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(54) Title: METHODS FOR TREATING SMALL CELL NEUROENDOCRINE AND RELATED CANCERS

(57) Abstract: The current disclosure provides for methods of identifying and treating small cell neuroendocrine (SCN) tumors and small-round-blue cell tumor (SRBCT). Aspects of the disclosure relate to a method comprising measuring the level of expression of one or more biomarkers from Tables 1-3 in a biological sample from a cancer patient. Further aspects relate to a method for treating small cell neuroendocrine (SCN) cancer or small-round-blue cell tumor (SRBCT) in a patient comprising administering a cancer treatment to the patient, wherein the cancer treatment is a treatment selected from Table 4A, 4B, or combinations of treatments from Table 4A and/or 4B.

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DESCRIPTION

METHODS FOR TREATING SMALL CELL NEUROENDOCRINE AND RELATED CANCERS

BACKGROUND OF THE INVENTION

[0001] This application claims priority to U.S. Provisional Patent Application Serial No. 62/853,551 filed May 28, 2019, which are incorporated by reference herein in their entirety.

[0002] This invention was made with government support under Grant Numbers CA092131, CA222877, GM008042, awarded by the National Institutes of Health. The government has certain rights in the invention.

Field of the Invention

[0003] This invention relates to the field of medicine.

II. Background

[0004] Small cell neuroendocrine cancers (SCNCs) are a highly aggressive cancer subtype that has been observed to arise in multiple tissues, more commonly reported in lung, with rare cases in prostate, bladder, breast, skin, gastrointestinal tract, and cervix. SCNCs that arise from different tissues share characteristic morphology- and marker-based histology such as high nuclear to cytoplasm ratios, frequent mitotic figures, and granular chromatin. At the molecular level, *TP53* and *RB1* loss and/or inactivating mutations are essentially obligatory for SCNCs of the lung and highly enriched in SCNC's of the prostate. Additionally, SCNCs from both tissues share common neuroendocrine markers such as chromogranin A (CHGA) and synaptophysin (SYP).

[0005] Neuroendocrine cells are found in numerous tissues, but the cell of origin of SCNCs across tissues is unclear. Small cell lung cancer (SCLC) can arise *de novo*, possibly from a cell of neuroendocrine origin, as seen in mouse models or in transformation experiments performed in distinct lung cell types. A second proposed mechanism for SCLC origin is through transdifferentiation from another non-neuroendocrine cell lineage, which has been observed in patient tumors, and studied in mouse *in vivo* experiments.

[0006] *De novo* neuroendocrine prostate cancers (NEPC) are rare (approximately 1% of cases), but exhibit a similarly aggressive phenotype. As in lung cancer, evidence for transdifferentiation from a prostate adenocarcinoma to a small cell neuroendocrine (SCN) state in response to androgen suppression therapy has been reported, with 25-40% of resulting resistant tumors expressing neuroendocrine markers. Thus, across multiple tissues types, adenocarcinomas have been observed to

escape targeted therapy through evolution to a histologically similar SCN phenotype, highlighting the need to characterize and develop therapies for this aggressive cancer outcome.

[0007] There are currently no effective therapies for SCNCs. SCNC is considered a systemic disease and typically leads to early metastases. Etoposide or platinum-based chemotherapies are the primary first-line treatment modalities. These treatments are only transiently effective, and 5-year survival rates for SCN lung and prostate cancers are less than 20%. In the progression to treatment-resistant SCN cancers, roles for shared oncogenic transcription factors such as MYCN, and epigenetic regulators such as EZH2, have been described. There is a need in the art for more effective detection and treatment methods for SCN cancers..

SUMMARY OF THE INVENTION

[0008] The current disclosure provides for methods of identifying and/or treating small cell neuroendocrine (SCN) tumors and small-round-blue cell tumor (SRBCT). Aspects of the disclosure relate to a method comprising measuring the level of expression of one or more biomarkers from Tables 1-3 in a biological sample from a cancer patient. Aspects of the disclosure relate to a method comprising measuring the level of expression of one or more biomarkers from Table 1 in a biological sample from a cancer patient. Aspects of the disclosure relate to a method comprising measuring the level of expression of one or more biomarkers from Table 2 in a biological sample from a cancer patient. Aspects of the disclosure relate to a method comprising measuring the level of expression of one or more biomarkers from Table 3 in a biological sample from a cancer patient.

[0009] Further aspects relate to a method for treating small cell neuroendocrine (SCN) cancer or small-round-blue cell tumor (SRBCT) in a patient comprising administering a cancer treatment to the patient, wherein the cancer treatment is a treatment selected from Table 4A or 4B, or combinations of treatments from Table 4A and/or 4B.

[0010] Further aspects relate to a method for treating small cell neuroendocrine (SCN) cancer or small-round-blue cell tumor (SRBCT) in a patient comprising administering a cancer treatment to the patient, wherein the cancer treatment is a targeted treatment that binds to and inhibits or activates a target, wherein the target is one listed in Table 5A or 5B, or combinations of targets listed in Table 5A and/or 5B.

[0011] Further aspects relate to a method for treating SCN cancer or SRBCT in a patient comprising administering a cancer treatment to a patient determined to have a SCN cancer or SRBCT, wherein the patient was determined to have a SCN or SRBCT by measuring the expression level of one or more biomarkers from tables 1-3 in a biological sample from the patient.

[0012] Further aspects relate to a method for prognosing a cancer patient or for diagnosing a SCN or SRBCT cancer, comprising: measuring the expression level of one or more biomarkers from Tables 1-3 in a biological sample from the patient; comparing the expression level of the at least one biomarker to a control level of expression, wherein the control level of expression comprises the level of expression

of the biomarkers in a SCN or SRBCT cancer; and diagnosing the patient as having a SCN or SRBCT cancer when the level of expression of the measured biomarker is not substantially different from the control level of expression.

[0013] Further aspects of the disclosure relate to a method for treating SCN or SRBCT cancer in a patient comprising administering a cancer treatment to a patient determined to have a SCN or SRBCT cancer, wherein the patient was determined to have a SCN or SRBCT cancer by measuring the expression level of at least ten biomarkers from tables 1-3 in a biological sample from the patient; wherein the biomarker has an absolute value of the signature weight of greater than 0.025; and wherein the treatment comprises ABT-263, NSC-207895, NPK76-II-72-1, XMD13-2, MP470, BX-912, GW-2580, GSK1070916, WZ3105, GSK690693, OSI-027, FK866, I-BET-762, GSK429286A, UNC0638, PHA-793887, QL-X-138, Vorinostat, Tubastatin A, CX-5461, or combinations thereof.

[0014] Further aspects relate to a method for treating SCN or SRBCT cancer in a patient comprising administering a cancer treatment to a patient determined to have a SCN or SRBCT cancer, wherein the patient was determined to have a SCN or SRBCTcancer by measuring the expression level of at least ten biomarkers from tables 1-3 in a biological sample from the patient; wherein the biomarker has an absolute value of the signature weight of greater than 0.025; and wherein the treatment comprises vorinostat, VU0238429, CUDC-101, BX-912, oxaliplatin, alisertib, salinomycin, BMS-754807, KX2-391, D-64131, oxyquinoline, axitinib, barasertib, BI-78D3, M-344, evodiamine, UNBS-5162, vinorelbine, albendazole, BI-2536, or combinations thereof.

[0015] In some embodiments, at least one biomarker has an absolute value of the signature weight of greater than 0.04. In some embodiments, at least 2 biomarkers have an absolute value of the signature weight of greater than 0.03.

[0016] In some embodiments, the patient has been determined to have and/or diagnosed with a cancer. In some embodiments, the cancer comprises a cancer disclosed herein. In some embodiments, the cancer comprises epithelial cancer, SRBCT, brain cancer, melanoma, or a germ cell cancer. In some embodiments, the cancer is a hematological cancer. In some embodiments, hematological cancers are excluded. In some embodiments, the cancer comprises an epithelial cancer selected from adrenocortical carcinoma, bladder urothelial carcinoma, breast invasive carcinoma, cervical squamous cell carcinoma, endocervical adenocarcinoma, cholangiocarcinoma, colon adenocarcinoma, rectum adenocarcinoma, esophageal carcinoma, head and neck squamous cell carcinoma, kidney chromophobe, kidney renal clear cell carcinoma, kidney renal papillary cell carcinoma, liver hepatocellular carcinoma, lung adenocarcinoma, lung squamous cell carcinoma, ovarian serous cystadenocarcinoma, pancreatic adenocarcinoma, prostate adenocarcinoma, stomach adenocarcinoma, thyroid carcinoma, thymoma, uterine corpus endometrial carcinoma, and uterine carcinosarcoma. In some embodiments, the cancer comprises an SRBCT cancer selected from sarcoma, Wilms Tumor (pediatric), Ewing's Sarcoma, medulloblastoma, neuroblastoma, rhabdomyosarcoma, and neuroblastoma (pediatric). In some

embodiments, the cancer comprises a brain cancer selected from glioblastoma multiforme, brain lower grade glioma, mesothelioma, neuroblastoma (pediatric), pheochromocytoma and paraganglioma. In some embodiments, the cancer comprises a skin cancer. In some embodiments, the cancer comprises melanoma. In some embodiments, the cancer comprises skin cutaneous melanoma or uveal melanoma. In some embodiments, the cancer comprises testicular germ cell cancers. In some embodiments, the cancer comprises a hematological or hematopoietic cancer such as acute lymphoblastic leukemia (pediatric), acute myeloid leukemia (pediatric), acute myeloid leukemia induction fraction (pediatric), lymphoid neoplasm diffuse large B-cell lymphoma, and acute myeloid leukemia. In some embodiments, one or more of acute lymphoblastic leukemia (pediatric), acute myeloid leukemia (pediatric), acute myeloid leukemia induction fraction (pediatric), lymphoid neoplasm diffuse large B-cell lymphoma, and acute myeloid leukemia is excluded from the methods of the disclosure. In some embodiments, the cancer comprises a SCN cancer that is further defined as a cancer recited above or herein. In some embodiments, the cancer comprises small cell lung cancer. In some embodiments, the cancer excludes small cell lung cancer.

[0017] In some embodiments, the method comprises measuring the level of expression of at least five biomarkers from Tables 1-3. In some embodiments, the method comprises measuring the level of expression of at least, at most, or exactly 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440,

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[0018] In some embodiments, at least 2 of the measured biomarkers has an absolute value of the signature weight of greater than 0.025. In some embodiments, at least 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, or 100 (or any derivable range therein) of the measured biomarkers has an absolute value of the signature weight of greater than 0.02, 0.021, 0.022, 0.023, 0.024, 0.025, 0.026,

0.027, 0.028, 0.029, 0.03, 0.031, 0.032, 0.033, 0.034, 0.035, 0.036, 0.037, 0.038, 0.039, 0.04, 0.041, 0.042, 0.043, 0.044, 0.045, 0.046, 0.047, 0.048, 0.049, or 0.05 (or any derivable range therein).

[0019] In some embodiments, the method comprises measuring the level of expression of at least 10 biomarkers from Tables 1-3 and wherein at least 5 of the measured biomarkers has an absolute value of the signature weight of greater than 0.025. In some embodiments, the method comprises measuring the level of expression of at least 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, or 150 (or any derivable range thereof) biomarkers from Tables 1-3 and wherein at least 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, or 150 (or any derivable range thereof) of the measured biomarkers has an absolute value of the signature weight of greater than 0.02, 0.021, 0.022, 0.023, 0.024, 0.025, 0.026, 0.027, 0.028, 0.029, 0.03, 0.031, 0.032, 0.033, 0.034, 0.035, 0.036, 0.037, 0.038, 0.039, 0.04, 0.041, 0.042, 0.043, 0.044, 0.045, 0.046, 0.047, 0.048, 0.049, or 0.05 (or any derivable range therein). In some embodiments, the method comprises measuring the level of expression of at least 10 biomarkers from Tables 1-3 and wherein at least 5 of the measured biomarkers has an absolute value of the signature weight of greater than 0.03. In some embodiments, at least or at most 20, 30, 40, or 50 biomarkers are measured.

[0020] In some embodiments, the expression level of the measured biomarkers are/were determined to be not significantly different as compared to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a SCN or SRBCT cancer. In some embodiments, the expression level of the measured biomarkers are/were determined to be significantly different as compared to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a SCN or SRBCT cancer. In some embodiments, the expression level of the measured biomarkers are/were determined to be not significantly different as compared to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a cancer that is not a SCN or SRBCT cancer. In some embodiments, the expression level of the measured biomarkers are/were determined to be significantly different as compared to a control level of expression, wherein the control level of expression comprises the level

of expression of the biomarkers in a cancer that is not a SCN or SRBCT cancer. In some embodiments, the expression level of the measured biomarkers are/were determined to be not significantly different as compared to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a non-cancerous sample. In some embodiments, the expression level of the measured biomarkers are/were determined to be significantly different as compared to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a non-cancerous sample. In some embodiments, the expression level of the measured biomarkers are/were determined to be not significantly different as compared to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a cancerous sample, wherein the cancer comprises a cancer described herein. In some embodiments, the expression level of the measured biomarkers are/were determined to be significantly different as compared to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a cancerous sample, wherein the cancer comprises a cancer described herein.

[0021] In some embodiments, the one or more biomarkers has an absolute value of the signature weight of greater than 0.025. The term "absolute value" refers to the magnitude of a real number without regard to its sign. Signature weights are listed in Tables 1-3. In some embodiments, the one or more biomarkers has an absolute value of the signature weight of greater than or less than 0.000001, 0.000002, 0.000003,0.000004, 0.000005, 0.000006, 0.000007, 0.000008, 0.000009, 0.00001, 0.000015, 0.00002, 0.000025, 0.00003, 0.000035, 0.00004, 0.000045, 0.00005, 0.000055, 0.00006, 0.000065, 0.00007, 0.000075, 0.00008, 0.000085, 0.00009, 0.000095, 0.0001, 0.00015, 0.0002, 0.00025, 0.0003, 0.00035, 0.0004, 0.00045, 0.0005, 0.00055, 0.0006, 0.00065, 0.0007, 0.00075, 0.0008, 0.00085, 0.0009, 0.00095, 0.001, 0.0015, 0.002, 0.0025, 0.003, 0.0035, 0.004, 0.0045, 0.005, 0.0055, 0.006, 0.0065, 0.007, 0.0075, 0.008, 0.0085, 0.009, 0.0095, 0.01, 0.011, 0.012, 0.013, 0.014, 0.015, 0.016, 0.017, 0.018, 0.019, 0.02, 0.021, 0.022, 0.023, 0.024, 0.025, 0.026, 0.027, 0.028, 0.029, 0.03, 0.031, 0.032, 0.033, 0.034, 0.035, 0.036, 0.037, 0.038, 0.039, 0.04, 0.041, 0.042, 0.043, 0.044, 0.045, 0.046, 0.047, 0.048, 0.049, or 0.05 (or any range derivable therein).

[0022] In some embodiments, 1, 2, 3, 4, 5, 6, 7, or 8 biomarkers from Tables 1-3 are excluded from being measured for expression levels in the biological sample from the cancer patient. In some embodiments, at least, at most, or exactly 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180,

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[0023] In some embodiments, the method further comprises comparing the level of expression to the level of expression of the biomarker(s) in a control sample. In some embodiments, the control comprises a biological sample from a patient having a SCN or SRBCT cancer. In some embodiments, the control comprises a biological sample from a patient having a cancer disclosed herein. In some embodiments, the control comprises a biological sample from a patient having a cancer that is not a SCN cancer. In some embodiments, the control comprises a biological sample from a patient not having cancer.

[0024] In some embodiments, the method further comprises comprising comparing the level of expression to a control level of expression of the biomarker(s). In some embodiments, the control level of expression comprises the level of expression of the biomarker in a SCN or SRBCT cancerous sample. In some embodiments, the control level of expression comprises the level of expression of the biomarker in a cancerous sample from a cancer disclosed herein. In some embodiments, the control level of expression comprises the level of expression of the biomarker in cancerous sample that is not a SCN cancer. In some embodiments, the control level of expression comprises the level of expression of the biomarker in a non-cancerous sample.

[0025] In some embodiments, the biological sample comprises a tissue sample, a blood sample, a biopsy sample, a saliva sample, or a tumor sample. In some embodiments, the biological sample comprises a biological sample described herein. In some embodiments, the biological sample comprises tumor tissue. In some embodiments, the biological sample comprises metastatic tumor tissue or is from the lymph nodes.

[0026] In some embodiments, the subject has been treated for a cancer. In some embodiments, the treatment comprises a targeted therapy. In some embodiments, the method comprises or further comprises evaluating tumor size and/or lymph node status. In some embodiments, the method comprises or further comprises pathological and/or histological evaluation of a biological sample from the patient. In some embodiments, the sample is evaluated histologically for a SCN or SRBCT cell type. In some embodiments, the sample is determined to not have a SCN or SRBCT cancer after a histological analysis. In some embodiments, the method further comprises calculating a risk score for the patient. In some embodiments, the risk score indicates a risk of decreased overall survival,

metastasis, and/or recurrence. In some embodiments, the risk score indicates the risk for having a SCN or SBRCT cancer.

[0027] In some embodiments, the method comprises or further comprises treating the patient for a SCN or SRBCT cancer. In some embodiments, the treatment inhibits a Target listed in Table 5A or 5B. In some embodiments, the treatment activates a target listed in Table 5A or 5B. In some embodiments, one or more of the targets in Table 5A or 5B is excluded from the methods of the disclosure. In some embodiments, the treatment comprises ABT-263, NSC-207895, NPK76-II-72-1, XMD13-2, MP470, BX-912, GW-2580, GSK1070916, WZ3105, GSK690693, OSI-027, FK866, I-BET-762, GSK429286A, UNC0638, PHA-793887, QL-X-138, Vorinostat, Tubastatin A, CX-5461, or combinations thereof. In some embodiments, the treatment comprises vorinostat, VU0238429, CUDC-101, BX-912, oxaliplatin, alisertib, salinomycin, BMS-754807, KX2-391, D-64131, oxyquinoline, axitinib, barasertib, BI-78D3, M-344, evodiamine, UNBS-5162, vinorelbine, albendazole, BI-2536, or combinations thereof. In some embodiments, the treatment comprises a drug listed in Table 4A, 4B, or combinations thereof. In some embodiments, the treatment excludes at least, at most, or exactly 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, or 256 (or any derivable range therein) drugs listed in Table 4A or 4B. In some embodiments, the treatment is a treatment in Table 4A or 4B with a sensitivity in SCN, SRBCT or Blood value of 1 or potential.

[0028] In some embodiments, the patient has been determined to have a SCN or SRBCT based on the level of expression of one or more biomarkers from tables 1-3 in a biological sample from the patient.

[0029] Throughout this application, the term "about" is used to indicate that a value includes the inherent variation of error for the measurement or quantitation method.

[0030] The use of the word "a" or "an" when used in conjunction with the term "comprising" may mean "one," but it is also consistent with the meaning of "one or more," "at least one," and "one or more than one."

[0031] The phrase "and/or" means "and" or "or". To illustrate, A, B, and/or C includes: A alone, B alone, C alone, a combination of A and B, a combination of A and C, a combination of B and C, or a combination of A, B, and C. In other words, "and/or" operates as an inclusive or.

[0032] The words "comprising" (and any form of comprising, such as "comprise" and "comprises"), "having" (and any form of having, such as "have" and "has"), "including" (and any form of including, such as "includes" and "include") or "containing" (and any form of containing, such as "contains" and "contain") are inclusive or open-ended and do not exclude additional, unrecited elements or method steps.

[0033] The compositions and methods for their use can "comprise," "consist essentially of," or "consist of" any of the ingredients or steps disclosed throughout the specification. Compositions and methods "consisting essentially of" any of the ingredients or steps disclosed limits the scope of the claim to the specified materials or steps which do not materially affect the basic and novel characteristic of the claimed invention. It is contemplated that embodiments described in the context of the term "comprising" may also be implemented in the context of the term "consisting of" or "consisting essentially of."

[0034] It is contemplated that any embodiment discussed in this specification can be implemented with respect to any method or composition provided herein, and vice versa. Furthermore, compositions described herein can be used to achieve methods described herein. It is specifically contemplated that any limitation discussed with respect to one embodiment of the invention may apply to any other embodiment of the invention. Furthermore, any composition of the invention may be used in any method of the invention, and any method of the invention may be used to produce or to utilize any composition of the invention. Aspects of an embodiment set forth in the Examples are also embodiments that may be implemented in the context of embodiments discussed elsewhere in a different Example or elsewhere in the application, such as in the Summary of Invention, Detailed Description of the Embodiments, Claims, and description of Figure Legends.

[0035] Other objects, features and advantages of the present invention will become apparent from the following detailed description. It should be understood, however, that the detailed description and the specific examples, while indicating specific embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0036] The following drawings form part of the present specification and are included to further demonstrate certain aspects of the present invention. The invention may be better understood by reference to one or more of these drawings in combination with the detailed description of specific embodiments presented herein.

[0037] FIG. 1A-F. Pan-cancer convergence of small cell neuroendocrine carcinoma. A) Varimax-rotated PCA of adjacent normal, adenocarcinoma, and SCNC for lung and prostate. Ellipses represent 80% confidence regions. B) Varimax-rotated PCA of samples in panel A and bladder patient data. TCGA BLCA includes 4 SCN samples that were labeled separately (BLCA.SCN). PC1 and PC2 are reversed to show the SCN signature on the x-axis as in Fig1A. C) Gene loadings and selected top SCN-related genes of the varimax-rotated first principal component of the PCA (PCV1) of Fig. 1A. Enrichment analysis (GSEA) was run on this ranked gene list. Shown along the bottom are the top gene sets in the 'neuro' (red) and 'immune' (blue) categories, also shown in panel D. D) Top 10 gene sets from 'neuro' and 'immune' gene set categories. Lines mark false discovery rate (FDR) q-value of 0.05. E) Distribution of gene sets ranked by normalized enrichment score (NES). 5873 total genesets from C5 MSigDB collection. All listed categories enrichments are nominally significant (p value < 0.001) by Kolmogorov-Smirnov test (p values located in Fig. 8D). Dashed lines mark FDR q-value < 0.05 for individual gene sets in each direction. F) Left: Average rank ordering of VIPER activities across the three tissue types. Right: Zoom in to top of rank based inferred activity in each cancer separately. Combined p value across the three tissues by Stouffer's method (See also Figure 8).

[0038] FIG. 2A-D. An epigenetic basis for the shared small cell neuroendocrine gene expression signature. A) RRHO heat map of lung and bladder SCN signatures defined by PLSR loadings. Number shown is the maximum -log10(p value) of the RRHO heatmap. B) Methylation sites that define the lung or bladder SCN versus non-SCN dichotomy are enriched in open-sea regions rather than CG islands (random sample of 100K sites shown for visibility, distributions presented are representative of all sites). X-axis is the rank distance of the CG site from the nearest TSS (arrows point in direction of increasing distance). Y-axis is the rank value of individually run lung or bladder PLSR component 1 loadings, thus extreme values represent sites with differential methylation between SCN and non-SCN tumors. Waterfall plots show the relative values of the ranked loadings. C) Partial least squares regression (PLSR) analysis of DNA methylation data from patient bladder SCN and non-SCN tumor biopsy samples, and projection of lung LUAD and SCLC tumor samples onto this framework, or vice versa. PLSR component 1 is z-scored by tissue type. Dashed red lines separate training data (above line) from testing data (below line). D) Top 5 enrichment analysis (GSEA) terms for genes hypomethylated in SCN. Genes were ranked by averaged lung, prostate, bladder PLSR component 1 loadings. Dashed green line is at FDR p value = 0.05. (See also Figures 9-10).

[0039] FIG. 3A-I. Pan-cancer identification of primary tumors with an SCN signature. A) Gene expression-based prediction of SCN phenotype in epithelial TCGA cancers. Predictions made by projection onto varimax PCA from Figure 1A. For the two left boxes SCN scores are z-normalized w.r.t CRPC (leftmost box) and LUAD (middle box). For samples in the right box, SCN score is the value of PCv1 from projection onto Fig1A, z-score normalized by cancer type. For all boxes, samples greater than 3 standard deviations from the mean are highlighted as enlarged data points. Known cases of NETs

in PAAD (6 of 8; 2 missed are just slightly subthreshold) and SCNCs in BLCA (3 of 4 known cases, missed known case is next sample subthreshold) are predicted correctly (red inset boxes). Cancer types in rightmost box are left-right sorted based on the average of top 3 scores per cancer type. B) Kaplan-Meier of overall survival for predicted SCN versus non-SCN cases from epithelial TCGA cancers (samples in panel A right box plus LUAD; PAAD, SCLC, NEPC and CRPC-Adeno not included) (see Abbreviations section). P value is calculated controlling for tumor type. C) Left: P values from a Cox regression survival analysis in individual cancers using the continuous SCN score. Right: Pan-cancer Cox regression using the continuous score, accounting for cancer type. D-G) TCGA BRCA hematoxylin and eosin (H&E) stained diagnostic slides of invasive ductal carcinoma (D; TCGA-D8-A1XD), small cell neuroendocrine carcinoma (E; TCGA-BH-A0HL), mixed tumor with components of invasive ductal carcinoma (lower left, green arrow) and small cell neuroendocrine carcinoma (upper right, blue arrow) (F; TCGA-E9-A245), mixed tumor with components of large cell neuroendocrine carcinoma (upper left, green arrow) and small cell neuroendocrine carcinoma (lower right, blue arrow) (G; TCGA-A1-A0SK). H) Rug plot and Kolmogorov-Smirnov enrichment p value of breast cases scored by pathologist for SCN features ordered by their proliferation-removed SCN score. I) Scatter plot of all samples in TCGA BRCA cohort. (x-axis: Proliferation removed SCN score; y-axis: Z-scored Chromogranin A expression. Cases above the dashed red line, x=3, were computationally predicted as SCN-like) (See also Figures 11, 12).

[0040] FIG. 4A-C. Metastases across multiple tissue types have increased expression of SCN features. A) Projection of lung, prostate, bladder normal tissue, primary and metastatic non-SCN samples, and SCN samples onto the PCA framework of Fig. 1A. Samples were grouped into the categories of normal tissue, primary non-SCN, metastatic non-SCN, and SCN (both primary and metastatic), and the centroids and 80% confidence regions are displayed. Metastatic samples have profiles closer to SCNCs. Here, the pancreatic, cervix, stomach, and thymus blue samples are those annotated with a neuroendocrine (NE)-related term in Robinson et al., 2017. B) Heatmap of canonical SCN markers (top) and key SCN transcription factors (bottom) for prostate normal, primary adeno, metastatic adeno, and metastatic SCN. Samples ordered from left to right by the sum z-score of the genes displayed. C) Pan-cancer projections onto Fig. 1A (data from TCGA normal samples, TCGA primary tumors, MET500 metastatic tumors, SCLC tumors (George et al.), and CRPC and NEPC tumors (Beltran et al.). Plotted are the PCV1 values, representing SCN score. The SKIN.met cohort has two sources, the TCGA and met500 databases. Wilcoxon-Mann-Whitney p values are shown comparing primary (orange) and metastatic (red) cases. (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$). (See also Figure S6).

[0041] FIG. 5A-E. Blood cancers have SCN-like gene and protein expression profiles and drug sensitivities. A) Cell line gene expression SCN score (component 1 score of projection on PLSR of lung adeno and SCN lines). Z-score adjusted across all cell line samples together. Cancer types top-bottom sorted based on average SCN score per type. Red box: Non-SCN annotated epithelial lines with strong

SCN score. B) Protein profile of blood cell lines, from projection onto PCA of lung adeno (LUAD) and lung SCN (SCLC) lines. C) Drug sensitivity profile of blood cell lines, from projection onto PCA of IC50 values for lung adeno (LUAD) and lung SCN (SCLC) lines. Ellipses represent 80% confidence regions. In panels B and C, waterfall plots show binned gene expression SCN score of projected cell lines, showing that cell lines with transcriptional profiles closer to SCLC are associated with high Protein and Drug SCN scores, confirming that protein or drug sensitivity SCN scores are concordant with gene expression SCN scores. D) Heatmap of drugs with differential sensitivity between lung adeno and SCN cell lines (t-test p value < 0.0001). Hierarchical clustering is done on IC50 measurements for lung adeno, lung SCN, and blood lines. E) Enrichment of drug targets for drugs more effective in lung adeno or SCN lines. Kolmogorov Smirnov test p values. (See also Figure 14-15).

[0042] FIG. 6A-G. Validation of shared vulnerabilities based on genome-scale functional RNAi screens. A) Varimax-rotated PLSR model trained on the genome-scale RNAi sensitivity values for lung adeno (LUAD) and lung SCN (SCLC) cell lines. Ellipses represent 80% confidence regions. B) Prediction of small cell RNAi sensitivity profile for blood, SRBCTs, and all other cell lines in the dataset. SCN sensitivity score based on PLSRv component 1 from panel A. SRBCTs include neuroblastoma, medulloblastoma, rhabdomyosarcoma, Ewing's sarcoma, and Merkel cell carcinoma. C-F) Comparison of gene set expression rank to gene set sensitivity rank for lung SCN versus adeno, and blood versus non-blood, for gene sets containing selected keywords. Gene set RRHO scatter plots are subcategorized and colored by immune (C), lipid (D), neuro (E), and cell cycle (F) gene sets, with all other gene sets colored gray. Arrows in top left corner of individual panels indicate direction of significance ($q < 0.01$) by Kolmogorov-Smirnov test (diagonal arrows indicate significance in both expression and sensitivity directions; Benjamani-Hochberg correction). G) Select genes with differential lung SCN versus adeno, and blood versus non-blood RNAi sensitivity. The y-axis (RNAi sensitivity) is the published Demeter score. Student's t-test p values. (* $p < 0.1$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$). (See also Figure 16).

[0043] FIG. 7A-F. Tumors recapitulate SCN and blood cell line sensitivity signatures. A) Scatter plot of t-values from t-test of true IC50 values of lung SNC (SCLC) versus lung adeno (LUAD) in cell lines (x-axis) and predicted IC50 values in tumors (y–axis) highlight shared sensitivities signatures of tumor and cell line SCLC cases. B) Comparison of cross validation model R2 values (cell line-based) to signed log p values of cell line lung SCN versus lung adeno true drug sensitivities (IC50). R2 values are from true cell line drug sensitivities versus cross validation-based predicted cell line sensitivities. Dashed lines are p value 0.05 (log p value = 1.3). Model cross-validation performance improves for drugs with significant true differential sensitivities, showing that the models are built on relevant gene expression features. C) Real and predicted sensitivities for NPK76 (PLK3 inhibitor) and ABT.263 (BCL2 inhibitor). Y-axis is the log IC50. D) Projection of RNA-seq, elastic net-based predicted sensitivities of epithelial tumors onto PCA framework of SCLC and LUAD cell lines. More negative "Relative Sensitivity Scores" correspond to having more SCN like drug sensitivity profile. Asterisks

(*) denote individual tumor type significance by Kolmogorov Smirnov test, NS = not significant. SCLC and LUAD tumor predicted sensitivity compared via a Wilcoxon-Mann-Whitney test ($p < 2.2 \times 10\text{-}16$). Combined p value calculated with Stouffer's test. E) Real and predicted sensitivities for NPK76 (PLK3 inhibitor) and ABT.263 (BCL2 inhibitor) for blood tumors. Y-axis is the log IC50. F) Projection of elastic net sensitivities of epithelial tumors and blood tumors onto PCA framework of SCLC and LUAD cell lines (open bracket) highlights blood cancers are enriched for small cell sensitivity profiles; combined p value from Stouffer's test. More negative "Relative Sensitivity Scores" correspond to having more SCN like drug sensitivity profile.

[0044] FIG. 8A-G. Gene expression signatures of three tissue types supports convergent expression profiles of small cell neuroendocrine cancers. Related to Figure 1. A) Hierarchical clustering on Pearson's correlation using all genes. B) Heterogeneity of canonical neuroendocrine markers in SCNC tumors, with a representative set of non-SCNC tumors for comparison. C) Varimax-rotated PCA with proliferation and proliferation-related genes removed. Ellipses represent 80% confidence regions. D) Left: GSEA on proliferation-removed PCV1 loadings. Dashed lines mark FDR q-value <0.05 in each direction. Right: Bar chart of individual categories Kolmogorov-Smirnov test –log10(p values) for enrichment in SCN (for Neuro, Cell cycle and Splicing) or in Non-SCN (for Immune and Adhesion). E) Projection of patient tumor biopsies onto lung cell lines. Lung cell lines are from the same batch, with these results thus mitigating concerns of a batch effect between patient tumor datasets. Ellipses represent 80% confidence regions. F) Melanoma (SKCM) tumors projected onto lung cell line-defined PC components. The neuroendocrine dedifferentiation signature is distinct from other dedifferentiation trajectories, such as melanoma dedifferentiation (clusters 1-4 from Tsoi et al.). G) GSEA of a t-test defined SCNC versus adenocarcinoma signature. Gene sets are ranked by NES score. Kolmogorov-Smirnov p values < 2×10-16 for all.

[0045] FIG. 9A-B. Small cell neuroendocrine cancer convergence is reflected by epigenetic changes. Related to Figure 2. A) Lung tumor methylation projected to lung cell line methylation. Cell lines are from the same batch, mitigating concerns of batch effect in tumor data derived from two different datasets. Ellipses represent 80% confidence regions. B) Rank signature overlap (RRHO) of PLSR component 1 loadings of matched sites averaged to gene loci across lung, prostate, and bladder. Only the subset of sites that matched across 450K microarray and RRBS sequencing platforms were used. The average rank of these ranked gene lists created independently on the 3 separate tissues were used in the enrichment analysis in Fig. 2E. Numbers shown are maximum -log10(p values) of the RRHO heatmap.

[0046] FIG. 10A-G. Small cell neuroendocrine cancers of lung and prostate origin share DNA copy number alteration patterns. Related to Figure 2. A) PCA on lung CCLE cell line DNA copy number alteration (CNA) profiles. (Side tracks are density plots of points along PC2.) B) Cell line PC1 score reflects degree of aneuploidy (integrated CNA (iCNA) score). C) Projection of lung tumors to cell line-

defined PC components of panel A. LUAD category randomly down-sampled for clarity. Cell lines are from the same batch, mitigating batch effect concerns in the lung tumor data which are from two separate datasets. D) Projection of prostate tumors to cell line-defined PC components of panel A. E) PLSR of lung and prostate tumor CNA profiles, regressed on SCN or non-SCN status. LUAD category randomly down-sampled to match numbers in other categories. F) Genome-wide view of CNA patterns. Each row is a tumor biopsy sample: SCLC-red, LUAD-light green, NEPC-blue, CRPC-brown; SC-green, non-SC (NSC)-orange. G) Copy number changes consistently observed in both lung and prostate SCNC signatures, when each cancer type is initially analyzed by PLSR independently. Y-axis represents the mean of concordant PLSR loadings.

[0047] FIG. 11A-L. Tumors with SCN phenotype in breast cancer. Related to Figure 3. Tumor tissues from the TCGA breast cancer (BRCA) cohort scored by pathologist review of diagnostic slides for SCN features. A-D) TCGA-AC-A2QH. The case was originally diagnosed as invasive ductal carcinoma. Careful examination of the digital picture available at the TCGA website revealed focal areas of SCNC. A) Low power view of the case. Yellow arrow indicates the junction of invasive ductal carcinoma and SCNC. B) Medium power view of the junction of invasive ductal carcinoma and SCNC. Blue arrow points to the component of invasive ductal carcinoma, while yellow arrow points to the component of SCNC. C) High power view of invasive ductal carcinoma region. D) High power view of SCNC region. E-H) TCGA-A7-A13D. The case was originally also diagnosed as invasive ductal carcinoma. Careful examination of the digital picture available at the TCGA website revealed focal areas of SCNC. E) Low power view of the case. Yellow arrow indicates the junction of invasive ductal carcinoma and SCNC. F) Medium power view of the junction of invasive ductal carcinoma and SCNC. Blue arrow points to the component of invasive ductal carcinoma, while yellow arrow points to the component of SCNC. G) High power view of invasive ductal carcinoma region. H) High power view of SCNC region. I) Boxplots of SCN Score by PAM50 breast subtype. Dashed red line (y= 3) is threshold for calling tumor SCN-like. J) Scatter plot of REST Score vs SCN Score for 4 tumor types (R is Pearson's correlation). K-L) Violin plot of Pearson's R from correlation of REST Score (K) or REST gene expression (L) to SCN score for TCGA cancers (dots are the individual tumor type R values). P value from one way t-test (null hypothesis mean = 0), t is the signed t statistic. In most cancer types in the TCGA cohort, higher SCN scores are positively correlated with the expression of REST target genes, which supports the loss of REST as a transcriptional repressor in cancers that have an SCN component. The expression of the REST gene itself is also somewhat positively correlated with SCN score in the majority of cancers types (whereas the paradigm is that it should be negatively correlated owing to its function in downregulation of neural genes). This finding down weights REST's potential as a direct marker of non-NE tissues in samples with mixed histology. One possibility for this discrepancy is that REST function can be lost in multiple ways such as by mutation, (Mahamdallie et al., 2015), or by truncation/alternative splicing that abrogates its function (Chen and Miller, 2018) – both of which would not require concordant changes in transcription levels.

[0048] FIG. 12A-C. Genetic mutations associated with the SCN phenotype. Related to Figure 3. A) Gene mutation association with continuous SCN score in lung and prostate tumors. Signed log p values are positive (negative) when associated with the small cell neuroendocrine state (non-SCN state). Red line indicates a q-value of 0.1. B) Pan-epithelial cancer gene mutation association with SCN score in primary tumors. Mutational status is the dependent variable, conditioned on neuroendocrine score and tissue type. Dashed red line indicates a q-value of 0.1. C) Gene mutation association by individual cancer type across all TCGA cancers with data available. Dashed red line indicates a nominal p value of 0.05. Cancers not shown have no genes that met this threshold (COADREAD, UCEC, PAAD).

[0049] FIG. 13A-D. Metastatic carcinomas display a convergent SCN trajectory with a neuronal signature. Related to Figure 4. A) Projection of adenocarcinoma and SCN metastases onto PCA framework of Fig. 1A (black dots are Fig. 1A samples). Pan-cancer metastatic SCNs project onto the SCN space defined by lung and prostate. B) Expression levels of top 50 SCN signature gene loadings (prostate and lung Fig. 1A-defined) in prostate tissue and cancer samples. Samples are sorted by the sum z-score across these 50 genes. C) Separation of proliferation signal and SCN signal. Note some SCN samples (blue) are either primary (circle) or metastatic (square) biopsies. This approach highlighted a unique distinction in the pancreatic neuroendocrine tumors, in which both primary and metastatic tumors had equal expression of the neuronal program, but could be distinguished by their expression of the proliferation signature. Here, the pancreatic, cervix, stomach, and thymus blue samples are those annotated with a neuroendocrine (NE)-related term in Robinson et al., 2017. Wilcoxon-Mann-Whitney test p values are shown comparing primary (orange) and metastasis (red). (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$). D) Additional low grade neuroendocrine tumors from the pancreas, rectum, and small intestine. A different number of genes was used due to differences in data source and processing. Thus, lung and prostate SCN, and TCGA PAAD and TCGA pancreatic NETs shown in S6C are replotted for frame of reference.

[0050] FIG. 14A-B. Blood cancers share expression profiles with SCNCs. Related to Figure 5. A) SCN score of blood and SRBCT patient biopsies by projection onto Figure 1A framework (non-z-score normalized to keep on common scale). B) Heatmap of significantly differentially expressed proteins between lung adeno (LUAD) and lung SCN (SCLC) cell lines (t-test p value < 0.01). Hierarchical clustering is done on measurements for lung adeno, lung SCN, and blood lines. Values were imputed for proteins lacking measurements as described in methods. Cell lines with >25% imputed values for the proteins shown were removed.

