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(54) Title: BIOMARKERS FOR ASSESSING PERIPHERAL NEUROPATHY RESPONSE TO TREATMENT WITH A PROTEASOME INHIBITOR

(57) Abstract: The present invention provides methods for identifying patients at increased risk of developing an adverse neurological event in response to a cancer treatment. Methods also include modifying the treatment regimen of said patient dependent on the presence or absence of biomarkers in the patient.

BIOMARKERS FOR ASSESSING PERIPHERAL NEUROPATHY RESPONSE TO TREATMENT WITH A PROTEASOME INHIBITOR

5 CROSS REFERENCE TO RELATED APPLICATION

This application claims priority to provisional application Serial Number 61/162,848, filed March 24, 2009.

FIELD OF THE INVENTION

10 The present invention relates generally to the field of pharmacogenomics, and more specifically to the pharmacogenomic analysis of peripheral neuropathy candidate genes.

BACKGROUND OF THE INVENTION

15 Treatment with cancer drugs such as bortezomib has been associated with adverse events (AE) such as peripheral neuropathy (PN). Bortezomib-induced peripheral neuropathy typically occurs within the first courses of treatment with bortezomib and generally reaches a plateau at cycle 5 (Windebank & Grisold (2008) *J. Peripher. Nerv. Syst.* 13:27-46). Primarily, a small fiber and painful, axonal, 20 sensory distal neuropathy is produced. The associated pain has a mean rating of 7.8 (on scale of 0 for no pain and 10 for worst imaginable pain) (Cata *et al.* (2007) *J. Pain* 8:296-306).

25 Bortezomib-induced pain is associated with three major fiber types (A β , A δ and C caliber primary afferent fibers) in sensory nerves. An electrophysiologic nerve conduction study shows low amplitude of sensory action potential (distal, sensory, axonal neuropathy) (Richardson *et al.* (2006) *J. Clin. Oncol* 24:3113-3120). Conduction studies are consistent with primary or secondary demyelination process due to primary myelin-Schwann cell damage or degeneration of fast-conducting fibers (demyelination neuropathy noted in ulnar nerves) (Badros *et al.* (2007) *Cancer* 110: 1042-1049).

30 Mitochondrial and endoplasmic reticulum damage in addition to other factors may play a key role in bortezomib-induced peripheral neuropathy development in

humans. Bortezomib activates the mitochondrial-based apoptotic pathway (Pei *et al.* (2004) *Clin. Cancer Res.* 10:3839-3852). Bortezomib may also play a role in disregulation of neurotrophins as evidenced by inhibition of NF- κ B activation which has been shown to block transcription of nerve growth factor (NGF) mediated 5 neuron survival (NGF induces differentiation and survival of sensory nerve cells) (Landowski *et al.* (2005) *Cancer Res.* 65:3828-3836).

It has been observed that bortezomib-induced peripheral neuropathy is predominately sensory. Patients with pre-existing signs of peripheral neuropathy may experience worsening peripheral neuropathy during treatment. Dose reduction 10 resulted in improvement or resolution of peripheral neuropathy in 51% of patients with >Grade 2 PN in a phase 2 multiple myeloma study. Dose discontinuation resulted in improvement or resolution of peripheral neuropathy in 73% of patients discontinuing due to Grade 2 peripheral neuropathy or who had >Grade 3 peripheral neuropathy in a phase 2 multiple myeloma study.

15 Adverse responses to drugs constitute a major medical problem. To the extent that some of these adverse events are due to genetically encoded biochemical diversity among patients in pathways that effect drug action, the identification of variances that are predictive of such effects will allow for more effective and safer drug use. Thus, there is a need for biomarkers useful for identifying patients most at 20 risk for bortezomib-induced neuropathy.

SUMMARY OF THE INVENTION

The invention provides a method for identifying whether a patient is at increased risk for developing an adverse neurological event in respond to a cancer 25 treatment, comprising: determining whether or not said patient possesses one or more biomarkers for said increased risk, wherein the presence of said biomarker indicates an increased risk for said adverse neurological event. The presence of biomarkers may be determined by obtaining a biological sample from said patient, and performing genotyping analysis on the sample. In certain embodiments the 30 adverse neurological event is peripheral neuropathy, peripheral sensory neuropathy or neuralgia. The cancer treatment may comprise administration of a proteosome

inhibitor, such as bortezomib. The biomarkers may be one or more of rs4553808; rs1474642; rs12568757; rs11974610; or rs126134.

Also provided are diagnostic kits for identifying patients likely to develop an adverse neurologic event in response to treatment for cancer and methods for
5 treating cancer or individualizing a cancer treatment regimen.

DETAILED DESCRIPTION OF THE INVENTION

The present invention describes the identification of peripheral neuropathy
10 candidate genes that serve as useful molecular tools for predicting an adverse response to cancer drugs. Specifically, the present invention is directed to methods of identifying whether or not a patient is at increased risk of suffering an adverse neurologic event in response to treatment with proteasome inhibitors such as bortezomib.

15 The present invention involves the identification of genetic variances also referred to herein as “variants”, “markers” and/or “biomarkers”, that correlate with an increased risk of adverse neurological response to a cancer treatment. The association of patient response to drug treatment with these markers can open up new opportunities for drug development or distinguish a drug's indication among
20 other treatment choices because of higher confidence in the safety and/or efficacy.

The cancer treatment may include administration of a single drug or treatment, or administration of more than one drug or treatment. In certain embodiments, the cancer treatment comprises administering a proteasome inhibitor to a patient. Proteasome inhibitors include bortezomib, and/or compounds having structure
25 similar to that of bortezomib. Proteasome inhibitors having structure similar to bortezomib include those compounds disclosed in U.S. Patents Nos. 7,119,080; 6,747,150; 6,617,317; 6,548,668; 6,465,433; 6,297,217; 6,083,903; 5,780,454; 7,422,830; 7,109,323; 6,958,319; 6,713,446; and 6,699,835.

30 The adverse neurological event may be peripheral sensory neuropathy, neuralgia, peripheral neuropathy (NEC). The methods of the invention may identify increased risk of only one neurological event, or increased risk of more than one neurological event.

The increased risk may be any increase over the average risk, including increased risk of developing adverse neurological event in response to any level of treatment, increased risk of developing an adverse neurological event earlier in treatment, or increased risk of developing an adverse event in response to higher treatment doses. The increased risk may be dose-dependent or dose-independent.

The presence or absence of a biomarker may be assessed by obtaining a biological sample from a patient and determining whether said biological sample contains the biomarker. A "biological sample" as used herein refers to a sample containing or consisting of cells or tissue matter, such as cells or biological fluids isolated from a subject. Examples of biological samples include, for example, sputum, blood, blood cells (e.g., white blood cells), amniotic fluid, plasma, serum, semen, saliva, bone marrow, tissue or fine-needle biopsy samples, urine, peritoneal fluid, pleural fluid, and cell cultures. Biological samples may also include sections of tissues such as frozen sections taken for histological purposes. A test biological sample is the biological sample that has been the object of analysis, monitoring, or observation. A control biological sample can be either a positive or a negative control for the test biological sample. Often, the control biological sample contains the same type of tissues, cells and/or biological fluids of interest as that of the test biological sample. In particular embodiments, the biological sample is a "clinical sample," which is a sample derived from a human patient.

As used herein, the terms "comprising", "containing", "having" and "including" are used in their open, non-limiting sense.

"Genotyping" refers to the process of determining the genotype of an individual by the use of biological assays. Current methods of doing this include PCR, DNA sequencing, antisense oligonucleotide probes, and hybridization to DNA microarrays or beads. The technology is employed in clinical research for the investigation of disease-associated and response-associated genes. Due to current technological limitations, almost all genotyping is partial. That is, only a small fraction of an individual's genotype is determined.

A "single nucleotide polymorphism" (SNP, pronounced snip) is a DNA sequence variation occurring when a single nucleotide - A, T, C, or G - in the genome (or other shared sequence) differs between members of a species (or

between paired chromosomes in an individual). For example, two sequenced DNA fragments from different individuals, AAGCCTA to AAGCTTA, contain a difference in a single nucleotide. In this case it is said that there are two alleles: C and T. Almost all common SNPs have only two alleles.

5 Within a population, SNPs can be assigned a minor allele frequency — the lowest allele frequency at a locus that is observed in a particular population. This is simply the lesser of the two allele frequencies for single nucleotide polymorphisms. There are variations between human populations, so a SNP allele that is common in one geographical or ethnic group may be much rarer in another.

10 Biomarkers according to this invention which correlate with increased risk of adverse neurological events include rs4553808; rs1474642; rs12568757; rs11974610; and rs126134.

15 This application concerns the field of mammalian therapeutics and the selection of therapeutic regimens utilizing host genetic information, including gene sequence variances within the human genome in human populations. The application further concerns methods for identification of DNA sequence variations likely to affect treatment response.

20 The present invention is concerned generally with the field of identifying an appropriate treatment regimen for a disease based upon genotype in mammals, particularly in humans. It is further concerned with the genetic basis of inter-patient variation in response to therapy, including drug therapy. Specifically, this invention describes the identification of gene sequence variances useful in the field of therapeutics for optimizing efficacy and safety of drug therapy. These variances may be useful in guiding the optimal use of already approved compounds such as
25 bortezomib. DNA sequence variances in candidate genes (i.e., genes that may plausibly affect the action of a drug) are tested in clinical trials, leading to the establishment of diagnostic tests useful for improving the development of new pharmaceutical products and/or the more effective use of existing pharmaceutical products. The identification of genetic variances and the determination of their
30 utility in the selection of optimal therapy for specific patients are also described. In general, the invention relates to the identification of patient population subsets that respond to drug therapy with either therapeutic benefit or side effects (i.e.,

symptomatology prompting concern about safety or other unwanted signs or symptoms) such as peripheral neuropathy.

The identification of gene sequence variances in genes that may be involved in drug action are useful for determining whether genetic variances account for variable drug efficacy and safety and for determining whether a given drug or other therapy may be safe and effective in an individual patient. Provided in this invention are identifications of genes and sequence variances which can be useful in connection with predicting differences in response to treatment. A target gene and variances are useful, for example, in pharmacogenetic association studies and diagnostic tests to improve the use of certain drugs or other therapies.

In embodiments of this invention, the variance or variant form or forms of a gene is/are associated with a specific response to a drug. The frequency of a specific variance or variant form of the gene may correspond to the frequency of an efficacious response to administration of a drug. Alternatively, the frequency of a specific variance or variant form of the gene may correspond to the frequency of an adverse event resulting from administration of a drug. Alternatively the frequency of a specific variance or variant form of a gene may not correspond closely with the frequency of a beneficial or adverse response, yet the variance may still be useful for identifying a patient subset with high response or toxicity incidence because the variance may account for only a fraction of the patients with high response or toxicity. In such a case the preferred course of action is identification of a second or third or additional variances that permit identification of the patient groups not usefully identified by the first variance.

Also in other embodiments, the method of selecting a treatment includes excluding or eliminating a treatment, where the presence or absence of the at least one variance is indicative that the treatment will be ineffective or contra-indicated. In other preferred embodiments, in cases in which undesirable side-effects may occur or are expected to occur from a particular therapeutic treatment, the selection of a method of treatment can include identifying both a first and second treatment, where the first treatment is effective to treat the disease or condition, and the second treatment reduces a deleterious effect of the first treatment.

The phrase "eliminating a treatment" or "excluding a treatment" refers to removing a possible treatment from consideration, e.g., for use with a particular patient based on the presence or absence of a particular variance(s) in one or more genes in cells of that patient, or to stopping the administration of a treatment.

5 Usually, the treatment will involve the administration of a compound preferentially active or safe in patients with a form or forms of a gene, where the gene is one identified herein. The administration may involve a combination of compounds. Thus, in preferred embodiments, the method involves identifying such an active compound or combination of compounds, where the compound or
10 combination is less active or is less safe or both when administered to a patient having a different form of the gene.

Also in preferred embodiments, the method of selecting a treatment involves selecting a method of administration of a compound, combination of compounds, or pharmaceutical composition, for example, selecting a suitable dosage level and/or frequency of administration, and/or mode of administration. The method of administration can be selected to provide better, preferably maximum therapeutic benefit. In this context, "maximum" refers to an approximate local maximum based on the parameters being considered, not an absolute maximum.

Also in this context, a "suitable dosage level" refers to a dosage level that provides a therapeutically reasonable balance between pharmacological effectiveness and deleterious effects. Often this dosage level is related to the peak or average serum levels resulting from administration of a drug at the particular dosage level.

