001615	0.000693	0.921162	0.900215	0.020947	1	0.603958
1357673	0.000769	0.001617	0.008769	0.575884	0.63871	-0.06283	0.99789	0.227534
2316808	0.000495	0.001621	0.001111	0.810166	0.849462	-0.0393	0.998945	0.003443
4118531	0.002282	0.001621	0.007202	0.24612	0.183921	0.062199	0.954641	0.349678

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
114485	0.00112	0.001624	0.023756	0.921162	0.892704	0.028458	1	0.012388
2702119	0.001764	0.001642	0.002821	0.757261	0.697425	0.059837	1	0.743175
3128561	0.020165	0.001643	0.000378	0.724066	0.662366	0.061701	0.998945	0.467892
200207	0.002175	0.001646	0.008634	0.982365	0.956989	0.025376	0.998945	1
1960745	0.003726	0.001649	0.00517	0.628631	0.697849	-0.06922	0.998945	0.271398
3443746	0.000415	0.001652	0.006793	0.740664	0.688172	0.052492	0.998945	0.91391
302078	0.00122	0.001656	0.015646	0.700207	0.755914	-0.05571	0.998945	0.614787
1986413	0.001007	0.00167	0.002814	0.680498	0.743562	-0.06306	1	0.626738
2238567	0.004117	0.001671	0.0074	0.383158	0.444805	-0.06165	0.988397	0.925028
2371591	0.00012	0.001679	0.002682	0.998963	0.988197	0.010765	1	1
302108	0.000904	0.001686	0.026072	0.677755	0.741416	-0.06366	0.998945	0.22952
4483774	0.018155	0.00169	0.001083	0.44917	0.530172	-0.081	0.99789	0.925841
1083050	0.009281	0.001692	0.001375	0.454262	0.38412	0.070142	0.998945	0.494114
4264758	0.000839	0.001703	0.009024	0.576923	0.638229	-0.06131	0.995781	0.192282
4394986	0.00529	0.001705	0.000331	0.881743	0.848712	0.03303	1	0.017493
1912251	0.000282	0.001708	0.001021	0.920998	0.877682	0.043316	0.998945	0.047836
3688309	0.004564	0.001731	0.015106	0.243243	0.183476	0.059767	0.998945	0.352047
2803733	0.027896	0.001737	0.000791	0.381319	0.421348	-0.04003	0.949367	0.846169
3114506	0.005695	0.001739	0.007996	0.603734	0.672043	-0.06831	0.998945	0.528755
2725137	0.064004	0.001741	0.002564	0.938797	0.962446	-0.02365	1	1
1864240	0.018691	0.001751	0.007662	0.738046	0.684267	0.053778	0.996835	0.914406
2117709	5.96E-05	0.001765	0.112233	0.925156	0.965591	-0.04044	0.99789	0.424286
1576232	0.002803	0.001766	0.019904	0.87422	0.824034	0.050186	0.998945	0.523907
811205	0.001976	0.001768	0.001842	0.566528	0.502151	0.064378	0.99789	0.642789
811205	0.001976	0.001768	0.001842	0.566528	0.502151	0.064378	0.99789	0.642789
1703956	0.002303	0.001769	0.00394	0.483299	0.400862	0.082436	0.994726	0.38573
4372792	0.003969	0.001788	0.009772	0.623958	0.575107	0.048851	0.99789	0.57108
924230	0.001383	0.001805	0.00411	0.754167	0.800429	-0.04626	0.99789	0.244836
1079209	0.015358	0.001822	0.001495	0.975052	0.990343	-0.01529	0.998945	1
2303867	0.000422	0.001836	0.012083	0.056017	0.082974	-0.02696	0.99789	0.542641
554092	0.001247	0.001839	0.001279	0.919087	0.888412	0.030675	1	0.637445
1079217	0.014988	0.001839	0.001515	0.975104	0.990343	-0.01524	1	1
64620	0.003155	0.00184	0.003872	0.407676	0.342275	0.065402	1	0.472918
811212	0.002083	0.001859	0.00329	0.549793	0.476395	0.073398	1	0.457511
811212	0.002083	0.001859	0.00329	0.549793	0.476395	0.073398	1	0.457511
3152763	0.001328	0.001865	0.003507	0.923077	0.956009	-0.03293	0.998945	0.218019
388245	0.000389	0.001868	0.005705	0.909751	0.857759	0.051992	0.99789	0.84853
208249	0.000587	0.001874	0.022882	0.842105	0.892208	-0.0501	0.827004	0.598686
410726	0.023188	0.001892	0.004208	0.839212	0.800429	0.038782	1	0.771798
3715893	0.000646	0.001897	0.002915	0.108921	0.075107	0.033814	1	0.096165
1153278	0.000381	0.001904	0.013364	0.409563	0.490323	-0.08076	0.99789	0.71057
3565525	0.000526	0.001908	0.002734	0.258929	0.341849	-0.08292	0.906118	0.742223
554091	0.001243	0.001927	0.001362	0.919087	0.888412	0.030675	1	0.637445
2393077	0.000493	0.001941	0.003882	0.942946	0.915236	0.02771	1	0.761664
4554829	0.002466	0.00195	0.001596	0.302905	0.263441	0.039464	0.998945	0.63413
554095	0.001254	0.00195	0.0013	0.918919	0.887339	0.03158	0.998945	0.490191
732905	2.68E-05	0.001952	0.005948	0.634236	0.696429	-0.06219	0.841772	0.402588
1963915	0.00965	0.001956	0.003001	0.665577	0.621622	0.043956	0.952532	0.686447
4650579	0.005176	0.001959	0.009897	0.683742	0.739486	-0.05574	0.925105	0.258208
2393743	0.001221	0.001963	0.000814	0.3125	0.382543	-0.07004	0.995781	0.921775
4507739	0.050627	0.001967	0.000322	0.375523	0.327214	0.048309	0.992616	0.461372
1906165	0.002854	0.001969	0.000727	0.120293	0.176344	-0.05605	0.994726	0.523753
554083	0.001252	0.001978	0.001639	0.914761	0.886266	0.028495	0.998945	0.818851
554086	0.001252	0.001978	0.001639	0.914761	0.886266	0.028495	0.998945	0.818851
1153561	0.848788	0.001985	0.003279	0.949064	0.962446	-0.01338	0.998945	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1054672	0.004676	0.001992	0.010698	0.946985	0.915236	0.031749	0.998945	0.560688
2117572	0.006924	0.001992	0.010249	0.899168	0.932403	-0.03324	0.998945	1
2393785	0.001031	0.001995	0.000897	0.313278	0.38412	-0.07084	1	0.769519
433444	0.000588	0.002003	0.013407	0.641667	0.596774	0.044892	0.996835	0.562992
4118524	0.001373	0.002009	0.007623	0.262994	0.195279	0.067715	0.998945	0.185826
253770	0.000761	0.00201	0.002249	0.779046	0.816524	-0.03748	1	1
105437	0.002751	0.002015	0.004729	0.610151	0.668172	-0.05802	0.955696	0.391152
1153490	0.920004	0.002024	0.003477	0.934647	0.952688	-0.01804	0.998945	0.614593
388240	0.000343	0.002048	0.007703	0.909751	0.856989	0.052762	0.998945	0.849713
3699030	0.002434	0.002053	0.002291	0.993776	0.984979	0.008797	1	1
4254750	0.210998	0.00206	0.002195	0.370332	0.42382	-0.05349	1	0.507921
863343	0.000959	0.002093	0.001397	0.271784	0.217204	0.05458	0.998945	0.683014
1054621	0.003653	0.002114	0.010876	0.947095	0.914502	0.032593	0.995781	0.762448
4101470	0.014651	0.002129	0.006302	0.982365	0.961373	0.020992	1	0.504861
3155723	0.00167	0.002134	0.000811	0.713098	0.770968	-0.05787	0.99789	0.025609
1126178	0.001208	0.002148	0.000178	0.435282	0.390217	0.045064	0.990506	0.695905
1523367	0.03309	0.002149	0.015159	0.658714	0.714592	-0.05588	1	0.42673
436336	0.001307	0.00216	0.01253	0.198545	0.127682	0.070862	0.998945	1
4234843	0.002484	0.00219	0.002726	0.705208	0.625536	0.079672	0.99789	0.843445
2289461	0.002202	0.002199	0.006633	0.504149	0.580472	-0.07632	1	0.924216
2808120	0.000152	0.002206	0.003168	0.472422	0.528796	-0.05637	0.842827	0.608255
4161965	0.010859	0.002214	0.002871	0.604384	0.66129	-0.05691	0.995781	0.679296
1708823	0.021557	0.002236	0.019804	0.077963	0.123391	-0.04543	0.998945	0.280569
2393733	0.001251	0.002239	0.000968	0.313278	0.38412	-0.07084	1	0.769519
1845316	0.000282	0.002249	0.000267	0.768191	0.830472	-0.06228	0.998945	1
513312	0.000538	0.002252	0.013954	0.097895	0.135484	-0.03759	0.991561	0.692453
1837929	0.002209	0.00226	0.017409	0.382292	0.456009	-0.07372	0.99789	0.400902
3477130	0.009489	0.002269	0.006313	0.399378	0.335837	0.063541	1	0.835435
4070997	0.002545	0.002274	0.002584	0.705394	0.625536	0.079858	1	0.843445
1054650	0.0051	0.002282	0.012755	0.948025	0.916129	0.031896	0.99789	0.55138
4635871	0.000561	0.002302	0.040764	0.825107	0.87935	-0.05424	0.946203	0.654012
305456	0.211406	0.002326	0.002586	0.371102	0.42382	-0.05272	0.998945	0.507921
1622821	0.000598	0.002331	0.007751	0.394191	0.458155	-0.06396	1	0.350858
4614024	0.005949	0.002336	0.00564	0.716805	0.786481	-0.06968	1	0.890147
3115460	0.000223	0.002338	0.010901	0.43763	0.494635	-0.05701	0.998945	0.307927
2306710	0.002182	0.002339	0.043361	0.564583	0.625536	-0.06095	0.99789	0.429445
709873	0.192524	0.002345	0.004935	0.53527	0.580472	-0.0452	1	0.569082
2575113	5.17E-05	0.002348	0.015266	0.381497	0.343011	0.038486	0.99789	0.680517
1153572	0.892118	0.00235	0.003758	0.948958	0.962446	-0.01349	0.99789	1
1479348	0.001781	0.002355	0.020634	0.299376	0.244086	0.05529	0.99789	0.614787
3702526	0.000289	0.002355	0.005781	0.758299	0.705819	0.05248	0.99789	0.823922
4367494	0.000261	0.002356	0.009353	0.786307	0.718884	0.067423	1	0.491485
1563278	0.009178	0.002359	0.001577	0.352083	0.450644	-0.09856	0.99789	0.851513
780646	0.001291	0.002361	0.014166	0.6875	0.613734	0.073766	0.99789	0.240761
1939245	0.000332	0.002367	0.003684	0.879418	0.910944	-0.03153	0.998945	0.563545
3079337	0.000693	0.002384	0.004281	0.260915	0.216595	0.04432	0.996835	0.019372
172638	0.002962	0.002414	0.034313	0.580042	0.523605	0.056436	0.998945	0.193452
1963914	0.008179	0.002418	0.002252	0.649688	0.604301	0.045387	0.99789	0.497943
348164	0.000719	0.002428	0.007368	0.972973	0.945279	0.027694	0.998945	0.38537
4562253	0.004851	0.00243	0.002718	0.318372	0.364516	-0.04614	0.995781	0.764464
1963129	0.001418	0.002434	0.002742	0.457469	0.5397	-0.08223	1	0.162761
1563277	0.010762	0.002435	0.009256	0.785417	0.690987	0.09443	0.99789	0.913775
856272	0.001221	0.002438	0.002434	0.71875	0.769313	-0.05056	0.99789	0.432969
512099	0.000507	0.00244	0.005226	0.477083	0.417382	0.059701	0.99789	0.84942
1542023	0.002743	0.002447	0.009743	0.338542	0.274194	0.064348	0.996835	0.484964

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3396048	0.018128	0.002463	0.006861	0.737552	0.690987	0.046565	1	1
1396900	0.007409	0.002472	0.005258	0.587318	0.63412	-0.0468	0.998945	0.920528
2216075	0.000369	0.002477	0.000469	0.835062	0.795064	0.039998	1	0.478409
4475011	0.000251	0.002485	0.014601	0.945378	0.97306	-0.02768	0.991561	0.282572
4049796	0.002211	0.002486	0.000812	0.165281	0.188172	-0.02289	0.99789	0.014201
764773	0.008328	0.002487	0.02422	0.656965	0.719355	-0.06239	0.99789	0.423377
253207	0.07149	0.00249	0.000331	0.526042	0.606452	-0.08041	0.996835	0.770674
3476349	0.00054	0.002494	0.004792	0.994813	0.98176	0.013054	1	1
302076	0.001846	0.002495	0.02109	0.700207	0.755365	-0.05516	1	0.53164
305458	0.274213	0.002499	0.002481	0.373444	0.42382	-0.05038	1	0.507921
4357007	0.003279	0.002526	0.019945	0.835759	0.787554	0.048205	0.998945	1
1888946	0.002698	0.002526	0.029447	0.761555	0.741342	0.020213	0.989451	0.544699
1982689	0.000229	0.002527	0.0122	0.894191	0.932403	-0.03821	1	0.049
2089203	0.003746	0.002527	0.010344	0.998963	0.993534	0.005428	0.99789	1
1928493	0.000744	0.002541	0.000407	0.870833	0.909871	-0.03904	0.99789	0.248592
1352334	0.031854	0.002556	0.003745	0.14657	0.098712	0.047857	0.998945	0.110007
3686641	0.000886	0.002568	0.002436	0.98643	0.9718	0.01463	0.991561	1
3153840	0.048192	0.00257	0.002241	0.95842	0.924893	0.033527	0.998945	0.315339
3153840	0.048192	0.00257	0.002241	0.95842	0.924893	0.033527	0.998945	0.315339
4228143	0.007786	0.002574	0.008654	0.604772	0.537634	0.067137	0.998945	0.305274
2356514	0.013979	0.002576	0.007958	0.926042	0.952688	-0.02665	0.996835	1
4158818	0.002518	0.002586	0.059966	0.162863	0.107527	0.055336	0.998945	1
1662329	0.000924	0.002594	0.004274	0.082121	0.14086	-0.05874	0.99789	1
410877	0.000987	0.002629	0.001077	0.506316	0.441685	0.064631	0.989451	0.509599
2169031	0.000481	0.002629	0.002769	0.658004	0.597639	0.060365	0.998945	0.026813
4551064	0.019388	0.002631	0.010674	0.697095	0.627155	0.06994	0.99789	0.691302
4385791	0.003109	0.002632	0.005784	0.862033	0.909871	-0.04784	1	0.157304
1741254	0.001026	0.002634	0.002598	0.686709	0.602174	0.084535	0.985232	0.006362
1906161	0.003773	0.002672	0.001329	0.121086	0.175269	-0.05418	0.995781	0.524628
811214	0.002918	0.002672	0.004073	0.552905	0.479614	0.073291	1	0.403403
811214	0.002918	0.002672	0.004073	0.552905	0.479614	0.073291	1	0.403403
4389156	0.015185	0.002679	0.0954	0.766112	0.820043	-0.05393	0.996835	0.345858
4389156	0.015185	0.002679	0.0954	0.766112	0.820043	-0.05393	0.996835	0.345858
3164185	0.937899	0.002681	0.147993	0.995851	0.990343	0.005507	1	1
302079	0.002043	0.002681	0.021459	0.701663	0.755914	-0.05425	0.99789	0.614787
938209	0.026866	0.002683	0.004486	0.9625	0.977419	-0.01492	0.996835	1
4417563	0.511261	0.002686	0.027002	0.221414	0.200644	0.02077	0.998945	0.147323
4664591	0.001524	0.002704	0.003227	0.314969	0.370172	-0.0552	0.998945	0.765962
4205225	0.003857	0.00272	0.003027	0.692308	0.748922	-0.05661	0.996835	0.048075
2266635	0.838879	0.002724	0.001886	0.127155	0.131868	-0.00471	0.969409	1
3311361	0.003205	0.002726	0.016627	0.727557	0.769313	-0.04176	0.996835	1
4265866	0.014547	0.002741	0.004416	0.497921	0.442765	0.055156	0.995781	0.510513
1667831	0.008695	0.002753	0.003062	0.836798	0.895699	-0.0589	0.99789	0.45484
1172153	0.002169	0.002766	0.009542	0.867432	0.831183	0.036249	0.995781	6.74E-08
646897	0.004995	0.002774	0.01355	0.397089	0.343348	0.053742	0.998945	0.837386
709838	0.144247	0.00278	0.007696	0.406639	0.446121	-0.03948	0.99789	0.573379
1410131	0.004477	0.002785	0.013376	0.396875	0.349785	0.04709	0.99789	0.918882
856345	0.00121	0.002787	0.004468	0.734375	0.7897	-0.05532	0.99789	0.127056
4397074	0.00563	0.00282	0.004742	0.946541	0.967811	-0.02127	0.994726	1
1153316	0.011565	0.00283	0.002564	0.852083	0.803879	0.048204	0.995781	0.768066
2022728	0.066891	0.00284	0.007588	0.195021	0.168455	0.026566	1	0.742795
3152760	0.001166	0.002846	0.005743	0.922199	0.956989	-0.03479	0.998945	0.202461
856284	0.001264	0.00285	0.003786	0.712656	0.765086	-0.05243	0.99789	0.699471
259789	0.000258	0.00285	0.009294	0.719335	0.639485	0.07985	0.998945	0.61648
3548370	0.001413	0.002856	0.000673	0.981328	0.957082	0.024246	1	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
4195519	0.244483	0.002863	0.021036	0.945364	0.94127	0.004094	0.803797	0.024043
3272632	0.000543	0.002882	0.000892	0.594624	0.652993	-0.05837	0.966245	0.061511
811224	0.005698	0.002895	0.002582	0.552905	0.49569	0.057215	0.99789	0.710921
811224	0.005698	0.002895	0.002582	0.552905	0.49569	0.057215	0.99789	0.710921
3571309	0.001449	0.002921	0.000688	0.981289	0.957082	0.024207	0.998945	1
2245478	0.002356	0.002942	0.022409	1	0.991398	0.008602	0.998945	1
4551528	0.006283	0.002951	0.036719	0.255252	0.227174	0.028078	0.987342	0.790318
4497793	0.00645	0.002954	0.032755	0.430208	0.386022	0.044187	0.996835	0.493417
1662272	0.000956	0.002996	0.005935	0.914938	0.862851	0.052087	0.996835	0.429511
1535572	0.000784	0.003003	0.020122	0.752075	0.793548	-0.04147	0.998945	0.481183
451309	0.000923	0.003004	0.007856	0.285863	0.330108	-0.04424	0.99789	0.347373
3128552	0.010844	0.00301	0.000761	0.754697	0.688172	0.066525	0.995781	1
410874	0.001029	0.003018	0.001884	0.505208	0.443133	0.062075	0.99789	0.639551
4455481	0.000625	0.00302	0.066463	0.97306	0.991266	-0.01821	0.972574	1
1890912	0.000132	0.003021	0.012454	0.216805	0.259657	-0.04285	1	0.470175
3296241	0.0033	0.003022	0.002586	0.529046	0.590323	-0.06128	0.998945	0.70209
4081491	0.001627	0.003031	0.008195	0.176349	0.218884	-0.04254	1	0.417948
3708834	0.015244	0.003039	0.002609	0.695426	0.741416	-0.04599	0.998945	0.148868
4116863	0.000623	0.003047	0.004365	0.137214	0.201717	-0.0645	0.998945	0.005803
4150145	0.102193	0.003047	0.0175	0.955394	0.954936	0.000459	1	0.614943
1276916	0.0036	0.003065	0.003222	0.605809	0.550429	0.05538	1	0.639666
4117799	0.00142	0.003066	0.002371	0.19917	0.154506	0.044664	1	0.479818
3706358	0.000322	0.003067	0.00812	0.489631	0.561446	-0.07181	0.89557	0.162799
3155360	0.017786	0.003068	0.010219	0.0861	0.052802	0.033298	0.99789	1
1874644	0.000121	0.003087	0.002443	0.741701	0.810086	-0.06838	1	0.097144
2347779	0.031147	0.003095	0.013639	0.959459	0.983906	-0.02445	0.998945	0.10814
4353567	0.003803	0.003114	0.004019	0.704167	0.628755	0.075411	0.99789	0.692325
3491369	0.00061	0.003117	0.008289	0.860759	0.892391	-0.03163	0.985232	0.461562
2117600	0.003135	0.003118	0.029584	0.88278	0.928112	-0.04533	1	0.282896
1153567	0.971689	0.003124	0.005011	0.949064	0.962284	-0.01322	0.996835	1
2140930	0.053819	0.003161	0.025573	0.841286	0.894397	-0.05311	0.99789	0.329104
1712457	0.00651	0.003162	0.044311	0.988589	0.972103	0.016486	1	1
1576230	0.006926	0.003167	0.036508	0.879418	0.830108	0.04931	0.99789	0.743356
302104	0.002736	0.003182	0.029719	0.741701	0.795064	-0.05336	1	0.202322
3430366	0.014841	0.003184	0.009434	0.970954	0.95279	0.018165	1	0.614579
2004718	0.002229	0.003203	0.01221	0.813278	0.866667	-0.05339	0.998945	0.691401
3379927	0.00704	0.003217	0.002502	0.817427	0.777897	0.03953	1	0.061083
272614	0.011775	0.003233	0.023899	0.789583	0.822581	-0.033	0.996835	0.155691
2452230	0.002426	0.003268	0.000997	0.524896	0.574034	-0.04914	1	0.001797
2118114	0.01107	0.003284	0.003931	0.929314	0.886853	0.04246	0.996835	0.35108
2324640	0.212469	0.00329	0.002319	0.814583	0.801075	0.013508	0.996835	0.058427
834574	0.004423	0.003294	0.004898	0.801867	0.835837	-0.03397	1	0.735662
294697	0.000763	0.003323	0.012874	0.626556	0.571888	0.054668	1	0.636518
997783	0.008401	0.003327	0.107324	0.718295	0.773605	-0.05531	0.998945	0.692394
1662350	0.000911	0.003344	0.006479	0.08195	0.138412	-0.05646	1	0.847078
1662350	0.000911	0.003344	0.006479	0.08195	0.138412	-0.05646	1	0.847078
1443058	0.202684	0.003346	0.01014	0.980084	0.965443	0.014641	0.991561	1
2598562	0.021537	0.003351	0.013574	0.302905	0.372294	-0.06939	0.995781	0.920695
1357693	0.000519	0.003352	0.028303	0.613306	0.671674	-0.05837	0.998945	0.344188
4021059	0.003933	0.003353	0.006305	0.879668	0.840129	0.039539	1	0.72954
1912255	0.000635	0.003353	0.001823	0.925156	0.878755	0.046401	0.998945	0.029722
1063378	0.017473	0.00337	0.008777	0.684375	0.626609	0.057766	0.99789	0.235508
302102	0.002878	0.003399	0.030353	0.742204	0.795699	-0.0535	0.99789	0.198845
1924196	0.002564	0.003406	0.00159	0.593555	0.558065	0.035491	0.99789	0.158851
2276303	0.005799	0.003408	0.006855	0.490625	0.429032	0.061593	0.996835	0.343612

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
302058	0.002595	0.003427	0.025774	0.700624	0.754292	-0.05367	0.998945	0.707489
2438991	0.99431	0.003433	0.010557	0.930498	0.915236	0.015262	1	0.360449
1524990	0.001299	0.003435	0.00282	0.64834	0.591398	0.056942	0.998945	0.249222
4309678	0.019512	0.003447	0.092562	0.765073	0.817597	-0.05252	0.998945	0.437632
1138256	0.000726	0.003448	0.022929	0.372407	0.425806	-0.0534	0.998945	0.022869
1479345	0.002337	0.00345	0.032119	0.298539	0.244612	0.053927	0.994726	0.531961
388286	0.000743	0.003469	0.003876	0.904564	0.857296	0.047268	1	0.849524
603038	0.001975	0.003472	0.005536	0.611349	0.553261	0.058088	0.977848	0.777528
1750016	0.001347	0.003493	0.00102	0.820833	0.76129	0.059543	0.996835	0.0978
4009500	0.004063	0.003507	0.005715	0.313929	0.240821	0.073109	0.995781	0.253252
3403776	0.000252	0.003511	0.005295	0.755717	0.722581	0.033137	0.99789	0.0828
1524982	0.002383	0.003513	0.00611	0.372591	0.328571	0.04402	0.972574	0.110451
2600644	0.004443	0.003535	0.001218	0.835062	0.816524	0.018539	1	0.120158
302077	0.002721	0.003536	0.022452	0.70296	0.758658	-0.0557	0.986287	0.525921
4110513	0.002006	0.003537	0.002793	0.656051	0.5837	0.072351	0.975738	0.333922
2118285	0.052707	0.00354	0.004027	0.501037	0.462366	0.038672	0.998945	0.093132
1948729	0.010343	0.003546	0.021256	0.341996	0.289247	0.052749	0.99789	0.82162
856351	0.000849	0.003546	0.006898	0.727178	0.785408	-0.05823	1	0.336205
3476282	0.000997	0.003549	0.007061	0.994813	0.980687	0.014127	1	1
806459	0.021088	0.003558	0.090422	0.762156	0.816415	-0.05426	0.987342	0.439871
4108353	0.020405	0.003565	0.096865	0.76556	0.817597	-0.05204	1	0.437632
3476366	0.000792	0.003591	0.00634	0.994813	0.982721	0.012092	0.996835	1
2410491	0.001071	0.003597	0.001828	0.309623	0.269565	0.040058	0.989451	0.477837
2165316	0.005873	0.003603	0.005822	0.715625	0.766667	-0.05104	0.996835	0.896782
253720	0.00132	0.003605	0.000994	0.251046	0.306034	-0.05499	0.993671	1
82089	0.334348	0.003606	0.034482	0.991701	0.991416	0.000285	1	1
1063967	0.022042	0.003616	0.010313	0.763655	0.802376	-0.03872	0.990506	1
689141	0.000925	0.003618	0.008792	0.573651	0.505365	0.068287	1	0.307927
1063276	0.002235	0.003637	0.112724	0.201245	0.152361	0.048884	1	0.210248
3115540	0.000335	0.00365	0.013159	0.442589	0.501087	-0.0585	0.990506	0.57576
3115540	0.000335	0.00365	0.013159	0.442589	0.501087	-0.0585	0.990506	0.57576
1662355	0.001131	0.003652	0.006428	0.082121	0.13871	-0.05659	0.99789	0.84702
1662355	0.001131	0.003652	0.006428	0.082121	0.13871	-0.05659	0.99789	0.84702
4234841	0.004094	0.003657	0.003708	0.703742	0.628233	0.075509	0.996835	0.765486
2134625	0.002093	0.003661	0.059725	0.939834	0.91309	0.026744	1	0.375576
1522544	0.00675	0.003663	0.024202	0.845114	0.796137	0.048977	0.998945	0.317074
3128553	0.013615	0.003672	0.001022	0.755187	0.689655	0.065532	0.99789	1
3382513	0.004001	0.003673	0.004688	0.986486	0.965665	0.020821	0.998945	1
4070986	0.004353	0.003677	0.003505	0.702083	0.626609	0.075474	0.99789	0.766517
2316703	0.000943	0.0037	0.001999	0.870332	0.899142	-0.02881	1	0.299679
3645440	0.000637	0.0037	0.005558	0.941909	0.904506	0.037402	1	0.414406
579188	0.92412	0.003718	0.012984	0.792708	0.805794	-0.01309	0.99789	1
3332018	0.061282	0.003723	0.01049	0.38981	0.438995	-0.04918	0.886076	0.691118
1373789	0.012508	0.003723	0.038753	0.784223	0.833333	-0.04911	0.862869	0.462238
73583	0.003944	0.00374	0.044113	0.299376	0.376344	-0.07697	0.99789	0.11396
3396584	0.026291	0.003741	0.011415	0.532158	0.584764	-0.05261	1	0.294161
4269304	0.001309	0.003744	0.003373	0.653846	0.585837	0.068009	0.998945	0.340291
253799	0.007158	0.003747	0.018954	0.809735	0.839246	-0.02951	0.952532	0.726503
2550354	0.009065	0.003774	0.005134	0.502088	0.563305	-0.06122	0.996835	0.925048
3336540	0.018884	0.003777	0.006618	0.976141	0.96129	0.014851	0.998945	1
4161264	0.208573	0.0038	0.005598	0.941909	0.934549	0.007359	1	0.434829
3318195	0.007164	0.003813	0.002616	0.914938	0.946352	-0.03141	1	1
3396591	0.025196	0.003813	0.01248	0.53112	0.583871	-0.05275	0.998945	0.505074
734864	0.060707	0.003829	0.018049	0.869295	0.896996	-0.0277	1	0.612733
3524275	0.007057	0.003834	0.002593	0.761411	0.719957	0.041454	1	0.566672

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
634940	0.000641	0.003834	0.016136	0.808091	0.847639	-0.03955	1	0.718833
4520585	0.020083	0.003841	0.101108	0.76556	0.817204	-0.05164	0.998945	0.278103
1662325	0.002746	0.003853	0.004716	0.917012	0.864516	0.052496	0.998945	1
806493	0.022046	0.003859	0.105784	0.766598	0.819742	-0.05314	1	0.349513
4004015	0.002954	0.00386	0.016413	0.450939	0.382863	0.068076	0.991561	0.693304
4571345	0.003774	0.003862	0.095954	0.937759	0.967811	-0.03005	1	0.382502
4571345	0.003774	0.003862	0.095954	0.937759	0.967811	-0.03005	1	0.382502
3480332	0.001785	0.003868	0.004545	0.675311	0.624464	0.050848	1	0.23562
3673676	0.002781	0.003869	0.022801	0.819415	0.864807	-0.04539	0.996835	0.551528
4408841	0.009157	0.00387	0.005407	0.364611	0.42401	-0.0594	0.988397	0.250484
631626	0.008805	0.003884	0.004438	0.955301	0.925966	0.029336	0.998945	0.497791
36229	0.423596	0.003887	0.024568	0.734864	0.745077	-0.01021	0.987342	1
1667873	0.007811	0.003894	0.004166	0.8375	0.894397	-0.0569	0.995781	0.80491
689186	0.001236	0.003896	0.009668	0.578288	0.505365	0.072923	0.996835	0.404195
4198223	0.011049	0.003903	0.001669	0.413721	0.472043	-0.05832	0.99789	0.263944
2004789	0.001702	0.003906	0.016966	0.730769	0.806867	-0.0761	0.998945	0.29732
1703960	0.013161	0.003911	0.01583	0.923077	0.870933	0.052144	0.993671	0.404191
3125964	0.023001	0.003932	0.010025	0.779046	0.812232	-0.03319	1	0.447197
4553243	0.024983	0.003934	0.005942	0.302495	0.345494	-0.043	0.998945	0.759568
1662361	0.000928	0.003936	0.00636	0.91805	0.859442	0.058608	1	0.847436
1662361	0.000928	0.003936	0.00636	0.91805	0.859442	0.058608	1	0.847436
2420481	0.00308	0.003938	0.015307	0.721992	0.788172	-0.06618	0.998945	0.211543
935067	0.04755	0.003945	0.012294	0.852697	0.86588	-0.01318	1	0.315795
2205669	0.001966	0.003954	0.006197	0.981328	0.967742	0.013586	0.998945	1
1924177	0.002873	0.003958	0.001818	0.593555	0.558065	0.035491	0.99789	0.222104
1609516	0.00597	0.003963	0.004408	0.665272	0.715983	-0.05071	0.992616	0.648352
4257049	0.002688	0.003966	0.005832	0.674788	0.609513	0.065275	0.974684	0.373977
2289458	0.002832	0.003974	0.010721	0.515658	0.592275	-0.07662	0.996835	0.923711
4101616	0.049827	0.003975	0.003402	0.469854	0.512931	-0.04308	0.996835	0.266295
3148719	0.001495	0.003985	0.045172	0.652083	0.711207	-0.05912	0.995781	0.910517
2133374	0.172804	0.003996	0.00796	0.821206	0.770386	0.05082	0.998945	0.793362
4108356	0.024742	0.003996	0.11034	0.766112	0.817597	-0.05148	0.998945	0.437632
4468619	0.559661	0.004005	0.029657	0.764583	0.755388	0.009195	0.995781	1
3123299	0.024596	0.004013	0.007769	0.331601	0.387097	-0.0555	0.99789	0.170879
410867	0.002657	0.004033	0.001662	0.527837	0.456332	0.071505	0.975738	0.510027
789726	0.000819	0.004062	0.004949	0.668067	0.58913	0.078937	0.987342	0.699938
4568052	0.000287	0.004073	0.011315	0.27027	0.231034	0.039236	0.927215	0.499181
1522529	0.007224	0.004078	0.028391	0.846473	0.796774	0.049699	0.998945	0.314861
1266242	0.000918	0.00408	0.006145	0.830561	0.891398	-0.06084	0.99789	0.633663
4437976	0.001724	0.004105	0.016516	0.238397	0.282328	-0.04393	0.989451	0.908839
2371256	0.180589	0.004114	0.008161	0.140333	0.177419	-0.03709	0.99789	0.750323
1924217	0.003357	0.004119	0.001637	0.592324	0.554839	0.037485	0.998945	0.261575
1266235	0.000899	0.00412	0.006936	0.830913	0.891631	-0.06072	1	0.633718
3867091	0.127177	0.004132	0.006812	0.913679	0.934509	-0.02083	0.998945	1
2624694	0.001547	0.004156	0.001271	0.664938	0.587983	0.076955	1	0.567607
3396588	0.031458	0.004159	0.01427	0.535565	0.58243	-0.04686	0.990506	0.502971
1576259	0.004235	0.00416	0.020838	0.839917	0.798491	0.041425	0.996835	0.666771
1963911	0.012812	0.004174	0.00377	0.651767	0.607296	0.044471	0.998945	0.382456
295854	0.002042	0.004175	0.000926	0.625	0.569892	0.055108	0.996835	0.155669
295854	0.002042	0.004175	0.000926	0.625	0.569892	0.055108	0.996835	0.155669
4365922	0.018555	0.004181	0.095038	0.766667	0.81828	-0.05161	0.996835	0.434518
4560856	0.023896	0.004195	0.103524	0.766667	0.817597	-0.05093	0.99789	0.437632
1153456	0.692099	0.0042	0.00735	0.934647	0.951613	-0.01697	0.998945	0.615787
4372459	0.000879	0.004209	0.004126	0.623701	0.551724	0.071976	0.996835	0.039211
1155279	0.006077	0.004211	0.047838	0.425	0.365217	0.059783	0.991561	0.546751

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3332286	0.00966	0.004214	0.010649	0.423237	0.483906	-0.06067	1	0.227655
4118404	0.034658	0.004223	0.024669	0.552463	0.498871	0.053591	0.959916	0.295761
253319	0.70373	0.004225	0.007635	0.795833	0.834409	-0.03858	0.996835	0.405992
1662271	0.001793	0.00424	0.007877	0.917879	0.865591	0.052288	0.99789	0.427478
1924205	0.003181	0.004258	0.002132	0.591858	0.556989	0.034869	0.995781	0.189054
4097821	0.000555	0.004273	0.016714	0.012277	0.035194	-0.02292	0.907173	1
1864209	0.023142	0.004273	0.002156	0.469917	0.446237	0.02368	0.998945	0.160579
454247	0.005577	0.004281	0.01262	0.9139	0.862661	0.051239	1	0.846824
926241	0.0145	0.004283	0.004341	0.328782	0.36551	-0.03673	0.988397	0.159371
1266290	0.001128	0.004316	0.005365	0.818465	0.88412	-0.06566	1	0.493982
1401237	0.004125	0.004331	0.001054	0.039419	0.020386	0.019033	1	0.170726
4561552	0.001674	0.004331	0.003943	0.653527	0.585837	0.06769	1	0.340291
2377219	0.268343	0.00434	0.031486	0.768672	0.727957	0.040715	0.998945	0.558424
4653871	0.004663	0.004345	0.005255	0.703586	0.626623	0.076963	0.987342	1
1374648	0.00154	0.004347	0.017201	0.892708	0.846983	0.045726	0.995781	0.105183
1539929	0.00368	0.004354	0.033689	0.847193	0.875269	-0.02808	0.99789	0.83097
4248215	0.00561	0.004361	0.077217	0.990664	0.998927	-0.00826	1	1
4186477	0.337759	0.004365	0.014007	0.955882	0.95398	0.001902	0.85443	1
689128	0.001046	0.004381	0.010663	0.571577	0.506438	0.065139	1	0.26597
3559003	0.001678	0.004386	0.033027	0.988589	0.972103	0.016486	1	1
4389154	0.024851	0.004387	0.106601	0.767782	0.817597	-0.04981	0.995781	0.437632
535603	0.000847	0.004396	0.024577	0.913721	0.954839	-0.04112	0.99789	0.235565
2459885	0.008808	0.0044	0.010212	0.118257	0.08691	0.031347	1	0.235958
1937502	0.693623	0.0044	0.005211	0.596473	0.580472	0.016001	1	0.704248
1264004	0.000257	0.004409	0.038431	0.907484	0.947425	-0.03994	0.998945	0.125044
1264004	0.000257	0.004409	0.038431	0.907484	0.947425	-0.03994	0.998945	0.125044
959095	0.05748	0.004409	0.01226	0.746362	0.703863	0.042499	0.998945	0.374024
1937500	0.683505	0.004416	0.005383	0.596473	0.580472	0.016001	1	0.704248
3311455	0.001527	0.004423	0.020688	0.541667	0.584764	-0.0431	0.99789	0.182009
1651196	0.042708	0.00443	0.030122	0.455208	0.507511	-0.0523	0.99789	0.459516
603737	0.003035	0.004445	0.004242	0.779626	0.821888	-0.04226	0.998945	0.081005
171375	0.011604	0.00445	0.032075	0.382479	0.431767	-0.04929	0.96519	0.847323
1963912	0.012253	0.004451	0.003938	0.652807	0.607527	0.04528	0.99789	0.436341
4100743	0.01803	0.004474	0.004946	0.298301	0.253333	0.044968	0.971519	0.534088
1623469	0.007878	0.004482	0.029092	0.998963	0.993548	0.005414	0.998945	0.016094
2247777	0.133309	0.004488	0.005386	0.77453	0.780645	-0.00611	0.995781	1
1651218	0.042854	0.004493	0.030097	0.455301	0.507511	-0.05221	0.998945	0.459516
3403779	0.000328	0.004498	0.006653	0.755187	0.723176	0.032011	1	0.083166
3403780	0.000328	0.004498	0.006653	0.755187	0.723176	0.032011	1	0.083166
2114789	0.013592	0.004498	0.016107	0.392708	0.318966	0.073743	0.995781	0.018725
1144211	0.089869	0.00451	0.007556	0.891079	0.900215	-0.00914	1	0.439752
3325523	0.036244	0.004516	0.118452	0.814315	0.855914	-0.0416	0.998945	0.129002
3115503	0.000422	0.004517	0.014695	0.441737	0.501104	-0.05937	0.975738	0.778468
4327107	0.004672	0.00452	0.009169	0.933333	0.957974	-0.02464	0.995781	0.565393
3987721	0.003283	0.004538	0.000816	0.78527	0.824731	-0.03946	0.998945	0.524628
4490369	0.006334	0.00454	0.114224	0.004167	0	0.004167	0.996835	1
3562833	0.006011	0.004548	0.02174	0.996888	0.982796	0.014092	0.998945	0.12298
922157	0.010689	0.004564	0.037962	0.917879	0.953863	-0.03598	0.998945	0.61431
4124892	0.497608	0.004571	0.001214	0.656383	0.681718	-0.02534	0.974684	0.448976
404139	0.003376	0.004579	0.008008	0.751566	0.799136	-0.04757	0.993671	0.665943
1264139	0.000285	0.004581	0.076867	0.891079	0.933476	-0.0424	1	0.043265
3426068	0.017661	0.004589	0.014561	0.276842	0.334773	-0.05793	0.989451	1
4199573	0.000707	0.0046	0.007802	0.642091	0.557668	0.084423	0.990506	0.502275
3260119	0.005026	0.004605	0.001283	0.196058	0.225702	-0.02964	0.996835	0.109346
1662287	0.002701	0.004623	0.004099	0.113071	0.16309	-0.05002	1	0.309288

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2347091	0.003764	0.004626	0.001858	0.73029	0.773605	-0.04331	1	0.692394
4642008	0.000721	0.004629	0.008598	0.864108	0.821888	0.042219	1	0.203776
4118405	0.039081	0.004653	0.030283	0.544792	0.491361	0.053431	0.994726	0.352461
579167	0.46928	0.004659	0.09867	0.487552	0.536559	-0.04901	0.998945	0.351349
1937498	0.661157	0.004661	0.006143	0.597077	0.578947	0.01813	0.986287	0.564535
1667885	0.009674	0.004663	0.003813	0.835759	0.891631	-0.05587	0.998945	0.633718
1141114	0.160009	0.004667	0.041832	0.908714	0.88013	0.028584	0.996835	0.374647
4502903	0.001853	0.004672	0.00424	0.653527	0.586207	0.06732	0.99789	0.293104
3403777	0.000319	0.004675	0.006747	0.755187	0.723176	0.032011	1	0.083166
1651889	0.001278	0.004678	0.010331	0.713531	0.63449	0.07904	0.985232	0.764007
3524274	0.003694	0.004683	0.001981	0.727178	0.683476	0.043702	1	0.668274
1410093	0.006706	0.004692	0.02034	0.395616	0.350858	0.044757	0.996835	1
4237443	0.005583	0.004698	0.010015	0.313278	0.241342	0.071936	0.995781	0.252927
2518667	0.001105	0.004712	0.002943	0.453222	0.405376	0.047846	0.99789	0.923444
4228719	0.009958	0.004716	0.005761	0.997845	0.990909	0.006936	0.953586	1
423038	0.065853	0.004746	0.004844	0.869295	0.843348	0.025947	1	0.598066
3491379	0.000952	0.004747	0.011439	0.858921	0.891631	-0.03271	1	0.468704
3549786	0.002292	0.004751	0.013173	0.820539	0.86588	-0.04534	1	0.547515
62443	0.01718	0.004759	0.003124	0.649378	0.614224	0.035153	0.99789	0.624166
1741450	0.002851	0.004778	0.007955	0.726141	0.662366	0.063775	0.998945	1
4373840	0.006701	0.004793	0.087535	0.940748	0.968884	-0.02814	0.998945	0.362013
4373840	0.006701	0.004793	0.087535	0.940748	0.968884	-0.02814	0.998945	0.362013
2143016	0.00507	0.004803	0.024118	0.078838	0.097639	-0.0188	1	1
1741423	0.00329	0.004803	0.008068	0.726141	0.662366	0.063775	0.998945	1
2319654	0.001772	0.004808	0.023449	0.929461	0.94206	-0.0126	1	0.660536
180585	0.001703	0.004825	0.020323	0.998963	0.983906	0.015057	1	0.10814
1174293	0.00344	0.004827	0.012823	0.955394	0.927039	0.028356	1	1
1217714	0.115858	0.004831	0.021133	0.520833	0.577586	-0.05675	0.995781	0.022288
2316829	0.001667	0.004836	0.002619	0.8125	0.846652	-0.03415	0.994726	0.00634
922162	0.013823	0.00484	0.041083	0.917879	0.952688	-0.03481	0.99789	0.614593
2318810	0.001293	0.004841	0.017466	0.548857	0.629032	-0.08018	0.99789	0.090882
481295	0.004989	0.004854	0.002232	0.542531	0.623922	-0.08139	0.99789	0.692197
46302	0.002293	0.004854	0.012618	0.405405	0.342275	0.063131	0.998945	0.01824
447224	0.002201	0.004856	0.050002	0.998963	0.990343	0.008619	1	0.038233
3484543	0.012632	0.004856	0.007362	0.971992	0.954741	0.01725	0.99789	0.614809
1674741	0.113646	0.004859	0.032301	0.840249	0.862851	-0.0226	0.996835	0.112525
1338575	0.008556	0.00486	0.028715	0.359667	0.3	0.059667	0.99789	0.010857
1023595	0.002249	0.00486	0.002149	0.710581	0.77897	-0.06839	1	0.503646
341911	0.002037	0.004864	0.003043	0.976141	0.949462	0.026679	0.998945	1
4551070	0.006094	0.004876	0.042075	0.975941	0.958065	0.017877	0.994726	1
2194622	0.005316	0.004886	0.013082	0.994813	0.983871	0.010942	0.998945	1
2371302	0.169713	0.004893	0.01199	0.140333	0.178112	-0.03778	0.998945	1
4397093	0.588797	0.004893	0.035364	0.791494	0.786481	0.005013	1	0.169016
2403034	0.024708	0.004899	0.006713	0.080042	0.113978	-0.03394	0.99789	0.81884
1667879	0.009518	0.00493	0.004613	0.836798	0.893548	-0.05675	0.99789	0.805882
326273	0.415603	0.004931	0.001211	0.757511	0.76	-0.00249	0.966245	0.020143
1215592	0.001639	0.004932	0.017915	0.842324	0.888412	-0.04609	1	1
4655574	0.022976	0.004947	0.025197	0.393154	0.328326	0.064827	1	0.058961
535636	0.001857	0.004958	0.097349	0.706067	0.76129	-0.05522	0.994726	0.524055
333576	0.003828	0.00496	0.008958	0.641372	0.579399	0.061973	0.998945	0.254064
2433808	0.010243	0.004961	0.010625	0.279046	0.213519	0.065526	1	0.410834
2420472	0.003709	0.004971	0.016604	0.726611	0.788627	-0.06202	0.998945	0.211824
3426070	0.015911	0.004973	0.016033	0.305208	0.368817	-0.06361	0.996835	1
1986776	0.111177	0.004975	0.016318	0.360125	0.294956	0.065169	0.986287	0.498953
1370324	0.001036	0.004981	0.031229	0.835062	0.77897	0.056092	1	0.688453

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3596272	0.00118	0.004998	0.002038	0.274428	0.216738	0.05769	0.998945	0.019559
1066611	0.013926	0.004999	0.02152	0.903527	0.935622	-0.0321	1	0.243811
1066611	0.013926	0.004999	0.02152	0.903527	0.935622	-0.0321	1	0.243811
1667849	0.015945	0.005025	0.005831	0.835062	0.891631	-0.05657	1	0.809209
2255235	0.026667	0.005032	0.114458	0.767708	0.819355	-0.05165	0.996835	0.350482
1874652	0.000292	0.00504	0.003682	0.739085	0.811159	-0.07207	0.998945	0.097884
2007122	0.015414	0.005048	0.006737	0.432432	0.385193	0.047239	0.998945	0.922056
4446955	0.086649	0.005056	0.004443	0.965553	0.980477	-0.01492	0.991561	1
1651197	0.042381	0.005056	0.032389	0.455301	0.508621	-0.05332	0.996835	0.458573
2281341	0.083488	0.005062	0.027395	0.156965	0.182796	-0.02583	0.99789	1
1667877	0.01121	0.005062	0.005042	0.836798	0.893548	-0.05675	0.99789	0.805882
603759	0.003476	0.005078	0.004683	0.782744	0.820815	-0.03807	0.998945	0.081372
1357486	0.026314	0.005082	0.012729	0.892116	0.922747	-0.03063	1	1
2421221	0.019655	0.005083	0.017339	0.430498	0.495708	-0.06521	1	0.643873
4628096	0.00014	0.005091	0.00303	0.92887	0.885529	0.043341	0.992616	0.490388
2316803	0.001802	0.0051	0.003445	0.191909	0.155579	0.036329	1	0.00405
788846	0.006601	0.005105	0.036569	1	0.994624	0.005376	0.996835	1
1879474	0.000929	0.005108	0.002433	0.576763	0.512876	0.063888	1	0.781582
341908	0.002225	0.005108	0.002643	0.976141	0.951613	0.024528	0.998945	0.615787
4108354	0.019388	0.005111	0.120438	0.765073	0.817597	-0.05252	0.998945	0.437632
3597588	0.001972	0.005116	0.003153	0.844398	0.893777	-0.04938	1	1
1662279	0.001906	0.00512	0.00883	0.914938	0.863734	0.051204	1	0.693015
1165285	0.001666	0.005126	0.009171	0.106918	0.143956	-0.03704	0.983122	0.705276
4122642	0.003051	0.005128	0.002117	0.406445	0.462284	-0.05584	0.996835	1
582125	0.002763	0.005132	0.001198	0.766112	0.814378	-0.04827	0.998945	0.645653
2056926	0.000272	0.005133	0.007268	0.77131	0.721505	0.049804	0.99789	0.082739
4107083	0.003221	0.005134	0.028382	1	0.994612	0.005388	0.983122	1
4107083	0.003221	0.005134	0.028382	1	0.994612	0.005388	0.983122	1
3596268	0.001236	0.005138	0.001475	0.272917	0.216738	0.056178	0.99789	0.019559
40228	0.006308	0.00515	0.003097	0.934647	0.915236	0.019411	1	0.761664
754656	0.011878	0.005152	0.032111	0.626556	0.684946	-0.05839	0.998945	0.284833
1063376	0.022925	0.005154	0.014276	0.683333	0.626609	0.056724	0.99789	0.235508
1750018	0.001841	0.005157	0.002009	0.817048	0.761803	0.055245	0.998945	0.160452
1651225	0.04919	0.005162	0.031639	0.456341	0.507511	-0.05117	0.998945	0.459516
3416529	0.196627	0.00517	0.013679	0.871102	0.834773	0.036329	0.995781	0.614767
1651229	0.04898	0.005179	0.031535	0.456341	0.507511	-0.05117	0.998945	0.459516
2262590	0.022782	0.00518	0.004164	0.353684	0.401087	-0.0474	0.986287	0.627472
2380173	0.001023	0.005181	0.027711	0.436722	0.359914	0.076808	0.99789	0.421905
1539928	0.003902	0.005183	0.02979	0.84751	0.878755	-0.03124	1	0.8306
554099	0.002026	0.005183	0.01225	0.895228	0.870968	0.02426	0.998945	0.14979
1667889	0.012396	0.005183	0.00473	0.8361	0.892241	-0.05614	0.99789	0.63402
4636236	0.007985	0.005188	0.001665	0.253191	0.217582	0.035609	0.975738	0.269819
4056256	0.001495	0.005189	0.001759	0.725572	0.780645	-0.05507	0.99789	0.057113
1013766	0.079135	0.005213	0.004543	0.809129	0.850538	-0.04141	0.998945	0.467849
1013766	0.079135	0.005213	0.004543	0.809129	0.850538	-0.04141	0.998945	0.467849
1651206	0.042271	0.005213	0.030513	0.455208	0.507543	-0.05233	0.995781	0.404334
4606035	0.258412	0.005215	0.013975	0.870062	0.847639	0.022423	0.998945	0.718833
1409659	0.001943	0.005224	0.02425	0.971933	0.991416	-0.01948	0.998945	1
1409659	0.001943	0.005224	0.02425	0.971933	0.991416	-0.01948	0.998945	1
153610	0.021621	0.00524	0.002085	0.630977	0.587284	0.043693	0.996835	0.388568
566540	0.007745	0.005246	0.003023	0.506224	0.546137	-0.03991	1	0.512991
2197186	0.001044	0.005251	0.022231	0.594792	0.635193	-0.0404	0.99789	0.689936
1982566	0.000392	0.005251	0.023034	0.882536	0.927957	-0.04542	0.99789	0.722404
4035208	0.893272	0.005257	0.007746	0.415272	0.414317	0.000955	0.990506	0.387487
4556891	0.001901	0.005265	0.033923	0.8361	0.793991	0.042108	1	0.119499