[0051] FIG. 15A-F. Shared drug sensitivities in SCNC, SRBCTs, and SCN-like epithelial cancer cell lines. Related to Figure 5. A) PCA of protein profiles for lung adeno (LUAD) and lung SCN (SCLC) lines, and projection of all other cell lines, with SRBCTs highlighted as a group. SRBCTs include neuroblastoma, medulloblastoma, rhabdomyosarcoma, and Ewing's sarcoma. Ellipses represent 80% confidence regions. B) PCA of drug sensitivity IC50 for lung adeno and SCN lines, and projection of

all other cell lines, with SRBCTs highlighted as a group. C) Individual drug sensitivities for selected drugs with high differential sensitivity (p value < 0.0001) in the lung SCN versus adeno comparison, and blood versus non-blood comparison. Individual blood cancer types are shown, which were all grouped into the BLOOD category in panels A and B. Samples marked BLOOD in this panel are blood cancer lines of unclear subtype. Drug targets shown in parentheses of axes labels. Y-axis is the log IC50. D) Left: PC2 (from Fig. 5C) of drug sensitivity data on lung cell lines with culture-based growth characteristic indicated. Top right: Scatterplot of t-test signed log p values of SCLC (all lines) vs. LUAD (x-axis) and blood vs. other (y-axis) drug sensitivity profile comparisons (Pearson's R = 0.68). Bottom right: As in left panel but restricting SCLC samples to only those that grow adherent (Pearson's R = 0.69). The correlation coefficient of the two x-axes, "SCLC (suspension only) vs. LUAD" and "SCLC (adherent only) vs. LUAD", is R = 0.81. Note: almost all LUAD lines grow adherent (94%). (n=20 adherent SCLC, 6 semi-adherent SCLC, 38 suspension SCLC; 168 blood samples, 638 other (non-blood, non-lung, non-SRBCT), 58 adherent LUAD). Analysis of the shRNA knockdown sensitivity data likewise shows correlation between SCLC and blood knockdown sensitivity, even when only adherent SCLCs are used. The correlation of the blood vs other knockdown sensitivity signature to the SCLC vs LUAD signature is R=0.32 using only adherent SCLCs, R=0.4 using only suspension SCLCs, and R=0.43 using all SCLCs (n=11 adherent, n=2 semi-adherent, n=10 suspension SCLCs). E) Correlation (Pearson) between cell line drug sensitivity SCN score and RNA expression SCN score for epithelial cancer cell lines. Cell lines with larger RNA and drug scores are more SCN-like. (Combined p value for all epithelial cancers except LUAD and SCLC using weighted-Stouffer's test). The first panel shows the correlation coefficient and p values for both LUAD and SCLC. The individual values are r = −0.14, p = 0.32, and r = −0.51, p = 0.0012, respectively. F) Mean cell line drug sensitivity SCN score versus mean expression SCN score for epithelial tissue cell lines. Inset, inclusion of the mean from lung small cell lines (red circle region corresponds to the main graph). (* p < 0.05, ** p < 0.01, *** p < 0.001, **** p < 0.0001).

[0052] FIG. 16A-E. Validation of shared vulnerabilities based on genome-scale functional RNAi screens. Related to Figure 6. A) Varimax-rotated PLSR (PLSRV) of blood versus non-blood samples (all other cell lines except SCLC and SRBCT). Ellipses represent 80% confidence regions. B) Projection of LUAD, SCLC and SRBCT cell lines onto PLSRV component 1 of panel A. C) Enrichment or de-enrichment of categories of gene sets, based on co-ranked blood and SCLC RNAi sensitivity gene set signatures. Dotted line in the p value bar plot indicates nominal Kolmogorov-Smirnov p value = 0.01. D-E) RRHO scatter plots of blood and lung SCN sensitivities by genes (D) and by gene set (E). Gene set RRHO scatter plots are subcategorized and colored by immune, lipid, neuro, and cell cycle gene sets, with all other gene sets colored gray (left: sensitivity based, right: expression based).

[0053] FIG. 17A-C. Prediction of samples with SCN features using a logistic regression model with LASSO (LRL), using top/bottom 100. Using the top 100 and bottom 100 genes from the loadings of Fig1A as input to the LRL, a search grid of 100 values of the tuning parameter were generated (final

model contained 47 genes). Predictions were performed on A) the original training set (100% accuracy) or B) lung cell lines in the CCLE (95.2% accuracy). (Dashed lines represent the value of the tuning parameter used for prediction, x-axis = logarithm of lambda tuning parameter (reflecting the number of genes used), y-axis = accuracy.) C) Genes in the final model under these parameters. Different sets of final genes can be similarly informative.

[0054] FIG. 18A-C. Prediction of samples with SCN features using a logistic regression model with LASSO (LRL), using top/bottom 500. Using the top 500 and bottom 500 genes from the loadings of Fig1A as input to the LRL, a search grid of 100 values of the tuning parameter were generated (final model contained 41 genes). Predictions were made on the A) the original training set (100% accuracy) or B) lung cell lines in the CCLE (95.2% accuracy). (Dashed lines represent the value of the tuning parameter used for prediction, x-axis = logarithm of lambda tuning parameter (reflecting the number of genes used), y-axis = accuracy.) C) Genes in the final model under these parameters. Different sets of final genes can be similarly informative.

DETAILED DESCRIPTION OF THE INVENTION

[0055] In this disclosure, by defining the molecular signatures shared between SCN cancers from different tissue types, the inventors have identified molecular networks, key transcription factors, and gene mutations that drive a convergent SCN phenotype. The implications of identifying this molecular spectrum of SCN cancers is apparent in functional data on drug response and gene dependency, which further supports the value of identifying SCN-like cases in clinical assessment. The molecular profiling-based SCN scoring identified cases with SCN or neuroendocrine features across numerous purportedly non-SCN primary tumors. These cases may not have been reported in the original pathology reports due to the fact that their SCN component is typically focal, and the conventional thinking that SCN is rare in breast and other epithelial tumors. Epithelial tumor types, such as breast cancer, in which SCN tumors rarely occur but have poor prognosis, present statistical challenges in advancing care through clinical trials, and thus cross-tissue learning supported by shared molecular profiles will likely be required. In sum, the current disclosure relates to methods for identifying and classifying patients with SCN and treatments that may be particularly effective to treat those patients.

I. Definitions

[0056] The term "substantially the same", "not significantly different", or "within the range" refers to a level of expression that is not significantly different than what it is compared to. Alternatively, or in conjunction, the term substantially the same refers to a level of expression that is less than 2, 1.5, or 1.25 fold different than the expression level it is compared to or less than 20, 15, 10, or 5% difference in expression.

[0057] By "subject" or "patient" is meant any single subject for which therapy is desired, including humans, cattle, dogs, guinea pigs, rabbits, chickens, and so on. Also intended to be included as a subject

are any subjects involved in clinical research trials not showing any clinical sign of disease, or subjects involved in epidemiological studies, or subjects used as controls.

[0058] The term "primer" or "probe" as used herein, is meant to encompass any nucleic acid that is capable of priming the synthesis of a nascent nucleic acid in a template-dependent process. Typically, primers are oligonucleotides from ten to twenty and/or thirty base pairs in length, but longer sequences can be employed. Primers may be provided in double-stranded and/or single-stranded form, although the single-stranded form is preferred. A probe may also refer to a nucleic acid that is capable of hybridizing by base complementarity to a nucleic acid of a gene of interest or a fragment thereof.

[0059] As used herein, "increased" or "elevated" or "decreased" refers to expression level of a biomarker in the subject's sample as compared to a reference level representing the same biomarker or a different biomarker. In certain aspects, the reference level may be a reference level of expression from a non-cancerous tissue from the same subject or from a cancerous tissue that is not a small cell neuroendocrine cancer. Alternatively, the reference level may be a reference level of expression from a different subject or group of subjects. For example, the reference level of expression may be an expression level obtained from a sample (e.g., a tissue, fluid or cell sample) of a subject or group of subjects without cancer, with cancer, with SCN or SRBCT cancer, with a can that is not SCN or SRBCT, with a cancer that has not undergone transdifferentiation, or an expression level obtained from a non-cancerous tissue of a subject or group of subjects with cancer. The reference level may be a single value or may be a range of values. The reference level of expression can be determined using any method known to those of ordinary skill in the art. The reference level may also be depicted graphically as an area on a graph. In certain embodiments, a reference level is a normalized level.

[0060] The term "determining" or "evaluating" as used herein may refer to directly or indirectly measuring, quantitating, or quantifying (either qualitatively or quantitatively).

II. Cancer Therapies

[0061] Embodiments of the disclosure relate to administration of cancer therapies. In addition to the cancer therapies listed in Table 4A and 4B, it is contemplated the cancer therapies described below, such as an immunotherapy, virus, polysaccharide, neoantigen, chemotherapy, radiotherapy, surgery, or other agent described below may be used alone or in combination to treat SCN and/or SRBCT tumors.

A. Immunotherapy

[0062] In some embodiments, the cancer therapy comprises a cancer immunotherapy. Cancer immunotherapy (sometimes called immuno-oncology, abbreviated IO) is the use of the immune system to treat cancer. Immunotherapies can be categorized as active, passive or hybrid (active and passive). These approaches exploit the fact that cancer cells often have molecules on their surface that can be detected by the immune system, known as tumour-associated antigens (TAAs); they are often proteins or other macromolecules (e.g. carbohydrates). Active immunotherapy directs the immune system to attack tumor cells by targeting TAAs. Passive immunotherapies enhance existing anti-tumor responses

and include the use of monoclonal antibodies, lymphocytes and cytokines. Immunotherapies useful in the methods of the disclosure are described below.

1. Checkpoint Inhibitors and Combination Treatment

[0063] Embodiments of the disclosure may include administration of immune checkpoint inhibitors (also referred to as checkpoint inhibitor therapy), which are further described below.

a. PD-1, PDL1, and PDL2 inhibitors

[0064] PD-1 can act in the tumor microenvironment where T cells encounter an infection or tumor. Activated T cells upregulate PD-1 and continue to express it in the peripheral tissues. Cytokines such as IFN-gamma induce the expression of PDL1 on epithelial cells and tumor cells. PDL2 is expressed on macrophages and dendritic cells. The main role of PD-1 is to limit the activity of effector T cells in the periphery and prevent excessive damage to the tissues during an immune response. Inhibitors of the disclosure may block one or more functions of PD-1 and/or PDL1 activity.

[0065] Alternative names for "PD-1" include CD279 and SLEB2. Alternative names for "PDL1" include B7-H1, B7-4, CD274, and B7-H. Alternative names for "PDL2" include B7-DC, Btdc, and CD273. In some embodiments, PD-1, PDL1, and PDL2 are human PD-1, PDL1 and PDL2.

[0066] In some embodiments, the PD-1 inhibitor is a molecule that inhibits the binding of PD-1 to its ligand binding partners. In a specific aspect, the PD-1 ligand binding partners are PDL1 and/or PDL2. In another embodiment, a PDL1 inhibitor is a molecule that inhibits the binding of PDL1 to its binding partners. In a specific aspect, PDL1 binding partners are PD-1 and/or B7-1. In another embodiment, the PDL2 inhibitor is a molecule that inhibits the binding of PDL2 to its binding partners. In a specific aspect, a PDL2 binding partner is PD-1. The inhibitor may be an antibody, an antigen binding fragment thereof, an immunoadhesin, a fusion protein, or oligopeptide. Exemplary antibodies are described in U.S. Patent Nos. 8,735,553, 8,354,509, and 8,008,449, all incorporated herein by reference. Other PD-1 inhibitors for use in the methods and compositions provided herein are known in the art such as described in U.S. Patent Application Nos. US2014/0294898, US2014/022021, and US2011/0008369, all incorporated herein by reference.

[0067] In some embodiments, the PD-1 inhibitor is an anti-PD-1 antibody (e.g., a human antibody, a humanized antibody, or a chimeric antibody). In some embodiments, the anti-PD-1 antibody is selected from the group consisting of nivolumab, pembrolizumab, and pidilizumab. In some embodiments, the PD-1 inhibitor is an immunoadhesin (e.g., an immunoadhesin comprising an extracellular or PD-1 binding portion of PDL1 or PDL2 fused to a constant region (e.g., an Fc region of an immunoglobulin sequence). In some embodiments, the PDL1 inhibitor comprises AMP- 224. Nivolumab, also known as MDX-1106-04, MDX-1106, ONO-4538, BMS-936558, and OPDIVO®, is an anti-PD-1 antibody described in WO2006/121168. Pembrolizumab, also known as MK-3475, Merck 3475, lambrolizumab, KEYTRUDA®, and SCH-900475, is an anti-PD-1 antibody described in WO2009/114335. Pidilizumab, also known as CT-011, hBAT, or hBAT-1, is an anti-PD-1 antibody

described in WO2009/101611. AMP-224, also known as B7-DCIg, is a PDL2-Fc fusion soluble receptor described in WO2010/027827 and WO2011/066342. Additional PD-1 inhibitors include MEDI0680, also known as AMP-514, and REGN2810.

[0068] In some embodiments, the immune checkpoint inhibitor is a PDL1 inhibitor such as Durvalumab, also known as MEDI4736, atezolizumab, also known as MPDL3280A, avelumab, also known as MSB00010118C, MDX-1105, BMS-936559, or combinations thereof. In certain aspects, the immune checkpoint inhibitor is a PDL2 inhibitor such as rHIgM12B7.

[0069] In some embodiments, the inhibitor comprises the heavy and light chain CDRs or VRs of nivolumab, pembrolizumab, or pidilizumab. Accordingly, in one embodiment, the inhibitor comprises the CDR1, CDR2, and CDR3 domains of the VH region of nivolumab, pembrolizumab, or pidilizumab, and the CDR1, CDR2 and CDR3 domains of the VL region of nivolumab, pembrolizumab, or pidilizumab. In another embodiment, the antibody competes for binding with and/or binds to the same epitope on PD-1, PDL1, or PDL2 as the above- mentioned antibodies. In another embodiment, the antibody has at least about 70, 75, 80, 85, 90, 95, 97, or 99% (or any derivable range therein) variable region amino acid sequence identity with the above-mentioned antibodies.

b. CTLA-4, B7-1, and B7-2

[0070] Another immune checkpoint that can be targeted in the methods provided herein is the cytotoxic T-lymphocyte-associated protein 4 (CTLA-4), also known as CD152. The complete cDNA sequence of human CTLA-4 has the Genbank accession number L15006. CTLA-4 is found on the surface of T cells and acts as an "off" switch when bound to B7-1 (CD80) or B7-2 (CD86) on the surface of antigen-presenting cells. CTLA4 is a member of the immunoglobulin superfamily that is expressed on the surface of Helper T cells and transmits an inhibitory signal to T cells. CTLA4 is similar to the T-cell co-stimulatory protein, CD28, and both molecules bind to B7-1 and B7-2 on antigen-presenting cells. CTLA-4 transmits an inhibitory signal to T cells, whereas CD28 transmits a stimulatory signal. Intracellular CTLA-4 is also found in regulatory T cells and may be important to their function. T cell activation through the T cell receptor and CD28 leads to increased expression of CTLA-4, an inhibitory receptor for B7 molecules. Inhibitors of the disclosure may block one or more functions of CTLA-4, B7-1, and/or B7-2 activity. In some embodiments, the inhibitor blocks the CTLA-4 and B7-1 interaction. In some embodiments, the inhibitor blocks the CTLA-4 and B7-2 interaction.

[0071] In some embodiments, the immune checkpoint inhibitor is an anti-CTLA-4 antibody (e.g., a human antibody, a humanized antibody, or a chimeric antibody), an antigen binding fragment thereof, an immunoadhesin, a fusion protein, or oligopeptide.

[0072] Anti-human-CTLA-4 antibodies (or VH and/or VL domains derived therefrom) suitable for use in the present methods can be generated using methods well known in the art. Alternatively, art recognized anti-CTLA-4 antibodies can be used. For example, the anti-CTLA-4 antibodies disclosed in: US 8,119,129, WO 01/14424, WO 98/42752; WO 00/37504 (CP675,206, also known as

tremelimumab; formerly ticilimumab), U.S. Patent No. 6,207,156; Hurwitz et al., 1998; can be used in the methods disclosed herein. The teachings of each of the aforementioned publications are hereby incorporated by reference. Antibodies that compete with any of these art-recognized antibodies for binding to CTLA-4 also can be used. For example, a humanized CTLA-4 antibody is described in International Patent Application No. WO2001/014424, WO2000/037504, and U.S. Patent No. 8,017,114; all incorporated herein by reference.

[0073] A further anti-CTLA-4 antibody useful as a checkpoint inhibitor in the methods and compositions of the disclosure is ipilimumab (also known as 10D1, MDX- 010, MDX- 101, and Yervoy®) or antigen binding fragments and variants thereof (see, e.g., WO0 1/14424).

[0074] In some embodiments, the inhibitor comprises the heavy and light chain CDRs or VRs of tremelimumab or ipilimumab. Accordingly, in one embodiment, the inhibitor comprises the CDR1, CDR2, and CDR3 domains of the VH region of tremelimumab or ipilimumab, and the CDR1, CDR2 and CDR3 domains of the VL region of tremelimumab or ipilimumab. In another embodiment, the antibody competes for binding with and/or binds to the same epitope on PD-1, B7-1, or B7-2 as the above- mentioned antibodies. In another embodiment, the antibody has at least about 70, 75, 80, 85, 90, 95, 97, or 99% (or any derivable range therein) variable region amino acid sequence identity with the above-mentioned antibodies.

2. Inhibition of co-stimulatory molecules

[0075] In some embodiments, the immunotherapy comprises an inhibitor of a co-stimulatory molecule. In some embodiments, the inhibitor comprises an inhibitor of B7-1 (CD80), B7-2 (CD86), CD28, ICOS, OX40 (TNFRSF4), 4-1BB (CD137; TNFRSF9), CD40L (CD40LG), GITR (TNFRSF18), and combinations thereof. Inhibitors include inhibitory antibodies, polypeptides, compounds, and nucleic acids.

3. Dendritic cell therapy

[0076] In some embodiments, the immunotherapy comprises dendritic cell therapy. Dendritic cell therapy provokes anti-tumor responses by causing dendritic cells to present tumor antigens to lymphocytes, which activates them, priming them to kill other cells that present the antigen. Dendritic cells are antigen presenting cells (APCs) in the mammalian immune system. In cancer treatment they aid cancer antigen targeting. One example of cellular cancer therapy based on dendritic cells is sipuleucel-T.

[0077] One method of inducing dendritic cells to present tumor antigens is by vaccination with autologous tumor lysates or short peptides (small parts of protein that correspond to the protein antigens on cancer cells). These peptides are often given in combination with adjuvants (highly immunogenic substances) to increase the immune and anti-tumor responses. Other adjuvants include proteins or other chemicals that attract and/or activate dendritic cells, such as granulocyte macrophage colony-stimulating factor (GM-CSF).

[0078] Dendritic cells can also be activated in vivo by making tumor cells express GM-CSF. This can be achieved by either genetically engineering tumor cells to produce GM-CSF or by infecting tumor cells with an oncolytic virus that expresses GM-CSF.

[0079] Another strategy is to remove dendritic cells from the blood of a patient and activate them outside the body. The dendritic cells are activated in the presence of tumor antigens, which may be a single tumor-specific peptide/protein or a tumor cell lysate (a solution of broken down tumor cells). These cells (with optional adjuvants) are infused and provoke an immune response.

[0080] Dendritic cell therapies include the use of antibodies that bind to receptors on the surface of dendritic cells. Antigens can be added to the antibody and can induce the dendritic cells to mature and provide immunity to the tumor.

4. CAR-T cell therapy

[0081] In some embodiments, the cancer therapy comprises CAR-T cell therapy. Chimeric antigen receptors (CARs, also known as chimeric immunoreceptors, chimeric T cell receptors or artificial T cell receptors) are engineered receptors that combine a new specificity with an immune cell to target cancer cells. Typically, these receptors graft the specificity of a monoclonal antibody onto a T cell. The receptors are called chimeric because they are fused of parts from different sources. CAR-T cell therapy refers to a treatment that uses such transformed cells for cancer therapy.

[0082] The basic principle of CAR-T cell design involves recombinant receptors that combine antigen-binding and T-cell activating functions. The general premise of CAR-T cells is to artificially generate T-cells targeted to markers found on cancer cells. Scientists can remove T-cells from a person, genetically alter them, and put them back into the patient for them to attack the cancer cells. Once the T cell has been engineered to become a CAR-T cell, it acts as a "living drug". CAR-T cells create a link between an extracellular ligand recognition domain to an intracellular signalling molecule which in turn activates T cells. The extracellular ligand recognition domain is usually a single-chain variable fragment (scFv). An important aspect of the safety of CAR-T cell therapy is how to ensure that only cancerous tumor cells are targeted, and not normal cells. The specificity of CAR-T cells is determined by the choice of molecule that is targeted.

[0083] Exemplary CAR-T therapies include Tisagenlecleucel (Kymriah) and Axicabtagene ciloleucel (Yescarta). In some embodiments, the CAR-T therapy targets CD19.

5. Cytokine therapy

[0084] In some embodiments, the immunotherapy comprises cytokine therapy. Cytokines are proteins produced by many types of cells present within a tumor. They can modulate immune responses. The tumor often employs them to allow it to grow and reduce the immune response. These immune-modulating effects allow them to be used as drugs to provoke an immune response. Two commonly used cytokines are interferons and interleukins.

[0085] Interferons are produced by the immune system. They are usually involved in anti-viral response, but also have use for cancer. They fall in three groups: type I (IFNα and IFNβ), type II (IFNγ) and type III (IFNλ).

[0086] Interleukins have an array of immune system effects. IL-2 is an exemplary interleukin cytokine therapy.

6. Adoptive T-cell therapy

[0087] In some embodiments, the immunotherapy comprises adoptive T cell therapy. Adoptive T cell therapy is a form of passive immunization by the transfusion of T-cells (adoptive cell transfer). They are found in blood and tissue and usually activate when they find foreign pathogens. Specifically they activate when the T-cell's surface receptors encounter cells that display parts of foreign proteins on their surface antigens. These can be either infected cells, or antigen presenting cells (APCs). They are found in normal tissue and in tumor tissue, where they are known as tumor infiltrating lymphocytes (TILs). They are activated by the presence of APCs such as dendritic cells that present tumor antigens. Although these cells can attack the tumor, the environment within the tumor is highly immunosuppressive, preventing immune-mediated tumour death.[60]

[0088] Multiple ways of producing and obtaining tumour targeted T-cells have been developed. T-cells specific to a tumor antigen can be removed from a tumor sample (TILs) or filtered from blood. Subsequent activation and culturing is performed ex vivo, with the results reinfused. Activation can take place through gene therapy, or by exposing the T cells to tumor antigens.

[0089] It is contemplated that a cancer treatment may exclude any of the cancer treatments described herein. Furthermore, embodiments of the disclosure include patients that have been previously treated for a therapy described herein, are currently being treated for a therapy described herein, or have not been treated for a therapy described herein. In some embodiments, the patient is one that has been determined to be resistant to a therapy described herein. In some embodiments, the patient is one that has been determined to be sensitive to a therapy described herein.

B. Oncolytic virus

[0090] In some embodiments, the cancer therapy comprises an oncolytic virus. An oncolytic virus is a virus that preferentially infects and kills cancer cells. As the infected cancer cells are destroyed by oncolysis, they release new infectious virus particles or virions to help destroy the remaining tumour. Oncolytic viruses are thought not only to cause direct destruction of the tumour cells, but also to stimulate host anti-tumour immune responses for long-term immunotherapy

C. Polysaccharides

[0091] In some embodiments, the cancer therapy comprises polysaccharides. Certain compounds found in mushrooms, primarily polysaccharides, can up-regulate the immune system and may have anti-cancer properties. For example, beta-glucans such as lentinan have been shown in laboratory studies to

stimulate macrophage, NK cells, T cells and immune system cytokines and have been investigated in clinical trials as immunologic adjuvants.

D. Neoantigens

[0092] In some embodiments, the cancer therapy comprises neoantigen administration. Many tumors express mutations. These mutations potentially create new targetable antigens (neoantigens) for use in T cell immunotherapy. The presence of CD8+ T cells in cancer lesions, as identified using RNA sequencing data, is higher in tumors with a high mutational burden. The level of transcripts associated with cytolytic activity of natural killer cells and T cells positively correlates with mutational load in many human tumors.

E. Chemotherapies

[0093] In some embodiments, the cancer therapy comprises a chemotherapy. Suitable classes of chemotherapeutic agents include (a) Alkylating Agents, such as nitrogen mustards (e.g., mechlorethamine, cylophosphamide, ifosfamide, melphalan, chlorambucil), ethylenimines and methylmelamines (e.g., hexamethylmelamine, thiotepa), alkyl sulfonates (e.g., busulfan), nitrosoureas (e.g., carmustine, lomustine, chlorozoticin, streptozocin) and triazines (e.g., dicarbazine), (b) Antimetabolites, such as folic acid analogs (e.g., methotrexate), pyrimidine analogs (e.g., 5-fluorouracil, floxuridine, cytarabine, azauridine) and purine analogs and related materials (e.g., 6-mercaptopurine, 6-thioguanine, pentostatin), (c) Natural Products, such as vinca alkaloids (e.g., vinblastine, vincristine), epipodophylotoxins (e.g., etoposide, teniposide), antibiotics (e.g., dactinomycin, daunorubicin, doxorubicin, bleomycin, plicamycin and mitoxanthrone), enzymes (e.g., L-asparaginase), and biological response modifiers (e.g., Interferon-α), and (d) Miscellaneous Agents, such as platinum coordination complexes (e.g., cisplatin, carboplatin), substituted ureas (e.g., hydroxyurea), methylhydiazine derivatives (e.g., procarbazine), and adreocortical suppressants (e.g., taxol and mitotane). In some embodiments, cisplatin is a particularly suitable chemotherapeutic agent.

[0094] Cisplatin has been widely used to treat cancers such as, for example, metastatic testicular or ovarian carcinoma, advanced bladder cancer, head or neck cancer, cervical cancer, lung cancer or other tumors. Cisplatin is not absorbed orally and must therefore be delivered via other routes such as, for example, intravenous, subcutaneous, intratumoral or intraperitoneal injection. Cisplatin can be used alone or in combination with other agents, with efficacious doses used in clinical applications including about 15 mg/m^2 to about 20 mg/m^2 for 5 days every three weeks for a total of three courses being contemplated in certain embodiments. In some embodiments, the amount of cisplatin delivered to the cell and/or subject in conjunction with the construct comprising an Egr-1 promoter operably linked to a polynucleotide encoding the therapeutic polypeptide is less than the amount that would be delivered when using cisplatin alone.

[0095] Other suitable chemotherapeutic agents include antimicrotubule agents, e.g., Paclitaxel ("Taxol") and doxorubicin hydrochloride ("doxorubicin"). The combination of an Egr-1

promoter/TNFα construct delivered via an adenoviral vector and doxorubicin was determined to be effective in overcoming resistance to chemotherapy and/or TNF-α, which suggests that combination treatment with the construct and doxorubicin overcomes resistance to both doxorubicin and TNF-α.

[0096] Doxorubicin is absorbed poorly and is preferably administered intravenously. In certain embodiments, appropriate intravenous doses for an adult include about 60 mg/m^2 to about 75 mg/m^2 at about 21-day intervals or about 25 mg/m^2 to about 30 mg/m^2 on each of 2 or 3 successive days repeated at about 3 week to about 4 week intervals or about 20 mg/m^2 once a week. The lowest dose should be used in elderly patients, when there is prior bone-marrow depression caused by prior chemotherapy or neoplastic marrow invasion, or when the drug is combined with other myelopoietic suppressant drugs.

[0097] Nitrogen mustards are another suitable chemotherapeutic agent useful in the methods of the disclosure. A nitrogen mustard may include, but is not limited to, mechlorethamine (HN_2), cyclophosphamide and/or ifosfamide, melphalan (L-sarcolysin), and chlorambucil. Cyclophosphamide (CYTOXAN®) is available from Mead Johnson and NEOSTAR® is available from Adria), is another suitable chemotherapeutic agent. Suitable oral doses for adults include, for example, about 1 mg/kg/day to about 5 mg/kg/day, intravenous doses include, for example, initially about 40 mg/kg to about 50 mg/kg in divided doses over a period of about 2 days to about 5 days or about 10 mg/kg to about 15 mg/kg about every 7 days to about 10 days or about 3 mg/kg to about 5 mg/kg twice a week or about 1.5 mg/kg/day to about 3 mg/kg/day. Because of adverse gastrointestinal effects, the intravenous route is preferred. The drug also sometimes is administered intramuscularly, by infiltration or into body cavities.

[0098] Additional suitable chemotherapeutic agents include pyrimidine analogs, such as cytarabine (cytosine arabinoside), 5-fluorouracil (fluouracil; 5-FU) and floxuridine (fluorode-oxyuridine; FudR). 5-FU may be administered to a subject in a dosage of anywhere between about 7.5 to about 1000 mg/m2. Further, 5-FU dosing schedules may be for a variety of time periods, for example up to six weeks, or as determined by one of ordinary skill in the art to which this disclosure pertains.

[0099] Gemcitabine diphosphate (GEMZAR®, Eli Lilly & Co., "gemcitabine"), another suitable chemotherapeutic agent, is recommended for treatment of advanced and metastatic pancreatic cancer, and will therefore be useful in the present disclosure for these cancers as well.

[00100] The amount of the chemotherapeutic agent delivered to the patient may be variable. In one suitable embodiment, the chemotherapeutic agent may be administered in an amount effective to cause arrest or regression of the cancer in a host, when the chemotherapy is administered with the construct. In other embodiments, the chemotherapeutic agent may be administered in an amount that is anywhere between 2 to 10,000 fold less than the chemotherapeutic effective dose of the chemotherapeutic agent. For example, the chemotherapeutic agent may be administered in an amount that is about 20 fold less, about 500 fold less or even about 5000 fold less than the chemotherapeutic effective dose of the chemotherapeutic agent. The chemotherapeutics of the disclosure can be tested in vivo for the desired

therapeutic activity in combination with the construct, as well as for determination of effective dosages. For example, such compounds can be tested in suitable animal model systems prior to testing in humans, including, but not limited to, rats, mice, chicken, cows, monkeys, rabbits, etc. In vitro testing may also be used to determine suitable combinations and dosages, as described in the examples.

F. Radiotherapy

[00101] In some embodiments, the cancer therapy or prior therapy comprises radiation, such as ionizing radiation. As used herein, "ionizing radiation" means radiation comprising particles or photons that have sufficient energy or can produce sufficient energy via nuclear interactions to produce ionization (gain or loss of electrons). An exemplary and preferred ionizing radiation is an x-radiation. Means for delivering x-radiation to a target tissue or cell are well known in the art.

[00102] In some embodiments, the amount of ionizing radiation is greater than 20 Gy and is administered in one dose. In some embodiments, the amount of ionizing radiation is 18 Gy and is administered in three doses. In some embodiments, the amount of ionizing radiation is at least, at most, or exactly 2, 4, 6, 8, 10, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 18, 19, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, or 40 Gy (or any derivable range therein). In some embodiments, the ionizing radiation is administered in at least, at most, or exactly 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 does (or any derivable range therein). When more than one dose is administered, the does may be about 1, 4, 8, 12, or 24 hours or 1, 2, 3, 4, 5, 6, 7, or 8 days or 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, or 16 weeks apart, or any derivable range therein.

[00103] In some embodiments, the amount of IR may be presented as a total dose of IR, which is then administered in fractionated doses. For example, in some embodiments, the total dose is 50 Gy administered in 10 fractionated doses of 5 Gy each. In some embodiments, the total dose is 50-90 Gy, administered in 20-60 fractionated doses of 2-3 Gy each. In some embodiments, the total dose of IR is at least, at most, or about 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 125, 130, 135, 140, or 150 (or any derivable range therein). In some embodiments, the total dose is administered in fractionated doses of at least, at most, or exactly 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 15, 20, 25, 30, 35, 40, 45, or 50 Gy (or any derivable range therein. In some embodiments, at least, at most, or exactly 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, or 100 fractionated doses are administered (or any derivable range therein). In some embodiments, at least, at most, or exactly 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, or 12 (or any derivable range therein) fractionated doses are administered

per day. In some embodiments, at least, at most, or exactly 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, or 30 (or any derivable range therein) fractionated doses are administered per week.

G. Surgery

[00104] In some embodiments, the cancer therapy comprises surgery. Approximately 60% of persons with cancer will undergo surgery of some type, which includes preventative, diagnostic or staging, curative, and palliative surgery. Curative surgery includes resection in which all or part of cancerous tissue is physically removed, excised, and/or destroyed and may be used in conjunction with other therapies, such as the treatment of the present embodiments, chemotherapy, radiotherapy, hormonal therapy, gene therapy, immunotherapy, and/or alternative therapies. Tumor resection refers to physical removal of at least part of a tumor. In addition to tumor resection, treatment by surgery includes laser surgery, cryosurgery, electrosurgery, and microscopically-controlled surgery (Mohs' surgery).

[00105] Upon excision of part or all of cancerous cells, tissue, or tumor, a cavity may be formed in the body. Treatment may be accomplished by perfusion, direct injection, or local application of the area with an additional anti-cancer therapy. Such treatment may be repeated, for example, every 1, 2, 3, 4, 5, 6, or 7 days, or every 1, 2, 3, 4, and 5 weeks or every 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, or 12 months. These treatments may be of varying dosages as well.

III. ROC analysis

[00106] In statistics, a receiver operating characteristic (ROC), or ROC curve, is a graphical plot that illustrates the performance of a binary classifier system as its discrimination threshold is varied. The curve is created by plotting the true positive rate against the false positive rate at various threshold settings. (The true-positive rate is also known as sensitivity in biomedical informatics, or recall in machine learning. The false-positive rate is also known as the fall-out and can be calculated as 1 - specificity). The ROC curve is thus the sensitivity as a function of fall-out. In general, if the probability distributions for both detection and false alarm are known, the ROC curve can be generated by plotting the cumulative distribution function (area under the probability distribution from –infinity to + infinity) of the detection probability in the y-axis versus the cumulative distribution function of the false-alarm probability in x-axis.

[00107] ROC analysis provides tools to select possibly optimal models and to discard suboptimal ones independently from (and prior to specifying) the cost context or the class distribution. ROC analysis is related in a direct and natural way to cost/benefit analysis of diagnostic decision making. ROC analysis provides a tool for creating cut-off values to partition patient populations into high expression and low expression of certain biomarkers.

[00108] The ROC is also known as a relative operating characteristic curve, because it is a comparison of two operating characteristics (TPR and FPR) as the criterion changes. ROC analysis

curves are known in the art and described in Metz CE (1978) Basic principles of ROC analysis. Seminars in Nuclear Medicine 8:283-298; Youden WJ (1950) An index for rating diagnostic tests. Cancer 3:32-35; Zweig MH, Campbell G (1993) Receiver-operating characteristic (ROC) plots: a fundamental evaluation tool in clinical medicine. Clinical Chemistry 39:561-577; and Greiner M, Pfeiffer D, Smith RD (2000) Principles and practical application of the receiver-operating characteristic analysis for diagnostic tests. Preventive Veterinary Medicine 45:23-41, which are herein incorporated by reference in their entirety.

IV. Sample Preparation

[00109] In certain aspects, methods involve obtaining a biological sample from a subject and/or evaluating a biological sample. The methods of obtaining provided herein may include methods of biopsy such as fine needle aspiration, core needle biopsy, vacuum assisted biopsy, incisional biopsy, excisional biopsy, punch biopsy, shave biopsy or skin biopsy. In certain embodiments the sample is obtained from a biopsy from esophageal tissue by any of the biopsy methods previously mentioned. In other embodiments the sample may be obtained from any of the tissues provided herein that include but are not limited to non-cancerous or cancerous tissue and non-cancerous or cancerous tissue from the serum, gall bladder, mucosal, skin, heart, lung, breast, pancreas, blood, liver, muscle, kidney, smooth muscle, bladder, colon, intestine, brain, prostate, esophagus, or thyroid tissue. Alternatively, the sample may be obtained from any other source including but not limited to blood, sweat, hair follicle, buccal tissue, tears, menses, feces, or saliva. In certain aspects of the current methods, any medical professional such as a doctor, nurse or medical technician may obtain a biological sample for testing. Yet further, the biological sample can be obtained without the assistance of a medical professional.

[00110] A sample may include but is not limited to, tissue, cells, or biological material from cells or derived from cells of a subject. The biological sample may be a heterogeneous or homogeneous population of cells or tissues. The biological sample may be obtained using any method known to the art that can provide a sample suitable for the analytical methods described herein. The sample may be obtained by non-invasive methods including but not limited to: scraping of the skin or cervix, swabbing of the cheek, saliva collection, urine collection, feces collection, collection of menses, tears, or semen.

[00111] The sample may be obtained by methods known in the art. In certain embodiments the samples are obtained by biopsy. In other embodiments the sample is obtained by swabbing, endoscopy, scraping, phlebotomy, or any other methods known in the art. In some cases, the sample may be obtained, stored, or transported using components of a kit of the present methods. In some cases, multiple samples, such as multiple esophageal samples may be obtained for diagnosis by the methods described herein. In other cases, multiple samples, such as one or more samples from one tissue type (for example esophagus) and one or more samples from another specimen (for example serum) may be obtained for diagnosis by the methods. In some cases, multiple samples such as one or more samples from one tissue type (e.g. esophagus) and one or more samples from another specimen (e.g. serum) may

be obtained at the same or different times. Samples may be obtained at different times are stored and/or analyzed by different methods. For example, a sample may be obtained and analyzed by routine staining methods or any other cytological analysis methods.

[00112] In some embodiments the biological sample may be obtained by a physician, nurse, or other medical professional such as a medical technician, endocrinologist, cytologist, phlebotomist, radiologist, or a pulmonologist. The medical professional may indicate the appropriate test or assay to perform on the sample. In certain aspects a molecular profiling business may consult on which assays or tests are most appropriately indicated. In further aspects of the current methods, the patient or subject may obtain a biological sample for testing without the assistance of a medical professional, such as obtaining a whole blood sample, a urine sample, a fecal sample, a buccal sample, or a saliva sample.

[00113] In other cases, the sample is obtained by an invasive procedure including but not limited to: biopsy, needle aspiration, endoscopy, or phlebotomy. The method of needle aspiration may further include fine needle aspiration, core needle biopsy, vacuum assisted biopsy, or large core biopsy. In some embodiments, multiple samples may be obtained by the methods herein to ensure a sufficient amount of biological material.

[00114] General methods for obtaining biological samples are also known in the art. Publications such as Ramzy, Ibrahim Clinical Cytopathology and Aspiration Biopsy 2001, which is herein incorporated by reference in its entirety, describes general methods for biopsy and cytological methods. In one embodiment, the sample is a fine needle aspirate of a esophageal or a suspected esophageal tumor or neoplasm. In some cases, the fine needle aspirate sampling procedure may be guided by the use of an ultrasound, X-ray, or other imaging device.

[00115] In some embodiments of the present methods, the molecular profiling business may obtain the biological sample from a subject directly, from a medical professional, from a third party, or from a kit provided by a molecular profiling business or a third party. In some cases, the biological sample may be obtained by the molecular profiling business after the subject, a medical professional, or a third party acquires and sends the biological sample to the molecular profiling business. In some cases, the molecular profiling business may provide suitable containers, and excipients for storage and transport of the biological sample to the molecular profiling business.

[00116] In some embodiments of the methods described herein, a medical professional need not be involved in the initial diagnosis or sample acquisition. An individual may alternatively obtain a sample through the use of an over the counter (OTC) kit. An OTC kit may contain a means for obtaining said sample as described herein, a means for storing said sample for inspection, and instructions for proper use of the kit. In some cases, molecular profiling services are included in the price for purchase of the kit. In other cases, the molecular profiling services are billed separately. A sample suitable for use by the molecular profiling business may be any material containing tissues, cells, nucleic acids, genes,

gene fragments, expression products, gene expression products, or gene expression product fragments of an individual to be tested. Methods for determining sample suitability and/or adequacy are provided.

[00117] In some embodiments, the subject may be referred to a specialist such as an oncologist, surgeon, or endocrinologist. The specialist may likewise obtain a biological sample for testing or refer the individual to a testing center or laboratory for submission of the biological sample. In some cases the medical professional may refer the subject to a testing center or laboratory for submission of the biological sample. In other cases, the subject may provide the sample. In some cases, a molecular profiling business may obtain the sample.

V. Evaluating Levels of Biomarkers

[00118] In certain aspects a meta-analysis of expression or activity can be performed. In statistics, a meta-analysis combines the results of several studies that address a set of related research hypotheses. This is normally done by identification of a common measure of effect size, which is modeled using a form of meta-regression. Generally, three types of models can be distinguished in the literature on meta-analysis: simple regression, fixed effects meta-regression and random effects meta-regression. Resulting overall averages when controlling for study characteristics can be considered meta-effect sizes, which are more powerful estimates of the true effect size than those derived in a single study under a given single set of assumptions and conditions. A meta-gene expression value, in this context, is to be understood as being the median of the normalized expression of a biomarker gene or activity. Normalization of the expression of a biomarker gene is preferably achieved by dividing the expression level of the individual marker gene to be normalized by the respective individual median expression of this marker genes, wherein said median expression is preferably calculated from multiple measurements of the respective gene in a sufficiently large cohort of test individuals. The test cohort preferably comprises at least 3, 10, 100, 200, 1000 individuals or more including all values and ranges thereof. Dataset-specific bias can be removed or minimized allowing multiple datasets to be combined for meta-analyses (*See* Sims *et al.* BMC Medical Genomics (1:42), 1-14, 2008, which is incorporated herein by reference in its entirety).

[00119] The calculation of a meta-gene expression value is performed by: (i) determining the gene expression value of at least two, preferably more genes (ii) "normalizing" the gene expression value of each individual gene by dividing the expression value with a coefficient which is approximately the median expression value of the respective gene in a representative breast cancer cohort (iii) calculating the median of the group of normalized gene expression values.