Similarly, a "frequency of administration" refers to how often in a specified time period a treatment is administered, e.g., once, twice, or three times per day, every other day, once per week, etc. For a drug or drugs, the frequency of administration is generally selected to achieve a pharmacologically effective average or peak serum level without excessive deleterious effects (and preferably while still being able to have reasonable patient compliance for self-administered drugs).
25 Thus, it is desirable to maintain the serum level of the drug within a therapeutic window of concentrations for the greatest percentage of time possible without such

deleterious effects as would cause a prudent physician to reduce the frequency of administration for a particular dosage level.

The term "genotype" refers to the alleles present in DNA from a subject or patient, where an allele can be defined by the particular nucleotide(s) present in a nucleic acid sequence at a particular site(s). Often a genotype is the nucleotide(s) present at a single polymorphic site known to vary in the human population.

The detection of the presence or absence of at least one variance involves contacting a nucleic acid sequence corresponding to one of the genes identified herein or a product of such a gene with a probe. The probe is able to distinguish a particular form of the gene or gene product or the presence or a particular variance or variances, e.g., by differential binding or hybridization.

The terms "variant form of a gene", "form of a gene", or "allele" refer to one specific form of a gene in a population, the specific form differing from other forms of the same gene in the sequence of at least one, and frequently more than one, variant sites within the sequence of the gene. The sequences at these variant sites that differ between different alleles of the gene are termed "gene sequence variances" or "variances" or "variants". The term "alternative form" refers to an allele that can be distinguished from other alleles by having distinct variances at at least one, and frequently more than one, variant sites within the gene sequence.

Variances occur in the human genome at approximately one in every 500-1,000 bases within the human genome when two alleles are compared. When multiple alleles from unrelated individuals are compared the density of variant sites increases as different individuals, when compared to a reference sequence, will often have sequence variances at different sites. At most variant sites there are only two alternative nucleotides involving the substitution of one base for another or the insertion/deletion of one or more nucleotides. Within a gene there may be several variant sites. Variant forms of the gene or alternative alleles can be distinguished by the presence of alternative variances at a single variant site, or a combination of several different variances at different sites (haplotypes).

The "identification" of genetic variances or variant forms of a gene involves the discovery of variances that are present in a population. The identification of variances is required for development of a diagnostic test to determine whether a

patient has a variant form of a gene that is known to be associated with a disease, condition, or predisposition or with the efficacy or safety of the drug. Identification of previously undiscovered genetic variances is distinct from the process of "determining" the status of known variances by a diagnostic test (often referred to as 5 genotyping). The present invention provides exemplary variances in genes listed in the gene tables included and described herein.

In the context of this invention, the term "haplotype" refers to a *cis* arrangement of two or more polymorphic nucleotides, i.e., variances, on a particular chromosome, e.g., in a particular gene. The haplotype preserves information about 10 the phase of the polymorphic nucleotides--that is, which set of variances were inherited from one parent, and which from the other. A genotyping test does not provide information about phase. For example, an individual heterozygous at nucleotide 25 of a gene (both A and C are present) and also at nucleotide 100 (both G and T are present) could have haplotypes 25A-100G and 25C-100T, or 15 alternatively 25A-100T and 25C-100G. Only a haplotyping test can discriminate these two cases definitively.

The terms "variances", "variants" and "polymorphisms", as used herein, may also refer to a set of variances, haplotypes or a mixture of the two, unless otherwise indicated. Further, the term variance, variant or polymorphism (singular), as used 20 herein, also encompasses a haplotype unless otherwise indicated. This usage is intended to minimize the need for cumbersome phrases such as: ". . . measure correlation between drug response and a variance, variances, haplotype, haplotypes or a combination of variances and haplotypes . . . ", throughout the application. Similarly, the term "genotype", as used herein, means a procedure for determining 25 the status of one or more variances in a gene, including a set of variances comprising a haplotype. Thus phrases such as ". . . genotype a patient . . ." refer to determining the status of one or more variances, including a set of variances for which phase is known (i.e. a haplotype).

In preferred embodiments of this invention, the frequency of the variance or 30 variant form of the gene in a population is known. Measures of frequency known in the art include "allele frequency", namely the fraction of genes in a population that have one specific variance or set of variances. The allele frequencies for any gene

should sum to 1. Another measure of frequency known in the art is the "heterozygote frequency" namely, the fraction of individuals in a population who carry two alleles, or two forms of a particular variance or variant form of a gene, one inherited from each parent. Alternatively, the number of individuals who are 5 homozygous for a particular form of a gene may be a useful measure. The relationship between allele frequency, heterozygote frequency, and homozygote frequency is described for many genes by the Hardy-Weinberg equation, which provides the relationship between allele frequency, heterozygote frequency and homozygote frequency in a freely breeding population at equilibrium. Most human 10 variances are substantially in Hardy-Weinberg equilibrium.

"Population" refers to a defined group of individuals or a group of individuals with a particular disease or condition or individuals that may be treated with a specific drug identified by, but not limited to geographic, ethnic, race, gender, and/or cultural indices. In most cases a population will preferably encompass at least ten 15 thousand, one hundred thousand, one million, ten million, or more individuals, with the larger numbers being more preferable. In embodiments of this invention, the allele frequency, heterozygote frequency, or homozygote frequency of a specific variance or variant form of a gene is known. In preferred embodiments of this invention, the frequency of one or more variances that may predict response to a 20 treatment is determined in one or more populations using a diagnostic test.

It should be emphasized that it is currently not generally practical to study an entire population to establish the association between a specific disease or condition or response to a treatment and a specific variance or variant form of a gene. Such studies are preferably performed in controlled clinical trials using a limited number 25 of patients that are considered to be representative of the population with the disease. Since drug development programs are generally targeted at the largest possible population, the study population will generally consist of men and women, as well as members of various racial and ethnic groups, depending on where the clinical trial is being performed. This is important to establish the efficacy of the 30 treatment in all segments of the population.

As used herein, the terms "effective" and "effectiveness" includes both pharmacological effectiveness and physiological safety. Pharmacological

effectiveness refers to the ability of the treatment to result in a desired biological effect in the patient. Physiological safety refers to the level of toxicity, or other adverse physiological effects at the cellular, organ and/or organism level (often referred to as side-effects) resulting from administration of the treatment. On the 5 other hand, the term "ineffective" indicates that a treatment does not provide sufficient pharmacological effect to be therapeutically useful, even in the absence of deleterious effects, at least in the unstratified population. (Such a treatment may be ineffective in a subgroup that can be identified by the presence of one or more sequence variances or alleles.) "Less effective" means that the treatment results in a 10 therapeutically significant lower level of pharmacological effectiveness and/or a therapeutically greater level of adverse physiological effects, e.g., greater liver toxicity.

Thus, in connection with the administration of a drug, a drug which is "effective against" a disease or condition indicates that administration in a clinically 15 appropriate manner results in a beneficial effect for at least a statistically significant fraction of patients, such as an improvement of symptoms, a cure, a reduction in disease load, reduction in tumor mass or cell numbers, extension of life, improvement in quality of life, or other effect generally recognized as positive by medical doctors familiar with treating the particular type of disease or condition.

Effectiveness is measured in a particular population. In conventional drug development the population is generally every subject who meets the enrollment criteria (i.e. has the particular form of the disease or condition being treated). It is an aspect of the present invention that segmentation of a study population by genetic criteria can provide the basis for identifying a subpopulation in which administration 20 of a drug such as VELCADE™ may likely induce peripheral neuropathy.

The term "deleterious effects" refers to physical effects in a patient caused by administration of a treatment which are regarded as medically undesirable. Thus, for example, deleterious effects can include a wide spectrum of toxic effects injurious to health such as death of normally functioning cells when only death of 30 diseased cells is desired, nausea, fever, inability to retain food, dehydration, damage to critical organs such as arrhythmias, renal tubular necrosis, fatty liver, or pulmonary fibrosis leading to coronary, renal, hepatic, or pulmonary insufficiency among many

others. In this regard, the term "contra-indicated" means that a treatment results in deleterious effects such that a prudent medical doctor treating such a patient would regard the treatment as unsuitable for administration. Major factors in such a determination can include, for example, availability and relative advantages of 5 alternative treatments, consequences of non-treatment, and permanency of deleterious effects of the treatment.

It is recognized that many treatment methods, e.g., administration of certain compounds or combinations of compounds, may produce side-effects or other deleterious effects in patients. Such effects can limit or even preclude use of the 10 treatment method in particular patients, or may even result in irreversible injury, dysfunction, or death of the patient. Thus, in certain embodiments, the variance information is used to select both a first method of treatment and a second method of treatment. Usually the first treatment is a primary treatment that provides a physiological effect directed against the disease or condition or its symptoms. The 15 second method is directed to reducing or eliminating one or more deleterious effects of the first treatment, e.g., to reduce a general toxicity or to reduce a side effect of the primary treatment. Thus, for example, the second method can be used to allow use of a greater dose or duration of the first treatment, or to allow use of the first treatment in patients for whom the first treatment would not be tolerated or would be 20 contra-indicated in the absence of a second method to reduce deleterious effects or to potentiate the effectiveness of the first treatment.

Similar to the above aspect, in an embodiment at least one method of treatment involves the administration of a compound effective in at least some patients with a disease or condition; the presence or absence of the at least one 25 variance is indicative that the treatment will be effective in the patient; and/or the presence or absence of the at least one variance is indicative that the treatment will be ineffective or contra-indicated in the patient; and/or the treatment is a first treatment and the presence or absence of the at least one variance is indicative that a second treatment will be beneficial to reduce a deleterious effect of or potentiate the 30 effectiveness of the first treatment; and/or the at least one treatment is a plurality of methods of treatment. For a plurality of treatments, preferably the selecting involves

determining whether any of the methods of treatment will be more effective than at least one other of the plurality of methods of treatment.

In another aspect, the invention provides a method for selecting a patient for administration of a method of treatment for a disease or condition, or of selecting a patient for a method of administration of a treatment, by comparing the presence or absence of at least one variance in a gene as identified above in cells of a patient, with a list of variances in the gene, where the presence or absence of the at least one variance is indicative that the treatment or method of administration will be effective in the patient. If the at least one variance is present in the patient's cells, then the patient is selected for consideration of alternative treatment.

In another aspect, the invention provides a method for identifying a subset of patients with enhanced or diminished response or tolerance to a treatment method where the treatment is for a disease or condition in the patient. The method involves correlating one or more variances in one or more genes as identified in aspects above in a plurality of patients with response to a treatment method. The correlation may be performed by determining one or more variances in one or more genes in the plurality of patients and correlating the presence or absence of each of the variances (alone or in various combinations) with the patient's response to treatment and in particular to the development of peripheral neuropathy. The response should be statistically significant. A positive correlation between the presence of one or more variances and a response to treatment as demonstrated by evidence of peripheral neuropathy is indicative that the treatment is particularly ineffective in the group of patients having those variances. Such information is useful, for example, for selecting or de-selecting patients for a particular treatment or method of administration of a treatment, or for demonstrating that a group of patients exists for which the treatment or method of treatment would be particularly beneficial or contra-indicated.

In preferred embodiments, the correlation of patient responses to therapy according to patient genotype is carried out employing clinical trial data, e.g., as described herein according to any of the variations described.

A major goal of research is to identify markers that accurately predict a given patient's response to drugs in the clinic; such individualized assessment may greatly

facilitate personalized treatment. An approach of this nature is particularly needed in cancer treatment and therapy, where commonly used drugs are ineffective in many patients, and side effects are frequent. The ability to predict drug sensitivity in patients is particularly challenging because drug responses reflect both the properties 5 intrinsic to the target cells and also a host's metabolic properties.

All publications cited herein are hereby incorporated by reference. Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood to one of ordinary skill in the art to which this invention pertains.

10

EXAMPLE 1.

A randomized, open-label, multicenter study was conducted, consisting of 3 Phases: a Pre-randomization (Screening) Phase, an Open-label Treatment Phase, and 15 a Post-treatment Phase. Approximately 680 subjects with previously untreated multiple myeloma were randomly assigned to one of two treatment groups and were stratified according to baseline β 2-microglobulin, baseline albumin levels and region (North America, Europe, other). Subjects received either VELCADETM/ Melphalan/Prednisone (VMP) (Treatment Group A) or Melphalan/Prednisone (MP) 20 (Treatment Group B). Subjects in Treatment Group A received VELCADETM 1.3 mg/m² (twice weekly [Weeks 1, 2, 4, and 5] for four 6-week cycles [8 doses per cycle] followed by once weekly [Weeks 1, 2, 4, and 5] for five 6-week cycles [4 doses per cycle]) in combination with melphalan 9 mg/m² and prednisone 60 mg/m² (once daily on Days 1 to 4 of each 6-week cycle). Subjects in Treatment 25 Group B received 9 cycles of melphalan 9 mg/m² and prednisone 60 mg/m² once daily on Days 1 to 4 of each 6-week cycle. For both groups, treatment continued for a maximum of 9 cycles (54 weeks) and subjects were discontinued if disease progression or an unacceptable treatment-related toxicity occurred, or if a subject withdrew consent.