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1924195	0.003306	0.00527	0.002634	0.594142	0.558065	0.036078	0.994726	0.158851
3444012	0.001799	0.005271	0.020718	0.811203	0.783405	0.027798	0.99789	1
1928439	0.004455	0.005277	0.002771	0.514523	0.567597	-0.05307	1	0.347186
4605840	0.019269	0.005295	0.018838	0.612033	0.566524	0.04551	1	0.850335
4056259	0.001252	0.005306	0.001765	0.726141	0.782189	-0.05605	1	0.014061
4230064	0.003684	0.005308	0.048838	0.703975	0.636957	0.067018	0.989451	0.920029
2786212	0.001167	0.005309	0.001611	0.273486	0.217204	0.056282	0.995781	0.014245
302099	0.004117	0.005311	0.04322	0.74477	0.796976	-0.05221	0.992616	0.152754
4174855	0.001133	0.005314	0.004997	0.614345	0.5397	0.074646	0.998945	0.514922
1264011	0.000427	0.005319	0.05881	0.906639	0.943133	-0.03649	1	0.052333
1264011	0.000427	0.005319	0.05881	0.906639	0.943133	-0.03649	1	0.052333
535644	0.002747	0.005323	0.113378	0.738589	0.788627	-0.05004	1	0.403665
4269305	0.002359	0.005365	0.004853	0.655208	0.588553	0.066655	0.994726	0.38807
811137	0.005157	0.005369	0.007779	0.626819	0.575107	0.051712	0.998945	0.257178
1749235	0.000868	0.005371	0.005223	0.954262	0.924569	0.029693	0.996835	0.736936
2271977	0.000894	0.005377	0.002889	0.66318	0.602592	0.060588	0.992616	0.246067
2347087	0.005197	0.005379	0.002953	0.729253	0.773118	-0.04387	0.998945	0.692188
1667872	0.01258	0.005385	0.005207	0.837866	0.892473	-0.05461	0.994726	1
1708815	0.061044	0.005408	0.038547	0.120042	0.162338	-0.0423	0.992616	0.606825
1937852	0.63169	0.005443	0.006643	0.370332	0.385193	-0.01486	1	0.845576
3451676	0.005028	0.005445	0.012826	0.998958	0.991398	0.00756	0.996835	1
4037433	0.013091	0.00545	0.02044	0.719917	0.659483	0.060434	0.99789	1
1507441	0.022237	0.005452	0.010814	0.905602	0.879828	0.025773	1	1
1511555	0.090533	0.005485	0.008064	0.607884	0.561422	0.046461	0.99789	0.220196
1157702	0.011408	0.005486	0.002459	0.559623	0.507559	0.052064	0.992616	0.094648
349763	0.016122	0.005519	0.003491	0.198133	0.153433	0.044699	1	1
3675807	0.066665	0.00552	0.003121	0.852391	0.800429	0.051962	0.998945	0.46949
2371225	0.095468	0.005521	0.012309	0.145228	0.187768	-0.04254	1	0.362582
922193	0.018202	0.005533	0.038678	0.91805	0.95279	-0.03474	1	0.614579
4118403	0.030222	0.005539	0.026357	0.541754	0.493421	0.048333	0.986287	0.708536
754666	0.010686	0.005541	0.031599	0.62578	0.682403	-0.05662	0.998945	0.335941
2348404	0.012297	0.005543	0.007344	0.970894	0.944206	0.026688	0.998945	0.645953
1221271	0.000479	0.005591	0.024566	0.95625	0.92382	0.03243	0.99789	0.172189
2292931	0.045569	0.005592	0.007066	0.665281	0.615054	0.050227	0.99789	0.55713
4067583	0.001496	0.005596	0.031227	0.85625	0.805857	0.050393	0.992616	1
4034951	0.001078	0.005624	0.002921	0.4375	0.498759	-0.06126	0.855485	0.485469
2310656	0.005582	0.005629	0.026713	0.211618	0.180645	0.030973	0.998945	1
810602	0.033783	0.005633	0.004861	0.903527	0.870968	0.032559	0.998945	0.678259
1925176	0.007986	0.005658	0.00396	0.829876	0.786481	0.043395	1	0.128016
3317940	0.014348	0.005669	0.002674	0.571429	0.522727	0.048701	0.989451	0.709791
3560001	0.004341	0.005676	0.016343	0.830913	0.876344	-0.04543	0.998945	0.393056
3901762	0.000966	0.005682	0.000115	0.863395	0.894207	-0.03081	1	0.127092
3709754	0.004428	0.005698	0.011132	0.406709	0.468547	-0.06184	0.989451	0.925472
4387016	0.0276	0.005706	0.113896	0.76556	0.815618	-0.05006	0.994726	0.441619
3167441	0.007231	0.005707	0.03934	1	0.994589	0.005411	0.994726	0.010817
2331931	0.05416	0.005708	0.00338	0.266112	0.310345	-0.04423	0.996835	0.828188
2134626	0.003375	0.005712	0.085307	0.939709	0.914163	0.025546	0.998945	0.367468
3133420	0.002379	0.00574	0.016752	0.634409	0.698876	-0.06447	0.959916	0.430431
2400088	0.01029	0.005744	0.01981	0.718619	0.752723	-0.0341	0.988397	0.706708
4214983	0.059028	0.005763	0.040098	0.282744	0.306277	-0.02353	0.994726	0.827053
4467380	0.002013	0.005783	0.002908	0.783784	0.734979	0.048805	0.998945	0.002787
4339929	0.001504	0.005789	0.00544	0.464807	0.522068	-0.05726	0.99789	0.825802
780655	0.003209	0.005813	0.020611	0.699374	0.631466	0.067908	0.994726	0.369179
3186579	0.005169	0.005813	0.005716	0.448009	0.521205	-0.0732	0.949367	0.184822
935033	0.048735	0.005816	0.013563	0.852391	0.868026	-0.01563	0.998945	0.152635

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1268447	0.002255	0.005823	0.018994	0.726611	0.66129	0.065321	0.99789	0.214512
171383	0.007041	0.00586	0.036078	0.588028	0.541966	0.046062	0.889241	0.43
765965	0.00062	0.005861	0.001587	0.154564	0.124464	0.030101	1	0.206484
4185865	0.000897	0.005892	0.007969	0.87422	0.841935	0.032285	0.99789	0.385529
3454425	0.005718	0.00591	0.009134	0.832988	0.769892	0.063095	0.998945	0.189454
1667839	0.012713	0.005912	0.006594	0.835062	0.893777	-0.05871	1	0.805772
1667842	0.012713	0.005912	0.006594	0.835062	0.893777	-0.05871	1	0.805772
2081213	0.044325	0.005915	0.013112	0.059129	0.04086	0.018268	0.998945	1
4353546	0.023926	0.005925	0.048212	0.42369	0.4	0.02369	0.916667	0.269811
3901764	0.001024	0.005965	0.00013	0.865691	0.895202	-0.02951	0.995781	0.127092
1667874	0.011675	0.005971	0.006718	0.837838	0.893777	-0.05594	0.998945	0.805772
3146801	0.025596	0.005981	0.036588	0.794606	0.746237	0.048369	0.998945	0.713694
3548657	0.001446	0.005984	0.076371	0.591286	0.657667	-0.06638	0.996835	1
3454436	0.005745	0.006013	0.008127	0.829522	0.761853	0.067668	0.996835	0.610272
1762483	0.020958	0.006023	0.00291	0.914938	0.937634	-0.0227	0.998945	0.695778
736936	0.002203	0.006026	0.005439	0.985417	0.978541	0.006876	0.99789	0.187984
303902	0.010993	0.006059	0.007545	0.886458	0.860515	0.025943	0.99789	0.562159
146375	0.001441	0.006075	0.006391	0.050104	0.071121	-0.02102	0.994726	0.27517
4504973	0.023879	0.006095	0.095176	0.941909	0.966738	-0.02483	1	1
4100748	0.011804	0.006112	0.005096	0.286902	0.237124	0.049778	0.998945	0.521476
449790	0.017415	0.006115	0.002493	0.75431	0.794702	-0.04039	0.9673	0.470938
3426085	0.022196	0.006119	0.019475	0.302083	0.37013	-0.06805	0.993671	0.76467
1735752	0.010789	0.00612	0.008405	0.331568	0.362256	-0.03069	0.984177	0.268382
1566297	0.020673	0.006129	0.003284	0.337838	0.294624	0.043214	0.99789	0.503903
2433733	0.00438	0.006139	0.004564	0.711618	0.759657	-0.04804	1	0.611888
959796	0.003603	0.006171	0.007636	0.679461	0.63412	0.04534	1	0.484901
819412	0.03148	0.006177	0.012744	0.710581	0.780645	-0.07006	0.998945	0.10355
819412	0.03148	0.006177	0.012744	0.710581	0.780645	-0.07006	0.998945	0.10355
21125	0.005441	0.006192	0.064519	0.91875	0.947198	-0.02845	0.995781	1
4592899	0.024323	0.006196	0.003403	0.537344	0.480477	0.056867	0.994726	0.852036
3426080	0.019629	0.006202	0.024099	0.275681	0.333691	-0.05801	0.994726	1
3637132	0.008801	0.006237	0.011346	0.629668	0.584764	0.044904	1	0.774842
570396	0.04307	0.00624	0.033132	0.738947	0.789247	-0.0503	0.991561	0.488083
4161656	0.05692	0.006253	0.009931	0.928274	0.920259	0.008016	0.996835	0.518811
2168258	0.030793	0.006268	0.007731	0.867865	0.82967	0.038194	0.978903	0.86797
4475960	0.001322	0.00627	0.016777	0.807054	0.765021	0.042032	1	0.898211
929107	0.00293	0.006272	0.036004	0.95	0.914687	0.035313	0.994726	0.362005
1964833	0.007004	0.006286	0.004878	0.31289	0.365011	-0.05212	0.995781	0.617513
4391596	0.000692	0.00632	0.004084	0.516598	0.435622	0.080975	1	0.39702
3670446	0.006505	0.00634	0.0068	0.877593	0.830472	0.047121	1	0.62085
1338556	0.012991	0.00635	0.045646	0.34375	0.294118	0.049632	0.990506	0.032738
2701905	0.042688	0.006353	0.020089	0.571577	0.629828	-0.05825	1	0.6198
1978960	0.001638	0.006359	0.031673	0.71888	0.679957	0.038923	0.99789	0.134885
3492601	0.056528	0.006367	0.005553	0.761013	0.724344	0.03667	0.920886	0.178749
3192838	0.001541	0.00638	0.045903	0.202083	0.270968	-0.06888	0.996835	0.815227
1312181	0.000864	0.006399	0.003057	0.905602	0.873391	0.032211	1	0.402361
1002650	0.002572	0.006406	0.000416	0.807692	0.75054	0.057152	0.995781	0.536334
4032339	0.002555	0.006407	0.0222	0.775934	0.709227	0.066706	1	0.500849
2371188	0.09961	0.006426	0.012916	0.144491	0.184946	-0.04046	0.99789	0.442917
2004462	0.032122	0.006434	0.012765	0.823285	0.858369	-0.03508	0.998945	0.338099
689161	0.001897	0.006436	0.01391	0.572176	0.503282	0.068893	0.986287	0.513344
620768	0.004116	0.006458	0.001747	0.777083	0.714592	0.062491	0.99789	0.04116
2427725	0.010379	0.006461	0.150046	0.958333	0.922747	0.035587	0.99789	0.341422
807342	0.004623	0.006468	0.00674	0.71888	0.772043	-0.05316	0.998945	0.355506
1535537	0.00217	0.006474	0.040069	0.801867	0.837634	-0.03577	0.998945	0.607827

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3704399	0.00085	0.006476	0.007685	0.374481	0.422581	-0.0481	0.998945	0.924278
3704399	0.00085	0.006476	0.007685	0.374481	0.422581	-0.0481	0.998945	0.924278
1924036	0.008297	0.006493	0.003239	0.484342	0.45279	0.031553	0.996835	0.454399
1837941	0.036896	0.006518	0.044093	0.782744	0.823656	-0.04091	0.99789	1
4300555	0.030975	0.006535	0.00841	0.009375	0.020518	-0.01114	0.994726	1
1393025	0.008731	0.006537	0.025487	0.807856	0.751648	0.056207	0.976793	0.616465
3689009	0.018989	0.006539	0.007613	0.908994	0.931072	-0.02208	0.974684	0.712408
328090	0.00567	0.006547	0.052375	0.861746	0.825107	0.036639	0.998945	1
4174852	0.001544	0.006548	0.006246	0.623444	0.553648	0.069796	1	0.049096
1021331	0.059689	0.006565	0.008646	0.254184	0.322826	-0.06864	0.989451	0.165458
4201727	0.049028	0.00657	0.147189	0.965194	0.974587	-0.00939	0.991561	1
1270613	0.001208	0.006582	0.023656	0.343035	0.275751	0.067284	0.998945	0.562266
200378	0.007097	0.006603	0.020914	0.784823	0.726395	0.058428	0.998945	1
2015179	0.579769	0.006621	0.014238	0.155208	0.180258	-0.02505	0.99789	0.349513
4290935	0.028103	0.006628	0.079458	0.917879	0.954936	-0.03706	0.998945	0.614943
1268446	0.002672	0.00663	0.019225	0.727083	0.66309	0.063993	0.99789	0.119817
3525966	0.015174	0.006636	0.006339	0.903326	0.877419	0.025907	0.99789	1
1896453	0.059271	0.006662	0.008042	0.992723	0.983906	0.008818	0.998945	1
689169	0.001988	0.006673	0.012963	0.573222	0.506466	0.066756	0.993671	0.227148
346055	0.001818	0.00668	0.013881	0.860996	0.897849	-0.03685	0.998945	0.804367
1396149	0.025942	0.006703	0.015409	0.98444	0.972103	0.012337	1	1
2371241	0.114223	0.006719	0.014767	0.147303	0.186022	-0.03872	0.998945	0.443063
4084748	0.001441	0.006724	0.036993	0.319792	0.380435	-0.06064	0.991561	0.767401
1157413	0.048442	0.006734	0.029572	0.7625	0.701509	0.060991	0.995781	1
1644664	0.009794	0.006742	0.004952	0.103734	0.083691	0.020043	1	0.759488
4070999	0.007325	0.006759	0.009722	0.703426	0.627174	0.076252	0.977848	0.920618
1677725	0.064154	0.006763	0.056621	0.779046	0.82618	-0.04713	1	0.747525
1162131	0.152053	0.006768	0.010653	0.7125	0.737069	-0.02457	0.995781	0.094833
3455406	0.001564	0.006783	0.020331	0.412682	0.503226	-0.09054	0.99789	0.852824
4495432	0.013189	0.006797	0.074977	0.91841	0.955914	-0.0375	0.994726	1
4012653	0.037345	0.00682	0.078861	0.917708	0.955914	-0.03821	0.996835	1
1276458	0.087981	0.00682	0.03606	0.401452	0.337983	0.063469	1	0.679856
1676375	0.000367	0.006825	0.001048	0.828838	0.77957	0.049268	0.998945	0.417526
3175062	0.001578	0.006825	0.018153	0.011411	0.033262	-0.02185	1	0.40304
122929	0.826433	0.006828	0.010408	0.95666	0.940476	0.016183	0.986287	1
122929	0.826433	0.006828	0.010408	0.95666	0.940476	0.016183	0.986287	1
3114558	0.040182	0.006834	0.026309	0.489605	0.53871	-0.0491	0.99789	0.852169
1741437	0.006358	0.006835	0.010979	0.727848	0.663043	0.064805	0.985232	0.916862
4402734	0.006328	0.006863	0.013186	0.645228	0.57618	0.069048	1	0.128827
3152850	0.005199	0.006865	0.002365	0.240664	0.279095	-0.03843	0.99789	1
1034779	0.046747	0.006865	0.020999	0.528243	0.467603	0.06064	0.992616	0.709512
1850277	0.009765	0.006873	0.01095	0.432292	0.489224	-0.05693	0.995781	0.92597
2124575	0.003759	0.006894	0.013041	0.373431	0.31828	0.055151	0.994726	0.201412
4228002	0.014995	0.00692	0.005562	0.375796	0.458963	-0.08317	0.985232	0.640674
3870140	0.001759	0.006921	0.006216	0.122016	0.149874	-0.02786	1	0.64912
849980	0.004487	0.006923	0.062994	0.460499	0.403017	0.057482	0.996835	0.209888
1351075	0.02053	0.006946	0.017659	0.938797	0.917204	0.021592	0.998945	0.757971
4440207	0.63199	0.00695	0.002169	0.866667	0.859611	0.007055	0.994726	0.333011
1279727	0.408983	0.006951	0.081613	0.135135	0.111588	0.023547	0.998945	0.155464
764588	0.289109	0.006953	0.010663	0.869295	0.839785	0.02951	0.998945	1
98519	0.041897	0.006962	0.090785	0.801042	0.833693	-0.03265	0.994726	0.868271
98519	0.041897	0.006962	0.090785	0.801042	0.833693	-0.03265	0.994726	0.868271
98519	0.041897	0.006962	0.090785	0.801042	0.833693	-0.03265	0.994726	0.868271
4637785	0.006902	0.006975	0.067478	0.565762	0.496767	0.068995	0.994726	0.710298
2089126	0.0026	0.006983	0.007534	0.890397	0.884946	0.00545	0.995781	0.819233

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1314716	0.000823	0.006985	0.002939	0.524948	0.490323	0.034625	0.99789	0.00116
3416760	0.000977	0.007024	0.006629	0.955394	0.983906	-0.02851	1	1
921855	0.031096	0.007034	0.007091	0.891079	0.868026	0.023053	1	1
789724	0.001517	0.007041	0.007774	0.656448	0.582796	0.073653	0.989451	0.703224
4054583	0.040429	0.007042	0.009878	0.301455	0.341253	-0.0398	0.995781	0.836363
6850	0.001583	0.007075	0.056118	0.880457	0.839056	0.041402	0.998945	0.863819
539229	0.003494	0.007078	0.059226	0.422199	0.490323	-0.06812	0.998945	0.404357
3333533	0.002456	0.007088	0.022261	0.629668	0.557112	0.072556	0.99789	0.851087
1650600	0.19007	0.00709	0.075742	0.35166	0.321888	0.029771	1	0.339324
1953380	0.00157	0.007098	0.014217	0.772822	0.728541	0.044281	1	0.906746
1409055	0.007167	0.007113	0.045174	0.726115	0.665217	0.060897	0.982068	0.294845
1535549	0.002307	0.007118	0.042673	0.803942	0.840173	-0.03623	0.996835	0.38976
2527197	0.001202	0.007134	0.003554	0.946764	0.913978	0.032786	0.995781	0.560342
950452	0.002659	0.00715	0.019051	0.98444	0.962446	0.021993	1	0.484757
4070970	0.001313	0.007157	0.018646	0.913542	0.860215	0.053327	0.996835	0.125375
2105911	0.011356	0.007159	0.016682	0.237006	0.278495	-0.04149	0.99789	0.908111
3709752	0.005123	0.00716	0.023268	0.408714	0.468884	-0.06017	1	0.780536
3688961	0.044563	0.007164	0.006984	0.91805	0.934409	-0.01636	0.998945	0.710366
2951656	0.023021	0.007166	0.025415	0.303347	0.36933	-0.06598	0.992616	0.9205
1264052	0.000428	0.007173	0.064132	0.903527	0.940987	-0.03746	1	0.016097
2099466	0.000375	0.007178	0.003261	0.554979	0.61588	-0.0609	1	0.494114
1886698	0.104594	0.007184	0.005486	0.66457	0.691886	-0.02732	0.984177	0.380723
3192834	0.002045	0.007199	0.060822	0.196391	0.266376	-0.06998	0.979958	0.720279
1703958	0.01327	0.007212	0.020417	0.9139	0.863734	0.050167	1	0.233942
1518282	0.007294	0.007224	0.049126	0.977178	0.983836	-0.00666	0.99789	1
1834812	0.0094	0.007234	0.002044	0.551867	0.482833	0.069035	1	0.116017
1264158	0.000495	0.007265	0.067625	0.905405	0.944206	-0.0388	0.998945	0.046191
2371122	0.104556	0.007293	0.012797	0.146444	0.192225	-0.04578	0.992616	0.010392
4122636	0.003293	0.007297	0.028565	0.793722	0.739437	0.054285	0.919831	0.078463
4122636	0.003293	0.007297	0.028565	0.793722	0.739437	0.054285	0.919831	0.078463
4122636	0.003293	0.007297	0.028565	0.793722	0.739437	0.054285	0.919831	0.078463
2816496	0.000753	0.007314	0.017502	0.55083	0.489247	0.061583	0.998945	0.516041
3192814	0.004376	0.007329	0.068723	0.847917	0.790773	0.057144	0.99789	0.401724
1672372	0.00288	0.00734	0.005904	0.880252	0.849892	0.03036	0.990506	0.274084
2242719	0.013495	0.007342	0.040319	0.838174	0.892473	-0.0543	0.998945	0.221629
3857487	0.033833	0.007363	0.001684	0.332005	0.416877	-0.08487	0.998945	0.299791
3123070	0.008178	0.007365	0.043304	0.743776	0.783262	-0.03949	1	0.10129
557875	0.009524	0.007411	0.008742	0.940871	0.91309	0.027781	1	0.037517
717950	0.003469	0.007429	0.004616	0.59806	0.54878	0.04928	0.96519	0.77574
641536	0.002384	0.007433	0.027248	0.779046	0.715054	0.063992	0.998945	0.570876
2136111	0.022823	0.007436	0.001256	0.958506	0.969957	-0.01145	1	1
1176018	0.002438	0.00747	0.08446	0.352697	0.280043	0.072654	1	0.908767
2165330	0.001969	0.007491	0.025721	0.60251	0.548491	0.054019	0.993671	0.304083
3426071	0.018643	0.007496	0.01931	0.302743	0.369281	-0.06654	0.984177	0.764516
1268450	0.84603	0.007502	0.00305	0.188679	0.172451	0.016228	0.989451	0.325609
1732522	0.001688	0.007525	0.009548	0.629938	0.68172	-0.05178	0.99789	0.748408
2111337	0.212751	0.007529	0.003493	0.758299	0.719957	0.038342	1	0.107061
1352344	0.038944	0.007536	0.012896	0.120332	0.078326	0.042006	1	0.01574
1376059	0.003924	0.007581	0.019663	0.890625	0.845905	0.04472	0.995781	0.032399
1697239	0.837243	0.007593	0.00321	0.939709	0.909871	0.029838	0.998945	0.780268
793080	0.002135	0.007606	0.010449	0.449791	0.397849	0.051941	0.994726	0.438517
2808037	0.002975	0.007617	0.021701	0.359667	0.404301	-0.04463	0.99789	0.772695
132403	0.053151	0.007623	0.055126	0.29106	0.25054	0.04052	0.995781	1
3589727	0.007552	0.007627	0.072129	0.408524	0.346237	0.062287	0.99789	0.759339
1034777	0.047007	0.007633	0.022501	0.528008	0.46875	0.059258	0.99789	0.779789

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1886710	0.143236	0.007643	0.004815	0.665975	0.690987	-0.02501	1	0.385382
3454438	0.006911	0.007667	0.015162	0.830561	0.766094	0.064467	0.998945	0.300726
4150317	0.194317	0.007686	0.039004	0.632287	0.616822	0.015465	0.921941	1
1640509	0.0044	0.007694	0.026142	0.199374	0.245161	-0.04579	0.995781	0.707339
2939986	0.031993	0.007708	0.020666	0.686722	0.630388	0.056334	0.99789	0.370197
3640774	0.043486	0.00771	0.006078	0.238971	0.279337	-0.04037	0.843882	0.900558
4663410	0.006434	0.007723	0.004914	0.0883	0.067376	0.020924	0.924051	1
4008044	0.002166	0.007725	0.014704	0.511411	0.456897	0.054514	0.99789	0.640266
1651892	0.002743	0.007742	0.021935	0.71473	0.63412	0.08061	1	0.764703
539249	0.003928	0.007751	0.062157	0.425156	0.493534	-0.06838	0.996835	0.515564
4514284	0.011588	0.007752	0.035307	0.923241	0.902439	0.020802	0.970464	0.172829
2433740	0.002013	0.007759	0.009629	0.725	0.774194	-0.04919	0.996835	0.510172
2222123	0.007478	0.007771	0.075671	0.733888	0.780645	-0.04676	0.99789	0.34273
4347308	0.004925	0.007794	0.004816	0.228632	0.261589	-0.03296	0.971519	0.627183
3589724	0.00711	0.0078	0.070966	0.408714	0.346567	0.062147	1	0.759025
1002652	0.003958	0.007827	0.000615	0.808732	0.753219	0.055513	0.998945	0.803695
2622006	0.001424	0.00784	0.042479	0.676349	0.629828	0.04652	1	1
3447545	0.003158	0.007856	0.016032	0.858921	0.896774	-0.03785	0.998945	0.80432
180617	0.002406	0.007858	0.029797	0.370833	0.443133	-0.0723	0.99789	0.223258
4152608	0.047249	0.007865	0.001851	0.47286	0.425966	0.046894	0.996835	0.298696
871448	0.016467	0.007883	0.035336	0	0.00431	-0.00431	0.994726	1
329646	0.006645	0.007904	0.019679	0.608889	0.652074	-0.04318	0.932489	0.915975
1034784	0.050559	0.007908	0.022513	0.528008	0.468683	0.059326	0.996835	0.641709
1063372	0.02683	0.007911	0.019788	0.682008	0.62527	0.056738	0.992616	0.16585
1622895	0.006421	0.007923	0.01524	0.354167	0.407725	-0.05356	0.99789	0.388719
3198073	0.021109	0.007924	0.00812	0.338877	0.387339	-0.04846	0.998945	0.329449
1037711	0.378615	0.007949	0.069717	0.655602	0.688841	-0.03324	1	0.829555
4550305	0.001293	0.007961	0.004095	0.434375	0.49569	-0.06131	0.995781	0.194449
1176012	0.002809	0.007968	0.085098	0.352697	0.280043	0.072654	1	0.908767
1668480	0.160136	0.007978	0.116955	0.372141	0.342672	0.029469	0.996835	0.08023
3558254	0.017577	0.007982	0.010358	0.971992	0.983906	-0.01191	1	1
116325	0.007288	0.008018	0.053855	0.710581	0.756438	-0.04586	1	0.900413
1068926	0.005106	0.008024	0.042256	0.596674	0.525806	0.070867	0.99789	0.709821
4121282	0.004122	0.008039	0.006887	0.747312	0.802691	-0.05538	0.96097	0.000873
2371268	0.336864	0.008046	0.00803	0.141649	0.178808	-0.03716	0.976793	1
689172	0.00239	0.008047	0.015971	0.572765	0.506452	0.066313	0.99789	0.266405
3455668	0.004541	0.008085	0.079011	0.813278	0.845494	-0.03222	1	0.289785
2713890	0.09687	0.00812	0.017159	0.258299	0.224731	0.033568	0.998945	0.23151
3869003	0.915354	0.008129	0.033322	0.794667	0.742749	0.051918	0.995781	0.782631
2379955	0.107237	0.00814	0.094519	0.934647	0.95279	-0.01814	1	1
764731	0.014946	0.008162	0.057005	0.620968	0.690141	-0.06917	0.907173	0.650655
4166035	0.038051	0.008165	0.014162	0.291494	0.217532	0.073961	0.995781	0.219008
959126	0.116799	0.008189	0.011631	0.844609	0.80719	0.037419	0.983122	0.07348
3670448	0.006623	0.008193	0.008763	0.878631	0.829399	0.049232	1	0.41398
4429015	0.016477	0.008196	0.002829	0.416667	0.476242	-0.05958	0.988397	0.514243
1522576	0.030276	0.008204	0.03216	0.828125	0.790043	0.038082	0.993671	0.067906
4600176	0.007195	0.008229	0.023678	0.241164	0.299356	-0.05819	0.998945	0.9124
3687300	0.003991	0.008234	0.024227	0.491684	0.530108	-0.03842	0.99789	0.852263
3128617	0.052228	0.008267	0.002256	0.704167	0.645923	0.058244	0.99789	0.311291
1264054	0.000499	0.008274	0.075927	0.904366	0.940987	-0.03662	0.998945	0.016097
1640503	0.005814	0.008278	0.024086	0.796875	0.751613	0.045262	0.996835	0.618952
3455338	0.001754	0.008316	0.02063	0.4125	0.5	-0.0875	0.994726	0.710017
1269187	0.006668	0.008317	0.026481	0.83195	0.876078	-0.04413	0.99789	0.393892
1176017	0.003163	0.008338	0.096078	0.353125	0.280645	0.07248	0.996835	0.908935
3327771	0.006497	0.008358	0.015623	0.894191	0.858369	0.035822	1	0.125882

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1232539	0.004957	0.008386	0.038144	1	0.996774	0.003226	0.998945	1
4088765	0.127394	0.008398	0.084042	0.031175	0.028075	0.0031	0.834388	1
1874501	0.009161	0.008409	0.006426	0.554979	0.637339	-0.08236	1	0.317146
839735	0.021221	0.008415	0.032107	0.948025	0.929185	0.01884	0.998945	0.718586
4598409	0.003942	0.008418	0.015862	0.193347	0.231183	-0.03784	0.99789	0.696547
2347378	0.007521	0.008429	0.007625	0.712058	0.756438	-0.04438	0.998945	0.614703
4324133	0.002036	0.008434	0.001862	0.728601	0.782796	-0.05419	0.995781	0.014245
3443756	0.001578	0.008468	0.045966	0.676349	0.62743	0.048919	0.996835	1
2896198	0.021042	0.008475	0.058094	0.210856	0.246781	-0.03593	0.996835	0.455489
1652761	0.00724	0.008499	0.004904	0.893154	0.84086	0.052293	0.998945	0.015049
4296556	0.004984	0.008529	0.03858	0	0.002146	-0.00215	1	1
4479661	0.017615	0.008538	0.022669	0.619543	0.670968	-0.05143	0.99789	0.599522
516167	0.003003	0.008545	0.001677	0.417537	0.475162	-0.05763	0.993671	0.306528
2333571	0.013535	0.008571	0.013117	0.1639	0.202151	-0.03825	0.998945	0.029888
2483827	0.033909	0.008581	0.012485	0.286469	0.215078	0.071392	0.974684	0.329908
451331	0.006788	0.008582	0.039194	0.171162	0.22103	-0.04987	1	1
1535548	0.002808	0.008586	0.049452	0.803942	0.838013	-0.03407	0.996835	0.863855
1741261	0.002404	0.008592	0.009276	0.703742	0.635193	0.068549	0.998945	0.617177
1069448	0.002953	0.008603	0.011174	0.669087	0.729614	-0.06053	1	0.482452
2413825	0.02739	0.008606	0.001371	0.884615	0.918455	-0.03384	0.998945	1
3148708	0.002261	0.008625	0.054317	0.666667	0.723427	-0.05676	0.992616	1
4124996	0.014726	0.008626	0.020174	0.541494	0.489247	0.052246	0.998945	0.642732
2271883	0.278341	0.008626	0.053187	0.313278	0.284335	0.028943	1	0.819798
3869006	0.970135	0.008633	0.03467	0.79443	0.741814	0.052616	1	0.782631
722877	0.002896	0.008652	0.01517	0.931535	0.964516	-0.03298	0.998945	0.106297
2393742	0.007415	0.008657	0.003762	0.286902	0.345905	-0.059	0.996835	0.681505
4664996	0.00552	0.008658	0.043723	0.813953	0.763636	0.050317	0.859705	0.010455
4664996	0.00552	0.008658	0.043723	0.813953	0.763636	0.050317	0.859705	0.010455
4664996	0.00552	0.008658	0.043723	0.813953	0.763636	0.050317	0.859705	0.010455
2776341	0.022597	0.008674	0.028819	0.276458	0.335189	-0.05873	0.962025	1
2859641	0.058645	0.008678	0.004661	0.260626	0.213768	0.046858	0.908228	0.306329
533097	0.0085	0.008695	0.016536	0.673958	0.711828	-0.03787	0.996835	0.257721
4108352	0.036619	0.008702	0.147035	0.76971	0.817204	-0.04749	0.998945	0.438327
3180792	0.021434	0.008718	0.045028	0.986515	0.973118	0.013396	0.998945	0.282045
3995054	0.012174	0.008722	0.035803	0.020833	0.005376	0.015457	0.996835	1
2483830	0.032945	0.008724	0.014421	0.291232	0.219355	0.071877	0.995781	0.279228
1023683	0.004667	0.00874	0.001693	0.584034	0.514161	0.069872	0.986287	0.350588
1023683	0.004667	0.00874	0.001693	0.584034	0.514161	0.069872	0.986287	0.350588
4635620	0.002477	0.008768	0.002404	0.301948	0.34276	-0.04081	0.953586	0.057537
328095	0.00733	0.008789	0.05585	0.860996	0.825431	0.035565	0.99789	1
4042214	0.161874	0.00879	0.026682	0.150415	0.151288	-0.00087	1	0.145817
1176015	0.003028	0.008804	0.094578	0.352697	0.280043	0.072654	1	0.908767
2450765	0.003826	0.008823	0.002891	0.901452	0.932403	-0.03095	1	1
4404407	0.017381	0.008835	0.035237	0.200207	0.14485	0.055358	1	0.131774
1069019	0.004196	0.00886	0.024245	0.446512	0.3753	0.071212	0.89346	0.602684
4001626	0.043698	0.008875	0.016524	0.119295	0.078326	0.040968	1	0.01574
3443754	0.00151	0.008886	0.045272	0.676349	0.62959	0.046759	0.996835	1
4048836	0.029055	0.008902	0.017255	0.649269	0.693548	-0.04428	0.995781	0.913567
3426074	0.020221	0.008906	0.022932	0.695198	0.629828	0.06537	0.996835	1
4087940	0.215617	0.00891	0.109393	0.998963	0.997854	0.001109	1	1
3339889	0.000786	0.008914	0.018136	0.971992	0.946352	0.02564	1	1
3339878	0.000786	0.008914	0.018136	0.971992	0.946352	0.02564	1	1
803269	0.015457	0.008916	0.020454	0.465336	0.5	-0.03466	0.988397	0.019741
1268445	0.003304	0.008935	0.02623	0.727083	0.663067	0.064016	0.994726	0.211564
309873	0.031013	0.008969	0.00568	0.820539	0.854839	-0.0343	0.998945	0.354046

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
4155519	0.122032	0.008984	0.010287	0.27131	0.306452	-0.03514	0.99789	0.744713
1678832	0.060044	0.008988	0.037585	0.923237	0.898069	0.025168	1	1
524776	0.239311	0.008993	0.015123	0.98444	0.991416	-0.00698	1	0.000242
4214212	0.002262	0.008995	0.029146	0.037657	0.060606	-0.02295	0.991561	0.679157
2104240	0.008573	0.009003	0.023561	0.004149	0.01073	-0.00658	1	1
2758656	0.002983	0.009012	0.026853	0.627859	0.55914	0.068719	0.99789	0.925111
806456	0.02028	0.009016	0.179761	0.768908	0.817888	-0.04898	0.991561	0.434996
211483	0.004277	0.009026	0.004789	0.16805	0.124731	0.043319	0.998945	1
160768	0.003878	0.00903	0.003506	0.677386	0.704936	-0.02755	1	0.437094
3079474	0.007354	0.009031	0.063999	0.46473	0.404506	0.060224	1	0.043249
2314679	0.012084	0.009039	0.033003	0.505219	0.467672	0.037547	0.994726	0.709175
2314679	0.012084	0.009039	0.033003	0.505219	0.467672	0.037547	0.994726	0.709175
520005	0.037715	0.009053	0.076247	0.572765	0.52694	0.045825	0.996835	0.852318
4129497	0.030986	0.009084	0.033411	0.614108	0.569742	0.044365	1	0.850411
4081729	0.016585	0.009093	0.01172	0.349687	0.385281	-0.03559	0.992616	0.168746
842333	0.016794	0.009104	0.002786	0.069502	0.099785	-0.03028	1	1
2776344	0.032902	0.00913	0.039393	0.244813	0.298056	-0.05324	0.996835	0.911517
2317585	0.001962	0.009131	0.023823	0.594595	0.509677	0.084917	0.99789	0.078213
709874	0.208559	0.009133	0.024716	0.409751	0.457082	-0.04733	1	0.852049
1804163	0.000366	0.009141	0.013257	0.877593	0.819742	0.057851	1	0.532567
1023594	0.002244	0.009157	0.001131	0.55083	0.478448	0.072382	0.99789	0.137505
1651881	0.003538	0.00916	0.023323	0.715177	0.637339	0.077838	0.998945	0.920174
2276312	0.026145	0.009174	0.029452	0.508351	0.442266	0.066085	0.989451	0.849918
2718967	0.020303	0.009181	0.025656	0.303942	0.370968	-0.06703	0.998945	0.842765
2432374	0.035824	0.009194	0.072903	0.594595	0.545259	0.049336	0.996835	0.639781
4478416	0.03648	0.009213	0.015662	0.010417	0.023707	-0.01329	0.995781	4.25E-05
516132	0.002192	0.009234	0.003016	0.584388	0.525164	0.059224	0.982068	0.092046
702416	0.002152	0.009238	0.03524	0.23444	0.298056	-0.06362	0.996835	0.658233
1964847	0.010513	0.00924	0.006835	0.306017	0.357296	-0.05128	1	0.840145
1939161	0.004732	0.009243	0.013619	0.875	0.906318	-0.03132	0.990506	0.407791
4319947	0.046993	0.009247	0.002081	0.627083	0.665591	-0.03851	0.996835	0.91704
1228364	0.005781	0.009247	0.014492	0.950207	0.922747	0.027461	1	0.341422
101371	0.134142	0.009248	0.002068	0.824324	0.856223	-0.0319	0.998945	0.255844
842351	0.01898	0.009249	0.002808	0.070539	0.099785	-0.02925	1	1
1804175	0.000415	0.009274	0.022622	0.877593	0.821888	0.055705	1	0.751088
806500	0.008752	0.009314	0.099482	0.905858	0.938178	-0.03232	0.990506	0.688735
2947678	0.005441	0.009331	0.081198	0.814315	0.846567	-0.03225	1	0.283906
1841387	0.003386	0.009343	0.022243	0.97817	0.9603	0.01787	0.998945	1
516178	0.001998	0.009345	0.002969	0.418259	0.479348	-0.06109	0.982068	0.190701
516178	0.001998	0.009345	0.002969	0.418259	0.479348	-0.06109	0.982068	0.190701
982447	0.00527	0.009351	0.021636	0.673237	0.608836	0.0644	0.99789	0.697199
4056257	0.002285	0.009376	0.002302	0.728033	0.782937	-0.0549	0.992616	0.019363
4613905	0.005525	0.009381	0.029448	0.998963	0.992489	0.006473	1	1
2114792	0.064153	0.00941	0.043593	0.397917	0.336559	0.061358	0.996835	0.078263
2657954	0.015187	0.009421	0.014876	0.327623	0.292711	0.034912	0.955696	0.48884
4233173	0.0061	0.009422	0.041429	0.647541	0.720732	-0.07319	0.882911	0.027513
4233173	0.0061	0.009422	0.041429	0.647541	0.720732	-0.07319	0.882911	0.027513
2080303	0.386337	0.009428	0.078411	0.364301	0.306695	0.057605	0.993671	1
4573686	0.001706	0.009433	0.014653	0.14553	0.218615	-0.07308	0.994726	0.68272
4387330	0.034432	0.009437	0.037932	0.614345	0.570968	0.043377	0.99789	0.849798
4613665	0.004386	0.009445	0.005849	0.704167	0.74514	-0.04097	0.994726	0.177459
1441438	0.042562	0.009461	0.043243	0.99896	0.992473	0.006487	0.99789	1
1515237	0.157425	0.009495	0.09631	0.58682	0.519608	0.067212	0.988397	0.400183
1640485	0.006418	0.009535	0.026051	0.79668	0.752146	0.044535	1	0.618894
4259986	0.00525	0.009536	0.046285	0.59751	0.525751	0.071759	1	0.642753

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1953369	0.002449	0.009537	0.019449	0.746362	0.709227	0.037134	0.998945	0.822523
3115499	0.001019	0.009539	0.03004	0.458506	0.512876	-0.05437	1	0.458096
4514817	0.007683	0.009554	0.028341	0.645094	0.571888	0.073206	0.996835	0.850008
2238971	0.004278	0.009577	0.021946	0.936722	0.95914	-0.02242	0.998945	1
4613807	0.034901	0.0096	0.013964	0.512448	0.452688	0.05976	0.998945	0.851765
4442073	0.006993	0.009601	0.011581	0.053991	0.104019	-0.05003	0.89557	0.067964
4332876	0.140288	0.009611	0.004543	0.41858	0.469762	-0.05118	0.993671	0.513572
172140	0.028558	0.009615	0.011915	0.953222	0.972103	-0.01888	0.998945	1
4396675	0.484944	0.009631	0.11904	0.198133	0.16129	0.036842	0.998945	0.494113
4396675	0.484944	0.009631	0.11904	0.198133	0.16129	0.036842	0.998945	0.494113
1128988	0.018602	0.009636	0.073137	0.994813	1	-0.00519	1	1
1128988	0.018602	0.009636	0.073137	0.994813	1	-0.00519	1	1
1352350	0.033751	0.009652	0.013855	0.122407	0.078326	0.04408	1	0.01574
3484325	0.022481	0.009667	0.053122	0.968685	0.944924	0.02376	0.993671	0.152279
154120	0.030571	0.009677	0.022754	0.110996	0.07618	0.034816	1	0.741802
2325330	0.005664	0.009679	0.016654	0.41875	0.380901	0.037849	0.99789	0.281692
2346708	0.003914	0.009689	0.099216	0.718947	0.756989	-0.03804	0.991561	0.31318
1805031	0.006504	0.009697	0.016313	0.521784	0.473176	0.048608	1	0.926
768211	0.00722	0.009718	0.039891	0.93361	0.941935	-0.00833	0.998945	0.05944
929014	0.176833	0.009719	0.004418	0.561203	0.506438	0.054766	1	0.64389
3455682	0.013976	0.009719	0.016783	0.959459	0.976395	-0.01694	0.998945	1
3076563	0.008257	0.00973	0.069199	0.659044	0.696352	-0.03731	0.998945	0.443268
2928463	0.003311	0.009731	0.006491	0.23125	0.275751	-0.0445	0.99789	1
3989945	0.006416	0.009735	0.010174	0.914761	0.866953	0.047808	0.998945	0.427226
3381084	0.005229	0.009739	0.025095	0.820539	0.853763	-0.03322	0.998945	0.709524
3381084	0.005229	0.009739	0.025095	0.820539	0.853763	-0.03322	0.998945	0.709524
3702792	0.007693	0.00975	0.011133	0.699367	0.741722	-0.04235	0.977848	0.7127
3868994	0.955724	0.009751	0.035845	0.841333	0.803549	0.037785	0.993671	0.506008
2776340	0.0229	0.009762	0.030764	0.309771	0.374194	-0.06442	0.99789	0.843598
2285119	0.630605	0.009778	0.006187	0.878378	0.881862	-0.00348	0.910338	1
1921798	0.01618	0.0098	0.001715	0.255208	0.221983	0.033226	0.995781	0.226764
4499932	0.389251	0.0098	0.029802	0.846316	0.849673	-0.00336	0.985232	0.198839
2416366	0.00881	0.009806	0.001014	0.858491	0.90194	-0.04345	0.992616	0.602674
3645733	0.003577	0.00981	0.012475	0.916667	0.949353	-0.03269	0.995781	0.103716
1647649	0.007079	0.009838	0.040565	0.705394	0.770968	-0.06557	0.998945	1
1647649	0.007079	0.009838	0.040565	0.705394	0.770968	-0.06557	0.998945	1
1834862	0.007838	0.009843	0.004677	0.547718	0.477468	0.07025	1	0.194564
4445370	0.04044	0.009854	0.002852	0.996875	1	-0.00313	0.99789	1
806467	0.041821	0.009855	0.213416	0.774947	0.824236	-0.04929	0.979958	0.336036
806467	0.041821	0.009855	0.213416	0.774947	0.824236	-0.04929	0.979958	0.336036
2197189	0.002115	0.009856	0.033174	0.597077	0.63412	-0.03704	0.996835	0.617874
939155	0.003044	0.009862	0.007186	0.796875	0.846567	-0.04969	0.99789	0.210311
579165	0.239121	0.009863	0.091467	0.359667	0.415054	-0.05539	0.99789	0.127753
1535532	0.003336	0.009873	0.053032	0.804167	0.83691	-0.03274	0.99789	0.499058
803751	0.079787	0.009874	0.007766	0.8	0.76129	0.03871	0.996835	0.040332
717945	0.005898	0.009882	0.010132	0.610996	0.55794	0.053056	1	1
35298	0.024846	0.009884	0.019104	0.861746	0.834052	0.027695	0.996835	0.50084
1601703	0.003521	0.009901	0.003351	0.434375	0.505365	-0.07099	0.99789	0.853303
1601703	0.003521	0.009901	0.003351	0.434375	0.505365	-0.07099	0.99789	0.853303
1269198	0.008738	0.009903	0.018192	0.838877	0.879828	-0.04095	0.998945	1
3455987	0.007936	0.009912	0.069006	0.655208	0.692888	-0.03768	0.995781	0.586711
1511175	0.008565	0.009914	0.044839	0.151452	0.185622	-0.03417	1	0.443036
192868	0.009251	0.009918	0.002266	0.757829	0.7	0.057829	0.995781	1
929105	0.004681	0.009921	0.053402	0.948025	0.914163	0.033862	0.998945	0.367468
4575514	0.006615	0.00996	0.014364	0.744283	0.691145	0.053138	0.995781	0.326753

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3670413	0.006834	0.009964	0.013151	0.874481	0.827253	0.047228	1	0.418849
4193400	0.007405	0.009974	0.012671	0.743243	0.690987	0.052256	0.998945	0.329777
2114790	0.054322	0.009979	0.046746	0.399582	0.335484	0.064098	0.994726	0.09616
780658	0.005178	0.009979	0.038857	0.693856	0.624169	0.069687	0.973629	0.617
2238569	0.018102	0.009994	0.03135	0.400415	0.456989	-0.05657	0.998945	0.925528
491059	0.003388	0.01	0.00381	0.173237	0.222103	-0.04887	1	1
306798	0.016773	0.010002	0.011963	0.069502	0.042918	0.026584	1	1
1619043	0.003026	0.010006	0.008411	0.712656	0.67382	0.038836	1	0.526979
1750022	0.005544	0.01001	0.001189	0.789809	0.735491	0.054318	0.969409	0.020917
256381	0.014582	0.010012	0.016901	0.905405	0.876078	0.029328	0.996835	0.66943
2393805	0.003782	0.010035	0.005048	0.739085	0.680645	0.05844	0.99789	0.66985
4370533	0.061797	0.01004	0.004246	0.219207	0.268898	-0.04969	0.993671	0.288039
959526	0.454394	0.010042	0.015324	0.96473	0.959227	0.005503	1	1
4423401	0.007056	0.010043	0.013956	0.74375	0.691398	0.052352	0.996835	0.327762
4005633	0.045125	0.010062	0.015408	0.537344	0.482796	0.054549	0.998945	1
3169851	0.006736	0.010064	0.02398	0.993776	0.975322	0.018454	1	0.242857
3446337	0.04948	0.010067	0.019894	0.918776	0.890693	0.028084	0.987342	0.230681
4424381	0.008113	0.01007	0.013719	0.195021	0.143013	0.052008	0.991561	0.705693
3524230	0.06966	0.010075	0.010567	0.782158	0.748927	0.033231	1	0.623014
4320452	0.017519	0.010075	0.096101	0.73029	0.762876	-0.03259	1	0.898014
3590004	0.007431	0.010094	0.025653	0.820539	0.787554	0.032986	1	0.126496
1151679	0.001842	0.010098	0.003257	0.962656	0.91828	0.044376	0.998945	0.216955
3115548	0.001064	0.010102	0.031021	0.455301	0.509698	-0.0544	0.996835	0.577212
3115548	0.001064	0.010102	0.031021	0.455301	0.509698	-0.0544	0.996835	0.577212
907977	0.090186	0.010102	0.001746	0.145228	0.152361	-0.00713	1	0.071403
2346690	0.005097	0.010111	0.084021	0.720374	0.75914	-0.03877	0.99789	0.37466
3114237	0.020233	0.010124	0.040989	0.969854	0.954936	0.014919	0.998945	1
4608485	0.002083	0.010125	0.013578	0.14553	0.219957	-0.07443	0.998945	0.787177
1338574	0.109586	0.010137	0.014768	0.810811	0.857296	-0.04649	0.998945	0.705739
4011547	0.004327	0.010143	0.020025	0.193347	0.228942	-0.03559	0.995781	0.793612
3997454	0.029554	0.010159	0.010285	0.203742	0.162716	0.041027	0.996835	0.86432
2039033	0.013677	0.010173	0.01941	0.750526	0.702381	0.048145	0.988397	0.656471
3192851	0.002261	0.010202	0.060552	0.202083	0.269892	-0.06781	0.996835	0.813945
1594915	0.007892	0.010207	0.037425	0.472043	0.511086	-0.03904	0.966245	0.510116
1607672	0.01033	0.010223	0.021421	0.897303	0.854077	0.043226	1	0.709219
1863821	0.013388	0.010225	0.00613	0.559129	0.498927	0.060202	1	0.459461
2318829	0.000722	0.010235	0.075088	0.664927	0.59375	0.071177	0.994726	0.563523
4593353	0.773468	0.010253	0.008037	0.248434	0.256989	-0.00856	0.995781	0.115277
856423	0.004217	0.010263	0.026012	0.903361	0.934267	-0.03091	0.991561	1
1063452	0.099242	0.010266	0.006515	0.810811	0.756989	0.053822	0.99789	0.801196
1215608	0.00469	0.010284	0.018178	0.687891	0.725806	-0.03792	0.995781	0.907327
1215608	0.00469	0.010284	0.018178	0.687891	0.725806	-0.03792	0.995781	0.907327
1180845	0.005801	0.010293	0.009815	0.481211	0.551502	-0.07029	0.996835	0.925568
1357588	0.004669	0.010293	0.08271	0.816008	0.852688	-0.03668	0.99789	0.4612
1769691	0.927616	0.010299	0.001067	0.758299	0.729614	0.028685	1	0.195826
784000	0.021027	0.010318	0.011695	0.882536	0.934549	-0.05201	0.998945	1
4132250	0.041176	0.01033	0.018974	0.712656	0.668817	0.043838	0.998945	0.249268
1640519	0.00668	0.01033	0.028335	0.203354	0.246753	-0.0434	0.990506	0.707089
34448	0.001859	0.010336	0.025464	0.91805	0.937768	-0.01972	1	1
34484	0.001859	0.010336	0.025464	0.91805	0.937768	-0.01972	1	1
1640510	0.007473	0.010345	0.02716	0.203742	0.247845	-0.0441	0.996835	0.618526
4516329	0.009925	0.010373	0.048142	1	0.994624	0.005376	0.998945	1
2212832	0.130553	0.010375	0.018889	0.685031	0.623391	0.061641	0.998945	0.060511
512545	0.157246	0.0104	0.009491	0.420124	0.45279	-0.03267	1	0.925712
1318491	0.005882	0.010402	0.037737	0.462656	0.401288	0.061368	1	0.288692