[00120] A gene shall be understood to be specifically expressed in a certain cell type if the expression level of the gene in the cell type is at least about 2-fold, 5-fold, 10-fold, 100-fold, 1000-fold, or 10000-fold higher (or any range derivable therein) than in a reference cell type, or in a mixture of reference cell types. Reference cell types include non-cancerous tissue cells or a heterogenous population of cancers.

[00121] In certain algorithms a suitable threshold level is first determined for a marker gene. The suitable threshold level can be determined from measurements of the marker gene expression in multiple individuals from a test cohort. The median expression of the marker gene in said multiple expression measurements is taken as the suitable threshold value.

[00122] Comparison of multiple marker genes with a threshold level can be performed as follows: 1. The individual marker genes are compared to their respective threshold levels. 2. The number of marker genes, the expression level of which is above their respective threshold level, is determined. 3. If a marker genes is expressed above its respective threshold level, then the expression level of the marker gene is taken to be "above the threshold level".

[00123] Some embodiments include determining that a measured expression level is higher than, lower than, increased relative to, decreased relative to, equal to, or within a predetermined amount of a reference expression level. In some embodiments, a higher, lower, increased, or decreased expression level is at least 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 50, 100, 150, 200, 250, 500, or 1000 fold (or any derivable range therein) or at least 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, or 900% different than the reference level, or any derivable range therein. These values may represent a predetermined threshold level, and some embodiments include determining that the measured expression level is higher by a predetermined amount or lower by a predetermined amount than a reference level. In some embodiments, a level of expression may be qualified as “low” or “high,” which indicates the patient expresses a certain gene or miRNA at a level relative to a reference level or a level with a range of reference levels that are determined from multiple samples meeting particular criteria. The level or range of levels in multiple control samples is an example of this. In some embodiments, that certain level or a predetermined threshold value is at, below, or above 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 percentile, or any range derivable therein. Moreover, a threshold level may be derived from a cohort of individuals meeting a particular criteria. The number in the cohort may be, be at least, or be at most 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 441, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000 or more (or any range derivable therein). A measured expression level can be considered equal to a reference expression level if it is within a certain amount of the reference expression level, and such amount may be an amount that is predetermined. This can be the case, for example, when a classifier is used to identify the molecular subtype of a metastasis. The predetermined amount may be within 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 2, 3, 4, 5, 6, 7, 8,

9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 30, 35, 40, 45, or 50% of the reference level, or any range derivable therein.

[00124] For any comparison of gene or miRNA expression levels to a mean expression levels or a reference expression levels, the comparison is to be made on a gene-by-gene and miRNA-by-miRNA basis. For example, if the expression levels of gene A, gene B, and miRNA X in a patient's cancerous sample are measured, a comparison to mean expression levels in cancerous samples of a cohort of patients would involve: comparing the expression level of gene A in the patient's cancerous sample with the mean expression level of gene A in cancerous samples of the cohort of patients, comparing the expression level of gene B in the patient's sample with the mean expression level of gene B in samples of the cohort of patients, and comparing the expression level of miRNA X in the patient's metastasis with the mean expression level of miRNA X in cancerous samples of the cohort of patients. Comparisons that involve determining whether the expression level measured in a patient's sample is within a predetermined amount of a mean expression level or reference expression level are similarly done on a gene-by-gene and miRNA-by-miRNA basis, as applicable.

VI. Nucleic Acid Assays

[00125] Aspects of the methods include assaying nucleic acids to determine expression levels. Arrays can be used to detect differences between two samples. Specifically contemplated applications include identifying and/or quantifying differences between bacterial populations from a sample that is normal and from a sample that is not normal, between a cancerous condition and a non-cancerous condition, or between two differently treated samples. Also, microbiome profiles may be compared between a sample believed to be susceptible to a particular disease or condition and one believed to be not susceptible or resistant to that disease or condition. A sample that is not normal is one exhibiting phenotypic trait(s) of a disease or condition or one believed to be not normal with respect to that disease or condition. It may be compared to a cell that is normal with respect to that disease or condition. Phenotypic traits include symptoms of, or susceptibility to, a disease or condition of which a component is or may or may not be genetic or caused by a hyperproliferative or neoplastic cell or cells.

[00126] An array comprises a solid support with nucleic acid probes attached to the support. Arrays typically comprise a plurality of different nucleic acid probes that are coupled to a surface of a substrate in different, known locations. These arrays, also described as "microarrays" or colloquially "chips" have been generally described in the art, for example, U.S. Pat. Nos. 5,143,854, 5,445,934, 5,744,305, 5,677,195, 6,040,193, 5,424,186 and Fodor et al., 1991), each of which is incorporated by reference in its entirety for all purposes. Techniques for the synthesis of these arrays using mechanical synthesis methods are described in, e.g., U.S. Pat. No. 5,384,261, incorporated herein by reference in its entirety for all purposes. Although a planar array surface is used in certain aspects, the array may be fabricated on a surface of virtually any shape or even a multiplicity of surfaces. Arrays may be nucleic acids on beads, gels, polymeric surfaces, fibers such as fiber optics, glass or any other appropriate substrate, see

U.S. Pat. Nos. 5,770,358, 5,789,162, 5,708,153, 6,040,193 and 5,800,992, which are hereby incorporated in their entirety for all purposes.

[00127] In addition to the use of arrays and microarrays, it is contemplated that a number of difference assays could be employed to analyze nucleic acids, their activities, and their effects. Such assays include, but are not limited to, nucleic amplification, polymerase chain reaction, quantitative PCR, RT-PCR, in situ hybridization, Northern hybridization, hybridization protection assay (HPA)(GenProbe), branched DNA (bDNA) assay (Chiron), rolling circle amplification (RCA), single molecule hybridization detection (US Genomics), Invader assay (ThirdWave Technologies), and/or Bridge Litigation Assay (Genaco).

VII. Therapeutic Methods

[00128] The current methods and compositions relate to methods for treating cancer. In some embodiments, the cancer comprises a solid tumor. In some embodiments, the cancer is non-lymphatic. In some embodiments, the cancer is an epithelial cancer. In some embodiments, the caner excludes a hematological cancer.

[00129] The compositions of the disclosure may be used for in vivo, in vitro, or ex vivo administration. The route of administration of the composition may be, for example, intratumoral, intracutaneous, subcutaneous, intravenous, intralymphatic, and intraperitoneal administrations. In some embodiments, the administration is intratumoral or intralymphatic or peri-tumoral. In some embodiments, the compositions are administered directly into a cancer tissue or a lymph node.

[00130] "Tumor," as used herein, refers to all neoplastic cell growth and proliferation, whether malignant or benign, and all pre-cancerous and cancerous cells and tissues. The terms "cancer," "cancerous," "cell proliferative disorder," "proliferative disorder," and "tumor" are not mutually exclusive as referred to herein.

[00131] The cancers amenable for treatment include, but are not limited to, tumors of all types, locations, sizes, and characteristics. The methods and compositions of the disclosure are suitable for treating, for example, pancreatic cancer, colon cancer, acute myeloid leukemia, adrenocortical carcinoma, AIDS-related cancers, AIDS-related lymphoma, anal cancer, appendix cancer, astrocytoma, childhood cerebellar or cerebral basal cell carcinoma, bile duct cancer, extrahepatic bladder cancer, bone cancer, osteosarcoma/malignant fibrous histiocytoma, brainstem glioma, brain tumor, cerebellar astrocytoma brain tumor, cerebral astrocytoma/malignant glioma brain tumor, ependymoma brain tumor, medulloblastoma brain tumor, supratentorial primitive neuroectodermal tumors brain tumor, visual pathway and hypothalamic glioma, breast cancer, specific breast cancers such as ductal carcinoma in situ, invasive ductal carcinoma, tubular carcinoma of the breast, medullary carcinoma of the breast, mucinous carcinoma of the breast, papillary carcinoma of the breast, cribriform carcinoma of the breast, invasive lobular carcinoma, inflammatory breast cancer, lobular carcinoma in situ, male breast cancer, paget's disease of the nipple, phyllodes tumors of the breast, recurrent and/or metastatic

breast, cancer, luminal A or B breast cancer, triple-negative/basal-like breast cancer, and HER2-enriched breast cancer, lymphoid cancer, bronchial adenomas/carcinoids, tracheal cancer, Burkitt lymphoma, carcinoid tumor, childhood carcinoid tumor, gastrointestinal carcinoma of unknown primary, central nervous system lymphoma, primary cerebellar astrocytoma, childhood cerebral astrocytoma/malignant glioma, childhood cervical cancer, childhood cancers, chronic lymphocytic leukemia, chronic myelogenous leukemia, chronic myeloproliferative disorders, cutaneous T-cell lymphoma, desmoplastic small round cell tumor, endometrial cancer, ependymoma, esophageal cancer, Ewing's, childhood extragonadal Germ cell tumor, extrahepatic bile duct cancer, eye cancer, retinoblastoma, gallbladder cancer, gastric (stomach) cancer, gastrointestinal carcinoid tumor, gastrointestinal stromal tumor (GIST), germ cell tumor: extracranial, extragonadal, or ovarian, gestational trophoblastic tumor, glioma of the brain stem, glioma, childhood cerebral astrocytoma, childhood visual pathway and hypothalamic glioma, gastric carcinoid, hairy cell leukemia, head and neck cancer, heart cancer, hepatocellular (liver) cancer, Hodgkin lymphoma, hypopharyngeal cancer, hypothalamic and visual pathway glioma, childhood intraocular melanoma, islet cell carcinoma (endocrine pancreas), kaposi sarcoma, kidney cancer (renal cell cancer), laryngeal cancer , leukemia, acute lymphoblastic (also called acute lymphocytic leukemia) leukemia, acute myeloid (also called acute myelogenous leukemia) leukemia, chronic lymphocytic (also called chronic lymphocytic leukemia) leukemia, chronic myelogenous (also called chronic myeloid leukemia) leukemia, hairy cell lip and oral cavity cancer, liposarcoma, liver cancer (primary), non-small cell lung cancer, small cell lung cancer, lymphomas, AIDS-related lymphoma, Burkitt lymphoma, cutaneous T-cell lymphoma, Hodgkin lymphoma, Non-Hodgkin (an old classification of all lymphomas except Hodgkin's) lymphoma, primary central nervous system lymphoma, Waldenstrom macroglobulinemia, malignant fibrous histiocytoma of bone/osteosarcoma, childhood medulloblastoma, intraocular (eye) melanoma, merkel cell carcinoma, adult malignant mesothelioma, childhood mesothelioma, metastatic squamous neck cancer, mouth cancer, multiple endocrine neoplasia syndrome, multiple myeloma/plasma cell neoplasm, mycosis fungoides, myelodysplastic syndromes, myelodysplastic/myeloproliferative diseases, chronic myelogenous leukemia, adult acute myeloid leukemia, childhood acute myeloid leukemia, multiple myeloma, chronic myeloproliferative disorders, nasal cavity and paranasal sinus cancer, nasopharyngeal carcinoma, neuroblastoma, oral cancer, oropharyngeal cancer, osteosarcoma/ malignant, fibrous histiocytoma of bone, ovarian cancer, ovarian epithelial cancer (surface epithelial-stromal tumor), ovarian germ cell tumor, ovarian low malignant potential tumor, pancreatic cancer, islet cell paranasal sinus and nasal cavity cancer, parathyroid cancer, penile cancer, pharyngeal cancer, pheochromocytoma, pineal astrocytoma, pineal germinoma, pineoblastoma and supratentorial primitive neuroectodermal tumors, childhood pituitary adenoma, plasma cell neoplasia/multiple myeloma, pleuropulmonary blastoma, primary central nervous system lymphoma, prostate cancer, rectal cancer, renal cell carcinoma (kidney cancer), renal pelvis and ureter transitional cell cancer, retinoblastoma, rhabdomyosarcoma, childhood Salivary gland cancer Sarcoma, Ewing family of tumors, Kaposi

sarcoma, soft tissue sarcoma, uterine sezary syndrome sarcoma, skin cancer (nonmelanoma), skin cancer (melanoma), skin carcinoma, Merkel cell small cell lung cancer, small intestine cancer, soft tissue sarcoma, squamous cell carcinoma. squamous neck cancer with occult primary, metastatic stomach cancer, supratentorial primitive neuroectodermal tumor, childhood T-cell lymphoma, testicular cancer, throat cancer, thymoma, childhood thymoma, thymic carcinoma, thyroid cancer, urethral cancer, uterine cancer, endometrial uterine sarcoma, vaginal cancer, visual pathway and hypothalamic glioma, childhood vulvar cancer, and wilms tumor (kidney cancer).

VIII. Administration of Therapeutic Compositions

[00132] The therapy provided herein may comprise administration of a combination of therapeutic agents, such as a first cancer therapy and a second cancer therapy. The therapies may be administered in any suitable manner known in the art. For example, the first and second cancer treatment may be administered sequentially (at different times) or concurrently (at the same time). In some embodiments, the first and second cancer treatments are administered in a separate composition. In some embodiments, the first and second cancer treatments are in the same composition.

[00133] Embodiments of the disclosure relate to compositions and methods comprising therapeutic compositions. The different therapies may be administered in one composition or in more than one composition, such as 2 compositions, 3 compositions, or 4 compositions. Various combinations of the agents may be employed, for example, a first cancer treatment is “A” and a second cancer treatment is “B”:

A/B/A B/A/B B/B/A A/A/B A/B/B B/A/A A/B/B/B B/A/B/B
B/B/B/A B/B/A/B A/A/B/B A/B/A/B A/B/B/A B/B/A/A
B/A/B/A B/A/A/B A/A/A/B B/A/A/A A/B/A/A A/A/B/A

[00134] The therapeutic agents of the disclosure may be administered by the same route of administration or by different routes of administration. In some embodiments, the cancer therapy is administered intravenously, intramuscularly, subcutaneously, topically, orally, transdermally, intraperitoneally, intraorbitally, by implantation, by inhalation, intrathecally, intraventricularly, or intranasally. In some embodiments, the antibiotic is administered intravenously, intramuscularly, subcutaneously, topically, orally, transdermally, intraperitoneally, intraorbitally, by implantation, by inhalation, intrathecally, intraventricularly, or intranasally. The appropriate dosage may be determined based on the type of disease to be treated, severity and course of the disease, the clinical condition of the individual, the individual's clinical history and response to the treatment, and the discretion of the attending physician.

[00135] The treatments may include various “unit doses.” Unit dose is defined as containing a predetermined-quantity of the therapeutic composition. The quantity to be administered, and the particular route and formulation, is within the skill of determination of those in the clinical arts. A unit

dose need not be administered as a single injection but may comprise continuous infusion over a set period of time. In some embodiments, a unit dose comprises a single administrable dose.

[00136] The quantity to be administered, both according to number of treatments and unit dose, depends on the treatment effect desired. An effective dose is understood to refer to an amount necessary to achieve a particular effect. In the practice in certain embodiments, it is contemplated that doses in the range from 10 mg/kg to 200 mg/kg can affect the protective capability of these agents. Thus, it is contemplated that doses include doses of about 0.1, 0.5, 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, and 200, 300, 400, 500, 1000 μg/kg, mg/kg, μg/day, or mg/day or any range derivable therein. Furthermore, such doses can be administered at multiple times during a day, and/or on multiple days, weeks, or months.

[00137] In certain embodiments, the effective dose of the pharmaceutical composition is one which can provide a blood level of about 1 μM to 150 μM. In another embodiment, the effective dose provides a blood level of about 4 μM to 100 μM.; or about 1 μM to 100 μM; or about 1 μM to 50 μM; or about 1 μM to 40 μM; or about 1 μM to 30 μM; or about 1 μM to 20 μM; or about 1 μM to 10 μM; or about 10 μM to 150 μM; or about 10 μM to 100 μM; or about 10 μM to 50 μM; or about 25 μM to 150 μM; or about 25 μM to 100 μM; or about 25 μM to 50 μM; or about 50 μM to 150 μM; or about 50 μM to 100 μM (or any range derivable therein). In other embodiments, the dose can provide the following blood level of the agent that results from a therapeutic agent being administered to a subject: about, at least about, or at most about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, or 100 μM or any range derivable therein. In certain embodiments, the therapeutic agent that is administered to a subject is metabolized in the body to a metabolized therapeutic agent, in which case the blood levels may refer to the amount of that agent. Alternatively, to the extent the therapeutic agent is not metabolized by a subject, the blood levels discussed herein may refer to the unmetabolized therapeutic agent.

[00138] Precise amounts of the therapeutic composition also depend on the judgment of the practitioner and are peculiar to each individual. Factors affecting dose include physical and clinical state of the patient, the route of administration, the intended goal of treatment (alleviation of symptoms versus cure) and the potency, stability and toxicity of the particular therapeutic substance or other therapies a subject may be undergoing.

[00139] It will be understood by those skilled in the art and made aware that dosage units of μg/kg or mg/kg of body weight can be converted and expressed in comparable concentration units of μg/ml or mM (blood levels), such as 4 μM to 100 μM. It is also understood that uptake is species and organ/tissue dependent. The applicable conversion factors and physiological assumptions to be made

concerning uptake and concentration measurement are well-known and would permit those of skill in the art to convert one concentration measurement to another and make reasonable comparisons and conclusions regarding the doses, efficacies and results described herein.

IX. Kits

[00140] Certain aspects of the present invention also concern kits containing compositions of the invention or compositions to implement methods of the invention. In some embodiments, kits can be used to evaluate one or more biomarkers, such as one or more SCN or SRBCT biomarkers. In certain embodiments, a kit contains, contains at least or contains at most 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 100, 500, 1,000 or more probes, primers or primer sets, synthetic molecules or inhibitors, or any value or range and combination derivable therein. In some embodiments, there are kits for evaluating biomarker activity in a cell.

[00141] Kits may comprise components, which may be individually packaged or placed in a container, such as a tube, bottle, vial, syringe, or other suitable container means.

[00142] Individual components may also be provided in a kit in concentrated amounts; in some embodiments, a component is provided individually in the same concentration as it would be in a solution with other components. Concentrations of components may be provided as 1x, 2x, 5x, 10x, or 20x or more.

[00143] Kits for using probes, synthetic nucleic acids, nonsynthetic nucleic acids, and/or inhibitors of the disclosure for prognostic or diagnostic applications are included as part of the disclosure. Specifically contemplated are any such molecules corresponding to any biomarker identified herein, which includes nucleic acid primers/primer sets and probes that are identical to or complementary to all or part of a biomarker, which may include noncoding sequences of the biomarker, as well as coding sequences of the biomarker.

[00144] In certain aspects, negative and/or positive control nucleic acids, probes, and inhibitors are included in some kit embodiments. In addition, a kit may include a sample that is a negative or positive control for methylation of one or more biomarkers.

[00145] It is contemplated that any method or composition described herein can be implemented with respect to any other method or composition described herein and that different embodiments may be combined. The claims originally filed are contemplated to cover claims that are multiply dependent on any filed claim or combination of filed claims.

[00146] Any embodiment of the disclosure involving specific biomarker by name is contemplated also to cover embodiments involving biomarkers whose sequences are at least 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99% identical to the mature sequence of the specified nucleic acid.

[00147] Embodiments of the disclosure include kits for analysis of a pathological sample by assessing biomarker profile for a sample comprising, in suitable container means, two or more biomarker probes, wherein the biomarker probes detect one or more of the biomarkers identified herein. The kit can further comprise reagents for labeling nucleic acids in the sample. The kit may also include labeling reagents, including at least one of amine-modified nucleotide, poly(A) polymerase, and poly(A) polymerase buffer. Labeling reagents can include an amine-reactive dye.

X. Tables

Table 1: SCN gene signature weights

Gene	SCN signature weight	Gene	SCN signature weight	Gene	SCN signature weight	Gene	SCN signature weight
TARDBP	0.050046	NUDT6	0.003935	ASXL2	0.000974	NCOR2	-0.002519
PIK3R3	0.049087	CLRN1	0.003935	RDH11	0.000973	TOLLIP	-0.002519
DPYSL5	0.044226	HSPE1	0.003934	OR4C45	0.000973	DDAH1	-0.002520
TMBIM4	0.042018	OLA1	0.003932	CCDC105	0.000972	PWWP2B	-0.002522
PIK3R2	0.041165	KRTAP16-1	0.003932	SH3GL1	0.000972	SAXO2	-0.002522
INSM1	0.040721	C6orf201	0.003932	WDR45	0.000971	ATP6V0C	-0.002524
TIMM10B	0.039219	REV1	0.003930	MRPL34	0.000971	SUSD1	-0.002526
KIF1A	0.038317	COIL	0.003929	WASF3	0.000971	MYO9A	-0.002529
PSMA1	0.037698	HSD17B1	0.003928	MANF	0.000970	SLC25A1	-0.002529
STXBP5L	0.037609	ZKSCAN2	0.003928	CNNM3	0.000969	C11orf91	-0.002532
CHGA	0.036387	LRRC40	0.003927	ATP5B	0.000969	KCNAB2	-0.002532
PAPD7	0.036124	APBA3	0.003926	HAX1	0.000969	DHX32	-0.002532
ELAVL3	0.035688	HIST1H1C	0.003923	TMEM99	0.000968	DAGLB	-0.002532
DLL3	0.034705	SBF1	0.003923	CSN1S1	0.000968	PLSCR1	-0.002534
ASCL1	0.034372	HDAC4	0.003923	OR10C1	0.000967	TMEM62	-0.002534
PI4K2B	0.034356	DNAJB8	0.003922	SMCP	0.000967	HAUS4	-0.002535
ZIC5	0.034346	USP33	0.003922	FAM9A	0.000966	GLB1L	-0.002536
DLK1	0.034262	LIPT2	0.003922	LSM12	0.000965	NOP10	-0.002538
SEZ6	0.034028	HBQ1	0.003920	MRPL46	0.000964	ACOX3	-0.002540
FOXG1	0.033796	ZNF554	0.003919	BOLA2	0.000963	GHITM	-0.002544
GNG4	0.033750	HPS4	0.003918	LRRTM1	0.000962	JAK2	-0.002544
ATCAY	0.033655	RFPL3	0.003918	HCG22	0.000962	LAMA5	-0.002547
ZIC2	0.033534	CCDC148	0.003917	DRG2	0.000961	ASGR2	-0.002547
RAB3B	0.033273	DNAJB11	0.003916	NFYC	0.000961	ADAM17	-0.002548
RIMS2	0.033236	FAM46D	0.003916	EIF2AK3	0.000960	FSTL1	-0.002550
ACTL6B	0.033103	C10orf88	0.003915	OR4F15	0.000960	GBA	-0.002551
ZNF286A	0.033099	MKS1	0.003914	YBX1	0.000959	TMEM256	-0.002551
ONECUT2	0.032991	ITGA2B	0.003913	ASB10	0.000957	FAM228A	-0.002555
INA	0.032957	FAM185A	0.003912	BLOC1S6	0.000957	ARHGDIA	-0.002555

NRSN1	0.032855	SPATA31E1	0.003911	YY1AP1	0.000957	PROSC	-0.002556
PAGR1	0.032600	BAZ1B	0.003910	OR52N5	0.000956	GNAQ	-0.002557
CPLX2	0.032351	ZNF585B	0.003909	TEX43	0.000955	TNFRSF4	-0.002557
BEST3	0.032243	ERCC6L2	0.003908	LGALS16	0.000955	MYO10	-0.002557
CELF3	0.032012	ZSWIM5	0.003908	NUDT14	0.000954	HOXA4	-0.002558
DCX	0.031961	TRPT1	0.003908	LRRN3	0.000954	STON1	-0.002558
ST18	0.031529	C10orf113	0.003907	ALG11	0.000953	KRT23	-0.002559
CACNA1A	0.031512	NOL8	0.003906	OR6P1	0.000952	HORMAD1	-0.002559
XKR7	0.031507	PRR27	0.003906	MLEC	0.000952	SGSH	-0.002560
LHX2	0.031425	MYO3B	0.003906	IRF2BP2	0.000952	SNX3	-0.002561
CACNA1B	0.031268	MFSD9	0.003905	TEP1	0.000951	USB1	-0.002562
SYT4	0.031045	IPP	0.003903	DBP	0.000951	NOB1	-0.002562
C17orf100	0.031021	COA1	0.003902	OR52Z1	0.000951	CHST14	-0.002563
PCSK1	0.030989	MICALL2	0.003902	SLC25A32	0.000951	SMIM22	-0.002565
TAGLN3	0.030809	WWOX	0.003902	ANKRD27	0.000950	DOCK1	-0.002568
SOX11	0.030603	CSNK1G2	0.003902	CWC27	0.000950	PACS1	-0.002569
FAM57B	0.030310	ILF2	0.003901	LYPLA1	0.000950	NRG2	-0.002570
CHRNB2	0.030170	MBD1	0.003901	RUNDC3B	0.000950	CRLF1	-0.002570
NKX2-2	0.030022	C2orf61	0.003900	RNASE8	0.000949	PITPNA	-0.002570
KCNC1	0.029939	UPK1A	0.003899	KRTAP4-11	0.000949	TRPC3	-0.002573
ISL1	0.029906	ZNF207	0.003897	RAB33B	0.000949	CHMP4B	-0.002574
HEPACAM2	0.029840	AGT	0.003897	TGFBR1	0.000948	TMEM50A	-0.002574
ST8SIA3	0.029799	IFI27L1	0.003896	OR5D18	0.000948	PCYT2	-0.002575
DLX6	0.029756	CECR5	0.003895	SSX4B	0.000948	SPHK1	-0.002576
SCG3	0.029402	ZNF490	0.003894	TAF7	0.000947	SLAIN2	-0.002580
PHF21B	0.029396	HSPBAP1	0.003894	OR4A5	0.000947	INTS5	-0.002582
DLX1	0.029377	SLC39A14	0.003893	GTF3C6	0.000946	LYNX1	-0.002583
ACSL6	0.029205	ZNF99	0.003891	ARHGAP22	0.000946	C15orf57	-0.002584
SPATA13	0.029188	ZBTB41	0.003890	KRTAP13-3	0.000945	PNRC1	-0.002586
NOL4	0.029159	KLHL24	0.003890	VOPP1	0.000945	HBM	-0.002587
SEZ6L	0.029159	GMDS	0.003889	PSG2	0.000944	HK1	-0.002588
CDK5R2	0.029034	CDK16	0.003888	PHLDB1	0.000944	LSM10	-0.002589
CAMK2B	0.028906	PHF14	0.003885	APPL1	0.000944	VAV3	-0.002589
B4GALNT4	0.028815	CTAGE6	0.003883	KIAA0408	0.000944	BCAP29	-0.002593
TMEM179	0.028799	TSPY4	0.003883	MAP1LC3A	0.000944	SLFN14	-0.002593
CHGB	0.028725	ATM	0.003882	MCAT	0.000943	F2R	-0.002594
RGS5	0.028715	RAD18	0.003882	LENG1	0.000943	PIK3C2B	-0.002594
KCNH5	0.028658	ZMYND8	0.003881	MS4A4E	0.000942	ZNF728	-0.002596
KIF5C	0.028640	HSFX1	0.003881	KCNC3	0.000941	NAV3	-0.002597
MAST1	0.028625	PATZ1	0.003881	CNGA1	0.000941	PRG2	-0.002597
TMEM151B	0.028579	COMMD3	0.003879	TAF5L	0.000941	VPS11	-0.002600

ZBTB8B	0.028501	SKIV2L	0.003877	PWP1	0.000940	BAG1	-0.002601
MYT1	0.028396	ARMC1	0.003876	ARMCX3	0.000940	LNX2	-0.002601
VGF	0.028366	DMWD	0.003875	NAT10	0.000940	SPNS1	-0.002603
RALYL	0.028332	TRMT5	0.003874	CACNG8	0.000940	CPPED1	-0.002604
SLC7A14	0.028238	KLHL35	0.003874	GRSF1	0.000939	RAB29	-0.002605
SYT13	0.028114	SLC26A1	0.003874	VPREB1	0.000939	IL4I1	-0.002607
UNC13A	0.027888	OTOGL	0.003872	RPGR	0.000938	DYX1C1	-0.002607
ST8SIA5	0.027832	PRSS42	0.003872	PPP1R26	0.000938	KIAA1191	-0.002611
CAMK2N2	0.027811	METTL8	0.003870	GPC1	0.000937	RAB5B	-0.002611
SCGN	0.027799	KLHL28	0.003869	DARS	0.000937	PDLIM3	-0.002615
MPPED1	0.027698	PSPN	0.003868	AK2	0.000935	EEF2K	-0.002616
UNC80	0.027571	ZBTB6	0.003867	FAM47B	0.000935	EVC2	-0.002620
NRXN1	0.027371	HN1L	0.003864	IPO11	0.000934	ATRAID	-0.002620
HRH3	0.027336	TNNI3	0.003862	TMEM261	0.000934	PERM1	-0.002620
ELAVL4	0.027325	ZNF441	0.003862	RFK	0.000933	SLC25A30	-0.002621
CNTNAP2	0.027288	MTPAP	0.003861	AES	0.000932	MMP13	-0.002621
SYT14	0.027228	ONECUT3	0.003861	CASC10	0.000930	BCL10	-0.002621
OGDHL	0.027225	TIMM50	0.003861	LCN9	0.000929	DHRS4	-0.002624
ZMAT4	0.027169	ZNF599	0.003860	CMC1	0.000929	DLL4	-0.002625
TCERG1L	0.026964	RNF207	0.003860	PTER	0.000929	TRIM47	-0.002626
ZDHHC22	0.026950	FAM133B	0.003859	CTBP1	0.000928	PPP1R7	-0.002626
GRM4	0.026729	LANCL2	0.003858	PRDX3	0.000928	CDC42	-0.002627
AMH	0.026692	EHMT1	0.003858	CDC73	0.000927	B4GAT1	-0.002629
SRRM4	0.026690	CARF	0.003854	OR3A3	0.000926	TMTC2	-0.002630
DGKB	0.026580	SNX16	0.003854	LCE6A	0.000926	LDAH	-0.002632
FOXN4	0.026556	ENPP1	0.003854	COX6A2	0.000925	GP1BA	-0.002634
NEUROD1	0.026519	ZNF225	0.003854	SWI5	0.000925	RPL15	-0.002635
PCDH8	0.026511	TRRAP	0.003852	ZNF629	0.000925	ZEB1	-0.002635
RIMBP2	0.026498	DCP2	0.003851	MYF5	0.000924	MERTK	-0.002637
SULT4A1	0.026466	POC5	0.003851	FAM192A	0.000924	EXOC3L2	-0.002637
AMER3	0.026430	FKTN	0.003851	NOSIP	0.000924	LMAN2	-0.002638
TMEFF1	0.026347	VPS45	0.003850	CNOT1	0.000924	ZFAND5	-0.002638
NKAIN1	0.026332	PCGF6	0.003848	RTP3	0.000924	ZNRF3	-0.002638
BTBD17	0.026300	PRR23D1	0.003848	GRXCR2	0.000923	SAR1A	-0.002639
SCN3A	0.026154	TSNAXIP1	0.003847	HADH	0.000921	SURF4	-0.002639
SVOP	0.026100	GLB1L2	0.003846	TMEM143	0.000920	SORT1	-0.002641
POU4F1	0.026037	ITPRIPL1	0.003845	OR5B12	0.000920	PNPLA2	-0.002642
HOXD13	0.025985	ZNF616	0.003844	MAGEB4	0.000919	CCDC6	-0.002645
CBLN2	0.025911	CABP4	0.003843	NSUN4	0.000919	C7orf31	-0.002646
TRPM8	0.025897	SIGLEC15	0.003842	CST9L	0.000919	NCSTN	-0.002648
RUNDC3A	0.025835	SRSF5	0.003841	NDUFA12	0.000918	NEGR1	-0.002650

IDS	0.025572	GPSM1	0.003839	OR5M1	0.000918	TXN2	-0.002651
GRIK3	0.025522	COL19A1	0.003838	SCAF1	0.000918	NEK6	-0.002654
FSD1	0.025345	LDOC1L	0.003838	CCDC126	0.000918	RRM2B	-0.002655
HOXB9	0.025242	ABCC2	0.003838	SPDYE16	0.000917	NT5DC1	-0.002656
HOXD11	0.025228	TBC1D30	0.003835	PSMD5	0.000917	HCFC1R1	-0.002660
BEX1	0.025117	HIST1H4F	0.003835	KRT10	0.000917	TALDO1	-0.002662
SLC6A17	0.025088	ANAPC7	0.003834	ITGB8	0.000916	TRNP1	-0.002663
CLN3	0.024931	KCTD6	0.003834	METTL25	0.000915	CUX1	-0.002664
CRYBA2	0.024927	NFRKB	0.003833	DYNLL1	0.000915	HORMAD2	-0.002664
NGB	0.024816	TLE6	0.003832	PRAMEF10	0.000915	TUSC2	-0.002666
KCNH7	0.024805	NUP35	0.003830	PRAMEF17	0.000914	SORCS1	-0.002666
KIF5A	0.024804	ARFGAP1	0.003830	CYP11B2	0.000914	TOMM7	-0.002667
43535	0.024730	CSRNP2	0.003829	FIBP	0.000913	MPZL3	-0.002667
COL2A1	0.024673	CDK11A	0.003827	OR6C2	0.000912	OSCP1	-0.002669
TUBB2B	0.024657	DAZAP1	0.003826	FBXW2	0.000912	43525	-0.002669
UNC79	0.024609	AFM	0.003825	ELP5	0.000912	KCNRG	-0.002670
BARX1	0.024534	NUAK1	0.003823	LOR	0.000912	RNF130	-0.002674
TRIM9	0.024446	TPRKB	0.003822	BTRC	0.000912	COL4A6	-0.002675
POU3F2	0.024437	UGT2B10	0.003821	DLAT	0.000911	BATF3	-0.002675
KCNB2	0.024396	PASD1	0.003821	A2ML1	0.000911	CSPG4	-0.002676
KCNK9	0.024392	CTNNA3	0.003821	EDN2	0.000911	MICAL2	-0.002679
DRD2	0.024382	ZNF716	0.003819	OR6B3	0.000911	RPS9	-0.002681
SYT5	0.024358	SP3	0.003819	OR5F1	0.000910	NRIP1	-0.002682
KCNA1	0.024348	DCLRE1C	0.003818	DET1	0.000910	EIF3CL	-0.002683
C12orf56	0.024274	TIGD5	0.003816	CABP2	0.000909	SERINC3	-0.002683
PRAME	0.024245	OR1C1	0.003816	OR2T10	0.000909	NR2F1	-0.002683
SOX1	0.024178	C6orf136	0.003813	LRRC28	0.000909	FOXL1	-0.002687
PEX5L	0.024159	WDR75	0.003813	XPA	0.000908	S100A5	-0.002688
CAMKV	0.024143	C3orf70	0.003813	PRSS38	0.000908	MAP7D3	-0.002689
SALL1	0.024140	ANAPC1	0.003812	RAD51B	0.000908	TSC22D4	-0.002690
CABP7	0.024106	TAS2R8	0.003812	SLC25A46	0.000907	FKBP1B	-0.002690
BRSK2	0.024054	FARP2	0.003812	PRAMEF25	0.000906	ANXA7	-0.002690
PHYHIPL	0.024008	LUC7L2	0.003809	OR8J2	0.000905	IL13	-0.002693
DLX2	0.023887	FITM1	0.003809	ZNF526	0.000905	PTGR1	-0.002696
PTPRN	0.023751	LRWD1	0.003807	OR10AC1	0.000905	FOXC1	-0.002698
GAD1	0.023747	NIPBL	0.003806	OR5H1	0.000905	ARSF	-0.002700
C11orf71	0.023739	CCDC151	0.003805	GUCY2C	0.000904	43534	-0.002700
FUT9	0.023668	DYRK1A	0.003805	TMUB2	0.000904	DIAPH1	-0.002700
KCNH8	0.023608	ZNF324	0.003804	SFMBT2	0.000903	TAS1R1	-0.002701
ELOVL2	0.023538	SERPINA12	0.003804	C14orf177	0.000903	ILDR1	-0.002701
GPC2	0.023503	ESRP1	0.003803	NDUFS3	0.000902	ZC3H12D	-0.002702

EPHA8	0.023369	HTN1	0.003803	OR5D13	0.000901	C11orf24	-0.002703
COL22A1	0.023360	PTCD2	0.003802	TMEM254	0.000900	GPRC5D	-0.002707
NXPH4	0.023348	NUP153	0.003801	RAPGEF6	0.000900	RNF217	-0.002707
KCNH6	0.023265	TRIM33	0.003800	DHRSX	0.000900	SHB	-0.002707
NKAIN2	0.023157	ZNF20	0.003798	OR8G5	0.000900	ZNF319	-0.002708
GPR6	0.023028	SPAG4	0.003797	COPB2	0.000900	COX14	-0.002709
HES6	0.023018	CNOT3	0.003795	PTDSS2	0.000899	MCOLN1	-0.002710
DLX5	0.022900	CGB2	0.003794	ATXN3L	0.000899	HHIPL1	-0.002712
AP3B2	0.022896	NBPF3	0.003789	SNX4	0.000899	FKBP9	-0.002712
CELSR3	0.022882	ZNF706	0.003788	GFPT1	0.000899	KIAA0930	-0.002716
TERT	0.022839	RHOXF2	0.003788	ADO	0.000899	DOCK4	-0.002717
SNAP91	0.022802	RNMT	0.003788	MED13L	0.000899	AMDHD1	-0.002720
SALL3	0.022753	SLC25A52	0.003787	FOXP4	0.000898	DEFB4B	-0.002721
VWA5B2	0.022720	SFSWAP	0.003786	SRRD	0.000898	CHADL	-0.002725
ECSCR	0.022664	PIN4	0.003786	DDX1	0.000897	PPP2CB	-0.002726
E2F7	0.022589	CTPS2	0.003785	SENP8	0.000897	TMEM214	-0.002729
RTBDN	0.022574	ANAPC5	0.003784	KIR3DL3	0.000896	STX8	-0.002729
ZACN	0.022539	RHPN2	0.003781	KRTAP9-6	0.000895	SORBS1	-0.002731
GAD2	0.022517	TPR	0.003780	C9orf92	0.000895	SNCA	-0.002732
TPH1	0.022478	PRPS2	0.003780	IPMK	0.000895	RAB4B	-0.002734
CACNA1E	0.022469	INO80E	0.003780	ZPBP2	0.000894	LIMK1	-0.002734
CALML3	0.022441	ZNF80	0.003778	ZNF668	0.000892	TSPAN11	-0.002734
CNTNAP5	0.022435	FBXO46	0.003776	IFNA2	0.000891	ELF4	-0.002734
NEUROD4	0.022395	SDHAF3	0.003776	KIFAP3	0.000889	SLC4A5	-0.002735
43528	0.022364	PROK1	0.003775	AGBL2	0.000889	GRB2	-0.002736
CADPS	0.022363	PPP1R3F	0.003775	ZNF213	0.000887	PPP1R11	-0.002737
GRIA2	0.022350	DENND4B	0.003774	STRAP	0.000886	ERP29	-0.002738
HOXD10	0.022343	TMEM65	0.003773	LTV1	0.000886	EPN3	-0.002739
TMEM145	0.022342	SAFB	0.003773	NAGK	0.000886	RNASE3	-0.002742
SCN8A	0.022120	ZBTB1	0.003773	NUBPL	0.000886	EXOC3L1	-0.002742
KIF18B	0.022106	ZBED6CL	0.003772	NXPE4	0.000886	FOXP1	-0.002743
ASPM	0.022076	ALOX12B	0.003771	NFX1	0.000885	CT45A1	-0.002744
PPM1E	0.022048	GRHL3	0.003771	METTL15	0.000885	RCVRN	-0.002744
MRPS17	0.022007	OR52W1	0.003770	FAM103A1	0.000885	JAK3	-0.002744
C1QL1	0.021997	SLC25A13	0.003769	WARS2	0.000884	MCU	-0.002745
HMX2	0.021955	THAP8	0.003768	ASB17	0.000884	MXD4	-0.002746
KCNJ6	0.021950	APPL2	0.003768	PLXNA1	0.000884	DYDC1	-0.002746
FBXO43	0.021870	STRN4	0.003767	MRPS35	0.000883	TPM3	-0.002748
RIPPLY3	0.021866	STAU2	0.003767	OR8J1	0.000883	NLRP6	-0.002750
DEPDC1	0.021850	TIGD2	0.003767	NOA1	0.000882	SARAF	-0.002751
SLC6A5	0.021804	SHF	0.003767	HECTD1	0.000882	SLC41A2	-0.002753