30 DNA samples from study subjects were plated and normalized to a concentration of \geq 50 ng/ul using a liquid handling robot. The DNA plates were then transferred to Illumina for genotyping analysis using the GoldenGate platform,

which relies on primer extension. One blinded control was included on each plate. The controls consisted of duplicated samples and Coriell DNA (Coriell Institute for Medical Research, 408 Haddon Avenue, Camden, NJ) samples that were used to generate HapMap data (to verify genotyping accuracy through comparisons with publicly available genotype data for these samples).

The candidate genes included with examples have previous associations linked to hereditary neuropathy, peripheral neuropathy, energy production and fast axonal transport, nociception and pain transmission, neurogenesis and neuroprotection. The candidates that were genotyped in the examples include:

10 ACCN2, ACE, ACTB, ACTG1, ACTR1A, ACTR1B, ADORA2A, ADRA2B, AGT, AGTR1, AKR1B1, AKT1, AKT2, APC, ARP11, AXIN1, BMF, CACNA1A, CACNA1B, CAPZA1, CAPZA2, CAPZA3, CAPZB, CD86, COMT, CTLA4, CTNNB1, CTSS, CYP3A4, CYP3A5, DCTN1, DCTN2, DCTN3, DCTN4, DCTN6, DNCL1, DNCL2A, DNM2, DVL1, DVL2, DVL3, DYNC1H1, DYNC1I1,

15 DYNC1I2, DYNC1LI1, DYNC1LI2, DYNC2H1, DYNC2LI1, DYNLL2, DYNLRB2, ECGF1, EGR2, FGD4, FIG4, GARS, GCH1, GDAP1, GJB1, GJB2, GJB3, GJE1, GLRA3, GLS2, GLUL, GSK3A, GSK3B, HAP1, HSN2, HSPB1, HSPB8, HTR1B, IKBKAP, IL6, KIF1A, KIF1B, KIF3A, KIF3B, KIF5A, KIF5B, KIF5C, LITAF, LMNA, MAPK1, MAPK10, MAPK11, MAPK12, MAPK13,

20 MAPK14, MAPK3, MAPK4, MAPK6, MAPK7, MAPK8, MAPK9, MC1R, MFN2, Mitochondrial genome, MPZ, MTMR2, NDRG1, NEFL, NFE2L2, NGFB, NPY, NR1I2, NTRK1, OPRD1, OPRK1, OPRL1, OPRM1, PLP1, PMP22, PNOC, POLG, POLG2, PON1, PRPS1, PRX, PSMB1, PSMB10, PSMB2, PSMB3, PSMB4, PSMB5, PSMB6, PSMB7, PSMB8, PSMB9, PTGER1, PTGER2, PTGER3,

25 PTGER4, PTGS1, PTGS2, SBF2, SCN3A, SCN9A, SH3TC2, SLC12A6, SPTBN1, SPTBN2, SPTBN4, SPTBN5, SPTLC1, SURF1, TCF1, TCF4, TH, TNF, TRAK2, TRPV1, TRPV4, TTR, VIP, WNT1, WNT10A, WNT10B, WNT11, WNT16, WNT2, WNT2B, WNT3, WNT3A, WNT4, WNT5A, WNT5B, WNT6, WNT7A, WNT8A, WNT8B, WNT9A, WNT9B and YARS.

30 Included in the analysis are the 368 subjects who met all of the following criteria: consented to DNA analysis; had usable genotype data for SNPs listed in Appendix 1; had Adverse Event related clinical data before treatment and after at

least one cycle of VELCADE™ treatment (including those having neurological events and those completing treatment with no neurological event). These 368 subjects included: Treatment Group A (154 Caucasian, 2 black, 10 Asian); Treatment Group B (168 Caucasian, 4 black, 12 Asian), and 18 were not treated.

5 The primary adverse event endpoints are the treatment-emergent peripheral neuropathies caused by VELCADE™, including peripheral neuropathy NEC, peripheral sensory neuropathy, and neuralgia. For each specific peripheral neuropathy endpoint, the null hypothesis was that none of the successfully genotyped SNPs is associated with this specific treatment-emergent peripheral neuropathy. Each successfully genotyped SNP is tested to see whether there is a difference in the distribution of the genotypes of this SNP between patients with and without this specific VELCADE™ treatment-emergent peripheral neuropathy. The test result is subsequently adjusted by total number of successfully genotyped SNPs to correct multiplicity.

15 The secondary adverse event endpoints are the time to the first onset of treatment-emergent peripheral neuropathy caused by VELCADE™, including time to onset of any peripheral neuropathy, time to onset of grade ≥ 2 peripheral neuropathy, and time to onset of grade ≥ 3 peripheral neuropathy. For each specific time to onset endpoint, the null hypothesis is that none of the successfully genotyped SNPs is associated with the time to onset of this specific treatment-emergent peripheral neuropathy. For each successfully genotyped SNP, the patients are stratified according to the genotype of this SNP and tested to see whether there is a difference in the probability of onset of treatment-emergent peripheral neuropathy at any time point between patients of different genotypes. The test result is 20 subsequently adjusted by total number of successfully genotyped SNPs to correct multiplicity. Some subjects have multiple incidences of peripheral neuropathy: i.e., a resolved AE followed by one or more re-occurred events. In the case of multiple events in the same patient, the time to first neuropathy for the analysis of 'neuropathy of any grade' and the time to neuropathy of a particular grade was 25 subsequently adjusted by total number of successfully genotyped SNPs to correct multiplicity. Some subjects have multiple incidences of peripheral neuropathy: i.e., a resolved AE followed by one or more re-occurred events. In the case of multiple events in the same patient, the time to first neuropathy for the analysis of 'neuropathy of any grade' and the time to neuropathy of a particular grade was 30 considered the first day this particular grade is reported.

A series of quality control (QC) steps were conducted to assure the genotype data quality used in the analysis. The genotype data quality was assessed using

internal control (duplicated) samples. Seven subjects from this study were genotyped twice. The concordance rate between duplicate samples was 100%. The duplicated sample data from this study were handled in the following way. Data was merged together by the following rules: 1) consistent genotype calls were kept. 2) If one sample had a genotype call while the other sample had a missing value (NA), the merged data was assigned the called genotype. 3) If both samples had a missing value, the merged data had a missing value. 4) If both samples had genotype calls and they are inconsistent with each other, the merged data were assigned missing values.

Genotype data of a Coriell DNA sample that was used to generate HapMap data (<http://www.hapmap.org/>), was compared against publicly available genotype data to verify genotyping accuracy. The Hapmap CEU subject NA12043 was genotyped as the quality control (ID: GS0034314-DNAH11_J369, CEPH1346-11). Of the 1927 non-mtSNPs successfully genotyped, 1921 of them were also genotyped in the Hapmap project. The concordance rate between these samples was 98.23%.

Samples with genotype call rates less than 0.9, i.e. more than 10% missing genotype data, were excluded from subsequent analysis. All genotyped samples had a call rate greater than 95%. Therefore, no samples were excluded due to more than 10% missing data. Three subject samples were not successfully genotyped after multiple attempts.

Sixty-four tagging SNPs of the human mitochondrial genome were also included in this analysis. The 64 tagging SNPs were selected based on the alignment of 928 publicly available European mitochondrial genome sequences to capture 144 common mitochondrial SNPs (mtSNPs) with MAF greater than 1% and 9 haplogroups (Saxena, R., etc. (2006) “Comprehensive association testing of common mitochondrial DNA variation in metabolic disease”, *American Journal of Human Genetics* 79: 54-61).

Pair-wise correlation between genotypes of samples were calculated to identify questionable samples. If two subjects had identical genotype yet inconsistent phenotype data, both subjects were excluded from subsequent analysis. Heterozygosity of X-chromosome SNPs were calculated to identify gender discrepancies with the demographic data. Three subjects had discrepancies under

gender control loci analysis and were excluded from the analysis. One additional subject was identified by PLINK to have heterozygous haploid genotypes on an X chromosome SNP (rs12116382), indicating a potential gender error. This subject was excluded from subsequent analysis.

5 After the quality control measures and filtering by race, one hundred thirty nine VELCADE™ treated samples were included in the analysis.

Example 2.

A randomized, open-label, multicenter study was conducted that compared
10 vincristine/adriamycin/dexamethasone (VAD) and VELCADE™/Dexamethasone as induction treatment prior to autologous hematopoietic stem cell transplantation (AHSCT) in patients up to (and including) the age of 65 with newly diagnosed multiple myeloma. Approximately 480 patients were included in this study. Subjects were randomized at diagnosis into one of 4 induction treatment arms:

- 15
- A1 VAD (4 cycles)
 - A2 VAD (4 cycles) followed by Dexamethasone/cyclophosphamide/ etoposide/cis-Platinum (DCEP) (2 cycles)
 - B1 VELCADE + dexamethasone (4 cycles)
 - B2 VELCADE + dexamethasone (4 cycles) followed by DCEP (2 cycles)
- 20

Randomization was stratified based on the initial β2 microglobulin level (> or ≤ 3 mg/l) and the presence of chromosome 13 abnormalities identified by fluorescence in situ hybridization (FISH) analysis. After induction treatment (Arms A1 and B1) or after consolidation treatment (Arms A2 and B2) all of the patients
25 underwent AHSCT.

470 samples were sent to Illumina for genotyping on 2016 SNPs in 172 non-mitochondria genes. Out of the 470 samples, 29 samples are Hapmap control subjects (<http://www.hapmap.org/>), 3 samples are controls subjects from a Belgium family, and another 4 are samples from Example 1 for quality control. Therefore,
30 there were totally 434 unique subjects from this study (103 in A1, 105 in A2, 111 in B1, 111 in B2 and 4 not treated).

The genotyping dataset contained 29 samples from Hapmap project as control for genotyping quality. Of the 1939 SNPs genotyped, 1934 had

corresponding Hapmap data. Comparing the genotype calls, the 29 samples had an average concordance rate of 99.63%. However, a couple of SNPs (rs5699 and rs926103) had near 0% concordance between the Hapmap data and the dataset, indicating potential genotyping errors in these SNPs. To control data quality, 8
5 SNPs with < 90% concordance between the Hapmap data and treatment dataset were excluded from association analysis.

After the quality control and filtering, 212 VELCADE treated subjects were included in the association analysis on non-mtSNPs.

10 Example 3.

SNPs with minor allele frequency (MAF) less than 0.01 were excluded from subsequent analysis, since the accuracy of the clustering algorithm used by to generate genotyping calls is relatively low for SNPs with very low minor allele frequencies. There were 11 SNPs in the entire analysis of Example 1 with less than a
15 90% call rate and these were excluded. Of the remaining SNPs, 26 SNPs had MAF less than 0.01 and these were excluded. Hardy-Weinberg equilibrium (HWE) test was performed. Significant deviation from Hardy-Weinberg equilibrium may indicate potential genotyping errors in a homogenous population. However, moderate deviation from HWE may indicate positive associations with the study
20 endpoints. For the Example 1 study, the HWE test was performed in the Caucasian subjects since they form the largest homogenous population of the study reported herein. SNPs that deviated from HWE with p-value less than 0.05/2000 were excluded from subsequent analysis. There were 5 SNPs from the Example 1 study that failed the HWE test and these were excluded. Appendix 1 lists the total set of
25 SNPs tested, genotype status, call rate, MAF, P-value for HWE test, and the final statistical analysis status. After SNP level QC, 1885 non-mtSNPs were retained for the association analysis.

Out of the 2016 non-mtSNPs genotyped from subjects of Example 2 study, 1939 SNPs were successfully genotyped. There were 6 SNPs with less than 90% call
30 rate and were excluded. Of the remaining SNPs, 11 SNPs had minor allele frequency (MAF) less than 0.01 and were excluded. There were 6 SNPs from the Example 2 study that failed the HWE test ($P_{HWE} < 0.05/2000$) conducted on the

212 VELCADE treated white subjects and these were excluded. The annotation of the 2016 SNPs are listed in Appendix 1 together with the genotype status, call rate, MAF, P-value for HWE test, and the final statistical analysis status. After QC, 1908 non-mtSNPs were included in the association analysis.