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
4081737	0.028833	0.010419	0.035069	0.995851	0.993562	0.002288	1	1
1043954	0.011795	0.010421	0.009181	0.765625	0.802802	-0.03718	0.995781	0.769708
1673872	0.050967	0.010429	0.019366	0.981092	0.954447	0.026646	0.988397	0.614619
4351960	0.015363	0.01043	0.014313	0.983683	0.967662	0.016021	0.876582	1
4351960	0.015363	0.01043	0.014313	0.983683	0.967662	0.016021	0.876582	1
1197384	0.004865	0.010431	0.028948	0.893154	0.858065	0.035089	0.998945	1
4028797	0.000806	0.010433	0.013214	0.75211	0.725108	0.027001	0.987342	0.079551
1176008	0.00308	0.01045	0.09571	0.35447	0.282189	0.072281	0.998945	1
1540502	0.006061	0.010457	0.002997	0.372141	0.427039	-0.0549	0.998945	0.297636
4106551	0.002896	0.010458	0.022551	0.827443	0.850538	-0.02309	0.99789	1
4637543	0.033012	0.01048	0.012411	0.532225	0.475322	0.056903	0.998945	0.852883
4226964	0.001402	0.010485	0.001709	0.94917	0.967811	-0.01864	1	0.382502
4226964	0.001402	0.010485	0.001709	0.94917	0.967811	-0.01864	1	0.382502
4226964	0.001402	0.010485	0.001709	0.94917	0.967811	-0.01864	1	0.382502
2393802	0.003849	0.010488	0.005029	0.733193	0.679266	0.053928	0.990506	0.830997
345388	0.004192	0.010489	0.009947	0.378261	0.438202	-0.05994	0.954641	1
4070990	0.008679	0.010503	0.011958	0.724532	0.658798	0.065734	0.998945	0.837225
3494267	0.931947	0.010518	0.01596	0.290021	0.28172	0.0083	0.99789	0.908913
1068925	0.005028	0.010521	0.047987	0.595436	0.524731	0.070705	0.998945	0.641936
3593349	0.00253	0.010523	0.032154	0.943983	0.924893	0.019091	1	0.002218
4292393	0.162448	0.010531	0.056032	0.005198	0.007511	-0.00231	0.998945	1
96864	0.008009	0.010538	0.060386	0.946653	0.970588	-0.02394	0.988397	0.325495
96864	0.008009	0.010538	0.060386	0.946653	0.970588	-0.02394	0.988397	0.325495
1123611	0.000849	0.010543	0.051774	0.944906	0.973176	-0.02827	0.998945	1
4625952	0.007975	0.010546	0.028802	0.342045	0.297203	0.044843	0.916667	0.002661
4054003	0.004633	0.010583	0.01849	0.347126	0.39759	-0.05046	0.896624	0.305139
1741213	0.003242	0.010593	0.013408	0.705021	0.635484	0.069537	0.994726	0.61749
2403069	0.107649	0.010596	0.011639	0.082121	0.098925	-0.0168	0.99789	1
3324196	0.220254	0.010618	0.03748	0.683333	0.650538	0.032796	0.996835	0.683248
4495387	0.001019	0.010645	0.030235	0.731328	0.660944	0.070384	1	0.836183
481289	0.00394	0.010648	0.0049	0.634096	0.708155	-0.07406	0.998945	0.219417
4237885	0.002679	0.01068	0.031624	0.669102	0.608836	0.060266	0.994726	0.626005
2315741	0.001972	0.010684	0.02788	0.738994	0.660907	0.078087	0.991561	0.679335
306796	0.019786	0.010689	0.013234	0.069502	0.043991	0.025511	1	1
491461	0.00339	0.01072	0.056625	0.819502	0.87069	-0.05119	0.99789	0.211767
1852316	0.00109	0.010738	0.012416	0.292531	0.353763	-0.06123	0.998945	0.544338
2158291	0.002454	0.010741	0.001007	0.95332	0.975322	-0.022	1	1
819435	0.042941	0.010742	0.016132	0.708333	0.780172	-0.07184	0.995781	0.175423
1984049	0.588012	0.010757	0.010092	0.649269	0.683476	-0.03421	0.996835	0.830354
2150273	0.003887	0.010768	0.008118	0.798337	0.845905	-0.04757	0.996835	0.106147
1478534	0.318499	0.010778	0.012665	0.90249	0.880901	0.021588	1	0.825271
4628108	0.001962	0.010783	0.004361	0.624481	0.675966	-0.05148	1	0.011183
819427	0.047563	0.010815	0.019272	0.708506	0.780645	-0.07214	0.998945	0.1756
1430148	0.051369	0.010833	0.008303	0.755991	0.708705	0.047286	0.956751	0.253491
3128616	0.053879	0.010844	0.003796	0.704357	0.646237	0.05812	0.998945	0.312098
4526061	0.003508	0.010857	0.014455	0.407676	0.482833	-0.07516	1	0.781598
4621341	0.015916	0.010874	0.090897	0.997908	1	-0.00209	0.995781	1
1707526	0.006075	0.010877	0.008609	0.970588	0.984581	-0.01399	0.96308	1
3130399	0.288741	0.010899	0.002908	0.633056	0.622294	0.010762	0.994726	1
3361829	0.001927	0.010906	0.000393	0.865952	0.897959	-0.03201	0.989451	0.096596
328082	0.009703	0.010919	0.065718	0.860996	0.825107	0.035889	1	1
1092230	0.03774	0.010937	0.016265	0.5625	0.565076	-0.00258	0.984177	0.506993
3455983	0.008043	0.010964	0.080922	0.656965	0.692473	-0.03551	0.99789	0.586244
3443753	0.001942	0.010975	0.054245	0.674274	0.62931	0.044964	0.99789	1
2418293	0.001161	0.010976	0.024641	0.909375	0.950644	-0.04127	0.99789	0.092528

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1129858	0.008347	0.010978	0.002527	0.435417	0.51073	-0.07531	0.99789	0.643953
324968	0.018517	0.010988	0.037082	0.378755	0.320796	0.057959	0.968354	0.829089
324968	0.018517	0.010988	0.037082	0.378755	0.320796	0.057959	0.968354	0.829089
4207857	0.017911	0.010996	0.024807	0.058091	0.087983	-0.02989	1	0.771393
1092427	0.002467	0.011014	0.033395	0.088358	0.057235	0.031122	0.995781	0.386648
275301	0.634769	0.011022	0.001514	0.641079	0.576344	0.064735	0.998945	0.568869
2098866	0.019622	0.011042	0.007494	0.73382	0.78172	-0.0479	0.995781	0.496184
1736160	0.041891	0.01105	0.013659	0.742739	0.785408	-0.04267	1	0.409807
1532704	0.90226	0.011055	0.00058	0.875519	0.868026	0.007493	1	0.686443
4556357	0.043987	0.011082	0.046845	0.246888	0.200644	0.046244	1	0.886162
3327770	0.005366	0.011086	0.015269	0.894191	0.858369	0.035822	1	0.125882
2615814	0.001816	0.011089	0.006321	0.434647	0.494635	-0.05999	1	0.195416
1068919	0.00612	0.011089	0.053297	0.595833	0.525751	0.070082	0.99789	0.642753
1036280	0.00202	0.011122	0.005011	0.564449	0.482833	0.081616	0.998945	0.71051
2564603	0.029314	0.011143	0.032407	0.274428	0.329741	-0.05531	0.996835	0.833714
1190044	0.115156	0.011144	0.000847	0.756224	0.793103	-0.03688	0.99789	0.888022
2303037	0.003584	0.011146	0.006807	0.29668	0.357759	-0.06108	0.99789	0.840038
2150270	0.004085	0.011149	0.009557	0.79668	0.844086	-0.04741	0.998945	0.158846
4470179	0.009683	0.011162	0.036527	0.785146	0.832494	-0.04735	1	0.247194
3484336	0.011785	0.011186	0.038137	0.966736	0.94206	0.024676	0.998945	0.192773
2288999	0.01567	0.011187	0.036814	0.849585	0.774678	0.074907	1	0.50927
4099607	0.002171	0.011187	0.030565	0.76971	0.820815	-0.05111	1	0.752637
89619	0.001523	0.011195	0.007519	0.374481	0.319742	0.054739	1	0.831259
1153298	0.006155	0.011206	0.034777	0.643606	0.571272	0.072334	0.984177	0.251287
1068923	0.006376	0.011217	0.054995	0.595436	0.525806	0.069629	0.998945	0.709821
332097	0.006966	0.011218	0.005212	0.982143	0.957974	0.024169	0.991561	1
4070991	0.010451	0.011222	0.010542	0.725	0.661638	0.063362	0.995781	0.603971
3549838	0.024623	0.011223	0.029956	0.871875	0.828294	0.043581	0.994726	1
3548285	0.01006	0.011244	0.056382	0.612266	0.676344	-0.06408	0.99789	0.396433
1994405	0.001199	0.011246	0.000765	0.926931	0.958155	-0.03122	0.996835	1
871797	0.090808	0.011247	0.048087	0.633772	0.682844	-0.04907	0.948312	0.443946
2069140	0.003524	0.011259	0.003266	0.614108	0.677039	-0.06293	1	1
152209	0.017742	0.011271	0.058973	0.752075	0.813978	-0.0619	0.998945	0.645646
3692366	0.021347	0.011276	0.032053	0.959544	0.986052	-0.02651	1	1
2861423	0.003641	0.011294	0.032699	0.593617	0.652838	-0.05922	0.978903	0.537788
4473187	0.017541	0.011313	0.010768	0.273389	0.226882	0.046507	0.99789	0.895042
4541886	0.804804	0.011323	0.05558	0.996888	0.996781	0.000107	1	1
754618	0.014274	0.011329	0.013732	0.258299	0.296137	-0.03784	1	0.266438
2090173	0.157955	0.011341	0.033814	0.524896	0.58691	-0.06201	1	0.39093
2375375	0.004942	0.011353	0.046048	0.889004	0.849567	0.039437	0.995781	0.71693
1750035	0.005075	0.01137	0.002762	0.802083	0.745161	0.056922	0.996835	0.271001
2104844	0.028561	0.011384	0.075046	0.417537	0.366091	0.051446	0.993671	0.920223
1953606	0.019997	0.011405	0.003444	0.704782	0.665227	0.039555	0.995781	0.404089
4189623	0.003879	0.011407	0.042501	0.203742	0.142704	0.061038	0.998945	1
2281878	0.004133	0.011411	0.017402	0.185804	0.227371	-0.04157	0.994726	0.113389
205560	0.009278	0.011414	0.006077	0.638831	0.671674	-0.03284	0.996835	0.599298
389517	0.004939	0.011433	0.025612	0.991667	0.975322	0.016345	0.99789	1
1384120	0.130696	0.011452	0.025016	0.876299	0.917382	-0.04108	0.998945	0.349826
495011	0.003772	0.011468	0.011986	0.857884	0.817204	0.04068	0.998945	0.641861
2545061	0.00208	0.011505	0.05536	0.674274	0.62931	0.044964	0.99789	1
3674585	0.010755	0.011521	0.016242	0.263485	0.295064	-0.03158	1	0.823708
152205	0.017954	0.011522	0.062468	0.751046	0.815054	-0.06401	0.994726	0.442917
2159718	0.475192	0.011531	0.008802	0.431393	0.439914	-0.00852	0.998945	0.573921
3171682	0.024684	0.011536	0.029857	0.797297	0.75974	0.037557	0.994726	0.443837
838169	0.002227	0.011539	0.068307	0.661123	0.577419	0.083703	0.99789	0.21645

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
546299	0.004141	0.011542	0.002637	0.574675	0.51464	0.060036	0.955696	0.029329
1396693	0.010514	0.011553	0.013616	0.420502	0.383948	0.036554	0.990506	0.921593
2005382	0.004941	0.011585	0.046337	1	0.996774	0.003226	0.998945	1
1476900	0.010299	0.011606	0.013508	0.903527	0.872043	0.031484	0.998945	1
3496590	0.119497	0.011614	0.025554	0.082988	0.057112	0.025875	0.99789	0.653781
4046072	0.165537	0.011628	0.029088	0.926882	0.943231	-0.01635	0.973629	1
1037703	0.440783	0.011631	0.089412	0.654489	0.689247	-0.03476	0.995781	1
2816497	0.000762	0.011638	0.01606	0.510482	0.445055	0.065427	0.983122	0.256556
2025750	0.01196	0.011645	0.0016	0.591387	0.655629	-0.06424	0.979958	0.835086
1386913	0.007641	0.01165	0.028616	0.841489	0.894912	-0.05342	0.972574	0.453537
1601702	0.004387	0.011651	0.004919	0.434647	0.504292	-0.06964	1	0.926337
1601702	0.004387	0.011651	0.004919	0.434647	0.504292	-0.06964	1	0.926337
3494273	0.878985	0.011655	0.0177	0.287942	0.279698	0.008244	0.995781	1
1674942	0.126227	0.011657	0.053212	0.839248	0.861771	-0.02252	0.993671	0.116309
2483832	0.041651	0.01166	0.019861	0.288981	0.219355	0.069626	0.99789	0.417577
4263996	0.007781	0.011666	0.025636	0.742171	0.782468	-0.0403	0.992616	0.68294
2338634	0.016207	0.011671	0.05058	0.726141	0.684267	0.041874	0.99789	0.914406
1688190	0.004108	0.011674	0.009631	0.986486	0.973176	0.013311	0.998945	0.281521
4074504	0.005533	0.011679	0.011152	0.81185	0.775862	0.035988	0.996835	0.286901
2099468	0.000638	0.01168	0.004126	0.558511	0.617904	-0.05939	0.978903	0.766811
3309026	0.013068	0.01168	0.004001	0.805613	0.837983	-0.03237	0.998945	0.735058
4161476	0.009395	0.011682	0.032578	0.551148	0.597639	-0.04649	0.996835	0.923366
3318140	0.021437	0.011701	0.002959	0.454262	0.484946	-0.03068	0.99789	0.710635
3151394	0.214898	0.011708	0.099479	0.82914	0.860927	-0.03179	0.981013	0.002586
3670389	0.007056	0.011729	0.016987	0.866388	0.816524	0.049865	0.996835	0.535317
2171274	0.011412	0.011764	0.062575	0.267152	0.340129	-0.07298	0.998945	0.536099
1511067	0.010798	0.011813	0.047826	0.151452	0.185622	-0.03417	1	0.443036
1292012	0.010103	0.011814	0.003515	0.883576	0.824034	0.059542	0.998945	0.150072
1925399	0.013454	0.011818	0.007201	0.462656	0.425966	0.03669	1	0.34329
202295	0.006116	0.011819	0.024986	0.470772	0.513015	-0.04224	0.991561	0.351762
341452	0.010037	0.011819	0.019482	0.68711	0.764642	-0.07753	0.993671	0.897251
4113762	0.00049	0.011824	0.099087	0.711458	0.652597	0.058861	0.993671	0.681405
4225517	0.038836	0.011826	0.057677	0.977178	0.989247	-0.01207	0.998945	1
2338632	0.007547	0.011832	0.06001	0.658004	0.716738	-0.05873	0.998945	0.732234
2611368	0.005592	0.011839	0.028883	0.513514	0.581967	-0.06845	0.918776	0.550473
512546	0.145232	0.011842	0.011446	0.420124	0.45279	-0.03267	1	0.925712
1108825	0.00748	0.011842	0.139508	0.220833	0.170259	0.050575	0.995781	1
2322083	0.004096	0.011842	0.003	0.534375	0.587097	-0.05272	0.996835	0.848585
1637920	0.326446	0.011853	0.029835	0.933054	0.945279	-0.01222	0.995781	1
1626812	0.008492	0.011856	0.050874	0.734542	0.677632	0.05691	0.975738	0.453264
929091	0.005757	0.011857	0.063447	0.947917	0.914163	0.033754	0.99789	0.367468
34440	0.002204	0.011863	0.028413	0.918919	0.937768	-0.01885	0.998945	1
1279810	0.490305	0.011913	0.129539	0.197505	0.162017	0.035488	0.998945	0.498874
4327019	0.013305	0.011923	0.002511	0.244259	0.211828	0.032431	0.995781	0.126115
3396567	0.030175	0.011924	0.036248	0.517672	0.566667	-0.049	0.99789	0.219599
641538	0.005114	0.011933	0.033865	0.780665	0.718884	0.061781	0.998945	0.567593
1123737	0.02793	0.01196	0.009113	0.706432	0.660215	0.046216	0.998945	0.53491
1886027	0.017897	0.011969	0.021923	0.406445	0.342672	0.063772	0.996835	0.918065
1741283	0.003867	0.011971	0.011535	0.701883	0.633333	0.06855	0.994726	0.689569
2428115	0.001086	0.011977	0.001804	0.751037	0.816524	-0.06549	1	1
182701	0.07181	0.011983	0.028395	0.68361	0.736559	-0.05295	0.998945	0.188056
4267677	0.0226	0.011986	0.001302	0.612869	0.549462	0.063407	0.990506	0.160223
1503062	0.013363	0.011992	0.023456	0.350312	0.311159	0.039153	0.998945	0.104443
3482898	0.108958	0.011994	0.087056	0.348548	0.365801	-0.01725	0.995781	0.31596
4310545	0.085099	0.011996	0.019556	0.699584	0.741935	-0.04235	0.99789	0.903699

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2210294	0.004764	0.012002	0.012132	0.904564	0.94206	-0.0375	1	0.388718
2701016	0.032146	0.012023	0.019633	0.820539	0.847639	-0.0271	1	0.471213
1640495	0.007965	0.012025	0.030258	0.79668	0.753219	0.043462	1	0.618988
2431975	0.172925	0.012037	0.007463	0.081081	0.062232	0.018849	0.998945	0.408987
4072577	0.036114	0.012038	0.007747	0.822917	0.857451	-0.03453	0.994726	0.448843
4607458	0.001537	0.012039	0.011625	0.964657	0.938841	0.025816	0.998945	0.004499
2171276	0.012353	0.012044	0.067746	0.266598	0.340129	-0.07353	1	0.536099
1266255	0.002308	0.012048	0.015931	0.825	0.887097	-0.0621	0.996835	0.818938
3704864	0.151402	0.01205	0.017505	0.271967	0.305857	-0.03389	0.990506	1
1838161	0.022502	0.012083	0.058559	0.779167	0.819355	-0.04019	0.996835	0.637684
666933	0.122821	0.012094	0.024746	0.994813	0.997849	-0.00304	0.998945	1
1777754	0.00537	0.012099	0.019891	0.330913	0.402808	-0.07189	0.996835	0.05414
2296879	0.037501	0.012099	0.007124	0.650415	0.609677	0.040738	0.998945	0.172538
3416748	0.002161	0.01214	0.060673	0.819502	0.866953	-0.04745	1	0.544605
3327773	0.009318	0.012158	0.012571	0.897275	0.860087	0.037188	0.989451	0.172346
1136340	0.001683	0.012163	0.009801	0.824324	0.86588	-0.04156	0.998945	0.692786
1524928	0.004399	0.012167	0.011836	0.599585	0.65914	-0.05955	0.998945	0.469904
2159710	0.413277	0.012179	0.010752	0.432573	0.435345	-0.00277	0.99789	0.395473
4411673	0.312842	0.012183	0.004755	0.585774	0.62419	-0.03842	0.992616	0.488333
4269985	0.616266	0.012186	0.049063	0.748963	0.711373	0.037589	1	0.651725
2222124	0.0113	0.012222	0.101605	0.732365	0.780043	-0.04768	1	0.345792
634729	0.007827	0.012231	0.080829	0.989627	0.974249	0.015378	1	0.032123
1527056	0.043228	0.012238	0.068474	0.137787	0.163793	-0.02601	0.994726	1.81E-09
630657	0.002941	0.012253	0.017949	0.956432	0.929185	0.027247	1	1
275302	0.58634	0.012268	0.001587	0.642412	0.57618	0.066231	0.998945	0.507921
2776342	0.025971	0.012275	0.035085	0.279046	0.336559	-0.05751	0.998945	1
1536341	0.157277	0.01228	0.020521	0.270202	0.257772	0.01243	0.824895	0.894776
2481359	0.005861	0.012281	0.041508	0.488565	0.434549	0.054016	0.998945	1
1837945	0.023741	0.012284	0.02884	0.659329	0.715517	-0.05619	0.992616	0.819563
2259438	0.001486	0.0123	0.004692	0.936441	0.899113	0.037328	0.973629	0.195836
1373798	0.060292	0.012301	0.034985	0.75211	0.771552	-0.01944	0.989451	0.35571
2292932	0.049413	0.012302	0.0126	0.659044	0.607296	0.051748	0.998945	0.697805
4591896	0.95032	0.012333	0.003661	0.818087	0.807527	0.01056	0.99789	0.29483
2171293	0.012761	0.012337	0.068326	0.26618	0.339056	-0.07288	0.996835	0.470718
4081727	0.139488	0.012338	0.018103	0.780083	0.82618	-0.0461	1	1
2202013	0.006626	0.012361	0.014983	0.988589	0.97103	0.017559	1	1
1641102	0.028339	0.012364	0.04805	1	0.995708	0.004292	1	1
2296906	0.014357	0.012368	0.00087	0.965625	0.982833	-0.01721	0.99789	1
1068905	0.008297	0.012378	0.060059	0.593555	0.525806	0.067749	0.99789	0.709821
1206923	0.002306	0.012406	0.118308	0.888764	0.852657	0.036107	0.906118	0.695062
4554584	0.040301	0.012418	0.033985	0.703782	0.771242	-0.06746	0.986287	5.54E-05
4177170	0.06017	0.01242	0.001373	0.295833	0.328294	-0.03246	0.994726	0.246543
481293	0.014196	0.012433	0.004561	0.544681	0.620915	-0.07623	0.979958	0.487692
2315786	0.131761	0.012434	0.044321	0.177386	0.217811	-0.04043	1	0.786443
4207008	0.001997	0.012474	0.183554	0.975532	0.99026	-0.01473	0.983122	1
1940929	0.110552	0.012481	0.003793	0.684647	0.716738	-0.03209	1	0.424611
795780	0.025697	0.012482	0.032613	0.881497	0.844086	0.037411	0.99789	0.293015
2133361	0.232948	0.012484	0.028185	0.811458	0.765086	0.046372	0.995781	0.367858
1617548	0.254009	0.012497	0.00489	0.62474	0.63871	-0.01397	0.99789	0.367426
4192876	0.003663	0.012506	0.014611	0.400415	0.335129	0.065286	0.99789	1
3488172	0.007952	0.012507	0.182683	0.752075	0.68172	0.070354	0.998945	0.831376
4661310	0.000725	0.012511	0.048876	0.941788	0.966667	-0.02488	0.99789	0.085026
4661310	0.000725	0.012511	0.048876	0.941788	0.966667	-0.02488	0.99789	0.085026
4136616	0.019898	0.012514	0.191313	0.761053	0.730263	0.030789	0.982068	0.905309
1852056	0.004184	0.01252	0.027246	0.869023	0.91309	-0.04407	0.998945	0.560446

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1804184	0.000842	0.012521	0.038497	0.879418	0.829032	0.050386	0.99789	1
539236	0.011089	0.012528	0.097533	0.429648	0.496305	-0.06666	0.848101	0.84301
4532516	0.090427	0.012556	0.020589	0.708506	0.75914	-0.05063	0.998945	0.703852
1936436	0.013259	0.012564	0.018134	0.618257	0.548283	0.069974	1	0.709255
4103377	0.027314	0.012565	0.053702	0.665281	0.576344	0.088937	0.99789	0.017663
2281886	0.005599	0.012568	0.024577	0.18361	0.223656	-0.04005	0.998945	0.349006
146866	0.013889	0.01257	0.09151	0.116183	0.158351	-0.04217	0.994726	0.600523
2023276	0.005179	0.012577	0.044728	1	0.996781	0.003219	1	1
1037696	0.379642	0.012582	0.085386	0.655136	0.688985	-0.03385	0.991561	1
4113764	0.00053	0.012597	0.141501	0.708159	0.647059	0.0611	0.988397	0.60919
1217693	0.414459	0.012606	0.017165	0.507322	0.537716	-0.03039	0.993671	0.224489
1217693	0.414459	0.012606	0.017165	0.507322	0.537716	-0.03039	0.993671	0.224489
261921	0.004962	0.012612	0.09708	0.952282	0.922747	0.029535	1	0.747888
4199684	0.04536	0.012627	0.006605	0.634375	0.594828	0.039547	0.995781	0.442578
3602064	0.004345	0.01263	0.03796	0.929461	0.895248	0.034212	0.996835	1
4071000	0.009965	0.012636	0.043876	0.645833	0.571888	0.073945	0.99789	1
3222716	0.001202	0.012665	0.003332	0.867983	0.894624	-0.02664	0.99789	0.804849
3670394	0.009892	0.012672	0.016627	0.875	0.827586	0.047414	0.995781	0.872083
2390434	0.08066	0.012678	0.02546	0.756871	0.719647	0.037224	0.976793	0.035507
4300871	0.012322	0.01268	0.026089	0.558091	0.604526	-0.04643	0.99789	0.146415
3596421	0.249229	0.012685	0.004331	0.81289	0.785408	0.027482	0.998945	0.492126
1524936	0.002954	0.01269	0.006401	0.772629	0.719565	0.053064	0.974684	0.490608
3857512	0.631276	0.012705	0.015477	0.636968	0.654912	-0.01794	0.99789	0.38029
1982621	0.00144	0.012721	0.052919	0.880457	0.922747	-0.04229	0.998945	0.178994
257047	0.003279	0.012753	0.010095	0.768672	0.727957	0.040715	0.998945	0.815128
1603935	0.000843	0.012753	0.033497	0.944906	0.925966	0.018941	0.998945	0.031121
3154718	0.004206	0.012763	0.019607	0.005187	0.021459	-0.01627	1	1
449720	0.008043	0.012777	0.005099	0.926042	0.957516	-0.03147	0.990506	1
4523947	0.917163	0.012784	0.120289	0.998958	0.997849	0.001109	0.996835	1
342851	0.022725	0.012793	0.022209	0.957627	0.970779	-0.01315	0.985232	0.323717
1640459	0.007704	0.012817	0.031352	0.204357	0.251613	-0.04726	0.998945	0.805738
4106955	0.025276	0.01282	0.014253	0.2921	0.350538	-0.05844	0.99789	0.26216
1543849	0.002047	0.012822	0.01475	0.887967	0.92043	-0.03246	0.998945	0.756589
4071839	0.011062	0.012827	0.088963	0.131743	0.077419	0.054323	0.998945	0.748361
4300424	0.002889	0.012829	0.004161	0.732848	0.782796	-0.04995	0.99789	0.014245
422990	0.014734	0.012856	0.012668	0.914583	0.886022	0.028562	0.996835	0.490293
1524175	0.001313	0.012869	0.036053	0.733333	0.661987	0.071346	0.994726	0.917376
1827609	0.001872	0.012872	0.055292	0.655556	0.58094	0.074616	0.831224	0.074156
309867	0.033231	0.012885	0.009503	0.822614	0.854077	-0.03146	1	0.353461
3699019	0.004753	0.012894	0.017898	0.996881	0.988197	0.008684	0.998945	1
80922	0.004941	0.012896	0.055925	0.735477	0.799356	-0.06388	1	0.772333
3317887	0.127577	0.012899	0.00949	0.505519	0.547672	-0.04215	0.953586	0.39229
2330986	0.14929	0.012933	0.008185	0.255187	0.290773	-0.03559	1	0.500849
3549773	0.05206	0.012938	0.005695	0.797297	0.744612	0.052685	0.996835	0.902773
71255	0.015665	0.012946	0.008318	0.87422	0.849138	0.025082	0.996835	0.365563
100950	0.081133	0.01295	0.018672	0.570833	0.633333	-0.0625	0.996835	0.485538
3548264	0.010246	0.01296	0.061473	0.608333	0.67382	-0.06549	0.99789	0.344437
3483439	0.015318	0.012978	0.152809	0.675	0.737124	-0.06212	0.99789	1
3385347	0.00968	0.013003	0.03061	0.590042	0.640086	-0.05004	0.987342	0.688017
341906	0.005347	0.013005	0.008854	0.975104	0.950324	0.02478	0.996835	1
1750701	0.002203	0.013008	0.026674	0.567992	0.543103	0.024888	0.993671	0.574829
2357698	0.112977	0.013015	0.035583	0.212656	0.169528	0.043128	1	1
4109937	0.020257	0.013033	0.034907	0.451143	0.399784	0.051359	0.996835	0.286983
1184138	0.952518	0.013038	0.016866	0.698133	0.717204	-0.01907	0.998945	0.051395
3206615	0.006363	0.013052	0.073327	0.498963	0.55914	-0.06018	0.998945	0.073941

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
4514982	0.004708	0.013055	0.02125	0.868889	0.851598	0.017291	0.936709	0.055945
4514982	0.004708	0.013055	0.02125	0.868889	0.851598	0.017291	0.936709	0.055945
1852336	0.00113	0.013056	0.017278	0.294179	0.354077	-0.0599	0.998945	0.543631
4468913	0.757461	0.01306	0.046702	0.472767	0.505643	-0.03288	0.951477	0.569277
1953607	0.024191	0.013064	0.004509	0.703125	0.664163	0.038962	0.99789	0.468543
4186567	0.345238	0.013095	0.015357	0.384375	0.351613	0.032762	0.996835	0.541702
257719	0.003197	0.013109	0.005851	0.733402	0.783262	-0.04986	1	0.784828
1399116	0.651814	0.01311	0.021782	0.81289	0.822581	-0.00969	0.99789	0.201624
1804181	0.000617	0.013186	0.025676	0.877593	0.825107	0.052486	1	1
3491627	0.004881	0.013189	0.033133	0.939294	0.890023	0.049271	0.943038	0.028552
3446473	0.01885	0.013191	0.004729	0.950422	0.972345	-0.02192	0.976793	1
1623879	0.005233	0.013202	0.056056	0.903527	0.931183	-0.02766	0.998945	0.469148
863787	0.013023	0.013208	0.002898	0.471875	0.414317	0.057558	0.992616	0.773333
3108947	0.04457	0.013208	0.034539	0.908714	0.87957	0.029144	0.998945	0.515852
341457	0.008847	0.013212	0.020982	0.688797	0.765659	-0.07686	0.996835	0.896975
548955	0.042065	0.013214	0.110591	0.900415	0.862661	0.037754	1	0.56273
1622775	0.004521	0.013224	0.026826	0.659044	0.695279	-0.03624	0.998945	0.190398
516171	0.003358	0.013229	0.000998	0.25	0.284483	-0.03448	0.99789	1
3297520	0.007876	0.01326	0.05345	0.857884	0.791845	0.066038	1	0.402336
2150269	0.004283	0.013261	0.011997	0.79668	0.845161	-0.04848	0.998945	0.159898
1804187	0.000736	0.013261	0.033829	0.878631	0.826882	0.051749	0.998945	1
3548461	0.007845	0.013262	0.072581	0.623679	0.685682	-0.062	0.970464	0.099197
3548461	0.007845	0.013262	0.072581	0.623679	0.685682	-0.062	0.970464	0.099197
410865	0.00705	0.013268	0.008293	0.652083	0.594421	0.057663	0.99789	0.847567
2122278	0.007416	0.01328	0.070287	0.997925	0.986052	0.011874	1	1
4432866	0.007355	0.013288	0.0016	0.735421	0.778396	-0.04298	0.962025	0.493706
3327743	0.007053	0.013297	0.018506	0.893154	0.858065	0.035089	0.998945	0.253967
2348985	0.00656	0.013301	0.002342	0.401879	0.363441	0.038438	0.995781	0.763894
1277749	0.021933	0.013316	0.0719	1	0.996781	0.003219	1	1
1800552	0.821906	0.013323	0.053216	0.003112	0.002146	0.000966	1	1
3699796	0.040854	0.013349	0.014397	0.870332	0.894624	-0.02429	0.998945	0.328165
1741903	0.005571	0.013356	0.06608	0.614345	0.685345	-0.071	0.996835	0.914347
3148969	0.004317	0.01336	0.004048	0.609959	0.668455	-0.0585	1	0.532063
3426098	0.024393	0.013372	0.038982	0.277547	0.33691	-0.05936	0.998945	1
4238270	0.071205	0.013385	0.056982	0.603734	0.581545	0.022189	1	0.154705
4306118	0.035565	0.013389	0.008586	0.382143	0.446782	-0.06464	0.869198	0.015536
4259987	0.007836	0.013393	0.064645	0.595634	0.526824	0.06881	0.998945	0.710442
4259987	0.007836	0.013393	0.064645	0.595634	0.526824	0.06881	0.998945	0.710442
3549811	0.005497	0.013408	0.003986	0.672708	0.723568	-0.05086	0.973629	0.347362
3192836	0.003934	0.013415	0.026838	0.4875	0.547312	-0.05981	0.996835	0.223671
98520	0.05535	0.013417	0.120365	0.799582	0.831533	-0.03195	0.993671	0.868066
98520	0.05535	0.013417	0.120365	0.799582	0.831533	-0.03195	0.993671	0.868066
98520	0.05535	0.013417	0.120365	0.799582	0.831533	-0.03195	0.993671	0.868066
4605679	0.031089	0.013426	0.01502	0.107069	0.132035	-0.02497	0.994726	1
2072073	0.004234	0.013426	0.022175	0.951782	0.924078	0.027704	0.989451	0.500563
1352325	0.047161	0.013426	0.018436	0.111465	0.073913	0.037552	0.982068	0.007468
1708822	0.035503	0.013427	0.095318	0.222917	0.295259	-0.07234	0.995781	0.264533
92348	0.598463	0.013433	0.023895	0.939583	0.947084	-0.0075	0.994726	0.126883
3277985	0.002268	0.01344	0.038462	0.773859	0.814378	-0.04052	1	0.221562
3674586	0.012582	0.013456	0.018688	0.264033	0.294624	-0.03059	0.99789	0.823765
719280	0.593955	0.013488	0.019393	0.528067	0.525806	0.00226	0.99789	1
4385915	0.00737	0.01349	0.004581	0.70625	0.767241	-0.06099	0.995781	0.896501
4385915	0.00737	0.01349	0.004581	0.70625	0.767241	-0.06099	0.995781	0.896501
4385915	0.00737	0.01349	0.004581	0.70625	0.767241	-0.06099	0.995781	0.896501
3457651	0.008494	0.013492	0.005927	0.907676	0.873391	0.034286	1	0.206151

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2292958	0.056282	0.013493	0.012876	0.657676	0.608369	0.049307	1	0.627473
1279817	0.503704	0.013496	0.146433	0.198133	0.162017	0.036116	1	0.498874
647583	0.001607	0.013512	0.057967	0.982292	0.950538	0.031754	0.996835	1
4605055	0.013493	0.013532	0.05151	0.646934	0.576159	0.070776	0.976793	0.630745
1458475	0.007592	0.013568	0.027755	0.660083	0.613147	0.046937	0.996835	0.493853
1688685	0.005082	0.013573	0.024336	0.54375	0.610991	-0.06724	0.995781	1
4406785	0.042109	0.01358	0.024728	0.685685	0.75	-0.06432	1	0.048545
546295	0.00525	0.013593	0.003907	0.572614	0.51824	0.054374	1	0.227524
2394275	0.226032	0.013594	0.024116	0.803942	0.784335	0.019607	1	0.099057
523166	0.142098	0.013594	0.020356	0.780665	0.82618	-0.04551	0.998945	1
2297331	0.031663	0.013598	0.134697	0.89375	0.924893	-0.03114	0.99789	0.315339
311108	0.023885	0.013612	0.006874	0.692632	0.645788	0.046843	0.989451	0.839546
1617152	0.023302	0.01362	0.03833	0.961538	0.938578	0.022961	0.996835	1
3447520	0.004799	0.013623	0.022193	0.860125	0.895699	-0.03557	0.995781	1
1675552	0.006072	0.013631	0.068698	0.965768	0.936695	0.029072	1	0.704721
2393144	0.697685	0.013637	0.006945	0.883721	0.871145	0.012576	0.977848	0.529816
524882	0.155019	0.013641	0.021543	0.986486	0.993548	-0.00706	0.99789	1
1452029	0.106032	0.013642	0.092481	0.901452	0.925966	-0.02451	1	0.73096
216975	0.051964	0.013652	0.024624	0.013542	0.02897	-0.01543	0.99789	0.321375
4240548	0.172268	0.013662	0.005569	0.665975	0.697198	-0.03122	0.99789	0.742146
4664350	0.011353	0.013664	0.081018	0.625519	0.688172	-0.06265	0.998945	0.330396
4664350	0.011353	0.013664	0.081018	0.625519	0.688172	-0.06265	0.998945	0.330396
735076	0.05325	0.013673	0.075374	0.961538	0.964592	-0.00305	0.998945	1
1384130	0.114141	0.013673	0.031421	0.874481	0.916309	-0.04183	1	0.234096
3645090	0.516354	0.013677	0.143426	0.19917	0.16309	0.03608	1	0.394835
3192819	0.007501	0.013679	0.084389	0.842708	0.790773	0.051936	0.99789	0.401724
2009513	0.048372	0.013684	0.032428	0.341286	0.392473	-0.05119	0.998945	0.628184
3174579	0.003813	0.013692	0.032234	0.0125	0.033262	-0.02076	0.99789	0.40304
1210926	0.008852	0.013695	0.030307	0.744813	0.697849	0.046964	0.998945	0.061803
3142601	0.004135	0.0137	0.011628	0.956432	0.92382	0.032612	1	0.741802
1777723	0.006262	0.013713	0.020836	0.331601	0.401288	-0.06969	0.998945	0.0667
1936419	0.013426	0.013719	0.019904	0.618257	0.549356	0.068901	1	0.708118
3524231	0.067996	0.013731	0.012607	0.782744	0.75	0.032744	0.996835	0.710457
4594656	0.015185	0.013733	0.009654	0.935685	0.959227	-0.02354	1	1
1136347	0.0019	0.013741	0.012171	0.823958	0.864807	-0.04085	0.99789	0.692479
3994732	0.007139	0.013759	0.033909	0.470464	0.412088	0.058376	0.979958	0.033435
34433	0.002412	0.013766	0.031	0.91805	0.937768	-0.01972	1	1
3590033	0.39413	0.013768	0.015711	0.953125	0.948387	0.004738	0.996835	0.114082
2308728	0.006082	0.01379	0.015411	0.438797	0.493534	-0.05474	0.99789	0.032519
2106994	0.061547	0.01379	0.008614	0.838174	0.8	0.038174	0.998945	0.312264
3154473	0.008729	0.013799	0.015288	0.581933	0.543011	0.038922	0.992616	0.925528
2814368	0.005403	0.013818	0.004248	0.668094	0.725383	-0.05729	0.974684	0.29117
1673170	0.015562	0.013829	0.012634	0.577801	0.629828	-0.05203	1	0.091286
1396685	0.011824	0.013837	0.015389	0.421162	0.384449	0.036713	0.996835	0.694612
850036	0.007329	0.01384	0.065709	0.476546	0.416849	0.059697	0.976793	0.067645
4639859	0.009613	0.01384	0.011439	0.432773	0.48366	-0.05089	0.986287	0.640536
4440826	0.111367	0.013841	0.012511	0.173958	0.193133	-0.01917	0.99789	0.180224
2769985	0.008559	0.013846	0.029855	0.617895	0.568035	0.04986	0.989451	0.448919
4469074	0.679357	0.013855	0.012191	0.853734	0.837634	0.0161	0.998945	0.039214
2496003	0.012711	0.013856	0.047274	0.947917	0.92382	0.024097	0.99789	1
4055100	0.004817	0.013874	0.099161	0.360707	0.4375	-0.07679	0.996835	0.509658
1276905	0.048061	0.013879	0.030268	0.715812	0.665556	0.050256	0.968354	0.672461
4588117	0.002976	0.013884	0.069794	0.673958	0.626882	0.047077	0.996835	0.842796
570392	0.052442	0.013902	0.044779	0.7375	0.787879	-0.05038	0.993671	0.577081
1721737	0.021547	0.013927	0.001771	0.70332	0.767167	-0.06385	1	0.438833

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
839793	0.074455	0.013929	0.016862	0.686722	0.726395	-0.03967	1	0.727113
4056535	0.002579	0.013929	0.14742	0.041494	0.02043	0.021064	0.998945	0.171067
870719	0.014216	0.013942	0.022293	0.101871	0.146996	-0.04512	0.998945	0.093118
3144607	0.044887	0.013961	0.043191	0.404167	0.469892	-0.06573	0.996835	0.709542
1355944	0.05292	0.013969	0.022748	0.588727	0.637339	-0.04861	0.996835	1
3700156	0.436133	0.013995	0.01188	0.919087	0.937768	-0.01868	1	1
2850294	0.002224	0.014002	0.165854	0.635417	0.713362	-0.07795	0.995781	0.570031
954095	0.621117	0.014016	0.072617	0.998963	0.995708	0.003255	1	1
1552807	0.30019	0.014031	0.015952	0.362786	0.300429	0.062357	0.998945	0.581465
395969	0.005832	0.014041	0.001864	0.633056	0.6875	-0.05444	0.996835	0.083936
1023572	0.007457	0.014043	0.005839	0.706432	0.769313	-0.06288	1	0.515889
4213933	0.053859	0.014056	0.022547	0.533195	0.562366	-0.02917	0.998945	0.509423
2325270	0.006396	0.014083	0.030469	0.643154	0.68172	-0.03857	0.998945	0.52295
2027110	0.002986	0.014091	0.074904	0.866876	0.81128	0.055596	0.989451	0.446433
34422	0.002463	0.0141	0.031771	0.91805	0.937768	-0.01972	1	1
4100747	0.022264	0.014108	0.008417	0.304979	0.264579	0.0404	0.996835	0.474149
776667	0.160914	0.014113	0.044776	0.724895	0.74086	-0.01596	0.994726	0.903791
4234844	0.00961	0.014133	0.042196	0.644191	0.572043	0.072148	0.998945	0.850286
1804156	0.000741	0.01414	0.035439	0.877339	0.824731	0.052608	0.99789	0.872257
838220	0.013518	0.014143	0.063656	0.881743	0.849462	0.03228	0.998945	0.467777
4048535	0.017942	0.014143	0.004172	0.062241	0.092275	-0.03003	1	0.784755
75784	0.022393	0.014148	0.014118	0.642116	0.609677	0.032439	0.998945	0.242358
325064	0.003026	0.014165	0.025967	0.739085	0.69206	0.047025	0.998945	0.66531
2496004	0.011873	0.01417	0.039746	0.945833	0.922581	0.023253	0.996835	0.342469
3403751	0.020791	0.014171	0.008919	0.360707	0.324731	0.035976	0.99789	0.751041
1524173	0.001385	0.014171	0.038248	0.731328	0.660944	0.070384	1	0.836183
1885820	0.00137	0.014182	0.04671	0.36722	0.321505	0.045715	0.998945	0.396517
1125349	0.027205	0.014184	0.098707	0.930498	0.96129	-0.03079	0.998945	1
1507645	0.010577	0.014187	0.064697	0.41757	0.472036	-0.05447	0.957806	0.05745
434254	0.05544	0.014189	0.033068	0.86722	0.901288	-0.03407	1	0.602907
397218	0.170657	0.014201	0.049558	0.997925	0.998927	-0.001	1	1
3901773	0.002946	0.014206	0.000436	0.864181	0.892947	-0.02877	0.99789	0.127092
2315739	0.002622	0.014281	0.028314	0.739583	0.664871	0.074713	0.995781	0.602263
3327748	0.007331	0.014293	0.019599	0.893154	0.858369	0.034784	1	0.254111
4501328	0.007838	0.014298	0.117412	0.86722	0.902361	-0.03514	1	0.183997
4318227	0.002466	0.014313	0.011105	0.720374	0.673866	0.046508	0.995781	0.29165
3688288	0.013299	0.014327	0.019887	0.739085	0.686022	0.053064	0.99789	0.666775
4197691	0.670459	0.01433	0.017352	0.986737	0.973552	0.013186	1	1
4031951	0.024711	0.014357	0.011754	0.151261	0.142082	0.009178	0.988397	0.4494
1023624	0.005877	0.014358	0.005085	0.726141	0.790773	-0.06463	1	0.576508
2483788	0.045485	0.014362	0.022078	0.290021	0.22103	0.068991	0.998945	0.080183
2483788	0.045485	0.014362	0.022078	0.290021	0.22103	0.068991	0.998945	0.080183
341456	0.009818	0.014363	0.023355	0.68815	0.765591	-0.07744	0.99789	0.897434
1576276	0.009606	0.014383	0.066622	0.835062	0.798283	0.036779	1	0.885858
198892	0.157143	0.014392	0.090163	0.380457	0.372318	0.00814	0.998945	0.489329
2374399	0.012552	0.014407	0.018317	0.623701	0.677802	-0.0541	0.996835	0.166518
2374399	0.012552	0.014407	0.018317	0.623701	0.677802	-0.0541	0.996835	0.166518
1641495	0.028474	0.014411	0.052987	1	0.996781	0.003219	1	1
1749953	0.00439	0.014415	0.039014	0.629668	0.570815	0.058853	1	0.705395
3524269	0.076819	0.014421	0.017042	0.779046	0.747854	0.031192	1	0.622901
2310845	0.007917	0.014459	0.055085	0.087137	0.125	-0.03786	0.99789	0.401837
1940932	0.077609	0.014477	0.003326	0.709544	0.751613	-0.04207	0.998945	0.319628
4306393	0.005024	0.014484	0.012406	0.602911	0.658065	-0.05515	0.99789	0.470854
4072207	0.624319	0.014494	0.001929	0.641079	0.577419	0.063659	0.998945	0.505803
329625	0.007766	0.014504	0.019481	0.583333	0.633696	-0.05036	0.985232	0.546612

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3332282	0.011695	0.014514	0.016528	0.29668	0.326882	-0.0302	0.998945	0.114932
1471109	0.006903	0.014534	0.027442	0.871369	0.920601	-0.04923	1	0.75665
34416	0.002436	0.014536	0.030782	0.91805	0.938841	-0.02079	1	1
2117452	0.01067	0.01455	0.004887	0.766667	0.727468	0.039199	0.99789	0.90735
2222116	0.012697	0.014553	0.111077	0.734375	0.777897	-0.04352	0.99789	0.180583
1370327	0.003663	0.014555	0.066997	0.779626	0.737124	0.042501	0.998945	0.187757
3384796	0.031589	0.014558	0.020392	0.5842	0.632543	-0.04834	0.996835	0.317617
1782628	0.022057	0.01456	0.013154	0.589212	0.521505	0.067706	0.998945	0.852583
64117	0.00301	0.014608	0.063749	0.672199	0.732833	-0.06063	1	1
3524265	0.09376	0.014626	0.015667	0.779626	0.747854	0.031772	0.998945	0.622901
950445	0.039172	0.014627	0.012256	0.872407	0.844421	0.027986	1	0.727278
1412933	0.001049	0.014637	0.064536	0.963693	0.979614	-0.01592	1	0.170726
4450974	0.077559	0.014656	0.051201	0.958506	0.940987	0.017519	1	0.392146
2317520	0.004254	0.014659	0.033766	0.420124	0.504292	-0.08417	1	0.041332
803242	0.019016	0.014676	0.025639	0.467775	0.505365	-0.03759	0.998945	0.016117
696219	0.027829	0.01468	0.034377	0.515021	0.56808	-0.05306	0.964135	0.501724
4192543	0.011802	0.014687	0.006913	0.720464	0.745671	-0.02521	0.987342	0.326324
4192543	0.011802	0.014687	0.006913	0.720464	0.745671	-0.02521	0.987342	0.326324
3139723	0.005631	0.014705	0.02406	0.412863	0.366953	0.04591	1	0.920797
1190043	0.117417	0.014709	0.001217	0.757261	0.792918	-0.03566	1	0.887978
1804169	0.000588	0.014722	0.025214	0.876299	0.821505	0.054794	0.99789	0.751254
619113	0.025005	0.014726	0.010549	0.72547	0.688578	0.036892	0.994726	0.745413
1912715	0.003446	0.01474	0.006466	0.969917	0.94181	0.028107	0.99789	0.059835
2428542	0.016085	0.014744	0.025253	0.409186	0.346237	0.062949	0.995781	0.023995
3417420	0.004954	0.014744	0.010071	0.770747	0.820043	-0.0493	0.99789	0.20906
618986	0.013382	0.014775	0.011484	0.366667	0.408602	-0.04194	0.996835	0.389726
3335727	0.001766	0.014777	0.02689	0.978216	0.957082	0.021134	1	1
803810	0.007409	0.014789	0.144438	0.403226	0.356436	0.04679	0.883966	0.51602
734066	0.002377	0.014811	0.051174	0.61875	0.559395	0.059355	0.994726	0.004651
710968	0.003823	0.014832	0.035702	0.672199	0.622845	0.049354	0.99789	1
1524929	0.005749	0.014832	0.014491	0.599792	0.659871	-0.06008	0.998945	0.470328
691158	0.036778	0.014838	0.008596	0.819127	0.849462	-0.03034	0.99789	1
701616	0.003436	0.014876	0.026468	0.58465	0.498768	0.085882	0.89557	0.091303
4561494	0.151865	0.014879	0.050792	0.756989	0.762014	-0.00502	0.951477	1
1267986	0.002904	0.014939	0.025348	0.828482	0.782189	0.046293	0.998945	0.278803
1267986	0.002904	0.014939	0.025348	0.828482	0.782189	0.046293	0.998945	0.278803
1564690	0.035991	0.01494	0.041871	0.680498	0.734979	-0.05448	1	0.340849
4490276	0.051126	0.014951	0.022652	0.290456	0.222581	0.067876	0.998945	0.22691
1944894	0.009148	0.014965	0.058377	0.825726	0.861588	-0.03586	1	0.56205
922169	0.057471	0.01497	0.075758	0.90625	0.93871	-0.03246	0.996835	0.402664
2114787	0.04294	0.014976	0.026961	0.398109	0.329718	0.068391	0.988397	0.058699
3524624	0.006242	0.014976	0.016099	0.412863	0.475322	-0.06246	1	0.306905
3715699	0.005939	0.014977	0.012757	0.887967	0.916309	-0.02834	1	0.061711
270004	0.01888	0.014987	0.052288	0.911135	0.884956	0.026179	0.969409	0.164291
332282	0.015953	0.014993	0.080107	0.867983	0.824731	0.043252	0.99789	0.524628
3455148	0.003447	0.015016	0.176828	0.658333	0.737124	-0.07879	0.99789	0.904778
3394179	0.041201	0.015036	0.010682	0.322034	0.307095	0.014939	0.973629	0.020488
4109714	0.012517	0.015057	0.074665	0.763048	0.821121	-0.05807	0.994726	0.875307
2618960	0.025061	0.015065	0.045307	0.278706	0.336207	-0.0575	0.994726	0.917265
3508850	0.056066	0.015075	0.029646	0.084025	0.105376	-0.02135	0.998945	0.623585
4306202	0.008378	0.015087	0.055873	1	0.99569	0.00431	0.994726	1
2117653	0.011031	0.015095	0.328113	0.723493	0.651188	0.072305	0.995781	0.413783
3548137	0.013075	0.015097	0.06183	0.606846	0.670968	-0.06412	0.998945	0.247903
3548137	0.013075	0.015097	0.06183	0.606846	0.670968	-0.06412	0.998945	0.247903
1708820	0.056961	0.01512	0.1024	0.218295	0.284483	-0.06619	0.996835	0.17055