MYT1L	0.021779	PRDM8	0.003766	CBFA2T3	0.000882	OPRL1	-0.002753
NELL1	0.021770	PRPF4	0.003765	USE1	0.000881	NME5	-0.002756
CTNNA2	0.021751	NNT	0.003764	COTL1	0.000881	STXBP2	-0.002757
CCNE2	0.021716	DUS3L	0.003762	SETSIP	0.000881	DUSP23	-0.002761
SHOX2	0.021672	CHST1	0.003759	SLC51A	0.000880	FDCSP	-0.002762
GRP	0.021669	PHF7	0.003758	BLID	0.000880	MSRB2	-0.002762
RNF183	0.021577	LRIG2	0.003758	QRFPR	0.000880	AMIGO2	-0.002763
TROAP	0.021568	P3H1	0.003757	OR8H3	0.000880	P2RX4	-0.002765
CHD5	0.021561	ZNF790	0.003756	ACCSL	0.000879	SURF1	-0.002766
INSRR	0.021543	BTF3L4	0.003756	PRM2	0.000879	FGD3	-0.002769
SLC35D3	0.021542	EPM2AIP1	0.003756	KRTAP19-7	0.000877	SRD5A3	-0.002769
GDAP1L1	0.021492	RELT	0.003755	SLC35E4	0.000877	MEGF9	-0.002769
SCGB1D2	0.021439	KPNB1	0.003755	PPCDC	0.000877	MUL1	-0.002770
TMEM178B	0.021305	TRIM28	0.003754	MMP20	0.000876	CT45A3	-0.002772
CDH7	0.021291	DNAJC19	0.003753	DERL2	0.000876	PIGV	-0.002774
SIX3	0.021267	KRIT1	0.003753	TMCC1	0.000875	ALAD	-0.002777
CASKIN1	0.021263	RNPS1	0.003753	LRRC30	0.000875	EFNA5	-0.002777
TRIM67	0.021229	PROKR2	0.003752	ZCCHC10	0.000875	EIF2AK4	-0.002778
B3GALT5	0.021163	ZNF578	0.003752	GEMIN8	0.000874	IL23R	-0.002780
SLCO5A1	0.021156	IER5L	0.003751	ZP4	0.000873	FBXO36	-0.002785
HGFAC	0.021152	SOX6	0.003747	UQCRQ	0.000873	DRD1	-0.002788
FBF1	0.021142	RWDD2A	0.003747	ALDOC	0.000872	NDEL1	-0.002789
EPHA7	0.021141	KRT9	0.003745	AK6	0.000872	SLC5A1	-0.002789
ADCYAP1	0.021105	UBXN11	0.003745	MAP4K2	0.000872	ACTC1	-0.002790
NUF2	0.021039	CIB4	0.003745	DKK4	0.000872	SSTR4	-0.002791
DIRAS2	0.021015	POLR2D	0.003743	EPPK1	0.000871	SRF	-0.002792
SCN2A	0.021014	ANKRD63	0.003741	OR4A47	0.000870	MAGEH1	-0.002792
SNAP25	0.021013	NAA35	0.003741	TMEM56	0.000870	DUSP18	-0.002792
DPF1	0.020945	CLUL1	0.003741	SERPINI2	0.000870	PIP5KL1	-0.002792
UBE2QL1	0.020938	ASPHD2	0.003739	IFNA6	0.000869	MVB12B	-0.002795
RAD54L	0.020914	RECQL5	0.003736	HRNR	0.000869	MIEF2	-0.002795
GP1BB	0.020880	ZDHHC11	0.003736	C20orf24	0.000869	LOX	-0.002798
CRABP1	0.020879	EGR4	0.003735	AIMP2	0.000869	ANKS1A	-0.002801
CPLX3	0.020824	GRB10	0.003734	FGF3	0.000868	AKR1B10	-0.002801
NAT16	0.020801	PAPOLA	0.003734	CDK17	0.000868	PPA1	-0.002802
BRSK1	0.020795	RAVER2	0.003732	LAMA1	0.000868	ARHGEF10	-0.002807
KIF14	0.020782	HCFC1	0.003728	KRTAP19-5	0.000867	ZNF486	-0.002807
HJURP	0.020754	GJD4	0.003728	KRTAP6-1	0.000863	TFE3	-0.002807
KCNK12	0.020719	RASL10A	0.003726	TAAR9	0.000863	INAFM2	-0.002808
ADAMTS18	0.020714	GCFC2	0.003726	ZCCHC9	0.000863	ALPK3	-0.002808
MNX1	0.020709	ESPNL	0.003726	ARHGEF40	0.000862	OSGIN2	-0.002816

UNC5A	0.020679	NUP188	0.003726	IFNA14	0.000862	NUBP1	-0.002817
COCH	0.020621	RDH5	0.003725	OBP2A	0.000860	CNPPD1	-0.002817
TOP2A	0.020601	ZNHIT3	0.003724	BTNL2	0.000859	HLX	-0.002822
ZNF695	0.020585	AMY2B	0.003722	CXCR4	0.000858	ISCU	-0.002822
FAM64A	0.020571	SART3	0.003722	UHMK1	0.000858	STK40	-0.002823
AMER2	0.020562	NOXA1	0.003721	CWC22	0.000857	SLC17A5	-0.002824
NPPA	0.020538	PRR14L	0.003721	MOCS3	0.000856	HHAT	-0.002825
CENPF	0.020517	SLFN13	0.003719	OR51B5	0.000856	SLC39A4	-0.002826
EEF1A2	0.020507	WDR83	0.003719	OGFOD2	0.000856	PTGER1	-0.002828
ELAVL2	0.020501	SMIM13	0.003718	DNAJC21	0.000855	METTL24	-0.002830
DEPDC1B	0.020444	PCBP4	0.003718	BCAS2	0.000855	ACP2	-0.002830
RIPPLY2	0.020407	FAM217A	0.003718	HSPBP1	0.000854	KCNA10	-0.002830
STMN2	0.020406	ZNF780A	0.003716	GNA11	0.000851	ARSA	-0.002831
TEX15	0.020386	CRNKL1	0.003715	TCTN2	0.000850	CNNM4	-0.002831
APC2	0.020370	CAGE1	0.003715	ZNF581	0.000850	CCDC17	-0.002832
MSI1	0.020336	TIAL1	0.003715	P3H4	0.000850	NKX2-8	-0.002832
NEURL1	0.020268	DSCR4	0.003715	KCNK3	0.000849	ANO1	-0.002834
DMRTA2	0.020162	SRSF3	0.003715	PGAP2	0.000849	CHMP6	-0.002837
SHISA9	0.020137	CRYGN	0.003715	USP10	0.000849	IRF2	-0.002840
ABCC8	0.020127	UTS2B	0.003714	FAM204A	0.000849	LIMS1	-0.002841
SCRT1	0.020095	SPIC	0.003711	KRTAP6-3	0.000849	MTRR	-0.002842
CCDC150	0.020087	ZFP1	0.003711	ZBTB45	0.000848	DNAI1	-0.002843
FAM83F	0.020080	DCUN1D4	0.003709	TMEM230	0.000848	DAG1	-0.002844
KCNK10	0.020062	AUTS2	0.003709	CDR1	0.000848	MAGEE2	-0.002846
HOXB8	0.020056	PALB2	0.003709	KRTAP12-4	0.000848	GLTSCR2	-0.002846
ATOH7	0.020053	ACPT	0.003708	DYNC2LI1	0.000847	PPP1CA	-0.002848
TTK	0.020048	SNRNP200	0.003708	GTF2IRD2B	0.000847	PKP3	-0.002848
NEUROG2	0.020024	OR51F2	0.003708	OR4C3	0.000847	HADHA	-0.002848
TTBK1	0.019983	ALYREF	0.003706	MAGED1	0.000846	REEP3	-0.002851
STMN4	0.019952	PANX2	0.003706	TMEM126B	0.000845	FBXL5	-0.002851
PDIA2	0.019920	TGM3	0.003706	KRTAP4-8	0.000844	ERLEC1	-0.002852
GLYATL1	0.019856	CDAN1	0.003705	ZNF609	0.000844	GPAT2	-0.002852
POTEI	0.019788	ANKLE2	0.003705	ICMT	0.000843	DNM3	-0.002852
DLGAP5	0.019781	RAB41	0.003705	MPV17L2	0.000843	RAB17	-0.002853
PBK	0.019738	VSIG8	0.003705	MAPK7	0.000843	CCDC28A	-0.002853
DLGAP3	0.019721	BVES	0.003704	LARS2	0.000843	GJB5	-0.002856
NXPH1	0.019719	RSF1	0.003704	ERCC4	0.000842	CCDC107	-0.002857
TMEM63C	0.019718	C1orf234	0.003703	KRTAP4-3	0.000842	VAMP2	-0.002857
LRTM2	0.019709	CDCP2	0.003702	NCL	0.000842	PINK1	-0.002858
FAM111B	0.019709	GTF2H2	0.003701	MAP3K2	0.000842	SUOX	-0.002859
HOXA10	0.019707	NBPF26	0.003701	KPNA4	0.000841	PAFAH2	-0.002860

FOXD1	0.019695	ORMDL1	0.003701	AQR	0.000841	C1orf21	-0.002860
CENPA	0.019689	TRAPPC6B	0.003700	CRKL	0.000841	CORO1B	-0.002861
DPYSL4	0.019676	SPATA5L1	0.003700	ACSM4	0.000841	CCDC13	-0.002861
CNTN2	0.019641	TXLNG	0.003699	UCMA	0.000841	SLCO1A2	-0.002861
SHD	0.019618	TCP11L1	0.003699	HABP4	0.000840	TRIL	-0.002861
HOXA13	0.019618	ZNF808	0.003699	FST	0.000839	PIM3	-0.002862
FAM163B	0.019603	NEFM	0.003698	CRNN	0.000839	NLRC3	-0.002862
MEX3A	0.019558	PPIE	0.003697	LSM1	0.000839	HADHB	-0.002865
OR51E2	0.019553	REPS1	0.003697	OR6C70	0.000838	APOLD1	-0.002865
CALCB	0.019531	ZNF200	0.003696	PSMA7	0.000838	FAM188B	-0.002866
SP8	0.019520	ZNF729	0.003696	COX8A	0.000838	SNAI2	-0.002866
WNK2	0.019514	SLC13A3	0.003696	PRAMEF20	0.000837	ITPR2	-0.002867
RAB26	0.019503	ACAP2	0.003696	PRAMEF11	0.000836	BTLA	-0.002868
PPFIA4	0.019480	ARHGEF25	0.003695	FTMT	0.000836	OVCA2	-0.002870
SPOCK1	0.019470	RPA4	0.003694	EXOC1	0.000834	SLAMF9	-0.002871
RBFOX1	0.019457	TAOK1	0.003694	HNRNPCL3	0.000834	EHBP1L1	-0.002872
MATR3	0.019445	TSPY2	0.003694	CLDN24	0.000834	CYB561A3	-0.002873
MAGEA3	0.019440	DEFB132	0.003691	MTRNR2L10	0.000834	DOLK	-0.002873
SAPCD2	0.019393	NSMCE4A	0.003690	OR10G8	0.000833	TMEM167B	-0.002873
ESPL1	0.019386	HLCS	0.003690	SSX7	0.000833	QARS	-0.002873
HOXD4	0.019380	CLEC3A	0.003690	DDA1	0.000833	SNX7	-0.002874
SLC18A1	0.019365	RBM14	0.003688	ATP5D	0.000833	EPB41L5	-0.002874
ATP1A3	0.019364	NBPF4	0.003688	HARS	0.000833	TNMD	-0.002875
GRM8	0.019360	ARL5B	0.003687	OR4C46	0.000832	LIM2	-0.002878
FOXD3	0.019355	RHOXF1	0.003686	RABGAP1	0.000832	TYRO3	-0.002880
INHBE	0.019344	IP6K2	0.003685	CWF19L1	0.000832	JUND	-0.002881
NDST4	0.019336	RFXAP	0.003683	SRGAP2C	0.000832	NFE2L1	-0.002883
BSN	0.019310	TYW1B	0.003683	THADA	0.000831	SLC35A1	-0.002885
CER1	0.019298	SIKE1	0.003682	SLC35G4	0.000831	TULP2	-0.002886
HIST1H2BH	0.019294	SMPD4	0.003681	SEMG2	0.000831	KCTD21	-0.002886
KIF4A	0.019288	TDRKH	0.003680	OR2Z1	0.000830	CYP4F11	-0.002891
GRM2	0.019262	CCT6A	0.003679	IQCG	0.000830	PTPRK	-0.002892
FRRS1L	0.019244	DHX15	0.003676	TNPO3	0.000830	TNFAIP1	-0.002895
SOWAHA	0.019237	UBE2V2	0.003676	SNF8	0.000829	RPL3	-0.002896
SCG2	0.019209	ZNF644	0.003675	ETV3L	0.000829	SEMA4G	-0.002897
ACRV1	0.019190	SLC4A7	0.003674	OR5AC2	0.000828	MBNL2	-0.002898
KCNQ2	0.019163	MESP2	0.003673	KLRC2	0.000828	PRRG3	-0.002900
UHRF1	0.019149	C5orf47	0.003673	APC	0.000828	PSEN2	-0.002902
LCN15	0.019148	OR2L3	0.003672	ZCCHC17	0.000828	NPTN	-0.002905
RDM1	0.019132	FCN2	0.003672	SERPINA4	0.000828	TTC28	-0.002907
BUB1B	0.019102	BRD3	0.003671	OR5L1	0.000828	ASB13	-0.002908

CALB1	0.019033	CDC5L	0.003670	OR8H2	0.000827	HMGCL	-0.002908
RGS17	0.019032	HDAC1	0.003670	SLC15A4	0.000827	SREBF1	-0.002910
CDC25C	0.019021	CPLX4	0.003670	IER3IP1	0.000826	XKR3	-0.002910
CLGN	0.018981	MEPE	0.003670	PGK1	0.000826	KAT2B	-0.002913
IQGAP3	0.018974	SMARCD1	0.003669	PSMA4	0.000826	NCKAP5L	-0.002916
LHFPL5	0.018970	SDCCAG3	0.003668	IFNA16	0.000824	RDH10	-0.002917
CLVS2	0.018965	RBBP6	0.003667	STK32B	0.000824	CAPZB	-0.002917
CNIH2	0.018937	SCLY	0.003666	RASA4	0.000823	ZFP92	-0.002917
ATP2B3	0.018936	ZNF512	0.003665	CWC25	0.000823	ARAF	-0.002918
CCDC177	0.018929	INSL5	0.003665	PDSS2	0.000823	SH3BP1	-0.002918
UBE2C	0.018927	NLE1	0.003665	UBALD1	0.000822	TNIP2	-0.002919
NCAM1	0.018922	SIN3B	0.003664	IFT43	0.000822	ITGB3	-0.002920
POLQ	0.018917	ZNF407	0.003664	SLC17A3	0.000822	RPLP1	-0.002920
NEK2	0.018907	ZSCAN22	0.003660	OR51I1	0.000821	TEC	-0.002920
TMSB15A	0.018905	STON2	0.003660	COX16	0.000820	LPAR6	-0.002921
NDC80	0.018901	DDI1	0.003659	OR4E1	0.000820	BMP1	-0.002922
PCP4	0.018866	ZNF160	0.003658	CDC42BPA	0.000820	SIRT4	-0.002925
MKRN3	0.018863	FBXO22	0.003658	TEX13A	0.000816	DDX60L	-0.002927
MELK	0.018847	TM4SF20	0.003658	ST3GAL3	0.000815	ALG1	-0.002928
GTSE1	0.018820	TMEM67	0.003658	DPPA5	0.000815	PLXNA2	-0.002930
SKA1	0.018761	C9orf50	0.003657	SAGE1	0.000814	ABHD12B	-0.002933
EZH2	0.018753	AMER1	0.003656	NKAP	0.000814	IDO2	-0.002933
SLIT1	0.018740	WIZ	0.003656	HOOK3	0.000813	ARAP1	-0.002934
ST8SIA2	0.018740	ASXL1	0.003656	CT62	0.000812	C20orf194	-0.002935
GABRQ	0.018736	C18orf25	0.003655	UBIAD1	0.000811	COMMD1	-0.002935
CBS	0.018664	PGAM5	0.003655	DHODH	0.000811	RGS9BP	-0.002936
UCHL1	0.018653	PRR23D2	0.003655	YTHDF3	0.000811	DNAAF3	-0.002937
NMU	0.018651	ACD	0.003654	DNAJB6	0.000811	PLA2G4C	-0.002938
LRRC7	0.018635	SETDB1	0.003653	TSPAN5	0.000809	SERPINB11	-0.002938
MYBL2	0.018623	ZNF197	0.003653	SPACA5	0.000809	PARP8	-0.002940
DDC	0.018576	MAP3K4	0.003651	OR5AL1	0.000809	HSD17B12	-0.002941
EXO1	0.018534	RP1L1	0.003650	ACTRT2	0.000809	MICB	-0.002943
FGF17	0.018531	TCEANC	0.003648	NIPA2	0.000809	C3orf52	-0.002943
ARHGAP33	0.018529	SLC28A2	0.003647	PABPC4	0.000809	MTMR11	-0.002947
SIX2	0.018518	PLEKHG2	0.003647	SPATA45	0.000808	ZNF593	-0.002947
SRSF12	0.018518	PPEF1	0.003646	OR11G2	0.000808	LRCH1	-0.002948
TPX2	0.018506	ABCD4	0.003646	OR5T1	0.000808	BCL2L12	-0.002950
CDH2	0.018498	RFPL1	0.003645	TRDMT1	0.000807	NRBF2	-0.002951
NTN3	0.018492	NARS2	0.003645	NDUFS8	0.000807	SNX8	-0.002952
EMX1	0.018483	MIF	0.003644	AMTN	0.000807	MAP3K11	-0.002952
NEIL3	0.018461	LSMEM2	0.003643	SPCS2	0.000807	RGS6	-0.002954

OR51E1	0.018440	MLXIPL	0.003643	PRELID2	0.000806	KCNA4	-0.002955
NEUROG3	0.018429	ANXA2R	0.003642	CARNS1	0.000806	CYFIP1	-0.002958
KCNK16	0.018396	RANBP6	0.003639	OR2Y1	0.000806	LRRC29	-0.002963
CKAP2L	0.018388	PAN3	0.003639	USP3	0.000805	GSTT2	-0.002964
E2F2	0.018386	FAM131A	0.003638	DCAF8	0.000805	OGDH	-0.002965
KIF2C	0.018371	CHTOP	0.003638	ZNF391	0.000805	CBR1	-0.002967
KIF15	0.018341	SERAC1	0.003638	UBR2	0.000805	CCDC153	-0.002967
ELOVL4	0.018340	ATXN2L	0.003637	GPR119	0.000804	CCDC103	-0.002969
43711	0.018318	HBS1L	0.003636	N4BP2L1	0.000804	CROT	-0.002971
HIST1H2BG	0.018297	UBXN2B	0.003636	PARL	0.000804	ARRB2	-0.002971
PROX1	0.018274	WDR6	0.003634	OR51V1	0.000804	WNT5A	-0.002973
L1CAM	0.018270	SRRM1	0.003633	POFUT1	0.000802	PPP1R32	-0.002973
ACBD7	0.018253	ADAT3	0.003633	GJA8	0.000802	ACADSB	-0.002978
OPRD1	0.018246	CAND2	0.003633	CD200R1L	0.000801	PSKH1	-0.002978
SRPK3	0.018213	PPAN	0.003633	FCRL4	0.000800	SERPINH1	-0.002986
PAH	0.018204	NLRP13	0.003633	UBQLN4	0.000800	SRI	-0.002986
RPRM	0.018194	NKRF	0.003632	MDH1	0.000800	SPRED2	-0.002986
SLC45A2	0.018157	BPIFB6	0.003632	CLCN3	0.000799	ADD3	-0.002987
PIF1	0.018150	CRX	0.003632	ZBTB43	0.000799	GPR85	-0.002988
GPRIN1	0.018138	FADS1	0.003631	ROMO1	0.000798	ACTRT3	-0.002988
NCAPG	0.018130	CSNK2A3	0.003630	SQLE	0.000797	PDCD6IP	-0.002990
CRHR1	0.018103	FOXK2	0.003630	PITRM1	0.000797	LGR6	-0.002991
SHISA8	0.018100	PSMG3	0.003629	ASB7	0.000795	PGAM4	-0.002993
MED12L	0.018065	ZNF823	0.003628	ALPI	0.000795	CLRN3	-0.002993
CCKBR	0.018033	PTCD3	0.003627	TTC39B	0.000794	NUDT7	-0.002993
MTHFS	0.018020	ATRX	0.003626	TAS2R60	0.000794	PNOC	-0.002996
DDX25	0.017979	PSG4	0.003622	OR2T11	0.000793	GPR55	-0.003000
GHRH	0.017948	KNCN	0.003622	RBM23	0.000792	PSD4	-0.003003
LRFN2	0.017940	RCE1	0.003621	SLC27A4	0.000792	CAB39	-0.003003
C19orf45	0.017932	GTF2A1	0.003618	TUBAL3	0.000792	PSME1	-0.003003
NCAN	0.017921	GTF3C4	0.003618	C16orf91	0.000791	CLDN4	-0.003004
DSCAM	0.017910	GALNT7	0.003616	OR13C9	0.000791	RPS6KA4	-0.003006
MAGEA6	0.017900	TYK2	0.003614	WDR55	0.000790	MAST4	-0.003007
HPCA	0.017899	SLC9A4	0.003614	IFNA4	0.000789	MCTP2	-0.003008
ASXL3	0.017861	RAPGEFL1	0.003613	OR10Q1	0.000789	IGFLR1	-0.003013
SPAG5	0.017821	MDGA2	0.003612	BFSP2	0.000788	GGA2	-0.003014
NUSAP1	0.017814	EYS	0.003612	OR4C13	0.000788	NFKBIE	-0.003017
C16orf59	0.017808	CBR4	0.003609	PRR23A	0.000786	HIPK3	-0.003024
RHBDL3	0.017805	GPHA2	0.003607	PRKACG	0.000786	TMEM30A	-0.003025
CDCA3	0.017797	TMEM79	0.003606	NSMAF	0.000785	LASP1	-0.003026
FAM155B	0.017792	PRSS55	0.003605	ZNF25	0.000784	GJB2	-0.003026

BIRC5	0.017769	SLC1A2	0.003600	OR1E1	0.000784	SYTL3	-0.003027
RCOR2	0.017761	HESX1	0.003600	RAD23A	0.000783	CARD9	-0.003030
CALCA	0.017757	C20orf96	0.003600	MRPL51	0.000783	GUCD1	-0.003030
SKA3	0.017743	USPL1	0.003599	LRCH4	0.000783	MAP4K1	-0.003032
FLRT1	0.017734	WDR54	0.003598	SUMO1	0.000783	PEF1	-0.003034
KLK2	0.017733	RUVBL1	0.003597	OR8I2	0.000782	PRKAR2A	-0.003036
ADD2	0.017732	ZSCAN20	0.003597	RIC1	0.000780	UGT2B17	-0.003036
XRCC2	0.017706	SMG5	0.003597	MRLN	0.000780	ATP6V1F	-0.003039
ELFN2	0.017702	COL10A1	0.003596	ASAP1	0.000778	STIM1	-0.003039
SYNPR	0.017695	LRRC61	0.003594	OR5H14	0.000778	IZUMO2	-0.003042
KLK12	0.017690	UNC119	0.003591	PBLD	0.000777	IL2RA	-0.003043
CLSPN	0.017688	DRD5	0.003590	METTL9	0.000777	STOML1	-0.003047
SIX6	0.017653	DIDO1	0.003590	OR5R1	0.000774	MIF4GD	-0.003047
KCNT1	0.017649	KANSL1	0.003589	POF1B	0.000774	PRKCA	-0.003048
OTP	0.017637	STK11IP	0.003588	JRKL	0.000774	RPS14	-0.003051
ANK1	0.017597	WDR19	0.003588	ATG13	0.000773	ISG15	-0.003054
BRINP2	0.017595	GOLGA6L2	0.003586	HSF1	0.000773	SLC25A24	-0.003055
KDM5D	0.017573	HS2ST1	0.003585	CHCHD1	0.000773	GPRIN3	-0.003059
MAGEA2	0.017564	OPN4	0.003583	VCAN	0.000773	PDE3A	-0.003059
CEL	0.017536	MARS	0.003579	HTR3D	0.000773	FAM174A	-0.003060
KCNC2	0.017532	TRMT2A	0.003579	ATG16L1	0.000772	C22orf31	-0.003060
TICRR	0.017525	NANP	0.003578	DCP1B	0.000772	RAB1B	-0.003061
ZNF711	0.017519	PRH1	0.003576	KLC4	0.000772	PTK2B	-0.003065
HOXD3	0.017504	ZNF223	0.003574	DLST	0.000772	CD28	-0.003067
SPC24	0.017477	PHF21A	0.003566	NUP214	0.000771	MFSD6L	-0.003068
GRIK5	0.017450	TRMT6	0.003565	OR1S1	0.000770	DOCK5	-0.003070
PCSK1N	0.017441	ZNF839	0.003564	ETFDH	0.000769	COL23A1	-0.003075
SLC17A6	0.017424	KRTAP10-10	0.003563	BTN2A1	0.000769	TCEAL7	-0.003076
RGS7	0.017418	GID8	0.003562	KIAA0922	0.000768	PKHD1	-0.003078
ALX3	0.017411	OR52I1	0.003562	PRAMEF4	0.000766	SLC31A1	-0.003084
CDC20	0.017377	LRRTM3	0.003560	OR8U1	0.000766	CLCNKB	-0.003086
NEB	0.017365	HNRNPA1L2	0.003560	TMEM218	0.000766	NOTCH3	-0.003088
WNK3	0.017353	ZNF317	0.003559	TRAF6	0.000766	CCDC184	-0.003089
ADCY2	0.017343	ANKIB1	0.003558	GPR143	0.000765	FKBP5	-0.003089
MKI67	0.017323	FNDC8	0.003558	KRT3	0.000765	PLA2G2C	-0.003091
ORC6	0.017320	BCLAF1	0.003557	YARS	0.000765	BTNL3	-0.003096
SPC25	0.017314	VANGL1	0.003557	AXDND1	0.000764	BAAT	-0.003102
FAM72C	0.017257	KHDRBS3	0.003557	NDUFC2	0.000764	NAALADL2	-0.003103
CELF4	0.017256	SLC30A3	0.003556	DAOA	0.000763	DNAJB12	-0.003106
AURKB	0.017243	INO80D	0.003555	STXBP3	0.000763	RAPGEF1	-0.003106
DNASE1L2	0.017238	NOL11	0.003555	C18orf8	0.000763	ARRDC3	-0.003107

CDCA2	0.017232	POLR2J3	0.003555	OR5T3	0.000762	ELMO1	-0.003107
CYB561D2	0.017220	PRRC2A	0.003552	KHNYN	0.000762	ARMT1	-0.003110
INSM2	0.017207	LIN52	0.003552	QPCTL	0.000761	GPR137B	-0.003111
SLC38A11	0.017198	RCAN3	0.003549	SUN3	0.000761	CFAP43	-0.003113
RECQL4	0.017194	POLH	0.003548	OSBP	0.000760	ACOT2	-0.003116
SPTBN4	0.017177	TNRC6C	0.003546	KRTAP8-1	0.000760	DSE	-0.003116
KIFC1	0.017161	ALKBH2	0.003546	RASSF10	0.000759	TIMP1	-0.003117
RAX	0.017156	U2AF1	0.003546	ZNF408	0.000759	FGF18	-0.003117
GAP43	0.017144	DNAJC10	0.003545	PEMT	0.000758	FCAMR	-0.003120
CDK5R1	0.017131	RBM45	0.003544	CT45A2	0.000758	MED15	-0.003120
SYT1	0.017092	SUPT20H	0.003544	SMO	0.000758	MYOM2	-0.003121
DPY19L2	0.017090	OSGEPL1	0.003544	RNF40	0.000758	IDNK	-0.003123
T	0.017089	IFNK	0.003541	DCAF4	0.000758	ZNF385A	-0.003124
SCML2	0.017083	PTBP1	0.003541	SLC7A6OS	0.000757	CDK2AP2	-0.003125
MCM10	0.017074	NAP1L4	0.003541	HDAC5	0.000756	MCFD2	-0.003127
KIAA1549L	0.017069	CNTD1	0.003540	MBD3L4	0.000756	FGD6	-0.003128
KREMEN2	0.017066	RBM46	0.003539	PRKACA	0.000756	PPP1R9B	-0.003129
OTOG	0.017059	KLHL41	0.003537	TMEM39A	0.000756	HERPUD1	-0.003130
CCNB2	0.017029	CNGB1	0.003537	CCNH	0.000755	COBLL1	-0.003130
PPP2R2C	0.017019	NSUN2	0.003537	RNF20	0.000755	EIF4E3	-0.003139
ZYG11A	0.017019	YDJC	0.003537	PNRC2	0.000755	TIGAR	-0.003141
CENPE	0.017014	ZNF436	0.003535	MRPL55	0.000754	CLDN10	-0.003142
USP41	0.016986	MAML3	0.003533	C7orf26	0.000754	RPL14	-0.003143
SRRM3	0.016932	GLCCI1	0.003531	PDE9A	0.000754	SMIM10L2A	-0.003145
HCN3	0.016911	LRCH3	0.003530	KRTAP4-6	0.000754	CYTH1	-0.003148
SP9	0.016909	ZNF580	0.003529	MT4	0.000754	DOCK6	-0.003148
PRC1	0.016879	ZNF324B	0.003527	DGAT1	0.000753	LRRC55	-0.003148
TFAP2B	0.016877	ANP32E	0.003527	RBMY1E	0.000753	ARSB	-0.003153
FSTL5	0.016874	ANKRD52	0.003527	KDM3B	0.000750	TCIRG1	-0.003157
CDC45	0.016862	NANOS2	0.003525	PRAF2	0.000750	WBP2	-0.003161
CDKN3	0.016858	KRTAP10-6	0.003524	EDARADD	0.000750	COMP	-0.003161
ERCC6L	0.016858	SLC36A1	0.003523	SPANXD	0.000749	NUDT16	-0.003163
MGAT5B	0.016838	NUP160	0.003521	CNPY2	0.000748	DCBLD2	-0.003164
HIST1H2BO	0.016831	PTP4A3	0.003519	AIFM3	0.000747	C11orf86	-0.003165
PGAM2	0.016820	TUBGCP5	0.003519	CUL1	0.000746	ART5	-0.003165
HELLS	0.016803	DENR	0.003519	VEZT	0.000746	DNAH5	-0.003165
GFY	0.016782	NUDT21	0.003518	ACTR1B	0.000745	SHANK2	-0.003168
HOXA9	0.016780	RANGAP1	0.003517	TYW3	0.000745	KCTD10	-0.003169
HIST1H4E	0.016766	RABGGTB	0.003516	F5	0.000745	RHOU	-0.003170
CDCA8	0.016753	MSTO1	0.003515	ATG3	0.000745	SCP2	-0.003172
ADGRD2	0.016753	TAS2R42	0.003515	COQ9	0.000745	CCNDBP1	-0.003174

SHISA7	0.016741	LGALS14	0.003515	IFT46	0.000745	HIPK4	-0.003174
RTL1	0.016737	CYFIP2	0.003514	RAD50	0.000744	XYLT2	-0.003176
DRAXIN	0.016727	CCT5	0.003513	KRTAP15-1	0.000744	MID2	-0.003177
BRIP1	0.016714	XYLT1	0.003513	CYP27C1	0.000744	ORMDL2	-0.003182
GINS2	0.016711	LOXL3	0.003513	PIGO	0.000744	ASZ1	-0.003185
GPR12	0.016698	FAM210A	0.003512	HMCES	0.000744	BFAR	-0.003186
WDR62	0.016689	ORC4	0.003510	PINLYP	0.000743	RNF19B	-0.003188
HCN2	0.016682	LDLRAD4	0.003510	SH2B2	0.000742	CNTN3	-0.003189
ATP2B2	0.016653	GNG13	0.003507	SEMG1	0.000741	LAMP2	-0.003190
FEV	0.016618	RFX7	0.003507	IGFL3	0.000740	CERS2	-0.003190
FOXO6	0.016602	NUMA1	0.003507	BROX	0.000740	FAHD2B	-0.003193
SYNGR4	0.016588	ZNF222	0.003507	SLC2A8	0.000740	TCTA	-0.003194
NAT8L	0.016560	CASP3	0.003506	ACTL9	0.000740	GSTA5	-0.003194
FMN2	0.016554	TMEM177	0.003504	SKIV2L2	0.000740	HIP1	-0.003195
GP2	0.016551	ATP11C	0.003504	SLC22A5	0.000739	DUSP2	-0.003195
CENPI	0.016549	ZNF770	0.003503	C14orf28	0.000738	BCAR1	-0.003195
FAM72B	0.016547	DHX33	0.003501	ABRACL	0.000737	TM4SF18	-0.003196
PRDM13	0.016546	GABRA1	0.003501	PUF60	0.000737	TMEM101	-0.003196
MAGED4	0.016525	CHERP	0.003501	OR51B4	0.000737	ERICH4	-0.003197
SNCB	0.016521	HHLA1	0.003500	DEDD2	0.000737	GPR174	-0.003204
PACSIN1	0.016494	ACSBG2	0.003500	ADAM18	0.000736	DMRTA1	-0.003206
AMPH	0.016471	PER3	0.003500	OR7A10	0.000736	NFE2L2	-0.003206
IGFBPL1	0.016455	OR52R1	0.003500	C9orf78	0.000736	RHOQ	-0.003206
SH3GL2	0.016426	PDZRN4	0.003500	RALBP1	0.000735	TLCD1	-0.003208
MLLT11	0.016417	RIMS3	0.003499	OR7G1	0.000735	B3GNT2	-0.003208
DDX3Y	0.016409	ZNF778	0.003499	MT-ND4L	0.000733	PKHD1L1	-0.003210
FAM72D	0.016396	RGS12	0.003499	HTR1F	0.000731	RNASET2	-0.003211
LHFPL4	0.016387	KCTD1	0.003498	TEX14	0.000729	DPY19L1	-0.003213
CDKN2A	0.016382	DEFB134	0.003498	SLC30A9	0.000728	ARRDC4	-0.003214
USP9Y	0.016376	CBWD2	0.003496	SLC7A6	0.000728	PIK3R1	-0.003214
FOXM1	0.016374	DTNB	0.003496	LRRC17	0.000728	C12orf54	-0.003215
CCDC154	0.016372	FBXL18	0.003496	BANF2	0.000727	HIVEP2	-0.003216
UBE2T	0.016352	ZBTB40	0.003496	DBT	0.000726	LAMTOR1	-0.003218
SIM1	0.016348	SNRPF	0.003496	OR1D4	0.000726	INCA1	-0.003218
E2F8	0.016337	RAB15	0.003496	PRDM2	0.000725	SH3TC1	-0.003220
KIF20A	0.016325	PGBD4	0.003496	WDR92	0.000722	DST	-0.003221
ZNF488	0.016317	ZNF335	0.003493	ZNF658	0.000721	WLS	-0.003221
NPTX1	0.016305	RPAP3	0.003492	KRTAP4-4	0.000721	SPAG7	-0.003222
CBX2	0.016293	UBA5	0.003491	AURKAIP1	0.000721	CYP7B1	-0.003222
PAX5	0.016275	TFF1	0.003490	BANF1	0.000721	IL12B	-0.003223
SLITRK1	0.016264	CCDC166	0.003489	OR10G7	0.000720	C11orf16	-0.003230

STRC	0.016263	RMND5A	0.003488	PIH1D2	0.000720	SMURF1	-0.003231
GPR19	0.016259	ZBTB11	0.003487	PNP	0.000720	CT83	-0.003232
KIRREL3	0.016237	RNF112	0.003486	TTLL9	0.000720	FANK1	-0.003234
GNG3	0.016225	LAS1L	0.003486	LRRC1	0.000719	PTTG1IP	-0.003235
HIST1H2AE	0.016210	MEN1	0.003486	RIBC1	0.000718	BPIFA2	-0.003241
ZIC3	0.016189	USP28	0.003485	B4GALT5	0.000717	CALHM2	-0.003241
STIL	0.016163	TBCD	0.003485	ELOVL5	0.000717	SMARCD3	-0.003244
CHRNA3	0.016138	MYPOP	0.003484	METTL14	0.000717	HK2	-0.003244
TMEM249	0.016113	ZNF140	0.003484	ZDHHC20	0.000716	MAPKAPK2	-0.003246
CCNA2	0.016092	PCF11	0.003484	AMOT	0.000716	ERF	-0.003255
GPR137C	0.016085	GRM6	0.003484	MED29	0.000715	CHRFAM7A	-0.003257
ATRNL1	0.016071	PHF12	0.003484	SLC38A9	0.000715	ADK	-0.003258
HIST1H3C	0.016057	OR2AK2	0.003484	C3orf58	0.000714	LTA	-0.003261
KLHDC8A	0.016040	YAF2	0.003482	EFCAB3	0.000714	TMED5	-0.003263
SYCE2	0.016009	XCL1	0.003482	SLC24A5	0.000714	KCNMB4	-0.003264
CELF5	0.016007	CCDC144A	0.003481	ZCCHC2	0.000714	ZBTB7A	-0.003269
NKX6-1	0.016003	CASD1	0.003478	NR2F6	0.000712	MKX	-0.003274
THEG	0.016001	CATSPER3	0.003478	OSBPL8	0.000710	NMI	-0.003276
RRM2	0.015992	OR51S1	0.003477	OR1A1	0.000710	CNRIP1	-0.003276
PLEKHG4B	0.015989	SLC5A6	0.003475	ADAM19	0.000710	PACSIN2	-0.003278
NPC1L1	0.015976	GOLGA6L6	0.003475	AGAP3	0.000709	CASP8	-0.003280
ESCO2	0.015971	LRRC42	0.003475	PPP3CA	0.000709	NPY5R	-0.003280
CBLN1	0.015968	HEATR6	0.003475	FBXW10	0.000709	KLF10	-0.003282
PRSS53	0.015965	SLC45A1	0.003475	DEFB108B	0.000707	KAZALD1	-0.003285
YBX2	0.015933	XK	0.003474	CLDN17	0.000705	TNFRSF19	-0.003288
CENPU	0.015929	MED20	0.003474	DENND6A	0.000705	LRRC8A	-0.003290
CLVS1	0.015924	ARL13A	0.003473	ACVR1B	0.000705	HS3ST3B1	-0.003292
SLC17A4	0.015915	COPS5	0.003473	KRTAP9-1	0.000704	GRIN2A	-0.003293
CNTD2	0.015909	PHOX2B	0.003472	RNF148	0.000703	CHST11	-0.003293
CDCA5	0.015902	CCNT1	0.003472	PITX3	0.000703	PPARGC1B	-0.003294
HIST1H1E	0.015902	ZNF471	0.003469	OR10G3	0.000701	PTPN5	-0.003294
KLK3	0.015889	ZBTB48	0.003469	OR12D2	0.000701	RABAC1	-0.003296
TMEM74	0.015877	RBMXL2	0.003467	ACOT6	0.000700	XIRP1	-0.003296
DOC2A	0.015870	WDR70	0.003467	PRAMEF6	0.000700	NOV	-0.003297
TMSB15B	0.015861	CNOT6	0.003466	OR4A16	0.000699	ATP6V1E1	-0.003302
HIST1H2AI	0.015832	FAM83C	0.003466	TRIQK	0.000698	CAMK2N1	-0.003304
HOXB13	0.015782	REG1A	0.003465	COG6	0.000697	JAGN1	-0.003305
APLP1	0.015770	CA14	0.003465	OR2V2	0.000697	HEYL	-0.003305
CRIP3	0.015760	IMPA1	0.003464	ZNF362	0.000697	FLG	-0.003305
HIST1H2AG	0.015756	TAF1C	0.003464	BHLHE22	0.000697	XBP1	-0.003307
KIRREL2	0.015751	P2RX5	0.003463	RPP25	0.000697	PEPD	-0.003307