5 For each non-mtSNP, three genomic models were tested during the association analysis: Additive, Dominant and Recessive. All the non-mtSNPs under study are bi-allelic SNPs with a major allele (A) and a minor allele (B). The Dominant model compares subjects with AA genotype with those with AB or BB genotype. The Recessive model compares subjects with AA or AB genotype with those with BB genotype. The Additive model compares subjects having 0 copy of B (AA) with those have 1 copy of B (AB), and those with 2 copy of B (BB). MAF greater than 1% was used as threshold to filter SNPs during the quality control process. Included in this analysis is the following: 1) for the Dominant model, only SNPs with at least 4 AB/BB subjects will be analyzed; 2) for the Recessive model,
10 only SNPs with at least 4 BB subjects will be analyzed; 3) for the Additive model, only SNPs with at least 4 BB subjects, or those with at least 4 AB and 0 BB subjects, will be analyzed. After this filtration, a total of 1445 SNPs for analysis were included in the Additive model, 1885 SNPs were included in the Dominant model, and 1136 SNPs were included in the Recessive model. For Example 2 SNPs,
15 three genomic models were tested during the association analysis and minor allele frequency greater than 1% was used as a threshold to filter SNPs during the quality control process. Under this condition, the minimum number of B alleles each SNP has is 5, since $212 \times 2 \times 1\% = 4.24$, which can be of either one of the three possible genotype distributions: 1) 207 AA, 5 AB, 0 BB; 2) 208 AA, 3AB, 1BB; 3) 209 AA,
20 1 AB, 2 BB. Included in this analysis is the following: 1) for the Dominant model, only SNPs with at least 5 AB/BB subjects will be analyzed; 2) for the Recessive model, only SNPs with at least 5 BB subjects will be analyzed; 3) for the Additive model, only SNPs with at least 5 BB subjects, or those with at least 5 AB and 0 BB subjects, will be analyzed. After this filtration, there were 1441 SNPs for analysis
25 in additive model, 1908 SNPs for dominant model, and 1259 SNPs for recessive model.
30

All 64 tagging mtSNPs analyzed in Example 1 study had a >90% call rate. This genotype mtSNP genotype information was used to impute the genotype of other 80 common mtSNPs and 9 haplogroups following the method described by Saxena and colleagues (Saxena *et al.* (2006), *American Journal of Human Genetics*, 5 vol. 79, pages 54-61). After SNP level quality control and this filtering process, 62 mtSNPs were retained for association analysis. Note that a slightly higher MAF threshold was used for mtSNPs: 0.025 instead of 0.01 because the mtSNPs do not form heterozygous genotypes, and subjects with AA genotype against those with BB genotype were analyzed. The list of mtSNPs genotyped and imputed are listed in 10 Appendix 1. Because there were no significant associations between the mitochondrial SNPs and peripheral neuropathy categories, they were not genotyped in the Example 2 dataset.

A quantile-quantile plot (Q-Q plot) is a graphical data analysis method for comparing ordered values of a statistic with quantiles of a specific theoretical 15 distribution. In large-scale candidate gene association studies, Q-Q plots of p-values for association are often used for visualizing the result. In such plots, the -log10 transformed p-values are ordered and then plotted against the -log10 transformed quantiles of uniform distribution. Under the null hypothesis that there is no SNP associated with the endpoints of interest, the p-values should follow a uniform 20 distribution and the Q-Q plot should fall right on the expected line. While deviation of the Q-Q plot from the expected line at the extreme right hand tail may indicate significant associations, deviation of a large portion of the Q-Q plot may indicate potential data errors, such as genotyping errors or population stratification. For each 25 of the endpoints, an initial analysis was performed using χ^2 tests on the dominant model and the Q-Q plot was used to identify potential problems in the data.

For the 139 VELCADE™ treated Caucasian subjects in Example 1, Q-Q plots of the χ^2 tests on each of the three adverse events of interest (peripheral sensory neuropathy, peripheral neuropathy NEC, and neuralgia) using the dominant model on the 1885 non-mtSNPs showed no obvious genotyping problems in the data 30. The observed P-values are generally bigger (smaller in -log10 scale) than the expected P-values but fall within the 95% confidence intervals of the expected P-values. But some observed P-values fall out of the lower boundary of 95%

confidence interval on the –log10 scale. This is consistent with small sample sizes using this analysis, which has relatively lower power.

Demographic and baseline characteristics of the 139 VELCADE treated Caucasian subjects in Example 1 are summarized in Tables 1 and 2. There were no significant differences in these baseline characteristics between the subset of 139 subjects included in the pharmacogenomics study and the 340 subjects in the VMP arm of the Example 1 study, except for “region” since non-Caucasian subjects were excluded in the Pharmacogenomic (PGx) cohort.

10 Table 1. Comparison of the Baseline Continuous Characteristic for VELCADE Treated Caucasian Subjects with the Clinical Study Cohort Treated with VELCADE.

Baseline Continuous Characteristic	Example 1 Study (N=340) Median (range)	Example 1 PGx Subset (N=139) Median (range)
Age (years)	71(57-90)	72 (58-90)
Body Surface Area (m ²)	1.8(1.3-2.4)	1.8 (1.4-2.4)
Height (cm)	165(139-187)	167 (145-187)
Weight (kg)	71(40.3-127.9)	73.5 (47-125)
BMI	25.9(15.6-49.2)	26 (17.1-39.6)

15 Table 2. Comparison of the Baseline Categorical Characteristic for VELCADE Treated Caucasian Subjects with the Clinical Study Cohort Treated with VELCADE.

Baseline Categorical Characteristic		Example 1 Study (N=340) No. of Patients (%)	Example 1 PGx Subset (N=139) No. of Patients (%)
Sex	Female	168 (49.4)	61 (43.9)
	Male	172 (50.6)	78 (56.1)
Baseline b2-microglobin	<2.5 mg/L	42 (12.4)	13 (9.4)
	2.5 to 5.5 mg/L	187 (55.0)	88 (63.3)
	>5.5 mg/L	111 (32.6)	38 (27.3)
Baseline Albumin	<3.5 g/dL	198 (58.2)	75 (54.0)
	>=3.5 g/dL	142 (41.8)	64 (46.0)

Region	Europe	266 (78.2)	117 (84.2)
	North America	32 (9.4)	22 (15.8)
	Other	42 (12.4)	0 (0.0)
Sensory or Motor Neuropathy at Entry		37 (10.9)	17 (12.2)
Baseline Diabetes		39 (11.5)	19 (13.7)
Baseline Creatinine Clearance Group	<30 mL/min	19 (5.6)	8 (5.8)
	30-50 mL/min	92 (27.1)	33 (23.7)
	51-80 mL/min	167(49.1)	70 (50.4)
	>80 mL/min	62 (18.2)	28 (20.1)

The demographics information and baseline characteristics of the 212 VELCADE™ treated subjects in Example 2 were compared with the 139 VELCADE™ treated white subjects in Example 1 as shown in Tables 3 and 4.

- 5 Significant differences in subjects' age, height, BMI, baseline β-microglobin, baseline albumin, baseline creatinine clearance, neuropathy and diabetes history were observed between the 139 subjects from Example 1 and the 212 subjects from Example 2.

10 Table 3. Comparison of the Baseline Continuous Characteristic.

Baseline Continuous Characteristic	Example 1 PGx Subset (Vc-mp) (N=139) Median (range)	Example 2 Study PGx Subset (B1 and B2 arms) (N=212) Median (range)	P*
Age (years)	72 (58-90)	56 (31-65)	<0.0001
Body Surface Area (m ²)	1.8 (1.4-2.4)	1.8 (1.3-2.5)	0.15
Height (cm)	167 (145-187)	170 (146-196)	0.02
Weight (kg)	73.5 (47-125)	72 (42-126)	0.78
BMI	26 (17.1-39.6)	24.9 (17.9-38.7)	0.03

*P-values from two-sided t-tests.

Table 4. Comparison of the Baseline Categorical Characteristic

Baseline Categorical Characteristic		Example 1 PGx Subset (Vc-mp) (N=139) No. of Patients (%)	Example 2 PGx Subset (B1 and B2 arms) (N=212) No. of Patients (%)	P*
Sex	Female	61 (43.9)	92 (43.4)	0.93
	Male	78 (56.1)	120 (56.6)	
Baseline		13 (9.4)	60 (28.3)	<0.000

b2-microglobin	2.5 to 5.5 mg/L	88 (63.3)	103 (48.6)	1
	>5.5 mg/L	38 (27.3)	49 (23.1)	
Baseline Albumin	<3.5 g/dL	75 (54.0)	50 (23.6)	<0.0001
	>=3.5 g/dL	64 (46.0)	162 (76.4)	
Region	Europe	117 (84.2)	NA	NA
	North America	22 (15.8)	NA	
	Other	0 (0.0)	NA	
Sensory or Motor Neuropathy at Entry		17 (12.2)	1 (0.5)	<0.0001
Baseline Diabetes		19 (13.7)	12 (5.7)	0.01
Baseline Creatinine Clearance Group	<30 mL/min	8 (5.8)	17 (8.0)	<0.0001
	30-50 mL/min	33 (23.7)	19 (9.0)	
	51-80 mL/min	70 (50.4)	62 (29.3)	
	>80 mL/min	28 (20.1)	114 (53.8)	

*P-values from Chi-square tests.

All statistical tests were interpreted at the 5% significance level (2-tailed) unless otherwise specified. Multiple testing corrections were conducted using

- 5 Bonferroni adjustment for single locus (SNP) association tests and random permutation (1000 times) for multi-loci (Haplotype) association tests.

Association of individual SNPs with VELCADE™ treatment-emergent peripheral neuropathy events was performed based on genotypic, dominant and recessive models using logistic regression in SAS (PROC LOGISTIC, SAS, v. 9.1).

- 10 Samples within each peripheral neuropathy subgroup can be further stratified according to the number of AE incidences, the maximum NCI toxicity grade of the adverse event, the reversibility, and the duration of the adverse event. Baseline demographic data such as age, gender, race, country, baseline toxicity grade of neurological disease, and risk-factors for peripheral neuropathy determined in
15 clinical study of adverse event of VELCADE™ were used as covariates. Multiple testing corrections were conducted using Bonferroni adjustment.

Haplotype association analysis was performed based on Haplotype Trend Regression using the Logistic Regression module in HelixTree (HelixTree, v. 6.2).

- 18 Association of the haplotypes formed by 2 to 4 neighboring SNPs on the same chromosome with peripheral neuropathy was tested, with age, gender, race, country, and risk-factors for peripheral neuropathy determined in the ongoing VELCADE™ adverse event clinical study as covariates. Haplotype frequencies were estimated

using the expectation maximization (EM) algorithm in HelixTree. Multiple testing corrections were performed by all-marker permutation (1000 times). During each permutation, the group label (e.g. with neuralgia, without neuralgia) for each sample was randomly permuted. The haplotype association test was performed based on 5 the permuted group label. The frequency that a haplotype marker had a more significant P-value in the permuted dataset than the original dataset was used as the permutation adjusted P-value.

The primary endpoints included onset of each of the three adverse events of interest: peripheral sensory neuropathy (68 cases/ 71 controls), peripheral 10 neuropathy NEC (72 cases/ 67 controls), Neuralgia (59 cases/ 80 controls), and any occurrence of any one of the three adverse events (AE3: 84 cases / 55 controls). Patients were grouped into cases (those with any onset of the adverse events of interest) and controls (those without the adverse event of interest). As shown in 15 Table 5, the frequencies of the onset of adverse events of interest in the 139 selected subjects for the pharmacogenomics subset were similar to those in the VELCADE™ treated arm of Example 1.

20 Table 5. Comparison of the Frequency of Adverse Event of Interest for VELCADE Treated Caucasian Subjects Genotyped with the VELCADE Treated Clinical Trial Subjects.