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
332082	0.006151	0.015141	0.008068	0.981211	0.956009	0.025202	0.996835	1
4031267	0.002944	0.015177	0.176912	0.661053	0.742857	-0.0818	0.981013	0.806756
4583001	0.151023	0.01518	0.055758	0.271058	0.275938	-0.00488	0.966245	0.018221
1982625	0.001802	0.015184	0.0578	0.88125	0.922581	-0.04133	0.996835	0.179527
2297329	0.05751	0.015187	0.113451	0.895833	0.92382	-0.02799	0.99789	0.327968
3337737	0.022275	0.015212	0.007019	0.530083	0.47306	0.057023	0.99789	0.226454
710971	0.004492	0.015229	0.03213	0.653846	0.604526	0.04932	0.996835	0.025903
1829055	0.010141	0.015234	0.014455	0.870062	0.893548	-0.02349	0.99789	0.216048
3496577	0.13532	0.015243	0.03628	0.082988	0.059013	0.023975	1	0.668589
3448675	0.018471	0.015244	0.013781	0.894191	0.925966	-0.03177	1	1
3121027	0.410612	0.015252	0.019877	0.98444	0.97103	0.01341	1	0.321375
3210307	0.01249	0.015255	0.006556	0.643305	0.587097	0.056209	0.994726	1
4353570	0.010767	0.015261	0.050979	0.642259	0.571121	0.071139	0.993671	0.849838
3443743	0.00282	0.015264	0.077368	0.673597	0.627682	0.045914	0.998945	0.921326
4049548	0.025815	0.015266	0.010126	0.269311	0.199571	0.06974	0.996835	0.244836
174568	0.020516	0.015284	0.005645	0.844086	0.806236	0.03785	0.964135	0.291337
4024964	0.004081	0.015316	0.026436	0.266598	0.301075	-0.03448	0.998945	0.91221
3561769	0.021722	0.015318	0.015907	0.73444	0.719957	0.014483	1	0.490451
4259992	0.000994	0.015326	0.017858	0.717622	0.758242	-0.04062	0.976793	0.608748
2426946	0.00981	0.015332	0.012172	0.713693	0.767742	-0.05405	0.998945	0.604103
976255	0.005893	0.015356	0.034849	0.98444	0.956009	0.028431	1	0.051638
325110	0.003521	0.015361	0.029496	0.74109	0.694805	0.046285	0.990506	0.912643
2432797	0.055427	0.015363	0.184538	0.636929	0.704301	-0.06737	0.998945	1
3982327	0.008471	0.015376	0.01042	0.294979	0.227174	0.067805	0.989451	0.509459
2748593	0.016815	0.015402	0.04052	0.503112	0.433476	0.069636	1	1
1396632	0.017518	0.01545	0.017847	0.580913	0.611588	-0.03068	1	0.697029
3339759	0.017804	0.015458	0.042984	0.504149	0.435484	0.068666	0.998945	1
4340717	0.373955	0.01547	0.008937	0.944328	0.956989	-0.01266	0.992616	1
1422210	0.0477	0.015473	0.016009	0.904459	0.865854	0.038605	0.972574	0.685741
309882	0.033179	0.015478	0.017606	0.776971	0.817597	-0.04063	1	1
4320611	0.028256	0.015511	0.065086	0.130901	0.166297	-0.0354	0.9673	0.126536
4572365	0.051763	0.015522	0.006772	0.18361	0.137339	0.046271	1	0.694384
1963777	0.011578	0.015526	0.021576	0.476042	0.410753	0.065289	0.996835	0.92379
4367139	0.005293	0.015526	0.009347	0.245833	0.292918	-0.04709	0.99789	0.314024
4367139	0.005293	0.015526	0.009347	0.245833	0.292918	-0.04709	0.99789	0.314024
1352307	0.004909	0.015534	0.013739	0.633333	0.550538	0.082796	0.996835	0.454017
1963800	0.032519	0.015579	0.01124	0.561203	0.512876	0.048328	1	0.265658
3259853	0.013229	0.015586	0.067125	0.604822	0.64488	-0.04006	0.987342	0.221532
1172620	0.006821	0.015596	0.00562	0.951245	0.928112	0.023133	1	0.077665
2481360	0.008257	0.015597	0.047592	0.483264	0.429957	0.053307	0.993671	0.924691
4384500	0.03998	0.015611	0.1323	0.763048	0.733333	0.029715	0.995781	0.905595
3426079	0.033363	0.015643	0.043579	0.279046	0.335129	-0.05608	0.99789	0.83558
4555262	0.011663	0.015645	0.048541	0.644191	0.575269	0.068922	0.998945	0.924451
1566293	0.023043	0.015654	0.011992	0.371608	0.330108	0.0415	0.995781	0.347373
2675632	0.023275	0.015665	0.022326	0.803456	0.843545	-0.04009	0.970464	0.373365
2418438	0.000587	0.015666	0.070596	0.909474	0.951435	-0.04196	0.978903	1
2150275	0.00604	0.015687	0.011859	0.796875	0.843011	-0.04614	0.996835	0.15905
1804219	0.000948	0.015691	0.040387	0.878631	0.828326	0.050305	1	0.871639
1166684	0.025535	0.015711	0.150561	0.716216	0.777897	-0.06168	0.998945	1
1166684	0.025535	0.015711	0.150561	0.716216	0.777897	-0.06168	0.998945	1
2410240	0.001029	0.015743	0.060499	0.677453	0.626882	0.050571	0.995781	0.488915
4287364	0.01478	0.015743	0.020727	0.827801	0.860515	-0.03271	1	0.699561
3455470	0.005674	0.015749	0.019423	0.827957	0.865556	-0.0376	0.96519	0.686248
2297800	0.11911	0.015771	0.076768	0.986515	0.994624	-0.00811	0.998945	1
838094	0.011816	0.015799	0.051863	0.944798	0.896703	0.048095	0.976793	0.008873

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3483440	0.016848	0.015829	0.173646	0.677453	0.738197	-0.06074	0.996835	1
1940944	0.071564	0.015832	0.004913	0.712343	0.753829	-0.04149	0.986287	0.206573
1396684	0.010544	0.015835	0.016309	0.421548	0.383696	0.037852	0.989451	0.921708
1940933	0.129786	0.015841	0.005125	0.684647	0.717204	-0.03256	0.998945	0.423095
929614	0.006604	0.015841	0.038946	0.269231	0.237124	0.032106	0.998945	0.521476
98610	0.00717	0.015842	0.01632	0.990664	0.975322	0.015342	1	1
4192665	0.011424	0.015843	0.015837	0.741127	0.691398	0.049729	0.995781	0.327762
884984	0.099065	0.015848	0.090084	0.919087	0.866953	0.052134	1	0.840136
4392969	0.019254	0.015855	0.003618	0.908123	0.933081	-0.02496	0.996835	0.391646
2315789	0.15252	0.01586	0.044475	0.822614	0.782796	0.039818	0.998945	0.585415
1352242	0.022455	0.015923	0.022049	0.90249	0.93133	-0.02884	1	0.259505
4417943	0.01158	0.015941	0.027237	0.783195	0.75	0.033195	0.99789	0.386005
2144828	0.034088	0.015953	0.015707	0.837526	0.806034	0.031492	0.992616	0.65595
3403141	0.008331	0.015963	0.016562	0.097713	0.134409	-0.0367	0.99789	0.072104
436335	0.005999	0.015975	0.060143	0.20332	0.141631	0.061689	1	1
3496574	0.155804	0.015982	0.041586	0.082988	0.059395	0.023592	0.996835	0.670033
4317438	0.020746	0.015993	0.024628	0.059623	0.091595	-0.03197	0.993671	0.571337
400726	0.004508	0.015995	0.024399	0.376106	0.447072	-0.07097	0.945148	0.054669
400726	0.004508	0.015995	0.024399	0.376106	0.447072	-0.07097	0.945148	0.054669
1804160	0.000719	0.015998	0.028831	0.876556	0.823276	0.05328	0.99789	0.873226
3857501	0.650922	0.016004	0.018549	0.639148	0.656566	-0.01742	0.996835	0.256019
2814265	0.002841	0.016013	0.064709	0.67759	0.631522	0.046068	0.984177	0.764089
3484271	0.01776	0.016032	0.014949	0.487552	0.42382	0.063732	1	0.569153
1507652	0.006305	0.01604	0.053141	0.445378	0.507625	-0.06225	0.986287	0.02515
1276457	0.122695	0.01605	0.054892	0.407098	0.345494	0.061605	0.996835	1
4128099	0.002706	0.016078	0.007617	0.628998	0.678097	-0.0491	0.971519	0.001209
4055875	0.343438	0.016085	0.023992	0.921978	0.905765	0.016213	0.955696	0.000715
1749942	0.007136	0.016092	0.04239	0.630705	0.572961	0.057744	1	1
871796	0.098949	0.016108	0.045652	0.639004	0.680645	-0.04164	0.998945	0.522416
1351433	0.005795	0.016118	0.03028	0.985447	0.995699	-0.01025	0.99789	1
4220623	0.084498	0.016124	0.061396	0.99896	0.98927	0.00969	0.998945	1
2483828	0.059825	0.01615	0.026151	0.290625	0.222103	0.068522	0.99789	0.226949
2468541	0.002396	0.016153	0.022567	0.789419	0.833691	-0.04427	1	0.61809
1452031	0.101779	0.01616	0.113745	0.90249	0.927039	-0.02455	1	1
311165	0.013213	0.016161	0.005333	0.588174	0.532328	0.055847	0.99789	0.455676
4360126	0.030237	0.016167	0.018389	0.065353	0.100858	-0.03551	1	0.448747
1254354	0.003137	0.016167	0.019007	0.25	0.206897	0.043103	0.995781	0.888022
3192817	0.009648	0.016174	0.112909	0.841996	0.791398	0.050598	0.99789	0.40261
1222683	0.010027	0.016193	0.143545	0.926042	0.877419	0.048622	0.996835	0.830189
3897699	0.021704	0.016201	0.124257	0.647606	0.588161	0.059445	0.998945	0.910233
2428560	0.013476	0.016201	0.065137	0.558091	0.479614	0.078478	1	0.114384
1940973	0.165912	0.016228	0.009514	0.729253	0.757511	-0.02826	1	0.377341
764770	0.064071	0.016229	0.054694	0.613306	0.672747	-0.05944	0.998945	0.140937
2009517	0.111887	0.016232	0.058096	0.414583	0.47103	-0.05645	0.99789	0.780516
2238478	0.013748	0.016238	0.119649	0.747908	0.809677	-0.06177	0.994726	0.453803
1256033	0.004397	0.01625	0.00833	0.962656	0.975322	-0.01267	1	1
4350303	0.080184	0.016275	0.096119	0.001037	0.001078	-4.02E-05	0.99789	1
142680	0.006922	0.016289	0.091655	0.842795	0.891765	-0.04897	0.931435	0.803232
976262	0.005454	0.016305	0.049317	0.986402	0.957701	0.028701	0.990506	0.04069
2718968	0.026441	0.016305	0.042805	0.28112	0.337284	-0.05616	0.99789	0.835441
2009515	0.106261	0.016307	0.05332	0.611458	0.551948	0.05951	0.993671	0.572424
1579154	0.016055	0.016308	0.05225	0.788981	0.756989	0.031992	0.99789	1
4667654	0.003086	0.01631	0.018088	0.011435	0.036717	-0.02528	0.995781	0.466725
146867	0.009427	0.016311	0.115552	0.113071	0.157725	-0.04465	1	0.861855
4092165	0.022365	0.016317	0.004815	0.260373	0.225322	0.035052	1	0.595104

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1396658	0.012762	0.01632	0.017875	0.421162	0.386266	0.034896	1	0.69588
4139504	0.010589	0.016336	0.030698	0.892116	0.849785	0.042331	1	0.717098
1514726	0.05226	0.016343	0.01363	0.779749	0.827253	-0.0475	0.996835	0.256556
3685318	0.010744	0.016347	0.005981	0.696078	0.619318	0.07676	0.948312	0.068524
819447	0.066218	0.016347	0.030653	0.705637	0.775974	-0.07034	0.992616	0.10933
1373961	0.126147	0.016362	0.02386	0.568565	0.515419	0.053147	0.978903	1
3529205	0.165912	0.016388	0.082767	0.033195	0.019313	0.013882	1	1
1683587	0.017213	0.016392	0.006691	0.89834	0.935622	-0.03728	1	0.425292
929021	0.198812	0.016405	0.008068	0.463983	0.413755	0.050228	0.981013	0.772824
3166098	0.551126	0.016408	0.015066	0.628631	0.625806	0.002824	0.998945	1
2297322	0.045487	0.016424	0.140097	0.89501	0.92382	-0.02881	0.998945	0.327968
4405658	0.009699	0.016427	0.021371	0.047718	0.051502	-0.00378	1	0.345034
4372203	0.07482	0.016434	0.131244	0.875519	0.904506	-0.02899	1	1
4372203	0.07482	0.016434	0.131244	0.875519	0.904506	-0.02899	1	1
1023452	0.009398	0.016439	0.006011	0.7079	0.768319	-0.06042	0.996835	0.696304
1023452	0.009398	0.016439	0.006011	0.7079	0.768319	-0.06042	0.996835	0.696304
1023452	0.009398	0.016439	0.006011	0.7079	0.768319	-0.06042	0.996835	0.696304
3986301	0.005023	0.01644	0.023227	0.531315	0.589247	-0.05793	0.995781	0.92379
4624074	0.006007	0.016441	0.050243	0.3867	0.326203	0.060496	0.822785	0.059505
959064	0.111318	0.016446	0.024314	0.347193	0.312232	0.034962	0.998945	0.74648
1420172	0.235253	0.016451	0.010778	0.908714	0.888172	0.020542	0.998945	0.818167
1420172	0.235253	0.016451	0.010778	0.908714	0.888172	0.020542	0.998945	0.818167
1741335	0.009371	0.01646	0.005223	0.632292	0.596774	0.035517	0.996835	1
1119657	0.012315	0.016472	0.005631	0.682952	0.693723	-0.01077	0.994726	0.048559
721436	0.028858	0.016474	0.0371	0.880705	0.835837	0.044868	1	0.499022
221721	0.006083	0.016477	0.017461	0.994505	0.986425	0.00808	0.946203	1
4423201	0.003291	0.016481	0.018932	0.593886	0.51009	0.083797	0.953586	0.344696
3353072	0.659108	0.016482	0.022304	0.635279	0.654912	-0.01963	1	0.259305
1396690	0.013723	0.016482	0.018336	0.420998	0.386022	0.034976	0.99789	0.696115
539238	0.007006	0.016497	0.098618	0.426042	0.494553	-0.06851	0.990506	0.709337
2347089	0.015633	0.016517	0.011368	0.723029	0.761803	-0.03877	1	0.798815
4069886	0.006762	0.016527	0.028249	0.884937	0.850109	0.034828	0.986287	0.356123
3353073	0.61721	0.016561	0.021044	0.638298	0.654822	-0.01652	0.994726	0.165813
3564740	0.004538	0.016568	0.010671	0.217256	0.258621	-0.04136	0.996835	0.544861
2924874	0.008835	0.016571	0.006107	0.907676	0.873118	0.034558	0.998945	0.206231
547859	0.004026	0.016588	0.028734	0.417012	0.346567	0.070446	1	0.260426
634725	0.010639	0.016595	0.10532	0.989627	0.975322	0.014305	1	0.242857
3596463	0.273499	0.0166	0.006504	0.810811	0.783262	0.027549	0.998945	0.584991
777150	0.157523	0.016602	0.091118	0.420833	0.387931	0.032902	0.995781	0.922241
3127736	0.025501	0.016613	0.005005	0.06341	0.091202	-0.02779	0.998945	0.407798
795910	0.234884	0.016616	0.009784	0.691176	0.747835	-0.05666	0.989451	0.266709
2842042	0.022092	0.016625	0.044169	0.205394	0.251073	-0.04568	1	0.175189
4190385	0.009215	0.016625	0.106601	0.180294	0.12013	0.060164	0.990506	0.65836
2072815	0.01501	0.016635	0.026756	0.903125	0.940987	-0.03786	0.99789	0.392146
664366	0.015654	0.01667	0.010523	0.244161	0.278017	-0.03386	0.986287	0.354807
4093228	0.030292	0.016703	0.00389	0.443255	0.417219	0.026036	0.970464	0.923114
3327740	0.009026	0.016705	0.023805	0.893971	0.85914	0.034831	0.99789	0.254987
3989135	0.042111	0.016713	0.085264	0.176349	0.219355	-0.04301	0.998945	0.589214
3127521	0.0228	0.016729	0.008028	0.912317	0.882035	0.030283	0.992616	0.657529
724810	0.034391	0.016762	0.026252	0.027027	0.014009	0.013018	0.996835	1
1738000	0.005622	0.016769	0.104824	0.96888	0.984979	-0.0161	1	1
2483813	0.060675	0.016799	0.023233	0.290456	0.222103	0.068353	1	0.139302
2483813	0.060675	0.016799	0.023233	0.290456	0.222103	0.068353	1	0.139302
4098278	0.007149	0.016799	0.046821	0.318947	0.357609	-0.03866	0.986287	0.033011
4653563	0.028798	0.016813	0.035834	0.060291	0.087983	-0.02769	0.998945	0.771393

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1071271	0.002799	0.01682	0.032357	0.698133	0.745708	-0.04758	1	0.540985
2112279	0.022244	0.016823	0.042241	1	0.997854	0.002146	1	1
2453702	0.022021	0.016825	0.023753	0.924274	0.874464	0.04981	1	0.523914
3639979	0.726612	0.016827	0.149849	0.854167	0.84806	0.006106	0.995781	0.591744
1673175	0.017081	0.016827	0.016153	0.577963	0.629828	-0.05187	0.998945	0.091286
1638886	0.082811	0.016833	0.006331	0.596473	0.543991	0.052482	1	0.925648
1036640	0.003757	0.016873	0.002104	0.969409	0.982571	-0.01316	0.984177	1
3590515	0.015023	0.016874	0.008378	0.771762	0.733042	0.038721	0.978903	0.231325
4430114	0.009241	0.01689	0.020852	0.739085	0.686695	0.05239	0.998945	0.281263
2053179	0.024025	0.016896	0.008591	0.898536	0.933333	-0.0348	0.994726	0.710699
696208	0.028963	0.016898	0.041924	0.512474	0.564935	-0.05246	0.994726	0.924704
436328	0.006999	0.016901	0.07723	0.200846	0.141304	0.059541	0:984177	0.702414
4573380	0.005816	0.016902	0.024709	0.454357	0.496774	-0.04242	0.998945	0.404732
4240385	0.008603	0.016904	0.020783	0.741667	0.690987	0.05068	0.99789	0.329777
3869000	0.424675	0.01691	0.056224	0.852	0.797229	0.054771	0.99789	0.624889
2322146	0.004744	0.016955	0.007661	0.488542	0.439785	0.048757	0.996835	0.510119
1940980	0.169208	0.016969	0.008701	0.731733	0.75914	-0.02741	0.995781	0.310843
1912031	0.005006	0.016982	0.08101	0.972973	0.940987	0.031986	0.998945	0.668589
4499093	0.011373	0.016993	0.010773	0.860417	0.793103	0.067313	0.995781	1
1804243	0.004169	0.017	0.035792	0.08944	0.138128	-0.04869	0.951477	0.312607
3327732	0.008381	0.017002	0.022806	0.893971	0.860215	0.033756	0.99789	0.17347
1330050	0.012536	0.017011	0.03626	0.784232	0.728541	0.055692	1	0.291588
3899136	0.584425	0.017044	0.02338	0.576361	0.580808	-0.00445	0.99789	0.301011
2297327	0.046484	0.017051	0.142936	0.895228	0.92382	-0.02859	1	0.327968
4195217	0.00422	0.01706	0.019834	0.888594	0.863636	0.024958	0.998945	1
2145631	0.009512	0.017063	0.015435	0.795833	0.842672	-0.04684	0.995781	0.380825
3532338	0.211076	0.017081	0.049902	0.965768	0.975162	-0.00939	0.996835	1
4258053	0.00481	0.017083	0.028471	0.88671	0.852273	0.034438	0.948312	0.447384
4258053	0.00481	0.017083	0.028471	0.88671	0.852273	0.034438	0.948312	0.447384
2483798	0.058879	0.017107	0.023849	0.70894	0.778495	-0.06955	0.99789	0.139234
1752376	0.675899	0.017118	0.023418	0.673362	0.664835	0.008526	0.978903	0.675119
4270050	0.055651	0.017121	0.033192	0.48431	0.506508	-0.0222	0.990506	0.062736
1886020	0.021274	0.017123	0.027317	0.407676	0.34375	0.063926	0.99789	1
795800	0.012708	0.017128	0.05787	0.890625	0.854077	0.036548	0.99789	0.19187
4319098	0.010724	0.01714	0.017628	0.721861	0.752252	-0.03039	0.955696	0.055503
3192881	0.016946	0.017156	0.079945	0.130705	0.17957	-0.04886	0.998945	0.75294
4473868	0.266333	0.017168	0.181918	0.377339	0.340129	0.03721	0.998945	0.836612
3192868	0.016465	0.017169	0.088804	0.129668	0.178495	-0.04883	0.998945	1
2305403	0.006242	0.017169	0.019154	0.595436	0.665591	-0.07016	0.998945	0.096128
1511076	0.026799	0.017181	0.068012	0.155602	0.189247	-0.03365	0.998945	0.363217
2268662	0.006471	0.017201	0.035989	0.784375	0.736559	0.047816	0.996835	0.904817
3105288	0.03309	0.017216	0.059341	0.279626	0.33691	-0.05728	0.998945	1
348496	0.017474	0.017227	0.032133	0.392708	0.47103	-0.07832	0.99789	0.062984
2800188	0.009237	0.017247	0.017707	0.096674	0.133333	-0.03666	0.99789	0.1563
3491502	0.010297	0.017258	0.03483	0.835759	0.875269	-0.03951	0.99789	1
4395124	0.02607	0.017261	0.115577	0.185804	0.145161	0.040642	0.995781	0.579751
4395124	0.02607	0.017261	0.115577	0.185804	0.145161	0.040642	0.995781	0.579751
3605868	0.005614	0.017262	0.016238	0.939709	0.958065	-0.01836	0.99789	1
3198222	0.010015	0.01728	0.012895	0.033195	0.063305	-0.03011	1	0.029071
3496916	0.017885	0.017289	0.005545	0.895228	0.912017	-0.01679	1	1
3524264	0.095465	0.017299	0.017104	0.779046	0.748387	0.030659	0.998945	0.622734
4072696	0.008309	0.017299	0.017553	0.909751	0.936695	-0.02694	1	0.416661
1704943	0.723325	0.017303	0.022722	0.914938	0.909677	0.00526	0.998945	0.780692
1704943	0.723325	0.017303	0.022722	0.914938	0.909677	0.00526	0.998945	0.780692
1852893	0.14584	0.017314	0.011013	0.429461	0.501075	-0.07161	0.998945	0.852826

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1177825	0.014685	0.017318	0.042832	0.03527	0.055914	-0.02064	0.998945	1
2433736	0.005604	0.017318	0.02296	0.73029	0.775751	-0.04546	1	0.505611
3857497	0.806167	0.017341	0.026044	0.636605	0.657761	-0.02116	0.994726	0.310835
1740625	0.007577	0.017342	0.019849	0.726514	0.665236	0.061278	0.996835	0.917129
3268736	0.981429	0.017344	0.02426	0.854772	0.859611	-0.00484	0.996835	0.70091
3712172	0.015269	0.017344	0.048648	0.676349	0.718884	-0.04254	1	0.358951
459832	0.923262	0.017354	0.033087	0.911458	0.922078	-0.01062	0.993671	0.508102
4426233	0.004622	0.01737	0.036215	0.182952	0.145161	0.037791	0.99789	0.037486
1900917	0.011632	0.017378	0.005564	0.920673	0.883459	0.037214	0.859705	7.57E-06
4425217	0.010189	0.017382	0.019312	0.226959	0.179335	0.047624	0.901899	0.247457
1396676	0.012932	0.017385	0.019391	0.420998	0.386022	0.034976	0.99789	0.696115
1266270	0.006382	0.017393	0.058664	0.654255	0.726058	-0.0718	0.969409	0.095995
4174270	0.022568	0.017396	0.004726	0.855485	0.805435	0.05005	0.985232	0.552853
1651859	0.007658	0.017399	0.036349	0.732143	0.659483	0.07266	0.991561	0.214641
1071293	0.004206	0.01741	0.08333	0.489451	0.557734	-0.06828	0.984177	0.57024
2428561	0.014691	0.017415	0.069592	0.559129	0.481641	0.077487	0.996835	0.113793
343296	0.00615	0.017433	0.004946	0.923077	0.870968	0.052109	0.99789	0.678259
1673184	0.01635	0.017442	0.016813	0.579002	0.630108	-0.05111	0.99789	0.091972
3868998	0.467763	0.017468	0.058651	0.857713	0.812343	0.04537	0.99789	0.727795
1940977	0.169833	0.017472	0.009978	0.731328	0.758584	-0.02726	1	0.314318
806515	0.017968	0.017475	0.258623	0.887841	0.921053	-0.03321	0.984177	0.510302
4411555	0.005523	0.017475	0.009688	0.481289	0.516094	-0.03481	0.998945	0.711713
2432908	0.046585	0.017481	0.069237	0.580042	0.540773	0.039269	0.998945	0.852287
4205674	0.009191	0.017488	0.014662	0.449064	0.505365	-0.0563	0.998945	0.35514
2217213	0.009304	0.01749	0.350128	0.5125	0.451193	0.061307	0.992616	0.778057
2325272	0.008121	0.01749	0.033078	0.644491	0.680645	-0.03615	0.99789	0.74917
3403146	0.009219	0.017504	0.018252	0.09751	0.13412	-0.03661	1	0.160228
1850048	0.013964	0.017507	0.008946	0.552061	0.593679	-0.04162	0.953586	0.556313
2356516	0.030932	0.017514	0.028364	0.734927	0.671674	0.063253	0.998945	0.40226
1412469	0.006847	0.017547	0.117527	0.56237	0.522629	0.039741	0.996835	0.780635
1963785	0.013477	0.017548	0.024523	0.472973	0.41056	0.062413	0.996835	0.923565
1673178	0.019196	0.017576	0.014861	0.578125	0.629032	-0.05091	0.996835	0.090882
4623974	0.00561	0.017583	0.026036	0.742171	0.686022	0.05615	0.995781	0.281619
1412477	0.006933	0.017605	0.112256	0.56237	0.523605	0.038765	0.998945	0.780993
3195249	0.004682	0.017613	0.113571	0.992375	0.973502	0.018872	0.941983	1
1737325	0.0058	0.017617	0.079555	0.568928	0.5	0.068928	0.938819	0.701264
4160583	0.084808	0.017645	0.047834	0.657328	0.685682	-0.02835	0.96097	0.912575
4160583	0.084808	0.017645	0.047834	0.657328	0.685682	-0.02835	0.96097	0.912575
3192858	0.017537	0.017663	0.080237	0.130208	0.179185	-0.04898	0.99789	1
2483794	0.04985	0.017673	0.024546	0.709544	0.780172	-0.07063	0.99789	0.175423
3595777	0.014054	0.017682	0.016572	0.862033	0.832618	0.029415	1	0.242848
526237	0.001169	0.017724	0.044116	0.979253	0.994635	-0.01538	1	1
1264074	0.00128	0.017734	0.139321	0.899378	0.936695	-0.03732	1	0.029071
3982326	0.013113	0.017754	0.009094	0.721616	0.775346	-0.05373	0.940928	0.491709
790570	0.031271	0.017756	0.085411	0.881799	0.849567	0.032232	0.991561	0.274032
4157592	0.019527	0.017783	0.005297	0.91684	0.932403	-0.01556	0.998945	0.253877
202293	0.00819	0.017788	0.035793	0.471933	0.511853	-0.03992	0.996835	0.352672
4113763	0.000647	0.0178	0.171932	0.707113	0.647312	0.059801	0.994726	0.542337
1885819	0.001683	0.01781	0.059878	0.36722	0.322198	0.045022	0.99789	0.456534
1940983	0.172042	0.017823	0.009335	0.729253	0.758065	-0.02881	0.998945	0.375419
4293001	0.010237	0.01784	0.006566	0.7079	0.766094	-0.05819	0.998945	0.796149
4293001	0.010237	0.01784	0.006566	0.7079	0.766094	-0.05819	0.998945	0.796149
4293001	0.010237	0.01784	0.006566	0.7079	0.766094	-0.05819	0.998945	0.796149
4293001	0.010237	0.01784	0.006566	0.7079	0.766094	-0.05819	0.998945	0.796149
4659605	0.014535	0.017859	0.009804	0.353125	0.396552	-0.04343	0.995781	0.698464

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3192807	0.009254	0.017873	0.117545	0.843361	0.792918	0.050443	1	0.480771
897219	0.01788	0.017875	0.046452	0.543919	0.601149	-0.05723	0.927215	0.072542
4425828	0.104621	0.017884	0.015041	0.162366	0.129103	0.033263	0.972574	0.835428
1044481	0.011371	0.017889	0.004327	0.826403	0.868534	-0.04213	0.996835	0.839339
2117645	0.010574	0.017919	0.336125	0.723493	0.654839	0.068654	0.99789	0.538539
328926	0.035824	0.017962	0.008653	0.797718	0.757511	0.040207	1	0.899658
4454733	0.122928	0.017963	0.039899	0.647799	0.704793	-0.05699	0.987342	0.736533
4600800	0.020967	0.017964	0.000958	0.628898	0.674569	-0.04567	0.996835	1
4016004	0.006814	0.017968	0.069404	0.00104	0.004292	-0.00325	0.998945	1
1160392	0.002723	0.017979	0.059604	0.981328	0.959227	0.0221	1	0.544402
385441	0.011001	0.01798	0.011069	0.915975	0.923656	-0.00768	0.998945	0.011636
382850	0.0112	0.017983	0.089819	0.603774	0.664147	-0.06037	0.991561	0.835554
1352316	0.005929	0.018014	0.013341	0.903602	0.939262	-0.03566	0.984177	0.229232
1994414	0.001618	0.018022	0.001773	0.930063	0.957082	-0.02702	0.996835	0.582819
1940968	0.171974	0.018024	0.009045	0.731809	0.758584	-0.02677	0.998945	0.314318
1083031	0.008842	0.018036	0.019861	0.396703	0.450461	-0.05376	0.937764	0.207225
3313917	0.073155	0.018041	0.203967	0.934647	0.959227	-0.02458	1	0.544402
3426092	0.03576	0.018043	0.055137	0.279626	0.335498	-0.05587	0.994726	0.835014
2446231	0.477416	0.018044	0.06796	0.964509	0.950644	0.013866	0.996835	0.092528
4442127	0.024298	0.018059	0.026934	0.407484	0.346237	0.061248	0.99789	0.681887
3877173	0.029885	0.018061	0.064944	0.988	0.977273	0.010727	0.996835	0.151432
1155269	0.006213	0.018074	0.065808	0.366183	0.434549	-0.06837	1	1
1973007	0.014061	0.018088	0.010669	0.346555	0.310606	0.035949	0.992616	0.276877
2299187	0.004397	0.01809	0.005875	0.484375	0.458874	0.025501	0.993671	0.454315
4258056	0.130594	0.018117	0.146129	0.385892	0.373391	0.012502	1	0.113659
415163	0.18509	0.018137	0.027471	0.541667	0.506466	0.035201	0.995781	0.138087
2814709	0.006872	0.018149	0.035308	0.848233	0.881974	-0.03374	0.998945	1
3332204	0.118523	0.018151	0.067974	0.319792	0.358836	-0.03904	0.995781	0.481232
994350	0.104165	0.018159	0.037409	0.909283	0.888043	0.021239	0.985232	0.153501
2246238	0.008261	0.018177	0.046297	0.774896	0.718884	0.056012	1	0.085489
4568591	0.012204	0.01818	0.020977	0.959119	0.983871	-0.02475	0.993671	1
3455349	0.74816	0.018184	0.057541	0.712656	0.743562	-0.03091	1	0.465599
3455349	0.74816	0.018184	0.057541	0.712656	0.743562	-0.03091	1	0.465599
702956	0.011507	0.018197	0.034595	0.650628	0.695279	-0.04465	0.995781	0.443844
1370287	0.008845	0.018228	0.078261	0.168085	0.223195	-0.05511	0.977848	1
1500082	0.027318	0.018232	0.014334	0.207292	0.142549	0.064743	0.994726	1
1510965	0.024492	0.018254	0.062446	0.867983	0.828326	0.039657	0.998945	0.25746
2281957	0.005338	0.018286	0.063133	0.923237	0.878755	0.044481	1	1
1384140	0.147429	0.01831	0.067541	0.891631	0.924276	-0.03265	0.96519	0.497567
174467	0.090886	0.01832	0.039041	0.996849	0.988043	0.008805	0.987342	1
2338558	0.007865	0.018322	0.0357	0.297297	0.252688	0.044609	0.99789	0.392912
4168218	0.042402	0.018342	0.008835	0.796178	0.848552	-0.05237	0.970464	1
1787358	0.256755	0.018344	0.008433	0.93361	0.953564	-0.01995	0.996835	1
4362005	0.016717	0.018348	0.027608	0.514583	0.441558	0.073025	0.993671	0.187877
2281963	0.005661	0.018367	0.063211	0.923237	0.878755	0.044481	1	1
871661	0.049116	0.018384	0.067685	0.646751	0.695228	-0.04848	0.989451	0.583518
1462864	0.050008	0.018388	0.00924	0.140041	0.097639	0.042402	1	0.60282
546343	0.012734	0.018429	0.027715	0.525934	0.582796	-0.05686	0.998945	0.774879
1514327	0.046989	0.01843	0.004327	0.840956	0.888172	-0.04722	0.99789	0.818167
3192840	0.018198	0.018439	0.081703	0.131743	0.180258	-0.04851	1	1
4115754	0.003922	0.018447	0.068561	0.761194	0.706858	0.054336	0.971519	0.909857
89610	0.006186	0.018454	0.014363	0.376667	0.322581	0.054086	0.932489	1
2862605	0.007681	0.018458	0.088182	0.194387	0.246781	-0.05239	0.998945	0.170238
2305398	0.006641	0.018461	0.02151	0.59751	0.665236	-0.06773	1	0.118312
2117623	0.012237	0.018478	0.342531	0.279289	0.350858	-0.07157	0.995781	0.542205

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
766702	0.032738	0.018492	0.012227	0.928423	0.905579	0.022844	1	0.785424
4070988	0.012327	0.018497	0.051561	0.643451	0.57618	0.067271	0.998945	0.636295
256375	0.032017	0.018503	0.026679	0.908705	0.882955	0.02575	0.96097	0.643235
3324240	0.023582	0.018522	0.058311	0.915975	0.883047	0.032928	1	0.043205
2484225	0.008683	0.018532	0.025298	0.79375	0.842275	-0.04852	0.99789	0.384682
3289011	0.540595	0.018534	0.044118	0.869295	0.827253	0.042041	1	0.745377
1275888	0.002618	0.018541	0.072442	0.713098	0.666309	0.046789	0.998945	0.348798
3903769	0.082871	0.018564	0.016375	0.148936	0.209596	-0.06066	0.99789	1
4666428	0.010868	0.018568	0.019066	0.695021	0.653348	0.041673	0.996835	0.837344
32009	0.011751	0.018603	0.003741	0.868257	0.904506	-0.03625	1	0.414406
4267727	0.010777	0.018627	0.017216	0.698133	0.654839	0.043294	0.998945	0.681827
3383305	0.004296	0.018641	0.007521	0.464509	0.529032	-0.06452	0.995781	0.26576
437504	0.004895	0.018645	0.110742	0.89834	0.930258	-0.03192	1	0.715634
1224576	0.011228	0.018686	0.189702	0.668421	0.721739	-0.05332	0.986287	0.29819
3819195	0.031128	0.018688	0.005456	0.901596	0.938131	-0.03654	0.99789	1
4399437	0.006565	0.018694	0.012844	0.566667	0.507511	0.059156	0.99789	0.516432
1773348	0.001418	0.018699	0.040273	0.41684	0.475322	-0.05848	0.998945	0.11423
3979806	0.024737	0.018701	0.010176	0.51693	0.550588	-0.03366	0.915612	0.024179
2062607	0.005909	0.018702	0.08189	0.077963	0.11828	-0.04032	0.99789	0.502889
976269	0.007714	0.01873	0.042894	0.983368	0.955819	0.027549	0.996835	0.052199
3426091	0.032498	0.018809	0.060228	0.279626	0.335853	-0.05623	0.995781	0.916996
3260117	0.713386	0.018852	0.030855	0.597917	0.561422	0.036494	0.995781	0.777294
3608379	0.023775	0.018857	0.047495	0.97921	0.992489	-0.01328	0.998945	1
4434478	0.11666	0.018878	0.056646	0.304167	0.340517	-0.03635	0.995781	0.917864
4570142	0.602008	0.018878	0.078142	0.750522	0.712446	0.038076	0.996835	0.572752
3455162	0.00519	0.018893	0.173771	0.660083	0.738197	-0.07811	0.998945	0.719496
971411	0.431923	0.018896	0.049181	0.965696	0.953863	0.011834	0.998945	0.61431
1750024	0.012823	0.018896	0.008316	0.737552	0.68133	0.056221	1	0.336873
4497389	0.395164	0.018906	0.269714	0.008299	0.006438	0.001861	1	1
3989859	0.116089	0.018914	0.001991	0.758836	0.792918	-0.03408	0.998945	0.887978
3160152	0.349563	0.018919	0.159631	0.95332	0.96129	-0.00797	0.998945	0.505639
1137332	0.001816	0.018922	0.020672	0.161826	0.126882	0.034944	0.998945	0.528467
2001427	0.004507	0.018927	0.008309	0.888186	0.921336	-0.03315	0.989451	0.755388
982448	0.009845	0.018927	0.035514	0.67119	0.61039	0.0608	0.992616	0.696786
1051517	0.009798	0.01893	0.011359	0.660788	0.624464	0.036325	1	0.622489
1348821	0.031753	0.018937	0.011408	0.469917	0.512931	-0.04301	0.99789	0.780381
150622	0.045947	0.018938	0.019998	0.590249	0.629032	-0.03878	0.998945	0.842765
1068887	0.011486	0.018946	0.084779	0.594142	0.526882	0.067261	0.994726	0.780133
1068887	0.011486	0.018946	0.084779	0.594142	0.526882	0.067261	0.994726	0.780133
1718429	0.00358	0.018947	0.005383	0.965768	0.95279	0.012978	1	0.014384
966890	0.198029	0.018964	0.012393	0.994802	0.991361	0.003442	0.995781	1
1741498	0.005079	0.018968	0.015219	0.783333	0.733333	0.05	0.996835	1
2281972	0.010231	0.018968	0.051783	0.119295	0.174893	-0.0556	1	0.075897
2093924	0.024699	0.018974	0.156313	0.881974	0.832237	0.049737	0.972574	1
1177894	0.160255	0.018977	0.041713	0.769231	0.801502	-0.03227	0.998945	0.244664
3205763	0.016019	0.01898	0.04123	1	0.997854	0.002146	0.998945	1
976263	0.007764	0.018983	0.05278	0.98444	0.958155	0.026285	1	0.186141
4281550	0.016604	0.019	0.07924	0.952282	0.934549	0.017733	1	1
4281550	0.016604	0.019	0.07924	0.952282	0.934549	0.017733	1	1
4281550	0.016604	0.019	0.07924	0.952282	0.934549	0.017733	1	1
4281550	0.016604	0.019	0.07924	0.952282	0.934549	0.017733	1	1
4512783	0.080312	0.019033	0.07446	0.834029	0.780303	0.053726	0.992616	0.134624
582200	0.038138	0.019048	0.025147	0.950104	0.969957	-0.01985	0.998945	1
2481380	0.004653	0.019069	0.027879	0.345436	0.290948	0.054487	0.99789	0.653782
4274993	0.003505	0.019073	0.157778	0.366183	0.333691	0.032492	1	0.348798

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2680174	0.008424	0.019088	0.082769	0.721698	0.767059	-0.04536	0.89557	1
4099125	0.013062	0.019115	0.008444	0.346875	0.383047	-0.03617	0.99789	0.768864
801772	0.047523	0.019117	0.050953	0.241164	0.194206	0.046958	0.998945	0.373626
3670396	0.017482	0.019117	0.022982	0.873444	0.830819	0.042625	0.99789	0.86849
1449349	0.225055	0.01912	0.022295	0.996875	0.994624	0.002251	0.996835	1
3708579	0.04026	0.019154	0.047834	0.995842	1	-0.00416	0.998945	1
4631433	0.046203	0.019173	0.071247	0.273019	0.207506	0.065514	0.970464	0.199237
1673169	0.030453	0.019226	0.016325	0.579002	0.626609	-0.04761	0.998945	0.059723
2415883	0.0278	0.01923	0.024126	0.106846	0.136266	-0.02942	1	1
3674578	0.01477	0.019268	0.02103	0.264033	0.294181	-0.03015	0.996835	0.910937
1750645	0.01564	0.019269	0.045783	0.660083	0.622845	0.037238	0.996835	0.554054
2343706	0.041855	0.019302	0.031516	0.889004	0.921674	-0.03267	1	0.511827
2481378	0.004487	0.019312	0.022243	0.347368	0.290217	0.057151	0.986287	0.735327
4566687	0.004938	0.019315	0.035256	0.68711	0.658798	0.028312	0.998945	1
4208108	0.008309	0.019321	0.064016	1	0.996781	0.003219	1	1
3455175	0.004111	0.019347	0.233111	0.658004	0.737124	-0.07912	0.998945	0.904778
4124157	0.017197	0.019367	0.039899	0.413542	0.483871	-0.07033	0.996835	0.063344
634737	0.013782	0.019405	0.11577	0.989627	0.975216	0.014411	0.99789	0.243787
1485687	0.012533	0.019406	0.028819	0.856846	0.891631	-0.03478	1	1
709884	0.386404	0.019416	0.048945	0.401879	0.451613	-0.04973	0.995781	0.779043
2217208	0.010108	0.019418	0.298568	0.513485	0.451613	0.061873	0.998945	0.512658
1373849	0.027695	0.019425	0.042765	0.747908	0.775378	-0.02747	0.992616	0.790364
824904	0.366933	0.019427	0.026691	0.861746	0.901075	-0.03933	0.99789	1
1080892	0.038166	0.019428	0.04521	0.428423	0.362366	0.066058	0.998945	0.109291
906426	0.046405	0.01943	0.126518	0.816008	0.861588	-0.04558	0.998945	0.847078
3483416	0.019571	0.019432	0.183732	0.677755	0.737124	-0.05937	0.998945	0.812191
514006	0.002585	0.019433	0.06768	0.161826	0.122318	0.039508	1	0.830227
363841	0.00762	0.019441	0.131011	0.892931	0.856989	0.035942	0.99789	0.569751
888603	0.113584	0.019446	0.069733	0.207469	0.23927	-0.0318	1	0.527011
3286385	0.031887	0.019454	0.062259	0.464657	0.512903	-0.04825	0.99789	0.516021
1515646	0.01467	0.019459	0.025267	0.491649	0.572961	-0.08131	0.996835	0.008075
4095026	0.071976	0.019461	0.022325	0.669087	0.719957	-0.05087	1	0.357719
2516949	0.012329	0.019468	0.065654	0.622661	0.564516	0.058145	0.99789	1
3455165	0.004673	0.019488	0.202924	0.660083	0.737124	-0.07704	0.998945	0.904778
3508852	0.076469	0.019499	0.03716	0.08316	0.105376	-0.02222	0.99789	0.623585
415188	0.279985	0.019517	0.021659	0.405602	0.369099	0.036503	1	0.550643
415188	0.279985	0.019517	0.021659	0.405602	0.369099	0.036503	1	0.550643
4261532	0.02384	0.019529	0.021723	0.009336	0.026824	-0.01749	1	1
4281535	0.006978	0.019539	0.036234	0.153846	0.210129	-0.05628	0.996835	0.208615
1247261	0.760388	0.019557	0.304898	0.010373	0.007511	0.002863	1	1
3403144	0.010631	0.019576	0.020663	0.09751	0.133333	-0.03582	0.998945	0.1563
4377970	0.01236	0.019581	0.056274	0.255717	0.214592	0.041125	0.998945	1
2165626	0.002001	0.019591	0.027976	0.348548	0.433476	-0.08493	1	0.450341
1601704	0.01737	0.019612	0.006047	0.514583	0.577253	-0.06267	0.99789	0.924384
1601704	0.01737	0.019612	0.006047	0.514583	0.577253	-0.06267	0.99789	0.924384
3317881	0.057589	0.019615	0.015257	0.524896	0.473118	0.051778	0.998945	0.578011
4445879	0.044035	0.019644	0.0237	0.008299	0.024678	-0.01638	1	1
585058	0.358712	0.019695	0.073638	0.994737	0.997821	-0.00308	0.985232	1
929018	0.14891	0.019723	0.003937	0.532184	0.493213	0.038971	0.925105	0.924382
2483797	0.065899	0.019731	0.027626	0.709544	0.777897	-0.06835	1	0.139302
2371003	0.120631	0.019738	0.018821	0.130385	0.172535	-0.04215	0.914557	0.733745
1750544	0.025767	0.019778	0.027341	0.72479	0.767467	-0.04268	0.985232	1
1879671	0.039505	0.019783	0.017087	0.405405	0.454936	-0.04953	0.998945	0.640931
3448293	0.011492	0.019796	0.024032	0.62578	0.583153	0.042626	0.995781	0.923954
3322305	0.376369	0.0198	0.005337	0.751566	0.731183	0.020383	0.995781	0.196205

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2926028	0.005527	0.019804	0.035728	0.641667	0.572198	0.069468	0.995781	0.924488
4194595	0.008708	0.019827	0.070467	0.495842	0.417204	0.078638	0.99789	0.703224
4194595	0.008708	0.019827	0.070467	0.495842	0.417204	0.078638	0.99789	0.703224
1093265	0.00823	0.019839	0.170876	0.216702	0.27381	-0.05711	0.986287	0.129976
1608811	0.282895	0.019854	0.005585	0.837137	0.809267	0.02787	0.99789	0.293149
770019	0.025347	0.019861	0.022148	0.27027	0.223656	0.046614	0.99789	0.595539
758796	0.011648	0.019896	0.027459	0.387473	0.334066	0.053408	0.976793	0.399071
641535	0.008036	0.019902	0.050838	0.778586	0.716595	0.061991	0.996835	0.648804
1740647	0.00679	0.019915	0.018208	0.292771	0.351804	-0.05903	0.847046	0.824296
4390467	0.005113	0.019924	0.144742	0.653846	0.583691	0.070155	0.998945	0.295285
4641241	0.441909	0.019929	0.008555	0.895228	0.873391	0.021838	1	0.292968
4541969	0.006889	0.01993	0.014925	0.414938	0.483906	-0.06897	1	0.780754
1247000	0.042809	0.019932	0.081	0.579876	0.633621	-0.05375	0.99789	0.027835
1697756	0.095557	0.019942	0.196743	0.491701	0.450644	0.041057	1	0.641215
157586	0.158512	0.019953	0.001402	0.830208	0.777419	0.052789	0.996835	0.89343
4348433	0.023782	0.01996	0.022459	0.009414	0.025862	-0.01645	0.993671	1
4317400	0.265398	0.020006	0.023041	0.420833	0.45914	-0.03831	0.996835	0.852214
795791	0.013439	0.020009	0.032184	0.875	0.834409	0.040591	0.996835	0.242924
2104040	0.057523	0.02003	0.022126	0.786307	0.728541	0.057766	1	0.55802
2553386	0.005104	0.020034	0.032964	0.869792	0.886022	-0.01623	0.996835	0.490293
1266285	0.014248	0.020076	0.044872	0.615145	0.676026	-0.06088	0.996835	1
3879553	0.021673	0.020085	0.061604	0.998674	0.996222	0.002452	1	1
1153619	0.996751	0.020091	0.026132	0.962366	0.965368	-0.003	0.977848	1
1013629	0.223562	0.020162	0.050026	0.773389	0.811159	-0.03777	0.998945	0.224705
1674566	0.004075	0.020166	0.024628	0.388773	0.335837	0.052936	0.998945	0.120338
891909	0.021746	0.02022	0.047225	1	1	0	0.998945	1
1813512	0.051363	0.020246	0.026551	0.932573	0.903017	0.029555	0.99789	1
971426	0.361534	0.020292	0.059945	0.966805	0.953763	0.013042	0.998945	0.614283
4008050	0.010404	0.020294	0.045675	0.54375	0.491398	0.052352	0.996835	0.266257
1065796	0.013013	0.020295	0.078617	0.863739	0.836493	0.027246	0.913502	0.481105
3384899	0.009605	0.020296	0.008758	0.362105	0.30719	0.054916	0.985232	0.442573
395643	0.015038	0.020296	0.003726	0.552301	0.62527	-0.07297	0.992616	0.322348
42155	0.035071	0.020296	0.004347	0.327406	0.379828	-0.05242	0.995781	0.375961
3522271	0.030421	0.020297	0.019981	0.908714	0.881974	0.026739	1	0.657587
3866050	0.045384	0.020309	0.035791	0.997347	1	-0.00265	1	1
1036277	0.003971	0.020319	0.010269	0.540541	0.604077	-0.06354	0.998945	0.922832
2382865	0.230118	0.020352	0.003905	0.832292	0.812903	0.019388	0.996835	0.762522
634733	0.01445	0.020375	0.118409	0.989605	0.975322	0.014283	0.998945	0.242857
4649597	0.010924	0.020394	0.162882	0.991701	0.969957	0.021744	1	0.341621
3130098	0.403561	0.020403	0.094842	0.836798	0.869099	-0.0323	0.998945	0.413874
3192883	0.020509	0.020406	0.090245	0.130753	0.177802	-0.04705	0.993671	0.874495
3669070	0.017898	0.020408	0.063803	0.843035	0.796137	0.046898	0.998945	0.569549
4463577	0.004281	0.02041	0.093557	0.95332	0.973176	-0.01986	1	1
4585109	0.042292	0.020437	0.038759	0.242585	0.293926	-0.05134	0.984177	0.575666
1683039	0.0018	0.020459	0.126956	0.838912	0.780043	0.058869	0.995781	0.057586
1221273	0.003217	0.02046	0.051145	0.951245	0.921505	0.029739	0.998945	0.187422
328917	0.039508	0.020462	0.009861	0.797718	0.75914	0.038578	0.998945	1
4233587	0.010854	0.020472	0.106513	0.877593	0.827957	0.049636	0.998945	0.419696
2239075	0.021844	0.020472	0.019316	0.462578	0.434549	0.028029	0.998945	0.451644
274947	0.01775	0.020477	0.036601	0.845114	0.891631	-0.04652	0.998945	0.336749
2282568	0.145253	0.020484	0.033222	0.557054	0.596774	-0.03972	0.998945	0.334973
1886028	0.02682	0.020485	0.036198	0.406639	0.345161	0.061478	0.998945	0.91835
1912858	0.017965	0.020489	0.014948	0.773486	0.722462	0.051024	0.993671	0.564301
2427767	0.009042	0.020518	0.202186	0.840956	0.881974	-0.04102	0.998945	0.177729
192634	0.043049	0.020545	0.046364	0.99896	0.994624	0.004337	0.99789	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2377224	0.033425	0.020547	0.079967	0.932573	0.908798	0.023774	1	1
3867342	0.041231	0.020554	0.024338	0.995935	0.994825	0.00111	0.975738	1
4618851	0.033493	0.020582	0.002189	0.858628	0.906452	-0.04782	0.99789	0.581867
2248748	0.055087	0.020586	0.002312	0.929622	0.961039	-0.03142	0.989451	1
3636946	0.004515	0.0206	0.048513	0.756224	0.729614	0.02661	1	0.81488
1319360	0.023551	0.020602	0.045778	0.759375	0.727862	0.031513	0.994726	0.411164
1396657	0.013651	0.020628	0.022202	0.421162	0.384698	0.036464	0.99789	0.625249
4463866	0.011336	0.02065	0.007007	0.432432	0.386266	0.046166	0.998945	0.283575
2092068	0.010858	0.020652	0.002416	0.535865	0.595699	-0.05983	0.990506	0.847634
696217	0.038977	0.020653	0.049423	0.511435	0.562366	-0.05093	0.99789	1
353050	0.028029	0.020665	0.000756	0.10166	0.065591	0.036068	0.998945	0.246164
4617178	0.014559	0.020703	0.128946	0.156965	0.128755	0.028209	0.998945	0.210922
1750554	0.029544	0.020711	0.020362	0.727178	0.76824	-0.04106	1	0.795101
3282538	0.093488	0.020731	0.028803	0.820539	0.77957	0.04097	0.998945	1
792617	0.095557	0.020733	0.021527	0.698745	0.750542	-0.0518	0.990506	0.38691
3127728	0.012489	0.020735	0.025954	0.573958	0.645474	-0.07152	0.995781	0.36125
623793	0.016297	0.020736	0.029388	0.554979	0.598272	-0.04329	0.996835	0.499715
3403136	0.008844	0.020813	0.024508	0.096674	0.131749	-0.03508	0.995781	0.105642
1940954	0.077311	0.020833	0.004614	0.710856	0.75054	-0.03968	0.993671	0.320251
3564707	0.006362	0.020838	0.012713	0.217842	0.258065	-0.04022	0.998945	0.545042
1940971	0.140551	0.020846	0.00748	0.738589	0.775269	-0.03668	0.998945	0.23151
1352360	0.040013	0.020855	0.033641	0.138254	0.094421	0.043833	0.998945	0.166073
710990	0.005307	0.020857	0.049471	0.671518	0.623391	0.048127	0.998945	1
846067	0.013542	0.020873	0.0207	0.981328	0.962446	0.018881	1	1
1211895	0.012039	0.020873	0.018903	0.828838	0.862366	-0.03353	0.998945	0.431806
3426622	0.015764	0.020882	0.136644	0.276923	0.321185	-0.04426	0.943038	0.274708
2821210	0.036678	0.020935	0.062117	0.251559	0.2103	0.041259	0.998945	0.161675
2451149	0.066095	0.020943	0.046955	0.462578	0.525751	-0.06317	0.998945	0.780779
257710	0.007332	0.020946	0.02177	0.844075	0.880901	-0.03683	0.998945	0.179973
1071315	0.004356	0.020963	0.042329	0.700207	0.746237	-0.04603	0.998945	0.540741
4329127	0.123048	0.020963	0.044353	0.649378	0.704301	-0.05492	0.998945	0.655849
621604	0.039741	0.020973	0.025485	0.64553	0.699571	-0.05404	0.998945	0.379325
1266227	0.030615	0.020996	0.039394	0.751559	0.696121	0.055439	0.996835	0.510277
4218374	0.024026	0.021013	0.09076	0.951245	0.929185	0.02206	1	0.494124
4307084	0.131733	0.02104	0.044544	0.649378	0.704741	-0.05536	0.99789	0.65565
2984732	0.007952	0.02104	0.012661	0.275	0.226395	0.048605	0.99789	0.596618
4587567	0.006943	0.021045	0.012696	0.482328	0.515021	-0.03269	0.998945	0.517735
1941696	0.008344	0.021048	0.005648	0.951245	0.97103	-0.01979	1	1
1069426	0.014975	0.021061	0.007819	0.165281	0.222581	-0.0573	0.99789	0.789096
1175741	0.006323	0.021067	0.014975	0.986515	0.957082	0.029433	1	0.007028
3064127	0.007875	0.02109	0.11598	0.865751	0.911063	-0.04531	0.985232	0.388908
4285357	0.015018	0.021105	0.02803	0.647246	0.593952	0.053293	0.986287	0.563665
4596905	0.161099	0.021121	0.042964	0.123173	0.100858	0.022315	0.996835	0.799929
3817053	0.002717	0.021126	0.047315	0.97878	0.958438	0.020342	1	1
4618531	0.040048	0.021143	0.026074	0.478216	0.40625	0.071966	0.99789	0.847331
1921767	0.049794	0.021185	0.008366	0.287942	0.248922	0.039019	0.996835	0.901765
928183	0.261519	0.021185	0.028062	0.905602	0.883871	0.021731	0.998945	0.176686
1266269	0.009291	0.021203	0.057997	0.649893	0.725664	-0.07577	0.969409	0.1572
2236331	0.857391	0.02121	0.098068	0.294606	0.260776	0.03383	0.99789	1
1412456	0.005633	0.021225	0.302334	0.502101	0.568627	-0.06653	0.986287	0.703649
4158166	0.004373	0.021236	0.011283	0.795833	0.839056	-0.04322	0.99789	0.731927
2248876	0.025283	0.021258	0.052748	0.162863	0.142082	0.020781	0.994726	0.053596
2169874	0.423014	0.021262	0.063393	1	0.997854	0.002146	0.99789	1
1318509	0.016032	0.021294	0.077461	0.413721	0.368534	0.045187	0.996835	0.617921
3857478	0.669624	0.021303	0.027751	0.635279	0.653652	-0.01837	1	0.2094