RAB39A	0.015738	NSUN5	0.003460	MT-ATP6	0.000696	IFFO1	-0.003311
EBF3	0.015737	DHX9	0.003459	OXSR1	0.000696	PHF11	-0.003314
ASF1B	0.015732	ZFPM1	0.003459	RNF103	0.000695	PMVK	-0.003315
GINS1	0.015716	ZNF275	0.003456	PPP1R21	0.000694	DACT2	-0.003315
B4GALNT1	0.015714	RBM5	0.003456	OR5B17	0.000693	SPATA4	-0.003317
SYN1	0.015685	ELK1	0.003455	APEX2	0.000692	SNX24	-0.003318
SLC38A3	0.015673	ANKRD62	0.003455	UBL5	0.000692	SPTSSA	-0.003320
EYA2	0.015672	STAG2	0.003453	ABHD16A	0.000692	FAM187A	-0.003321
MXD3	0.015662	TROVE2	0.003452	OR2AP1	0.000692	SYBU	-0.003323
PKMYT1	0.015650	C15orf61	0.003451	SPINK9	0.000691	ECT2L	-0.003324
GRIK2	0.015644	FBXL8	0.003450	HIGD1C	0.000689	ST7	-0.003326
CEND1	0.015641	ORC5	0.003450	AADACL2	0.000688	TANGO2	-0.003330
PHGR1	0.015617	MROH1	0.003449	TUBB4B	0.000688	KLK6	-0.003332
NCAPH	0.015613	PANK2	0.003448	BNIP1	0.000688	SYDE2	-0.003332
HFM1	0.015594	ZAN	0.003448	FTHL17	0.000688	NIPAL4	-0.003334
NRCAM	0.015578	TET2	0.003447	PRORY	0.000687	C21orf33	-0.003334
HMMR	0.015567	ZSCAN18	0.003446	RPL35A	0.000687	PRLR	-0.003335
GABRG3	0.015558	CLDN14	0.003446	PRSS58	0.000687	ZBP1	-0.003335
GDF1	0.015541	B4GALT2	0.003445	WIPI2	0.000686	BRE	-0.003337
MAGEA12	0.015539	ZNF586	0.003445	SLC35C2	0.000686	TNK1	-0.003338
GABRA5	0.015527	SPIN1	0.003444	RNF25	0.000685	FAM71A	-0.003339
IGDCC3	0.015517	HEATR9	0.003444	IPO7	0.000685	CRLS1	-0.003342
NPAS4	0.015496	GAGE2A	0.003442	IL9	0.000685	UTF1	-0.003342
NKPD1	0.015485	MAP3K7	0.003440	SPATA6	0.000685	ABCG1	-0.003344
TMEM151A	0.015472	MBOAT4	0.003438	MRPL17	0.000685	TMEM245	-0.003344
KCNH2	0.015470	C1orf105	0.003437	TMEM244	0.000684	C2orf73	-0.003345
ATP4A	0.015464	FKBP6	0.003436	OR7E24	0.000683	NUMB	-0.003345
KIF11	0.015462	CLMN	0.003436	METTL16	0.000682	M6PR	-0.003346
PNMA3	0.015454	PRPF38B	0.003436	MRPS15	0.000682	DSG2	-0.003350
OLFM3	0.015425	PHLPP1	0.003435	CDRT15L2	0.000681	MS4A3	-0.003350
MAD2L1	0.015401	RPL39L	0.003434	TNKS2	0.000680	TANC1	-0.003351
OPRK1	0.015386	LY6G6C	0.003433	EXOC2	0.000680	FGF1	-0.003351
CPA5	0.015372	E2F6	0.003432	MGAT5	0.000679	DMD	-0.003351
NYAP1	0.015356	LATS1	0.003430	PQLC2	0.000678	SH3RF1	-0.003353
SYT10	0.015354	PGLYRP2	0.003429	OR5AP2	0.000677	MEF2D	-0.003354
MAGEA2B	0.015353	DOLPP1	0.003428	TSNAX	0.000677	CAPZA2	-0.003356
CDC6	0.015345	UMPS	0.003427	UBOX5	0.000677	SAT2	-0.003357
PLK1	0.015342	DNAJA4	0.003426	BMP2K	0.000676	HSD17B4	-0.003358
MYO18B	0.015337	ERCC2	0.003426	IGSF22	0.000675	BNC2	-0.003359
TLX1	0.015324	ZNF598	0.003424	PRKCI	0.000675	EOMES	-0.003360
HIST1H3B	0.015304	FAM217B	0.003423	KCNE4	0.000674	CA13	-0.003360

HMX3	0.015302	PHF13	0.003421	GPR137	0.000673	ZNF106	-0.003364
DRP2	0.015298	ACTN3	0.003421	KIAA0430	0.000672	CLEC17A	-0.003364
ANKRD18B	0.015281	ICOSLG	0.003420	TEX13B	0.000672	CILP	-0.003364
BUB1	0.015275	OXGR1	0.003420	MXD1	0.000671	CHMP3	-0.003364
KLHL14	0.015250	LEKR1	0.003419	SERHL2	0.000671	EXPH5	-0.003365
TYMS	0.015248	DGKH	0.003418	CACUL1	0.000671	ARHGEF17	-0.003367
SOX2	0.015241	PRIMPOL	0.003418	DYNC1LI2	0.000669	PRDX1	-0.003367
SLC26A10	0.015233	KCNA7	0.003417	KRT28	0.000669	HOXA5	-0.003368
TCEAL5	0.015226	TBP	0.003416	OR2M7	0.000668	FIS1	-0.003369
C1orf61	0.015223	NOL12	0.003416	ACTR10	0.000668	SH2B3	-0.003369
EME1	0.015185	GALNTL5	0.003416	CELA3B	0.000667	SIPA1	-0.003370
MAPK8IP2	0.015182	RHNO1	0.003416	SEC63	0.000667	PKD1L2	-0.003370
TAC3	0.015180	PRSS3	0.003416	CRYGD	0.000666	BTBD19	-0.003371
PDE11A	0.015172	NCBP2	0.003415	SLC44A1	0.000666	TMEM127	-0.003372
ISX	0.015169	NAA30	0.003414	C1orf64	0.000666	STAC2	-0.003372
ADAM11	0.015160	HIP1R	0.003413	OR4S2	0.000666	PCBP1	-0.003372
ZWINT	0.015159	SMYD1	0.003412	BRPF1	0.000666	MREG	-0.003373
CDKN2C	0.015159	MUCL1	0.003410	ARIH1	0.000665	PRSS16	-0.003376
TCP11X2	0.015157	ADAL	0.003409	RINL	0.000664	FOXJ1	-0.003376
TNFRSF25	0.015140	STPG2	0.003409	RAB22A	0.000664	ADGRA1	-0.003377
UBE2S	0.015139	SLC25A41	0.003408	GAGE12B	0.000663	CALCOCO2	-0.003382
CRMP1	0.015138	YPEL4	0.003408	IFT140	0.000663	GSTM4	-0.003383
SYP	0.015128	BBIP1	0.003408	SLC35B1	0.000663	PVALB	-0.003383
CECR6	0.015125	A1BG	0.003407	C5orf24	0.000662	NDUFAF3	-0.003384
ZNF367	0.015119	USP21	0.003407	C12orf66	0.000662	CBLN4	-0.003385
POTEF	0.015077	OR51A7	0.003407	RPL17	0.000661	LTBP3	-0.003388
TBR1	0.015077	TSC1	0.003406	C1QBP	0.000661	MPDU1	-0.003389
DMBX1	0.015076	SGPL1	0.003405	CTBP2	0.000661	HHEX	-0.003389
SLC18A3	0.015044	VHLL	0.003404	FOXK1	0.000660	LIMA1	-0.003391
COX6B2	0.015044	RPA3	0.003404	MFSD11	0.000660	DUXA	-0.003393
DNAJC12	0.015041	PARD6A	0.003401	RNASE11	0.000658	C1orf53	-0.003395
DNA2	0.015022	DEPDC5	0.003401	NDUFA8	0.000658	ETF1	-0.003396
OR2B6	0.015011	MYOG	0.003400	ADGRF4	0.000658	HERC5	-0.003397
TIGD3	0.015001	RHBDD3	0.003400	PDPK1	0.000658	TCTN3	-0.003397
CDC25A	0.014976	NGFR	0.003399	XDH	0.000657	ACAT1	-0.003399
ADGRB2	0.014968	NR2C2	0.003398	DHX8	0.000657	ELMO3	-0.003400
EML6	0.014960	WNT6	0.003398	C12orf57	0.000657	HOMER1	-0.003400
ARHGAP11A	0.014953	NUDT10	0.003398	TM2D3	0.000657	TTC39A	-0.003400
IGFL4	0.014948	KIAA1107	0.003396	VCY	0.000656	KIAA1161	-0.003401
REEP2	0.014947	AURKC	0.003396	CEPT1	0.000655	KRT8	-0.003403
PSAT1	0.014928	SLC17A2	0.003396	MOS	0.000655	HDDC2	-0.003404

NHLH1	0.014921	LBHD1	0.003396	GLT6D1	0.000655	KLRG1	-0.003405
NLRP11	0.014916	CCK	0.003395	DENND4A	0.000654	OAF	-0.003405
YJEFN3	0.014889	COA7	0.003395	C1GALT1	0.000653	TGIF2	-0.003407
KCNMB2	0.014882	KANSL2	0.003395	ATP13A2	0.000653	FNDC1	-0.003411
MEX3B	0.014878	LAMB4	0.003395	BAG6	0.000653	ABHD4	-0.003413
TMEFF2	0.014867	SH3BP5L	0.003394	NCALD	0.000653	PTPN1	-0.003415
LMO1	0.014865	RPS6KC1	0.003393	CCDC159	0.000652	COL4A2	-0.003416
ARHGEF39	0.014858	ZNF501	0.003392	SPRY3	0.000652	TEF	-0.003418
MAPT	0.014855	HSP90AA1	0.003392	OR7G3	0.000652	BTN2A2	-0.003419
RGS8	0.014836	KRTAP10-7	0.003391	MOSPD1	0.000651	FAM183A	-0.003419
CERS1	0.014825	SMC5	0.003391	HSPA8	0.000651	CLEC4G	-0.003420
FGF5	0.014810	ZNF844	0.003391	LIPC	0.000650	TMEM110	-0.003422
GNAO1	0.014806	NFATC4	0.003389	MTSS1L	0.000647	LHX6	-0.003423
GABRA3	0.014800	PLEKHH3	0.003388	SLC22A9	0.000647	NATD1	-0.003425
SLC9A3	0.014799	NSUN7	0.003388	TMEM55A	0.000646	SVIL	-0.003426
ZNF730	0.014788	ITIH4	0.003388	LUZP4	0.000645	VWA2	-0.003427
NKX3-2	0.014786	POLR1C	0.003387	43715	0.000645	ELF3	-0.003429
UTY	0.014783	LRP11	0.003387	STRA8	0.000645	SLC6A16	-0.003430
TET1	0.014779	BECN2	0.003384	GGPS1	0.000644	SHC1	-0.003435
HIST2H3A	0.014756	BRMS1L	0.003383	IFNA8	0.000644	TMEM179B	-0.003436
CDH22	0.014754	MLLT10	0.003383	VCY1B	0.000644	CNR2	-0.003437
ANKRD34B	0.014752	ZNF155	0.003383	SLC35A5	0.000644	FAM214B	-0.003439
HIST2H3C	0.014740	MAP9	0.003382	PPIAL4E	0.000643	ADAM33	-0.003439
NEUROD2	0.014740	REG4	0.003381	RNF114	0.000643	PROM2	-0.003440
ADCY1	0.014728	C11orf65	0.003381	VPS4B	0.000642	PHF24	-0.003441
ATAD5	0.014706	GOLGA8J	0.003380	TBK1	0.000641	JAK1	-0.003443
SIX1	0.014683	FAM69B	0.003380	CREBBP	0.000640	EEF1A1	-0.003443
HIST1H2BF	0.014669	SPATA9	0.003379	OR8B4	0.000640	DESI1	-0.003443
KSR2	0.014667	ZBTB33	0.003377	SRP19	0.000640	PPDPF	-0.003445
CENPK	0.014658	TTC31	0.003376	GEMIN4	0.000640	GCNT2	-0.003446
HIST1H1B	0.014653	GABPB1	0.003374	RABGAP1L	0.000639	SIGLEC10	-0.003447
OIP5	0.014621	ZNF136	0.003374	SPACA7	0.000639	PTN	-0.003449
ANKRD18A	0.014609	RABL6	0.003374	FAM76A	0.000639	KCNJ1	-0.003450
SMC1B	0.014604	ZNF707	0.003374	MINOS1	0.000639	SFT2D1	-0.003452
TRIM46	0.014603	GTF3C3	0.003371	RRP8	0.000639	GRAP2	-0.003453
KNTC1	0.014598	CFHR2	0.003371	POLL	0.000638	CASC1	-0.003455
HIST1H2AM	0.014593	MRPL30	0.003371	COPRS	0.000638	RAB13	-0.003459
GLYATL2	0.014590	CFAP70	0.003370	ZNRD1	0.000638	TDGF1	-0.003460
KCNN1	0.014586	KRBOX4	0.003369	CELA2A	0.000637	AMFR	-0.003463
PODXL2	0.014582	UQCRH	0.003369	SNAPC1	0.000637	DPH3	-0.003463
HTR3A	0.014579	OR10G2	0.003368	OR6C68	0.000637	CYP2B6	-0.003467

TFAP2A	0.014571	EFCAB2	0.003368	TBC1D20	0.000636	TRIM56	-0.003469
VWC2L	0.014570	MAP2K7	0.003366	NOX3	0.000636	MBIP	-0.003470
STX1A	0.014552	PADI6	0.003366	SPACA1	0.000636	GSDMD	-0.003470
RET	0.014529	YWHAQ	0.003365	OGFOD3	0.000636	FDFT1	-0.003471
KIF23	0.014522	SIRT7	0.003365	JPH1	0.000636	BTBD9	-0.003472
NPTX2	0.014521	GLTSCR1	0.003364	C1orf228	0.000635	KITLG	-0.003474
ENTPD8	0.014495	PRR20C	0.003364	OR5H15	0.000635	PTPRZ1	-0.003476
CDT1	0.014480	SIAH2	0.003364	COASY	0.000634	CDCP1	-0.003476
OTX2	0.014469	EP400	0.003362	APH1B	0.000633	IFI44	-0.003479
TEX101	0.014443	CHN1	0.003362	OR10P1	0.000633	FAM13C	-0.003479
CTXN2	0.014440	DNAJC2	0.003361	GAGE12C	0.000633	CDC42EP4	-0.003485
SST	0.014418	ZNF354A	0.003360	GAGE12D	0.000633	IL2	-0.003489
CDK1	0.014404	PRR25	0.003360	MPI	0.000632	PPP4R4	-0.003491
PDX1	0.014398	PBRM1	0.003359	KRTAP27-1	0.000632	BET1L	-0.003493
CCNE1	0.014362	C8orf59	0.003357	MGAT4B	0.000632	HMOX2	-0.003496
GREB1	0.014341	ITGA7	0.003357	PDPR	0.000632	SLC35A4	-0.003498
WASF1	0.014334	KRT40	0.003357	ERICH3	0.000631	PYGM	-0.003498
FAM171A2	0.014323	MAB21L2	0.003356	AKT1S1	0.000631	NCAM2	-0.003499
CSAG1	0.014318	CCDC88A	0.003355	NLRC5	0.000630	EMC7	-0.003499
ASB15	0.014312	DENND1A	0.003354	MTDH	0.000629	PAMR1	-0.003499
HIST1H1D	0.014309	WNT10B	0.003354	CHST7	0.000629	RASGEF1A	-0.003500
FRMPD1	0.014309	RABL2A	0.003352	ARHGEF10L	0.000629	SESN2	-0.003501
PTTG1	0.014291	STARD9	0.003351	URAD	0.000629	ZDHHC9	-0.003501
XKR5	0.014281	LYSMD4	0.003350	IL1F10	0.000628	LOXL4	-0.003503
IGSF9	0.014281	ESM1	0.003350	LRRC57	0.000628	FNDC3B	-0.003504
TLX3	0.014273	XRN1	0.003349	CLUAP1	0.000628	SLC2A4	-0.003509
ADAMTS14	0.014271	PNPT1	0.003349	WDR37	0.000628	MEGF6	-0.003511
TRIM36	0.014266	CEP350	0.003348	TP53INP1	0.000628	ZDHHC16	-0.003511
C20orf203	0.014239	TTC39C	0.003347	KDM2A	0.000627	GFRA2	-0.003511
DAND5	0.014234	SCRG1	0.003346	PAF1	0.000627	AKNA	-0.003513
CCER2	0.014217	MBD4	0.003346	OR4C11	0.000626	CRISPLD2	-0.003513
NR0B1	0.014188	DHTKD1	0.003346	GAST	0.000626	ESRP2	-0.003515
SLC16A8	0.014187	NR2C1	0.003345	FOPNL	0.000623	C17orf97	-0.003516
KISS1R	0.014181	INTS4	0.003343	MTX1	0.000623	BMP7	-0.003517
USH2A	0.014168	SEPHS1	0.003342	AGPAT1	0.000623	ACOT4	-0.003517
FOXE3	0.014160	RCN2	0.003342	SPANXN5	0.000623	RHBDL2	-0.003523
NLGN4Y	0.014159	NOP58	0.003341	PIGP	0.000622	SNX17	-0.003523
SV2A	0.014155	ZNF212	0.003341	MRPS34	0.000622	FAM26F	-0.003525
ALX4	0.014153	GARNL3	0.003341	NFIB	0.000622	IDH1	-0.003527
SBK1	0.014141	MAGEC3	0.003340	NBPF15	0.000622	HS1BP3	-0.003529
VIL1	0.014139	LRBA	0.003339	ASNSD1	0.000622	MAS1L	-0.003530

ATP6V1G2	0.014136	MTRF1L	0.003338	INS	0.000622	DMTN	-0.003530
GABRB3	0.014131	ELP2	0.003337	OR2T27	0.000621	MDS2	-0.003533
ARHGDIG	0.014124	C2orf69	0.003337	CDYL2	0.000621	IMPA2	-0.003543
ARHGAP11B	0.014121	CSPP1	0.003336	CFAP20	0.000620	VWA1	-0.003544
FRMD5	0.014118	VDAC3	0.003335	RABL2B	0.000619	GPR153	-0.003545
CHRNA5	0.014110	VPS13B	0.003334	TMEM60	0.000619	RNF122	-0.003545
AGMO	0.014109	ORC3	0.003334	GANAB	0.000619	LAMB1	-0.003548
LIN28B	0.014063	COX20	0.003334	ARF6	0.000618	TSHZ3	-0.003551
CHTF18	0.014062	HNRNPAB	0.003334	IBA57	0.000618	TMEM53	-0.003552
ZFY	0.014024	TNFSF11	0.003333	GJA3	0.000617	TMSB10	-0.003554
CCNB1	0.014023	GSTZ1	0.003329	USP17L17	0.000617	CAPN12	-0.003556
CDCA7	0.014014	IRAK1BP1	0.003329	ACCS	0.000617	KIAA0319L	-0.003556
HOXA11	0.013992	TSPY10	0.003329	OR5H6	0.000617	B3GNT9	-0.003556
FANCB	0.013990	KCNQ5	0.003329	CMTR2	0.000616	CACNG4	-0.003560
C2orf70	0.013969	C1orf174	0.003328	CLLU1OS	0.000616	MICALCL	-0.003568
AGBL4	0.013950	NACAD	0.003327	MIER1	0.000615	SPEF1	-0.003568
SLC24A2	0.013940	IQCH	0.003327	LYPD3	0.000615	BMPR2	-0.003572
CYP2D7	0.013939	PGK2	0.003326	SERPINB4	0.000614	PHLDA2	-0.003576
HIST1H3D	0.013938	C17orf58	0.003326	FBXL13	0.000613	GPR160	-0.003577
PRR36	0.013926	STK11	0.003325	C7orf72	0.000612	FLII	-0.003578
PITX1	0.013924	NDUFAF4	0.003325	SLC7A10	0.000612	SPRR2D	-0.003578
C1QL4	0.013921	MTRF1	0.003323	COMMD10	0.000612	FHL3	-0.003578
GRK1	0.013901	TRIM66	0.003323	RPS19	0.000611	FAM109B	-0.003580
UGT2A1	0.013896	TMPRSS11F	0.003323	STARD3	0.000611	ANO10	-0.003580
CSMD2	0.013895	PRRC2B	0.003322	PTK7	0.000611	NAT2	-0.003582
GPR158	0.013886	PLD6	0.003321	AK3	0.000610	GABARAP	-0.003583
DNER	0.013879	FARSA	0.003321	PRMT9	0.000610	CORO1C	-0.003584
USH1C	0.013842	TMPRSS11D	0.003320	ABT1	0.000609	CDK6	-0.003588
ENTPD2	0.013836	NCOA5	0.003319	UBE2A	0.000608	TBC1D9	-0.003591
SYT6	0.013836	KRTAP10-4	0.003318	TMEM207	0.000608	CHST9	-0.003592
RPS6KL1	0.013821	TTBK2	0.003317	PHYHIP	0.000608	RAPH1	-0.003593
GNB3	0.013817	RRH	0.003313	STK3	0.000607	DNASE2	-0.003594
AKR7L	0.013816	AGPAT4	0.003313	HOXA2	0.000607	APELA	-0.003594
MGAT4C	0.013814	LOXL2	0.003312	CYP4F3	0.000607	IRS1	-0.003598
FOXB1	0.013802	SUPT7L	0.003312	FPGT	0.000607	HSDL2	-0.003599
PDZD4	0.013798	ZKSCAN5	0.003312	ZNF582	0.000606	UBAP1	-0.003600
STMN1	0.013794	MBD3	0.003312	VPS41	0.000606	CDKN1A	-0.003602
HIST1H2BJ	0.013793	WDPCP	0.003311	KLKB1	0.000606	ADORA1	-0.003604
CEP55	0.013789	GNB5	0.003311	FBLIM1	0.000606	SDC2	-0.003606
RAD51AP1	0.013770	SSRP1	0.003310	RXFP4	0.000605	CAPN3	-0.003609
MMP16	0.013741	PANK4	0.003307	MAP2K2	0.000605	DISP1	-0.003609

CPT1C	0.013738	KATNAL1	0.003305	IFNA7	0.000604	ADH5	-0.003609
ORC1	0.013734	AVPR1A	0.003305	UBL4A	0.000603	UPK1B	-0.003610
NLGN1	0.013727	MTG2	0.003305	DNAJA1	0.000603	CTBS	-0.003611
ANLN	0.013717	SUB1	0.003304	NDUFS2	0.000603	METTL21C	-0.003613
HIST1H2BL	0.013714	ZPLD1	0.003304	AADACL4	0.000602	GANC	-0.003615
RPS4Y1	0.013697	LRRC20	0.003304	OR9G4	0.000601	HRH2	-0.003616
LHX3	0.013689	TUBA3C	0.003303	SOX15	0.000600	NOVA2	-0.003617
MT3	0.013687	NEURL2	0.003301	IGDCC4	0.000599	OSBPL1A	-0.003620
SCG5	0.013679	FAM19A5	0.003301	CPD	0.000598	ZG16B	-0.003620
C2CD4C	0.013667	PTCD1	0.003301	FAT1	0.000598	REN	-0.003620
CHRM4	0.013653	WSB2	0.003300	OXSM	0.000594	DNAJC3	-0.003624
RXFP3	0.013637	ING3	0.003300	LY6G6D	0.000594	CCDC71	-0.003624
EMILIN3	0.013633	GSK3B	0.003299	RDH14	0.000593	SLFN12L	-0.003625
ASPDH	0.013625	NOM1	0.003295	AKAP10	0.000592	STARD10	-0.003626
CDC7	0.013619	COQ6	0.003294	RPS4Y2	0.000591	SPATA12	-0.003628
GPR173	0.013616	SMAD4	0.003293	MTMR3	0.000591	TOB1	-0.003628
DNMT3B	0.013610	HMBOX1	0.003293	HECA	0.000591	WWC1	-0.003630
RNF157	0.013590	EXOSC5	0.003291	OR1M1	0.000591	TSC22D1	-0.003630
PAX3	0.013582	SIVA1	0.003291	TFG	0.000590	PLBD2	-0.003632
FAM83D	0.013573	ARR3	0.003291	OTUD4	0.000590	GALNT3	-0.003635
VAX2	0.013565	PPIAL4G	0.003290	NPHS2	0.000590	NOD1	-0.003637
PLEKHH1	0.013557	ACSM6	0.003288	NUTM2A	0.000589	CFL2	-0.003641
FAM196A	0.013556	ACMSD	0.003288	EXOC4	0.000589	IGF2	-0.003644
RAB3C	0.013551	OPALIN	0.003288	MTFP1	0.000589	NFIL3	-0.003644
SLC5A12	0.013550	DUSP12	0.003287	THAP7	0.000588	CFAP53	-0.003645
TP53TG3	0.013542	USP18	0.003285	POTEB	0.000588	STAC3	-0.003645
RAB39B	0.013537	NPS	0.003285	ING2	0.000586	LPP	-0.003646
SLC30A10	0.013517	DDX49	0.003284	KRTAP29-1	0.000586	TSPAN19	-0.003646
TMEM196	0.013515	NEMP2	0.003283	OR4P4	0.000585	TSPAN2	-0.003650
MAGED4B	0.013482	OR56A5	0.003283	OR5J2	0.000585	SULT1C2	-0.003654
PARPBP	0.013463	ZFR	0.003282	BEND7	0.000585	PPM1F	-0.003656
DTL	0.013458	IARS	0.003282	KRTAP9-2	0.000584	PAPLN	-0.003658
GNRH2	0.013440	NKAIN3	0.003282	KRTAP1-4	0.000584	HPS5	-0.003658
ACYP1	0.013439	ATG2B	0.003281	SMU1	0.000584	ZP2	-0.003658
C3orf67	0.013429	MIER3	0.003280	LMO4	0.000584	ACVR1	-0.003658
AK5	0.013429	PPM1A	0.003280	BICD2	0.000583	CTSK	-0.003660
HIST3H2BB	0.013422	CSPG5	0.003279	ANKRD50	0.000583	ARL2BP	-0.003661
GAL3ST3	0.013390	GON4L	0.003279	PHYKPL	0.000583	IKBKE	-0.003663
SLC8A2	0.013384	FAM134B	0.003277	FOXI2	0.000582	RNF181	-0.003666
MEP1B	0.013381	HNRNPU	0.003276	MRPL27	0.000581	DLEU7	-0.003667
B3GAT1	0.013376	MON2	0.003275	ATMIN	0.000581	PTP4A1	-0.003670

NXF2B	0.013342	ACTR5	0.003275	RBM15B	0.000581	SLC27A1	-0.003670
MTMR7	0.013340	CD3EAP	0.003274	HIST1H2BA	0.000580	SPR	-0.003670
KCNH3	0.013335	MARS2	0.003273	SPO11	0.000580	PARP14	-0.003671
PLK4	0.013332	RBBP5	0.003271	KLHL26	0.000580	PKIG	-0.003671
SLC6A15	0.013319	ZMYM4	0.003271	ARPC5L	0.000579	TBC1D22A	-0.003671
GRIN2C	0.013314	MTNR1A	0.003270	MLN	0.000579	TNNC2	-0.003672
RASSF6	0.013306	SLC2A5	0.003269	OR5D16	0.000577	SAMD3	-0.003674
MND1	0.013303	ZNF263	0.003269	PIGC	0.000576	MYOZ2	-0.003675
IGSF5	0.013288	GNB1L	0.003269	MRPS28	0.000576	KCNJ12	-0.003675
BSND	0.013285	CGB1	0.003268	TMEM168	0.000576	ACTBL2	-0.003676
GCK	0.013279	SAE1	0.003267	OCM2	0.000575	EPPIN	-0.003678
RFC4	0.013268	CLPB	0.003267	ARMS2	0.000575	INF2	-0.003678
GNGT1	0.013261	JMY	0.003266	SLC18B1	0.000575	RPL29	-0.003678
FSIP2	0.013256	HEATR4	0.003265	FAM209B	0.000575	FLT3LG	-0.003680
EIF1AY	0.013252	DICER1	0.003265	DIS3	0.000574	SYNM	-0.003680
MAP1B	0.013251	RD3	0.003264	CDC123	0.000573	WNT5B	-0.003681
NOVA1	0.013230	ZNF70	0.003263	OSBPL6	0.000573	RAP1GAP	-0.003681
DISP2	0.013227	ZNF740	0.003262	ZNF800	0.000572	WDR1	-0.003688
HIST1H4I	0.013222	IFT27	0.003262	OR10Z1	0.000571	APRT	-0.003689
DIRAS1	0.013211	ASB1	0.003262	GPHN	0.000571	GPR108	-0.003690
KIFC2	0.013208	LANCL1	0.003261	IL3	0.000571	SH3TC2	-0.003693
POLE2	0.013208	ERCC6	0.003260	MRFAP1L1	0.000570	SPINT1	-0.003693
C19orf57	0.013203	TXNL4B	0.003259	MKRN2	0.000570	ZNF541	-0.003694
FZD9	0.013199	CYHR1	0.003258	RORA	0.000569	CCDC115	-0.003697
CA10	0.013198	CDK20	0.003258	ARMC10	0.000569	CYB5D2	-0.003698
STRA6	0.013192	RINT1	0.003257	RABL3	0.000568	NUDT8	-0.003699
ZGRF1	0.013191	DNAJC28	0.003257	LMF2	0.000568	PRRG2	-0.003699
IGSF9B	0.013184	DLG1	0.003257	OR6Q1	0.000568	TAP2	-0.003701
BRICD5	0.013176	RRP1	0.003255	NAAA	0.000567	C17orf107	-0.003701
ALLC	0.013172	HOMER2	0.003255	TMEM202	0.000567	TRPM1	-0.003702
PTPRH	0.013169	ZSCAN29	0.003255	C6orf120	0.000566	PDGFRB	-0.003702
DDX11	0.013154	C1orf52	0.003254	LCE1C	0.000566	RAB8B	-0.003703
KIAA2022	0.013129	ADGRG7	0.003254	RITA1	0.000566	PEX11G	-0.003703
PSRC1	0.013119	EIF4G3	0.003254	NDUFV2	0.000566	CAMK1	-0.003706
TFR2	0.013092	SOHLH2	0.003254	SUPT3H	0.000566	PMEPA1	-0.003708
AIRE	0.013085	AMPD3	0.003254	MARK2	0.000566	MFSD1	-0.003708
MARK1	0.013078	AKR1D1	0.003254	ELSPBP1	0.000565	CAPS	-0.003711
FANCI	0.013078	IGHMBP2	0.003253	PSME2	0.000565	VWA7	-0.003712
POTEE	0.013071	PDSS1	0.003253	GLT8D1	0.000565	DTX2	-0.003713
FAM222A	0.013070	COX6C	0.003250	SNX19	0.000564	OTOA	-0.003713
COL11A2	0.013067	TMEM69	0.003249	AIFM1	0.000564	DNAJB4	-0.003714

HIST1H3G	0.013056	GATC	0.003249	SH3BGR	0.000563	TPSG1	-0.003715
PABPC1L	0.013050	POMT1	0.003249	SLC25A16	0.000563	BCAP31	-0.003719
PDXP	0.013043	GOLGA6L1	0.003248	KRT6C	0.000563	PKP1	-0.003722
HOXD8	0.013026	PRPF38A	0.003247	FLYWCH1	0.000562	PPP1R13L	-0.003724
GSC	0.013020	NUFIP2	0.003247	LSM3	0.000562	COL21A1	-0.003725
EVX2	0.013015	ZC3H11A	0.003244	HNRNPCL4	0.000562	ARMC7	-0.003728
C5orf34	0.012998	PPIP5K2	0.003243	SNAPIN	0.000562	TSPAN31	-0.003730
ZNF726	0.012991	GTPBP8	0.003243	JAG1	0.000561	BIN1	-0.003731
CCDC168	0.012990	FAM104A	0.003243	KRTAP5-6	0.000561	CRYZ	-0.003734
LYPD6	0.012943	NOL4L	0.003242	FAIM2	0.000559	GNS	-0.003737
MYBL1	0.012928	ERI3	0.003241	FAM160B2	0.000559	GRAPL	-0.003738
IL17REL	0.012927	SPEN	0.003240	OR10H1	0.000558	IFI27L2	-0.003740
LINGO2	0.012927	ANKH	0.003239	SLC4A1AP	0.000557	SIGLEC16	-0.003742
SLC7A9	0.012908	NUDCD1	0.003239	IFNE	0.000556	PRR15L	-0.003745
FAM131C	0.012898	TAS2R39	0.003239	DENND2A	0.000556	MAP1LC3B	-0.003748
FTCD	0.012893	STX2	0.003238	LRRC27	0.000556	SNX2	-0.003748
TTC6	0.012883	KHDRBS1	0.003238	GPX6	0.000556	TMEM45B	-0.003753
NETO1	0.012882	OR56A3	0.003238	ITPR3	0.000556	MYL6	-0.003753
E2F1	0.012875	CCDC157	0.003237	SMIM9	0.000554	PRCP	-0.003755
ZIC1	0.012873	GET4	0.003237	ZNF641	0.000554	AP1S3	-0.003757
FBXW12	0.012861	LMBR1	0.003236	AUP1	0.000554	BTN3A1	-0.003759
FOXI3	0.012860	RBM24	0.003233	AFTPH	0.000553	CALD1	-0.003760
GDAP1	0.012856	AZIN1	0.003232	OR10AD1	0.000553	NR2F2	-0.003760
LMNB1	0.012849	RLIM	0.003232	KIAA1551	0.000553	COPS7A	-0.003768
CABYR	0.012845	SLC2A11	0.003231	HEATR3	0.000552	SLFN11	-0.003770
ZCCHC18	0.012834	FOLH1	0.003231	MRPL44	0.000552	COL26A1	-0.003770
CENPV	0.012832	SSC4D	0.003231	ATP5L	0.000552	AIM2	-0.003771
BLM	0.012827	SMG7	0.003230	AKT1	0.000551	NEIL2	-0.003771
GRIP1	0.012821	BRAF	0.003229	HR	0.000551	STK17A	-0.003772
MYO3A	0.012815	ZNF791	0.003229	DDB1	0.000551	CHMP2A	-0.003775
MAGEA1	0.012807	SLC37A4	0.003229	TNR	0.000548	PDE1C	-0.003777
FANCA	0.012803	GOPC	0.003227	RGR	0.000547	SLC12A3	-0.003780
BMP8A	0.012797	PLCZ1	0.003227	FAM184A	0.000547	HDAC7	-0.003781
FAM135B	0.012787	ZNF398	0.003226	OR5AS1	0.000547	DGKG	-0.003783
LRRC53	0.012785	ZNF618	0.003225	NEK8	0.000546	MTMR14	-0.003784
HIST1H3F	0.012784	FAM98C	0.003224	NADK	0.000546	SUMF2	-0.003786
MUC19	0.012774	PIAS3	0.003224	OR2T35	0.000546	MPST	-0.003787
ATP2A1	0.012769	FAM173A	0.003221	GTPBP6	0.000545	TGM1	-0.003787
EPHA10	0.012767	LMNTD2	0.003221	DNAJB5	0.000545	TMEM200A	-0.003787
SLC25A48	0.012764	CLCNKA	0.003220	VPS25	0.000545	DSEL	-0.003797
KLK15	0.012758	KHSRP	0.003219	DEFB107A	0.000541	BCO1	-0.003798

SPAG11B	0.012751	ZNF287	0.003219	DEFB107B	0.000541	TMEM45A	-0.003799
ATAD2	0.012737	PRPSAP1	0.003218	CCDC124	0.000540	FNIP2	-0.003801
ECT2	0.012737	ICE2	0.003217	BIRC2	0.000540	GPR84	-0.003802
RNFT2	0.012735	SPSB3	0.003216	SMR3A	0.000539	GLIPR1L2	-0.003803
C1orf127	0.012733	STXBP4	0.003216	GRXCR1	0.000538	RARB	-0.003804
GRIN3A	0.012724	USP17L4	0.003214	XIAP	0.000538	KRT32	-0.003805
ANKRD36	0.012723	CPSF4L	0.003214	GMNC	0.000538	DCC	-0.003806
MYLK2	0.012718	ZFP3	0.003213	NAV2	0.000537	CDH17	-0.003808
HIST3H2A	0.012718	SLC47A2	0.003212	TGM5	0.000537	NMB	-0.003808
COL9A1	0.012712	OR51J1	0.003212	RPL26L1	0.000537	RASSF3	-0.003810
ANKRD36C	0.012707	C7orf34	0.003211	MEIG1	0.000536	IL10RB	-0.003811
MTCL1	0.012704	STK35	0.003210	PDGFD	0.000536	HSD17B14	-0.003812
CCDC14	0.012704	CCT2	0.003210	LYST	0.000535	SLFN12	-0.003815
CHST8	0.012695	CNOT7	0.003209	IQCF6	0.000535	TBC1D10A	-0.003817
ARTN	0.012689	RFESD	0.003207	PDILT	0.000535	TTC23	-0.003817
RASAL1	0.012687	CUL4B	0.003207	C16orf90	0.000535	TAP1	-0.003819
SRCIN1	0.012675	SERPINE3	0.003207	FGF6	0.000534	UNC13B	-0.003822
TCTE3	0.012675	IL20RB	0.003206	TMTC1	0.000534	CAP1	-0.003825
DNAJC6	0.012670	DDX17	0.003203	C7orf49	0.000534	KRCC1	-0.003825
RNF165	0.012666	RPE	0.003202	DEF8	0.000533	PDGFRL	-0.003829
LINGO1	0.012660	NSD1	0.003198	ARPP19	0.000533	WIPI1	-0.003831
SMPD3	0.012658	SSX2B	0.003197	MIEF1	0.000533	ARF4	-0.003836
PNCK	0.012657	RICTOR	0.003197	INAFM1	0.000532	TMEM115	-0.003838
PCK1	0.012655	MPLKIP	0.003197	MORN2	0.000532	TGOLN2	-0.003839
FOXE1	0.012652	WDR31	0.003196	LBP	0.000532	NHSL2	-0.003839
KCNH4	0.012640	CDK2AP1	0.003196	ZC3H12B	0.000532	PLCE1	-0.003842
PROKR1	0.012636	HSFY1	0.003195	MYBBP1A	0.000531	PPM1K	-0.003843
C21orf58	0.012635	KRTAP10-2	0.003195	RFPL4A	0.000531	MOB3A	-0.003844
HCN4	0.012634	POLD2	0.003194	SLC52A2	0.000531	PPT1	-0.003845
KIAA1524	0.012629	ABHD11	0.003193	KRT25	0.000531	TCTEX1D4	-0.003846
C12orf42	0.012624	HEY2	0.003191	KRT33B	0.000530	CD200R1	-0.003847
MCM2	0.012621	MEAF6	0.003189	CABIN1	0.000530	FBN1	-0.003848
CA9	0.012620	KBTBD12	0.003188	FBXL14	0.000529	DEF6	-0.003851
CHEK1	0.012614	SPRR1A	0.003188	CGRRF1	0.000527	C1orf54	-0.003857
C4orf50	0.012602	NR0B2	0.003187	BBS9	0.000527	TNFRSF17	-0.003860
CBFA2T2	0.012599	PIKFYVE	0.003187	SLC43A1	0.000526	CAPNS2	-0.003861
HIST1H4C	0.012583	WNT8A	0.003186	IMPAD1	0.000526	FAM114A1	-0.003862
MURC	0.012575	ATF2	0.003185	RFWD2	0.000526	ABHD5	-0.003864
TIMELESS	0.012574	METTL21A	0.003185	TMEM161A	0.000525	NFIX	-0.003867
ANKRD13B	0.012548	PMS2	0.003184	POTEB2	0.000525	CORO1A	-0.003867
BTBD11	0.012542	RBM8A	0.003184	DUSP19	0.000524	LAMC1	-0.003868

SSTR2	0.012541	ZNF649	0.003183	TMEM126A	0.000523	PARD3B	-0.003870
ZSCAN23	0.012539	SBF2	0.003182	TBC1D3H	0.000523	PI4K2A	-0.003874
AURKA	0.012535	TCFL5	0.003182	SLC22A2	0.000523	LRRFIP1	-0.003876
FAM72A	0.012528	ZAR1L	0.003182	NUDT5	0.000522	NLRX1	-0.003876
SIM2	0.012527	AFG3L2	0.003182	SPATA31A5	0.000522	ECH1	-0.003883
TMEM198	0.012506	RND2	0.003181	NDUFA6	0.000522	GLMP	-0.003884
HPDL	0.012501	43525	0.003181	HINT1	0.000521	OSTM1	-0.003886
PSD	0.012499	SRPK2	0.003179	COPS4	0.000521	FUCA2	-0.003887
ADAM22	0.012497	CCDC27	0.003178	BZW2	0.000520	KRTCAP3	-0.003888
PRLHR	0.012494	GATAD2B	0.003178	ATG4C	0.000519	PAPSS1	-0.003888
CKMT1B	0.012493	C17orf67	0.003176	PSKH2	0.000518	GDF7	-0.003889
CHRNB4	0.012479	CRY1	0.003176	RPH3A	0.000518	TOM1L2	-0.003892
HIST1H2AD	0.012465	CHDH	0.003174	PHPT1	0.000518	LHFP	-0.003895
FBXO5	0.012458	METTL10	0.003174	TRAPPC3	0.000516	RGS22	-0.003897
KRT83	0.012456	TFAP2D	0.003173	RAB40C	0.000515	RHBDF2	-0.003897
ZNF300	0.012452	NDRG4	0.003173	CLPP	0.000514	FRY	-0.003898
HIST1H2AL	0.012446	MLNR	0.003173	CCM2	0.000514	FOXP2	-0.003900
CPT1B	0.012444	ZNF280D	0.003172	GOLGA2	0.000513	KISS1	-0.003900
POTEJ	0.012432	TRIM55	0.003171	GRIFIN	0.000513	NABP1	-0.003902
TCF24	0.012430	KLHDC3	0.003170	KRTAP19-6	0.000513	MGAM	-0.003904
GRIN1	0.012423	ARIH2OS	0.003169	EIF3M	0.000512	MYH10	-0.003904
PCLO	0.012404	CERS4	0.003167	PAGE3	0.000512	ODF3B	-0.003904
LRRC26	0.012404	INPP5F	0.003164	ZNF341	0.000512	FAR2	-0.003905
SMOC1	0.012398	ASPSCR1	0.003162	YTHDF2	0.000512	LUZP1	-0.003906
DAPL1	0.012396	RBMXL3	0.003160	AMOTL1	0.000511	SLC35F6	-0.003906
TRPA1	0.012393	CCDC58	0.003160	SNN	0.000511	ARL8B	-0.003911
KIAA1211	0.012367	C6orf10	0.003160	BFSP1	0.000510	SLC20A2	-0.003911
DBH	0.012367	MED27	0.003160	NOP14	0.000509	ACSM5	-0.003914
NKX2-4	0.012363	KCND1	0.003159	TRPV1	0.000507	CD47	-0.003914
CEP152	0.012358	AP5M1	0.003159	STAT5B	0.000506	RND3	-0.003915
SLC35F1	0.012356	ZNF134	0.003159	TMEM135	0.000506	CLIC1	-0.003921
HOXC9	0.012353	HSD3B2	0.003158	KRT37	0.000505	XAF1	-0.003923
GSG2	0.012345	DLG4	0.003158	PTPN20	0.000505	LRPAP1	-0.003924
TONSL	0.012317	FIZ1	0.003158	LRIT1	0.000505	CAPN11	-0.003925
GPR61	0.012314	CDON	0.003156	PITPNB	0.000503	TRANK1	-0.003925
SYNGR3	0.012303	B3GNTL1	0.003155	BTBD6	0.000503	COQ10B	-0.003927
PTH2R	0.012290	PFDN4	0.003155	DRG1	0.000503	SLC5A4	-0.003936
NCAPG2	0.012273	ZC3H6	0.003155	REG3A	0.000502	CLDN6	-0.003936
MMP11	0.012263	PDCD6	0.003155	OR10G9	0.000502	UBC	-0.003937
JPH3	0.012249	GNL3	0.003153	CCT7	0.000502	C15orf39	-0.003940
CACNG5	0.012244	USP26	0.003152	RIOK3	0.000502	LHX9	-0.003942