AE Cases of Interest	Study (VMP)	PGx Subset (VMP)
	No. of Patients (%) (N=340)	No. of Patients (%) (N=139)
Peripheral Neuropathy NEC	159 (46.8)	72 (51.8)
Peripheral Sensory Neuropathy	151 (44.4)	68 (48.9)
Neuralgia	121 (35.6)	59 (42.4)
Any of the three AE	187 (55.0)	84 (60.4)

For consistency between Example 1 and Example 2, the regression model included all the predetermined covariates including: age, gender, baseline b2-microglobin, baseline albumin, body surface area (BSA), body mass index (BMI), 25 neuropathy status at entry (either sensory neuropathy or motor neuropathy), diabetes

status at baseline, and creatinine clearance at baseline (categorized into 4 groups: <30mL/min, ≥30 and ≤50 mL/min, >50 and ≤ 80mL/min, > 80 mL/min).

After Bonferroni correction for multiple testing using $P = 0.05/(1885 + 62) = 2.57E-5$ as threshold, none of the 1885 non-mtSNPs and 62 mtSNPs showed any

5 significant association with the onset of any of the adverse event endpoints tested in Example 1. Correction by False Discovery Rate (FDR) < 0.05 was used as threshold for multiple testing and no SNPs showed significant association with the onset of any of the adverse events tested.

Haplotype association analysis was performed based on Haplotype Trend
10 Regression using the Logistic Regression module in HelixTree (HelixTree v. 6.2).

Association of the haplotypes formed by 2 to 4 neighboring non-mtSNPs on the same chromosome with peripheral neuropathy was tested. Haplotype frequencies were estimated using the expectation maximization (EM) algorithm in HelixTree.

15 After multiple testing corrections using all-marker permutation (1000 times), none of the haplotypes tested showed any significant association (P -permutation < 0.05) with any of the adverse event endpoints under study.

Association of individual SNPs with time of onset of VELCADE treatment-emergent peripheral neuropathy events was performed based on genotypic, dominant and recessive models using log rank test and Cox regression in SAS
20 (PROC LIFETEST and PROC PHREG, SAS v. 9.1). Baseline demographic data such as age, gender, race, country, baseline toxicity grade of neurological disease, and risk-factors for peripheral neuropathy determined in the ongoing VELCADE™ adverse event clinical study were tested as covariates for the Cox proportional hazards model. Multiple testing corrections were conducted using Bonferroni
25 adjustment.

The secondary end points tested included time to onset of any peripheral neuropathy (72 events / 67 censored), time to onset of grade ≥ 2 peripheral neuropathy (50 events / 89 censored), and time to onset of grade ≥ 3 peripheral neuropathy (21 events / 118 censored). The same set of covariates used in the
30 logistic regression were used as covariates for the Cox proportional hazards model for each of the end points.

After Bonferroni correction for multiple testing using $P = 0.05/(1885 + 62) = 2.57E-5$ as threshold, one SNP (rs4553808 from gene CTLA4) showed significant association (Wald Type 3 test $P = 1.68E-6$, FDR=0.0019) with time to onset of Peripheral Neuropathy in recessive model. The proportionality test showed that the
5 proportional assumption of Cox regression was not violated by this model. Patients with the homozygous genotype of the minor allele of rs4553808 (GG) tend to have earlier onset of Peripheral Neuropathy than those that contain only 1 or 0 copy of the minor allele (AA/AG); median time to onset for these subjects was 36 days compared to 89.5 days. There were only 6 patients who had the GG genotype in the
10 dataset. All of them had some level of Peripheral Neuropathy during the Example 1 study: 2 subjects had maximum grade 1 peripheral neuropathy, 2 had maximum grade 2 peripheral neuropathy, and 2 subjects had maximum grade 3 peripheral neuropathy. None of the 5 subjects with the GG genotype of rs4553808 from the non-VELCADE treated arm had any onset of peripheral neuropathy during the trial.

15 The association of single markers with the cumulative dosage of VELCADE at the onset of peripheral neuropathy was tested. For this endpoint, rs4553808 showed a marginally significant association. Patients with homozygous genotype of the minor allele of rs4553808 (GG) tended to have onset of peripheral neuropathy at a lower cumulative dosage of VELCADE™ than those that contained only 1 or 0
20 copy of the minor allele (AA/AG): the median time to onset for these subjects was 8.45 mg/m² vs. 18.8 mg/m².

One SNP, rs1474642 of gene PSMB1, showed significant associations with time to onset of level ≥ 2 Peripheral neuropathy in recessive model after Bonferroni correction. If using FDR <0.05 as threshold, another SNP, rs12568757 of CTSS,
25 also showed a significant association. The proportionality test showed that the proportional assumption of Cox regression was not violated by this model.

Using the cumulative dosage of VELCADE to the onset of level ≥ 2 Peripheral neuropathy as endpoint, rs1474642 and rs12568757 showed a marginally
30 significant association. However, another SNP, rs916758 of DYNC1I1, showed a significant association with the cumulative dosage of VELCADE to onset of level \geq

2 peripheral neuropathy in the dominant model: Wald Type 3 test P = 6.14E-6, FDR=0.012.

Patients with the homozygous genotype of the minor allele of rs1474642 (GG) tended to have earlier onset of level \geq 2 peripheral neuropathy than those that contained only 1 or 0 copies of the minor allele (AA/AG): the median time to onset for these subjects was 26 days vs. 109 days; whereas median cumulative dosage of VELCADETM to time to onset was 6.9 mg/m² vs. 22.1 mg/m². There were 4 patients with the homozygous GG genotype. Two of these subjects had maximum grade 3 peripheral neuropathy, one had grade 2 peripheral neuropathy, and one had no peripheral neuropathy during the study. In the MP-treated arm of Example 1 study, 6 of the 142 successfully genotyped MP-treated Caucasian subjects had GG genotype of rs1474642. None of these subjects had any onset of peripheral neuropathy during the trial.

Similarly, patients with the homozygous genotype of the minor allele of rs12568757 (GG) tended to have earlier onset of level \geq Grade 2 peripheral neuropathy than those that contained only 1 or 0 copy of the minor allele (AA/AG); the median time to onset was 88 days vs. 113 days; whereas the median cumulative dosage of VELCADETM to onset was 18.4 mg/m² vs. 23.2 mg/m². There were 39 patients with the GG genotype: 10 with grade 3 peripheral neuropathy, 11 with grade 2, 6 with grade 1 and 12 with no peripheral neuropathy during the study. In the MP-treated arm of Example 1 study, 39 of the 142 successfully genotyped MP-treated Caucasian subjects had GG genotype of rs12568757. But only two of them had peripheral neuropathy during the trial: one had grade 1, the other had grade 2.

Patients carrying 1 or 2 copies of the minor allele of rs916758 (AG/GG) tended to have earlier onset of level \geq 2 peripheral neuropathy than those that contain 0 copies of the minor allele (AA): median time to onset was 75 days vs. 109 days; whereas median cumulative dosage of VELCADE to onset was 16.6 mg/m² vs. 23.2 mg/m². There were 32 patients with AG/GG genotypes: 8 with grade 3 peripheral neuropathy, 9 with grade 2, 2 with grade 1 and 13 with no peripheral neuropathy during the study. In the MP-treated arm of Example 1 study, 33 of the 142 successfully genotyped MP-treated caucasian subjects had AG/GG genotypes of rs916758. But only two of them had grade 1 peripheral neuropathy during the trial.

No SNP showed a significant association with time to onset of level \geq Grade 3 peripheral neuropathy after Bonferroni correction. But using FDR <0.05 as threshold, one SNP (rs11974610 of gene GJE1) showed a significant association. Using cumulative dosage of VELCADE™ to the onset of level \geq Grade 3 peripheral neuropathy as the endpoint, rs11974610 showed a marginally significant association.

5 Patients with the homozygous genotype of the minor allele of rs11974610 (AA) tended to have an earlier onset of level \geq Grade 3 peripheral neuropathy than those that contain only 1 or 0 copies of the minor allele (GG/GA): median time to onset was 97 days vs. 113 days; whereas median cumulative dosage of VELCADE™ to

10 onset was 17.6 mg/m² vs. 24.7 mg/m². There were 6 patients with the AA genotypes. Four of them had maximum grade 3 peripheral neuropathy, and 2 had no peripheral neuropathy during the study. In the MP-treated arm of the Example 1 study, 5 of the 142 successfully genotyped MP-treated Caucasian subjects had AA genotype of rs11974610. Only one of them had grade 2 peripheral neuropathy

15 during the trial.

The subjects who had the homozygous genotypes for the minor allele of rs4553808, rs1474642, and rs11974610, had no overlap. But among the 39 subjects who had GG genotype of rs12568757, 2 of them also had GG of rs4553808, 1 had GG of rs1474642, and 3 had AA of rs11974610. All 6 subjects who had two copies of the markers identified had onset of peripheral neuropathy during the Example 1 study. Among the 32 patients with AG/GG genotypes of rs916758, 16 of them also had GG of rs12568757 (11 of them had onset of peripheral neuropathy), 2 had both GG of rs4553808 and GG of rs12568757, 1 had GG of rs1474642 and GG of rs12568757, 1 had AA of rs11974610 and GG of rs12568757, and 1 had GG of

20 rs1474642.

25

The 5 SNPs which either showed significant associations with time of onset of different levels of peripheral neuropathy or with cumulative dosage of VELCADE™ to the onset of peripheral neuropathy in Example 1 were validated with the Example 2 study. The onset rate of peripheral neuropathy event (including peripheral neuropathies, dysesthesia, and paraesthesia) is 44.8% in Example 2, comparable with the 51.8% in the Example 1 ($P=0.24$). The analysis results are summarized in Table 6. Based on the raw p-values for the association tests, none of

the significant associations identified in Example 1 were replicated in Example 2. However, rs4553808 showed the same trend in association with time to onset of peripheral neuropathy in the recessive model (Wald Type 3 P-value = 0.138). Patients with homogenous genotype of the minor allele of rs4553808 (GG) tend to 5 have earlier onset of peripheral neuropathy than those that contain only 1 or 0 copy of the minor allele (AA/AG): median time to onset was 68 days vs. 70 days. Even though rs916758 also had a relatively low P-value of association (Wald Type 3 P-value = 0.113), the trend is opposite to what was observed in Example 1.

Table 6. Verification of Example 1 significant associations in Example 2.

SNP ID	Endpoint	Genetic Model	P-value
rs4553808	time to onset of PN	Recessive	0.138
rs1474642	time to onset of level >=2 PN	Recessive	0.933
rs12568757	time to onset of level >=2 PN	Recessive	0.444
rs11974610	time to onset of level >=3 PN	Recessive	0.996
rs916758	cumulative dosage of VELCADE to level >=2 PN	Dominant	0.113

10

The association with time and cumulative dosage of VELCADE™ to the onset of different levels of peripheral neuropathy in all 1908 SNPs in Example 2 was tested. No significant associations was identified after multiple testing correction using Bonfferoni ($0.05/1908=2.62E-05$). The primary endpoints in Example 2 were 15 tested in all 1908 genotyped SNPs: peripheral sensory neuropathy (8 cases/ 204 controls), peripheral neuropathy NEC (44 cases/ 168 controls), Neuralgia (9 cases/ 203 controls), and any occurrence of any one of the three adverse events (AE3: 51 cases / 161 controls. One SNP (rs1261134 of gene TCF4) showed significant association with the onset of any one of the adverse events of interest in the additive 20 model after multiple testing correction by FDR adjustments.

The inventors have identified 4 SNPs (rs4553808 of CTLA4, rs1474642 of PSMB1, rs12568757 of CTSS, and rs11974610 of GJE1) which showed significant associations with time to onset of different levels of peripheral neuropathy in the recessive model. These SNPs also showed marginally significant associations with 25 cumulative dosage of VELCADE™ to the onset of peripheral neuropathy in the recessive model. Another SNP, rs916758 of DYNC1I1, showed significant association with the cumulative dosage of VELCADE™ to onset of level \geq Grade 2 peripheral neuropathy in the dominant model in Example 1. However, it did not

have significant association with time to onset of peripheral neuropathy. These associations are related to VELCADE™ treatment because subjects with the identified markers in the MP treated arm had zero or very low frequency of onset of peripheral neuropathy during the trial. None of these associations were replicated in
5 Example 2. One SNP, rs4553808, showed the same trend of association with time to onset of peripheral neuropathy in Example 2 ($P=0.138$).