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
838166	0.003098	0.021307	0.067327	0.700837	0.631466	0.069371	0.993671	0.484942
838166	0.003098	0.021307	0.067327	0.700837	0.631466	0.069371	0.993671	0.484942
819255	0.007599	0.021327	0.043371	0.578452	0.506508	0.071944	0.990506	0.514269
819255	0.007599	0.021327	0.043371	0.578452	0.506508	0.071944	0.990506	0.514269
1886077	0.101405	0.021343	0.030066	0.90272	0.875	0.02772	0.993671	0.206026
1640567	0.012853	0.02135	0.049395	0.205637	0.24838	-0.04274	0.993671	0.803364
1351083	0.020235	0.021356	0.116019	0.142708	0.115054	0.027655	0.996835	0.491698
1268136	0.014122	0.021356	0.026405	0.700624	0.723176	-0.02255	0.998945	0.564971
2381611	0.076863	0.021357	0.015211	0.872407	0.902361	-0.02995	1	0.183997
641533	0.012212	0.021357	0.052737	0.783195	0.726395	0.0568	1	0.560728
2483800	0.068076	0.021372	0.028133	0.709979	0.777897	-0.06792	0.998945	0.139302
1940941	0.099583	0.021374	0.005555	0.712058	0.751613	-0.03955	0.99789	0.319628
806496	0.027848	0.021376	0.189661	0.903527	0.933476	-0.02995	1	1
1510963	0.032445	0.021384	0.072678	0.86722	0.829399	0.037821	1	0.324696
3688335	0.015329	0.021399	0.030493	0.734607	0.673961	0.060647	0.978903	0.457691
302845	0.409056	0.021402	0.035242	0.437238	0.424569	0.01267	0.993671	0.703801
4507436	0.016924	0.021407	0.012909	0.356994	0.393939	-0.03695	0.992616	0.696628
4158841	0.27786	0.021407	0.192786	0.377593	0.340129	0.037465	1	0.836612
2959675	0.020692	0.021408	0.097102	0.130705	0.179185	-0.04848	1	1
1507677	0.012433	0.02142	0.061783	0.306017	0.348712	-0.0427	1	0.127264
770895	0.05983	0.021429	0.008987	0.809129	0.825107	-0.01598	1	0.750404
770963	0.07287	0.021433	0.006553	0.812241	0.828326	-0.01609	1	0.41976
1023472	0.0125	0.02145	0.009179	0.701042	0.762876	-0.06183	0.99789	0.700566
1023472	0.0125	0.02145	0.009179	0.701042	0.762876	-0.06183	0.99789	0.700566
1023472	0.0125	0.02145	0.009179	0.701042	0.762876	-0.06183	0.99789	0.700566
2453697	0.031838	0.021451	0.036776	0.91805	0.871245	0.046805	1	0.307659
1960729	0.016619	0.02146	0.055386	0.651042	0.711828	-0.06079	0.996835	0.257721
1608810	0.266821	0.02147	0.00624	0.837838	0.808442	0.029396	0.994726	0.292797
1940942	0.087851	0.021485	0.005118	0.712656	0.751073	-0.03842	1	0.32143
3604930	0.185748	0.021487	0.074856	0.94917	0.962446	-0.01328	1	1
4097392	0.02624	0.021505	0.032648	0.514553	0.444086	0.070467	0.99789	0.259469
2084183	0.01608	0.021505	0.0217	0.223958	0.170626	0.053332	0.994726	0.324045
3350809	0.252333	0.021507	0.017579	0.489987	0.441065	0.048922	0.992616	0.069822
2318688	0.003563	0.021527	0.085106	0.840249	0.803648	0.036601	1	0.104975
1497031	0.265767	0.021529	0.014318	0.721053	0.676407	0.044646	0.988397	0.595288
795802	0.014204	0.021538	0.034723	0.875519	0.835484	0.040035	0.998945	0.309747
3174489	0.004372	0.021586	0.054579	0.988565	0.969957	0.018608	0.998945	1
4194146	0.05128	0.021595	0.013792	0.175676	0.154839	0.020837	0.99789	1
1609812	0.0759	0.021599	0.043592	0.747401	0.795064	-0.04766	0.998945	1
465946	0.089458	0.021608	0.07494	1	0.998922	0.001078	0.995781	1
4530156	0.368014	0.021613	0.003853	0.210805	0.213666	-0.00286	0.984177	0.677514
823674	0.022226	0.021613	0.021641	0.9139	0.861588	0.052312	1	0.696573
2622386	0.040894	0.021628	0.041698	0.020747	0.037554	-0.01681	1	1
2072819	0.01076	0.021632	0.010345	0.933014	0.971106	-0.03809	0.860759	1
3403772	0.016391	0.021635	0.067314	0.628395	0.690051	-0.06166	0.840717	0.478266
3274915	0.010321	0.021642	0.073476	0.401674	0.344421	0.057253	0.995781	0.080907
3274915	0.010321	0.021642	0.073476	0.401674	0.344421	0.057253	0.995781	0.080907
4261682	0.083313	0.021644	0.008761	0.683333	0.734409	-0.05108	0.996835	0.905739
1859965	0.419476	0.021662	0.117628	0.998963	0.998927	3.56E-05	1	1
434985	0.015758	0.021668	0.053098	0.193983	0.158798	0.035185	1	0.295736
4360709	0.089985	0.02176	0.075337	1	0.996774	0.003226	0.99789	1
871769	0.056674	0.02176	0.075416	0.651767	0.695279	-0.04351	0.998945	0.662943
2314165	0.003198	0.021806	0.169118	0.656393	0.586466	0.069927	0.882911	0.756775
2143399	0.001988	0.021825	0.034232	0.84968	0.907323	-0.05764	0.955696	0.400781
4111262	0.010391	0.021825	0.033239	0.120582	0.156989	-0.03641	0.99789	0.484142

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
4497848	0.075172	0.021833	0.231023	0.002721	0	0.002721	0.979958	1
2321841	0.636804	0.021836	0.091339	0.988589	0.993562	-0.00497	1	1
3417425	0.009696	0.021841	0.011889	0.77131	0.819355	-0.04805	0.99789	0.15649
4428388	0.02167	0.021845	0.008437	0.590625	0.621212	-0.03059	0.993671	0.198564
3918207	0.019873	0.02186	0.026171	0.734043	0.649874	0.084168	0.998945	0.397621
1603927	0.003433	0.021863	0.183948	0.828482	0.782328	0.046155	0.996835	0.78532
4515348	0.002685	0.021869	0.04497	0.945021	0.924893	0.020128	1	1
1006134	0.007159	0.021886	0.078524	0.551042	0.597639	-0.0466	0.99789	1
2289460	0.005397	0.02193	0.050223	0.44917	0.525862	-0.07669	0.99789	0.852492
585005	0.017054	0.021934	0.048114	0.345188	0.282328	0.062861	0.993671	0.566863
1683050	0.002046	0.021937	0.126166	0.834719	0.780303	0.054416	0.994726	0.020785
790476	0.08564	0.021939	0.207624	0.210581	0.179185	0.031396	1	0.154934
4606490	0.017804	0.021955	0.035829	0.413866	0.4859	-0.07203	0.988397	0.040213
1524952	0.008445	0.021958	0.005503	0.603125	0.551502	0.051623	0.99789	0.3489
1610505	0.007959	0.02197	0.030428	0.451883	0.495604	-0.04372	0.984177	0.512388
2333481	0.049793	0.021982	0.011665	0.141531	0.16586	-0.02433	0.890295	0.049888
1672411	0.008354	0.022009	0.008643	0.95738	0.923491	0.033889	0.996835	1
306614	0.005682	0.022024	0.045339	0.317048	0.254839	0.062209	0.99789	1
3296760	0.012927	0.022053	0.100811	0.770747	0.809013	-0.03827	1	0.293342
2079236	0.105787	0.022063	0.088669	0.997925	0.994635	0.00329	1	1
3108971	0.111855	0.022086	0.044243	0.907676	0.880901	0.026775	1	0.508137
1496831	0.251058	0.022122	0.013878	0.284969	0.335837	-0.05087	0.996835	0.254666
1651833	0.01028	0.022122	0.043856	0.729253	0.659871	0.069382	1	0.215839
806487	0.020964	0.022125	0.197218	0.880705	0.910944	-0.03024	1	0.775612
4065240	0.246992	0.022135	0.017587	0.283784	0.329399	-0.04562	0.998945	0.753785
3136209	0.016524	0.022165	0.031699	0.958506	0.974249	-0.01574	1	1
4309403	0.001868	0.022179	0.037768	0.275779	0.369136	-0.09336	0.867089	0.6709
3124065	0.009831	0.022191	0.028844	0.800214	0.846325	-0.04611	0.9673	0.716368
4617722	0.008221	0.022214	0.036334	0.368973	0.31828	0.050693	0.993671	0.201412
1352256	0.028757	0.022227	0.033693	0.902287	0.932258	-0.02997	0.99789	0.14913
1790156	0.003692	0.022244	0.013605	0.925156	0.890558	0.034598	0.998945	0.634046
1617538	0.278603	0.022277	0.00964	0.62578	0.639785	-0.01401	0.99789	0.421492
1617538	0.278603	0.022277	0.00964	0.62578	0.639785	-0.01401	0.99789	0.421492
2055973	0.004592	0.02229	0.059519	0.907173	0.877193	0.02998	0.981013	0.014191
1155319	0.008572	0.022297	0.082761	0.365344	0.434549	-0.0692	0.996835	0.924896
3548070	0.017303	0.02231	0.083708	0.609959	0.669528	-0.05957	1	0.295381
805567	0.004329	0.022329	0.005452	0.684647	0.721505	-0.03686	0.998945	0.817992
2297416	0.344141	0.022337	0.005464	0.29106	0.300429	-0.00937	0.998945	0.509662
2294084	0.00806	0.022337	0.093678	0.892116	0.924893	-0.03278	1	1
2294084	0.00806	0.022337	0.093678	0.892116	0.924893	-0.03278	1	1
906966	0.001085	0.022365	0.003875	0.936722	0.898069	0.038653	1	0.30478
277727	0.017234	0.022383	0.031138	0.963693	0.984979	-0.02129	1	0.094328
2358174	0.212969	0.022387	0.144945	0.61875	0.578326	0.040424	0.99789	0.342398
1391023	0.076787	0.022394	0.513491	0.997917	1	-0.00208	0.995781	1
3192825	0.008936	0.022398	0.118436	0.829167	0.772532	0.056634	0.99789	0.895072
3328069	0.012246	0.022399	0.032764	0.890041	0.851931	0.03811	1	0.065192
3604908	0.130087	0.022404	0.057559	0.946985	0.962446	-0.01546	0.998945	1
3133720	0.000772	0.022415	0.067844	0.534519	0.462366	0.072153	0.994726	0.031958
1940949	0.10268	0.022427	0.005595	0.712656	0.751073	-0.03842	1	0.32143
3172472	0.044414	0.022433	0.100371	0.960499	0.983871	-0.02337	0.99789	0.108363
620931	0.317381	0.022436	0.002731	0.385655	0.436695	-0.05104	0.998945	0.706615
1768133	0.13284	0.022482	0.033643	0.870332	0.836559	0.033773	0.998945	0.03979
713245	0.06356	0.02251	0.059382	0.929167	0.903433	0.025733	0.99789	0.41906
3669064	0.017577	0.022518	0.058954	0.843035	0.793991	0.049044	0.998945	0.888239
791211	0.039695	0.022524	0.106602	0.560291	0.530043	0.030248	0.998945	0.264942

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1146055	0.007715	0.022526	0.026654	0.530208	0.589056	-0.05885	0.99789	1
522345	0.052623	0.022537	0.02763	0.981053	0.966595	0.014458	0.990506	0.404412
888574	0.030643	0.022541	0.107627	0.432292	0.381974	0.050317	0.99789	0.695258
795783	0.0144	0.022543	0.046764	0.87422	0.834409	0.039812	0.99789	0.405992
3688330	0.013758	0.022553	0.033772	0.731328	0.670601	0.060727	1	0.753785
2288338	0.004018	0.022573	0.049059	0.709071	0.773333	-0.06426	0.951477	0.686387
1924151	0.026564	0.02258	0.018937	0.494759	0.462203	0.032556	0.991561	0.160874
4467207	0.60861	0.022598	0.060886	0.431144	0.478261	-0.04712	0.983122	0.852147
4577994	0.080896	0.022601	0.037346	0.008299	0.021459	-0.01316	1	0.187984
2228768	0.02035	0.022622	0.028038	0.537155	0.603297	-0.06614	0.976793	0.283042
4026469	0.022406	0.022644	0.018795	0.421384	0.37931	0.042073	0.992616	0.693249
1155263	0.008376	0.022645	0.082249	0.366183	0.435484	-0.0693	0.998945	1
2288336	0.001419	0.022668	0.044705	0.813278	0.854077	-0.0408	1	1
2428662	0.025697	0.022685	0.031507	0.514583	0.445279	0.069304	0.99789	0.223117
3140039	0.004761	0.02269	0.023691	0.997921	0.987097	0.010824	0.99789	1
4232534	0.008791	0.022691	0.012597	0.979253	0.962446	0.016807	1	0.12993
533065	0.00403	0.022694	0.046777	0.656322	0.707346	-0.05102	0.904008	0.556275
3901780	0.003508	0.022694	0.000852	0.8687	0.892947	-0.02425	1	0.127092
947574	0.11637	0.022746	0.00882	0.105809	0.139785	-0.03398	0.998945	0.699994
1789354	0.477085	0.022764	0.01188	0.321206	0.341202	-0.02	0.998945	0.049954
620933	0.300121	0.022789	0.002755	0.389004	0.439914	-0.05091	1	0.638213
2314133	0.013811	0.022797	0.010098	0.661458	0.62043	0.041028	0.996835	0.325688
1940953	0.09983	0.022805	0.006087	0.713098	0.751073	-0.03798	0.998945	0.32143
4014861	0.010956	0.022834	0.103369	0.455301	0.406048	0.049254	0.995781	0.441339
3196804	0.006843	0.02285	0.079856	1	0.995699	0.004301	0.998945	1
925241	0.004923	0.022862	0.019937	0.711019	0.680258	0.030761	0.998945	0.16802
3140041	0.00481	0.022867	0.023883	0.997917	0.987124	0.010792	0.99789	1
1175118	0.003533	0.022894	0.172167	0.544681	0.5	0.044681	0.977848	0.925455
1000976	0.47844	0.022914	0.072312	0.854772	0.893777	-0.03901	1	0.459403
1222666	0.01218	0.022916	0.187742	0.926349	0.878495	0.047854	0.998945	1
1634147	0.50833	0.022918	0.156739	0.998963	0.997854	0.001109	1	1
493980	0.071586	0.022919	0.111864	0.951613	0.973684	-0.02207	0.971519	1
4436657	0.169877	0.022942	0.145515	0.814076	0.820879	-0.0068	0.982068	0.426961
3711032	0.012795	0.022943	0.00824	0.950104	0.974194	-0.02409	0.99789	1
873650	0.01963	0.02295	0.185632	0.294444	0.337444	-0.043	0.945148	0.459592
4352553	0.013878	0.022967	0.044212	0.48847	0.531453	-0.04298	0.989451	0.575738
4248475	0.017921	0.022967	0.072638	0.001037	0.003219	-0.00218	1	1
3993754	0.028471	0.023003	0.015507	0.142412	0.187768	-0.04536	0.998945	0.879189
2432048	0.006267	0.023012	0.127059	0.796258	0.81828	-0.02202	0.99789	0.756597
1597046	0.008092	0.02302	0.013964	0.835062	0.798925	0.036138	0.998945	0.385441
795792	0.013982	0.023034	0.035528	0.875519	0.835484	0.040035	0.998945	0.309747
884663	0.007893	0.023039	0.009903	0.90021	0.947368	-0.04716	0.983122	0.355183
4514546	0.067898	0.023056	0.180219	0.343373	0.314904	0.02847	0.876582	0.733058
1726713	0.522158	0.023078	0.026105	0.934511	0.915054	0.019458	0.99789	0.360958
4261653	0.026982	0.023087	0.038597	0.086279	0.056989	0.029289	0.99789	0.3865
2364401	0.012771	0.02309	0.006684	0.387734	0.321429	0.066305	0.994726	0.338642
1337169	0.052079	0.023097	0.261066	0.916493	0.94181	-0.02532	0.994726	1
3553036	0.024427	0.023107	0.042998	0.760373	0.806452	-0.04608	0.998945	0.297917
1286770	0.007296	0.023127	0.059242	0.091286	0.059013	0.032273	1	1
1036145	0.00649	0.023167	0.015342	0.665625	0.615302	0.050323	0.995781	0.326469
4031676	0.012099	0.023168	0.049022	0.151767	0.104077	0.04769	0.998945	0.804325
1351074	0.020333	0.023174	0.126482	0.144191	0.11588	0.028311	1	0.493982
2238486	0.020086	0.023181	0.135325	0.754167	0.815451	-0.06128	0.99789	0.443164
1806472	0.658426	0.023181	0.086294	0.680498	0.713978	-0.03348	0.998945	0.733348
2242272	0.012325	0.023184	0.094922	0.894792	0.926882	-0.03209	0.996835	0.293483

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3423675	0.399714	0.0232	0.172756	0.80625	0.831897	-0.02565	0.995781	1
485522	0.031064	0.023209	0.029649	0.821577	0.777419	0.044157	0.998945	1
4373217	0.688585	0.023218	0.107312	0.059129	0.075594	-0.01647	0.996835	1
593300	0.026358	0.023222	0.124835	0.895833	0.913978	-0.01815	0.996835	0.368081
1366193	0.014354	0.023232	0.077044	0.938797	0.917382	0.021415	1	0.541194
1043946	0.016598	0.023233	0.014322	0.825364	0.862661	-0.0373	0.998945	0.56273
795678	0.005912	0.02324	0.077335	0.432489	0.38961	0.042879	0.987342	0.696786
4408244	0.120336	0.02326	0.04837	0.649378	0.705819	-0.05644	0.99789	0.575907
1790158	0.004586	0.023304	0.014549	0.924274	0.890558	0.033716	1	0.634046
1836796	0.00819	0.023331	0.031395	0.955301	0.979614	-0.02431	0.998945	1
1742546	0.377869	0.023342	0.044794	0.870062	0.852371	0.017692	0.996835	0.853488
3650122	0.48575	0.023346	0.08478	0.884855	0.898069	-0.01321	1	0.123497
3455680	0.010719	0.023348	0.160868	0.833333	0.8625	-0.02917	0.932489	0.026687
3548378	0.014725	0.023381	0.077466	0.622407	0.680258	-0.05785	1	0.243578
3548378	0.014725	0.023381	0.077466	0.622407	0.680258	-0.05785	1	0.243578
31929	0.017793	0.023383	0.003764	0.872385	0.904968	-0.03258	0.992616	0.411644
976261	0.009841	0.023405	0.065634	0.98444	0.958155	0.026285	1	0.186141
499144	0.008271	0.023434	0.071559	0.828125	0.76824	0.059885	0.99789	0.050013
437375	0.011817	0.02344	0.06074	0.945946	0.967672	-0.02173	0.996835	0.383827
4100691	0.020286	0.023446	0.014081	0.889006	0.83913	0.049876	0.984177	0.165932
1741069	0.020453	0.02345	0.031348	0.606838	0.53491	0.071928	0.962025	0.293869
1068555	0.010378	0.023454	0.0955	0.8125	0.756494	0.056006	0.985232	0.008071
1091919	0.074701	0.023455	0.040793	0.10499	0.129828	-0.02484	0.998945	0.542711
1355950	0.050536	0.023458	0.022856	0.632568	0.668817	-0.03625	0.995781	0.209883
1980311	0.007058	0.023467	0.016409	0.759336	0.718884	0.040452	1	0.731691
2136072	0.014525	0.023469	0.017591	0.973029	0.954936	0.018093	1	1
4484184	0.010135	0.02347	0.074358	0.564315	0.511828	0.052487	0.998945	0.926158
4484184	0.010135	0.02347	0.074358	0.564315	0.511828	0.052487	0.998945	0.926158
2451140	0.052817	0.023477	0.037584	0.460581	0.521459	-0.06088	1	1
1236206	0.008963	0.023499	0.051263	0.393528	0.425966	-0.03244	0.996835	0.508443
4453533	0.012892	0.023501	0.084433	0.00104	0.006438	-0.0054	0.998945	1
1003784	0.026269	0.023503	0.126987	0.791274	0.853301	-0.06203	0.878692	0.691455
1899826	0.148676	0.023503	0.078671	0.784648	0.822198	-0.03755	0.984177	0.339068
1352366	0.034752	0.023549	0.0445	0.884615	0.922581	-0.03797	0.99789	0.179527
2259039	0.006889	0.023562	0.115195	0.946921	0.974781	-0.02786	0.977848	1
2433723	0.003503	0.023584	0.045611	0.772443	0.821121	-0.04868	0.994726	1
2281901	0.014602	0.023588	0.038788	0.10587	0.163399	-0.05753	0.987342	0.058796
73602	0.02982	0.023608	0.082465	0.257796	0.322581	-0.06478	0.99789	0.91554
790519	0.02924	0.02361	0.1002	0.895228	0.860515	0.034713	1	0.332562
1206808	0.009465	0.023619	0.1102	0.776971	0.744612	0.032359	0.99789	0.808099
1500671	0.405728	0.023631	0.074147	0.939834	0.922581	0.017253	0.998945	0.179527
1647698	0.014231	0.023634	0.08987	0.76971	0.825107	-0.0554	1	0.25923
2093897	0.020713	0.023658	0.20321	0.881743	0.832618	0.049125	1	0.739883
2171282	0.031041	0.023677	0.017381	0.096473	0.135193	-0.03872	1	0.551528
3025369	0.071542	0.023677	0.047322	0.476042	0.412903	0.063138	0.996835	0.63245
1874606	0.00217	0.0237	0.026979	0.7625	0.815054	-0.05255	0.996835	0.165468
3528807	0.050906	0.023717	0.02592	0.997925	0.989247	0.008678	0.998945	1
1250438	0.092269	0.023717	0.030251	0.755319	0.718341	0.036979	0.978903	0.728967
516161	0.00582	0.023725	0.00204	0.25	0.282796	-0.0328	0.998945	1
2073325	0.004382	0.023727	0.060718	0.88278	0.900215	-0.01743	1	0.603958
1374326	0.024721	0.023792	0.191082	0.776507	0.820815	-0.04431	0.998945	0.528468
4232694	0.019505	0.023816	0.016387	0.869295	0.821505	0.047789	0.998945	0.026489
4232694	0.019505	0.023816	0.016387	0.869295	0.821505	0.047789	0.998945	0.026489
2117635	0.016223	0.023817	0.366491	0.279749	0.349785	-0.07004	0.996835	0.610566
2447712	0.021786	0.023827	0.014309	0.855809	0.810086	0.045723	1	0.546154

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1836800	0.008364	0.023828	0.032896	0.955208	0.979526	-0.02432	0.995781	1
1939094	0.008856	0.023841	0.288095	0.741127	0.787554	-0.04643	0.996835	0.488627
4337526	0.253511	0.02385	0.066358	0.21875	0.179185	0.039565	0.99789	0.637302
1660699	0.008453	0.023871	0.110855	0.924116	0.898925	0.025192	0.99789	0.606173
2407451	0.012445	0.023874	0.005735	0.561458	0.483906	0.077553	0.99789	0.459804
1229637	0.092288	0.023887	0.003497	0.953027	0.927802	0.025225	0.994726	1
725278	0.111618	0.023902	0.041416	0.134375	0.105832	0.028543	0.994726	0.024876
976267	0.010007	0.023935	0.066048	0.984407	0.958155	0.026253	0.998945	0.186141
2099449	0.002013	0.023937	0.029454	0.697505	0.746237	-0.04873	0.99789	1
1229577	0.029415	0.023956	0.014463	0.831473	0.872727	-0.04125	0.936709	0.016726
1396637	0.023362	0.023977	0.027726	0.58125	0.611588	-0.03034	0.99789	0.697029
3857498	0.718517	0.024014	0.030992	0.636605	0.656171	-0.01957	1	0.259305
1983961	0.056138	0.024022	0.031953	0.888655	0.913607	-0.02495	0.990506	0.234346
1674634	0.011674	0.024065	0.025962	0.401899	0.345815	0.056084	0.978903	0.029192
395641	0.018364	0.024104	0.005225	0.550936	0.618534	-0.0676	0.996835	0.376988
1820403	0.209098	0.024131	0.045533	0.764523	0.74514	0.019382	0.996835	0.902588
4122268	0.041927	0.024132	0.024005	0.725572	0.670601	0.054971	0.998945	0.346713
69995	0.331841	0.024139	0.156085	0.962656	0.950644	0.012012	1	0.617738
1056249	0.003622	0.024139	0.016077	0.857588	0.895923	-0.03833	0.998945	0.208273
3687665	0.01325	0.024145	0.03066	0.933472	0.95914	-0.02567	0.99789	0.545204
434261	0.053724	0.024146	0.032031	0.869295	0.903433	-0.03414	1	0.788265
1396584	0.023935	0.02416	0.024832	0.582121	0.610515	-0.02839	0.998945	0.922671
570410	0.074762	0.024169	0.042314	0.752101	0.802802	-0.0507	0.991561	0.558238
4632601	0.287791	0.024169	0.03335	0.387265	0.342391	0.044874	0.990506	0.254766
3299691	0.030247	0.024175	0.083585	0.998963	0.997849	0.001113	0.998945	1
1276910	0.029443	0.024193	0.050678	0.686722	0.635193	0.051529	1	0.841896
4582970	0.032794	0.024201	0.038968	0.438669	0.386609	0.05206	0.995781	0.768706
2314178	0.009288	0.024229	0.026009	0.561715	0.522075	0.03964	0.982068	0.777968
2001305	0.006019	0.024229	0.003968	0.88278	0.906652	-0.02387	1	0.784813
3549659	0.039799	0.024233	0.019857	0.996703	1	-0.0033	0.939873	1
1004339	0.150821	0.024246	0.103445	0.507261	0.476344	0.030917	0.998945	0.403788
635948	0.04114	0.024275	0.069867	0.920124	0.93133	-0.01121	1	0.153231
1059913	0.206465	0.024277	0.009247	0.644191	0.61879	0.0254	0.996835	0.139305
3564693	0.005884	0.024302	0.013416	0.21875	0.260259	-0.04151	0.994726	0.227801
3857481	0.624537	0.024305	0.029515	0.635279	0.65404	-0.01876	0.998945	0.207327
3131103	0.039313	0.024313	0.009672	0.754678	0.694206	0.060472	0.998945	0.913386
1434516	0.036994	0.024335	0.047451	0.975636	0.950111	0.025525	0.973629	0.30179
2246222	0.013493	0.024338	0.060247	0.76971	0.714592	0.055117	1	0.306663
1094739	0.018663	0.024343	0.023702	0.877593	0.840129	0.037465	1	0.489171
358510	0.006427	0.024392	0.083842	0.686848	0.633333	0.053514	0.995781	0.689569
2388477	0.07956	0.024419	0.105194	0.692946	0.648069	0.044877	1	0.478599
1490545	0.007323	0.024422	0.034231	0.126623	0.093126	0.033497	0.96308	0.571783
2451139	0.056841	0.024447	0.038228	0.461538	0.520474	-0.05894	0.996835	0.852398
3292513	0.021042	0.024494	0.206143	0.656965	0.726293	-0.06933	0.996835	0.727274
2456381	0.011691	0.024508	0.010442	0.779046	0.728448	0.050597	0.99789	0.045517
1175719	0.00945	0.024532	0.020066	0.985447	0.959227	0.02622	0.998945	0.171109
1445927	0.893485	0.024539	0.151496	0.957286	0.958886	-0.0016	0.817511	1
2682956	0.053733	0.024544	0.06844	0.773486	0.744086	0.0294	0.995781	0.27349
306850	0.098395	0.024544	0.047277	0.558212	0.606223	-0.04801	0.998945	0.770953
1721029	0.022889	0.024554	0.006941	0.977178	0.954644	0.022535	0.996835	0.614744
1270631	0.007372	0.02456	0.062317	0.434511	0.374464	0.060048	0.998945	0.137977
1536307	0.013639	0.024584	0.092592	0.387967	0.347312	0.040655	0.998945	0.9185
1906867	0.042394	0.024587	0.066801	0.326403	0.271552	0.054852	0.996835	0.815492
2463287	0.011062	0.024593	0.0031	0.622385	0.669935	-0.04755	0.988397	1
3588609	0.004773	0.024595	0.080188	0.906054	0.944201	-0.03815	0.987342	0.642511

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1211888	0.014504	0.0246	0.022844	0.828838	0.862366	-0.03353	0.998945	0.431806
585018	0.015153	0.024615	0.046079	0.348548	0.281116	0.067432	1	0.567593
4307967	0.008578	0.024617	0.031029	0.73774	0.683807	0.053932	0.976793	0.278882
1835027	0.015369	0.024617	0.08677	0.676349	0.621505	0.054843	0.998945	0.693252
1146019	0.00788	0.024625	0.028407	0.53112	0.587983	-0.05686	1	1
3706052	0.010966	0.024654	0.007272	0.787344	0.733906	0.053439	1	0.553217
3706052	0.010966	0.024654	0.007272	0.787344	0.733906	0.053439	1	0.553217
2398065	0.04079	0.024666	0.067545	0.091286	0.069742	0.021544	1	0.715634
4096244	0.020289	0.024682	0.030376	0.857588	0.877682	-0.02009	0.998945	0.830227
1963907	0.03173	0.024682	0.00377	0.51971	0.469892	0.049817	0.998945	0.163829
3564961	0.002668	0.024692	0.017516	0.190871	0.232258	-0.04139	0.998945	0.896503
1677423	0.021503	0.024693	0.052059	0.771784	0.819742	-0.04796	1	0.754926
287530	0.001981	0.024704	0.111052	0.943983	0.966738	-0.02275	1	0.084707
386642	0.096057	0.024705	0.068506	0.998963	0.997845	0.001118	0.99789	1
4390527	0.021102	0.02474	0.027476	0.125519	0.101931	0.023587	1	0.608895
1671123	0.00434	0.024742	0.01534	0.268191	0.292918	-0.02473	0.998945	0.074
4161473	0.024509	0.024748	0.0395	0.289583	0.340129	-0.05055	0.99789	0.35321
4657544	0.261701	0.024774	0.076779	0.765073	0.804301	-0.03923	0.99789	0.185533
4657544	0.261701	0.024774	0.076779	0.765073	0.804301	-0.03923	0.99789	0.185533
1804220	0.001586	0.024776	0.036497	0.122917	0.170968	-0.04805	0.996835	1
3421938	0.004714	0.024779	0.070384	0.994813	0.97957	0.015243	0.998945	0.171067
815165	0.009457	0.024783	0.014725	0.945021	0.932258	0.012763	0.998945	0.711727
1078127	0.030738	0.024787	0.004887	0.615385	0.572961	0.042423	0.998945	1
1043914	0.008964	0.024799	0.006827	0.269792	0.22043	0.049362	0.996835	0.78715
4515437	0.335952	0.0248	0.019957	0.47286	0.49569	-0.02283	0.994726	0.78055
950451	0.018926	0.024814	0.027905	0.109375	0.150215	-0.04084	0.99789	0.585891
4308059	0.278447	0.024815	0.07479	0.217842	0.179185	0.038658	1	0.637302
4069982	0.793867	0.024819	0.041848	0.259637	0.259494	0.000144	0.881857	0.361521
2707537	0.008214	0.024838	0.049099	0.505388	0.546171	-0.04078	0.957806	0.701828
2217206	0.01273	0.024855	0.356939	0.513514	0.453863	0.059651	0.998945	0.779212
3599883	0.007035	0.024956	0.010893	0.904366	0.867742	0.036624	0.99789	1
1080901	0.01906	0.024965	0.026814	0.387133	0.322989	0.064145	0.92616	0.227921
4156143	0.023217	0.02497	0.075678	0.612033	0.674194	-0.06216	0.998945	0.245582
639358	0.612273	0.02497	0.024802	0.644191	0.658798	-0.01461	1	0.180047
1146085	0.00785	0.024974	0.023127	0.53178	0.589912	-0.05813	0.978903	0.698534
3491429	0.015181	0.024989	0.043112	0.835759	0.875269	-0.03951	0.99789	1
1500074	0.052274	0.025014	0.021538	0.209544	0.145923	0.063621	1	0.853517
3706050	0.010832	0.025016	0.007425	0.787942	0.733333	0.054608	0.99789	0.553074
3706050	0.010832	0.025016	0.007425	0.787942	0.733333	0.054608	0.99789	0.553074
2012979	0.01146	0.025016	0.075316	0.885177	0.856681	0.028496	0.994726	0.705653
3638404	0.008214	0.025022	0.021665	0.896266	0.863441	0.032825	0.998945	0.046608
1351100	0.080937	0.025023	0.058215	0.940871	0.921336	0.019535	0.99789	1
4352922	0.568413	0.025031	0.028034	0.016701	0.013948	0.002753	0.996835	1
1737327	0.014132	0.025035	0.097285	0.570686	0.506438	0.064248	0.998945	0.353963
1409892	0.090163	0.025043	0.046629	0.575884	0.572043	0.003841	0.99789	0.63567
3666785	0.965684	0.025076	0.080376	0.279167	0.304301	-0.02513	0.996835	0.512267
516159	0.007124	0.025089	0.002046	0.25052	0.283262	-0.03274	0.998945	1
863793	0.013861	0.025109	0.014416	0.439331	0.385776	0.053555	0.993671	0.557782
2121274	0.012289	0.025111	0.124063	0.991701	0.973176	0.018525	1	1
1608808	0.309718	0.025155	0.008033	0.836798	0.810086	0.026712	0.998945	0.293727
928983	0.105293	0.025181	0.015995	0.388773	0.349892	0.038881	0.995781	0.476305
3138413	0.009254	0.025192	0.023837	0.53527	0.566524	-0.03125	1	0.450341
3138413	0.009254	0.025192	0.023837	0.53527	0.566524	-0.03125	1	0.450341
1675561	0.019863	0.025206	0.016979	0.754149	0.814378	-0.06023	1	0.221562
2754630	0.00715	0.025208	0.129689	0.339212	0.407725	-0.06851	1	0.847896

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
209372	0.036755	0.025236	0.063649	0.036383	0.059395	-0.02301	0.995781	0.39278
123772	0.431292	0.025238	0.192705	0.988147	0.993363	-0.00522	0.966245	1
4035953	0.015114	0.025265	0.047147	0.834025	0.874464	-0.04044	1	1
1940947	0.077875	0.025268	0.00554	0.712058	0.75431	-0.04225	0.996835	0.453099
63802	0.01647	0.02527	0.065583	0.595436	0.649462	-0.05403	0.998945	0.104398
570395	0.075205	0.025301	0.052174	0.817481	0.854381	-0.0369	0.81962	1
758814	0.01244	0.025338	0.027697	0.394191	0.343011	0.05118	0.998945	0.536788
1137923	0.073983	0.025348	0.016213	0.983402	0.966738	0.016664	1	0.40304
2024296	0.030006	0.025359	0.00802	0.410788	0.473176	-0.06239	1	0.852737
3488223	0.006377	0.025389	0.08923	0.507307	0.568966	-0.06166	0.994726	0.218272
1155274	0.00998	0.025393	0.09542	0.367983	0.433333	-0.06535	0.99789	1
1595665	0.28513	0.025402	0.033277	0.981328	0.994635	-0.01331	1	1
553615	0.034346	0.025421	0.024737	0.713098	0.68172	0.031377	0.99789	0.831376
1688715	0.006749	0.025427	0.057675	0.66736	0.728448	-0.06109	0.996835	0.640636
1675529	0.030959	0.025433	0.024636	0.757261	0.814378	-0.05712	1	0.126909
3112926	0.01492	0.025439	0.116731	0.997921	0.991398	0.006523	0.99789	0.000243
1266259	0.011369	0.02544	0.061066	0.655858	0.722462	-0.0666	0.992616	0.245808
3375140	0.012609	0.025445	0.005786	0.973739	0.983801	-0.01006	0.990506	1
2668930	0.011259	0.025446	0.007575	0.788981	0.734409	0.054573	0.99789	0.55361
2668930	0.011259	0.025446	0.007575	0.788981	0.734409	0.054573	0.99789	0.55361
2093895	0.020994	0.025475	0.237237	0.883333	0.833691	0.049642	0.99789	1
3153222	0.089148	0.025485	0.052152	0.474012	0.41309	0.060922	0.998945	0.504612
1572831	0.057379	0.025487	0.017419	0.242204	0.228541	0.013663	0.998945	0.8954
1487488	0.010834	0.025507	0.019555	0.441788	0.449571	-0.00778	0.998945	0.455313
1357589	0.014721	0.025512	0.060559	0.312762	0.280778	0.031984	0.992616	0.050912
830054	0.191662	0.025513	0.023139	0.527027	0.570815	-0.04379	0.998945	0.000318
1836863	0.011998	0.025565	0.032344	0.040456	0.016094	0.024362	1	1
857497	0.005185	0.025576	0.059683	0.816008	0.777419	0.038589	0.99789	0.080302
4400842	0.022482	0.025609	0.099992	0.685682	0.761693	-0.07601	0.945148	0.242748
1548226	0.079844	0.02561	0.109565	0.682573	0.639785	0.042788	0.998945	0.131166
3482521	0.108353	0.02562	0.030645	0.114108	0.146237	-0.03213	0.998945	0.709524
2651459	0.923477	0.025624	0.074194	0.295833	0.307527	-0.01169	0.996835	1
2651459	0.923477	0.025624	0.074194	0.295833	0.307527	-0.01169	0.996835	1
1806252	0.022918	0.025629	0.274244	0.745851	0.782189	-0.03634	1	0.786443
4070985	0.021985	0.02563	0.017006	0.667708	0.603448	0.06426	0.995781	0.771088
4040737	0.013506	0.025641	0.077973	0.08195	0.11588	-0.03393	1	0.372681
4040737	0.013506	0.025641	0.077973	0.08195	0.11588	-0.03393	1	0.372681
2447706	0.024708	0.025649	0.016458	0.853734	0.810086	0.043649	1	0.546154
641549	0.013616	0.025666	0.054697	0.786902	0.729032	0.05787	0.99789	0.906502
1177185	0.015885	0.025672	0.023877	0.530083	0.45914	0.070943	0.998945	0.925595
2495905	0.218349	0.025688	0.063819	0.879668	0.911828	-0.03216	0.998945	0.771727
439437	0.002286	0.0257	0.017063	0.731915	0.679204	0.052711	0.972574	0.130293
92440	0.022514	0.025709	0.105309	0.449552	0.544084	-0.09453	0.925105	0.383855
1266258	0.010494	0.025718	0.059601	0.653846	0.723656	-0.06981	0.99789	0.417873
1473850	0.859433	0.02576	0.021749	0.624477	0.571739	0.052738	0.989451	0.341372
171186	0.012212	0.025765	0.032709	0.308351	0.352403	-0.04405	0.953586	0.036132
3309071	0.011448	0.02577	0.024417	0.203744	0.16408	0.039665	0.954641	0.119671
3280700	0.111994	0.025771	0.025068	0.825678	0.790497	0.035182	0.993671	0.482258
4346507	0.855339	0.025783	0.087689	0.265356	0.2775	-0.01214	0.851266	0.802964
4623488	0.060141	0.025806	0.015036	0.519751	0.556867	-0.03712	0.998945	0.452616
1536310	0.032175	0.025825	0.135966	0.386564	0.35	0.036564	0.953586	0.917446
1960553	0.178786	0.025834	0.038252	0.196203	0.198889	-0.00269	0.974684	0.462052
1184104	0.049652	0.025895	0.044166	0.927975	0.897629	0.030346	0.994726	0.454614
562221	0.026197	0.025897	0.092239	0.682952	0.724731	-0.04178	0.99789	0.8171
174646	0.062982	0.025909	0.009037	0.96473	0.979614	-0.01488	1	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
253826	0.00728	0.02591	0.011102	0.704497	0.756608	-0.05211	0.971519	0.202401
2297824	0.163028	0.025918	0.08176	0.9875	0.9946	-0.0071	0.994726	1
4327911	0.656904	0.025938	0.049343	0.915449	0.907809	0.00764	0.991561	0.784838
3522282	0.031136	0.025939	0.024322	0.91684	0.890558	0.026282	0.998945	1
802284	0.093567	0.025941	0.337148	0.470954	0.503226	-0.03227	0.998945	0.164841
4384635	0.007214	0.025972	0.03177	0.775934	0.815451	-0.03952	1	0.645891
4450017	0.753775	0.025983	0.024186	0.722917	0.739785	-0.01687	0.996835	0.904256
1180984	0.009758	0.026002	0.019888	0.464583	0.522727	-0.05814	0.993671	0.264146
819430	0.103448	0.026005	0.047204	0.715768	0.781116	-0.06535	1	0.175849
1192798	0.022143	0.026036	0.014803	0.205394	0.244086	-0.03869	0.998945	0.532461
4043597	0.070474	0.026037	0.006345	0.73029	0.77897	-0.04868	1	0.227493
2463794	0.003958	0.026045	0.083841	0.719917	0.772532	-0.05262	1	0.692297
3642857	0.013565	0.026076	0.015029	0.182573	0.234979	-0.05241	1	0.038614
4366412	0.009291	0.026084	0.199321	0.384134	0.331897	0.052237	0.994726	0.34575
3443969	0.011554	0.026097	0.026772	0.70894	0.685622	0.023317	0.998945	0.830297
3502899	0.007589	0.026105	0.012951	0.873181	0.910753	-0.03757	0.99789	0.243586
3324068	0.009694	0.026114	0.024874	0.167012	0.200644	-0.03363	1	0.473338
1769136	0.004841	0.026118	0.057245	0.990664	0.980687	0.009977	1	1
4271581	0.097098	0.026128	0.092045	0.01971	0.036481	-0.01677	1	1
2299263	0.003467	0.02614	0.008425	0.467842	0.433476	0.034366	1	1
1651836	0.013989	0.026145	0.045149	0.276042	0.341202	-0.06516	0.99789	0.256707
3640760	0.014562	0.026145	0.02527	0.392116	0.457082	-0.06497	1	0.513735
4646156	0.014963	0.026185	0.0521	0.753638	0.695699	0.057939	0.99789	0.126284
4437165	0.451713	0.02622	0.06798	0.497925	0.494635	0.00329	1	0.926164
3857480	0.644639	0.026251	0.031836	0.636122	0.654912	-0.01879	0.998945	0.2094
4127779	0.039559	0.026254	0.003007	0.607741	0.552688	0.055052	0.994726	0.13432
1244474	0.103568	0.026268	0.005843	0.956432	0.919355	0.037077	0.998945	0.060273
291443	0.079873	0.026273	0.138178	0.907676	0.917382	-0.00971	1	0.541194
3301434	0.022448	0.026274	0.057979	0.59375	0.609131	-0.01538	0.946203	0.621483
257691	0.008745	0.026286	0.024367	0.844075	0.880901	-0.03683	0.998945	0.179973
257691	0.008745	0.026286	0.024367	0.844075	0.880901	-0.03683	0.998945	0.179973
1080905	0.032362	0.026293	0.047201	0.388773	0.329032	0.059741	0.99789	0.344513
3998041	0.013634	0.026315	0.009868	0.601042	0.646868	-0.04583	0.994726	0.264347
1940940	0.109275	0.026329	0.006961	0.712656	0.74946	-0.0368	0.996835	0.323574
1270614	0.007726	0.026351	0.068448	0.426195	0.36087	0.065326	0.992616	0.157254
2297810	0.162609	0.026362	0.082823	0.987552	0.994635	-0.00708	1	1
2382846	0.27539	0.026369	0.004602	0.169087	0.187097	-0.01801	0.998945	0.762522
3557923	0.042211	0.026417	0.129041	0.83195	0.873391	-0.04144	1	0.402361
884661	0.005372	0.026441	0.015037	0.870833	0.917927	-0.04709	0.994726	0.756993
1480990	0.017916	0.02649	0.071979	0.848548	0.883047	-0.0345	1	0.658043
516293	0.00853	0.026492	0.003202	0.731328	0.699571	0.031757	1	0.912228
2288582	0.001902	0.026504	0.037444	0.811203	0.853004	-0.0418	1	1
1933665	0.020665	0.026514	0.09514	0.873444	0.905376	-0.03193	0.998945	0.588608
4561506	0.041142	0.026515	0.012057	0.358921	0.393548	-0.03463	0.998945	1
3121811	0.080358	0.026516	0.055228	0.994737	0.983766	0.010971	0.988397	0.109037
1796679	0.039922	0.026519	0.241315	0.996881	1	-0.00312	0.99789	1
964800	0.043041	0.026525	0.056574	0.997925	0.992489	0.005436	1	1
487197	0.075091	0.026525	0.259089	0.997886	1	-0.00211	0.983122	1
1615277	0.004574	0.026529	0.02789	0.588358	0.626882	-0.03852	0.99789	0.842796
342489	0.030472	0.026531	0.003511	0.239085	0.208155	0.030931	0.998945	0.779991
3506065	0.015685	0.026532	0.046047	0.835062	0.874464	-0.0394	1	1
3506065	0.015685	0.026532	0.046047	0.835062	0.874464	-0.0394	1	1
4272518	0.022135	0.026532	0.009292	0.600636	0.661926	-0.06129	0.979958	0.404538
3847523	0.048847	0.026532	0.079287	1	0.997475	0.002525	0.99789	1
1640447	0.014126	0.026533	0.046644	0.207292	0.25	-0.04271	0.99789	0.901624

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1631345	0.009936	0.026536	0.066741	0.98444	0.959227	0.025212	1	0.171109
1093259	0.011126	0.026554	0.198169	0.216805	0.272532	-0.05573	1	0.160151
2447701	0.016071	0.026558	0.01353	0.554979	0.501073	0.053906	1	0.711502
2322101	0.014048	0.026559	0.005597	0.543841	0.589633	-0.04579	0.993671	0.38739
1936424	0.025609	0.026572	0.059249	0.639241	0.701944	-0.0627	0.988397	0.316994
1885992	0.029237	0.026594	0.036293	0.40625	0.347403	0.058847	0.993671	0.837364
1623005	0.023839	0.026603	0.064785	0.442946	0.363734	0.079212	1	0.423045
1179108	0.03298	0.026608	0.10447	0.990664	0.978541	0.012123	1	1
3547476	0.006372	0.02661	0.017797	0.945513	0.910398	0.035115	0.970464	1
1846080	0.044477	0.026633	0.221619	0.857884	0.903433	-0.04555	1	0.788265
4023351	0.062687	0.026661	0.002019	0.403125	0.387446	0.015679	0.993671	0.433433
245511	0.076085	0.026671	0.433576	0.99896	1	-0.00104	0.99789	1
1500666	0.42425	0.026673	0.075036	0.940625	0.922747	0.017878	0.99789	0.178994
1348810	0.051924	0.026683	0.026639	0.485477	0.534483	-0.04901	0.99789	0.925878
479924	0.005122	0.026692	0.036023	0.177386	0.237124	-0.05974	1	0.157958
794246	0.036315	0.026737	0.036954	0.450939	0.406725	0.044215	0.991561	0.923109
4254278	0.019552	0.026746	0.003951	0.824689	0.84375	-0.01906	0.99789	1
4551781	0.003002	0.026746	0.015542	0.683054	0.746171	-0.06312	0.986287	0.805171
4074810	0.331526	0.026748	0.012534	0.463617	0.487124	-0.02351	0.998945	0.852853
4476194	0.037218	0.026758	0.033857	0.568134	0.578091	-0.00996	0.989451	0.703352
788450	0.007407	0.02677	0.085791	0.895228	0.857296	0.037932	1	0.184734
3549819	0.008009	0.026809	0.098201	0.887967	0.847312	0.040655	0.998945	0.859208
2415779	0.01884	0.026818	0.020631	0.813929	0.847312	-0.03338	0.99789	0.719045
4587309	0.007091	0.026832	0.025209	0.531447	0.592191	-0.06074	0.989451	1
1737321	0.01533	0.026839	0.105826	0.569647	0.506438	0.063209	0.998945	0.353963
13229	0.006737	0.026844	0.028335	0.211458	0.155914	0.055544	0.996835	0.215007
1750223	0.076578	0.026844	0.259379	0.002075	0	0.002075	1	1
3455222	0.00405	0.026851	0.272343	0.641372	0.71875	-0.07738	0.996835	0.909102
1651845	0.012443	0.026864	0.050023	0.724319	0.659483	0.064836	0.992616	0.214641
4587922	0.007276	0.026868	0.006691	0.175676	0.217811	-0.04214	0.998945	0.278803
4267002	0.112617	0.026881	0.044272	0.914938	0.939914	-0.02498	1	0.224329
586177	0.009558	0.026881	0.057009	0.865625	0.825806	0.039819	0.996835	0.257294
888604	0.133694	0.026884	0.087048	0.207469	0.237634	-0.03017	0.998945	0.70069
1536266	0.018231	0.026893	0.114823	0.385655	0.34806	0.037595	0.996835	1
1651828	0.010252	0.026899	0.059366	0.273859	0.337983	-0.06412	1	0.351207
3670106	0.003843	0.026903	0.006118	0.9875	0.996767	-0.00927	0.995781	1
131521	0.253527	0.026937	0.068774	0.866944	0.83691	0.030034	0.998945	0.609779
1234757	0.057721	0.02694	0.061598	0.342324	0.398488	-0.05616	0.996835	0.019787
132617	0.049965	0.026951	0.0804	1	0.996781	0.003219	1	1
937365	0.018279	0.026953	0.168725	0.756224	0.697425	0.058799	1	0.062647
2415765	0.022586	0.026964	0.020462	0.799793	0.833333	-0.03354	0.998945	0.31541
1373947	0.012844	0.026971	0.086766	1	0.996781	0.003219	1	1
1916984	0.018791	0.02699	0.009808	0.936722	0.907725	0.028997	1	0.000672
530408	0.017265	0.027006	0.020522	0.958506	0.974249	-0.01574	1	0.262015
329631	0.015119	0.027021	0.02843	0.592516	0.637339	-0.04482	0.998945	0.48294
3385846	0.004364	0.027059	0.02483	0.722222	0.658314	0.063908	0.92827	0.138193
3699020	0.013105	0.027059	0.045844	0.996881	0.989177	0.007704	0.994726	1
3029607	0.006791	0.027065	0.015646	0.903527	0.868534	0.034992	0.99789	1
2024306	0.033105	0.02709	0.008817	0.409751	0.472944	-0.06319	0.995781	0.925679
994409	0.006118	0.027098	0.029913	0.725104	0.76129	-0.03619	0.998945	0.798706
1921819	0.03236	0.027103	0.005566	0.253205	0.222727	0.030478	0.957806	0.072866
1971701	0.050136	0.027108	0.022384	0.900424	0.876087	0.024337	0.983122	0.390062
680507	0.016407	0.027108	0.019165	0.922037	0.897849	0.024188	0.99789	0.609204
4071575	0.073506	0.027115	0.021294	0.680761	0.654428	0.026333	0.987342	0.471887
1475740	0.031294	0.027121	0.039864	0.470213	0.397603	0.072609	0.979958	0.381884