GAL	0.012236	OR13D1	0.003151	FAF2	0.000501	LMBRD1	-0.003943
PILRB	0.012232	DDX56	0.003147	SLC22A6	0.000501	C2orf74	-0.003946
VSTM2A	0.012222	OR1J4	0.003147	TMEM258	0.000501	KCNQ3	-0.003947
COL7A1	0.012221	ZNF595	0.003146	OR4C16	0.000501	C11orf52	-0.003947
CCNF	0.012217	DZIP1	0.003146	OR4D5	0.000500	GDE1	-0.003949
POU6F2	0.012205	GNG2	0.003144	AMBRA1	0.000500	RHBDD2	-0.003951
TAL2	0.012205	BBS7	0.003144	DEFB119	0.000500	CXorf65	-0.003953
ZFP69B	0.012200	C1orf204	0.003143	ZC3H3	0.000500	CMTM6	-0.003956
SYT16	0.012198	ZBTB44	0.003143	HMGN4	0.000500	NYNRIN	-0.003957
ANKLE1	0.012192	ALK	0.003143	CRYGB	0.000499	MS4A1	-0.003962
MCM4	0.012188	LRPPRC	0.003143	OR10X1	0.000498	DNAH11	-0.003964
DONSON	0.012188	VTA1	0.003143	RARS	0.000497	GLUD1	-0.003967
CDH24	0.012155	URB1	0.003143	TOMM34	0.000497	ADGRG2	-0.003968
TP73	0.012145	RNF126	0.003142	MARVELD3	0.000496	ATG7	-0.003969
RPRML	0.012141	MTX2	0.003141	TBC1D14	0.000496	ADGRA2	-0.003972
FBXO41	0.012126	THAP5	0.003141	POLR2F	0.000496	NEU1	-0.003972
KIAA1024	0.012126	NEFH	0.003140	TBC1D1	0.000495	MYL4	-0.003972
ZNF519	0.012123	KDM7A	0.003137	LARP7	0.000494	RCAN1	-0.003973
SYT7	0.012122	GMEB2	0.003135	C2CD2L	0.000494	PFN1	-0.003980
MANEAL	0.012117	MRPS30	0.003135	BBS1	0.000494	C1QTNF9	-0.003983
SIX4	0.012077	PDZD3	0.003134	PCGF1	0.000493	KIAA2012	-0.003985
MYEF2	0.012068	CPEB3	0.003134	PRMT8	0.000493	CCDC160	-0.003985
KCNJ3	0.012059	PSG1	0.003134	SPATA3	0.000492	PTGER3	-0.003988
HRK	0.012055	KRTAP19-1	0.003133	C1orf123	0.000491	SPACA3	-0.003988
GOLGA8A	0.012053	SLC9A5	0.003132	OR51B2	0.000489	DECR1	-0.003988
CLEC18B	0.012046	SZT2	0.003131	FASTKD5	0.000489	OCEL1	-0.003989
CPA2	0.012039	CFAP61	0.003131	SMARCD2	0.000489	RAG1	-0.003993
CLSTN2	0.012030	TMEM97	0.003130	RBMY1J	0.000489	PLEKHM1	-0.003993
MAP6D1	0.012025	NEU4	0.003130	DAZL	0.000489	AKR1B1	-0.003994
SPTBN2	0.012014	TMEM80	0.003130	KRTAP4-9	0.000488	KIAA1671	-0.003994
LRRC24	0.011998	CNTFR	0.003129	C20orf196	0.000488	CDH13	-0.003995
ERAS	0.011996	PCM1	0.003129	RAF1	0.000488	LY6K	-0.003995
POU3F3	0.011995	DCAKD	0.003129	PSMB4	0.000487	COL6A3	-0.003995
ASTN1	0.011984	SPATA7	0.003129	ZNF747	0.000486	ACAP1	-0.003996
UQCRHL	0.011961	ASF1A	0.003128	APOBEC1	0.000486	TRIOBP	-0.003996
ASTN2	0.011953	GFM2	0.003128	SMARCAL1	0.000486	ABHD15	-0.003996
HIST2H2AC	0.011948	CAPS2	0.003128	PEX10	0.000486	IL17D	-0.003997
AUNIP	0.011945	CFAP54	0.003125	RNF4	0.000485	RAB5C	-0.003998
HOXC6	0.011942	POLB	0.003125	PLA2G2E	0.000485	NBPF10	-0.003998
RNF182	0.011938	GSTCD	0.003125	SEMA4F	0.000484	ANGPTL2	-0.004000
ATP4B	0.011926	PPM1D	0.003123	LCE2C	0.000483	FCHO2	-0.004002

MAMDC4	0.011911	DSG1	0.003123	MOB4	0.000481	F11R	-0.004004
FAM166A	0.011893	USP14	0.003121	ATF4	0.000481	IL24	-0.004005
PROZ	0.011881	TAS1R3	0.003121	DEFB121	0.000481	POLR2L	-0.004005
FABP7	0.011881	FYTTD1	0.003121	FBXO33	0.000481	DUOXA2	-0.004006
TRIP13	0.011871	NEMF	0.003121	HIF1A	0.000481	XG	-0.004006
SCAMP5	0.011871	CCT3	0.003121	C2orf76	0.000480	TSPAN14	-0.004006
SMIM24	0.011865	TMCO6	0.003120	ZNF777	0.000480	GGCX	-0.004010
VWDE	0.011848	CCDC137	0.003120	MBD3L1	0.000480	GRINA	-0.004010
DSCC1	0.011838	SHOX	0.003119	FBXO28	0.000479	PNPLA6	-0.004011
PRR11	0.011835	PLA2G2F	0.003119	PLEKHO1	0.000478	RASGRP3	-0.004013
RNF186	0.011834	SPATA5	0.003116	ITPA	0.000478	TIMP4	-0.004016
ANKRD36B	0.011833	SFMBT1	0.003116	SUPT20HL1	0.000477	MYBPC2	-0.004019
HMGB2	0.011815	IGFL2	0.003116	ZNF114	0.000476	TRIM38	-0.004020
AKR7A3	0.011802	DHX57	0.003112	RNF111	0.000476	TEKT3	-0.004021
FAM171B	0.011796	ADGRL3	0.003111	OR4D9	0.000475	DENND2D	-0.004022
HYLS1	0.011793	NBPF9	0.003111	CENPB	0.000474	C4orf3	-0.004023
CCDC34	0.011787	COPS7B	0.003109	GTF2F1	0.000474	ECHDC1	-0.004029
MTBP	0.011784	FGL1	0.003105	ERCC1	0.000473	ARHGAP28	-0.004030
PIDD1	0.011769	GPI	0.003105	RGMB	0.000472	ACADS	-0.004030
SEC11C	0.011769	ARMC6	0.003104	RPS15	0.000472	DHRS12	-0.004030
RIBC2	0.011763	FYN	0.003104	RASA1	0.000470	HTR7	-0.004034
WDR27	0.011760	SCGB2A2	0.003104	EEFSEC	0.000470	LHPP	-0.004036
CDH18	0.011754	RPRD1B	0.003104	HNF1A	0.000470	PODNL1	-0.004037
KCNJ4	0.011746	ALS2	0.003104	GPR155	0.000469	TOB2	-0.004037
TOX3	0.011744	P2RX6	0.003103	CNTN5	0.000468	IFIH1	-0.004039
MCF2L2	0.011732	TAS2R1	0.003101	SPRR2E	0.000468	SCML4	-0.004039
GBX2	0.011722	HID1	0.003100	H2AFB1	0.000468	MAB21L3	-0.004049
PATE4	0.011719	GATA4	0.003099	PSMD6	0.000468	PDK2	-0.004053
PCDH19	0.011718	SIRT6	0.003099	SRFBP1	0.000468	ST6GALNAC3	-0.004054
ZNF850	0.011711	ERH	0.003098	AIDA	0.000467	DSC3	-0.004055
ADARB2	0.011708	ZNF276	0.003097	SYCE1	0.000467	C5orf49	-0.004058
SLC29A4	0.011707	KDM6A	0.003096	DENND4C	0.000467	MAFB	-0.004060
CUX2	0.011692	FADS6	0.003096	OR5T2	0.000466	ZDHHC1	-0.004065
HIST1H2AH	0.011690	WDR86	0.003095	FMNL2	0.000466	ARHGAP1	-0.004068
MAP7D2	0.011687	THAP2	0.003094	CT45A7	0.000466	BCKDHA	-0.004069
UGT8	0.011682	ARFGEF3	0.003094	KRTAP4-2	0.000464	FAM109A	-0.004071
MEST	0.011677	CPXM1	0.003094	ZNF816	0.000463	ADGRG4	-0.004071
CHAF1B	0.011675	ENTPD4	0.003093	CRABP2	0.000459	RSPH1	-0.004075
TSHR	0.011672	CLASP1	0.003093	SLC38A6	0.000459	SDSL	-0.004077
NXF2	0.011657	GAPDH	0.003093	CTAGE9	0.000459	ASPH	-0.004078

DNM1	0.011655	VPS16	0.003093	UGGT1	0.000458	BTG2	-0.004079
MAGEA9B	0.011645	DEAF1	0.003093	PHF5A	0.000458	BICC1	-0.004084
KCNAB3	0.011643	DDX27	0.003092	OR10V1	0.000458	ABHD14A	-0.004086
CENPM	0.011639	AAAS	0.003091	RPS21	0.000458	SLC35D2	-0.004089
TAF7L	0.011620	PEX6	0.003091	CSTF2T	0.000458	SCPEP1	-0.004090
ARG2	0.011583	OR13J1	0.003090	PRR21	0.000458	B4GALNT3	-0.004094
CDH12	0.011580	ANGEL2	0.003089	TMA7	0.000457	CHST6	-0.004096
PSMC3IP	0.011578	SYNJ1	0.003089	UCHL3	0.000457	HPS6	-0.004101
SH2D5	0.011575	OR2L5	0.003088	PDCL3	0.000456	KCNIP1	-0.004101
TRPC5	0.011570	GALNT14	0.003087	CDS2	0.000455	MCTP1	-0.004105
PAQR9	0.011567	PUSL1	0.003086	KRTAP6-2	0.000454	NEDD4L	-0.004108
AHSG	0.011566	SLC25A22	0.003084	VPS37C	0.000453	USP54	-0.004111
KCNH1	0.011540	ANAPC4	0.003083	PSMC3	0.000453	SOAT1	-0.004114
ISM2	0.011536	INVS	0.003082	POLR3C	0.000453	TNIK	-0.004114
B3GALT1	0.011531	SSX1	0.003082	LCA5L	0.000453	CTNNA1	-0.004115
AVPR1B	0.011525	ZCCHC7	0.003081	APMAP	0.000452	GPR20	-0.004119
DUSP26	0.011523	ADNP2	0.003081	FRG1	0.000452	PRTN3	-0.004120
TCP10L	0.011516	MTMR9	0.003081	TRIM39	0.000452	EFHB	-0.004120
TCF19	0.011514	SP7	0.003081	OR4X1	0.000451	SLC48A1	-0.004125
MPHOSPH9	0.011488	CYCS	0.003078	LCE5A	0.000451	CTNNB1	-0.004127
KIF18A	0.011487	EIF4A3	0.003076	WDR25	0.000450	TSPAN9	-0.004128
SLC44A5	0.011486	OR4F3	0.003075	SLC35B3	0.000449	MMP25	-0.004129
ERC2	0.011482	FBXO48	0.003075	EXOSC1	0.000448	PPIL6	-0.004131
HIST1H4B	0.011467	TPD52L3	0.003075	RAB2A	0.000447	NHSL1	-0.004132
PPP1R17	0.011443	C12orf40	0.003073	KRT71	0.000446	TRAF3IP3	-0.004134
SLC12A1	0.011434	TARSL2	0.003072	AP2S1	0.000446	NPAS2	-0.004134
IRX4	0.011427	ZNF12	0.003070	SCP2D1	0.000446	SNX21	-0.004137
MRAP2	0.011425	BOD1L2	0.003070	TAF1B	0.000445	PLAG1	-0.004139
ZNF793	0.011415	TTC5	0.003069	SCRN2	0.000445	SNED1	-0.004141
PNMA5	0.011413	TMEM55B	0.003069	EPYC	0.000444	SLC16A13	-0.004147
GNAZ	0.011407	ZNF587B	0.003069	TTYH2	0.000444	IQSEC1	-0.004151
KRTAP5-1	0.011407	CARM1	0.003068	43709	0.000444	SLC12A4	-0.004152
RAB9B	0.011406	MGEA5	0.003068	MOSPD2	0.000444	GYG2	-0.004158
CXXC4	0.011405	CLCN5	0.003068	LNPEP	0.000444	RNASEK	-0.004158
UMODL1	0.011404	TNRC6B	0.003067	PCGF5	0.000443	VPS37B	-0.004159
RAD54B	0.011400	SNRPB	0.003066	RNF146	0.000443	CNGA4	-0.004159
LYG1	0.011398	RIOK1	0.003065	NUDC	0.000442	ZBTB38	-0.004160
ZFHX4	0.011390	DCUN1D1	0.003063	TARM1	0.000442	SKI	-0.004161
HIST1H4J	0.011387	REC114	0.003059	CT45A8	0.000441	SIL1	-0.004162
IBSP	0.011380	GUF1	0.003055	LEUTX	0.000440	EMC3	-0.004162
CA8	0.011352	UBTF	0.003054	OR10S1	0.000439	GIPC3	-0.004163

FAM161A	0.011349	GXYLT1	0.003053	SLC45A3	0.000438	TMCO4	-0.004163
ATP6V1C2	0.011346	MYLK3	0.003053	CUEDC2	0.000438	SOWAHC	-0.004164
PRPH	0.011342	MTFR1	0.003051	HEY1	0.000438	SSFA2	-0.004164
GABRR2	0.011342	INHBB	0.003051	SEC16A	0.000438	NR1H3	-0.004165
CADM2	0.011341	TNP2	0.003048	CNBP	0.000438	MSRB1	-0.004166
KIF24	0.011337	EXD3	0.003047	SLC22A12	0.000437	GIPC1	-0.004167
CKMT1A	0.011334	GTF2I	0.003047	KIAA2013	0.000437	QDPR	-0.004170
HOXD9	0.011311	SF3B1	0.003046	C2orf88	0.000437	EBPL	-0.004170
NPIPA2	0.011308	MANEA	0.003043	TCEAL8	0.000436	NOS1	-0.004170
STMN3	0.011297	PAWR	0.003041	PPP1R1A	0.000435	DAZAP2	-0.004173
MYADML2	0.011281	TTC26	0.003041	UFL1	0.000434	FOXA3	-0.004175
ASNS	0.011277	TAAR3	0.003041	EFCAB9	0.000434	LGI4	-0.004176
HOXB3	0.011268	KRTAP10-11	0.003039	ZCCHC13	0.000434	GCNT3	-0.004177
LONRF2	0.011248	DPY19L4	0.003038	OR8K3	0.000433	TLE4	-0.004191
CCDC129	0.011246	ZNF132	0.003038	CENPBD1	0.000433	POLR3H	-0.004192
DGKI	0.011244	PI4KA	0.003037	USP17L3	0.000432	MOGAT1	-0.004195
PAQR6	0.011218	ARMC8	0.003037	RPAP1	0.000432	SLC26A4	-0.004196
ANKS1B	0.011202	TBRG4	0.003036	FGF13	0.000432	REL	-0.004196
EMX2	0.011200	FGF4	0.003036	POGK	0.000431	CHPT1	-0.004196
ANGPTL3	0.011194	CEMP1	0.003036	PRAMEF19	0.000431	NXNL2	-0.004199
GPT2	0.011184	PDK3	0.003035	MAGEB3	0.000431	RXFP2	-0.004200
CORT	0.011179	RALGDS	0.003035	C12orf71	0.000431	NMRK1	-0.004202
RACGAP1	0.011176	PRSS45	0.003035	VCX2	0.000431	OLAH	-0.004203
MCM8	0.011168	MYH7	0.003033	PRKCSH	0.000431	KIF12	-0.004205
CDHR1	0.011166	SET	0.003033	CST11	0.000430	ADAM8	-0.004206
RAC3	0.011161	PGBD2	0.003032	TMEM221	0.000430	SPAG17	-0.004206
NPPB	0.011157	SECISBP2	0.003032	MAN1B1	0.000429	RIPK2	-0.004207
TENM3	0.011146	HEBP2	0.003031	KRTAP19-8	0.000429	TNFRSF21	-0.004208
HIST1H4D	0.011130	POLR2I	0.003031	SIGLECL1	0.000428	ZNF597	-0.004210
EPHB1	0.011125	RANBP9	0.003029	ARHGAP12	0.000428	CCL7	-0.004212
RPP14	0.011123	KCNG2	0.003028	LRRC72	0.000428	TPM2	-0.004213
GALR1	0.011122	BMF	0.003028	LYZL1	0.000427	EFR3A	-0.004218
C2orf82	0.011121	KRR1	0.003027	MAT1A	0.000427	CES2	-0.004221
TTYH1	0.011112	ANKHD1	0.003027	ATP6V1D	0.000427	CTAGE8	-0.004225
DACH2	0.011103	NAA50	0.003026	TPMT	0.000425	SCUBE2	-0.004228
MEIOB	0.011101	ETV2	0.003024	ATP5G3	0.000425	MYL12B	-0.004228
SPDYA	0.011078	TOMM5	0.003024	PAPPA2	0.000425	ACTN4	-0.004228
PATE2	0.011075	GABPB2	0.003023	TOR1A	0.000425	CADM3	-0.004229
HOXC10	0.011074	GALNTL6	0.003023	KTN1	0.000424	INPP5A	-0.004237
SLC38A8	0.011072	ATP11B	0.003022	KIAA1210	0.000424	CD19	-0.004241
SAPCD1	0.011069	PTPN2	0.003020	URGCP	0.000424	ETS2	-0.004241

TTC9B	0.011066	LGALS7	0.003020	OR7C2	0.000422	ANO6	-0.004241
CYP2D6	0.011063	ZNF440	0.003018	ZDHHC15	0.000421	PIEZO2	-0.004244
CCDC136	0.011060	GPALPP1	0.003018	HAGH	0.000421	C8orf58	-0.004244
GRIK1	0.011045	ZNF773	0.003017	FAM105A	0.000420	YPEL5	-0.004244
CTXN1	0.011043	43527	0.003016	MBLAC2	0.000419	MUC20	-0.004246
POLE	0.011040	KRTAP1-1	0.003016	ACAA2	0.000419	PLEKHG1	-0.004246
DCLK3	0.011037	SLC39A3	0.003016	TTLL6	0.000419	LRRC4B	-0.004247
JAKMIP1	0.011031	WRNIP1	0.003015	IL22	0.000418	MYBPH	-0.004252
DYNC1I1	0.011030	ESF1	0.003015	TMEM225	0.000417	TSKU	-0.004255
AQP12B	0.011022	C9orf43	0.003014	KRTAP4-5	0.000417	IP6K3	-0.004255
CALY	0.011018	FBXL4	0.003014	IRS2	0.000417	POLE4	-0.004256
KIAA0895L	0.011010	ZNF621	0.003014	GDPD3	0.000417	TSPAN8	-0.004257
CGA	0.011008	RP9	0.003013	ZPBP	0.000417	KCTD14	-0.004260
ZNF556	0.011008	FAM9B	0.003010	TRAF1	0.000416	ZNF438	-0.004261
PCSK2	0.011006	OR2H1	0.003006	BBX	0.000416	MAT2B	-0.004262
TDRD12	0.011000	WDR73	0.003005	TMEM216	0.000415	DNAJB13	-0.004264
CDK3	0.010994	TMEM209	0.003004	FZD8	0.000415	S1PR2	-0.004265
SV2B	0.010988	ZW10	0.003004	PRG3	0.000414	ARMC3	-0.004268
TTLL7	0.010988	ACTR6	0.003003	TEX36	0.000414	SYS1	-0.004270
B3GAT2	0.010987	NCOA6	0.003003	NUS1	0.000413	TSPAN15	-0.004273
ZP1	0.010964	OR8B12	0.003002	TIGD6	0.000413	RILPL1	-0.004274
PFN2	0.010954	SLC35G5	0.003002	G3BP2	0.000413	HBD	-0.004274
WDR76	0.010952	FSBP	0.003002	ANAPC10	0.000412	WDR49	-0.004278
PSD2	0.010949	TRAF2	0.003001	OR13C7	0.000410	CDH3	-0.004281
ZIC4	0.010949	KRTAP5-8	0.003001	THUMPD1	0.000410	SERINC2	-0.004284
AVP	0.010949	CDH20	0.003000	INTS12	0.000410	ACO1	-0.004288
KLF1	0.010945	TBCC	0.002999	FTSJ3	0.000408	DCDC2B	-0.004289
FIGNL1	0.010930	TLK2	0.002998	EMD	0.000407	PCDH17	-0.004289
CTSV	0.010930	ZBTB24	0.002997	DYNC1I2	0.000406	SULT1C4	-0.004292
PPP2R3B	0.010919	SMARCC1	0.002996	DDX18	0.000406	ACOT9	-0.004293
ICA1L	0.010919	AKAP9	0.002993	CD2AP	0.000406	ARPC2	-0.004294
TRIM72	0.010917	PFDN6	0.002993	DSCR3	0.000406	SERPINE1	-0.004294
KCNB1	0.010904	MED10	0.002993	TGIF1	0.000406	MT-ND5	-0.004295
TAS2R19	0.010900	CIPC	0.002992	TAF8	0.000405	RNF13	-0.004295
ESPN	0.010895	FAM213A	0.002992	SDHAF2	0.000405	LCNL1	-0.004303
BRCA1	0.010890	HELZ	0.002991	FSCN1	0.000404	NAGPA	-0.004303
CKAP2	0.010883	SGSM3	0.002991	SPRR2B	0.000403	KRT15	-0.004305
MGAM2	0.010881	AMBN	0.002990	CCDC106	0.000403	ERBB4	-0.004310
C11orf87	0.010879	STK19	0.002990	TATDN2	0.000403	NOTCH4	-0.004314
ZNF233	0.010874	NFATC2IP	0.002989	ATP6V1A	0.000402	KCNN3	-0.004315
TRO	0.010859	MPDZ	0.002988	KRT33A	0.000402	ADAM15	-0.004316

HIST1H3J	0.010858	TMEM120B	0.002987	RAP1GDS1	0.000401	EVC	-0.004317
DBF4B	0.010858	AGBL5	0.002986	WDR46	0.000401	PARVG	-0.004321
NPTXR	0.010857	OR1K1	0.002986	USP12	0.000400	APOBEC3D	-0.004324
TLL2	0.010852	RBMX2	0.002986	CXorf49B	0.000400	TCAF2	-0.004324
SSX2IP	0.010839	TEKT2	0.002983	SLC25A6	0.000399	HNF4A	-0.004331
GPX2	0.010837	NR6A1	0.002983	SIGIRR	0.000398	STX12	-0.004333
NPPC	0.010827	HNRNPC	0.002981	AMELY	0.000398	NAGLU	-0.004335
IGF2BP3	0.010827	PET100	0.002981	AIMP1	0.000398	KRT16	-0.004336
GINS4	0.010821	ARID3B	0.002980	MROH8	0.000397	RBM43	-0.004336
UTS2R	0.010806	ZNF142	0.002980	FAM206A	0.000396	ETV1	-0.004340
KIF19	0.010804	RAD17	0.002979	DGKD	0.000395	SLC25A20	-0.004341
TMPRSS5	0.010804	ANKRD12	0.002979	NEU2	0.000395	WFDC3	-0.004344
TSPEAR	0.010803	SPAG8	0.002977	C9orf69	0.000395	CA1	-0.004348
WDR90	0.010795	KIAA2026	0.002977	TP53BP2	0.000394	ARL2	-0.004348
ZNF93	0.010785	TBC1D24	0.002976	MALSU1	0.000393	SLC29A3	-0.004349
TXNDC16	0.010784	FAM205C	0.002975	MRPL20	0.000392	ADAMTS9	-0.004349
CPA4	0.010776	FAM13B	0.002974	MOBP	0.000392	CCNYL1	-0.004349
FAM24B	0.010775	P2RY11	0.002974	EIF3J	0.000392	XAGE3	-0.004350
ASB16	0.010760	UAP1L1	0.002973	SLC19A2	0.000392	KIF16B	-0.004352
SMIM17	0.010737	TMEM183A	0.002973	C3orf38	0.000392	C16orf74	-0.004355
USP49	0.010729	CDK5RAP1	0.002972	AKIRIN2	0.000391	EDA	-0.004355
HPX	0.010725	KCNU1	0.002972	SMR3B	0.000390	SPARC	-0.004356
RMI2	0.010714	MARK3	0.002971	NDUFB7	0.000389	TK2	-0.004356
PPFIA2	0.010712	NUP133	0.002968	OR6C6	0.000388	IL17RA	-0.004357
BARHL1	0.010711	C7orf61	0.002967	HIBCH	0.000387	LRRC3B	-0.004357
TFF3	0.010703	GABRR3	0.002967	43722	0.000387	ILK	-0.004359
TTC36	0.010690	ANAPC2	0.002965	BTBD1	0.000387	LRP5	-0.004361
MMP12	0.010689	KIAA1024L	0.002965	JMJD4	0.000387	SPRR1B	-0.004364
ANKRD23	0.010687	ZNF470	0.002965	TOR3A	0.000387	PRRX1	-0.004366
WDHD1	0.010687	OBP2B	0.002964	NDUFB5	0.000386	PRDX6	-0.004368
MIOX	0.010683	C19orf81	0.002964	IFT172	0.000385	PIK3CD	-0.004369
C14orf39	0.010682	NXF1	0.002964	KRTAP19-4	0.000385	SLC2A14	-0.004371
MMD2	0.010681	MORC2	0.002964	IQCF5	0.000385	ARC	-0.004372
CCDC74B	0.010662	OSR2	0.002964	CHD3	0.000384	UPK2	-0.004373
MAPK8IP1	0.010658	PPIH	0.002962	MTCH1	0.000384	KRT14	-0.004376
FRMPD3	0.010652	HYI	0.002962	CCL1	0.000384	EPS8L2	-0.004376
CNPY1	0.010645	KRTDAP	0.002960	JTB	0.000383	DPEP3	-0.004377
43713	0.010640	SAMD13	0.002959	SULF2	0.000382	STAP1	-0.004378
SYT2	0.010638	NPRL2	0.002958	ANKRD37	0.000382	PDXK	-0.004379
LIN28A	0.010622	C8G	0.002956	MMP24	0.000381	SIT1	-0.004381
PGBD5	0.010620	CISD2	0.002956	ERMP1	0.000381	SSTR1	-0.004381

GABRR1	0.010612	UFD1L	0.002956	SPANXN3	0.000380	GRTP1	-0.004386
DAB1	0.010610	GPR32	0.002956	GTF2H1	0.000380	C10orf142	-0.004387
C19orf48	0.010605	MORF4L2	0.002955	RPL22	0.000378	CXCL9	-0.004388
ARPP21	0.010593	HSD11B1L	0.002951	ALG2	0.000378	ACHE	-0.004393
HIST1H2AK	0.010592	AREL1	0.002951	TMEM8C	0.000378	TMEM63A	-0.004394
MUC6	0.010588	LRIF1	0.002951	WDFY1	0.000378	ZBBX	-0.004395
GMNN	0.010584	PSG9	0.002950	MRPS2	0.000377	PLIN5	-0.004395
DPP10	0.010576	FABP1	0.002950	QRICH1	0.000377	MAFK	-0.004397
L3MBTL1	0.010574	KIAA1614	0.002950	PSMD4	0.000377	CD226	-0.004398
LRRIQ4	0.010574	HMGB4	0.002949	TRIM64C	0.000377	SEMA3D	-0.004398
GDNF	0.010566	PSMC6	0.002949	ACADVL	0.000376	NPFFR1	-0.004401
DAZ1	0.010565	SPATA31D1	0.002947	LGALS8	0.000376	KIAA1522	-0.004402
DNAH14	0.010556	DCAF8L2	0.002947	CAMSAP2	0.000375	LILRB5	-0.004403
ECEL1	0.010556	MIS12	0.002947	TMEM170A	0.000375	TMOD3	-0.004405
EN1	0.010556	ZNF845	0.002946	ATG10	0.000375	MKNK2	-0.004406
KRT75	0.010555	FAM210B	0.002946	ADIG	0.000375	UBE2L6	-0.004406
COL20A1	0.010554	HES3	0.002945	RPS19BP1	0.000374	IL9R	-0.004410
SUGP2	0.010554	HNRNPL	0.002944	PRPF6	0.000374	BCL2L15	-0.004414
NPW	0.010553	HEATR1	0.002943	DEFB128	0.000373	CREB3L2	-0.004415
C20orf144	0.010537	OR52L1	0.002943	UXT	0.000373	CALCR	-0.004416
GNRHR	0.010536	WRAP53	0.002939	NUDT13	0.000373	CD8B	-0.004417
RGS4	0.010535	RAB11FIP3	0.002939	ZMIZ1	0.000372	TPPP	-0.004418
SI	0.010530	ELMOD2	0.002939	TIMM23	0.000371	TSPAN3	-0.004419
CDH9	0.010527	TSGA13	0.002938	CHRNB1	0.000371	ACAA1	-0.004420
SKP2	0.010527	HUWE1	0.002938	ARL15	0.000371	IRX2	-0.004422
TP53TG3D	0.010525	MPPED2	0.002938	ATG5	0.000370	RSPH4A	-0.004424
BMP8B	0.010523	SCAF4	0.002937	SPACA5B	0.000370	OR52N4	-0.004424
SLC12A5	0.010521	EBF4	0.002937	MICU3	0.000370	GSTK1	-0.004424
SRRM5	0.010520	UBFD1	0.002937	CNTNAP3B	0.000370	PEA15	-0.004425
GPR26	0.010518	INPP5J	0.002936	SIPA1L1	0.000369	TMEM9B	-0.004426
CACNG2	0.010517	CARHSP1	0.002935	RPL6	0.000368	C16orf71	-0.004426
TRPM5	0.010507	CXorf23	0.002935	COPB1	0.000368	RNF180	-0.004427
LTB4R2	0.010502	HSPH1	0.002934	IFNL3	0.000367	METRN	-0.004428
CUZD1	0.010495	SLC33A1	0.002934	YWHAE	0.000367	CCM2L	-0.004433
KCND2	0.010491	FIP1L1	0.002933	MED8	0.000367	ZHX2	-0.004437
TP53TG3B	0.010484	DDX46	0.002933	CINP	0.000366	GPX8	-0.004438
KCNG3	0.010478	C8orf22	0.002933	CC2D1B	0.000364	NCOA4	-0.004442
SS18L1	0.010474	PACRGL	0.002933	ATP5A1	0.000364	ITGA1	-0.004445
TMEM132A	0.010472	GABRB1	0.002933	SPDYC	0.000364	TLR6	-0.004449
FZD3	0.010472	MRPL47	0.002931	FAM25E	0.000363	PML	-0.004456
RAD51	0.010470	PGM3	0.002931	SAA4	0.000363	ERAP2	-0.004456

PLEKHG5	0.010466	QRSL1	0.002930	OR4X2	0.000363	TMEM27	-0.004464
SEC61A2	0.010463	APEX1	0.002929	SYT12	0.000363	NECAP2	-0.004464
STAG3	0.010459	PKN2	0.002929	PLRG1	0.000362	ANGPTL4	-0.004465
GLYATL3	0.010456	DAAM1	0.002928	SEC61A1	0.000362	EXT1	-0.004466
ST6GAL2	0.010456	OR10A5	0.002928	HNRNPCL1	0.000362	SNAI3	-0.004467
ASPHD1	0.010453	PREPL	0.002927	YME1L1	0.000360	AAED1	-0.004468
PRR7	0.010452	MFSD12	0.002927	SUCLA2	0.000360	G6PD	-0.004470
SPRED3	0.010445	ZADH2	0.002926	MED18	0.000360	MCL1	-0.004471
HIST1H2BE	0.010444	SDHAF1	0.002925	LLPH	0.000357	MID1IP1	-0.004478
GABRG1	0.010442	TIMM23B	0.002925	CIC	0.000356	TBC1D8B	-0.004482
SPAG11A	0.010436	DNAJC18	0.002924	LRRC4C	0.000356	NAGA	-0.004483
SNCAIP	0.010435	ZBTB17	0.002923	DEFB129	0.000355	C6orf132	-0.004490
PAX9	0.010425	PPP2R5D	0.002922	RPL21	0.000354	GLUL	-0.004490
DCAF12L2	0.010424	CCDC90B	0.002920	IDH3G	0.000354	UCN3	-0.004492
CENPW	0.010399	CD200	0.002920	LONP2	0.000354	ETV7	-0.004492
RHBDL1	0.010395	PRSS48	0.002918	BCAS3	0.000353	ZMYND12	-0.004494
MMP26	0.010392	POLR2B	0.002918	CLCN4	0.000352	RAB25	-0.004495
PHOX2A	0.010385	NF1	0.002917	PKD2L1	0.000351	NTM	-0.004495
OTOF	0.010381	TTF1	0.002917	CT47B1	0.000351	ATP1B2	-0.004500
MAGEA10	0.010381	UGT2A3	0.002916	TCEAL4	0.000351	FCRLA	-0.004500
PIANP	0.010380	CYSRT1	0.002915	RABGEF1	0.000349	SMIM14	-0.004504
SCN5A	0.010375	FSHB	0.002915	OR2V1	0.000349	IER2	-0.004505
LYG2	0.010368	CYP27B1	0.002914	FAHD1	0.000349	SAT1	-0.004509
EVX1	0.010368	SCIN	0.002914	SESN3	0.000349	DRGX	-0.004510
SMC2	0.010368	PSG7	0.002914	LCE2D	0.000348	ARHGAP10	-0.004510
PANO1	0.010353	CYP2R1	0.002913	NUDT22	0.000348	CYP4V2	-0.004514
ANKRD20A4	0.010352	CMAS	0.002913	MLF1	0.000346	PARVA	-0.004516
PI15	0.010349	SGTA	0.002912	FAM43A	0.000346	GNG5	-0.004516
ACAP3	0.010346	SH3BP2	0.002911	DEFB112	0.000346	EFCAB14	-0.004527
ZNF878	0.010340	SP5	0.002910	CRYGA	0.000345	TMEM47	-0.004530
IGSF1	0.010332	GTPBP10	0.002909	PNPLA3	0.000345	ELMOD1	-0.004533
ATAT1	0.010330	CACNG3	0.002908	ATP6V1C1	0.000343	MSX2	-0.004534
PRAC2	0.010330	MTIF2	0.002908	FAM57A	0.000342	MAPK3	-0.004535
RHPN1	0.010305	TSPO2	0.002907	KCTD5	0.000341	RTP4	-0.004537
HSF4	0.010303	KCNK13	0.002907	ARMCX6	0.000340	ARHGAP42	-0.004537
PRKCG	0.010302	KRTAP5-9	0.002906	PSMC5	0.000339	USP53	-0.004539
TMEM169	0.010300	BAIAP3	0.002906	LCE3E	0.000338	DBI	-0.004540
NFASC	0.010300	PIK3C3	0.002905	ZDHHC8	0.000338	SDCBP2	-0.004542
CALML6	0.010295	CDC34	0.002905	FAM24A	0.000337	FBXW4	-0.004545
PTGES3L	0.010286	UBAP2	0.002903	VRK2	0.000337	SCNN1A	-0.004548
ALB	0.010286	FGF16	0.002903	HSPA12A	0.000336	LGMN	-0.004549

LYPD1	0.010285	XRCC5	0.002902	VAMP4	0.000335	SERPINA5	-0.004549
LIG1	0.010277	C19orf60	0.002902	EXOSC4	0.000335	CLDN7	-0.004550
C3orf30	0.010267	ZNF513	0.002901	REXO2	0.000334	CFLAR	-0.004556
WEE2	0.010262	EPC2	0.002899	C22orf46	0.000334	ZNF423	-0.004556
ADGRB1	0.010260	OR2AE1	0.002898	CLPS	0.000333	EPHX2	-0.004557
GAS2L3	0.010250	FAM200A	0.002893	ANKRD11	0.000333	MEDAG	-0.004558
CHRNA9	0.010249	SULF1	0.002892	NSFL1C	0.000333	UBQLNL	-0.004558
GCGR	0.010239	PARS2	0.002890	C19orf66	0.000333	SLC19A1	-0.004560
NRTN	0.010236	SCAF8	0.002890	SPDYE4	0.000332	GUCY1A2	-0.004561
DND1	0.010224	ZBED6	0.002890	AFAP1	0.000332	STAT3	-0.004566
SPDL1	0.010216	TRIM49D2	0.002890	POU2AF1	0.000330	KRT222	-0.004566
CATSPER2	0.010210	GNAT3	0.002889	CD2BP2	0.000330	EPB41L1	-0.004567
MYH7B	0.010208	TIMM9	0.002888	OR52K2	0.000330	ARAP3	-0.004572
KIAA0907	0.010206	PROSER1	0.002888	DNALI1	0.000328	ARRDC5	-0.004573
ESRRG	0.010201	FGF23	0.002887	ADCY6	0.000328	CCDC54	-0.004574
SPSB4	0.010200	TSC2	0.002887	CDY1B	0.000326	PRSS36	-0.004574
TAS2R10	0.010199	CRYBB3	0.002886	PMEL	0.000325	RRAS2	-0.004576
CENPH	0.010196	CASK	0.002886	FBXL12	0.000325	TDRP	-0.004577
ZNF280B	0.010195	ARID4B	0.002885	RDH13	0.000323	NOTCH1	-0.004577
SPIN4	0.010194	CEACAM16	0.002885	MED31	0.000323	DDX60	-0.004579
ZC3HAV1L	0.010194	HS3ST1	0.002885	NTPCR	0.000322	ATP1B1	-0.004584
SLC22A7	0.010183	CARD14	0.002883	ULK4	0.000322	HSPB1	-0.004584
DCLK2	0.010182	NAA10	0.002882	GDPD5	0.000321	BDKRB2	-0.004585
RNASEH2A	0.010180	NIPSNAP1	0.002881	MAGI2	0.000321	TRAM1L1	-0.004588
LRFN5	0.010164	MCPH1	0.002880	SOGA3	0.000321	RNF149	-0.004589
NPHS1	0.010154	ADIPOQ	0.002880	B4GALT7	0.000321	NEK7	-0.004593
PAQR4	0.010153	OR8D1	0.002879	ZNF628	0.000320	REP15	-0.004594
DNAJC22	0.010149	TBCE	0.002878	ATG4A	0.000320	PALLD	-0.004597
IL17RB	0.010141	TFF2	0.002877	OR2F1	0.000320	HTRA4	-0.004599
SEC31B	0.010140	GMCL1	0.002877	SNX15	0.000318	TUBA4A	-0.004600
LCN12	0.010139	ATP9A	0.002875	REG3G	0.000317	ADARB1	-0.004601
FBXL16	0.010137	PLEKHB1	0.002874	TPCN2	0.000317	TRABD2B	-0.004602
CHD7	0.010132	FAM231D	0.002874	TMEM14B	0.000316	IGFBP7	-0.004602
UBL4B	0.010122	DTD1	0.002873	OSBPL3	0.000316	AATK	-0.004602
CLEC18A	0.010120	CDK4	0.002872	MPC1L	0.000316	SULT1B1	-0.004603
ENHO	0.010114	CSTF2	0.002871	AKR1A1	0.000316	TMEM155	-0.004604
GEN1	0.010111	INTS1	0.002871	TMEM223	0.000315	ARHGAP9	-0.004609
IGSF11	0.010111	PBX3	0.002870	WDR41	0.000314	SOD2	-0.004609
LHX4	0.010094	SGIP1	0.002870	C11orf98	0.000314	SLC16A6	-0.004619
FANCL	0.010092	OR2L2	0.002870	FDXR	0.000314	SYPL1	-0.004620
TRAIP	0.010061	GCSH	0.002870	ERGIC2	0.000313	RGS1	-0.004623