Appendix 1. SNPs genotyped

SNP ID	Genome Build Version	Chr	Position	dbSNP Version	Gene Symbol	Gene ID
rs307370	36	1	1263141	127	DVL1	1855
rs307359	36	1	1269877	127	DVL1	1855
rs6695456	36	1	10193113	127	KIF1B	23095
rs11586485	36	1	10231613	127	KIF1B	23095
rs3748575	36	1	10264939	127	KIF1B	23095
rs3748576	36	1	10265216	127	KIF1B	23095
rs17397129	36	1	10268049	127	KIF1B	23095
rs8019	36	1	10289074	127	KIF1B	23095
rs17402390	36	1	10321547	127	KIF1B	23095
rs17034775	36	1	10321595	127	KIF1B	23095
rs12125492	36	1	10344465	127	KIF1B	23095
rs12403443	36	1	10346575	127	KIF1B	23095
rs1002076	36	1	10361479	127	KIF1B	23095
rs11121556	36	1	10365454	127	KIF1B	23095
rs1474868	36	1	11966751	127	MFN2	9927
rs6675934	36	1	11974992	127	MFN2	9927
rs1810563	36	1	11976617	127	MFN2	9927
rs2236057	36	1	11984792	127	MFN2	9927
rs183339	36	1	19536998	127	CAPZB	832
rs2268813	36	1	19539395	127	CAPZB	832
rs16862684	36	1	19546907	127	CAPZB	832
rs1535036	36	1	19549511	127	CAPZB	644075
rs214336	36	1	19551060	127	CAPZB	644075
rs214338	36	1	19552460	127	CAPZB	644075
rs761308	36	1	19552706	127	CAPZB	644075
rs127037	36	1	19552732	127	CAPZB	644075
rs17477654	36	1	19553131	127	CAPZB	644075
rs7533994	36	1	19553860	127	CAPZB	644075
rs214344	36	1	19554234	127	CAPZB	644075
rs10917432	36	1	19571448	127	CAPZB	832
rs17394154	36	1	19578972	127	CAPZB	832
rs4911987	36	1	19594090	127	CAPZB	644083
rs12030205	36	1	19612761	127	CAPZB	832
rs3829833	36	1	19620083	127	CAPZB	832
rs11586303	36	1	19637868	127	CAPZB	832
rs4911997	36	1	19638256	127	CAPZB	832
rs1472568	36	1	19639019	127	CAPZB	832
rs9651016	36	1	19641828	127	CAPZB	832
rs10458381	36	1	19641830	127	CAPZB	832
rs10917451	36	1	19641910	127	CAPZB	832
rs2088824	36	1	19657921	127	CAPZB	832
rs12401874	36	1	19662284	127	CAPZB	832
rs9887859	36	1	19664676	127	CAPZB	832
rs10799815	36	1	19668262	127	CAPZB	832

rs16862800	36	1	19668729	127	CAPZB	832
rs4912104	36	1	19672216	127	CAPZB	832
rs10799817	36	1	19678584	127	CAPZB	832
rs6664461	36	1	19681758	127	CAPZB	832
rs10917461	36	1	19682345	127	CAPZB	832
rs1995309	36	1	19691836	127	CAPZB	832
rs16822407	36	1	19693956	127	CAPZB	832
rs1474646	36	1	22314612	127	WNT4	54361
rs2235530	36	1	22316347	127	WNT4	54361
rs12756110	36	1	22319735	127	WNT4	54361
rs3765350	36	1	22319903	127	WNT4	54361
rs12131703	36	1	22320804	127	WNT4	54361
rs6678992	36	1	22326429	127	WNT4	54361
rs10917158	36	1	22326960	127	WNT4	54361
rs7544210	36	1	22327729	127	WNT4	54361
rs12042083	36	1	22345319	127	WNT4	54361
rs7542242	36	1	22350080	127	WNT4	54361
rs1042114	36	1	29011562	127	OPRD1	4985
rs2236861	36	1	29012343	127	OPRD1	4985
rs678849	36	1	29017775	127	OPRD1	4985
rs4654322	36	1	29023832	127	OPRD1	4985
rs2236855	36	1	29034586	127	OPRD1	4985
rs6697423	36	1	29043082	127	OPRD1	4985
rs529520	36	1	29047533	127	OPRD1	4985
rs581111	36	1	29047960	127	OPRD1	4985
rs508448	36	1	29054112	127	OPRD1	4985
rs204069	36	1	29067405	127	OPRD1	4985
rs16866009	36	1	33013876	127	YARS	8565
rs699005	36	1	33018389	127	YARS	8565
rs2282294	36	1	33018764	127	YARS	8565
rs881393	36	1	33029232	127	YARS	8565
rs10753265	36	1	33036599	127	YARS	8565
rs10798918	36	1	33048568	127	YARS	8565
rs6677618	36	1	33053704	127	YARS	8565
rs1741969	36	1	35028712	127	GJB3	2701
rs6668196	36	1	35841791	127	PSMB2	5690
rs676614	36	1	35880097	127	PSMB2	5690
rs959	36	1	71090849	127	PTGER3	5733
rs6656853	36	1	71097887	127	PTGER3	5733
rs6672081	36	1	71097928	127	PTGER3	5733
rs7533733	36	1	71100822	127	PTGER3	5733
rs17131465	36	1	71102044	127	PTGER3	5733
rs5702	36	1	71104018	127	PTGER3	5733
rs1409986	36	1	71104086	127	PTGER3	5733
rs11209706	36	1	71105576	127	PTGER3	5733
rs1327449	36	1	71110513	127	PTGER3	5733
rs11804767	36	1	71124792	127	PTGER3	5733
rs4147114	36	1	71129253	127	PTGER3	5733
rs1409165	36	1	71136693	127	PTGER3	5733

rs11209710	36	1	71137606	127	PTGER3	5733
rs1359835	36	1	71138082	127	PTGER3	5733
rs4650094	36	1	71138571	127	PTGER3	5733
rs6659643	36	1	71139087	127	PTGER3	5733
rs942976	36	1	71140159	127	PTGER3	5733
rs17541722	36	1	71146509	127	PTGER3	5733
rs1327466	36	1	71146695	127	PTGER3	5733
rs17542063	36	1	71156823	127	PTGER3	5733
rs6424410	36	1	71157268	127	PTGER3	5733
rs602383	36	1	71164234	127	PTGER3	5733
rs499641	36	1	71185970	127	PTGER3	5733
rs650194	36	1	71187451	127	PTGER3	5733
rs7541936	36	1	71188185	127	PTGER3	5733
rs5699	36	1	71191040	127	PTGER3	5733
rs977214	36	1	71198848	127	PTGER3	5733
rs626398	36	1	71205572	127	PTGER3	5733
rs3819790	36	1	71215723	127	PTGER3	5733
rs2050066	36	1	71227723	127	PTGER3	5733
rs6424414	36	1	71228058	127	PTGER3	5733
rs2300167	36	1	71230750	127	PTGER3	5733
rs10789314	36	1	71237136	127	PTGER3	5733
rs5693	36	1	71247370	127	PTGER3	5733
rs5675	36	1	71250127	127	PTGER3	5733
rs5673	36	1	71250429	127	PTGER3	5733
rs8179390	36	1	71266953	127	PTGER3	5733
rs2817864	36	1	71275693	127	PTGER3	5733
rs2744902	36	1	71280129	127	PTGER3	5733
rs2817869	36	1	71294992	127	PTGER3	9406
rs2488787	36	1	112807331	127	WNT2B	55917
rs11102479	36	1	112808327	127	WNT2B	7482
rs1175649	36	1	112820800	127	WNT2B	7482
rs1175650	36	1	112821097	127	WNT2B	7482
rs10776751	36	1	112821821	127	WNT2B	7482
rs1759693	36	1	112824815	127	WNT2B	7482
rs974442	36	1	112829794	127	WNT2B	7482
rs351359	36	1	112841800	127	WNT2B	7482
rs11807828	36	1	112844072	127	WNT2B	7482
rs351364	36	1	112846584	127	WNT2B	7482
rs3790606	36	1	112853709	127	WNT2B	7482
rs351370	36	1	112856182	127	WNT2B	7482
rs12138754	36	1	112857176	127	WNT2B	7482
rs910697	36	1	112864648	127	WNT2B	7482
rs2273368	36	1	112865294	127	WNT2B	7482
rs11102489	36	1	112865873	127	WNT2B	7482
rs11102516	36	1	112962873	127	CAPZA1	54879
rs7550315	36	1	112993391	127	CAPZA1	829
rs1238	36	1	113015620	127	CAPZA1	829
rs6537748	36	1	113015904	127	CAPZA1	829
rs6330	36	1	115630836	127	NGFB	4803

rs6328	36	1	115631466	127	NGFB	4803
rs2268793	36	1	115633306	127	NGFB	4803
rs2268792	36	1	115634405	127	NGFB	4803
rs17033622	36	1	115635714	127	NGFB	4803
rs2239622	36	1	115639232	127	NGFB	4803
rs2856811	36	1	115639805	127	NGFB	4803
rs6678788	36	1	115641194	127	NGFB	4803
rs11102920	36	1	115642633	127	NGFB	4803
rs6686615	36	1	115646569	127	NGFB	4803
rs12058927	36	1	115647744	127	NGFB	4803
rs12402406	36	1	115649911	127	NGFB	4803
rs4644491	36	1	115654507	127	NGFB	4803
rs7555016	36	1	115656670	127	NGFB	4803
rs10858073	36	1	115657510	127	NGFB	4803
rs10776798	36	1	115663777	127	NGFB	4803
rs7530686	36	1	115665423	127	NGFB	4803
rs4839436	36	1	115670612	127	NGFB	4803
rs10858074	36	1	115671833	127	NGFB	4803
rs11102925	36	1	115672877	127	NGFB	4803
rs4839028	36	1	115673789	127	NGFB	4803
rs4320778	36	1	115676454	127	NGFB	4803
rs10745349	36	1	115676717	127	NGFB	4803
rs11102929	36	1	115678026	127	NGFB	4803
rs17033706	36	1	115679147	127	NGFB	4803
rs4634908	36	1	115681344	127	NGFB	4803
rs17540656	36	1	115681655	127	NGFB	4803
rs10776801	36	1	115684064	127	NGFB	4803
rs11583020	36	1	115685317	127	NGFB	4803
rs11102932	36	1	115687606	127	NGFB	4803
rs4310443	36	1	115688564	127	NGFB	4803
rs4073110	36	1	115688850	127	NGFB	4803
rs10776802	36	1	115690449	127	NGFB	4803
rs10858078	36	1	115690525	127	NGFB	4803
rs11576175	36	1	148994018	127	CTSS	1520
rs10888390	36	1	148994163	127	CTSS	1520
rs12568757	36	1	148996417	127	CTSS	1520
rs7172	36	1	149638762	127	PSMB4	5692
rs4603	36	1	149640649	127	PSMB4	5692
rs2485662	36	1	154350092	127	LMNA	4000
rs6686943	36	1	154359615	127	LMNA	4000
rs9427236	36	1	154360030	127	LMNA	4000
rs505058	36	1	154372809	127	LMNA	4000
rs4641	36	1	154374158	127	LMNA	4000
rs6669212	36	1	154376937	127	LMNA	4000
rs7544967	36	1	155048992	127	NTRK1	9047
rs926103	36	1	155051606	127	NTRK1	9047
rs2150906	36	1	155051980	127	NTRK1	4914
rs1800601	36	1	155052241	127	NTRK1	4914
rs4661222	36	1	155061630	127	NTRK1	9047