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
971284	0.085176	0.027129	0.122631	0.985447	0.972103	0.013344	0.998945	1
1051549	0.024091	0.027155	0.043823	0.841996	0.800429	0.041567	0.998945	0.664249
546331	0.01044	0.027182	0.018906	0.515593	0.565591	-0.05	0.99789	0.92498
2428709	0.041656	0.027192	0.034662	0.512605	0.449353	0.063252	0.991561	0.060377
2723114	0.022348	0.027208	0.00772	0.665281	0.596983	0.068298	0.996835	0.49966
1286208	0.009421	0.027228	0.038148	0.707983	0.684267	0.023716	0.991561	0.520499
4018378	0.012893	0.027279	0.014258	0.705882	0.760215	-0.05433	0.992616	0.375685
261304	0.099058	0.02728	0.027207	0.661826	0.702586	-0.04076	0.99789	0.37539
2093904	0.024443	0.027283	0.231189	0.881743	0.834764	0.046979	1	0.86764
2280226	0.017774	0.027305	0.052741	0.833333	0.863147	-0.02981	0.992616	0.845074
4403227	0.14703	0.027316	0.003716	0.876556	0.907725	-0.03117	1	1
31923	0.036381	0.027333	0.003483	0.86875	0.901288	-0.03254	0.99789	0.602907
3996807	0.004547	0.027344	0.032894	0.808463	0.859524	-0.05106	0.916667	0.542084
3072089	0.863271	0.027344	0.02983	0.44917	0.488172	-0.039	0.998945	0.164324
2787054	0.00484	0.027362	0.275501	0.620332	0.549356	0.070976	1	0.453959
3457653	0.027892	0.027369	0.014961	0.907484	0.87957	0.027915	0.99789	0.27987
2321263	0.033387	0.027372	0.020173	0.330561	0.374194	-0.04363	0.99789	0.693144
2308736	0.004869	0.027375	0.053323	0.542531	0.594421	-0.05189	1	0.388969
3669063	0.023627	0.027429	0.072973	0.849585	0.808602	0.040983	0.998945	0.880975
3363842	0.104989	0.02743	0.130613	0.623169	0.55303	0.070139	0.996835	0.738263
200286	0.027267	0.027442	0.084027	0.992739	0.974249	0.01849	1	1
1410622	0.01387	0.027452	0.100895	0.700658	0.730159	-0.0295	0.946203	0.115326
3297584	0.015652	0.027461	0.119486	0.855809	0.792918	0.062891	1	0.397643
1455379	0.217949	0.027561	0.018185	0.41318	0.447425	-0.03424	0.995781	0.708316
2288680	0.068183	0.027563	0.062131	0.636458	0.688841	-0.05238	0.99789	0.829555
711029	0.002445	0.027571	0.051322	0.633192	0.59	0.043192	0.973629	0.696596
809058	0.089923	0.02758	0.057779	0.784375	0.823656	-0.03928	0.996835	1
4447949	0.011173	0.027583	0.051853	0.638254	0.688841	-0.05059	0.998945	1
1366223	0.018735	0.027584	0.087605	0.943867	0.920601	0.023266	0.998945	0.517835
4624836	0.012501	0.027588	0.022623	0.857292	0.828326	0.028965	0.99789	0.743979
725273	0.145992	0.027602	0.035799	0.13278	0.103004	0.029776	1	0.612733
2117649	0.007448	0.027606	0.414246	0.591489	0.527902	0.063588	0.968354	0.924561
4285435	0.036709	0.027622	0.054155	0.141667	0.098712	0.042954	0.99789	0.110007
2067922	0.002495	0.027634	0.02363	0.863825	0.911828	-0.048	0.99789	0.037937
1640499	0.019249	0.027634	0.059861	0.793139	0.751613	0.041526	0.99789	0.90173
4290168	0.080453	0.027643	0.072858	0.124468	0.156044	-0.03158	0.975738	1
1510954	0.043746	0.02765	0.090055	0.866944	0.831545	0.035399	0.998945	0.188186
3107176	0.03267	0.027682	0.057256	0.209979	0.253219	-0.04324	0.998945	0.220435
2304578	0.003111	0.027696	0.082595	0.7	0.756438	-0.05644	0.99789	0.130364
2304578	0.003111	0.027696	0.082595	0.7	0.756438	-0.05644	0.99789	0.130364
1244480	0.101714	0.027697	0.005379	0.950207	0.910944	0.039263	1	0.038777
1004343	0.148712	0.027697	0.102732	0.506224	0.476293	0.029931	0.99789	0.402224
928958	0.227097	0.027708	0.007573	0.5	0.450644	0.049356	0.998945	1
2037670	0.726015	0.027716	0.161709	0.995851	0.994635	0.001215	1	1
174640	0.019661	0.027726	0.016205	0.864865	0.833691	0.031174	0.998945	0.242337
3984258	0.183601	0.027759	0.200004	0.588174	0.52897	0.059204	1	1
4054002	0.015819	0.02777	0.047916	0.659751	0.610515	0.049236	1	0.496753
395640	0.017358	0.027776	0.0055	0.551975	0.621505	-0.06953	0.99789	0.376812
1888941	0.008328	0.027784	0.249344	0.915975	0.898069	0.017906	1	0.123497
4532354	0.017283	0.027826	0.056455	0.375839	0.423165	-0.04733	0.931435	0.623648
906431	0.010503	0.027829	0.054853	0.983368	0.962446	0.020922	0.998945	0.12993
189839	0.048356	0.02786	0.143692	0.925311	0.904506	0.020805	1	0.170976
2007569	0.007944	0.02789	0.006265	0.820084	0.7897	0.030384	0.995781	0.676758
3496578	0.236732	0.02789	0.075945	0.078947	0.05914	0.019808	0.991561	0.669067
2314154	0.010523	0.02791	0.039671	0.564315	0.526824	0.037491	1	0.515562

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
823245	0.800637	0.027915	0.165723	0.99896	0.998925	3.58E-05	0.99789	1
2288906	0.009844	0.027921	0.150663	0.863071	0.915236	-0.05217	1	0.761664
1318466	0.006636	0.027928	0.011841	0.926349	0.951509	-0.02516	0.99789	1
3639255	0.291093	0.027929	0.10107	0.127859	0.118026	0.009833	0.998945	1
31985	0.025737	0.027941	0.004872	0.86875	0.902361	-0.03361	0.99789	0.291885
3557922	0.065126	0.027946	0.137481	0.821586	0.857656	-0.03607	0.919831	0.227472
4136450	0.038854	0.027947	0.035811	0.755741	0.693133	0.062608	0.996835	0.446401
3134984	0.166582	0.028025	0.019742	0.954357	0.93133	0.023026	1	0.153231
1631349	0.013271	0.028064	0.050235	0.985477	0.963519	0.021958	1	0.117568
4499975	0.380149	0.028088	0.024899	0.66632	0.645788	0.020532	0.995781	0.919058
1856179	0.015953	0.028116	0.083675	0.691332	0.717865	-0.02653	0.983122	0.730194
2374442	0.005783	0.028117	0.063802	0.002075	0.015021	-0.01295	1	0.003361
3860309	0.006148	0.028125	0.050378	0.540431	0.594872	-0.05444	0.983122	0.169187
1906909	0.039895	0.02814	0.07665	0.327801	0.271459	0.056342	1	0.640328
788448	0.008899	0.028146	0.077106	0.894191	0.857296	0.036895	1	0.184734
3153136	0.573455	0.028153	0.053916	0.904167	0.899142	0.005025	0.99789	0.118056
758819	0.012581	0.028161	0.029849	0.394191	0.343348	0.050843	1	0.538063
1211902	0.015851	0.028167	0.027437	0.829876	0.860515	-0.03064	1	0.440463
3123297	0.0852	0.028198	0.026211	0.35967	0.411082	-0.05141	0.85654	0.916795
3130251	0.060204	0.028227	0.014789	0.55625	0.594156	-0.03791	0.993671	1
747552	0.151574	0.028246	0.085479	0.998963	0.997854	0.001109	1	1
725276	0.145898	0.028271	0.0408	0.13278	0.103004	0.029776	1	0.612733
1396703	0.017614	0.028273	0.031784	0.421162	0.384449	0.036713	0.996835	0.694612
3308514	0.02527	0.028282	0.064382	0.862786	0.891631	-0.02885	0.998945	0.809209
2117646	0.006838	0.028303	0.390697	0.39749	0.462446	-0.06496	0.995781	0.642452
1507746	0.015735	0.028308	0.072036	0.448133	0.506438	-0.0583	1	0.137956
1813528	0.08114	0.028309	0.04206	0.932432	0.902151	0.030282	0.99789	1
1878709	0.006323	0.028317	0.014759	0.955789	0.931868	0.023921	0.981013	0.252223
2432045	0.004038	0.028325	0.115896	0.814196	0.849785	-0.03559	0.996835	0.585891
3329521	0.019814	0.028332	0.161795	0.549896	0.606223	-0.05633	0.998945	0.438612
360452	0.088728	0.028373	0.024471	0.686071	0.731183	-0.04511	0.99789	1
1737324	0.016406	0.028377	0.100774	0.570686	0.506452	0.064234	0.99789	0.354401
718067	0.018866	0.028381	0.114801	0.399378	0.466667	-0.06729	0.998945	0.852466
3249293	0.068721	0.028397	0.059939	0.479123	0.416129	0.062994	0.995781	0.391444
2154655	0.005138	0.028409	0.082056	0.98444	0.962446	0.021993	1	0.12993
108495	0.666206	0.028422	0.027043	0.987526	0.990323	-0.0028	0.99789	1
2375216	0.037099	0.028425	0.042998	0.929461	0.890558	0.038903	1	0.235427
3317630	0.039199	0.028536	0.134895	0.204832	0.247797	-0.04297	0.981013	0.529923
1366199	0.018728	0.028536	0.079339	0.938669	0.917382	0.021287	0.998945	0.541194
3563103	0.007757	0.028556	0.036331	0.637029	0.564795	0.072234	0.992616	0.849991
755987	0.833272	0.028605	0.018861	0.687759	0.648069	0.039691	1	1
4143841	0.007487	0.028614	0.104335	0.619792	0.680645	-0.06085	0.996835	0.594099
1523884	0.01167	0.028614	0.053248	0.789809	0.747826	0.041983	0.982068	0.265144
341382	0.028935	0.028624	0.033065	0.941788	0.96444	-0.02265	0.996835	0.445531
493085	0.013314	0.028631	0.078236	0.664583	0.615551	0.049033	0.994726	0.030576
2239798	0.094514	0.02865	0.068444	0.782158	0.822961	-0.0408	1	1
2117643	0.020397	0.028651	0.40399	0.728541	0.66147	0.067071	0.96519	0.673503
3880397	0.010904	0.028672	0.033366	0.466757	0.509554	-0.0428	0.983122	0.376068
4414205	0.006092	0.028679	0.110969	0.361746	0.440987	-0.07924	0.998945	0.925435
2289591	0.014468	0.028735	0.037176	0.74739	0.798056	-0.05067	0.993671	0.386361
803762	0.009442	0.02878	0.153486	0.375	0.321739	0.053261	0.987342	0.284924
2335962	0.160475	0.028799	0.164464	0.987526	0.98172	0.005806	0.99789	1
3605123	0.046596	0.028813	0.045087	0.967842	0.979614	-0.01177	1	0.170726
3152620	0.123367	0.028822	0.004022	0.85262	0.796667	0.055953	0.957806	0.040398
211329	0.183069	0.028822	0.007537	0.746888	0.777897	-0.03101	1	0.502786

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
325786	0.016754	0.028848	0.195669	0.605544	0.667391	-0.06185	0.979958	0.916459
1622904	0.041046	0.028864	0.170613	0.699353	0.634228	0.065125	0.96097	0.262833
984448	0.098348	0.028866	0.011077	0.868308	0.8337	0.034608	0.971519	1
1634877	0.009845	0.02889	0.123354	0.292531	0.252146	0.040385	1	0.460629
1212354	0.007521	0.028896	0.052072	0.95842	0.928112	0.030308	0.998945	0.497165
3309082	0.00886	0.028904	0.01981	0.943983	0.910944	0.033039	1	0.563545
3451647	0.949665	0.028929	0.033854	0.449064	0.48927	-0.04021	0.998945	0.194145
2320706	0.017164	0.028934	0.155217	0.844075	0.79721	0.046865	0.998945	0.885937
2072803	0.016406	0.028943	0.022345	0.917012	0.950644	-0.03363	1	0.617738
1435457	0.014529	0.028943	0.033054	0.733888	0.788627	-0.05474	0.998945	0.489132
3498325	0.015356	0.028967	0.038119	0.751559	0.699571	0.051988	0.998945	0.660242
4372878	0.01272	0.028971	0.037441	0.698958	0.637634	0.061324	0.996835	0.482206
2723189	0.014574	0.02899	0.026826	0.099792	0.136266	-0.03647	0.998945	0.172448
3858624	0.769745	0.029011	0.02073	0.697211	0.739899	-0.04269	0.99789	1
4581070	0.026822	0.029053	0.083242	1	0.995708	0.004292	0.998945	0.006441
1301652	0.015576	0.029054	0.042692	0.908714	0.887339	0.021375	1	0.490191
1888854	0.072148	0.029087	0.138725	0.093361	0.108369	-0.01501	1	1
4241477	0.016725	0.029107	0.332142	0.840956	0.862366	-0.02141	0.99789	0.847147
1473810	0.531951	0.029109	0.036443	0.66632	0.61828	0.048041	0.99789	0.492646
3130592	0.889852	0.02912	0.007269	0.924274	0.936695	-0.01242	1	0.704721
1412972	0.002094	0.029126	0.076712	0.963542	0.979614	-0.01607	0.99789	0.170726
2378952	0.0055	0.029128	0.042329	0.842324	0.800429	0.041894	1	0.771798
2297804	0.173381	0.029135	0.111031	0.986515	0.993562	-0.00705	1	1
2233107	0.008027	0.029151	0.099925	0.890041	0.916309	-0.02627	1	0.759488
182616	0.004561	0.029152	0.023604	0.833333	0.78172	0.051613	0.996835	0.683162
162461	0.801925	0.029178	0.013125	0.998963	0.998927	3.56E-05	1	1
739034	0.011898	0.029184	0.105848	0.164938	0.131974	0.032964	1	0.419945
1982938	0.012197	0.029195	0.107464	0.541845	0.605791	-0.06395	0.96519	0.622016
2288996	0.02701	0.029223	0.066961	0.857884	0.798925	0.058959	0.998945	0.562982
976256	0.012523	0.029235	0.077598	0.984407	0.95914	0.025268	0.99789	0.171698
1577163	0.036156	0.029253	0.077231	0.923237	0.886266	0.03697	1	1
4171310	0.00424	0.029274	0.073057	0.956432	0.936285	0.020146	0.996835	1
3706285	0.040348	0.029282	0.032993	0.913684	0.87965	0.034034	0.983122	0.657669
3706285	0.040348	0.029282	0.032993	0.913684	0.87965	0.034034	0.983122	0.657669
3706285	0.040348	0.029282	0.032993	0.913684	0.87965	0.034034	0.983122	0.657669
3706285	0.040348	0.029282	0.032993	0.913684	0.87965	0.034034	0.983122	0.657669
4191711	0.00364	0.029306	0.003231	0.764523	0.819355	-0.05483	0.998945	0.082985
137611	0.035995	0.029307	0.045245	0.974066	0.953863	0.020204	1	0.252112
2013357	0.019626	0.029319	0.08984	0.742739	0.697198	0.04554	0.99789	0.660008
929670	0.006449	0.029323	0.167388	0.344864	0.297619	0.047245	0.990506	0.316723
1674981	0.069696	0.029329	0.01841	0.844142	0.823276	0.020866	0.993671	0.632165
3563382	0.042392	0.029352	0.040649	0.966805	0.963519	0.003286	1	0.117568
2222562	0.048502	0.029386	0.21983	0.557173	0.633621	-0.07645	0.996835	0.764181
2305549	0.022903	0.029388	0.012283	0.85343	0.825431	0.027999	0.996835	0.053082
2305549	0.022903	0.029388	0.012283	0.85343	0.825431	0.027999	0.996835	0.053082
3553439	0.021435	0.0294	0.042	0.832988	0.901288	-0.0683	1	0.602907
3982818	0.032679	0.029403	0.203219	0.948133	0.92382	0.024313	1	0.741802
2093868	0.02706	0.029447	0.251365	0.882536	0.834764	0.047772	0.998945	0.86764
31968	0.026219	0.029455	0.004372	0.869023	0.902361	-0.03334	0.998945	0.291885
1412965	0.00227	0.029467	0.062869	0.964657	0.98176	-0.0171	0.998945	1
2441044	0.102871	0.029472	0.021793	0.857588	0.898925	-0.04134	0.99789	0.300082
2108786	0.015418	0.029473	0.031359	0.049896	0.071121	-0.02122	0.996835	0.070662
3491434	0.017249	0.029474	0.04852	0.835759	0.874464	-0.0387	0.998945	1
3491434	0.017249	0.029474	0.04852	0.835759	0.874464	-0.0387	0.998945	1
3056695	0.004772	0.029477	0.267424	0.641372	0.71828	-0.07691	0.99789	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
363840	0.009751	0.029479	0.173442	0.892116	0.859914	0.032202	0.99789	1
2093889	0.025222	0.029483	0.241058	0.881743	0.833691	0.048052	1	1
3286304	0.077153	0.02951	0.262208	0.971992	0.947425	0.024567	1	0.125044
4033313	0.230064	0.029517	0.183452	0.965336	0.962801	0.002535	0.984177	1
1200546	0.054479	0.029517	0.119066	0.954357	0.943133	0.011224	1	1
4530044	0.028302	0.029542	0.106957	0.10499	0.131183	-0.02619	0.99789	1
3845164	0.051968	0.029543	0.046451	0.020747	0.039785	-0.01904	0.998945	0.029863
2289046	0.008858	0.029578	0.161274	0.482365	0.522532	-0.04017	1	0.403291
4083859	0.93476	0.029595	0.040879	0.665618	0.650327	0.015292	0.987342	0.413515
4237444	0.007087	0.029595	0.018825	0.37422	0.307527	0.066693	0.99789	0.038131
474076	0.007951	0.029638	0.01871	0.952282	0.93133	0.020952	1	0.259505
2216005	0.021434	0.029652	0.06318	0.4125	0.494577	-0.08208	0.992616	0.093389
4602597	0.003483	0.029669	0.010394	0.253112	0.336559	-0.08345	0.998945	0.756508
3168846	0.02125	0.029669	0.038235	0.321206	0.380645	-0.05944	0.99789	0.018139
276748	0.016625	0.029707	0.138426	0.872407	0.906652	-0.03425	1	0.408661
617881	0.072728	0.029718	0.013109	0.813929	0.784946	0.028983	0.99789	0.053271
2194925	0.02147	0.029736	0.059353	0.950207	0.97103	-0.02082	1	1
4045672	0.058991	0.029741	0.026513	0.452183	0.405579	0.046604	0.998945	0.388969
342855	0.018556	0.029768	0.079145	0.954357	0.966738	-0.01238	1	0.40304
1912872	0.031564	0.029796	0.024202	0.774059	0.724249	0.04981	0.995781	0.417192
1384169	0.299543	0.02982	0.054297	0.88278	0.914163	-0.03138	1	0.037615
1355282	0.176178	0.029822	0.08569	0.134096	0.162366	-0.02827	0.99789	0.122673
2432234	0.095589	0.029861	0.212574	0.95	0.965517	-0.01552	0.995781	0.095662
3192846	0.02748	0.029873	0.129506	0.129938	0.176344	-0.04641	0.99789	0.87307
1837960	0.131867	0.02991	0.100258	0.782158	0.811015	-0.02886	0.996835	1
1928953	0.015908	0.029922	0.023031	0.725	0.685622	0.039378	0.99789	0.283897
725221	0.15714	0.029945	0.056571	0.113071	0.084764	0.028307	1	0.560688
4353573	0.014604	0.029962	0.123363	0.173597	0.21828	-0.04468	0.99789	0.58866
4434595	0.022011	0.02999	0.006682	0.566528	0.527056	0.039472	0.994726	0.304749
3132713	0.047769	0.029995	0.085454	1	0.996703	0.003297	0.979958	1
2288583	0.002212	0.03003	0.047253	0.811203	0.852688	-0.04148	0.998945	1
2581622	0.191898	0.030041	0.07272	0.574689	0.594828	-0.02014	0.99789	0.8478
1115894	0.032397	0.030044	0.006854	0.829522	0.775378	0.054144	0.995781	1
2282397	0.418469	0.030082	0.067174	0.620879	0.616253	0.004626	0.947257	0.688669
3897731	0.01392	0.030096	0.039144	0.749004	0.687657	0.061347	0.998945	0.898035
1558847	0.640868	0.030109	0.1906	0.660714	0.695652	-0.03494	0.987342	0.270326
1069165	0.006055	0.030116	0.051621	0.133333	0.085837	0.047496	0.99789	0.560421
4301530	0.10903	0.03013	0.030459	0.430063	0.450216	-0.02015	0.992616	0.512178
4301530	0.10903	0.03013	0.030459	0.430063	0.450216	-0.02015	0.992616	0.512178
406994	0.047252	0.030167	0.058104	0.608108	0.653763	-0.04566	0.99789	0.260984
1928979	0.01435	0.030173	0.018664	0.723493	0.688172	0.035321	0.99789	0.449098
808861	0.288759	0.03018	0.002338	0.633612	0.606291	0.027321	0.991561	0.329252
3901789	0.010384	0.030183	0.083505	0.849934	0.798489	0.051445	0.998945	0.725645
3708637	0.037095	0.030186	0.026419	0.698745	0.746781	-0.04804	0.995781	0.14141
4031275	0.006285	0.030222	0.265062	0.647182	0.721382	-0.0742	0.993671	1
3327725	0.014176	0.030234	0.04539	0.890625	0.853712	0.036913	0.989451	0.090651
2111633	0.005865	0.030271	0.065659	0.798755	0.834409	-0.03565	0.998945	0.091346
395642	0.021222	0.030272	0.006849	0.55	0.61588	-0.06588	0.99789	0.327363
2057850	0.1341	0.030281	0.159422	0.559623	0.598925	-0.0393	0.994726	0.772521
1069162	0.005131	0.030304	0.052565	0.133817	0.083871	0.049946	0.998945	0.759626
3522290	0.034301	0.030328	0.026601	0.915625	0.890323	0.025302	0.996835	1
2406877	0.147649	0.030329	0.031072	0.867983	0.907725	-0.03974	0.998945	0.575504
2406877	0.147649	0.030329	0.031072	0.867983	0.907725	-0.03974	0.998945	0.575504
1129391	0.010577	0.030335	0.026701	0.767152	0.71828	0.048872	0.99789	0.30265

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2569055	0.557051	0.030357	0.033313	0.403326	0.43319	-0.02986	0.996835	0.507963
1552618	0.017258	0.03037	0.048704	0.7	0.649142	0.050858	0.99789	0.041819
499146	0.010143	0.030401	0.086456	0.826403	0.76824	0.058163	0.998945	0.050013
2388453	0.086415	0.030402	0.118915	0.692708	0.649462	0.043246	0.996835	0.610393
1451969	0.23453	0.030415	0.187516	0.89834	0.925966	-0.02763	1	0.73096
2428117	0.003584	0.030422	0.010654	0.76971	0.827253	-0.05754	1	0.628234
359689	0.003661	0.030447	0.024086	0.873181	0.829399	0.043782	0.998945	0.743348
1433878	0.058255	0.030451	0.039689	0.773859	0.803226	-0.02937	0.998945	0.241102
1146050	0.010365	0.030451	0.03148	0.532359	0.587473	-0.05511	0.993671	1
4007491	0.026586	0.030453	0.024564	0.180498	0.13871	0.041788	0.998945	0.331812
2162503	0.951367	0.030465	0.066139	0.902287	0.896996	0.005291	0.998945	0.804374
1805083	0.006005	0.030472	0.228774	0.451883	0.490239	-0.03836	0.990506	1
1184075	0.051666	0.030483	0.052362	0.928125	0.895923	0.032202	0.99789	0.454774
4302400	0.010716	0.030484	0.169895	0.674636	0.748927	-0.07429	0.998945	0.109087
620940	0.326942	0.030496	0.003212	0.383891	0.436285	-0.05239	0.992616	0.706616
2297758	0.184328	0.030506	0.069246	0.986515	0.993548	-0.00703	0.998945	1
4017022	0.02977	0.030519	0.014934	0.626834	0.574398	0.052436	0.985232	0.848253
1094747	0.022088	0.03057	0.036872	0.877871	0.84086	0.03701	0.995781	0.48652
4637251	0.815855	0.030603	0.103388	0.004158	0.005365	-0.00121	0.998945	1
2057819	0.162272	0.030624	0.150625	0.559375	0.594421	-0.03505	0.99789	0.50287
4031842	0.00155	0.030639	0.009619	0.198745	0.238661	-0.03992	0.992616	0.898204
2101052	0.17605	0.03064	0.055512	0.727178	0.690987	0.036191	1	0.233593
17263	0.011033	0.030685	0.071951	0.526151	0.481681	0.04447	0.993671	0.192758
4659780	0.012213	0.030697	0.044923	0.345436	0.407328	-0.06189	0.99789	1
662809	0.006546	0.030698	0.021168	0.555094	0.58691	-0.03182	0.998945	0.444577
1539433	0.004656	0.030711	0.057524	0.334755	0.389254	-0.0545	0.975738	0.00419
2483920	0.238563	0.030777	0.162458	0.348548	0.309013	0.039535	1	0.913775
4099595	0.029932	0.030813	0.039224	0.611458	0.548283	0.063175	0.99789	0.351203
1076644	0.01523	0.03082	0.028718	0.194387	0.223176	-0.02879	0.998945	0.503443
3559950	0.011467	0.030827	0.06158	0.96888	0.983906	-0.01503	1	1
1961890	0.018056	0.030831	0.06823	0.835062	0.864807	-0.02974	1	1
2428675	0.033643	0.03084	0.039206	0.513485	0.446004	0.067481	0.996835	0.133627
245053	0.014599	0.030846	0.058303	0.746362	0.684549	0.061812	0.998945	0.591851
2046886	0.028851	0.030893	0.044972	0.824689	0.861588	-0.0369	1	0.119185
1229446	0.076323	0.030901	0.051402	0.927673	0.902151	0.025522	0.993671	0.602743
2172346	0.01551	0.030912	0.016799	0.140333	0.196352	-0.05602	0.998945	1
2432232	0.064811	0.030945	0.274582	0.951245	0.967742	-0.0165	0.998945	1
2432232	0.064811	0.030945	0.274582	0.951245	0.967742	-0.0165	0.998945	1
4534584	0.054888	0.03096	0.026266	0.695804	0.70122	-0.00542	0.885021	1
2454916	0.024167	0.03097	0.034288	0.906639	0.931034	-0.0244	0.99789	1
2633258	0.807828	0.030986	0.070718	0.575	0.588172	-0.01317	0.996835	0.774188
2350839	0.044202	0.030993	0.060591	0.465768	0.551613	-0.08585	0.998945	0.348423
2418530	0.024092	0.031007	0.108776	0.123444	0.154506	-0.03106	1	0.479818
4131920	0.003876	0.031027	0.181002	0.134096	0.15914	-0.02504	0.99789	0.607205
1972386	0.027733	0.031027	0.05518	0.424116	0.477322	-0.05321	0.995781	0.780331
328766	0.006372	0.031033	0.075507	0.056133	0.031116	0.025017	0.998945	1
1145908	0.709066	0.031053	0.03814	0.929167	0.91309	0.016077	0.99789	0.560446
1894451	0.030613	0.031056	0.185816	0.435685	0.487124	-0.05144	1	0.926366
466173	0.016126	0.031062	0.060413	1	0.995708	0.004292	1	1
2288597	0.002505	0.031064	0.062048	0.793319	0.842672	-0.04935	0.994726	1
976257	0.013401	0.031106	0.08154	0.98431	0.958963	0.025346	0.992616	0.03496
55432	0.010036	0.031112	0.04961	0.278481	0.305857	-0.02738	0.986287	0.912614
1997482	0.014006	0.031125	0.039637	0.901879	0.868251	0.033628	0.993671	0.839321
4509851	0.029983	0.031149	0.052744	0.789419	0.751073	0.038346	1	0.536501
1659426	0.01848	0.031197	0.181058	0.623444	0.676724	-0.05328	0.99789	0.089149

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
516499	0.565407	0.031229	0.221646	0.64834	0.676344	-0.028	0.998945	0.245452
2307281	0.364994	0.03126	0.032731	0.80083	0.837983	-0.03715	1	0.735058
3107225	0.032489	0.031267	0.063898	0.210581	0.252146	-0.04157	1	0.271166
652287	0.115007	0.031272	0.072318	0.157676	0.183476	-0.0258	1	0.64484
4511583	0.006972	0.031291	0.03236	0.720126	0.675647	0.044479	0.992616	0.341271
2084193	0.022853	0.031311	0.033259	0.224066	0.172747	0.05132	1	0.256556
3328068	0.018595	0.031319	0.044659	0.890041	0.85515	0.034891	1	0.091105
3342450	0.008706	0.031356	0.05625	0.845436	0.872043	-0.02661	0.998945	0.533728
3591378	0.006704	0.031361	0.042243	0.173237	0.228541	-0.0553	1	0.294222
1072990	0.097394	0.031365	0.054608	0.711019	0.647186	0.063833	0.994726	0.760373
3426879	0.027336	0.031368	0.012229	0.737006	0.776458	-0.03945	0.995781	1
4126787	0.092877	0.031384	0.084174	0.678423	0.751073	-0.07265	1	0.386573
2297809	0.330073	0.031397	0.189293	0.987474	0.994635	-0.00716	0.996835	1
3029593	0.01587	0.031399	0.031283	0.100622	0.136266	-0.03564	1	0.172448
2692498	0.068701	0.031418	0.048412	0.44289	0.488095	-0.0452	0.89557	0.079588
4553970	0.008235	0.03145	0.012018	0.734375	0.780043	-0.04567	0.99789	0.021761
4615453	0.018735	0.031476	0.062136	0.653527	0.611588	0.041939	1	0.172723
2208800	0.016615	0.031489	0.030851	0.608108	0.566524	0.041585	0.998945	0.777844
3174618	0.006136	0.031516	0.096019	0.985447	0.968615	0.016832	0.994726	1
1980035	0.009292	0.03153	0.128065	0.913721	0.880901	0.03282	0.998945	1
4308958	0.363605	0.031534	0.065897	0.003119	0.001073	0.002046	0.998945	1
4040519	0.025767	0.031556	0.036258	0.52079	0.579399	-0.05861	0.998945	0.086992
2082497	0.061028	0.031565	0.204589	0.992739	0.98176	0.010979	1	1
2232620	0.028616	0.031589	0.044487	0.822245	0.786797	0.035449	0.994726	0.677594
2446956	0.008753	0.031614	0.097865	0.605809	0.561555	0.044254	0.996835	0.924802
4554812	0.008392	0.031632	0.137153	0.228125	0.195279	0.032846	0.99789	0.554632
4638332	0.391883	0.031658	0.117455	0.12369	0.110753	0.012937	0.993671	0.814828
4012318	0.006138	0.031667	0.010471	0.446653	0.480687	-0.03403	0.995781	0.710434
4515058	0.042633	0.031703	0.145399	0.598532	0.565875	0.032658	0.991561	0.186158
4454111	0.230103	0.031723	0.022968	0.605618	0.660398	-0.05478	0.946203	0.676188
2093877	0.028049	0.031782	0.227617	0.881743	0.834764	0.046979	1	0.86764
906633	0.054413	0.03179	0.054487	0.320628	0.291954	0.028674	0.929325	0.355184
2846467	0.01251	0.03182	0.012354	0.701461	0.74086	-0.0394	0.995781	0.276329
3056692	0.00428	0.031825	0.27771	0.641667	0.71828	-0.07661	0.996835	1
566544	0.006289	0.031826	0.067923	0.524008	0.574514	-0.05051	0.993671	0.924373
1928981	0.016747	0.031854	0.01946	0.723958	0.686695	0.037263	0.99789	0.38876
3403127	0.025245	0.031858	0.038258	0.994802	0.984979	0.009824	0.998945	1
2944508	0.008631	0.031863	0.077822	0.233888	0.204936	0.028952	0.998945	0.887234
3984038	0.033651	0.031906	0.034718	0.009356	0.025806	-0.01645	0.99789	1
806586	0.327075	0.031918	0.036514	0.52183	0.574514	-0.05268	0.995781	1
4234517	0.016413	0.03192	0.021725	0.733333	0.770386	-0.03705	0.99789	0.8961
1980310	0.010023	0.031932	0.020622	0.761954	0.719957	0.041997	0.998945	0.818258
3029590	0.017597	0.031933	0.028788	0.097713	0.133333	-0.03562	0.99789	0.1563
2288688	0.030334	0.031933	0.149958	0.490644	0.555914	-0.06527	0.99789	0.347404
1685080	0.022913	0.03194	0.317468	0.973029	0.95279	0.020239	1	0.269899
4534835	0.150195	0.031961	0.013528	0.641372	0.69206	-0.05069	0.998945	0.386669
478407	0.03057	0.031965	0.054738	0.536383	0.490343	0.046039	0.998945	0.853326
1336315	0.307568	0.031967	0.022069	0.75	0.723176	0.026824	1	0.354104
4589881	0.024214	0.032003	0.149098	0.53527	0.46129	0.073979	0.998945	0.852169
630524	0.034722	0.032004	0.031278	0.596875	0.551502	0.045373	0.99789	0.851413
3857178	0.06829	0.032004	0.00458	0.914894	0.934509	-0.01962	0.998945	0.385856
3529133	0.005222	0.03201	0.049487	0.870062	0.919181	-0.04912	0.996835	0.756433
357368	0.019475	0.032017	0.074613	0.945946	0.97103	-0.02508	0.998945	1
2093925	0.027864	0.032023	0.243966	0.881743	0.834409	0.047334	0.998945	0.867907
377510	0.014061	0.032036	0.21674	0.970954	0.95279	0.018165	1	0.074234

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1846079	0.059422	0.032038	0.229896	0.857884	0.902361	-0.04448	1	0.60282
345417	0.005978	0.032063	0.07629	0.537815	0.589247	-0.05143	0.992616	0.848089
360286	0.246883	0.032074	0.041629	0.782105	0.810722	-0.02862	0.983122	0.445171
2061907	0.022934	0.032105	0.114964	0.994759	0.979393	0.015366	0.989451	1
4491031	0.009608	0.032108	0.406448	0.402923	0.467811	-0.06489	0.996835	0.780164
1501790	0.043149	0.032108	0.060177	0.843361	0.815451	0.02791	1	0.878359
3689636	0.03482	0.032112	0.05764	0.788382	0.75	0.038382	1	0.536403
4174833	0.015424	0.032114	0.31096	0.452282	0.38172	0.070562	0.998945	0.325684
3292498	0.021913	0.032117	0.229636	0.654564	0.722103	-0.06754	1	0.908154
609708	0.126772	0.032125	0.058272	0.475104	0.427039	0.048065	1	0.344615
993314	0.005944	0.032154	0.038837	0.990644	0.98176	0.008885	0.998945	1
312841	0.040772	0.032159	0.013322	0.947095	0.912903	0.034192	0.998945	0.37629
2159707	0.993963	0.032162	0.017067	0.678794	0.685745	-0.00695	0.995781	0.236971
1754060	0.003948	0.032207	0.005887	0.612033	0.655914	-0.04388	0.998945	0.065113
1651891	0.010019	0.032232	0.036684	0.387967	0.462446	-0.07448	1	0.227271
4567801	0.692191	0.032234	0.353692	0.852201	0.856209	-0.00401	0.987342	0.568778
1918975	0.006959	0.032251	0.137793	0.360996	0.443966	-0.08297	0.99789	0.9252
4516548	0.015329	0.032251	0.010756	0.468288	0.526432	-0.05814	0.977848	0.397472
4373012	0.035656	0.032253	0.006456	0.442918	0.394397	0.048521	0.988397	0.770543
1943825	0.028489	0.032257	0.0348	0.818465	0.843011	-0.02455	0.998945	0.484142
2545800	0.010246	0.032274	0.04262	0.837838	0.891398	-0.05356	0.99789	1
4010889	0.005912	0.032275	0.052204	0.835774	0.870933	-0.03516	0.990506	1
3292942	0.31742	0.032285	0.062545	0.96473	0.945279	0.019451	1	0.008242
182596	0.005981	0.032376	0.033983	0.828838	0.781116	0.047722	1	0.589537
1013666	0.255118	0.032383	0.113459	0.76618	0.803226	-0.03705	0.995781	0.185493
1013666	0.255118	0.032383	0.113459	0.76618	0.803226	-0.03705	0.995781	0.185493
1013666	0.255118	0.032383	0.113459	0.76618	0.803226	-0.03705	0.995781	0.185493
1975099	0.010433	0.032387	0.008674	0.891892	0.930258	-0.03837	0.998945	0.062139
1265975	0.019814	0.032408	0.106526	0.93659	0.964592	-0.028	0.998945	0.105907
1266268	0.017863	0.032423	0.0566	0.566806	0.490323	0.076483	0.995781	0.781071
2024305	0.0292	0.032426	0.007892	0.398649	0.464286	-0.06564	0.92616	0.923357
1023625	0.008277	0.032438	0.005857	0.456432	0.519313	-0.06288	1	0.020631
4004384	0.0069	0.032445	0.036888	0.713693	0.66056	0.053133	0.99789	0.917665
570737	0.031626	0.032447	0.075354	0.750542	0.807963	-0.05742	0.936709	0.75462
2761847	0.022093	0.032456	0.005541	0.752075	0.797849	-0.04577	0.998945	0.194615
4573612	0.049877	0.032462	0.050767	0.10166	0.091202	0.010458	1	0.785256
5386	0.009716	0.032463	0.066918	0.806017	0.757511	0.048506	1	0.032085
2571619	0.009236	0.032468	0.10582	0.287344	0.235991	0.051353	0.99789	0.897962
929611	0.011798	0.032471	0.062663	0.727178	0.755365	-0.02819	1	0.25955
2246231	0.017599	0.032508	0.083524	0.781705	0.733836	0.047869	0.996835	0.285285
1897971	0.009067	0.032509	0.058793	0.38125	0.425647	-0.0444	0.995781	0.775698
2165380	0.024287	0.032521	0.034027	0.938797	0.909871	0.028925	1	0.780268
4140032	0.796513	0.032534	0.206808	0.998963	0.998925	3.79E-05	0.998945	1
305402	0.091808	0.032549	0.006496	0.14657	0.204741	-0.05817	0.996835	0.776006
2324465	0.025401	0.032585	0.026264	0.559252	0.493492	0.065759	0.993671	0.401699
2873406	0.03374	0.032587	0.061067	0.208768	0.248918	-0.04015	0.992616	0.173233
725223	0.165064	0.032589	0.060712	0.113071	0.084946	0.028124	0.998945	0.360958
2033633	0.0025	0.032593	0.013709	0.728601	0.777419	-0.04882	0.995781	0.22691
4282494	0.072714	0.032663	0.100978	0.002083	0.009657	-0.00757	0.99789	1
4125187	0.023033	0.032668	0.006061	0.39605	0.334052	0.061998	0.996835	0.29651
53858	0.445006	0.032675	0.170787	0.878378	0.858369	0.020009	0.998945	0.338099
509395	0.015478	0.032696	0.070326	0.54668	0.610515	-0.06383	1	0.770885
2349384	0.992933	0.032738	0.042363	0.330913	0.330087	0.000826	0.995781	0.752341
1963921	0.046631	0.032738	0.012128	0.545643	0.497849	0.047794	0.998945	0.095529
2842041	0.037823	0.032759	0.064682	0.210581	0.251078	-0.0405	0.99789	0.265825

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
395645	0.024262	0.032776	0.007817	0.551867	0.616129	-0.06426	0.998945	0.281891
4277964	0.290414	0.032782	0.023164	0.704357	0.72103	-0.01667	1	0.419818
1577482	0.054972	0.032803	0.034303	0.935685	0.90194	0.033745	0.99789	0.426032
2283367	0.027881	0.032824	0.047328	0.737552	0.690323	0.047229	0.998945	0.913926
4601180	0.033284	0.032828	0.035995	0.481641	0.450331	0.03131	0.966245	0.002365
509396	0.015708	0.032858	0.07059	0.546778	0.610515	-0.06374	0.998945	0.770885
1884559	0.005361	0.032861	0.032002	0.995506	0.98818	0.007326	0.915612	1
503555	0.11846	0.032875	0.071173	0.751037	0.79721	-0.04617	1	0.113477
1547099	0.088769	0.032878	0.04131	0.462578	0.39485	0.067728	0.998945	0.698085
4374195	0.010843	0.032887	0.050084	0.278125	0.247312	0.030813	0.996835	1
4016240	0.015822	0.032898	0.023319	0.537578	0.572961	-0.03538	0.996835	0.850101
1422398	0.023323	0.032898	0.049781	0.839662	0.879913	-0.04025	0.983122	1
1408094	0.016829	0.032908	0.053934	0.676715	0.631749	0.044966	0.995781	0.272697
830031	0.309241	0.032925	0.017346	0.654564	0.622845	0.031719	0.99789	0.236589
1874602	0.002524	0.032933	0.039133	0.762448	0.815054	-0.05261	0.998945	0.281837
2348386	0.16384	0.032944	0.10248	0.074689	0.054721	0.019968	1	0.639521
1919001	0.008278	0.032953	0.125771	0.360707	0.443844	-0.08314	0.995781	1
3419461	0.285113	0.032971	0.055867	0.43361	0.398069	0.035541	1	0.772096
3650111	0.15509	0.032992	0.079042	0.153527	0.151288	0.002239	1	0.210599
3650111	0.15509	0.032992	0.079042	0.153527	0.151288	0.002239	1	0.210599
285033	0.033481	0.032997	0.009948	0.33543	0.285408	0.050022	0.994726	0.496091
285033	0.033481	0.032997	0.009948	0.33543	0.285408	0.050022	0.994726	0.496091
1836580	0.022141	0.033031	0.018784	0.928423	0.910944	0.017479	1	1
1181082	0.019335	0.033047	0.015517	0.211458	0.256438	-0.04498	0.99789	0.223618
2981316	0.017944	0.03305	0.031669	0.100622	0.136266	-0.03564	1	0.172448
4612368	0.003175	0.033071	0.073707	0.53212	0.486143	0.045977	0.949367	0.500888
1536316	0.057126	0.033075	0.163745	0.349687	0.313978	0.035708	0.995781	0.666775
4497147	0.029209	0.033093	0.018657	0.901247	0.904506	-0.00326	0.998945	1
314078	0.01139	0.033104	0.015289	0.409751	0.462446	-0.0527	1	0.780585
4362021	0.080169	0.033117	0.054005	0.002132	0	0.002132	0.96308	1
761671	0.370709	0.033181	0.023847	0.408524	0.401075	0.007449	0.99789	0.289004
494176	0.018366	0.033182	0.028332	0.719917	0.767167	-0.04725	1	0.301471
494176	0.018366	0.033182	0.028332	0.719917	0.767167	-0.04725	1	0.301471
1308738	0.013742	0.033199	0.090109	1	0.998927	0.001073	0.998945	1
2439338	0.054902	0.033208	0.033673	0.510395	0.559013	-0.04862	0.998945	0.706935
807649	0.920496	0.03322	0.072992	0.50601	0.493557	0.012453	0.848101	0.612572
2428566	0.059853	0.033229	0.066782	0.487526	0.406652	0.080874	0.998945	0.035113
2428620	0.031982	0.033242	0.055045	0.514553	0.445279	0.069274	0.998945	0.223117
3457649	0.016066	0.033266	0.015566	0.905602	0.871245	0.034357	1	0.40551
830041	0.295834	0.033277	0.017438	0.654886	0.622318	0.032568	0.998945	0.279066
2378951	0.013511	0.033285	0.097817	0.873444	0.844421	0.029023	1	1
782735	0.002875	0.033288	0.12605	0.739627	0.796137	-0.05651	1	0.569549
4610533	0.155333	0.033306	0.064989	0.252599	0.305616	-0.05302	0.995781	0.323987
3901738	0.005008	0.033323	0.001374	0.871353	0.896725	-0.02537	1	0.343794
4241097	0.005715	0.033328	0.091238	0.242171	0.301075	-0.0589	0.995781	0.078769
2217201	0.016917	0.033397	0.407462	0.514553	0.458065	0.056488	0.99789	0.851765
2255713	0.630788	0.03342	0.041165	0.884075	0.859453	0.024622	0.874473	0.678477
4501988	0.014317	0.033421	0.081384	0.352391	0.306867	0.045524	0.998945	0.827656
817046	0.031627	0.033421	0.021963	0.794606	0.757511	0.037095	1	0.705212
3028697	0.017671	0.033433	0.083181	0.461378	0.527115	-0.06574	0.991561	0.852272
2302958	0.044256	0.033452	0.041058	0.807054	0.85515	-0.0481	1	0.853259
1708777	0.022552	0.033466	0.075177	0.23029	0.292918	-0.06263	1	0.576134
3192787	0.015419	0.033474	0.150499	0.839212	0.787257	0.051955	0.996835	1
4235515	0.307515	0.033475	0.02984	0.261006	0.197849	0.063157	0.993671	0.883663
1486709	0.040888	0.033478	0.088073	0.584375	0.641935	-0.05756	0.996835	0.615369

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3688293	0.03589	0.033481	0.046065	0.736345	0.687773	0.048572	0.985232	0.588204
2364391	0.045775	0.033497	0.014956	0.7125	0.755914	-0.04341	0.996835	0.801359
4636290	0.050598	0.033498	0.038708	0.904564	0.881974	0.02259	1	0.263928
4529678	0.023357	0.033516	0.085028	0.643606	0.578603	0.065003	0.986287	0.848218
79047	0.010741	0.033529	0.013739	0.678794	0.620172	0.058623	0.998945	0.92165
1932847	0.02661	0.033533	0.13024	0.332988	0.377682	-0.04469	1	0.767872
3455271	0.006585	0.033534	0.287389	0.642116	0.71828	-0.07616	0.998945	1
1264097	0.003777	0.033544	0.201231	0.910603	0.945279	-0.03468	0.998945	0.008242
3324198	0.037494	0.033564	0.093575	0.9139	0.883871	0.030029	0.998945	0.040058
2117636	0.008453	0.033579	0.426765	0.402287	0.464516	-0.06223	0.99789	0.852266
4041069	0.069155	0.033652	0.018866	0.29668	0.361588	-0.06491	1	0.228966
2314167	0.036147	0.033668	0.068055	0.758873	0.714592	0.04428	0.996835	0.04116
2305534	0.032505	0.033673	0.096427	0.816667	0.788172	0.028495	0.996835	0.331907
615364	0.003658	0.033675	0.014721	0.576923	0.615302	-0.03838	0.996835	0.694748
3132827	0.01493	0.033683	0.186399	0.709375	0.772138	-0.06276	0.994726	0.354712
2256173	0.012015	0.033693	0.052153	0.907676	0.943133	-0.03546	1	0.177915
3482384	0.013595	0.033697	0.076345	0.466102	0.533769	-0.06767	0.982068	0.851223
3476722	0.004329	0.033699	0.054867	0.532158	0.596567	-0.06441	1	0.123592
1431790	0.177384	0.033726	0.087139	0.533264	0.550538	-0.01727	0.99789	0.074902
3455194	0.005059	0.03374	0.288904	0.641667	0.718143	-0.07648	0.994726	1
803756	0.010825	0.033757	0.17746	0.37155	0.323974	0.047576	0.985232	0.202453
2165634	0.003537	0.033759	0.070654	0.331601	0.404301	-0.0727	0.99789	0.500278
314080	0.011678	0.033761	0.014908	0.409751	0.462446	-0.0527	1	0.780585
1375689	0.02489	0.03377	0.01866	0.575935	0.607226	-0.03129	0.904008	0.612637
3124547	0.014106	0.033783	0.032054	0.81289	0.754292	0.058598	0.998945	0.319709
2057849	0.132115	0.033785	0.146242	0.550936	0.593548	-0.04261	0.99789	0.501665
435322	0.079815	0.033795	0.036074	0.536307	0.483836	0.052471	0.99789	0.456937
1750949	0.02968	0.033809	0.087339	0.667015	0.696352	-0.02934	0.996835	0.661686
3359435	0.088768	0.033809	0.093432	0.523923	0.492823	0.0311	0.881857	0.557061
3324223	0.03768	0.033821	0.092894	0.914938	0.88412	0.030818	1	0.108627
637906	0.014947	0.033825	0.103657	0.88278	0.83691	0.04587	1	0.609779
1911788	0.071475	0.033891	0.235696	0.879418	0.92382	-0.0444	0.998945	0.011503
2938816	0.031365	0.033897	0.012141	0.43763	0.391164	0.046466	0.996835	0.559441
3107249	0.046122	0.03395	0.066008	0.208159	0.25162	-0.04346	0.992616	0.174092
2221772	0.021964	0.033972	0.100398	1	0.996781	0.003219	0.998945	1
550291	0.009722	0.033976	0.073908	0.376299	0.350538	0.025762	0.99789	0.610393
1242972	0.057931	0.034027	0.011951	0.539419	0.580472	-0.04105	1	0.505451
4107568	0.01085	0.034051	0.046007	0.985477	0.97103	0.014447	1	1
1430146	0.075519	0.034054	0.07853	0.380252	0.434066	-0.05381	0.982068	0.105441
1885568	0.009027	0.034055	0.101376	0.153527	0.219957	-0.06643	1	0.686107
423444	0.011754	0.034058	0.084588	1	0.994635	0.005365	0.998945	1
4554927	0.005183	0.034069	0.044027	0.683992	0.617711	0.066281	0.995781	0.237317
3173393	0.024649	0.034077	0.309202	0.9341	0.913232	0.020868	0.990506	0.234535
3418443	0.009266	0.034097	0.101862	0.84751	0.888412	-0.0409	1	0.490802
2428605	0.033655	0.034153	0.054308	0.514553	0.445279	0.069274	0.998945	0.223117
902187	0.058149	0.034168	0.191313	0.929461	0.902361	0.0271	1	0.424862
902187	0.058149	0.034168	0.191313	0.929461	0.902361	0.0271	1	0.424862
902187	0.058149	0.034168	0.191313	0.929461	0.902361	0.0271	1	0.424862
2269266	0.585649	0.034194	0.031023	0.574844	0.55794	0.016904	0.998945	0.03927
2269266	0.585649	0.034194	0.031023	0.574844	0.55794	0.016904	0.998945	0.03927
3077567	0.008537	0.034203	0.019979	0.79668	0.839056	-0.04238	1	0.731927
3546444	0.008537	0.034203	0.019979	0.79668	0.839056	-0.04238	1	0.731927
1413226	0.022581	0.034207	0.110594	0.987526	0.967811	0.019715	0.998945	0.382502
3297141	0.04944	0.034232	0.139341	0.841996	0.789247	0.052749	0.99789	0.049858
795789	0.008774	0.034242	0.051383	0.936722	0.899142	0.03758	1	0.799929