PKIB	0.010059	SRRM2	0.002869	RHOV	0.000313	ZNFX1	-0.004626
SLC35F4	0.010052	LYPD8	0.002869	MED4	0.000312	SCARF2	-0.004626
FGF12	0.010050	ZNF516	0.002869	IL25	0.000312	PPP1R3C	-0.004627
TRIM45	0.010046	GZF1	0.002868	NANOGNB	0.000312	WDR81	-0.004629
C10orf90	0.010037	STK33	0.002867	NHLRC3	0.000312	INPP5K	-0.004630
MYO19	0.010031	LEMD3	0.002867	FAM178B	0.000311	CXCL10	-0.004630
MMS22L	0.010029	POLR3E	0.002867	NOMO3	0.000311	SMARCA2	-0.004630
SYCP2	0.010022	RAPGEF4	0.002866	BPIFB3	0.000311	HSD17B8	-0.004631
LHX1	0.010022	SLC25A39	0.002866	ZFP2	0.000310	CDKN2B	-0.004631
TEX22	0.010021	POP7	0.002865	KRTAP2-2	0.000310	MCOLN2	-0.004631
GPR63	0.010018	ACAD9	0.002865	APBB1	0.000309	CD58	-0.004636
SLC36A4	0.010016	GNPDA2	0.002865	PITPNM2	0.000309	MRPL14	-0.004636
HS6ST3	0.010012	CDH10	0.002864	KRTAP20-3	0.000309	NLRP2	-0.004638
MESP1	0.010010	EBLN1	0.002864	CDC37	0.000309	EBI3	-0.004641
OVOL3	0.010006	KIT	0.002863	STX6	0.000309	A4GALT	-0.004641
LHX5	0.010003	ZBTB21	0.002862	MTTP	0.000309	HPS1	-0.004646
GPR142	0.010002	OR13H1	0.002860	CCDC185	0.000308	GLTP	-0.004648
RASL10B	0.009994	RDH12	0.002859	TBX1	0.000305	NRG3	-0.004652
OXCT2	0.009992	DAGLA	0.002859	MAGEB5	0.000305	TWF2	-0.004653
MARCKSL1	0.009992	AKAP8	0.002857	VPS33A	0.000303	ABCA9	-0.004654
CCDC18	0.009991	TMEM170B	0.002857	RNASEH2B	0.000301	MTM1	-0.004654
FANCG	0.009991	SRM	0.002857	MRPS27	0.000301	HSD3B7	-0.004655
ABCA5	0.009986	MRS2	0.002857	GML	0.000301	WNT9B	-0.004655
FSD1L	0.009985	CARS	0.002855	POU6F1	0.000301	SNX18	-0.004659
CST1	0.009982	FKBPL	0.002853	RCBTB2	0.000299	PTPRU	-0.004660
CALN1	0.009973	GVQW1	0.002852	GTF2E2	0.000299	TLR10	-0.004660
ONECUT1	0.009971	NAPG	0.002852	PP2D1	0.000298	PRSS33	-0.004660
GOLGA6L10	0.009970	SEC22A	0.002852	ATP5O	0.000298	ST6GAL1	-0.004662
HOXB2	0.009968	VAPB	0.002851	SPRR4	0.000298	VPS18	-0.004662
CEP72	0.009967	TLDC1	0.002851	NECAB3	0.000296	RNPEPL1	-0.004662
ZNF334	0.009965	FSCB	0.002850	NUTM2B	0.000296	C4orf22	-0.004662
TENM4	0.009965	DUSP4	0.002850	PFKFB2	0.000295	LRCOL1	-0.004666
HIST4H4	0.009948	NIPA1	0.002849	NDUFA1	0.000295	PPP1R16B	-0.004667
KCNMB3	0.009932	MAS1	0.002849	GPKOW	0.000294	DACT3	-0.004668
ZNF713	0.009924	USP30	0.002848	CACNB1	0.000293	CROCC2	-0.004670
HIST1H2AJ	0.009921	NHLH2	0.002848	GAGE12F	0.000293	ANK3	-0.004670
MASP2	0.009917	DHX40	0.002848	GAGE12G	0.000293	C10orf105	-0.004676
KHDC1	0.009916	OR51Q1	0.002847	DUSP21	0.000293	IQGAP1	-0.004683
CEP97	0.009911	ZNF175	0.002847	APBB2	0.000293	APOC4	-0.004685
KCNIP2	0.009911	CXorf58	0.002845	KLHL2	0.000292	NAMPT	-0.004688
KCNJ9	0.009887	MTERF4	0.002844	TMEM241	0.000292	LAMP1	-0.004689

CCDC15	0.009881	OVGP1	0.002843	NGRN	0.000291	TMCC3	-0.004691
CHAF1A	0.009879	ZNF296	0.002842	MTF1	0.000290	FUT7	-0.004691
LRRC66	0.009866	POLM	0.002841	RNF113A	0.000290	CAPNS1	-0.004691
SATL1	0.009865	ING4	0.002841	ATP5C1	0.000288	SAA2	-0.004692
CEP295	0.009861	MAPK6	0.002840	MYCBPAP	0.000288	LACTB	-0.004693
PRSS50	0.009859	CLNS1A	0.002839	IQCF2	0.000287	ANXA6	-0.004694
TNFRSF13C	0.009859	TFAM	0.002838	KCMF1	0.000287	ARRDC2	-0.004694
IQCC	0.009858	ABCA10	0.002836	FABP9	0.000286	FRK	-0.004695
NCAPD3	0.009858	GTF2H2C	0.002836	SAP30L	0.000286	SLC12A8	-0.004702
TPH2	0.009857	YLPM1	0.002836	TBC1D3C	0.000285	RECK	-0.004703
SCX	0.009853	DNMT3L	0.002835	PRY	0.000285	NME8	-0.004704
PAK3	0.009851	ASCC3	0.002835	HIST1H2AC	0.000284	MICALL1	-0.004704
SALL4	0.009845	STEAP1B	0.002835	HSP90AB1	0.000284	WFDC13	-0.004706
RBFOX3	0.009841	PSG11	0.002835	ZFAND3	0.000283	RNASEL	-0.004708
EME2	0.009838	IL17F	0.002835	BARX2	0.000280	ERGIC1	-0.004708
OLFM4	0.009837	DCAF12	0.002833	TTC12	0.000280	TEAD4	-0.004710
TUBA3D	0.009834	CHD8	0.002832	ASCL4	0.000279	CASP7	-0.004711
ZNF625	0.009827	NFKBIL1	0.002832	ST14	0.000279	KLK11	-0.004714
IL23A	0.009824	PHF2	0.002831	HIST1H4G	0.000279	KCNE3	-0.004714
ASIC3	0.009818	NOP2	0.002831	CASR	0.000278	AMHR2	-0.004715
MSI2	0.009816	PRMT7	0.002831	FGF20	0.000278	BCL6	-0.004717
NANOS1	0.009808	TMEM182	0.002830	ALG8	0.000278	PSMB8	-0.004718
NEUROG1	0.009802	GIPR	0.002830	SRPRB	0.000278	PLAGL1	-0.004720
NKX2-5	0.009802	CCDC78	0.002830	ZNF18	0.000277	CLTB	-0.004721
CPLX1	0.009802	ZRANB1	0.002830	SSX8	0.000275	DHH	-0.004721
C17orf53	0.009802	SAYSD1	0.002827	SNRNP35	0.000275	FAM167B	-0.004721
GKAP1	0.009792	OR2C3	0.002826	NEK11	0.000274	SLC9C2	-0.004722
THOC1	0.009782	AMPD2	0.002826	POLK	0.000272	RHBDF1	-0.004723
POU4F2	0.009781	B4GALT4	0.002825	FAM25G	0.000272	LTBR	-0.004724
COL11A1	0.009778	RHOXF2B	0.002825	PWP2	0.000271	CNDP2	-0.004731
TMPO	0.009777	PPHLN1	0.002824	SMIM2	0.000270	PNMAL2	-0.004734
SPIN2A	0.009774	CSNK2A1	0.002824	NAF1	0.000270	ZNF835	-0.004736
GPR83	0.009773	RWDD3	0.002824	ZDHHC18	0.000270	GHDC	-0.004736
RFC3	0.009772	NUP50	0.002823	LCE3C	0.000270	ARSJ	-0.004746
DTX1	0.009766	ZNF329	0.002823	DEFB110	0.000269	HSBP1L1	-0.004747
SASS6	0.009752	FRMD3	0.002822	UBE2Q1	0.000269	SDCBP	-0.004747
XRCC3	0.009750	DBX2	0.002821	GIGYF2	0.000268	SOCS1	-0.004749
C1orf112	0.009746	OR2D2	0.002821	LYPD5	0.000268	KIRREL	-0.004750
ZNF681	0.009742	CHFR	0.002819	MED26	0.000267	TMEM87A	-0.004750
F12	0.009727	TMEM107	0.002819	ADCY3	0.000267	ARHGAP27	-0.004751
DBF4	0.009717	ZNF28	0.002819	C19orf12	0.000266	RAI14	-0.004752

PDK1	0.009698	WDR18	0.002816	POC1B	0.000266	NPC1	-0.004753
RELN	0.009698	RAN	0.002816	ATP5I	0.000264	GPR182	-0.004755
CCNL2	0.009690	GAGE13	0.002815	TMEM229A	0.000264	TPRG1L	-0.004758
ZNF891	0.009685	LDHAL6B	0.002815	FKBP11	0.000262	PTGDR	-0.004760
GREB1L	0.009681	COX17	0.002814	MGARP	0.000261	FERMT2	-0.004761
LRRC14B	0.009676	ZNF34	0.002814	DYNC1LI1	0.000260	EPS8	-0.004762
SLC4A10	0.009676	EPG5	0.002814	PPIAL4F	0.000260	PTPN6	-0.004764
SLC4A3	0.009675	FAM221B	0.002812	NCKAP1	0.000258	ZCWPW2	-0.004764
SEMA6C	0.009673	OR1N2	0.002811	KBTBD4	0.000258	CD300A	-0.004770
PGAP1	0.009669	MYH15	0.002811	KRTAP13-4	0.000257	MYH13	-0.004771
ZGLP1	0.009665	C19orf25	0.002811	CALR	0.000256	TMEM98	-0.004771
NT5M	0.009664	SPATA31A1	0.002811	ACACA	0.000256	CACHD1	-0.004773
WFIKKN1	0.009663	COMTD1	0.002809	KIAA0391	0.000256	GBA3	-0.004776
MTNR1B	0.009660	OR1L3	0.002809	CLN6	0.000256	DKKL1	-0.004780
TUBB8	0.009660	ZXDB	0.002809	F8A1	0.000255	JPH4	-0.004785
CLEC18C	0.009659	CRYAA	0.002807	ASIC5	0.000254	RPS6KA1	-0.004785
NPAS3	0.009659	PDS5B	0.002807	MTRNR2L1	0.000254	ARPC4	-0.004787
MAPK12	0.009657	DDX5	0.002805	FBXO31	0.000253	WWP2	-0.004789
VASH2	0.009651	ANKRD53	0.002805	MTIF3	0.000253	IL27	-0.004790
RCCD1	0.009638	TOMM40	0.002805	TERF2	0.000252	DOCK9	-0.004796
FEN1	0.009635	TXLNA	0.002802	ZNF442	0.000252	GSTO2	-0.004798
HIST1H3A	0.009629	C2orf49	0.002801	KRTAP21-3	0.000252	TTC16	-0.004800
CGREF1	0.009629	MEMO1	0.002801	VGLL2	0.000252	FAM150A	-0.004807
CACNA1G	0.009629	MTAP	0.002799	WDR61	0.000252	CD79A	-0.004808
C1QTNF4	0.009627	TSHZ1	0.002799	TMEM184C	0.000252	DDO	-0.004809
ANKRD20A1	0.009626	LRTM1	0.002799	SEC61B	0.000252	CPEB2	-0.004812
BARD1	0.009624	RPS6KB1	0.002796	LACRT	0.000252	PLEKHB2	-0.004817
C18orf54	0.009621	OR8G1	0.002795	TMX2	0.000251	RSPH10B2	-0.004817
CCDC28B	0.009619	SSBP4	0.002794	TTLL11	0.000251	GAA	-0.004821
LY6G5B	0.009616	ZNF350	0.002794	NAP1L3	0.000250	TICAM2	-0.004822
SPTB	0.009610	PAGE4	0.002793	TTLL1	0.000247	SGCD	-0.004822
CACNA2D1	0.009602	ARHGAP19	0.002790	COPE	0.000247	SLA2	-0.004824
CFHR3	0.009600	RHAG	0.002790	TXNRD1	0.000246	BRI3	-0.004826
HAND2	0.009599	ATP10B	0.002790	SSH2	0.000245	NFIC	-0.004827
PAXBP1	0.009596	TRA2A	0.002788	ZNF763	0.000244	TMEM219	-0.004828
DNASE1	0.009586	HUS1	0.002788	BEAN1	0.000243	TKTL1	-0.004829
SERPINB5	0.009577	SLC37A3	0.002788	ARL6IP4	0.000242	PTPRG	-0.004829
CD24	0.009576	LHB	0.002787	TIRAP	0.000241	CAPN1	-0.004831
C19orf71	0.009575	GGT7	0.002787	BRD7	0.000240	PIK3R6	-0.004833
KCNG1	0.009574	ATF7IP	0.002787	SF3B2	0.000239	MAN2B2	-0.004836
SCRT2	0.009571	BCAN	0.002787	DIMT1	0.000239	ALAS1	-0.004843

VSTM2B	0.009556	NCKIPSD	0.002787	TMEM253	0.000238	OPHN1	-0.004846
CNKSR3	0.009551	ZFP41	0.002787	CACFD1	0.000238	SLC39A11	-0.004847
FAM227A	0.009546	LEFTY1	0.002786	SPAG1	0.000237	SMPD1	-0.004851
ANKRD61	0.009541	PRPF40A	0.002785	USP17L13	0.000237	TMBIM6	-0.004852
MYCN	0.009540	TM4SF5	0.002785	MRPS23	0.000237	CCPG1	-0.004852
MSH5	0.009538	XKR4	0.002784	TGM7	0.000235	HELT	-0.004853
RFX4	0.009535	TMEM14A	0.002783	ZNF688	0.000235	SPATS2L	-0.004855
TMEM200C	0.009532	ZNF33B	0.002783	RFX1	0.000235	HECW2	-0.004861
ADCY10	0.009528	SMIM21	0.002782	DEFB136	0.000234	GLT8D2	-0.004862
OTOP3	0.009526	RRP1B	0.002782	PFN3	0.000234	AVPR2	-0.004869
ABCC5	0.009526	ZSCAN10	0.002782	KRT80	0.000233	CFAP58	-0.004872
RSRP1	0.009523	ZNF304	0.002780	MGAT4D	0.000233	NR1H4	-0.004879
TAAR1	0.009521	GRM5	0.002780	BPY2	0.000233	PTPRO	-0.004882
SUV39H2	0.009521	CPOX	0.002780	KSR1	0.000232	ASB2	-0.004886
COL9A3	0.009520	CECR2	0.002777	CNOT11	0.000231	UBE2E2	-0.004887
ZNF714	0.009512	ZFP28	0.002774	XPNPEP1	0.000231	COL6A1	-0.004888
ZFP30	0.009510	NLGN3	0.002774	PRAMEF5	0.000231	MED11	-0.004890
CELF6	0.009508	AKR1C4	0.002773	ELOF1	0.000230	PTX3	-0.004895
PPAT	0.009492	SPP2	0.002772	VDAC2	0.000230	TMC7	-0.004901
EFNA3	0.009486	WTAP	0.002772	GPX5	0.000229	GEM	-0.004902
ENO2	0.009463	FAM53A	0.002772	DPM2	0.000229	MBNL1	-0.004905
MYCL	0.009461	FAM227B	0.002771	R3HDM4	0.000227	TMEM140	-0.004906
ADAM23	0.009460	FAM9C	0.002771	FIGLA	0.000227	DOK3	-0.004908
CA5A	0.009460	VN1R5	0.002770	OLIG1	0.000226	OCLN	-0.004910
MCM7	0.009458	PPP2R1B	0.002770	TECPR2	0.000226	LTBP1	-0.004910
C9orf40	0.009456	LZIC	0.002770	TRIAP1	0.000226	RGS10	-0.004918
SMC4	0.009454	ADAM28	0.002769	MRPS7	0.000225	SLC8B1	-0.004920
RNASE10	0.009436	SIAH1	0.002769	RGPD2	0.000225	PXN	-0.004922
TCP11X1	0.009436	CYP21A2	0.002769	NAA20	0.000224	ZFP42	-0.004924
TACC3	0.009434	PSG8	0.002768	EFTUD2	0.000224	PAX8	-0.004925
KIAA1456	0.009434	EDC4	0.002768	USP17L10	0.000222	TMEM156	-0.004931
KCTD19	0.009432	PTMA	0.002767	EDDM3A	0.000222	ARPIN	-0.004935
SLC4A8	0.009431	UTP18	0.002766	VPS9D1	0.000221	HERC6	-0.004935
PRDM15	0.009429	GPATCH8	0.002765	DSTYK	0.000220	IRF4	-0.004935
BGLAP	0.009422	TAS2R9	0.002763	DCD	0.000219	RUNX3	-0.004939
ARHGAP36	0.009420	MRPL48	0.002762	RNASE7	0.000218	ENAM	-0.004939
ZNF692	0.009420	CCDC180	0.002762	STK4	0.000218	PPFIBP1	-0.004941
CTRC	0.009417	RBM48	0.002761	ADAMTS10	0.000218	AP5B1	-0.004942
SLC25A27	0.009401	RBMY1A1	0.002760	MRPS9	0.000217	ARHGEF26	-0.004944
ZNF705E	0.009388	SNRNP40	0.002760	DNAH10OS	0.000217	ARL14EPL	-0.004945
AQP11	0.009388	ALG9	0.002759	PSMD7	0.000214	NFKB2	-0.004946

CALML5	0.009373	LONP1	0.002756	MAGED2	0.000212	PHACTR1	-0.004948
TEX29	0.009370	DDX52	0.002756	H3F3B	0.000212	NPY1R	-0.004949
LRRC10	0.009366	UTP20	0.002756	PPP3CB	0.000210	HMGN5	-0.004949
FOXH1	0.009362	MTA2	0.002755	EPHA3	0.000210	BMP6	-0.004949
SUMO4	0.009359	C1orf216	0.002754	ZNF689	0.000210	MEIKIN	-0.004951
POU3F1	0.009344	GYPA	0.002754	MRPL57	0.000209	CPNE2	-0.004953
ILDR2	0.009340	USP24	0.002754	HIF1AN	0.000209	ARL14	-0.004954
PHGDH	0.009337	DCUN1D5	0.002753	PPP1R3D	0.000207	NDST1	-0.004957
FAM81A	0.009333	SPRTN	0.002753	RNF14	0.000206	PMM1	-0.004958
EN2	0.009331	DBR1	0.002752	ATE1	0.000206	SIX5	-0.004958
MYOD1	0.009328	RBM19	0.002752	DEFB106A	0.000205	TMPRSS4	-0.004958
GRM7	0.009322	SARDH	0.002751	KRTAP4-12	0.000204	TMEM120A	-0.004959
CEP78	0.009322	KLC3	0.002751	ADAR	0.000204	DCUN1D3	-0.004959
CDX2	0.009322	TSPY8	0.002749	MFSD6	0.000204	MFGE8	-0.004960
CEP85	0.009320	TSN	0.002749	BPY2B	0.000203	PPP1R3B	-0.004962
MYBPC1	0.009320	FLAD1	0.002748	BPY2C	0.000203	LHFPL2	-0.004963
DRD4	0.009309	TOE1	0.002748	AKAP4	0.000203	SNAP23	-0.004963
GOLGA6A	0.009303	MAP4K5	0.002747	CTR9	0.000203	ALDH3B2	-0.004968
CDHR2	0.009301	SMARCC2	0.002747	PPY	0.000202	HOXD1	-0.004970
FAM84A	0.009300	DLGAP2	0.002747	TSTD3	0.000201	ATP6V0D1	-0.004973
GNRH1	0.009296	POLR3K	0.002746	PIAS1	0.000201	ACSS1	-0.004974
FAM169A	0.009294	BCL11A	0.002745	UBE3B	0.000201	KRT6A	-0.004979
TMPRSS9	0.009291	PARG	0.002744	PSMB5	0.000200	TEX264	-0.004984
KIAA0319	0.009290	GPR21	0.002744	STK31	0.000199	DUSP7	-0.004985
ROPN1B	0.009283	ABHD16B	0.002744	IBTK	0.000199	AZGP1	-0.004990
SCNN1D	0.009273	EWSR1	0.002744	KIF25	0.000198	GALNT10	-0.004991
MC4R	0.009272	FLG2	0.002744	PIGQ	0.000197	ID3	-0.004992
PTBP2	0.009263	C8orf89	0.002743	TMLHE	0.000197	ZBTB47	-0.004996
NKX6-3	0.009261	SPATA6L	0.002743	ITGB1BP1	0.000197	ITIH3	-0.005000
BRS3	0.009252	OPRM1	0.002742	MRPL53	0.000197	NACC2	-0.005000
NPIPA7	0.009247	SLC9B1	0.002742	SPAG9	0.000196	TIGIT	-0.005002
NPM2	0.009242	PTGR2	0.002742	SAMD8	0.000195	OCA2	-0.005003
ERICH5	0.009236	MAML1	0.002742	DEFB116	0.000195	IRF1	-0.005004
INCENP	0.009233	BRPF3	0.002741	ALDH1B1	0.000195	TMEM63B	-0.005005
HIST1H4A	0.009232	GNPNAT1	0.002740	RALY	0.000195	GBP5	-0.005006
RAB40AL	0.009227	PICK1	0.002738	ELAC2	0.000195	GRASP	-0.005009
GLDC	0.009221	CCT8	0.002738	OCSTAMP	0.000194	CRY2	-0.005009
PASK	0.009218	SPTA1	0.002737	ASB8	0.000194	ECM1	-0.005010
APOF	0.009207	LSM2	0.002737	PARD3	0.000194	ITGAD	-0.005010
ZNF594	0.009204	GABRA6	0.002736	TOP1MT	0.000193	MROH6	-0.005011
FRMD1	0.009202	ARG1	0.002736	OR5AK2	0.000192	AGA	-0.005013

MB	0.009201	FBL	0.002735	SDCCAG8	0.000192	LEPROT	-0.005014
SLC39A5	0.009196	LLGL1	0.002734	GID4	0.000192	TBXA2R	-0.005017
UNC93A	0.009196	C14orf2	0.002733	HMHB1	0.000192	FURIN	-0.005017
HOXB1	0.009183	MCM9	0.002733	CLRN2	0.000191	GALC	-0.005018
TOPBP1	0.009181	ZBTB14	0.002732	CSGALNACT 2	0.000189	FAM110C	-0.005018
ENO3	0.009180	SNRPD2	0.002732	COL5A1	0.000189	SH2D2A	-0.005018
GUCA1B	0.009168	KRT74	0.002732	IL36A	0.000189	HRC	-0.005019
ZBTB12	0.009168	PSG5	0.002732	CHST4	0.000188	EIF5AL1	-0.005023
RIMKLA	0.009166	PTGES2	0.002730	PCDH18	0.000188	SLC10A3	-0.005023
NWD2	0.009162	MBOAT2	0.002730	ZC3H13	0.000187	WIPF1	-0.005025
GOLGA6L9	0.009157	FAM26D	0.002729	PRM3	0.000187	KLHDC7B	-0.005025
HIST1H3E	0.009157	43716	0.002728	CT47A7	0.000187	ABHD17C	-0.005028
HAUS5	0.009150	FAM133A	0.002728	SLC9A6	0.000187	SERPINB8	-0.005032
SPERT	0.009149	LPIN3	0.002728	MECR	0.000186	PLD1	-0.005033
SMKR1	0.009145	TRPM2	0.002727	RPS7	0.000186	GGT5	-0.005041
KLHL1	0.009143	FGF19	0.002727	EIF4G1	0.000186	GPRC5C	-0.005044
CENPL	0.009143	FAAH2	0.002727	PLEKHG6	0.000186	NBPF14	-0.005050
PCNA	0.009140	BMI1	0.002727	CTDP1	0.000186	SVOPL	-0.005051
HIST2H4A	0.009139	FAT2	0.002726	CCNI	0.000186	STS	-0.005055
ZNF782	0.009138	IFT74	0.002725	DEFB104A	0.000185	GTSF1	-0.005056
PMFBP1	0.009136	ENY2	0.002725	DEFB104B	0.000185	ITPKB	-0.005059
SOX21	0.009135	OR2AG2	0.002724	F8A2	0.000185	RANBP3L	-0.005063
SDK2	0.009131	TAS2R40	0.002724	TFCP2L1	0.000185	LPA	-0.005064
PDZK1	0.009129	MED28	0.002723	RAB36	0.000185	HTRA3	-0.005069
MIA	0.009127	BTBD8	0.002723	KRTAP22-1	0.000184	PEAK1	-0.005071
CDCA4	0.009126	ARHGAP4	0.002723	MS4A5	0.000184	CAB39L	-0.005073
DSCAML1	0.009124	STRADA	0.002723	EML4	0.000184	CLEC4C	-0.005073
HIST1H3H	0.009119	SERPINA6	0.002722	FUK	0.000183	CDKL5	-0.005075
NEFL	0.009118	CAPN15	0.002722	HPCAL4	0.000182	TTPA	-0.005079
MAST2	0.009118	CLDN22	0.002721	KCTD20	0.000181	NPL	-0.005081
PROC	0.009116	FAM188A	0.002719	CST8	0.000180	ADAM29	-0.005082
ZNF253	0.009107	HNRNPM	0.002719	PRADC1	0.000177	DSTN	-0.005083
MADCAM1	0.009103	RNASE9	0.002719	RPS28	0.000176	FAM129A	-0.005084
UCK2	0.009102	OR6A2	0.002719	EIF2S2	0.000176	VCAM1	-0.005085
HIST1H2AB	0.009101	ZMYM5	0.002717	FAM120AOS	0.000175	SNX25	-0.005088
HIST2H3D	0.009099	TEX35	0.002717	OPN1SW	0.000174	RCAN2	-0.005088
FRMPD2	0.009082	EVL	0.002716	L3MBTL4	0.000174	IFFO2	-0.005089
PLGLB1	0.009081	OR5C1	0.002715	ATP5H	0.000172	FAM198B	-0.005093
CLTCL1	0.009079	CIDEB	0.002715	FAM89B	0.000172	RHOJ	-0.005093
HLTF	0.009076	NUMBL	0.002713	DTNBP1	0.000171	CD177	-0.005101

A1CF	0.009066	TCHHL1	0.002713	KRTAP19-2	0.000171	LRCH2	-0.005105
WBSCR28	0.009065	FAM193A	0.002713	EXOC6	0.000170	NTRK3	-0.005106
KCNS2	0.009063	PRKRA	0.002712	MAPK9	0.000170	ADAM9	-0.005108
RIC3	0.009054	SCAMP1	0.002712	TSR2	0.000169	TRAPPC3L	-0.005109
MTFR2	0.009053	FBXL22	0.002711	RCN1	0.000168	SHISA4	-0.005109
IL11	0.009048	CBWD1	0.002711	ANKRD60	0.000168	CCL4L2	-0.005113
PIWIL1	0.009044	SIRT5	0.002711	TRIP12	0.000168	SLC43A3	-0.005115
SNTG2	0.009039	CHKB	0.002711	CFDP1	0.000167	SIGLEC8	-0.005117
PROX2	0.009032	DCDC1	0.002711	LCE4A	0.000167	CASKIN2	-0.005119
QRICH2	0.009027	OR9A4	0.002711	POSTN	0.000165	CFAP47	-0.005121
CEP41	0.009026	SPRYD4	0.002710	MPHOSPH8	0.000164	COL4A5	-0.005121
C1QL2	0.009025	OR2D3	0.002709	STIM2	0.000164	LAPTM4A	-0.005122
CRHR2	0.009024	43533	0.002709	PYDC2	0.000163	ALDH3A2	-0.005125
NOXRED1	0.009023	ANKRA2	0.002708	TRIM48	0.000163	JOSD2	-0.005126
KLHL23	0.009023	HSPA13	0.002708	USF1	0.000163	OSBPL5	-0.005128
MSH4	0.009015	USP34	0.002708	FCRL5	0.000162	STEAP2	-0.005131
TAS2R31	0.009014	SMARCB1	0.002707	COPS2	0.000162	POR	-0.005133
CCDC74A	0.009013	TECRL	0.002706	RPL37	0.000162	PARP4	-0.005135
CENPO	0.009013	NRIP2	0.002706	PPP2R5B	0.000162	SECISBP2L	-0.005138
SMCO2	0.009007	PLXNA4	0.002706	AKIP1	0.000161	MAP3K15	-0.005139
MOV10L1	0.009007	NHLRC2	0.002705	ETV6	0.000161	LY6G6F	-0.005139
KATNAL2	0.009004	ACAD8	0.002705	SPANXN4	0.000161	MANBA	-0.005139
UNC5D	0.009003	SPATA17	0.002704	FIG4	0.000161	BTN3A2	-0.005145
HOXD12	0.009003	NKX2-6	0.002703	TBC1D15	0.000160	GUCY2D	-0.005145
PSMA2	0.009002	ENTPD6	0.002702	TRAF3	0.000160	KLHL38	-0.005148
SLCO6A1	0.008994	LARS	0.002702	PPP2CA	0.000160	PCSK6	-0.005148
SYNJ2	0.008991	CSTL1	0.002701	PAPPA	0.000160	PHLDB2	-0.005148
SLC7A11	0.008989	C18orf32	0.002700	LYSMD2	0.000158	GALNT15	-0.005149
RFC5	0.008988	SSBP2	0.002700	MSGN1	0.000157	FAM65A	-0.005153
MCF2L	0.008986	FAM209A	0.002700	SLC12A6	0.000157	MXRA7	-0.005153
SAP25	0.008979	TCF20	0.002700	MPP1	0.000156	ST6GALNAC5	-0.005155
ANO4	0.008976	GAGE2E	0.002699	ARV1	0.000155	RAET1G	-0.005157
WNT16	0.008976	ARID1B	0.002699	DHDDS	0.000154	TNIP1	-0.005160
SOX4	0.008974	KIAA1257	0.002699	MT1HL1	0.000154	IRX5	-0.005164
OR13A1	0.008972	ZNF511	0.002698	RLN3	0.000153	MAP3K6	-0.005165
PAX4	0.008972	CLK3	0.002698	GOT1L1	0.000152	ISM1	-0.005165
KIF3C	0.008968	C19orf68	0.002698	SETX	0.000152	CLEC12B	-0.005166
AGXT	0.008968	TTLL4	0.002698	SRC	0.000152	ERAP1	-0.005168
SPTSSB	0.008967	FAM160A2	0.002697	IFNA13	0.000151	PDE4B	-0.005169
POMK	0.008963	ZNF500	0.002696	PIGK	0.000151	ABCA1	-0.005169

H2AFX	0.008949	FAM199X	0.002696	SPPL3	0.000151	ACOT1	-0.005171
IGFBP2	0.008941	ZNF426	0.002695	NMNAT1	0.000150	CABLES1	-0.005171
STRIP2	0.008941	CMTR1	0.002693	CRYBG3	0.000148	MYO5C	-0.005173
ALX1	0.008934	RANBP3	0.002693	TPST1	0.000148	UST	-0.005174
CIART	0.008933	PRPS1	0.002692	OR52B4	0.000148	ST3GAL6	-0.005174
C9orf172	0.008931	TRIM11	0.002692	DEGS2	0.000148	TMEM54	-0.005174
ZNF708	0.008928	ZNF41	0.002691	MBD3L2	0.000145	DAB2IP	-0.005176
PRR18	0.008921	MBOAT1	0.002690	SLC23A1	0.000144	SLC39A1	-0.005176
RAB3A	0.008921	RNF187	0.002690	LAPTM4B	0.000144	MFSD5	-0.005184
KCNF1	0.008920	SPATC1L	0.002690	LCE1D	0.000143	MAN2B1	-0.005185
CDKN2D	0.008913	FBXO42	0.002689	NPRL3	0.000142	CD1D	-0.005193
HOXC4	0.008911	FCHSD1	0.002689	FUNDC2	0.000142	KRT18	-0.005194
MAPK8IP3	0.008909	ASAP2	0.002687	USP6NL	0.000140	SLC6A20	-0.005195
CKS2	0.008905	KATNBL1	0.002686	TTN	0.000139	APCDD1	-0.005197
FOXL2NB	0.008897	CERK	0.002685	COMMD5	0.000139	NDN	-0.005203
TTC14	0.008892	PDZRN3	0.002685	OR4C6	0.000139	SLC6A6	-0.005204
ATP8A2	0.008891	MKKS	0.002683	KBTBD3	0.000139	DOK1	-0.005206
BEGAIN	0.008890	RTN3	0.002682	FAM47C	0.000138	IFI6	-0.005211
PCBP3	0.008888	EPCAM	0.002680	USP5	0.000137	MS4A6E	-0.005212
ZNF732	0.008887	SFXN4	0.002680	PSMD8	0.000137	C9orf24	-0.005215
SPOCK3	0.008884	NUP54	0.002679	MRPS12	0.000137	BDH2	-0.005217
NUP62CL	0.008883	TAAR8	0.002678	CELA3A	0.000137	VWC2	-0.005228
ZNF705G	0.008881	TMEM52	0.002677	GATB	0.000137	N4BP1	-0.005231
HIST1H3I	0.008880	ETAA1	0.002677	KCTD9	0.000137	RAB40A	-0.005238
ADAMTS20	0.008877	ITSN1	0.002676	PCSK7	0.000136	PIK3C2G	-0.005245
NETO2	0.008876	NGDN	0.002675	NPR2	0.000136	MAGI3	-0.005245
CPNE7	0.008869	NYAP2	0.002674	KRTAP25-1	0.000136	FAM198A	-0.005245
RPS6KA6	0.008869	PAGE1	0.002674	ALG10B	0.000136	DOCK11	-0.005248
SHCBP1	0.008865	TNPO1	0.002673	RWDD1	0.000136	RSAD2	-0.005249
KPNA2	0.008858	NAA15	0.002673	FAM153B	0.000135	SBDS	-0.005249
TIGD1	0.008851	C7orf43	0.002671	OAZ3	0.000134	LRRC6	-0.005250
ATXN7L2	0.008849	FBXO44	0.002670	HIVEP3	0.000134	DPYS	-0.005250
JAKMIP3	0.008842	TCOF1	0.002670	NOX4	0.000134	KIFC3	-0.005250
ZNF107	0.008841	SLC5A2	0.002670	C6orf226	0.000133	ELF1	-0.005255
PEG10	0.008841	MOV10	0.002669	TYSND1	0.000133	PLIN2	-0.005257
HOXB7	0.008839	UPK3A	0.002668	SPON2	0.000133	PLK2	-0.005259
UROC1	0.008838	KIN	0.002667	GSDMA	0.000132	SRPX2	-0.005259
SYN2	0.008835	FBXO9	0.002666	RYBP	0.000132	RALB	-0.005261
TMEM184A	0.008829	POFUT2	0.002665	COX10	0.000132	PLEKHN1	-0.005264
FANCD2	0.008814	MRPL3	0.002665	NUDCD3	0.000131	RAB3IL1	-0.005267
PNMA6A	0.008813	OGG1	0.002664	RNASE12	0.000131	CCDC65	-0.005267

HIST1H2BM	0.008813	PRB1	0.002663	FOXO3	0.000131	TPM4	-0.005271
LCT	0.008811	ZNF564	0.002659	TVP23C	0.000131	EPB41L4A	-0.005272
MAD2L2	0.008808	ARMC2	0.002659	AMMECR1L	0.000131	TIFAB	-0.005277
CPE	0.008808	RAI1	0.002659	PSMD1	0.000130	LMF1	-0.005279
CSRNP3	0.008805	NRG4	0.002659	SLC29A1	0.000129	TRAPPC1	-0.005284
CCDC110	0.008800	PDCD2	0.002657	INTS9	0.000129	RRBP1	-0.005286
CBY3	0.008798	UHRF1BP1L	0.002656	MESDC1	0.000128	TCF7L2	-0.005287
PPP1R3E	0.008797	PAGE2	0.002655	NXNL1	0.000128	UTS2	-0.005290
VAT1L	0.008796	SWT1	0.002654	TMEM134	0.000127	PRSS23	-0.005291
NAPB	0.008782	PJA1	0.002654	RAB6A	0.000126	MXRA8	-0.005294
FGD1	0.008779	DPY30	0.002653	OR4F4	0.000125	RASSF5	-0.005295
CHRM5	0.008776	FRYL	0.002652	FAM229B	0.000124	SSH3	-0.005299
ZNF483	0.008775	NOC2L	0.002652	FCHO1	0.000123	H2AFJ	-0.005301
SRD5A1	0.008775	UCK1	0.002650	STK24	0.000123	RHOA	-0.005302
GOLGA7B	0.008773	GFER	0.002649	SBNO2	0.000122	TSLP	-0.005313
FAM216A	0.008770	KLHL7	0.002649	SLCO1C1	0.000122	NR1H2	-0.005314
SKOR1	0.008757	PRR20A	0.002647	ARPC1A	0.000122	SYNPO2L	-0.005314
AK4	0.008757	PRR20B	0.002647	SLC46A1	0.000122	SERTAD3	-0.005315
RMI1	0.008756	PRR20D	0.002647	GCAT	0.000122	MT1X	-0.005316
NCR3LG1	0.008750	PRR20E	0.002647	GPN1	0.000121	ZNF521	-0.005319
JAKMIP2	0.008749	WDR89	0.002647	NOC4L	0.000121	NUDT18	-0.005319
MYL7	0.008747	ZNF2	0.002647	TECR	0.000121	ZDHHC7	-0.005319
NECAB2	0.008739	FAM161B	0.002646	MBD3L5	0.000120	ADAP2	-0.005327
MAGEA11	0.008737	TSEN2	0.002645	UBE2G1	0.000120	EFHC2	-0.005327
TBC1D3B	0.008736	SOS1	0.002644	ECD	0.000120	TNFRSF9	-0.005330
YPEL1	0.008731	SIPA1L2	0.002642	OR5AR1	0.000118	EDA2R	-0.005333
CNFN	0.008718	NPBWR2	0.002641	ECI2	0.000118	HSD17B11	-0.005337
MAGEC1	0.008709	MAGEB6	0.002640	NEURL3	0.000118	PACRG	-0.005339
HIST2H2AB	0.008702	NT5C3A	0.002639	SEC23B	0.000118	REEP5	-0.005340
CASP8AP2	0.008693	IQCA1L	0.002639	SP1	0.000117	GFRA1	-0.005343
FGF21	0.008688	SNTG1	0.002638	NDUFA13	0.000117	SPRYD7	-0.005344
PHF6	0.008686	AP1AR	0.002638	UBA1	0.000116	FAM26E	-0.005344
PRB3	0.008686	RANBP2	0.002638	GPAA1	0.000114	PDE2A	-0.005349
SKIDA1	0.008681	USP9X	0.002636	CCDC63	0.000113	PKDCC	-0.005351
C3orf22	0.008680	PTCH1	0.002636	GTDC1	0.000113	VIT	-0.005351
SAP30	0.008673	BRD2	0.002636	CRYGC	0.000112	HEXB	-0.005352
MEF2B	0.008673	CRIPT	0.002636	KBTBD13	0.000112	MMP14	-0.005353
CEP192	0.008672	C18orf21	0.002636	LAT	0.000110	SPRY1	-0.005363
MSH2	0.008669	XRCC1	0.002636	CEACAM18	0.000109	NR4A2	-0.005365
ABLIM2	0.008669	C1orf226	0.002635	TEX28	0.000109	C17orf64	-0.005369
ZNF157	0.008667	TRAP1	0.002635	TKFC	0.000108	DCDC2	-0.005371