rs2768747	36	1	155067388	127	NTRK1	3645
rs1998977	36	1	155070745	127	NTRK1	3645
rs6674412	36	1	155071605	127	NTRK1	3645
rs11812062	36	1	155072321	127	NTRK1	3645
rs4661229	36	1	155075830	127	NTRK1	3645
rs12145540	36	1	155084568	127	NTRK1	3645
rs4661063	36	1	155091425	127	NTRK1	3645
rs11264577	36	1	155103591	127	NTRK1	4914
rs1800879	36	1	155104765	127	NTRK1	4914
rs12132885	36	1	155108960	127	NTRK1	4914
rs6334	36	1	155112857	127	NTRK1	4914
rs2644604	36	1	155114730	127	NTRK1	4914
rs2768755	36	1	155114744	127	NTRK1	4914
rs6336	36	1	155115542	127	NTRK1	4914
rs2644596	36	1	155118938	127	NTRK1	4914
rs943551	36	1	155122121	127	NTRK1	4914
rs4657015	36	1	159539065	127	MPZ	4359
rs4657016	36	1	159539150	127	MPZ	4359
rs7532602	36	1	159540935	127	MPZ	4359
rs16832786	36	1	159541529	127	MPZ	4359
rs7531561	36	1	159545854	127	MPZ	4359
rs11579939	36	1	159546142	127	MPZ	4359
rs3813630	36	1	159546873	127	MPZ	4359
rs4131826	36	1	159549008	127	MPZ	6391
rs11265589	36	1	159550921	127	MPZ	6391
rs16832809	36	1	159551916	127	MPZ	6391
rs7734	36	1	180619244	127	GLUL	2752
rs9347	36	1	180619821	127	GLUL	2752
rs17462824	36	1	180622870	127	GLUL	2752
rs1058111	36	1	180623022	127	GLUL	2752
rs12136955	36	1	180625567	127	GLUL	2752
rs12403634	36	1	180626938	127	GLUL	2752
rs12756106	36	1	180631766	127	GLUL	127670
rs1925829	36	1	180637397	127	GLUL	127670
rs689470	36	1	184907681	127	PTGS2	5743
rs2206593	36	1	184909052	127	PTGS2	5743
rs5275	36	1	184909681	127	PTGS2	5743
rs5277	36	1	184914820	127	PTGS2	5743
rs4648261	36	1	184915627	127	PTGS2	5743
rs2745557	36	1	184915844	127	PTGS2	5743
rs689466	36	1	184917374	127	PTGS2	5743
rs12042763	36	1	184918499	127	PTGS2	5743
rs10911907	36	1	184923125	127	PTGS2	5743
rs1009658	36	1	226170404	127	WNT9A	7483
rs12748472	36	1	226170998	127	WNT9A	7483
rs3820623	36	1	226173885	127	WNT9A	7483
rs8192633	36	1	226176094	127	WNT9A	7483
rs10127943	36	1	226176687	127	WNT9A	7483
rs12046421	36	1	226177357	127	WNT9A	7483

rs2527614	36	1	226193093	127	WNT9A	7483
rs680997	36	1	226193850	127	WNT9A	7483
rs697763	36	1	226259245	127	WNT3A	89780
rs708122	36	1	226283620	127	WNT3A	89780
rs10916258	36	1	226286505	127	WNT3A	89780
rs752107	36	1	226313974	127	WNT3A	89780
rs7536290	36	1	228903325	127	AGT	183
rs11122574	36	1	228904431	127	AGT	183
rs7079	36	1	228904954	127	AGT	183
rs2478523	36	1	228908132	127	AGT	183
rs3789664	36	1	228910047	127	AGT	183
rs2493131	36	1	228910128	127	AGT	183
rs6687360	36	1	228911615	127	AGT	183
rs11568054	36	1	228912178	127	AGT	183
rs699	36	1	228912417	127	AGT	183
rs4762	36	1	228912600	127	AGT	183
rs2004776	36	1	228915325	127	AGT	183
rs3789678	36	1	228916105	127	AGT	183
rs5050	36	1	228916509	127	AGT	183
rs2071406	36	1	228917264	127	AGT	183
rs2493137	36	1	228918739	127	AGT	183
rs1326886	36	1	228926383	127	AGT	183
rs6746378	36	2	43851116	127	DYNC2LI1	130271
rs7606529	36	2	43854289	127	DYNC2LI1	51626
rs2288709	36	2	43857514	127	DYNC2LI1	51626
rs17031514	36	2	43860159	127	DYNC2LI1	51626
rs3815995	36	2	43864124	127	DYNC2LI1	51626
rs11695056	36	2	43868913	127	DYNC2LI1	51626
rs9309107	36	2	43875330	127	DYNC2LI1	51626
rs10208317	36	2	43880895	127	DYNC2LI1	51626
rs11556157	36	2	43881517	127	DYNC2LI1	51626
rs17343939	36	2	54614833	127	SPTBN1	56969
rs9309255	36	2	54627345	127	SPTBN1	6711
rs11892788	36	2	54637612	127	SPTBN1	6711
rs4671961	36	2	54652100	127	SPTBN1	6711
rs10204932	36	2	54652631	127	SPTBN1	6711
rs2229506	36	2	54698294	127	SPTBN1	6711
rs6715538	36	2	54701438	127	SPTBN1	6711
rs2971886	36	2	54704804	127	SPTBN1	6711
rs12624153	36	2	54711305	127	SPTBN1	6711
rs1052788	36	2	54712015	127	SPTBN1	6711
rs2229503	36	2	54712168	127	SPTBN1	6711
rs2941579	36	2	54715329	127	SPTBN1	6711
rs6760298	36	2	54719324	127	SPTBN1	6711
rs6748715	36	2	54719998	127	SPTBN1	6711
rs2941584	36	2	54735125	127	SPTBN1	6711
rs17344343	36	2	54735795	127	SPTBN1	6711
rs17416242	36	2	54737289	127	SPTBN1	6711
rs17416291	36	2	54740732	127	SPTBN1	6711

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rs2941587	36	2	54742001	127	SPTBN1	6711
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rs1734242	36	5	112153318	127	APC	324
rs11953943	36	5	112183659	127	APC	324
rs2229992	36	5	112190753	127	APC	324
rs351771	36	5	112192460	127	APC	324
rs13167522	36	5	112195207	127	APC	324
rs41115	36	5	112203669	127	APC	324
rs42427	36	5	112204224	127	APC	324

rs866006	36	5	112204458	127	APC	324
rs459552	36	5	112204655	127	APC	324
rs465899	36	5	112205070	127	APC	324
rs2229995	36	5	112206694	127	APC	324
rs11242126	36	5	132058313	127	KIF3A	11127
rs17690965	36	5	132058566	127	KIF3A	11127
rs1468216	36	5	132064151	127	KIF3A	11127
rs3798130	36	5	132070045	127	KIF3A	11127
rs17691077	36	5	132071250	127	KIF3A	11127
rs3756752	36	5	132101772	127	KIF3A	11127
rs10041787	36	5	137447393	127	WNT8A	7478
rs10036244	36	5	137447624	127	WNT8A	7478
rs6596422	36	5	137454346	127	WNT8A	7478
rs17109205	36	5	148356356	127	SH3TC2	79628
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rs17109208	36	5	148358668	127	SH3TC2	79628
rs1432795	36	5	148358977	127	SH3TC2	79628
rs6885467	36	5	148359748	127	SH3TC2	79628
rs3763022	36	5	148361271	127	SH3TC2	79628
rs1045942	36	5	148361390	127	SH3TC2	79628
rs3763020	36	5	148361511	127	SH3TC2	79628
rs998304	36	5	148362558	127	SH3TC2	79628
rs11740300	36	5	148384113	127	SH3TC2	79628
rs17708342	36	5	148385575	127	SH3TC2	79628
rs6875902	36	5	148388086	127	SH3TC2	79628
rs1432793	36	5	148388294	127	SH3TC2	79628
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rs2304034	36	5	148391113	127	SH3TC2	79628
rs17109268	36	5	148396298	127	SH3TC2	79628
rs17795259	36	5	148397145	127	SH3TC2	79628
rs17722293	36	5	148402467	127	SH3TC2	79628
rs28173	36	5	148403766	127	SH3TC2	79628
rs36076	36	5	148412254	127	SH3TC2	79628
rs36044	36	5	148421321	127	SH3TC2	79628
rs2915806	36	5	148431108	127	SH3TC2	255187
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rs3733925	36	5	150070537	127	DCTN4	51164
rs11954652	36	5	150078076	127	DCTN4	51164
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rs6895740	36	5	179600539	127	MAPK9	5601
rs4601008	36	5	179603122	127	MAPK9	5601
rs4362908	36	5	179605431	127	MAPK9	5601
rs4147385	36	5	179610123	127	MAPK9	5601
rs6863088	36	5	179612366	127	MAPK9	5601
rs6868333	36	5	179620378	127	MAPK9	5601
rs13185784	36	5	179626674	127	MAPK9	5601
rs3111515	36	5	179627958	127	MAPK9	5601
rs9968653	36	5	179632110	127	MAPK9	5601

rs2112593	36	5	179633209	127	MAPK9	5601
rs3812066	36	5	179641502	127	MAPK9	5601
rs6867398	36	5	179644666	127	MAPK9	5601
rs915654	36	6	31646476	127	TNF	4049
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rs909253	36	6	31648292	127	TNF	4049
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rs1800630	36	6	31650455	127	TNF	4049
rs1800629	36	6	31651010	127	TNF	7124
rs3093661	36	6	31651737	127	TNF	7124
rs3093662	36	6	31652168	127	TNF	7124
rs4645843	36	6	31652541	127	TNF	7124
rs769178	36	6	31655493	127	TNF	4050
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rs3819720	36	6	32912548	127	PSMB8	6891
rs17583244	36	6	32912665	127	PSMB8	6891
rs3819721	36	6	32912776	127	PSMB8	6891
rs1871665	36	6	32912857	127	PSMB8	6891
rs241424	36	6	32912912	127	PSMB8	6891
rs2239701	36	6	32913027	127	PSMB8	6891
rs4713598	36	6	32914764	127	PSMB8	6891
rs3763366	36	6	32915424	127	PSMB8	6891
rs2071543	36	6	32919607	127	PSMB8	5696
rs2071542	36	6	32919623	127	PSMB8	5696
rs2071463	36	6	32920506	127	PSMB8;PSM B9	5696
rs2071541	36	6	32920836	127	PSMB8;PSM B9	6890
rs9469283	36	6	32921734	127	PSMB8;PSM B9	6890
rs2071482	36	6	32924678	127	PSMB8;PSM B9	6890
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rs4148879	36	6	32927456	127	PSMB8;PSM B9	6890
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rs12211012	36	6	36146186	127	MAPK14	1432
rs9357207	36	6	36147131	127	MAPK14	1432
rs851006	36	6	36173163	127	MAPK14	1432
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rs3761977	36	6	36204425	127	MAPK13	5603
rs1059227	36	6	36206388	127	MAPK13	5603
rs2071864	36	6	36208710	127	MAPK13	5603
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rs2071863	36	6	36215150	127	MAPK13	5603
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rs6297	36	6	78228660	127	HTR1B	3351
rs6296	36	6	78228979	127	HTR1B	3351
rs6298	36	6	78229711	127	HTR1B	3351
rs130058	36	6	78230000	127	HTR1B	3351
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rs1213369	36	6	78234976	127	HTR1B	3351
rs1213370	36	6	78235516	127	HTR1B	3351
rs9400317	36	6	110114340	127	FIG4	221264
rs4947012	36	6	110118967	127	FIG4	221264
rs3823234	36	6	110130366	127	FIG4	9896
rs9398215	36	6	110146535	127	FIG4	9896
rs4947015	36	6	110159208	127	FIG4	9896
rs6568602	36	6	110159969	127	FIG4	9896
rs11964533	36	6	110165693	127	FIG4	9896
rs2295837	36	6	110171621	127	FIG4	9896
rs17612758	36	6	110172123	127	FIG4	9896
rs13191444	36	6	110190757	127	FIG4	9896
rs17613127	36	6	110205619	127	FIG4	9896
rs11153219	36	6	110209321	127	FIG4	9896
rs10499054	36	6	110212927	127	FIG4	9896
rs9885672	36	6	110214210	127	FIG4	9896
rs4499962	36	6	110225279	127	FIG4	9896
rs4473902	36	6	110226960	127	FIG4	9896
rs4495300	36	6	110231221	127	FIG4	9896
rs13220781	36	6	110233086	127	FIG4	9896
rs17070984	36	6	110233524	127	FIG4	9896
rs9398218	36	6	110252996	127	FIG4	9896
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rs6010226	36	22	49056743	127	MAPK11	23654
rs131815	36	22	49306474	127	ECGF1	29781
rs140524	36	22	49307548	127	ECGF1	29781
rs140523	36	22	49309648	127	ECGF1	9997
rs140522	36	22	49318132	127	ECGF1	440836
rs131794	36	22	49318618	127	ECGF1	440836

rs5770871	36	22	49325128	127	ECGF1	440836
rs6525485	36	X	70359570	127	GJB1	2705
rs7057082	36	X	70362347	127	GJB1	2705
rs752081	36	X	70366527	127	GJB1	2705
rs521895	36	X	102923068	127	PLP1	5354
rs17003884	36	X	102923122	127	PLP1	5354
rs2233696	36	X	102927056	127	PLP1	5354
rs2294152	36	X	102930390	127	PLP1	5354
rs7055303	36	X	106750252	127	PRPS1	5631
rs13440633	36	X	106752682	127	PRPS1	5631
rs12116382	36	X	106754652	127	PRPS1	5631
rs5962867	36	X	106756861	127	PRPS1	5631
rs1924215	36	X	106757459	127	PRPS1	5631
rs1924216	36	X	106757741	127	PRPS1	5631
rs10521515	36	X	106760120	127	PRPS1	5631
rs10217967	36	X	106762523	127	PRPS1	5631
rs5962868	36	X	106765295	127	PRPS1	5631
rs7886132	36	X	106766918	127	PRPS1	5631
rs16985261	36	X	106767665	127	PRPS1	5631
rs5962873	36	X	106784625	127	PRPS1	5631