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3480150	0.013077	0.034252	0.065682	0.917879	0.877682	0.040197	0.998945	0.664575
2080106	0.023541	0.034254	0.017213	1	0.99676	0.00324	0.991561	1
2283288	0.213767	0.034263	0.043744	0.315353	0.362069	-0.04672	0.99789	0.044307
4436488	0.031718	0.034266	0.044877	0.51556	0.445279	0.070281	1	0.223117
424983	0.826113	0.034269	0.221868	0.99896	0.997849	0.001111	0.99789	1
518283	0.006717	0.034285	0.190648	0.884855	0.92382	-0.03896	1	0.741802
2851999	0.0185	0.034292	0.041849	0.920998	0.892704	0.028294	0.998945	0.807249
2093873	0.030683	0.034309	0.219774	0.881743	0.835837	0.045906	1	0.866093
3557701	0.054419	0.034326	0.10167	0.996888	0.990343	0.006545	1	0.038233
209452	0.005601	0.034335	0.039047	0.994813	0.990343	0.00447	1	1
2097859	0.026895	0.034387	0.020924	0.773013	0.79329	-0.02028	0.991561	0.776282
3107290	0.028627	0.034396	0.076168	0.208506	0.252146	-0.04364	1	0.178776
4131482	0.038044	0.0344	0.028504	0.814583	0.764516	0.050067	0.996835	0.196943
4131482	0.038044	0.0344	0.028504	0.814583	0.764516	0.050067	0.996835	0.196943
4131482	0.038044	0.0344	0.028504	0.814583	0.764516	0.050067	0.996835	0.196943
3649794	0.057685	0.034404	0.022813	0.997807	0.995434	0.002373	0.943038	1
3348669	0.047512	0.034411	0.044357	0.877593	0.829399	0.048194	1	0.188251
696243	0.05862	0.034428	0.090488	0.511603	0.561957	-0.05035	0.985232	1
696243	0.05862	0.034428	0.090488	0.511603	0.561957	-0.05035	0.985232	1
4038939	0.064641	0.03445	0.023033	0.766598	0.736559	0.030038	0.998945	0.63413
494186	0.023748	0.034459	0.030186	0.720374	0.767167	-0.04679	0.998945	0.301471
494186	0.023748	0.034459	0.030186	0.720374	0.767167	-0.04679	0.998945	0.301471
1408096	0.017896	0.034468	0.048479	0.676715	0.631974	0.044741	0.998945	0.272954
1912014	0.012196	0.03447	0.110427	0.971992	0.94206	0.029932	1	1
3107244	0.032603	0.034492	0.073115	0.210417	0.252688	-0.04227	0.996835	0.218615
1804153	0.001879	0.034527	0.034094	0.890852	0.83871	0.052143	0.99789	1
4619654	0.038458	0.034529	0.04254	0.775532	0.812775	-0.03724	0.974684	0.877935
2993710	0.035407	0.034537	0.036561	0.440748	0.390323	0.050426	0.99789	0.4957
1366183	0.018111	0.034539	0.098886	0.938797	0.91828	0.020517	0.998945	0.533212
80907	0.03525	0.034539	0.059728	0.613071	0.558065	0.055006	0.998945	0.850889
767881	0.017136	0.034543	0.028773	0.755187	0.794624	-0.03944	0.998945	0.120241
4055099	0.020709	0.034573	0.057865	0.322479	0.386609	-0.06413	0.990506	0.557843
1003786	0.01685	0.034585	0.114151	0.753813	0.821918	-0.06811	0.946203	0.626008
1804242	0.005321	0.034593	0.083323	0.898129	0.848712	0.049416	0.998945	0.370137
3385901	0.003788	0.034646	0.021889	0.773585	0.728355	0.04523	0.990506	0.195166
1205598	0.675572	0.034657	0.034187	0.799793	0.823656	-0.02386	0.998945	0.023973
2797304	0.390461	0.034661	0.008394	0.111227	0.117457	-0.00623	0.996835	0.005928
724834	0.00609	0.034678	0.068644	0.11722	0.083691	0.033529	1	0:234096
4110484	0.127863	0.0347	0.007705	0.783195	0.740343	0.042852	1	0.809874
2249237	0.012663	0.034785	0.026007	0.859667	0.807527	0.05214	0.99789	0.767153
1340307	0.013742	0.034794	0.092366	1	0.996774	0.003226	0.99789	1
2317948	0.048148	0.034809	0.01122	0.403471	0.446309	-0.04284	0.957806	0.388889
530317	0.009533	0.034817	0.073896	0.72973	0.772043	-0.04231	0.99789	0.234605
1184076	0.058187	0.034835	0.067886	0.928125	0.895923	0.032202	0.99789	0.454774
2639563	0.031968	0.034836	0.098371	0.209474	0.25	-0.04053	0.982068	0.105165
3599880	0.022303	0.034842	0.01967	0.908009	0.87365	0.034359	0.975738	1
1769787	0.06153	0.034891	0.072828	0.988518	0.977371	0.011147	0.994726	1
3600106	0.003268	0.034901	0.015614	0.758368	0.720302	0.038066	0.992616	0.107057
4589935	0.398507	0.034914	0.01959	0.845114	0.839056	0.006059	0.998945	0.863819
2114793	0.070678	0.034914	0.087669	0.374165	0.318792	0.055373	0.945148	0.029066
2468530	0.006746	0.034921	0.056479	0.776151	0.816524	-0.04037	0.995781	0.535317
3309802	0.0124	0.034927	0.168441	0.95332	0.967811	-0.01449	1	1
3642866	0.017193	0.034942	0.032177	0.180873	0.229614	-0.04874	0.998945	0.035264
1083554	0.01973	0.034954	0.00545	0.727178	0.767167	-0.03999	1	1
1978040	0.144401	0.034955	0.090242	0.821206	0.860215	-0.03901	0.99789	0.699994

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2281956	0.010851	0.034968	0.093601	0.923237	0.880645	0.042591	0.998945	1
3527844	0.023818	0.034969	0.020611	0.879668	0.91309	-0.03342	1	1
3706084	0.025443	0.034979	0.010006	0.825726	0.774678	0.051048	1	0.790499
3706084	0.025443	0.034979	0.010006	0.825726	0.774678	0.051048	1	0.790499
4070982	0.029801	0.034999	0.020206	0.664583	0.606223	0.05836	0.99789	0.846492
1117169	0.009881	0.035007	0.028294	0.915975	0.881974	0.034001	1	0.823066
1117169	0.009881	0.035007	0.028294	0.915975	0.881974	0.034001	1	0.823066
4644713	0.036019	0.035012	0.069351	0.658714	0.740343	-0.08163	1	1
1762638	0.015375	0.035016	0.018001	0.460581	0.407527	0.053054	0.998945	0.923476
233904	0.025691	0.035049	0.036165	0.998918	0.990888	0.008029	0.950422	1
3107239	0.035142	0.035067	0.075567	0.210581	0.252146	-0.04157	1	0.178776
3601990	0.012621	0.035072	0.02451	0.89413	0.852174	0.041956	0.988397	0.711324
538466	0.011319	0.03509	0.030799	0.952282	0.929185	0.023098	1	0.718586
3339800	0.162364	0.035107	0.061358	0.562092	0.610209	-0.04812	0.938819	0.224155
1789752	0.011502	0.035109	0.08999	0.852697	0.796137	0.05656	1	0.393081
1627512	0.014112	0.035121	0.093242	1	0.997849	0.002151	0.99789	1
1125272	0.038075	0.035128	0.226736	0.923237	0.95279	-0.02955	1	0.614579
4493241	0.01364	0.035138	0.039282	0.862213	0.902151	-0.03994	0.995781	0.602743
1068562	0.016184	0.03515	0.135323	0.802905	0.751073	0.051832	1	0.082648
2283436	0.025594	0.035154	0.064488	0.744283	0.697425	0.046858	0.998945	0.585017
3321621	0.017403	0.035206	0.008566	0.994703	0.996637	-0.00193	0.968354	1
2911180	0.021988	0.03523	0.022258	0.858921	0.816524	0.042398	1	1
3303200	0.111101	0.035249	0.052189	0.435282	0.385371	0.049911	0.988397	0.489795
3303200	0.111101	0.035249	0.052189	0.435282	0.385371	0.049911	0.988397	0.489795
4040712	0.021087	0.035267	0.077472	0.567708	0.627155	-0.05945	0.995781	0.691302
4083279	0.637116	0.035268	0.265952	0.650943	0.675647	-0.0247	0.992616	0.244626
153492	0.005922	0.03527	0.056423	0.925311	0.888412	0.036899	1	0.245801
3311391	0.090281	0.035273	0.068089	0.225572	0.188985	0.036587	0.995781	0.761815
2246259	0.021088	0.035311	0.100241	0.730769	0.689247	0.041522	0.99789	0.104186
4587624	0.017112	0.035312	0.166559	0.983333	0.970842	0.012491	0.994726	1
4311250	0.830287	0.035313	0.148937	0.979303	0.983032	-0.00373	0.950422	1
4311250	0.830287	0.035313	0.148937	0.979303	0.983032	-0.00373	0.950422	1
4311250	0.830287	0.035313	0.148937	0.979303	0.983032	-0.00373	0.950422	1
4311250	0.830287	0.035313	0.148937	0.979303	0.983032	-0.00373	0.950422	1
1951128	0.012316	0.035317	0.028087	0.64834	0.596774	0.051566	0.998945	0.501524
3285406	0.201983	0.035322	0.064202	0.81639	0.795455	0.020935	0.995781	0.25371
1741862	0.022505	0.035324	0.149475	0.605208	0.677106	-0.0719	0.994726	0.524823
3200322	0.784819	0.035326	0.045743	0.813808	0.795011	0.018797	0.990506	0.085466
2354891	0.234212	0.035345	0.069455	0.541841	0.562771	-0.02093	0.991561	0.508199
1798478	0.085241	0.035345	0.027744	0.997921	0.98927	0.008651	0.998945	1
3107188	0.037722	0.035354	0.073649	0.210581	0.251613	-0.04103	0.998945	0.26799
3203213	0.032809	0.035366	0.054515	0.856681	0.822727	0.033954	0.953586	0.100887
3203213	0.032809	0.035366	0.054515	0.856681	0.822727	0.033954	0.953586	0.100887
2087936	0.252363	0.03539	0.095754	0.536383	0.596774	-0.06039	0.99789	0.773327
1997472	0.010424	0.035391	0.023795	0.93125	0.899142	0.032108	0.99789	1
3455872	0.009076	0.035399	0.081681	0.4139	0.454839	-0.04094	0.998945	0.049334
1461731	0.222542	0.0354	0.026602	0.974874	0.975325	-0.00045	0.825949	1
1622927	0.011611	0.035407	0.157031	0.473517	0.408297	0.06522	0.981013	0.026063
4258466	0.019693	0.035417	0.043645	0.745322	0.714592	0.03073	0.998945	0.211315
795784	0.008938	0.035434	0.048072	0.93763	0.899142	0.038488	0.998945	0.799929
1946940	0.010989	0.035496	0.050204	0.578091	0.638393	-0.0603	0.958861	0.918766
2172342	0.01613	0.035497	0.018915	0.140333	0.195043	-0.05471	0.996835	0.883015
1653025	0.05223	0.035523	0.046752	0.911826	0.885193	0.026633	1	0.175723
1653025	0.05223	0.035523	0.046752	0.911826	0.885193	0.026633	1	0.175723
4072417	0.030199	0.035534	0.146723	0.534232	0.46129	0.072942	0.998945	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2483927	0.244486	0.035544	0.222971	0.672557	0.705376	-0.03282	0.99789	0.655979
2314166	0.014284	0.035554	0.046437	0.564315	0.527957	0.036358	0.998945	0.516414
837520	0.008802	0.035557	0.047576	0.905602	0.935622	-0.03002	1	0.710809
1626974	0.605996	0.035587	0.020876	0.978125	0.976395	0.00173	0.99789	1
2117644	0.021733	0.035596	0.469085	0.721414	0.655914	0.0655	0.99789	0.471849
2295339	0.021683	0.035603	0.069473	0.694387	0.643777	0.05061	0.998945	0.840578
2295339	0.021683	0.035603	0.069473	0.694387	0.643777	0.05061	0.998945	0.840578
4279427	0.01542	0.035608	0.001636	0.936722	0.916309	0.020413	1	1
188308	0.038859	0.035617	0.150408	0.979253	0.98927	-0.01002	1	1
5481	0.002919	0.035638	0.084129	0.751037	0.707527	0.04351	0.998945	0.262078
809244	0.028408	0.035645	0.100841	0.802083	0.827957	-0.02587	0.996835	1
3455311	0.023075	0.035667	0.058354	0.809771	0.845494	-0.03572	0.998945	0.373454
3706056	0.015571	0.035672	0.011834	0.789144	0.735421	0.053723	0.993671	0.633365
3111502	0.088839	0.035688	0.068765	0.208506	0.238147	-0.02964	0.99789	0.521966
2305415	0.012952	0.035708	0.026876	0.515593	0.572043	-0.05645	0.99789	0.393738
4598740	0.03969	0.035725	0.046755	0.8375	0.856989	-0.01949	0.996835	0.012687
4040721	0.011188	0.035755	0.053601	0.842324	0.793991	0.048332	1	0.394523
4040721	0.011188	0.035755	0.053601	0.842324	0.793991	0.048332	1	0.394523
1519639	0.005711	0.035762	0.103231	0.966805	0.938841	0.027964	1	0.685972
342880	0.020872	0.035775	0.080609	0.95332	0.967811	-0.01449	1	1
3070393	0.273734	0.035817	0.017655	0.512474	0.573276	-0.0608	0.996835	0.924551
76656	0.047616	0.035819	0.096192	0.656639	0.709677	-0.05304	0.998945	0.042979
709403	0.013963	0.035825	0.160089	0.403527	0.334764	0.068763	1	0.534026
4298570	0.012568	0.035846	0.065709	0.331878	0.29684	0.035038	0.950422	0.023234
2412727	0.016378	0.03585	0.048958	0.866944	0.839056	0.027888	0.998945	0.731927
4251766	0.007669	0.035865	0.27837	0.638542	0.712121	-0.07358	0.993671	1
1407216	0.019035	0.035868	0.010945	0.940748	0.964592	-0.02384	0.998945	1
1407216	0.019035	0.035868	0.010945	0.940748	0.964592	-0.02384	0.998945	1
1407216	0.019035	0.035868	0.010945	0.940748	0.964592	-0.02384	0.998945	1
2288339	0.003087	0.035872	0.075352	0.794179	0.842672	-0.04849	0.996835	1
4529154	0.006487	0.035873	0.060461	0.985477	0.980687	0.00479	1	1
1521510	0.026889	0.035875	0.032021	0.134656	0.111231	0.023424	0.993671	0.815494
1939427	0.017066	0.035898	0.03445	0.03112	0.013948	0.017172	1	1
1827695	0.009994	0.035929	0.081168	0.731809	0.669892	0.061916	0.99789	0.293959
306010	0.063198	0.03596	0.057663	0.382046	0.421336	-0.03929	0.994726	0.017265
278049	0.010249	0.035963	0.059763	0.334719	0.269313	0.065406	0.998945	0.557506
2377872	0.277622	0.03598	0.231551	0.119149	0.140523	-0.02137	0.979958	1
3984476	0.23189	0.03599	0.008836	0.55083	0.580472	-0.02964	1	0.505451
1181141	0.030909	0.035999	0.01201	0.212058	0.257511	-0.04545	0.998945	0.114881
2654112	0.154097	0.036002	0.145842	0.41805	0.361588	0.056462	1	0.04488
3490312	0.021748	0.036005	0.120518	0.794304	0.852876	-0.05857	0.976793	0.578725
3311560	0.026792	0.036053	0.105417	0.546973	0.596983	-0.05001	0.994726	1
4660968	0.019376	0.03606	0.114004	0	0.003219	-0.00322	1	1
4488038	0.043208	0.036071	0.411893	0.640041	0.70279	-0.06275	1	0.825345
3381858	0.054569	0.036094	0.067497	0.835417	0.868817	-0.0334	0.996835	0.839364
341439	0.033503	0.036119	0.045454	0.675676	0.751613	-0.07594	0.99789	0.046188
3549810	0.013631	0.036131	0.013612	0.700207	0.73927	-0.03906	1	0.335702
1660804	0.014069	0.036148	0.146478	0.924116	0.900215	0.023902	0.998945	0.603958
4129336	0.04976	0.036149	0.136878	0.817427	0.851931	-0.0345	1	0.715492
906331	0.018878	0.036156	0.122379	0.10661	0.141447	-0.03484	0.975738	0.700531
717961	0.032394	0.036164	0.024341	0.438669	0.488197	-0.04953	0.998945	0.853345
2371367	0.039468	0.036176	0.050625	0.40249	0.354077	0.048412	1	0.839593
388093	0.019454	0.036176	0.11426	1	0.997854	0.002146	1	1
2364396	0.031407	0.036181	0.015261	0.370062	0.310753	0.05931	0.99789	0.448939
1888864	0.087867	0.03627	0.157877	0.093361	0.108369	-0.01501	1	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2407361	0.082403	0.036272	0.037521	0.97817	0.964592	0.013578	0.998945	1
2295349	0.021527	0.036299	0.069134	0.693983	0.643319	0.050664	0.99789	0.840051
2010950	0.033538	0.036301	0.119554	0.912863	0.945161	-0.0323	0.998945	0.385305
870989	0.496324	0.03631	0.088145	0.821577	0.784335	0.037242	1	0.220693
2283440	0.015727	0.036334	0.077262	0.748963	0.699571	0.049392	1	0.912228
3412660	0.010041	0.036373	0.042867	0.837161	0.890558	-0.0534	0.996835	1
4055098	0.019692	0.036374	0.065284	0.323958	0.387339	-0.06338	0.99789	0.494658
1918178	0.168376	0.036382	0.035592	0.180498	0.143777	0.036721	1	0.851193
705307	0.020761	0.036393	0.072935	0.911642	0.884946	0.026696	0.99789	0.364797
3297488	0.141318	0.036405	0.04918	0.201042	0.160907	0.040135	0.994726	0.301464
3416566	0.054232	0.036406	0.044725	0.924274	0.904301	0.019973	0.998945	0.596143
1519641	0.005828	0.036407	0.104818	0.966805	0.938841	0.027964	1	0.685972
934090	0.088158	0.036415	0.026781	0.899378	0.922414	-0.02304	0.99789	1
1352455	0.017967	0.036427	0.032037	0.269792	0.207792	0.061999	0.993671	0.15768
1640173	0.311001	0.036429	0.041012	0.419958	0.457974	-0.03802	0.996835	0.779132
4174830	0.045996	0.036432	0.421724	0.640333	0.70279	-0.06246	0.998945	0.825345
2410261	0.013896	0.036454	0.067577	0.661458	0.625536	0.035922	0.99789	0.488932
2428659	0.040107	0.036492	0.053697	0.511411	0.445279	0.066132	1	0.223117
1877265	0.424791	0.036499	0.028691	0.412863	0.362069	0.050794	0.99789	0.920087
1804150	0.002212	0.036503	0.055707	0.892116	0.84086	0.051256	0.998945	0.728073
3260089	0.01396	0.036505	0.078113	0.834029	0.800216	0.033813	0.993671	1
2262676	0.031162	0.036528	0.030371	0.403326	0.443133	-0.03981	0.998945	0.399195
2440886	0.032215	0.036531	0.033244	0.84751	0.878755	-0.03124	1	1
2239797	0.09444	0.036535	0.083788	0.783925	0.822961	-0.03904	0.996835	1
803757	0.044671	0.036566	0.020602	0.818372	0.776824	0.041548	0.996835	0.061426
4546209	0.035315	0.036598	0.071898	0.210581	0.253219	-0.04264	1	0.220435
744981	0.702697	0.0366	0.048284	0.878947	0.895879	-0.01693	0.987342	0.206952
2754408	0.055421	0.036616	0.247981	0.932432	0.911828	0.020604	0.99789	0.23926
2284538	0.008567	0.036618	0.07519	0.93361	0.89485	0.03876	1	0.622991
4097388	0.03433	0.036633	0.049604	0.51556	0.445161	0.070399	0.998945	0.222012
182607	0.006197	0.036651	0.034204	0.827443	0.781116	0.046327	0.998945	0.589537
2069887	0.143956	0.036658	0.126372	0.696466	0.73927	-0.0428	0.998945	0.188137
1553051	0.082566	0.036661	0.082256	0.864496	0.838043	0.026452	0.987342	0.731534
1726982	0.653621	0.03669	0.066339	0.979253	0.983906	-0.00465	1	1
584821	0.014714	0.036707	0.013081	0.675	0.716738	-0.04174	0.99789	0.494207
532845	0.090802	0.036709	0.054714	0.184874	0.150433	0.034441	0.989451	0.855244
2244331	0.084985	0.036713	0.214122	0.616183	0.569892	0.04629	0.998945	0.345225
801759	0.053465	0.036723	0.123626	0.206432	0.160944	0.045487	1	0.606556
1153752	0.211585	0.036723	0.061232	0.932489	0.94869	-0.0162	0.983122	0.621812
3351443	0.035018	0.036728	0.088844	0.753662	0.70202	0.051642	0.996835	0.088953
865545	0.015311	0.036734	0.070507	0.327801	0.293991	0.033809	1	0.824009
4392046	0.06461	0.036746	0.077644	0.485447	0.406652	0.078795	0.998945	0.035113
1079297	0.005251	0.036752	0.015031	0.959459	0.98176	-0.0223	0.998945	1
4224143	0.38146	0.036755	0.08908	0.220954	0.183476	0.037478	1	1
4615613	0.014317	0.036756	0.038279	0.996881	0.984979	0.011903	0.998945	1
3638536	0.052112	0.036772	0.013789	0.96888	0.983906	-0.01503	1	1
4274205	0.088681	0.036775	0.075292	0.584091	0.620413	-0.03632	0.924051	1
275833	0.020129	0.036777	0.131898	0.65272	0.702586	-0.04987	0.993671	0.578495
4560786	0.02054	0.036785	0.086435	0.692144	0.643939	0.048205	0.984177	0.613054
4560786	0.02054	0.036785	0.086435	0.692144	0.643939	0.048205	0.984177	0.613054
4092190	0.065354	0.036799	0.036787	0.880457	0.841935	0.038522	0.99789	0.862074
1146666	0.382853	0.036806	0.470631	0.99676	0.996681	7.88E-05	0.96519	1
4276284	0.040399	0.036828	0.053792	0.513514	0.443966	0.069548	0.996835	0.222151
42081	0.024233	0.036834	0.055764	0.626556	0.680258	-0.0537	1	0.831259
2297273	0.013138	0.036844	0.1202	0.858921	0.892704	-0.03378	1	0.634317

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
382303	0.192808	0.036845	0.10284	0.95	0.964516	-0.01452	0.996835	1
3546450	0.009019	0.036851	0.021044	0.79668	0.839056	-0.04238	1	0.731927
4653500	0.014051	0.036859	0.037933	0.797203	0.856079	-0.05888	0.877637	0.067383
3142597	0.015956	0.036867	0.040895	0.751042	0.795259	-0.04422	0.995781	0.776006
1609816	0.078113	0.036872	0.058834	0.75	0.79721	-0.04721	0.99789	1
1305201	0.018662	0.036872	0.082179	0.4125	0.478355	-0.06585	0.993671	0.455653
1742588	0.126535	0.036937	0.019516	0.970954	0.950644	0.020311	1	1
3382335	0.081783	0.037	0.058509	0.885892	0.854839	0.031053	0.998945	0.354046
92421	0.024339	0.037005	0.183072	0.457974	0.540481	-0.08251	0.971519	0.571994
1466068	0.006475	0.037009	0.076134	0.251037	0.306867	-0.05583	1	0.00629
897208	0.054683	0.037018	0.050158	0.492723	0.550538	-0.05781	0.99789	0.708152
3153443	0.018084	0.037018	0.076743	0.956432	0.966738	-0.01031	1	0.40304
4255647	0.071508	0.037038	0.145958	0.336458	0.376609	-0.04015	0.99789	0.238027
2069871	0.143956	0.037101	0.132354	0.696466	0.73927	-0.0428	0.998945	0.188137
1552662	0.024721	0.037112	0.035188	0.70625	0.654428	0.051822	0.994726	0.013573
897212	0.059555	0.037118	0.056997	0.493763	0.553763	-0.06	0.99789	0.925498
4457915	0.185231	0.037137	0.073832	0.65	0.700431	-0.05043	0.995781	0.657924
3637104	0.615192	0.037142	0.044928	0.98444	0.993548	-0.00911	0.998945	1
1265675	0.119127	0.037167	0.067311	0.927235	0.896774	0.030461	0.99789	1
2305722	0.064501	0.037179	0.078563	0.765625	0.724249	0.041376	0.99789	0.64304
3127731	0.023715	0.037181	0.041518	0.579167	0.645474	-0.06631	0.995781	0.36125
3602324	0.032772	0.037208	0.013303	0.43763	0.391631	0.045999	0.998945	0.627473
2723190	0.020052	0.037219	0.03136	0.098958	0.134698	-0.03574	0.995781	0.16147
292408	0.023493	0.03723	0.147192	0.840625	0.889485	-0.04886	0.99789	0.24433
3510779	0.028901	0.037255	0.270537	0.300626	0.325758	-0.02513	0.992616	0.596354
683958	0.010814	0.037295	0.063444	0.730208	0.758065	-0.02786	0.996835	0.130206
3559899	0.017148	0.037302	0.163786	0.994802	0.992457	0.002346	0.996835	1
2024309	0.045742	0.037307	0.013685	0.408511	0.475771	-0.06726	0.974684	0.70665
1982933	0.014621	0.037326	0.119467	0.537344	0.592275	-0.05493	1	0.564984
662208	0.044267	0.037332	0.072536	0.853734	0.893548	-0.03981	0.998945	0.337733
2449478	0.50961	0.037353	0.040265	0.61945	0.629913	-0.01046	0.982068	0.688408
2449478	0.50961	0.037353	0.040265	0.61945	0.629913	-0.01046	0.982068	0.688408
1650886	0.059853	0.037363	0.190902	0.551975	0.52043	0.031545	0.99789	0.925996
2331523	0.013031	0.03737	0.09856	0.194969	0.23927	-0.0443	0.994726	0.798915
824045	0.016363	0.037374	0.023181	0.908524	0.932403	-0.02388	0.998945	0.253877
4111852	0.009131	0.037392	0.078504	0.652361	0.705495	-0.05313	0.971519	0.498589
2022132	0.078345	0.037407	0.119065	0.607884	0.53871	0.069174	0.998945	0.852169
3455281	0.006054	0.037431	0.299515	0.642708	0.71828	-0.07557	0.996835	0.818815
1789873	0.013948	0.037434	0.089876	0.849057	0.786797	0.06226	0.990506	0.488099
703252	0.038052	0.037459	0.09646	0.994813	0.984979	0.009835	1	1
92435	0.022938	0.03751	0.144048	0.574194	0.645556	-0.07136	0.96519	0.836749
4366014	0.029811	0.037516	0.033246	0.375783	0.429032	-0.05325	0.995781	0.343612
1260394	0.522486	0.037518	0.12169	0.946985	0.958874	-0.01189	0.994726	0.173483
725418	0.01948	0.037524	0.02202	0.977131	0.991416	-0.01429	0.998945	1
1175114	0.005983	0.037554	0.240554	0.538382	0.5	0.038382	0.99789	1
3602325	0.034592	0.037565	0.013704	0.43763	0.392473	0.045157	0.99789	0.628184
870967	0.503671	0.03758	0.085887	0.824689	0.785408	0.039281	1	0.409807
2863269	0.036709	0.037601	0.011633	0.437759	0.390558	0.047201	1	0.560568
3288367	0.009377	0.037607	0.063158	0.890756	0.851293	0.039463	0.991561	0.274935
2160952	0.022927	0.03761	0.013253	0.537736	0.565733	-0.028	0.992616	0.344624
4368276	0.025074	0.037613	0.029932	0.096674	0.12527	-0.0286	0.995781	0.52178
777450	0.009624	0.037613	0.090394	0.902083	0.856989	0.045094	0.996835	0.037359
3709787	0.635428	0.037619	0.143702	0.942827	0.956009	-0.01318	0.998945	0.051638
1349190	0.05644	0.037619	0.032555	0.680585	0.722343	-0.04176	0.991561	0.352601
4618565	0.019093	0.037637	0.033865	0.660083	0.616631	0.043452	0.995781	0.694966

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
765491	0.014974	0.037653	0.014657	0.454357	0.484979	-0.03062	1	0.781626
3192994	0.010726	0.037664	0.050193	0.268191	0.316524	-0.04833	0.998945	0.031881
2432117	0.011793	0.03767	0.052797	0.39834	0.436695	-0.03836	1	0.510154
3107316	0.034067	0.03767	0.083386	0.209812	0.254292	-0.04448	0.996835	0.224185
2093843	0.028926	0.037676	0.257314	0.880705	0.833691	0.047014	1	0.737711
4072719	0.045059	0.037681	0.146762	0.595436	0.564378	0.031058	1	0.131655
4416381	0.025553	0.037718	0.100819	0.148649	0.118026	0.030623	0.998945	0.119214
1652416	0.020682	0.037721	0.084141	0.107292	0.074353	0.032938	0.995781	0.497937
2295323	0.021305	0.03773	0.068037	0.692946	0.642704	0.050242	1	0.762619
2295323	0.021305	0.03773	0.068037	0.692946	0.642704	0.050242	1	0.762619
4558890	0.050676	0.037739	0.2804	0.951245	0.975322	-0.02408	1	1
2091994	0.023613	0.037762	0.023283	0.554054	0.524678	0.029376	0.998945	0.020128
1918982	0.007261	0.037767	0.138434	0.362213	0.442888	-0.08067	0.994726	0.851087
1525545	0.010626	0.037808	0.111947	0.987421	0.9718	0.015621	0.989451	1
4536923	0.007332	0.037813	0.331483	0.784232	0.841202	-0.05697	1	0.606431
1708809	0.037254	0.037833	0.171694	0.222917	0.282189	-0.05927	0.99789	0.302854
2262649	0.029688	0.037834	0.033201	0.404366	0.442888	-0.03852	0.996835	0.347838
3152215	0.240953	0.037835	0.087853	0.521875	0.559783	-0.03791	0.991561	0.636063
2852000	0.016466	0.037852	0.118561	0.662162	0.601293	0.060869	0.996835	0.561213
2295351	0.023409	0.037857	0.070332	0.693983	0.643011	0.050973	0.998945	0.919524
2090650	0.067997	0.037872	0.048475	0.489627	0.550538	-0.06091	0.998945	0.223149
1930976	0.175861	0.037909	0.008947	0.513542	0.462366	0.051176	0.996835	0.709194
3587790	0.003654	0.037914	0.045184	0.26556	0.311159	-0.0456	1	0.052463
2295340	0.022876	0.03792	0.069952	0.693983	0.643319	0.050664	0.99789	0.840051
2295340	0.022876	0.03792	0.069952	0.693983	0.643319	0.050664	0.99789	0.840051
790553	0.155809	0.037923	0.06194	0.220374	0.186695	0.033679	0.998945	0.224585
3702663	0.035275	0.037943	0.037274	0.565762	0.616129	-0.05037	0.995781	0.844535
1754883	0.015993	0.037945	0.119531	0.857588	0.815451	0.042138	0.998945	0.878359
617835	0.084375	0.037978	0.018533	0.813278	0.784946	0.028332	0.998945	0.053271
860004	0.042629	0.038032	0.009682	0.931393	0.904301	0.027092	0.99789	0.055868
1536373	0.04228	0.038038	0.178541	0.34728	0.316129	0.031151	0.994726	0.747991
1048702	0.056644	0.038075	0.060786	0.017635	0.013978	0.003656	0.998945	1
4481465	0.021929	0.038075	0.105428	0.484375	0.546943	-0.06257	0.989451	0.637283
4554541	0.01053	0.038078	0.061381	0.33368	0.269313	0.064367	0.998945	0.557506
4428324	0.295789	0.038086	0.180602	0.579002	0.634698	-0.0557	0.996835	0.133081
5470	0.002809	0.038124	0.083276	0.748441	0.698925	0.049516	0.99789	0.011009
2258905	0.116357	0.038125	0.217701	0.679461	0.711828	-0.03237	0.998945	1
66629	0.058077	0.038134	0.202046	0.238589	0.218884	0.019705	1	1
3986299	0.063608	0.038136	0.103239	0.190871	0.230519	-0.03965	0.995781	0.694678
1622923	0.012307	0.038146	0.160731	0.472917	0.407725	0.065191	0.99789	0.068698
493760	0.032288	0.038156	0.020551	0.065353	0.084764	-0.01941	1	1
3107268	0.031118	0.038188	0.076095	0.20894	0.252146	-0.04321	0.998945	0.178776
264445	0.819664	0.03821	0.010037	0.466387	0.467672	-0.00129	0.991561	0.019868
1427327	0.022784	0.038211	0.091413	0.583682	0.631749	-0.04807	0.992616	0.071974
3844734	0.075449	0.038214	0.062475	0.360743	0.415404	-0.05466	0.998945	0.49096
2216094	0.058273	0.038253	0.09406	0.783195	0.754292	0.028903	1	0.25981
2396216	0.04204	0.038254	0.008654	0.333686	0.27533	0.058356	0.976793	0.059336
1885815	0.007024	0.038262	0.088222	0.390397	0.349138	0.041259	0.994726	6.10E-06
803745	0.022205	0.038277	0.100119	0.384855	0.335837	0.049018	1	0.298734
1912921	0.014758	0.038348	0.032552	0.963542	0.931183	0.032359	0.996835	0.00336
3143327	0.027405	0.038356	0.074003	0.651767	0.727957	-0.07619	0.99789	0.725516
3107222	0.035587	0.038357	0.076839	0.208506	0.251613	-0.04311	0.998945	0.26799
3455247	0.006619	0.038372	0.287491	0.637967	0.712446	-0.07448	1	0.821106
93620	0.143776	0.038384	0.084912	0.996875	1	-0.00313	0.992616	1
3107161	0.032439	0.038387	0.088158	0.210581	0.252688	-0.04211	0.998945	0.218615

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1906162	0.000129	5.83E-05	2.37E-05	0.177755	0.253233	-0.07548	0.996835	0.714149
1906158	0.000181	8.08E-05	2.70E-05	0.178125	0.251613	-0.07349	0.996835	0.622734
1906160	0.000178	0.000105	3.64E-05	0.177824	0.251613	-0.07379	0.994726	0.805738
1906169	0.000276	0.00012	3.31E-05	0.178125	0.249462	-0.07134	0.996835	0.536185
1906163	0.00026	0.000164	4.76E-05	0.178125	0.25	-0.07188	0.995781	0.710457
1906159	0.000309	0.000175	5.37E-05	0.178497	0.25	-0.0715	0.994726	0.710457
3583851	1.96E-05	0.000332	3.73E-05	0.230687	0.28458	-0.05389	0.956751	0.907418
3583851	1.96E-05	0.000332	3.73E-05	0.230687	0.28458	-0.05389	0.956751	0.907418
78896	0.000226	0.000502	6.40E-05	0.348548	0.282796	0.065752	0.998945	0.302935
3449500	0.005738	0.000554	0.000201	0.938797	0.900215	0.038582	1	0.069256
3564463	7.17E-05	0.000655	0.000655	0.622601	0.695556	-0.07295	0.969409	1
3564517	4.88E-05	0.000671	0.000778	0.622129	0.690323	-0.06819	0.995781	0.913926
3869888	0.012626	0.000678	0.002446	0.668435	0.609848	0.058587	0.998945	0.907872
3564788	5.12E-05	0.000713	0.000171	0.60395	0.686422	-0.08247	0.996835	0.666032
3564788	5.12E-05	0.000713	0.000171	0.60395	0.686422	-0.08247	0.996835	0.666032
4545409	2.94E-05	0.000719	0.006607	0.778993	0.731377	0.047616	0.949367	0.276292
3564462	6.19E-05	0.000736	0.000829	0.623701	0.690987	-0.06729	0.998945	0.913775
5523025	0.01208	0.000807	0.000209	0.93763	0.900215	0.037415	0.998945	0.295818
515694	0.000277	0.000834	0.006208	0.85447	0.799356	0.055114	0.998945	0.314623
2221869	0.006488	0.001013	0.002788	0.996888	0.990343	0.006545	1	1
2088029	0.47748	0.001111	0.005463	0.717842	0.728541	-0.0107	1	0.160108
3564773	7.49E-05	0.001122	0.000211	0.60166	0.683476	-0.08182	1	0.594152
3564773	7.49E-05	0.001122	0.000211	0.60166	0.683476	-0.08182	1	0.594152
4540158	0.420254	0.001257	0.003081	0.865625	0.835837	0.029788	0.99789	0.399417
3564466	0.000118	0.001361	0.00208	0.620582	0.684549	-0.06397	0.998945	1
4014524	0.611916	0.001471	0.003003	0.15249	0.155914	-0.00342	0.998945	0.376189
3564832	0.000116	0.001525	0.000165	0.575726	0.656989	-0.08126	0.998945	0.608256
1435501	0.002392	0.001795	0.004553	0.610417	0.659871	-0.04945	0.99789	0.179712
1435501	0.002392	0.001795	0.004553	0.610417	0.659871	-0.04945	0.99789	0.179712
3362992	0.012114	0.001799	0.005792	0.695007	0.640726	0.05428	0.979958	0.715162
105391	0.001016	0.001825	0.007675	0.880705	0.823656	0.057049	0.998945	0.079375
4124501	0.001271	0.001862	0.006225	0.632017	0.685622	-0.05361	0.998945	0.830297
1723519	0.001302	0.001912	0.006885	0.63278	0.685622	-0.05284	1	0.830297
105417	0.001142	0.001978	0.009384	0.880208	0.822961	0.057247	0.99789	0.109707
4271580	0.443037	0.002124	0.006315	0.149378	0.149142	0.000236	1	0.359298
7933520	0.57231	0.002448	0.004808	0.869748	0.83913	0.030617	0.987342	0.298701
6351658	0.009419	0.002458	0.000775	0.913721	0.877682	0.036039	0.998945	0.27909
2270689	0.054977	0.002539	0.002047	0.313278	0.255914	0.057364	0.998945	0.903164
3449497	0.010869	0.002646	0.000847	0.9139	0.877682	0.036218	1	0.27909
1752798	0.000522	0.00285	0.004987	0.448852	0.393319	0.055533	0.994726	1
1906267	0.004126	0.002972	0.001434	0.147799	0.211039	-0.06324	0.990506	0.125948
4600058	0.009333	0.003119	0.006373	0.691909	0.76129	-0.06938	0.998945	0.702262
3564617	0.000248	0.003166	0.002409	0.610417	0.681034	-0.07062	0.995781	0.831507
3564812	0.00018	0.003368	0.000287	0.19917	0.247854	-0.04868	1	0.80362
598296	0.50638	0.003551	0.000335	0.439331	0.448387	-0.00906	0.994726	0.639886
4619535	0.652309	0.003597	0.004811	0.855042	0.826087	0.028955	0.987342	0.329305
3988043	0.202094	0.003748	0.041773	0.996855	0.994589	0.002267	0.990506	1
1435497	0.002749	0.003859	0.013135	0.635135	0.684946	-0.04981	0.99789	0.451615
1435497	0.002749	0.003859	0.013135	0.635135	0.684946	-0.04981	0.99789	0.451615
2258179	0.002035	0.004179	0.01223	0.226141	0.277419	-0.05128	0.998945	0.354379
2258179	0.002035	0.004179	0.01223	0.226141	0.277419	-0.05128	0.998945	0.354379
2258179	0.002035	0.004179	0.01223	0.226141	0.277419	-0.05128	0.998945	0.354379
2921437	0.087831	0.004248	0.01575	0.934647	0.935484	-0.00084	0.998945	1
3869893	0.05371	0.004348	0.011297	0.695479	0.653652	0.041826	0.998945	0.904279
515904	0.004674	0.004894	0.03363	0.165625	0.196121	-0.0305	0.995781	0.376099

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3448989	0.012641	0.005014	0.005572	0.572805	0.587389	-0.01458	0.969409	0.244836
408126	0.064725	0.005082	0.001062	0.700216	0.743619	-0.0434	0.941983	0.704547
660340	0.0016	0.005249	0.011206	0.738589	0.688578	0.050012	0.99789	0.103965
2268594	0.002654	0.005313	0.011223	0.202282	0.246781	-0.0445	1	0.900818
4090194	0.735688	0.00543	0.027557	0.716075	0.706263	0.009812	0.993671	0.501977
414139	0.00044	0.005809	0.001826	0.860707	0.789247	0.07146	0.99789	1
5974942	0.944887	0.005891	0.018684	0.898889	0.895238	0.003651	0.917722	0.110291
4127583	0.002129	0.006113	0.011975	0.785417	0.746767	0.038649	0.995781	0.460929
1756365	0.159873	0.00618	0.002786	0.908996	0.907328	0.001668	0.993671	0.023371
4591337	0.582356	0.006221	0.002609	0.391441	0.373118	0.018322	0.995781	1
3869898	0.129536	0.006646	0.019236	0.664447	0.615676	0.048771	0.995781	0.416142
4527910	0.052456	0.00682	0.048888	0.884615	0.884131	0.000484	1	0.788641
7237789	0.026913	0.006825	0.000535	0.904301	0.894144	0.010157	0.958861	0.61314
3869914	0.081226	0.006835	0.013734	0.882979	0.924433	-0.04145	0.998945	0.646257
2570284	0.000494	0.007058	0.000735	0.801042	0.755914	0.045128	0.996835	0.614787
1906295	0.003024	0.007094	0.010056	0.802905	0.737069	0.065836	0.99789	0.056265
632473	0.00104	0.007133	0.008389	0.699584	0.75	-0.05042	0.998945	0.03502
4775809	0.009988	0.007178	0.000491	0.925	0.910944	0.014056	0.99789	0.394872
1435635	0.007262	0.007389	0.019312	0.225104	0.275751	-0.05065	1	0.163702
1752374	0.595656	0.007437	0.002442	0.389121	0.371767	0.017354	0.993671	0.843083
4508970	0.00282	0.007566	0.010903	0.878378	0.844421	0.033958	0.998945	0.485272
7198756	0.020285	0.007658	0.007844	0.443396	0.448578	-0.00518	0.985232	0.450044
7198756	0.020285	0.007658	0.007844	0.443396	0.448578	-0.00518	0.985232	0.450044
7241763	0.036208	0.007772	0.016843	0.908714	0.920601	-0.01189	1	0.75665
790047	0.818349	0.008012	0.016394	0.855208	0.866667	-0.01146	0.996835	0.691401
1752375	0.569022	0.008018	0.002923	0.610187	0.626609	-0.01642	0.998945	0.843298
5114454	0.030332	0.008101	0.017289	0.908714	0.920601	-0.01189	1	0.75665
1906300	0.027702	0.008423	0.011084	0.826403	0.773118	0.053285	0.99789	0.084784
4560282	0.776502	0.008558	0.03873	0.664241	0.662017	0.002224	0.998945	0.351207
4560282	0.776502	0.008558	0.03873	0.664241	0.662017	0.002224	0.998945	0.351207
1111262	0.007653	0.008585	0.009214	0.76971	0.809013	-0.0393	1	0.653211
4660959	0.002863	0.008705	0.009375	0.87526	0.845161	0.030099	0.99789	0.594049
2814813	0.012334	0.008753	0.014846	0.998963	0.992489	0.006473	1	0.022435
3448925	0.057908	0.009067	0.005638	0.575884	0.587097	-0.01121	0.99789	0.389242
1865009	0.911121	0.009233	0.046172	0.668399	0.66056	0.007839	0.996835	0.469264
1865009	0.911121	0.009233	0.046172	0.668399	0.66056	0.007839	0.996835	0.469264
632472	0.001269	0.009273	0.010817	0.701258	0.753233	-0.05197	0.992616	0.033281
2411758	0.001641	0.009284	0.005052	0.95929	0.934549	0.024741	0.996835	0.434829
1876293	0.117695	0.00943	0.000753	0.885892	0.882796	0.003096	0.998945	0.498022
515715	0.002499	0.009487	0.016404	0.65249	0.584946	0.067543	0.998945	0.63285
3027989	0.017798	0.00952	0.002612	0.817427	0.849462	-0.03203	0.998945	0.027523
337622	0.002629	0.009605	0.033216	0.676349	0.741416	-0.06507	1	0.336374
1906305	0.030453	0.009859	0.014153	0.824689	0.773707	0.050982	0.99789	0.084796
4090221	0.602527	0.010029	0.029494	0.682573	0.666667	0.015906	0.998945	0.531025
3603994	0.00176	0.010091	0.004864	0.599585	0.652688	-0.0531	0.998945	0.608885
2265226	0.0053	0.01039	0.02075	0.787344	0.737124	0.05022	1	0.549658
2265226	0.0053	0.01039	0.02075	0.787344	0.737124	0.05022	1	0.549658
2268666	0.005369	0.010695	0.026864	0.797718	0.743562	0.054156	1	0.545511
2268660	0.005523	0.010929	0.026592	0.798755	0.744635	0.05412	1	0.542475
3490801	0.336516	0.011064	0.061265	0.739627	0.777897	-0.03827	1	0.043286
1546737	0.00585	0.011281	0.035166	0.37526	0.345494	0.029766	0.998945	0.358534
835771	0.049637	0.011287	0.016186	0.850312	0.877419	-0.02711	0.99789	0.66496
4122441	0.901478	0.011295	0.014283	0.916667	0.926882	-0.01022	0.996835	0.496918
4122441	0.901478	0.011295	0.014283	0.916667	0.926882	-0.01022	0.996835	0.496918
4090415	0.584297	0.011419	0.032717	0.678038	0.667391	0.010647	0.979958	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
346359	0.011052	0.011506	0.135902	0.726141	0.769313	-0.04317	1	0.116555
632606	0.052191	0.011627	0.013867	0.982292	0.961373	0.020918	0.99789	1
4253707	0.003158	0.011659	0.038084	0.677755	0.742457	-0.0647	0.996835	0.330908
1876300	0.005947	0.011849	0.003077	0.977178	0.988197	-0.01102	1	1
2268663	0.005905	0.011886	0.02847	0.796875	0.743562	0.053313	0.99789	0.545511
6127569	0.172417	0.012013	0.008201	0.493763	0.523605	-0.02984	0.998945	0.265036
4149780	0.001264	0.012064	0.001856	0.808091	0.770968	0.037124	0.998945	1
3564772	0.00175	0.01233	0.003134	0.176724	0.224719	-0.04799	0.958861	0.101484
3564772	0.00175	0.01233	0.003134	0.176724	0.224719	-0.04799	0.958861	0.101484
5052913	0.353468	0.012641	0.058329	0.180435	0.191964	-0.01153	0.957806	0.648014
4149788	0.010805	0.012877	0.006058	0.162839	0.2	-0.03716	0.995781	0.561674
510803	0.001521	0.013021	0.083419	0.758836	0.810086	-0.05125	0.998945	0.653794
408213	0.050551	0.01327	0.002601	0.68711	0.730022	-0.04291	0.995781	0.724852
408213	0.050551	0.01327	0.002601	0.68711	0.730022	-0.04291	0.995781	0.724852
1906307	0.008783	0.013442	0.018121	0.845436	0.7897	0.055736	1	0.070763
660359	0.003684	0.013651	0.010729	0.872727	0.843387	0.02934	0.918776	0.855494
7354612	0.002315	0.013656	0.012113	0.866183	0.89485	-0.02867	1	0.327241
7354612	0.002315	0.013656	0.012113	0.866183	0.89485	-0.02867	1	0.327241
7354612	0.002315	0.013656	0.012113	0.866183	0.89485	-0.02867	1	0.327241
4429999	0.712949	0.013739	0.006339	0.669792	0.678571	-0.00878	0.993671	1
2757287	0.010091	0.01377	0.044109	0.317125	0.264254	0.05287	0.979958	1
1864995	0.695362	0.013823	0.078529	0.670124	0.667387	0.002738	0.996835	0.463439
1864995	0.695362	0.013823	0.078529	0.670124	0.667387	0.002738	0.996835	0.463439
1546764	0.014243	0.014109	0.06953	0.136268	0.107609	0.02866	0.988397	0.21861
5764035	0.279964	0.014213	0.003996	0.996888	0.995708	0.00118	1	0.006441
5764035	0.279964	0.014213	0.003996	0.996888	0.995708	0.00118	1	0.006441
4767136	0.002945	0.014499	0.006544	0.054979	0.037554	0.017426	1	0.484757
4071759	0.012773	0.014669	0.050038	0.567992	0.533696	0.034296	0.989451	1
5766001	0.135405	0.014799	0.067629	0.996888	0.990323	0.006565	0.998945	1
2043438	0.255155	0.014804	0.009151	0.253638	0.278495	-0.02486	0.99789	0.357343
1208733	0.004544	0.015107	0.052116	0.711579	0.677802	0.033777	0.990506	0.397323
4784253	0.011259	0.015614	0.019494	0.966805	0.953763	0.013042	0.998945	0.614283
4779534	0.011472	0.01586	0.019803	0.966805	0.953863	0.012942	1	0.61431
828163	0.010679	0.01587	0.114009	0.992739	0.997854	-0.00512	1	1
896573	0.490196	0.015919	0.014117	0.828482	0.81867	0.009813	0.998945	0.638961
896573	0.490196	0.015919	0.014117	0.828482	0.81867	0.009813	0.998945	0.638961
598285	0.04779	0.016284	0.00234	0.435789	0.473856	-0.03807	0.985232	0.778779
2057491	0.635684	0.016518	0.003182	0.713693	0.724249	-0.01056	1	0.562266
1435618	0.010492	0.016646	0.042693	0.231328	0.274678	-0.04335	1	0.164807
835776	0.059345	0.016705	0.021734	0.846154	0.875271	-0.02912	0.993671	0.671027
1752395	0.479469	0.016988	0.024465	0.66632	0.664163	0.002157	0.998945	0.917528
636828	0.002966	0.017193	0.041906	0.954167	0.933839	0.020327	0.992616	0.438035
2057498	0.957314	0.017936	0.022137	0.44375	0.425966	0.017784	0.99789	0.047158
3328131	0.003802	0.017944	0.057984	0.667708	0.725806	-0.0581	0.996835	1
1906292	0.016065	0.018077	0.024672	0.821577	0.763948	0.057628	1	0.156995
1906293	0.013785	0.018109	0.02383	0.825364	0.766164	0.0592	0.996835	0.119621
1673510	0.022072	0.018111	0.181024	0.58316	0.527957	0.055203	0.99789	0.643027
660330	0.004917	0.018321	0.019163	0.875262	0.848913	0.026349	0.988397	0.716782
728652	0.007687	0.018455	0.031445	0.708595	0.764579	-0.05598	0.991561	0.19563
6881361	0.065724	0.018614	0.004671	0.687891	0.730519	-0.04263	0.992616	0.636359
6881361	0.065724	0.018614	0.004671	0.687891	0.730519	-0.04263	0.992616	0.636359
1722770	0.006725	0.018694	0.027061	0.912863	0.933476	-0.02061	1	0.710677
632454	0.00898	0.018847	0.026475	0.778008	0.740343	0.037665	1	0.228191
998036	0.594074	0.01898	0.024636	0.273859	0.272043	0.001816	0.998945	0.241694
3433849	0.129678	0.019116	0.03626	0.677386	0.668455	0.008931	1	0.021507

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
105372	0.027498	0.019449	0.009385	0.399168	0.351931	0.047237	0.998945	0.542113
1111214	0.477829	0.019472	0.007026	0.233402	0.248927	-0.01552	1	0.215149
1111214	0.477829	0.019472	0.007026	0.233402	0.248927	-0.01552	1	0.215149
1673498	0.04711	0.01957	0.19242	0.560381	0.507743	0.052638	0.974684	0.778261
1673498	0.04711	0.01957	0.19242	0.560381	0.507743	0.052638	0.974684	0.778261
679157	0.061089	0.019769	0.016418	0.868143	0.870968	-0.00282	0.990506	1
1366690	0.018294	0.020122	0.093564	0.385983	0.416309	-0.03033	0.995781	0.775373
3328132	0.004065	0.020438	0.061499	0.669102	0.725806	-0.0567	0.995781	1
2039268	0.022244	0.020565	0.04791	1	0.997854	0.002146	1	1
408220	0.081088	0.020681	0.004981	0.689189	0.728448	-0.03926	0.996835	0.640636
408220	0.081088	0.020681	0.004981	0.689189	0.728448	-0.03926	0.996835	0.640636
2088011	0.795699	0.020908	0.060438	0.838174	0.841202	-0.00303	1	0.863572
515510	0.005425	0.021133	0.00524	0.509336	0.546237	-0.0369	0.998945	0.454125
611923	0.033726	0.021166	0.01979	0.556133	0.546237	0.009896	0.99789	0.574531
611923	0.033726	0.021166	0.01979	0.556133	0.546237	0.009896	0.99789	0.574531
1888822	0.070112	0.021726	0.030984	0.230769	0.246237	-0.01547	0.99789	0.803862
3328134	0.006352	0.021833	0.022138	0.607884	0.673491	-0.06561	0.99789	0.832865
3007596	0.78146	0.022018	0.069009	0.714137	0.743562	-0.02943	0.998945	0.465599
3007596	0.78146	0.022018	0.069009	0.714137	0.743562	-0.02943	0.998945	0.465599
2345260	0.324691	0.022099	0.039332	0.829876	0.830108	-0.00023	0.998945	1
4526667	0.037414	0.022145	0.032636	0.011411	0.025751	-0.01434	1	1
3328127	0.0059	0.022699	0.017336	0.617954	0.680346	-0.06239	0.993671	0.74852
3449498	0.038184	0.022806	0.093565	0.621875	0.641164	-0.01929	0.995781	0.481232
3430882	0.006988	0.022837	0.091833	0.299793	0.251073	0.04872	1	0.218224
3328133	0.006082	0.023102	0.019408	0.470954	0.407725	0.063229	1	0.847896
515495	0.01409	0.023177	0.001002	0.47921	0.503219	-0.02401	0.998945	0.138906
408182	0.091087	0.023525	0.005645	0.688797	0.726882	-0.03809	0.998945	0.640083
4008516	0.066851	0.023671	0.076735	0.809623	0.760776	0.048848	0.993671	0.443777
4008516	0.066851	0.023671	0.076735	0.809623	0.760776	0.048848	0.993671	0.443777
4008516	0.066851	0.023671	0.076735	0.809623	0.760776	0.048848	0.993671	0.443777
632483	0.012797	0.023713	0.046241	0.773389	0.738197	0.035191	0.998945	0.401722
1888837	0.292066	0.023958	0.019338	0.498956	0.521459	-0.0225	0.996835	0.457608
3455358	0.800365	0.024257	0.067536	0.713098	0.743562	-0.03046	0.998945	0.465599
535755	0.128608	0.024289	0.117108	0.726141	0.736559	-0.01042	0.998945	0.475108
6096417	0.070846	0.024347	0.054836	1	0.995699	0.004301	0.996835	1
6096417	0.070846	0.024347	0.054836	1	0.995699	0.004301	0.996835	1
1722137	0.016592	0.024364	0.110561	0.47921	0.493521	-0.01431	0.995781	0.642657
4583199	0.043254	0.02464	0.064178	0.253112	0.229614	0.023498	1	0.294077
4079419	0.003968	0.024856	0.020092	0.795643	0.76824	0.027403	1	0.119478
3490732	0.407486	0.024924	0.073513	0.23029	0.210753	0.019538	0.998945	0.677323
1581467	0.035088	0.024941	0.008347	0.825	0.802575	0.022425	0.99789	0.88363
105381	0.02864	0.024977	0.010469	0.398129	0.347495	0.050634	0.991561	0.60716
4193165	0.350057	0.024982	0.031153	0.965768	0.965665	0.000102	1	1
4225105	0.025301	0.025053	0.111421	0.670146	0.699134	-0.02899	0.992616	0.439815
2409445	0.135445	0.025058	0.004724	0.745322	0.699571	0.045751	0.998945	0.151364
408228	0.083175	0.025143	0.005243	0.689189	0.728448	-0.03926	0.996835	0.640636
408228	0.083175	0.025143	0.005243	0.689189	0.728448	-0.03926	0.996835	0.640636
2329981	0.044438	0.025454	0.051078	0.302905	0.347312	-0.04441	0.998945	0.608885
4189937	0.010152	0.025604	0.070958	0.31128	0.23356	0.07772	0.951477	0.426116
4034992	0.087036	0.02566	0.034429	0.673237	0.660944	0.012292	1	0.009917
5083712	0.012111	0.025805	0.058621	0.979036	0.969828	0.009208	0.992616	1
690100	0.348261	0.025878	0.033694	0.722453	0.72043	0.002023	0.99789	0.250183
3972352	0.068412	0.025888	0.016969	0.18815	0.222103	-0.03395	0.998945	0.788799
3972352	0.068412	0.025888	0.016969	0.18815	0.222103	-0.03395	0.998945	0.788799
3972352	0.068412	0.025888	0.016969	0.18815	0.222103	-0.03395	0.998945	0.788799

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
3972352	0.068412	0.025888	0.016969	0.18815	0.222103	-0.03395	0.998945	0.788799
3972352	0.068412	0.025888	0.016969	0.18815	0.222103	-0.03395	0.998945	0.788799
3972352	0.068412	0.025888	0.016969	0.18815	0.222103	-0.03395	0.998945	0.788799
3972352	0.068412	0.025888	0.016969	0.18815	0.222103	-0.03395	0.998945	0.788799
3972352	0.068412	0.025888	0.016969	0.18815	0.222103	-0.03395	0.998945	0.788799
3455181	0.810463	0.0261	0.069587	0.7119	0.743506	-0.03161	0.992616	0.464889
4374888	0.046932	0.026228	0.034627	0.011411	0.024784	-0.01337	0.99789	1
5864646	0.027835	0.026439	0.0111	0.738046	0.72103	0.017016	0.998945	0.564504
901139	0.005197	0.026534	0.021098	0.472917	0.524678	-0.05176	0.99789	0.306905
408215	0.085872	0.026641	0.00646	0.688797	0.727957	-0.03916	0.998945	0.639985
408215	0.085872	0.026641	0.00646	0.688797	0.727957	-0.03916	0.998945	0.639985
2271177	0.012577	0.026968	0.136191	0.16805	0.149462	0.018587	0.998945	0.044654
3470418	0.705646	0.027531	0.077719	0.713693	0.745708	-0.03202	1	0.540985
3470418	0.705646	0.027531	0.077719	0.713693	0.745708	-0.03202	1	0.540985
3268522	0.095671	0.027534	0.049588	0.93192	0.940141	-0.00822	0.921941	0.385737
3268509	0.004405	0.027643	0.064761	0.896266	0.935484	-0.03922	0.998945	1
8314531	0.649692	0.027673	0.012421	0.889004	0.895923	-0.00692	1	1
2345312	0.421938	0.027723	0.045386	0.83195	0.828326	0.003624	1	0.871639
430275	0.547409	0.027898	0.0239	0.747917	0.746237	0.00168	0.996835	0.902677
3430875	0.009885	0.028113	0.109587	0.301053	0.252723	0.048329	0.985232	0.324023
4434018	0.026243	0.028186	0.097569	0.129668	0.108602	0.021066	0.998945	0.469285
408249	0.089649	0.028649	0.005571	0.688797	0.725322	-0.03653	1	0.560699
2622020	0.01005	0.028695	0.113614	0.299793	0.252146	0.047647	1	0.325065
7722488	0.151574	0.028726	0.023717	0.998963	0.997854	0.001109	1	1
1995668	0.808296	0.028785	0.018315	0.604772	0.620172	-0.0154	1	0.169559
4016401	0.495789	0.028788	0.267377	0.608259	0.607914	0.000345	0.912447	1
1111213	0.780484	0.02915	0.010273	0.242739	0.259657	-0.01692	1	0.117339
1111213	0.780484	0.02915	0.010273	0.242739	0.259657	-0.01692	1	0.117339
328518	0.01302	0.029152	0.060724	0.897917	0.858836	0.03908	0.995781	0.448729
3430876	0.009907	0.029446	0.116435	0.299376	0.251613	0.047763	0.99789	0.324666
3411535	0.526901	0.029481	0.093923	0.929314	0.939914	-0.0106	0.998945	0.224329
4190166	0.022695	0.029546	0.01336	0.102911	0.067742	0.035169	0.99789	0.457165
835040	0.007562	0.029573	0.023171	0.540541	0.59632	-0.05578	0.994726	0.771889
835040	0.007562	0.029573	0.023171	0.540541	0.59632	-0.05578	0.994726	0.771889
7353343	0.004479	0.029748	0.046056	0.996888	0.984979	0.011909	1	1
814089	0.698942	0.029969	0.003645	0.39501	0.397629	-0.00262	0.996835	0.065555
814089	0.698942	0.029969	0.003645	0.39501	0.397629	-0.00262	0.996835	0.065555
2707613	0.01199	0.030015	0.11582	0.300416	0.252146	0.04827	0.998945	0.325065
4354195	0.442356	0.030199	0.085884	0.23029	0.211373	0.018917	1	0.780818
1510988	0.083111	0.030218	0.103868	0.791494	0.841202	-0.04971	1	0.295736
4482734	0.027974	0.030416	0.049098	0.238589	0.215517	0.023072	0.99789	0.40959
430276	0.497738	0.030532	0.029358	0.755187	0.754292	0.000895	1	0.900475
5752590	0.968859	0.03088	0.097678	0.824635	0.827253	-0.00262	0.996835	0.193823
5752590	0.968859	0.03088	0.097678	0.824635	0.827253	-0.00262	0.996835	0.193823
4231355	0.049402	0.031117	0.087753	1	0.997854	0.002146	1	1
573242	0.070335	0.031136	0.030976	0.834025	0.82618	0.007845	1	0.871836
679143	0.05266	0.031181	0.021715	0.869748	0.87149	-0.00174	0.990506	1
6519803	0.02657	0.031294	0.133983	0.386694	0.418103	-0.03141	0.996835	0.923963
1042971	0.784089	0.031406	0.032222	0.69375	0.709227	-0.01548	0.99789	0.73627
535757	0.169474	0.031707	0.151463	0.726141	0.734409	-0.00827	0.998945	0.406707
1625167	0.014749	0.031789	0.01496	0.566528	0.62069	-0.05416	0.996835	0.430123
598272	0.874602	0.031966	0.005112	0.453222	0.453863	-0.00064	0.998945	0.709105
4764709	0.005343	0.032124	0.035663	0.963617	0.945279	0.018338	0.998945	0.150139

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
4448218	0.002558	0.032285	0.277425	0.699584	0.644086	0.055498	0.99789	0.544228
4222559	0.47585	0.032341	0.025447	0.75	0.745671	0.004329	0.993671	0.902612
133251	0.037408	0.032351	0.096634	1	0.997854	0.002146	0.998945	1
1111217	0.828386	0.032392	0.010929	0.235967	0.246237	-0.01027	0.99789	0.168418
1111217	0.828386	0.032392	0.010929	0.235967	0.246237	-0.01027	0.99789	0.168418
3412509	0.592089	0.032434	0.015204	0.889004	0.89485	-0.00585	1	1
2043396	0.069443	0.032454	0.040189	0.330561	0.367457	-0.0369	0.996835	0.230376
4815191	0.199146	0.032647	0.154247	0.72973	0.734914	-0.00518	0.996835	0.633425
2356391	0.754443	0.033178	0.186394	0.596674	0.586393	0.010281	0.995781	0.631792
611929	0.031209	0.033339	0.040335	0.5587	0.548596	0.010104	0.991561	0.511439
611929	0.031209	0.033339	0.040335	0.5587	0.548596	0.010104	0.991561	0.511439
3688463	0.195973	0.033659	0.087721	0.698133	0.732833	-0.0347	1	0.479588
740440	0.085775	0.033722	0.014926	0.23444	0.280043	-0.0456	1	0.908767
4232865	0.018074	0.033807	0.0982	0.996888	0.991416	0.005472	1	1
4232865	0.018074	0.033807	0.0982	0.996888	0.991416	0.005472	1	1
4756526	0.166227	0.033885	0.093807	0.95933	0.932051	0.027279	0.852321	0.23999
490835	0.005555	0.034096	0.430235	0.994813	1	-0.00519	0.998945	1
515696	0.007497	0.034145	0.179143	0.848233	0.791398	0.056835	0.99789	0.672989
4042442	0.041532	0.034214	0.081431	0.406445	0.339056	0.067389	0.998945	0.836183
4765715	0.011966	0.034325	0.001551	0.981328	0.984979	-0.00365	1	1
7705918	0.021672	0.034593	0.056315	0.911642	0.927957	-0.01631	0.99789	0.722404
4755293	0.283306	0.034922	0.025096	0.893154	0.891631	0.001523	1	0.809209
2936134	0.0185	0.034993	0.184275	0.293803	0.247788	0.046016	0.970464	0.379261
4767125	0.130533	0.035012	0.009958	0.525157	0.496718	0.02844	0.985232	0.77939
2387916	0.362537	0.035142	0.047538	0.121622	0.097639	0.023982	0.998945	1
4633195	0.077539	0.035736	0.048907	0.920925	0.95788	-0.03696	0.82173	0.482793
1132757	0.009003	0.035823	0.068476	0.730126	0.688453	0.041672	0.988397	0.081139
814077	0.067962	0.035948	0.012876	0.71888	0.737634	-0.01875	0.998945	0.401479
814077	0.067962	0.035948	0.012876	0.71888	0.737634	-0.01875	0.998945	0.401479
814077	0.067962	0.035948	0.012876	0.71888	0.737634	-0.01875	0.998945	0.401479
2622021	0.012423	0.036127	0.14088	0.297917	0.252146	0.045771	0.99789	0.325065
535756	0.166356	0.036263	0.150704	0.728216	0.735484	-0.00727	0.998945	0.474356
4035616	0.238188	0.036267	0.053265	0.577801	0.615054	-0.03725	0.998945	0.141819
647028	0.571538	0.036403	0.176687	0.41684	0.404301	0.012539	0.99789	0.101434
8298454	0.51989	0.036596	0.056683	0.863931	0.885045	-0.02111	0.96097	0.639853
2302672	0.026579	0.036624	0.167852	0.667722	0.69214	-0.02442	0.983122	0.510994
2409435	0.077454	0.036754	0.005104	0.78125	0.733906	0.047344	0.99789	0.905634
3998465	0.065013	0.036894	0.060181	0.654812	0.640086	0.014726	0.993671	0.364191
7306849	0.022062	0.037032	0.00694	0.419287	0.364516	0.054771	0.993671	0.109023
8220514	0.032978	0.037085	0.14195	0.948133	0.958155	-0.01002	1	1
3412521	0.579997	0.037447	0.016957	0.889813	0.89485	-0.00504	0.998945	1
1625149	0.021294	0.037866	0.057314	0.929167	0.953863	-0.0247	0.99789	0.61431
1366638	0.013056	0.037942	0.046998	0.774896	0.755365	0.019531	1	0.802033
4020275	0.760911	0.03801	0.02376	0.206499	0.241901	-0.0354	0.991561	0.448689
4537692	0.298707	0.038221	0.052159	0.58159	0.617391	-0.0358	0.989451	0.236719
2039235	0.008032	0.038226	0.063874	0.9158	0.905376	0.010424	0.99789	1
1111218	0.810599	0.03832	0.011684	0.235967	0.251073	-0.01511	0.998945	0.109087
4474895	0.381711	0.038436	0.193138	1	0.995708	0.004292	0.998945	0.006441
1255685	0.231229	0.03854	0.051491	0.135417	0.127957	0.00746	0.996835	0.835555
4614401	0.01973	0.038556	0.103746	0.297917	0.319264	-0.02135	0.993671	0.335
4056387	0.636793	0.038688	0.189621	0.95842	0.9603	-0.00188	0.998945	0.524755
414144	0.00443	0.038811	0.014664	0.885892	0.825107	0.060785	1	0.62922
7163466	0.013326	0.039051	0.048919	0.775468	0.755365	0.020103	0.998945	0.802033
4775001	0.220056	0.039392	0.266397	0.885892	0.87069	0.015202	0.99789	0.540872

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
1187191	0.030965	0.039516	0.122107	0.892116	0.862366	0.029751	0.998945	0.562803
6761913	0.006265	0.039765	0.165887	0.963693	0.979614	-0.01592	1	0.170726
3490706	0.27397	0.039796	0.171576	0.735477	0.775751	-0.04027	1	0.032238
6353598	0.04066	0.039899	0.129866	0.642259	0.607527	0.034733	0.994726	0.628184
490796	0.038272	0.040029	0.113761	0.132017	0.163441	-0.03142	0.99789	0.087815
4448666	0.916989	0.040156	0.027115	0.809771	0.782189	0.027582	0.998945	0.587953
367854	0.407569	0.040208	0.025179	0.178794	0.167026	0.011768	0.996835	0.404693
3490305	0.27165	0.040232	0.051914	0.785115	0.754386	0.030729	0.984177	1
901009	0.014171	0.040243	0.026466	0.538382	0.602151	-0.06377	0.998945	1
3449056	0.065924	0.040521	0.040383	0.435417	0.42382	0.011597	0.99789	0.183929
4158827	0.021983	0.040733	0.112686	0	0.003219	-0.00322	1	1
3455302	0.906456	0.04084	0.051696	0.661826	0.688841	-0.02702	1	0.913906
3455302	0.906456	0.04084	0.051696	0.661826	0.688841	-0.02702	1	0.913906
660766	0.023309	0.040856	0.028913	0.76971	0.816129	-0.04642	0.998945	1
660766	0.023309	0.040856	0.028913	0.76971	0.816129	-0.04642	0.998945	1
515568	0.003103	0.040886	0.006316	0.446985	0.482721	-0.03574	0.995781	0.515006
535763	0.23568	0.041281	0.165717	0.727651	0.732258	-0.00461	0.99789	0.479027
1366643	0.014885	0.041454	0.041008	0.776151	0.757019	0.019131	0.992616	0.704515
2333236	0.023504	0.041626	0.043731	0.742353	0.796069	-0.05372	0.877637	1
4750374	0.015146	0.04172	0.128696	0.98029	0.98927	-0.00898	1	1
4233141	0.532873	0.041723	0.058188	0.849585	0.872318	-0.02273	1	0.835304
1510994	0.040379	0.041741	0.135831	0.642116	0.607296	0.03482	1	0.697805
367391	0.005842	0.041864	0.052595	0.881743	0.846567	0.035176	1	1
2270686	0.016228	0.041898	0.021334	0.256757	0.206263	0.050493	0.995781	0.569526
1366637	0.014429	0.041927	0.049827	0.774428	0.755365	0.019063	0.998945	0.802033
6564163	0.058433	0.042013	0.123504	0.639413	0.607296	0.032117	0.994726	0.560265
1673520	0.051024	0.042138	0.270323	0.550936	0.503219	0.047717	0.998945	0.853297
2057477	0.94096	0.042465	0.003005	0.771875	0.777897	-0.00602	0.99789	1
2039183	0.308403	0.04251	0.042666	0.06341	0.069742	-0.00633	0.998945	0.152866
1722189	0.023363	0.04254	0.144893	0.452183	0.462366	-0.01018	0.99789	0.925759
820285	0.097302	0.042666	0.028338	0.990123	0.997167	-0.00704	0.799578	1
820285	0.097302	0.042666	0.028338	0.990123	0.997167	-0.00704	0.799578	1
4497601	0.017464	0.042782	0.079452	0.917012	0.907328	0.009685	0.99789	1
6251431	0.008365	0.042868	0.189802	0.952632	0.940605	0.012027	0.989451	1
2043433	0.080565	0.042926	0.051702	0.330913	0.36551	-0.0346	0.994726	0.133259
2409762	0.00522	0.043244	0.051451	0.065353	0.101931	-0.03658	1	0.018087
3688473	0.267737	0.043275	0.109043	0.698133	0.729526	-0.03139	0.99789	0.724417
2302671	0.024067	0.043331	0.179694	0.338608	0.312095	0.026513	0.988397	0.588185
2557399	0.028262	0.043348	0.027894	0.98444	0.975269	0.009171	0.998945	1
5321220	0.03834	0.044126	0.144048	0.998956	0.995708	0.003248	0.996835	1
1888844	0.015717	0.044292	0.206579	0.039419	0.050429	-0.01101	1	0.325741
4023739	0.530621	0.044309	0.088634	0.443099	0.458937	-0.01584	0.872363	0.137391
4023739	0.530621	0.044309	0.088634	0.443099	0.458937	-0.01584	0.872363	0.137391
1435514	0.1008	0.044427	0.02444	0.247917	0.213519	0.034397	0.99789	0.213247
1435514	0.1008	0.044427	0.02444	0.247917	0.213519	0.034397	0.99789	0.213247
1435514	0.1008	0.044427	0.02444	0.247917	0.213519	0.034397	0.99789	0.213247
1435514	0.1008	0.044427	0.02444	0.247917	0.213519	0.034397	0.99789	0.213247
3670722	0.044073	0.04454	0.146877	0.452282	0.518319	-0.06604	0.99789	0.228281
835055	0.014701	0.044598	0.051811	0.539583	0.596567	-0.05698	0.99789	0.70038
835055	0.014701	0.044598	0.051811	0.539583	0.596567	-0.05698	0.99789	0.70038
6019749	0.1363	0.044906	0.147154	0.98029	0.991416	-0.01113	1	1
690112	0.887936	0.045092	0.055999	0.844075	0.835837	0.008238	0.998945	0.866093
3490740	0.9567	0.045264	0.046047	0.394191	0.41056	-0.01637	0.99789	0.63141
1597536	0.534234	0.046025	0.204591	0.957292	0.959227	-0.00194	0.99789	0.171109
670813	0.090338	0.046376	0.032173	0.175311	0.139785	0.035526	0.998945	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
6843052	0.02702	0.04647	0.063522	0.996888	0.993521	0.003367	0.996835	1
1208748	0.013497	0.046695	0.113328	0.31289	0.34806	-0.03517	0.996835	0.683502
1510995	0.043079	0.046702	0.155862	0.642116	0.607296	0.03482	1	0.697805
4763446	0.021599	0.046982	0.006055	0.95332	0.958155	-0.00484	1	1
7862331	0.184854	0.047031	0.127053	0.940871	0.953763	-0.01289	0.998945	0.614283
4767101	0.016898	0.047089	0.165558	0.016598	0.008602	0.007995	0.998945	1
7170398	0.045101	0.047239	0.161686	0.94917	0.958155	-0.00898	1	1
7140938	0.047981	0.047273	0.148397	0.641372	0.607296	0.034076	0.998945	0.697805
1624836	0.008075	0.047298	0.107289	0.444328	0.511983	-0.06765	0.986287	0.575661
1748490	0.016483	0.047653	0.076955	0.584025	0.589056	-0.00503	1	0.924013
4495703	0.234055	0.047728	0.132414	0.0861	0.07618	0.009919	1	0.741802
6382600	0.028378	0.047837	0.014561	0.408524	0.357451	0.051073	0.995781	0.128687
1366678	0.022658	0.048338	0.086508	0.726611	0.743011	-0.0164	0.99789	1
4322954	0.013738	0.048487	0.088545	0.76971	0.751082	0.018627	0.995781	0.535615
4779139	0.006414	0.048943	0.169101	0.957469	0.974249	-0.01678	1	0.262015
4549139	0.82506	0.049019	0.033746	0.811203	0.782189	0.029014	1	0.587953
1913006	0.027931	0.049265	0.072403	0.911826	0.928112	-0.01629	1	0.722145
4512909	0.997473	0.049471	0.043998	0.393154	0.411447	-0.01829	0.996835	0.502041
6848152	0.031282	0.050083	0.012531	0.826042	0.771058	0.054983	0.994726	0.793612
6848152	0.031282	0.050083	0.012531	0.826042	0.771058	0.054983	0.994726	0.793612
6848152	0.031282	0.050083	0.012531	0.826042	0.771058	0.054983	0.994726	0.793612
814087	0.038522	0.050174	0.040987	0.747401	0.775378	-0.02798	0.995781	0.89379
814087	0.038522	0.050174	0.040987	0.747401	0.775378	-0.02798	0.995781	0.89379
2928213	0.010493	0.050314	0.124433	0.409186	0.346237	0.062949	0.995781	0.100868
835767	0.394881	0.050398	0.018143	0.604167	0.650215	-0.04605	0.99789	0.684388
346358	0.028743	0.050444	0.136841	0.886458	0.856223	0.030235	0.99789	0.57377
2329038	0.018471	0.050484	0.079955	0.80625	0.828664	-0.02241	0.995781	0.047942
863456	0.06838	0.051172	0.155166	0.956432	0.966738	-0.01031	1	0.40304
4652196	0.08971	0.051232	0.123609	1	0.997849	0.002151	0.99789	1
2409767	0.011636	0.05125	0.043082	0.061458	0.095494	-0.03404	0.99789	0.0049
2409767	0.011636	0.05125	0.043082	0.061458	0.095494	-0.03404	0.99789	0.0049
1752316	0.03669	0.051465	0.152006	0.538095	0.475248	0.062848	0.869198	0.484933
8239901	0.052404	0.051823	0.120385	0.997925	1	-0.00207	0.998945	1
8239901	0.052404	0.051823	0.120385	0.997925	1	-0.00207	0.998945	1
3490300	0.307454	0.052227	0.074124	0.783195	0.751073	0.032122	1	0.710842
3412578	0.100948	0.052458	0.098596	0.45	0.401728	0.048272	0.984177	0.081526
430277	0.223668	0.052508	0.055625	0.896226	0.891775	0.004452	0.990506	1
3848168	0.022013	0.052609	0.02319	0.272606	0.302267	-0.02966	0.998945	0.513173
2457187	0.015179	0.052642	0.082214	0.93361	0.91309	0.02052	1	0.560446
105542	0.121784	0.052819	0.113075	0.901042	0.856989	0.044052	0.996835	0.849713
105542	0.121784	0.052819	0.113075	0.901042	0.856989	0.044052	0.996835	0.849713
105542	0.121784	0.052819	0.113075	0.901042	0.856989	0.044052	0.996835	0.849713
4067212	0.278606	0.05294	0.079414	0.585595	0.571121	0.014474	0.994726	0.704941
7817761	0.052986	0.053071	0.020439	0.82839	0.775269	0.053121	0.988397	0.594718
7817761	0.052986	0.053071	0.020439	0.82839	0.775269	0.053121	0.988397	0.594718
4093643	0.034824	0.053163	0.006413	0.378378	0.420259	-0.04188	0.996835	1
863434	0.049838	0.05341	0.069695	0.943983	0.95279	-0.00881	1	0.269899
7576359	0.623287	0.054185	0.060359	0.866944	0.84607	0.020874	0.990506	1
4231347	0.036008	0.054455	0.05255	0.194792	0.238512	-0.04372	0.988397	0.122935
1752783	0.027898	0.05449	0.043202	0.693856	0.660793	0.033063	0.976793	0.75337
794336	0.062128	0.05485	0.102055	1	0.998927	0.001073	1	1
901013	0.018032	0.054863	0.042744	0.541494	0.602371	-0.06088	0.99789	1
5697539	0.042614	0.054933	0.093415	0.928423	0.930258	-0.00183	1	0.480919
5697539	0.042614	0.054933	0.093415	0.928423	0.930258	-0.00183	1	0.480919
1207819	0.084897	0.054942	0.123856	0.99896	0.997854	0.001106	0.998945	1

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
659501	0.832539	0.055227	0.11666	0.818087	0.798925	0.019163	0.99789	0.112172
3328139	0.015737	0.055252	0.109626	0.16805	0.127682	0.040367	1	0.061086
659451	0.749345	0.055683	0.11695	0.818465	0.801075	0.017389	0.998945	0.079603
5609186	0.369464	0.055719	0.102661	1	0.998927	0.001073	1	1
1700415	0.829726	0.055727	0.077749	0.721992	0.708155	0.013837	1	0.178033
4266361	0.894574	0.055812	0.065669	0.405602	0.433333	-0.02773	0.998945	0.298967
2467276	0.682243	0.056051	0.135234	0.807054	0.813305	-0.00625	1	0.762238
3972324	0.049061	0.056103	0.193595	0.868257	0.885193	-0.01694	1	0.649094
3972324	0.049061	0.056103	0.193595	0.868257	0.885193	-0.01694	1	0.649094
3972324	0.049061	0.056103	0.193595	0.868257	0.885193	-0.01694	1	0.649094
3972324	0.049061	0.056103	0.193595	0.868257	0.885193	-0.01694	1	0.649094
3972324	0.049061	0.056103	0.193595	0.868257	0.885193	-0.01694	1	0.649094
3972324	0.049061	0.056103	0.193595	0.868257	0.885193	-0.01694	1	0.649094
3972324	0.049061	0.056103	0.193595	0.868257	0.885193	-0.01694	1	0.649094
632579	0.085728	0.056279	0.05124	0.98643	0.968817	0.017613	0.995781	1
4546731	0.008031	0.056473	0.09822	0.695021	0.636559	0.058462	0.998945	0.108665
453149	0.021533	0.056706	0.071983	0.085239	0.097639	-0.0124	0.998945	0.107389
659643	0.070673	0.056742	0.124068	0.670124	0.685745	-0.01562	0.996835	0.280467
2489520	0.149431	0.056761	0.307715	0.623701	0.613978	0.009722	0.99789	0.062869
1208277	0.177733	0.056766	0.043636	0.127859	0.153433	-0.02557	0.998945	0.720889
660775	0.032021	0.057182	0.037151	0.770747	0.816129	-0.04538	0.998945	1
6255454	0.934524	0.057373	0.064905	0.403125	0.427957	-0.02483	0.996835	0.393738
4694319	0.061282	0.057423	0.15789	0.88278	0.873391	0.00939	1	0.003048
4388383	0.248257	0.05745	0.084758	0.864017	0.889009	-0.02499	0.993671	0.246346
3684383	0.085002	0.057629	0.105224	1	0.996774	0.003226	0.99789	1
3684383	0.085002	0.057629	0.105224	1	0.996774	0.003226	0.99789	1
4309340	0.527049	0.057759	0.174304	0.909707	0.895981	0.013725	0.913502	0.432377
2258121	0.042176	0.057804	0.023162	0.358333	0.414163	-0.05583	0.99789	0.702916
4258964	0.008934	0.05787	0.082051	0.671162	0.624731	0.046431	0.998945	0.074756
3609594	0.02078	0.058826	0.278017	0.328838	0.380901	-0.05206	1	0.624639
515457	0.023919	0.058883	0.005339	0.624481	0.657328	-0.03285	0.99789	0.122721
4234061	0.088141	0.059236	0.1349	1	0.998915	0.001085	0.992616	1
1752827	0.056148	0.059311	0.052609	0.077963	0.091595	-0.01363	0.996835	1
2222024	0.027131	0.059841	0.197241	0.641079	0.65194	-0.01086	0.99789	1
4127548	0.017365	0.059886	0.058695	0.156639	0.193548	-0.03691	0.998945	0.234416
1830401	0.161648	0.060357	0.084807	0.692308	0.69206	0.000248	0.998945	0.10249
847600	0.072223	0.060398	0.142422	0.363825	0.315054	0.048772	0.99789	0.199129
1207802	0.054859	0.060552	0.078644	0.998963	0.995708	0.003255	1	1
1913493	0.261295	0.061034	0.122414	0.817048	0.804721	0.012327	0.998945	0.767742
1563969	0.057615	0.061333	0.048585	0.890625	0.889485	0.00114	0.99789	1
4503980	0.986471	0.061397	0.072333	0.406054	0.431183	-0.02513	0.995781	0.29899
1331308	0.003651	0.061818	0.044563	0.746875	0.759698	-0.01282	0.995781	0.20281
7452933	0.099449	0.061941	0.03149	0.548017	0.55914	-0.01112	0.995781	0.706935
3313778	0.059494	0.062135	0.222254	0.570539	0.582618	-0.01208	1	0.294483
1089476	0.054813	0.06227	0.276088	0.996881	1	-0.00312	0.99789	1
6777250	0.036241	0.062868	0.005855	0.885882	0.913793	-0.02791	0.876582	0.754931
6777250	0.036241	0.062868	0.005855	0.885882	0.913793	-0.02791	0.876582	0.754931
4127049	0.427754	0.063152	0.046627	0.951193	0.961712	-0.01052	0.954641	0.002311
515257	0.79513	0.063784	0.079038	0.342324	0.322961	0.019362	1	0.671621
794304	0.33128	0.063946	0.148429	0.817427	0.847312	-0.02988	0.998945	0.149556
2793744	0.881198	0.063969	0.072936	0.403125	0.428112	-0.02499	0.99789	0.394934
659680	0.137208	0.064168	0.121815	0.679461	0.687768	-0.00831	1	0.332063

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
632600	0.148671	0.064197	0.080963	0.98029	0.962366	0.017925	0.998945	1
4023740	0.924506	0.064223	0.07404	0.405208	0.431818	-0.02661	0.993671	0.296696
1538119	0.043672	0.064456	0.071851	0.440087	0.383772	0.056315	0.96519	1
1406391	0.07687	0.064529	0.05386	0.323899	0.345572	-0.02167	0.991561	0.53846
1563964	0.055628	0.064801	0.049592	0.110187	0.110515	-0.00033	0.998945	1
4111339	0.148819	0.065023	0.063705	0.060417	0.041845	0.018571	0.99789	0.186141
105374	0.163566	0.06515	0.066575	0.460638	0.428261	0.032377	0.981013	0.634233
435790	0.415977	0.065189	0.121551	0.804979	0.843348	-0.03837	1	0.114123
660746	0.023409	0.065235	0.050937	0.770833	0.817495	-0.04666	0.994726	1
4541820	0.528355	0.065251	0.084583	0.898721	0.894273	0.004448	0.973629	0.075336
4541820	0.528355	0.065251	0.084583	0.898721	0.894273	0.004448	0.973629	0.075336
723782	0.572584	0.065329	0.209372	0.846555	0.829694	0.016861	0.988397	0.618825
660812	0.02983	0.065633	0.037033	0.77027	0.813305	-0.04303	0.998945	0.878523
4601930	0.617742	0.066207	0.072305	0.827815	0.801606	0.026209	0.937764	0.173605
901136	0.031937	0.066253	0.222068	0	0.004292	-0.00429	1	0.006441
4546736	0.010351	0.06661	0.094384	0.671518	0.625536	0.045981	0.998945	0.075141
4392833	0.255547	0.066646	0.101859	0.863542	0.889009	-0.02547	0.995781	0.246346
659418	0.102275	0.066704	0.105518	0.943983	0.953863	-0.00988	1	0.252112
3609648	0.025958	0.066858	0.048222	0.954357	0.977468	-0.02311	1	0.205791
2043359	0.325562	0.067461	0.070392	0.324689	0.341595	-0.01691	0.99789	0.681072
2043359	0.325562	0.067461	0.070392	0.324689	0.341595	-0.01691	0.99789	0.681072
2039276	0.034468	0.067585	0.097274	0.911826	0.908798	0.003027	1	0.785256
728627	0.027856	0.067682	0.204357	0.748441	0.788337	-0.0399	0.995781	0.402422
5201068	0.036281	0.068214	0.014442	0.830913	0.772826	0.058087	0.993671	1
5201068	0.036281	0.068214	0.014442	0.830913	0.772826	0.058087	0.993671	1
5201068	0.036281	0.068214	0.014442	0.830913	0.772826	0.058087	0.993671	1
4487171	0.01581	0.068309	0.059082	0.995851	0.993534	0.002316	0.99789	1
4767518	0.549115	0.068405	0.044243	0.91383	0.911957	0.001873	0.981013	0.38002
863519	0.210326	0.06868	0.014149	0.698133	0.731681	-0.03355	0.99789	0.155739
57867	0.023686	0.069338	0.095053	0.171518	0.145161	0.026356	0.99789	0.259245
535746	0.210236	0.069584	0.203138	0.698545	0.698498	4.68E-05	0.998945	0.912438
1233304	0.129924	0.069687	0.210104	0.378631	0.386266	-0.00764	1	0.495032
660816	0.03149	0.069813	0.041996	0.771784	0.813978	-0.04219	0.998945	0.878238
646980	0.795671	0.069823	0.194824	0.39501	0.399142	-0.00413	0.998945	0.053732
7621844	0.275257	0.070031	0.044263	0.006289	0.004329	0.00196	0.990506	1
3434705	0.265978	0.070197	0.166752	0.399168	0.367457	0.031712	0.996835	0.548833
3605980	0.017011	0.070235	0.15912	0.425732	0.367457	0.058275	0.993671	0.071861
612617	0.021877	0.070493	0.214251	0.434238	0.370968	0.06327	0.995781	1
80202	0.670328	0.070513	0.036321	0.506224	0.497845	0.008379	0.99789	0.306954
80202	0.670328	0.070513	0.036321	0.506224	0.497845	0.008379	0.99789	0.306954
2270696	0.043593	0.071163	0.039605	0.364108	0.324731	0.039377	0.998945	0.751041
660805	0.108146	0.071213	0.109648	0.276507	0.296137	-0.01963	0.998945	0.374024
3869876	0.285584	0.071317	0.081358	0.61518	0.648101	-0.03292	0.995781	0.807692
7062658	0.118132	0.071499	0.244642	0.986486	0.977419	0.009067	0.99789	1
2480290	0.033774	0.071581	0.174402	1	0.997849	0.002151	0.996835	1
2057496	0.730578	0.071882	0.018859	0.735967	0.745161	-0.00919	0.99789	0.627392
3979461	0.948221	0.072059	0.100554	0.192946	0.190323	0.002623	0.998945	0.881137
4225906	0.125282	0.072092	0.069694	0.306941	0.268889	0.038053	0.96097	0.188335
515561	0.00795	0.072304	0.019484	0.428274	0.464592	-0.03632	0.998945	1
3313705	0.071437	0.072308	0.096446	0.312903	0.308534	0.004369	0.972574	0.912869
6549328	0.119144	0.072325	0.246692	0.986515	0.977468	0.009047	1	1
4299066	0.19323	0.072622	0.080579	0.675311	0.646996	0.028315	1	0.760871
4042447	0.117826	0.072629	0.247917	0.986515	0.977468	0.009047	1	1
901468	0.25456	0.072732	0.087368	0.647917	0.655914	-0.008	0.996835	0.35488

snp_id	nda01_all_	nda01_reg	nda01_reg	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_	nda01_ig_
2420865	0.059184	0.072865	0.073348	0.982365	0.995708	-0.01334	1	1
1209387	0.037964	0.072879	0.151101	0.740664	0.729614	0.01105	1	1
4915119	0.032553	0.073163	0.097519	0.978216	0.972103	0.006113	1	1
1888848	0.027737	0.073169	0.284132	0.960581	0.951717	0.008864	1	1
3477774	0.03127	0.07325	0.086667	0.45738	0.435345	0.022036	0.996835	0.508701
2088008	0.701146	0.073441	0.058167	0.920124	0.92382	-0.0037	1	1
2420816	0.679396	0.073617	0.16877	0.767094	0.758352	0.008742	0.9673	0.608987
2409371	0.414595	0.073755	0.079443	0.793139	0.75	0.043139	0.998945	0.901624
4381275	0.033588	0.073957	0.178291	1	0.997854	0.002146	1	1
4667514	0.033595	0.073958	0.178239	1	0.997849	0.002151	0.998945	1
3631114	0.015447	0.07401	0.109135	0.998963	0.994635	0.004327	1	1
1215237	0.013674	0.074283	0.03638	0.616854	0.649775	-0.03292	0.937764	0.001234
1722931	0.405458	0.074327	0.039773	0.620042	0.621505	-0.00146	0.995781	0.280044
80266	0.135359	0.074329	0.119219	0.224947	0.225336	-0.00039	0.96519	0.137763
80266	0.135359	0.074329	0.119219	0.224947	0.225336	-0.00039	0.96519	0.137763
4323371	0.12548	0.074616	0.209606	0.384855	0.414163	-0.02931	1	0.848769
598273	0.621246	0.074636	0.031255	0.322398	0.32809	-0.00569	0.935654	0.237047
368002	0.038534	0.074657	0.362212	0.553942	0.580645	-0.0267	0.998945	0.848952
3865629	0.147324	0.074662	0.264295	0.998667	1	-0.00133	0.996835	1
3449911	0.836064	0.074672	0.154005	0.907484	0.906652	0.000832	0.998945	0.047593

snp_id	nda01_ig_	nda01_ig_	nda01_reg	nda01_reg	nda01_rep	nda01_rep	nda01_rep	nda01_rep
83237	7.28E-05	3.12E-05	0.000116	0.000392	0.520318	0.589024	-0.06871	0.994903
811165	0.006178	0.004733	0.00273	0.000667	0.59243	0.658596	-0.06617	1
4496443	0.006168	0.010957	0.030554	0.034645	0.992218	0.986264	0.005954	0.895005
4496443	0.006168	0.010957	0.030554	0.034645	0.992218	0.986264	0.005954	0.895005
4496443	0.006168	0.010957	0.030554	0.034645	0.992218	0.986264	0.005954	0.895005
4496443	0.006168	0.010957	0.030554	0.034645	0.992218	0.986264	0.005954	0.895005
4496443	0.006168	0.010957	0.030554	0.034645	0.992218	0.986264	0.005954	0.895005
4496443	0.006168	0.010957	0.030554	0.034645	0.992218	0.986264	0.005954	0.895005
1446001	0.000782	0.001391	0.000518	0.003275	0.756276	0.79564	-0.03936	0.861366
872808	0.006206	0.005271	0.005728	0.011064	0.759683	0.816748	-0.05706	0.998981
4501073	0.006409	0.005687	0.004086	0.010138	0.756162	0.808717	-0.05255	1
736995	0.00061	0.00063	0.002554	0.00156	0.957447	0.914044	0.043403	0.995923
2452235	0.007936	0.009418	0.008378	0.015974	0.757117	0.81432	-0.0572	0.992864
872831	0.006452	0.005045	0.008857	0.022499	0.766547	0.819512	-0.05296	0.987768
3318178	0.00614	0.009181	0.000263	0.000326	0.654529	0.612219	0.04231	0.982671
1445885	0.001657	0.003073	0.008342	0.031853	0.693137	0.739726	-0.04659	0.891947
736943	0.000325	0.000497	0.001963	0.002552	0.910053	0.864634	0.045419	0.995923
2631830	8.35E-05	0.000176	0.000127	7.19E-05	0.655203	0.635922	0.01928	0.997961
3318169	0.0097	0.012417	0.00023	0.000263	0.655203	0.621065	0.034137	0.998981
702419	0.000329	0.000356	0.000925	0.005168	0.227993	0.271186	-0.04319	1
811194	0.008271	0.007379	0.006572	0.001031	0.604754	0.656404	-0.05165	0.992864
2379416	0.01828	0.020273	0.005098	0.009243	0.885362	0.860775	0.024587	0.998981
1446029	0.000123	0.000192	0.000887	0.002626	0.729245	0.777188	-0.04794	0.924567
4319486	2.88E-06	9.34E-07	5.50E-06	5.25E-05	0.499067	0.465879	0.033188	0.93476
3702837	0.000433	0.000363	7.35E-05	9.68E-05	0.409331	0.456416	-0.04709	1
1445915	0.000599	0.000924	0.003053	0.015673	0.714789	0.751214	-0.03642	0.998981
1749243	0.00081	0.001345	0.005738	0.031706	0.963028	0.934625	0.028403	1
1749244	0.000838	0.001377	0.005824	0.032134	0.963028	0.934625	0.028403	1
3311454	0.013602	0.009186	0.014073	0.09887	0.692782	0.753027	-0.06024	1
1749237	0.000633	0.001109	0.004938	0.029123	0.965669	0.938257	0.027412	1
3702834	0.000812	0.000673	7.20E-05	9.74E-05	0.409171	0.455097	-0.04593	0.997961
1445945	0.000488	0.000754	0.002646	0.014026	0.713028	0.748184	-0.03516	1
736949	0.002163	0.002711	0.010054	0.005037	0.962081	0.925971	0.03611	0.997961
1445953	0.000534	0.000837	0.003325	0.013746	0.714789	0.755448	-0.04066	1
410868	0.000879	0.001562	0.002408	0.001901	0.675	0.622642	0.052358	0.908257
4205013	0.000598	0.000901	0.003351	0.013849	0.287234	0.245742	0.041492	0.993884
1445934	0.000644	0.001001	0.003054	0.015864	0.713404	0.748786	-0.03538	0.997961
1446047	0.000314	0.000468	0.001761	0.007111	0.715564	0.749383	-0.03382	0.982671
971425	0.046596	0.06689	0.039251	0.150819	0.865065	0.818063	0.047002	0.940877
2452239	0.016919	0.015001	0.009381	0.031826	0.743386	0.800242	-0.05686	0.998981
1445952	0.000582	0.000956	0.003757	0.014885	0.714159	0.754854	-0.0407	0.995923
1227452	0.004242	0.002293	0.009322	0.001919	0.877641	0.900243	-0.0226	0.997961
4237765	0.025521	0.045566	0.117335	0.426042	0.40669	0.337772	0.068918	1
1749239	0.000633	0.001109	0.004938	0.029123	0.965669	0.93932	0.026349	0.998981
2012929	0.007172	0.008918	0.030646	0.022167	0.738722	0.832461	-0.09374	0.931702
1732526	0.000107	0.000182	0.000698	0.002325	0.806604	0.828042	-0.02144	0.925586
1911997	0.000616	0.000924	0.002387	0.036316	0.814672	0.778075	0.036597	0.909276
1445933	0.000416	0.000672	0.001962	0.008716	0.716049	0.747573	-0.03152	0.997961
1863818	0.01243	0.02695	0.082171	0.136718	0.624334	0.554612	0.069722	0.993884
1448301	0.00065	0.001012	0.003279	0.01604	0.286092	0.251816	0.034276	1
4349212	0.02213	0.015505	0.013193	0.010292	0.669039	0.597561	0.071478	0.990826
3318164	0.015056	0.019808	0.000354	0.000391	0.34331	0.377427	-0.03412	0.998981
1445892	0.000767	0.001267	0.003654	0.01911	0.713781	0.747573	-0.03379	0.996942
1445954	0.002091	0.002689	0.009303	0.035177	0.743772	0.790244	-0.04647	0.990826
4355001	2.25E-06	6.89E-07	4.80E-06	7.89E-05	0.503559	0.530562	-0.027	0.989806

snp_id	nda01_ig_	nda01_ig_	nda01_reg	nda01_reg	nda01_rep	nda01_rep	nda01_rep	nda01_rep
1445914	0.00062	0.000983	0.002973	0.014657	0.714664	0.746341	-0.03168	0.994903
1445929	0.000765	0.001179	0.00377	0.015313	0.713908	0.748184	-0.03428	1
1445979	0.000238	0.000367	0.00153	0.006874	0.713404	0.747573	-0.03417	0.997961
415665	0.002975	0.005724	0.017526	0.029425	0.523852	0.587591	-0.06374	0.995923
1445900	0.00062	0.001008	0.003763	0.018335	0.714789	0.748786	-0.034	0.998981
1126176	0.006116	0.013633	0.045958	0.050058	0.390845	0.323245	0.067601	1
1445881	0.000789	0.001266	0.004401	0.019965	0.714286	0.748786	-0.0345	0.997961
1126166	0.007012	0.014604	0.04977	0.043549	0.391343	0.322816	0.068527	0.996942
1762509	3.87E-05	3.11E-05	2.34E-06	7.83E-07	0.909735	0.927873	-0.01814	0.992864
1445873	0.000102	0.000238	0.000695	0.008337	0.841189	0.874652	-0.03346	0.863405
1445925	0.000673	0.001104	0.004051	0.019367	0.713908	0.748184	-0.03428	1
1126170	0.005135	0.011281	0.039375	0.046547	0.389771	0.323601	0.06617	0.996942
1445878	0.000728	0.001157	0.004096	0.019511	0.714286	0.748184	-0.0339	0.998981
4107752	0.010603	0.006767	0.002913	0.007943	0.027289	0.048426	-0.02114	1
1445904	0.000834	0.001302	0.004564	0.02141	0.714286	0.748184	-0.0339	0.998981
4031270	8.96E-06	3.09E-06	1.85E-05	0.000209	0.520246	0.54733	-0.02708	0.998981
3455452	2.88E-06	1.12E-06	9.38E-06	0.000199	0.49823	0.530488	-0.03226	0.993884
3455466	3.37E-06	1.29E-06	1.17E-05	0.000236	0.497345	0.530562	-0.03322	0.992864
1273588	0.002091	0.001826	0.002116	0.003397	0.803887	0.842615	-0.03873	0.997961
3318145	0.013922	0.018257	0.00057	0.00056	0.34331	0.377427	-0.03412	0.998981
3318142	0.014455	0.018991	0.000573	0.000557	0.34331	0.376513	-0.0332	1
1936542	0.004595	0.003861	0.009127	0.001265	0.369027	0.408759	-0.03973	0.994903
1445995	0.000444	0.000647	0.002753	0.011943	0.713781	0.749392	-0.03561	0.995923
1126179	0.00569	0.012264	0.042305	0.04463	0.389576	0.324818	0.064758	0.995923
1445897	0.000826	0.001299	0.004771	0.023053	0.714789	0.748184	-0.0334	1
1445917	0.000536	0.000842	0.002697	0.013976	0.716049	0.746973	-0.03092	0.998981
2803739	0.015005	0.019881	0.000633	0.000615	0.34331	0.377427	-0.03412	0.998981
1446025	0.000347	0.000535	0.002171	0.008759	0.714286	0.746359	-0.03207	0.997961
4031288	3.18E-06	1.27E-06	1.08E-05	0.000275	0.497359	0.529126	-0.03177	0.998981
1445884	0.000551	0.000906	0.003619	0.016595	0.715669	0.748184	-0.03252	1
2752035	3.31E-06	1.29E-06	1.01E-05	0.000233	0.498227	0.529197	-0.03097	0.993884
1446011	0.000436	0.000734	0.002625	0.00828	0.708627	0.74092	-0.03229	1
3455457	4.26E-06	1.54E-06	1.18E-05	0.000268	0.497359	0.529056	-0.0317	1
4264889	3.60E-06	1.23E-06	8.58E-06	0.000126	0.496466	0.468523	0.027943	0.997961
4001715	0.006964	0.005201	0.003213	0.007913	0.346018	0.36253	-0.01651	0.994903
4031284	3.60E-06	1.36E-06	9.30E-06	0.000102	0.493783	0.466993	0.026791	0.990826
1446053	0.00032	0.000455	0.001973	0.008267	0.715669	0.747573	-0.0319	0.998981
2960222	1.07E-05	3.38E-06	2.45E-05	0.00022	0.479718	0.452555	0.027163	0.996942
1446007	0.000386	0.00057	0.002333	0.010211	0.714789	0.747573	-0.03278	0.998981
3640928	0.000467	0.000837	0.00187	0.006488	0.887411	0.863081	0.024331	0.991845
3455256	5.66E-06	1.66E-06	1.06E-05	0.000121	0.501852	0.529948	-0.0281	0.941896
4612615	7.67E-06	2.94E-06	1.94E-05	0.000281	0.494545	0.462406	0.032139	0.96738
3640896	0.007012	0.007658	0.008727	0.010547	0.86067	0.822034	0.038636	0.998981
4264888	5.68E-06	2.17E-06	1.43E-05	0.000153	0.494475	0.464935	0.02954	0.945973
227553	0.002682	0.004209	0.016751	0.004183	0.811287	0.86618	-0.05489	0.996942
227553	0.002682	0.004209	0.016751	0.004183	0.811287	0.86618	-0.05489	0.996942
4355000	4.52E-06	1.99E-06	1.53E-05	0.000222	0.497359	0.527913	-0.03055	0.998981
3130336	0.006858	0.006891	0.001939	0.004395	0.100352	0.105327	-0.00497	1
4031272	9.66E-06	3.02E-06	2.33E-05	0.000219	0.502698	0.535088	-0.03239	0.973496
4424141	2.98E-06	1.08E-06	8.10E-06	0.000106	0.4947	0.468523	0.026177	0.997961
4031282	6.36E-06	2.41E-06	1.73E-05	0.000257	0.50531	0.535539	-0.03023	0.991845
147505	0.0298	0.033235	0.052592	0.136215	0.396277	0.334146	0.06213	0.992864
4295763	9.93E-06	3.92E-06	2.64E-05	0.000425	0.518486	0.544903	-0.02642	0.998981
4429642	0.067982	0.058299	0.024328	0.037947	0.946652	0.893678	0.052973	1
702417	0.000207	0.000201	0.000884	0.004838	0.205986	0.245763	-0.03978	1

DEMANDE OU BREVET VOLUMINEUX

LA PRÉSENTE PARTIE DE CETTE DEMANDE OU CE BREVET COMPREND PLUS D'UN TOME.

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