MtSNP genotyped and imputed

SNP or Haplotype	Position (rCRSA)	SNP Type	Call rate	MAF
— <i>mt10034</i>	10034	Genotyped	1.000	0.034
— <i>mt10044</i>	10044	Imputed	1.000	0.000
— <i>mt10084</i>	10084	Genotyped	1.000	0.007
— <i>mt10238</i>	10238	Imputed	1.000	0.040
— <i>mt10398</i>	10398	Imputed	1.000	0.181
— <i>mt10463</i>	10463	Imputed	0.945	0.128
— <i>mt10550</i>	10550	Imputed	1.000	0.047
— <i>mt10876</i>	10876	Imputed	0.984	0.007
— <i>mt10915</i>	10915	Genotyped	1.000	0.027
— <i>mt11251</i>	11251	Imputed	0.945	0.241
— <i>mt11299</i>	11299	Imputed	1.000	0.047
— <i>mt11377</i>	11377	Genotyped	1.000	0.007
— <i>mt11467</i>	11467	Imputed	0.992	0.228
— <i>mt11470</i>	11470	Imputed	1.000	0.013
— <i>mt11485</i>	11485	Genotyped	1.000	0.020
— <i>mt11674</i>	11674	Genotyped	1.000	0.020
— <i>mt11719</i>	11719	Genotyped	0.997	0.470
— <i>mt11812</i>	11812	Genotyped	0.945	0.064
— <i>mt11840</i>	11840	Imputed	1.000	0.007
— <i>mt1189</i>	1189	Genotyped	1.000	0.040
— <i>mt11914</i>	11914	Genotyped	0.934	0.065
— <i>mt11947</i>	11947	Imputed	1.000	0.020
— <i>mt12007</i>	12007	Genotyped	0.937	0.043
— <i>mt12239</i>	12239	Imputed	1.000	0.000
— <i>mt12308</i>	12308	Imputed	0.992	0.228
— <i>mt12372</i>	12372	Genotyped	0.992	0.228
— <i>mt12414</i>	12414	Genotyped	1.000	0.020
— <i>mt1243</i>	1243	Imputed	1.000	0.020
— <i>mt12501</i>	12501	Imputed	1.000	0.054
— <i>mt12612</i>	12612	Imputed	1.000	0.081
— <i>mt12618</i>	12618	Imputed	1.000	0.013
— <i>mt12633</i>	12633	Genotyped	1.000	0.060
— <i>mt12669</i>	12669	Imputed	1.000	0.000
— <i>mt12705</i>	12705	Genotyped	1.000	0.087
— <i>mt13020</i>	13020	Genotyped	0.984	0.007
— <i>mt13105</i>	13105	Genotyped	0.989	0.014
— <i>mt13368</i>	13368	Imputed	0.945	0.128
— <i>mt13617</i>	13617	Imputed	1.000	0.101
— <i>mt13708</i>	13708	Genotyped	1.000	0.107
— <i>mt13734</i>	13734	Genotyped	1.000	0.007
— <i>mt13740</i>	13740	Imputed	1.000	0.007
— <i>mt13780</i>	13780	Imputed	1.000	0.040
— <i>mt13879</i>	13879	Genotyped	1.000	0.007
— <i>mt13934</i>	13934	Genotyped	1.000	0.020
— <i>mt13965</i>	13965	Genotyped	0.997	0.007
— <i>mt13966</i>	13966	Genotyped	1.000	0.013
— <i>mt14022</i>	14022	Imputed	1.000	0.000
— <i>mt14167</i>	14167	Imputed	1.000	0.047
— <i>mt14182</i>	14182	Genotyped	1.000	0.060
— <i>mt14233</i>	14233	Imputed	0.945	0.064
— <i>mt14365</i>	14365	Imputed	1.000	0.007
— <i>mt1438</i>	1438	Imputed	1.000	0.020
— <i>mt14470</i>	14470	Genotyped	0.997	0.020
— <i>mt14582</i>	14582	Imputed	1.000	0.007
— <i>mt14687</i>	14687	Imputed	0.997	0.007
— <i>mt14766</i>	14766	Imputed	0.997	0.470
— <i>mt14793</i>	14793	Genotyped	0.997	0.040
— <i>mt14798</i>	14798	Genotyped	1.000	0.101
— <i>mt14905</i>	14905	Imputed	0.945	0.128
— <i>mt15043</i>	15043	Genotyped	1.000	0.060
— <i>mt15218</i>	15218	Genotyped	1.000	0.020
— <i>mt15257</i>	15257	Genotyped	1.000	0.013
— <i>mt15452</i>	15452	Imputed	0.995	0.215
— <i>mt15607</i>	15607	Imputed	0.945	0.128
— <i>mt15746</i>	15746	Imputed	1.000	0.000
— <i>mt15758</i>	15758	Genotyped	1.000	0.013
— <i>mt15784</i>	15784	Genotyped	1.000	0.000
— <i>mt15833</i>	15833	Genotyped	1.000	0.020
— <i>mt15884</i>	15884	Genotyped	1.000	0.013
— <i>mt15904</i>	15904	Imputed	0.997	0.060
— <i>mt15907</i>	15907	Imputed	0.984	0.007
— <i>mt15924</i>	15924	Genotyped	0.997	0.060
— <i>mt15928</i>	15928	Imputed	0.945	0.128

CLAIMS

1. A method for identifying whether a patient is at increased risk for developing an adverse neurological event in respond to a cancer treatment, comprising:
 - 5 determining whether or not said patient possesses one or more biomarkers for said increased risk, wherein the presence of said biomarker indicates an increased risk for said adverse neurological event.
 2. The method of claim 1, wherein said adverse neurological event is selected from the group consisting of peripheral neuropathy, peripheral sensory neuropathy and neuralgia.
 - 10 3. The method of claims 1-2, wherein said cancer treatment comprises administration of a proteosome inhibitor.
 4. The method of claim 3, wherein said proteosome inhibitor comprises bortezomib.
 - 15 5. The method of claims 1-2, wherein said biomarker is selected from the group consisting of rs4553808; rs1474642; rs12568757; rs11974610; and rs126134.
 6. The method of claim 4, wherein said biomarker is selected from the group consisting of rs4553808; rs1474642; rs12568757; rs11974610; and rs126134.
 - 20 7. The method of claim 1, wherein said determining comprises obtaining a biological sample from said patient, and performing genotyping analysis on said sample.
 8. A diagnostic kit or equivalent for identifying patients likely to develop an adverse event in response to treatment for cancer, comprising: a biomarker selected from the group consisting of one or more of the sequence variances in the candidate genes listed in Appendix 1; and instructions for employing said biomarker to identify patients likely to develop peripheral neuropathy in response to treatment for cancer.
 - 25 9. A method for treating a patient for cancer comprising: determining whether or not said patient possesses one or more biomarkers for increased risk of developing an adverse neurological event in response to a cancer treatment,

- wherein the presence of said biomarker indicates an increased risk for said adverse neurological event; and selecting a first method of treatment or a second method of treatment, wherein said first method of treatment and second method of treatment are dependent on whether said patient is likely to develop peripheral neuropathy in response to said treatment for cancer.
- 5 10. The method of claim 9, wherein if said patient is determined not to be likely to develop peripheral neuropathy in response to said treatment for cancer, said first method of treatment is employed.
11. The method of claim 9, wherein if said patient is determined to be likely to 10 develop peripheral neuropathy in response to said treatment for cancer, said second method of treatment is employed.
12. The method of claim 10, wherein said first method of treatment comprises treating said patient with an agent that provides a physiological effect directed against said cancer without modification for peripheral neuropathy.
- 15 13. The method of claim 11, wherein said second method of treatment comprises treating said patient with an agent that provides a physiological effect directed against said cancer with modification for peripheral neuropathy.
14. The method of claim 13, wherein said modification comprises reducing a dose of said agent.
- 20 15. The method of claim 13, wherein said modification comprises eliminating use of said agent.
16. The method of claim 13, wherein said modification comprises administering an agent known to treat peripheral neuropathy.
17. A method for selecting a patient for administration of a method of treatment 25 for cancer, comprising: comparing a presence or absence of at least one biomarker selected from the group consisting of one or more of the sequence variances in the candidate genes listed in Appendix 1 in cells of said patient with a list of variances, wherein the presence of at least one variance is indicative that said method of treatment for cancer may be deleterious to said patient, and modifying said method of treatment for cancer if said at least one variance is present in said patient's cells.
- 30

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/028459

A. CLASSIFICATION OF SUBJECT MATTER
INV. C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/028687 A1 (UNIV JW GOETHE FRANKFURT MAIN [DE]; TEGEDE RIRMGARD [DE]; LOETSCH JOER) 13 March 2008 (2008-03-13) the whole document page 4, line 7 - line 10 page 11, line 13 - line 16; table 1 page 17, line 25 - page 18, line 2; claims 1-5	1,2,7
Y		9-16
A		5,6,8,17
	----- -/-	

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
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- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search

Date of mailing of the international search report

13 August 2010

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Authorized officer

Pinta, Violaine

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/028459

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BADROS ASHRAF ET AL: "Neurotoxicity of bortezomib therapy in multiple myeloma: a single-center experience and review of the literature" CANCER, vol. 110, no. 5, September 2007 (2007-09), pages 1042-1049, XP002594459 ISSN: 0008-543X the whole document page 1044, right-hand column - page 1045, right-hand column -----	1-4
Y A	ARGYRIOU ANDREAS A ET AL: "Bortezomib-induced peripheral neuropathy in multiple myeloma: a comprehensive review of the literature" BLOOD, vol. 112, no. 5, September 2008 (2008-09), pages 1593-1599, XP002594460 ISSN: 0006-4971 the whole document page 1595 - page 1596, left-hand column -----	9-16 5-8,17
A	EL-CHEIKH JEAN ET AL: "Features and risk factors of peripheral neuropathy during treatment with bortezomib for advanced multiple myeloma." CLINICAL LYMPHOMA & MYELOMA JUN 2008 LNKD-PUBMED:18650177, vol. 8, no. 3, June 2008 (2008-06), pages 146-152, XP002594461 ISSN: 1557-9190 the whole document page 149, left-hand column -----	1-8,17
X,P	RICCI DEBORAH S ET AL: "Pharmacogenomic (PGx) Analysis of Bortezomib-Associated Peripheral Neuropathy in the Phase 3 VISTA Trial of Bortezomib Plus Melphalan-Prednisone Versus Melphalan-Prednisone in Multiple Myeloma" BLOOD; 51ST ANNUAL MEETING OF THE AMERICAN-SOCIETY-OF-HEMATOLOGY; NEW ORLEANS, LA, USA; DECEMBER 05 -08, 2009, AMERICAN SOCIETY OF HEMATOLOGY, US, vol. 114, no. 22, 20 November 2009 (2009-11-20), page 1491, XP008124894 ISSN: 0006-4971 abstract -----	1-17
		-/-

INTERNATIONAL SEARCH REPORT

International application No PCT/US2010/028459

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	CORTHALS SOPHIE L ET AL: "Genetic Associations with Bortezomib Mediated Neuropathy in Multiple Myeloma." BLOOD, vol. 114, no. 22, November 2009 (2009-11), page 713, XP002594463 & 51ST ANNUAL MEETING OF THE AMERICAN-SOCIETY-OF-HEMATOLOGY; NEW ORLEANS, LA, USA; DECEMBER 05 -08, 2009 abstract	1-4,7, 9-16
A	-----	5,6,8,17
X,P	KUIPER ROWAN ET AL: "Developing a SNP Classifier for Predicting Peripheral Neuropathy by Bortezomib in Multiple Myeloma Patients." BLOOD, vol. 114, no. 22, ABS.1800, November 2009 (2009-11), XP002594464 & 51ST ANNUAL MEETING OF THE AMERICAN-SOCIETY-OF-HEMATOLOGY; NEW ORLEANS, LA, USA; DECEMBER 05 -08, 2009 abstract	1-4,7, 9-16
A	-----	5,6,8,17

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2010/028459

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 2008028687	A1 13-03-2008	AU 2007294123	A1	13-03-2008
		CA 2662721	A1	13-03-2008
		EP 2059608	A1	20-05-2009
		JP 2010502205	T	28-01-2010
		US 2010144776	A1	10-06-2010