PRPF39	0.008662	TMEM263	0.002635	CDRT1	0.000108	WWC3	-0.005375
ZNF736	0.008658	YTHDC1	0.002634	TBC1D21	0.000107	HEXA	-0.005376
AGPAT5	0.008653	MED30	0.002633	PRMT2	0.000106	TMSB4X	-0.005379
LRRTM2	0.008653	IPO5	0.002633	PRM1	0.000106	TAPBP	-0.005379
THRSP	0.008650	PRPF19	0.002632	DOK5	0.000106	SNX30	-0.005380
KNSTRN	0.008644	FABP12	0.002632	CSNK1D	0.000106	ELOVL1	-0.005385
TEX19	0.008640	OR1L4	0.002632	METTL1	0.000104	ADGRG3	-0.005386
IZUMO4	0.008636	UNC119B	0.002632	MMS19	0.000103	STAT5A	-0.005391
TEX30	0.008634	H1FOO	0.002631	RAB11B	0.000103	FEZ2	-0.005392
CENPN	0.008630	ECSIT	0.002629	RSL24D1	0.000103	DHDH	-0.005393
CALHM1	0.008629	TARBP2	0.002629	KLHDC1	0.000102	SERINC5	-0.005394
EFCAB8	0.008624	CBLB	0.002629	CT45A9	0.000102	IFIT5	-0.005395
ARL17A	0.008623	PTRH2	0.002628	SPTLC2	0.000101	ADRB3	-0.005399
MAGEC2	0.008621	GOLGA6C	0.002628	SLC22A23	0.000101	MSRA	-0.005403
BIK	0.008619	ACLY	0.002628	EIF4G2	0.000100	BIRC7	-0.005404
MTUS2	0.008617	TRIM43	0.002628	DNAJC17	0.000099	ADAMTS3	-0.005405
NASP	0.008612	AOC1	0.002628	FAP	0.000098	STAT4	-0.005406
PRRT2	0.008612	RPL7L1	0.002627	KRTAP20-1	0.000098	ULBP3	-0.005407
KIF20B	0.008609	OR51A4	0.002626	HYAL3	0.000098	FRRS1	-0.005407
BRCA2	0.008607	CLASP2	0.002626	C16orf96	0.000097	DPYSL2	-0.005408
ZNF221	0.008603	ANKRD34A	0.002625	TUSC5	0.000097	DNAI2	-0.005408
GABRG2	0.008601	PRPSAP2	0.002625	SNX6	0.000096	FZD5	-0.005409
TBC1D31	0.008598	ANKAR	0.002625	PELI3	0.000095	DHRS7B	-0.005410
HMGB3	0.008598	NDUFB1	0.002624	PRY2	0.000094	COL6A2	-0.005411
AMIGO3	0.008593	RPP30	0.002623	COX6B1	0.000094	ABCC9	-0.005412
CENPJ	0.008591	AZIN2	0.002623	POLDIP2	0.000092	C11orf45	-0.005414
SPPL2B	0.008584	CHAC1	0.002623	PRLH	0.000092	COL17A1	-0.005414
CTHRC1	0.008579	ARID1A	0.002622	SCGB1C2	0.000092	MAP1LC3B 2	-0.005414
PRUNE2	0.008577	ASMT	0.002622	GATAD2A	0.000091	APOBEC3G	-0.005415
DDN	0.008576	ZNF282	0.002622	DEFB135	0.000091	USP25	-0.005416
DDX39A	0.008575	RALGAPB	0.002621	OR10A6	0.000091	PRR15	-0.005418
TRIM59	0.008574	ST7L	0.002621	WNT1	0.000090	TMEM43	-0.005420
DCT	0.008572	OCIAD2	0.002620	DEFB127	0.000090	LTK	-0.005422
LCN8	0.008570	MED1	0.002619	POMZP3	0.000089	APOD	-0.005425
PAN2	0.008570	FBXO11	0.002619	CCDC61	0.000089	SLC5A5	-0.005426
APBA2	0.008561	TTC8	0.002619	SNX9	0.000089	PSTPIP1	-0.005426
CEP131	0.008560	MTMR1	0.002618	NDUFB10	0.000088	PYGL	-0.005428
PALM2	0.008550	COA5	0.002618	LCE1F	0.000088	ZFP57	-0.005434
C11orf42	0.008548	ZNF837	0.002618	SART1	0.000087	GXYLT2	-0.005435
EID2B	0.008548	NLRP8	0.002618	MT-CO1	0.000085	TREML2	-0.005437

MAGEA9	0.008547	HSDL1	0.002617	USP17L18	0.000084	LRRK1	-0.005439
PANX3	0.008545	DNAJA3	0.002617	ZNF626	0.000084	CHST3	-0.005440
QSOX2	0.008543	COL5A2	0.002616	EMC6	0.000083	EFNA4	-0.005441
GPT	0.008540	MSANTD3	0.002616	TMIGD1	0.000080	CTSA	-0.005442
ITGB3BP	0.008539	RNF24	0.002615	TOR1B	0.000078	CLN5	-0.005444
ATAD3B	0.008538	OR2M4	0.002613	FXYD6	0.000078	DOC2B	-0.005445
OLIG2	0.008537	PRB4	0.002613	STAU1	0.000077	MAFF	-0.005445
KCTD8	0.008532	COG1	0.002612	ATXN10	0.000077	CDS1	-0.005446
RHEBL1	0.008530	ZNRF2	0.002612	FAM177B	0.000076	ACSS3	-0.005448
UGT3A1	0.008527	FUZ	0.002612	DEFB123	0.000076	SGMS1	-0.005449
TMCC2	0.008526	POGLUT1	0.002611	OR5K2	0.000076	S100A13	-0.005450
LRRC75A	0.008518	UCHL5	0.002611	RPS8	0.000075	GJC2	-0.005453
ZNF789	0.008513	B3GAT3	0.002610	SPANXB1	0.000074	CCDC42	-0.005456
LINGO3	0.008512	RNF220	0.002610	NCDN	0.000074	CDHR3	-0.005458
HOXC8	0.008499	ATP2C1	0.002610	MYL10	0.000073	KIR2DL4	-0.005459
FEZF2	0.008497	P4HTM	0.002609	COPA	0.000073	CC2D2A	-0.005461
ZBED8	0.008492	EIF2B1	0.002608	LYZL6	0.000072	CMTM3	-0.005463
HAP1	0.008489	ZNF165	0.002607	SMYD5	0.000072	RSU1	-0.005464
PGBD1	0.008487	MAP4K3	0.002607	CYP20A1	0.000072	KANK1	-0.005465
TMSB4Y	0.008486	METTL2B	0.002607	CXorf38	0.000072	HTRA1	-0.005468
FLVCR1	0.008481	SPATA31D3	0.002606	SWSAP1	0.000071	SAMD5	-0.005469
GUCA1A	0.008480	C1QTNF6	0.002605	HIVEP1	0.000071	TRAM1	-0.005469
WDR88	0.008477	SLC2A7	0.002603	ALDH16A1	0.000071	KLHL5	-0.005469
POU5F2	0.008477	OR4F21	0.002603	XPO4	0.000071	TC2N	-0.005476
NBPF20	0.008474	OR2J3	0.002602	BSPH1	0.000071	P2RY8	-0.005481
DTNA	0.008466	ATXN7L3B	0.002602	KRTAP22-2	0.000070	LAMA4	-0.005488
AHI1	0.008465	DIP2C	0.002602	LSS	0.000070	RAP2B	-0.005488
RBP3	0.008465	ZFHX3	0.002602	DEFB124	0.000069	HDAC11	-0.005492
ZC3H8	0.008463	OR52E6	0.002601	TRIM64	0.000069	PHOSPHO1	-0.005495
VPS37D	0.008457	RAVER1	0.002601	FXR2	0.000069	PLK3	-0.005499
SPTBN5	0.008456	EIF5A2	0.002601	RNF166	0.000067	B3GALT4	-0.005503
C1orf94	0.008439	PIH1D1	0.002601	NMS	0.000067	TCEA3	-0.005504
AVIL	0.008437	NRF1	0.002600	GRB7	0.000067	UXS1	-0.005504
FAM159B	0.008435	PRR35	0.002600	SLC35G1	0.000066	EDEM2	-0.005505
TBX18	0.008427	SPHK2	0.002600	ANP32D	0.000065	CCL3	-0.005508
FEZF1	0.008425	TRMT61B	0.002599	ARL13B	0.000063	KLHDC8B	-0.005513
MCOLN3	0.008425	RABIF	0.002599	NCOA1	0.000062	VTCN1	-0.005513
CYP4F8	0.008425	TRMT10A	0.002599	PGPEP1	0.000061	MGMT	-0.005514
SBK2	0.008425	TLE1	0.002599	HNRNPCL2	0.000061	PROK2	-0.005515
CCP110	0.008422	SLC25A17	0.002599	RPP38	0.000060	HSD17B2	-0.005515
HIST1H2BN	0.008420	PPFIA1	0.002598	TSC22D2	0.000059	CTDSP1	-0.005516

HIST2H2AA4	0.008411	MAP4K4	0.002598	PSME3	0.000058	ZBTB42	-0.005516
CCDC183	0.008409	CAMSAP3	0.002598	NCOA3	0.000057	NFKB1	-0.005521
NBEA	0.008404	ZNF274	0.002598	C12orf43	0.000057	AFAP1L1	-0.005522
FOXL2	0.008403	RNF214	0.002596	DEFB114	0.000057	GULP1	-0.005523
QPCT	0.008402	USP17L11	0.002596	EPS8L3	0.000057	FHOD1	-0.005524
CA6	0.008398	RNASEH1	0.002595	IL36B	0.000055	ACSL1	-0.005526
HMSD	0.008396	TBC1D19	0.002595	ZNF69	0.000055	ANTXR2	-0.005529
DNMT1	0.008396	STATH	0.002594	LCE2B	0.000054	C12orf74	-0.005529
KCNJ11	0.008393	WDR47	0.002593	TSHB	0.000054	MAP4	-0.005530
SEMA5B	0.008380	NT5C	0.002593	SOCS5	0.000053	TACC2	-0.005530
ABCA12	0.008378	UIMC1	0.002592	GOLPH3	0.000053	COLGALT2	-0.005530
SAMD7	0.008374	CASZ1	0.002591	DNAJC4	0.000052	SMCO3	-0.005531
UCN2	0.008371	PDHX	0.002590	ZBTB2	0.000051	FCRLB	-0.005535
CDKAL1	0.008369	C12orf76	0.002589	NPAS1	0.000048	PLEC	-0.005536
SLC35E2	0.008369	CATSPERG	0.002589	AKAP11	0.000047	OIT3	-0.005537
TAS2R5	0.008367	ACAD10	0.002589	ATP7A	0.000047	PARP15	-0.005538
CENPP	0.008366	MEGF8	0.002588	GRID1	0.000047	RAP1A	-0.005541
EPHA5	0.008363	FAM231A	0.002588	MAGIX	0.000045	P2RY6	-0.005541
AHSA2	0.008352	NMUR2	0.002588	MYO5A	0.000045	LILRA4	-0.005543
LHX8	0.008350	TLK1	0.002586	ZRSR2	0.000045	WDR78	-0.005544
GDF9	0.008346	APOPT1	0.002584	KLF11	0.000045	IL31RA	-0.005546
SPIRE2	0.008343	FNTA	0.002584	MED16	0.000044	PLCG2	-0.005549
ZNF92	0.008339	RNF8	0.002583	FAM46A	0.000043	NEK5	-0.005550
GGH	0.008335	C6orf48	0.002583	PPP2R5C	0.000043	FCRL3	-0.005550
DDX53	0.008333	DNLZ	0.002582	GOLGA5	0.000043	PARVB	-0.005555
DRICH1	0.008321	CPSF2	0.002582	LPAR4	0.000042	ALDH1A3	-0.005555
PPFIA3	0.008320	BRD1	0.002581	PGA5	0.000041	MYH9	-0.005557
SLC10A4	0.008318	MOGAT3	0.002579	TMEM82	0.000041	C5	-0.005561
SOHLH1	0.008317	RRAGD	0.002577	LYZL4	0.000040	MUC3A	-0.005564
SMIM18	0.008314	STRIP1	0.002575	DCP1A	0.000040	C22orf15	-0.005565
NRIP3	0.008311	TNFSF4	0.002575	RASEF	0.000040	UTRN	-0.005567
TENM1	0.008308	LDHC	0.002574	OSTC	0.000039	FAM65B	-0.005568
SCGB1D1	0.008303	CLK4	0.002572	SCAND1	0.000039	ARHGEF3	-0.005568
DSPP	0.008303	ACP1	0.002572	MAD1L1	0.000038	MEI1	-0.005568
HIST2H4B	0.008299	OR51D1	0.002571	SLC26A2	0.000037	SLC7A2	-0.005569
HOOK1	0.008298	KDM5C	0.002571	LGALS7B	0.000036	TNC	-0.005575
BOLL	0.008297	TRIM42	0.002570	FCF1	0.000036	MCC	-0.005576
B4GALT6	0.008295	RRN3	0.002570	MED21	0.000036	DHX58	-0.005577
CCDC138	0.008292	FRMPD4	0.002569	C5orf52	0.000036	GAB1	-0.005580
SLC34A3	0.008292	SMN1	0.002568	DRAP1	0.000036	VASP	-0.005583
NMNAT3	0.008292	OR2A14	0.002567	TCF15	0.000035	SH2D4B	-0.005584

REM2	0.008289	YTHDC2	0.002566	SRP72	0.000035	MAL2	-0.005590
BCL2L10	0.008288	CPSF3	0.002565	CRBN	0.000034	CCDC96	-0.005591
PTPRN2	0.008281	THBS2	0.002562	MAPK14	0.000033	CBX7	-0.005593
LDLRAD3	0.008275	CLCN6	0.002558	GRK6	0.000033	ACPP	-0.005594
TWIST1	0.008271	FMR1NB	0.002558	LY6G5C	0.000033	TLN1	-0.005594
BDH1	0.008268	BAIAP2L1	0.002557	COQ2	0.000031	STK10	-0.005598
LEAP2	0.008256	SLC35B4	0.002556	LAMP5	0.000031	LXN	-0.005601
C1QL3	0.008253	PPP2R2D	0.002556	CHCHD6	0.000030	TMC4	-0.005601
CHN2	0.008249	UGT2B15	0.002556	CAMLG	0.000030	MRAS	-0.005604
PKP2	0.008239	CYP11B1	0.002556	LCE3A	0.000028	TNKS1BP1	-0.005605
LMNB2	0.008237	TAB3	0.002556	MLLT1	0.000027	GSAP	-0.005605
ZNF606	0.008237	TH	0.002555	GIMD1	0.000027	LRMP	-0.005606
ZNF587	0.008235	OR11H12	0.002555	SHMT1	0.000026	GPR68	-0.005606
AGAP4	0.008235	C1orf50	0.002554	STT3A	0.000026	EYA4	-0.005609
CELSR2	0.008233	ZBTB3	0.002552	NPFF	0.000025	ARHGAP25	-0.005609
PSIP1	0.008229	ZNF79	0.002552	FAM32A	0.000023	TMEM220	-0.005612
TBC1D32	0.008222	DDX10	0.002552	FAM134A	0.000023	LIMD1	-0.005615
MYB	0.008217	STRN3	0.002551	DEFB113	0.000021	VSTM2L	-0.005616
DNAJB7	0.008216	ZNF735	0.002549	KCNQ4	0.000021	HAAO	-0.005617
WNT11	0.008211	ARMCX5	0.002549	NEDD8	0.000020	ABHD6	-0.005626
SPATA25	0.008208	SLC37A1	0.002548	TMCO1	0.000020	VAT1	-0.005630
MATN1	0.008203	SMAD5	0.002547	AAMP	0.000019	APOL6	-0.005631
FAXC	0.008201	UTP6	0.002547	SCGB1D4	0.000019	NINJ1	-0.005633
SSUH2	0.008191	PCCB	0.002546	AAK1	0.000019	ETS1	-0.005633
ZNF84	0.008190	MRPL1	0.002546	ZNF853	0.000019	BTD	-0.005634
PGM2L1	0.008189	VMA21	0.002544	YIPF2	0.000018	TOM1	-0.005635
LRRC39	0.008185	PMPCB	0.002543	GTF2H5	0.000017	C12orf49	-0.005637
PABPN1L	0.008185	METTL5	0.002543	PDP1	0.000016	JMJD7	-0.005639
EYA1	0.008183	SAMD4B	0.002543	ERC1	0.000015	PAG1	-0.005640
RELL2	0.008171	PAIP1	0.002543	EHF	0.000014	C19orf84	-0.005641
GATS	0.008169	SFRP1	0.002542	DMRT2	0.000013	ATP1A1	-0.005648
BRI3BP	0.008161	SPG7	0.002541	SLC16A10	0.000012	CAMK1G	-0.005650
GPR27	0.008160	COX19	0.002541	NUDT19	0.000012	CCDC113	-0.005650
NAA40	0.008159	THAP6	0.002539	SLC12A9	0.000009	ASL	-0.005651
CFHR5	0.008158	ABCB7	0.002539	ZPR1	0.000009	PNKD	-0.005653
PAX6	0.008158	CDCA7L	0.002539	RAB3D	0.000009	CARD10	-0.005656
CREBZF	0.008157	TIPRL	0.002537	MVK	0.000009	GLOD5	-0.005659
ZNF83	0.008157	ZMAT1	0.002536	GMPPA	0.000005	F2RL1	-0.005659
TRMU	0.008155	ZNF697	0.002536	TCEAL1	0.000004	CD209	-0.005660
POLA1	0.008150	ARID3A	0.002535	ARX	0.000003	LRRC46	-0.005661
NEMP1	0.008150	MED25	0.002535	CT45A5	0.000003	ISG20	-0.005661

BSX	0.008148	CDK13	0.002535	CT47A12	0.000003	EOGT	-0.005661
ADAM32	0.008146	OR9A2	0.002535	ZNHIT2	0.000002	RASGRP1	-0.005662
C4orf46	0.008146	UQCC3	0.002534	BRMS1	0.000002	FAM107B	-0.005663
E2F3	0.008145	SLC26A8	0.002534	MRPS24	0.000001	ST5	-0.005665
PKD1	0.008145	ASH1L	0.002533	SMIM23	0.000001	ARL4D	-0.005668
IL17RD	0.008138	SNPH	0.002533	SERPINB12	-0.000001	EFNB1	-0.005669
FOXI1	0.008134	MAK	0.002530	MLH1	-0.000001	NUGGC	-0.005669
PLCB4	0.008132	XPO7	0.002529	ANXA13	-0.000001	C1QTNF1	-0.005672
DSP	0.008131	HDHD2	0.002529	IRF6	-0.000002	CSRP1	-0.005675
PROCA1	0.008130	HS3ST6	0.002527	PNO1	-0.000002	AQP2	-0.005682
BHLHA15	0.008130	STAMBPL1	0.002526	DAP3	-0.000002	DENND3	-0.005689
RBM12B	0.008116	OR51M1	0.002526	RBBP9	-0.000002	SLAMF7	-0.005690
C8orf44	0.008113	PPM1N	0.002526	LONRF1	-0.000003	SUCNR1	-0.005694
FJX1	0.008113	SHISA2	0.002526	ADAMTS19	-0.000003	TIPARP	-0.005696
TP53AIP1	0.008110	CMBL	0.002526	MRPL33	-0.000004	CXCR5	-0.005698
ZNF121	0.008109	SYNCRIP	0.002526	SLC30A7	-0.000004	LDHB	-0.005702
TSACC	0.008108	MZT2B	0.002526	SPIRE1	-0.000005	DEFB4A	-0.005704
LRRD1	0.008105	GPHB5	0.002525	LZTS2	-0.000005	SIDT1	-0.005704
GPR88	0.008104	CCDC70	0.002525	NUP98	-0.000005	ACTB	-0.005704
UPF3B	0.008099	KNG1	0.002524	CCDC174	-0.000006	LENG9	-0.005706
ZNF780B	0.008099	CLEC4F	0.002522	KLF16	-0.000006	TRIP10	-0.005707
AGAP6	0.008097	FAM84B	0.002522	CNIH1	-0.000006	ARHGAP29	-0.005710
CYP2E1	0.008086	TMEM68	0.002521	ZMPSTE24	-0.000007	NKX2-1	-0.005711
H2AFY2	0.008079	RFNG	0.002521	TEX33	-0.000007	NAP1L2	-0.005711
ALDH8A1	0.008077	OARD1	0.002521	IFT88	-0.000007	CEACAM1	-0.005712
FAM221A	0.008077	FAM228B	0.002517	NOL3	-0.000007	LGALSL	-0.005719
CEP57L1	0.008077	RGP1	0.002515	DAPK3	-0.000008	MUC5AC	-0.005719
NR5A1	0.008075	TRAF4	0.002515	PDIA4	-0.000009	ELL2	-0.005725
ZNF525	0.008071	BIRC6	0.002515	RAB11A	-0.000010	ARID5B	-0.005728
SPRN	0.008069	GNMT	0.002515	PGRMC2	-0.000010	KRT5	-0.005728
NPIPA1	0.008064	SLC7A13	0.002515	TM9SF4	-0.000010	IL10	-0.005732
WNT8B	0.008061	FAM156B	0.002514	EBP	-0.000010	RNF39	-0.005734
TMEM235	0.008058	PUS1	0.002514	PSMD13	-0.000011	PREX1	-0.005741
RGAG1	0.008048	DYRK1B	0.002514	WDR83OS	-0.000012	RNLS	-0.005742
FOXD2	0.008048	UBALD2	0.002512	PARK7	-0.000012	SYPL2	-0.005745
ATG9B	0.008048	CACNA1H	0.002511	TMEM116	-0.000013	CFAP74	-0.005745
F2	0.008044	ADAD1	0.002511	NDUFA3	-0.000013	RGS9	-0.005746
HAPLN1	0.008041	FAM126B	0.002510	MMP17	-0.000013	WBP1L	-0.005749
GATSL2	0.008039	GFOD2	0.002509	USP17L8	-0.000014	PRRX2	-0.005751
INHA	0.008037	DYNLT1	0.002509	UBP1	-0.000015	FES	-0.005753
IMMP1L	0.008034	ALKBH1	0.002507	SLAIN1	-0.000016	PIK3AP1	-0.005755

PNN	0.008031	POLR3D	0.002506	LCE1A	-0.000017	SLC16A2	-0.005755
EFNA2	0.008029	TIMM17B	0.002506	TRIM7	-0.000017	SLC35C1	-0.005763
CEP250	0.008025	PCBD2	0.002505	SAMM50	-0.000017	GLI1	-0.005764
MAB21L1	0.008021	C5orf22	0.002505	FBXO25	-0.000018	TEAD3	-0.005765
CABP1	0.008011	ACSF3	0.002505	TMEM222	-0.000018	ZC4H2	-0.005766
PAX1	0.008010	ZMYM6	0.002505	MTPN	-0.000019	VAMP3	-0.005766
ADAM20	0.008008	MAFG	0.002504	LRRC10B	-0.000019	THEM5	-0.005767
SPIN3	0.008008	CYLC2	0.002504	CT47A6	-0.000020	CACNA2D4	-0.005768
CRYGS	0.008008	MAGEB1	0.002504	RBM3	-0.000022	SMIM3	-0.005768
EMC9	0.008007	MORC1	0.002503	SSR1	-0.000022	SMIM10L2B	-0.005771
ISLR2	0.008004	OC90	0.002503	ZNF281	-0.000023	PTPRR	-0.005778
ZFHX2	0.008004	LRTOMT	0.002503	PHAX	-0.000023	SLC2A10	-0.005784
HTR6	0.008004	AS3MT	0.002502	GPN3	-0.000024	GALE	-0.005785
OFCC1	0.008003	SRSF9	0.002501	TOX4	-0.000026	PPARD	-0.005786
DNAJC9	0.008003	CD320	0.002501	PDCD4	-0.000026	ETFB	-0.005788
C4orf48	0.007997	TMEM215	0.002501	ANKRD55	-0.000027	ANKRD22	-0.005789
POMC	0.007995	INTS3	0.002499	PYGO1	-0.000032	WNT10A	-0.005790
OCLM	0.007995	CSNK1A1L	0.002498	EAF1	-0.000033	TMEM2	-0.005792
NTNG2	0.007995	MRPS33	0.002498	CDPF1	-0.000033	MRVI1	-0.005793
LUC7L3	0.007992	OR10A2	0.002496	NME4	-0.000035	SFXN3	-0.005794
HIST1H4H	0.007991	CDC16	0.002494	ETFA	-0.000037	SPEF2	-0.005798
SLC26A7	0.007990	CPNE9	0.002493	CTSF	-0.000041	C1orf194	-0.005799
TPBGL	0.007988	TIMM17A	0.002493	TRIM65	-0.000044	MYO1B	-0.005800
KIAA1549	0.007986	PLA2G12A	0.002493	ACYP2	-0.000045	FZD4	-0.005800
NNAT	0.007980	KHDC3L	0.002492	RBCK1	-0.000046	LURAP1L	-0.005802
VWCE	0.007974	FBXW9	0.002492	HCRTR2	-0.000046	STAB2	-0.005803
NKX6-2	0.007971	C16orf46	0.002491	PRPF8	-0.000047	CLECL1	-0.005804
CAPRIN2	0.007967	CLLU1	0.002491	SLC1A5	-0.000048	GLIPR1	-0.005805
FNDC5	0.007966	ZNF416	0.002491	AKR7A2	-0.000049	BLNK	-0.005805
ZNF43	0.007965	AGXT2	0.002491	KRT24	-0.000050	KLRC1	-0.005806
MPP2	0.007964	LRRC56	0.002491	YPEL3	-0.000051	LAP3	-0.005810
MTHFD2	0.007964	TSPY1	0.002490	STX10	-0.000051	SCAMP2	-0.005812
DPH7	0.007963	RFPL4B	0.002490	RPS26	-0.000053	ACY1	-0.005816
CBX8	0.007960	KLHDC10	0.002490	NUTM2D	-0.000055	TNNT2	-0.005822
NREP	0.007959	MYNN	0.002489	PPP1R2	-0.000056	NR3C1	-0.005825
GJC3	0.007957	C7orf62	0.002489	CDC42BPB	-0.000057	RELB	-0.005827
NPB	0.007956	NUDT15	0.002489	RNF123	-0.000057	ATF7IP2	-0.005828
LUC7L	0.007956	ZBTB8A	0.002489	COX18	-0.000060	PHEX	-0.005829
VN1R1	0.007954	G6PC2	0.002489	TBL3	-0.000060	TJP1	-0.005829
PROM1	0.007944	CBFB	0.002489	CDX4	-0.000060	PARK2	-0.005837
UHRF2	0.007941	MAP7	0.002488	LRRC41	-0.000060	POLD4	-0.005838

MAP2	0.007940	SLC17A9	0.002487	MUC12	-0.000061	ABLIM1	-0.005842
RAP1GAP2	0.007939	EIF2AK2	0.002485	PPP1R15B	-0.000061	KLK8	-0.005843
HOXC11	0.007938	TAMM41	0.002485	ATAD1	-0.000061	ATF3	-0.005844
KIF22	0.007937	LARP6	0.002483	HHLA3	-0.000062	GDF15	-0.005847
NUP210	0.007934	CNPY4	0.002482	AFF1	-0.000062	MDFI	-0.005852
CNGA2	0.007934	RAB11FIP4	0.002480	AKAP6	-0.000062	GABRE	-0.005856
ACVR1C	0.007924	CBLC	0.002477	GAB2	-0.000063	HS6ST2	-0.005856
DNMT3A	0.007923	THAP3	0.002477	CD276	-0.000064	TICAM1	-0.005860
ACVR2B	0.007921	RERE	0.002476	SPINT4	-0.000064	C1QTNF2	-0.005870
TRIM73	0.007916	PPWD1	0.002476	CFAP97	-0.000064	RHOH	-0.005873
PCYT1B	0.007915	GCNT1	0.002476	NDUFB2	-0.000064	PCOLCE	-0.005877
DMP1	0.007912	LZTR1	0.002475	USP27X	-0.000066	CHST15	-0.005880
ZNF829	0.007911	SCAI	0.002474	ZCRB1	-0.000067	TBC1D10C	-0.005881
GAL3ST2	0.007910	ABCC10	0.002474	PURA	-0.000069	TRIM8	-0.005882
HEPHL1	0.007909	PLSCR5	0.002473	LRSAM1	-0.000070	TRADD	-0.005887
TPD52	0.007908	TBX22	0.002473	FAM3A	-0.000070	CTAGE4	-0.005892
DHFR	0.007908	CATSPER4	0.002472	PLCXD2	-0.000071	NFKBIZ	-0.005896
MYO7A	0.007902	GPRC6A	0.002471	DNAJC1	-0.000072	GPR141	-0.005904
GOLGA8B	0.007900	SCMH1	0.002470	AP2A1	-0.000073	EFNB2	-0.005907
TTC23L	0.007900	ZNF462	0.002470	CORO2B	-0.000078	WARS	-0.005907
ARL9	0.007898	ZNF691	0.002469	ARSK	-0.000079	ANXA5	-0.005908
KALRN	0.007890	C5orf51	0.002469	USP32	-0.000080	PTPN7	-0.005908
CEP95	0.007883	SFT2D3	0.002467	C3orf62	-0.000080	DUSP3	-0.005910
TLX2	0.007881	GK2	0.002467	INPP5B	-0.000081	SPSB1	-0.005911
ZNF737	0.007879	MBD6	0.002466	ADM	-0.000081	PFKFB3	-0.005914
MEGF11	0.007879	LIN7A	0.002466	FAM122A	-0.000081	SAMD12	-0.005914
LGR4	0.007878	WDR7	0.002466	P4HA1	-0.000082	TAPBPL	-0.005914
TRH	0.007877	STIP1	0.002466	WDR26	-0.000083	PALD1	-0.005915
PTCH2	0.007875	RPTOR	0.002466	ANGPTL6	-0.000084	MOB3C	-0.005917
PRDM12	0.007875	KAT7	0.002465	IL18BP	-0.000085	SLC9A1	-0.005918
PRIM1	0.007869	COPG2	0.002465	DDX3X	-0.000085	KLRK1	-0.005920
ZFP37	0.007866	TMEM242	0.002465	GRWD1	-0.000087	PLEKHA4	-0.005923
BRINP1	0.007861	TPP2	0.002464	RPL7	-0.000088	RNF43	-0.005925
ZDHHC23	0.007857	VEZF1	0.002464	EMG1	-0.000090	PEG3	-0.005929
PTF1A	0.007855	COX11	0.002464	SLC25A25	-0.000091	ANO3	-0.005929
WSCD1	0.007848	DCAF10	0.002463	ANKS6	-0.000092	LHFPL3	-0.005930
DBX1	0.007845	FAM172A	0.002463	OTUD5	-0.000094	CD248	-0.005930
RETNLB	0.007841	IGLL1	0.002462	FAM25C	-0.000094	PLCH1	-0.005941
ZNF550	0.007838	IPPK	0.002460	ALG14	-0.000095	TYMP	-0.005942
SAAL1	0.007832	VPS72	0.002460	NDST2	-0.000096	DNAH6	-0.005943
TTLL2	0.007832	ULBP1	0.002459	LEMD1	-0.000096	TPT1	-0.005943

ZNF273	0.007830	PNLDC1	0.002459	PLB1	-0.000097	GPBAR1	-0.005949
PRAC1	0.007827	FAM50A	0.002456	RTF1	-0.000098	TXNDC11	-0.005949
LTB4R	0.007823	TRIM15	0.002456	ILVBL	-0.000098	AR	-0.005950
CLEC2L	0.007823	C12orf29	0.002455	ZMAT3	-0.000098	EMB	-0.005951
GADD45G	0.007808	SERPINA10	0.002455	USO1	-0.000098	TMEM40	-0.005951
MCM6	0.007806	CCDC38	0.002452	NOL6	-0.000098	SLC44A3	-0.005953
ADAM21	0.007805	ZNF75D	0.002452	MPL	-0.000099	GPR17	-0.005954
TAS2R30	0.007798	KLHL8	0.002451	FAM83G	-0.000099	SASH1	-0.005955
GALNT8	0.007792	SRSF4	0.002451	LAMTOR3	-0.000100	PLA2R1	-0.005955
C12orf75	0.007792	ATP6V0A2	0.002450	SEC22C	-0.000101	ARHGAP20	-0.005957
TFAP4	0.007784	KRT77	0.002450	ERCC5	-0.000101	IRF5	-0.005958
ZNF491	0.007783	OR51L1	0.002449	UBE2Z	-0.000102	PSTPIP2	-0.005964
RFX3	0.007782	EPM2A	0.002448	TMEM217	-0.000103	SLC22A18	-0.005968
MCF2	0.007780	EXD2	0.002445	SMARCA5	-0.000105	SEMA7A	-0.005972
ZNF841	0.007774	PHACTR4	0.002443	IMP4	-0.000105	SEMA3A	-0.005973
CDHR5	0.007772	MECP2	0.002442	FUT2	-0.000106	TAOK3	-0.005973
PNISR	0.007770	HGS	0.002441	ZBTB46	-0.000107	MAP2K3	-0.005975
MC1R	0.007768	CARS2	0.002440	TMEM123	-0.000109	SLC24A3	-0.005975
ZNF382	0.007763	PLCL2	0.002440	DPM3	-0.000110	MT2A	-0.005978
NT5DC3	0.007761	SYMPK	0.002439	TAB2	-0.000111	FABP6	-0.005979
ZNF620	0.007758	INIP	0.002439	CCDC91	-0.000113	ADGRL4	-0.005979
SLC35F3	0.007755	ZNF555	0.002438	EFCAB6	-0.000114	PRDX5	-0.005983
ZNF138	0.007755	CTC1	0.002437	ZNF425	-0.000114	SWAP70	-0.005988
SLC25A21	0.007755	MUC7	0.002437	RFX2	-0.000116	ERRFI1	-0.005992
KCNJ13	0.007751	FSD2	0.002436	BPNT1	-0.000116	ORAI3	-0.005994
MEGF10	0.007749	IRGM	0.002435	NCOR1	-0.000116	ADH6	-0.005995
ANKRD20A3	0.007748	ZNF880	0.002435	MAP3K1	-0.000117	GRAP	-0.005996
OGT	0.007745	RAB24	0.002434	GNB2	-0.000118	OLFML2A	-0.005998
GPSM2	0.007744	COL24A1	0.002434	NENF	-0.000118	MACROD2	-0.005999
GCM1	0.007742	TYR	0.002433	NSRP1	-0.000119	MX1	-0.005999
DSN1	0.007737	HMGA1	0.002432	SYK	-0.000120	GAL3ST1	-0.006001
CCHCR1	0.007736	GPR101	0.002430	PSMC2	-0.000121	BNC1	-0.006001
MAGEB17	0.007733	SIRT1	0.002430	SCO1	-0.000121	RBPMS2	-0.006005
GLRA4	0.007721	SLC25A12	0.002429	GTPBP1	-0.000121	MST1R	-0.006006
DMTF1	0.007717	SPINK2	0.002429	TMEM185B	-0.000122	DENND1C	-0.006008
FAM71F1	0.007714	DZIP1L	0.002429	ZBED3	-0.000123	SQSTM1	-0.006009
CFHR1	0.007697	C19orf43	0.002429	KRT6B	-0.000125	RPH3AL	-0.006012
TMPRSS15	0.007693	DOHH	0.002429	TBC1D3K	-0.000125	FTH1	-0.006015
OXT	0.007690	HHATL	0.002429	SCGB1C1	-0.000125	LAYN	-0.006016
CNTLN	0.007680	C16orf45	0.002429	DUSP22	-0.000126	CXCL11	-0.006018
PARP2	0.007676	FBXO30	0.002428	LIPG	-0.000126	AZU1	-0.006019

B3GNT4	0.007671	ATP13A1	0.002428	LCN1	-0.000126	MYOZ3	-0.006020
SPDYE2	0.007670	TBCA	0.002428	PTDSS1	-0.000126	RGS2	-0.006020
TAC1	0.007668	ACP6	0.002427	ALKBH3	-0.000126	MGAT1	-0.006022
ZNF8	0.007668	CBLL1	0.002426	PI4KB	-0.000126	XKRX	-0.006024
SFXN1	0.007662	FAM186B	0.002426	CCDC146	-0.000127	ADGRL2	-0.006027
MAGEL2	0.007661	SMUG1	0.002425	SPINT2	-0.000128	SLC16A3	-0.006030
SLC23A3	0.007656	REXO1	0.002425	FAM149A	-0.000128	NECAB1	-0.006032
C11orf94	0.007645	DIP2B	0.002423	SEC24B	-0.000130	CCDC8	-0.006037
TRIT1	0.007643	P4HA3	0.002423	RAB6C	-0.000131	OR6K3	-0.006039
DIAPH3	0.007642	RAB40B	0.002423	RAD21L1	-0.000131	CACNA1S	-0.006042
PCNT	0.007640	TMEM17	0.002421	LSM6	-0.000131	RUNX1	-0.006043
TECTA	0.007638	UBE2M	0.002421	TMEM184B	-0.000132	RGS19	-0.006044
GTPBP3	0.007630	PPP1CC	0.002420	PDE8B	-0.000133	SGPP2	-0.006045
FBXO45	0.007630	KAT6A	0.002420	F2RL2	-0.000135	COL12A1	-0.006047
ACOT12	0.007628	BTBD10	0.002419	FBXW11	-0.000135	ITGA9	-0.006049
GFAP	0.007624	NR1D2	0.002419	OR3A1	-0.000136	FMNL1	-0.006051
NHS	0.007623	C8orf46	0.002416	TMEM203	-0.000136	CSGALNACT1	-0.006052
LENG8	0.007623	KRTAP3-3	0.002415	PAPD5	-0.000137	ORAI1	-0.006052
THOP1	0.007612	ABHD17B	0.002413	GAK	-0.000137	GPR4	-0.006053
MICAL3	0.007611	MAGEB2	0.002412	R3HCC1	-0.000138	EXOC3L4	-0.006059
FAM19A4	0.007611	UBE2J2	0.002412	FBXO15	-0.000138	GSTO1	-0.006062
GRIA4	0.007608	FAM162A	0.002412	OAZ2	-0.000139	LAT2	-0.006068
TAS2R4	0.007608	PYGO2	0.002412	ATP6V1E2	-0.000139	NQO1	-0.006068
PLXNB3	0.007605	ECHDC2	0.002411	FER	-0.000139	PEAR1	-0.006072
MDM4	0.007603	BPIFB2	0.002411	TRAPPC4	-0.000140	ATP6V0E1	-0.006077
ZNF530	0.007600	EIF2B4	0.002411	HSFX2	-0.000141	NALCN	-0.006077
ZNF560	0.007598	UBAC1	0.002410	MC2R	-0.000142	GUCA2B	-0.006083
JRK	0.007593	MSL3	0.002410	ARHGAP21	-0.000143	IL13RA1	-0.006085
NPIPB4	0.007593	DCDC2C	0.002409	BRF2	-0.000143	KLRG2	-0.006086
TDP1	0.007592	KATNA1	0.002408	ATIC	-0.000144	SH2D3A	-0.006088
ARVCF	0.007590	GTF3C1	0.002407	DNAJB1	-0.000144	PGM1	-0.006089
RAB6B	0.007587	TRIB3	0.002407	OPN1MW	-0.000145	LTC4S	-0.006093
USH1G	0.007584	OR7A5	0.002406	TOMM20	-0.000146	GRIA1	-0.006094
TMEM132E	0.007583	PFN4	0.002404	ATP8B4	-0.000147	RBMS1	-0.006096
VCX3A	0.007574	RNF169	0.002404	FUT4	-0.000147	ADCYAP1R1	-0.006099
KCNV2	0.007570	AP4B1	0.002404	ADRA2A	-0.000148	ZCCHC5	-0.006108
HTR1A	0.007564	TMX1	0.002404	PEX3	-0.000148	SIDT2	-0.006120
LRP8	0.007563	CCDC89	0.002403	43531	-0.000149	SOX18	-0.006120
GALNT9	0.007557	TMEM57	0.002402	PIGY	-0.000150	PLD3	-0.006121
NAV1	0.007556	COPS3	0.002401	KLRF2	-0.000150	UGT2B7	-0.006125

NUP155	0.007553	C15orf40	0.002400	CALM1	-0.000153	F8	-0.006126
TGFBR3L	0.007549	ZNF703	0.002399	MYO1D	-0.000155	CCL8	-0.006127
VSTM5	0.007547	PURB	0.002399	FIGN	-0.000155	CRYL1	-0.006132
ANKZF1	0.007547	AGTPBP1	0.002399	CMTM4	-0.000156	PTPRM	-0.006132
TBC1D3L	0.007546	HDGF	0.002398	MMGT1	-0.000157	KCNJ16	-0.006133
GJC1	0.007541	ANKRD54	0.002398	DPRX	-0.000158	ATXN1	-0.006136
MS4A8	0.007541	SLC25A45	0.002397	USP43	-0.000158	ASB12	-0.006140
RGS20	0.007539	ATPAF1	0.002397	MTR	-0.000160	TGFB1I1	-0.006146
TAS2R20	0.007536	NPEPPS	0.002397	VPS4A	-0.000161	UBA7	-0.006147
L2HGDH	0.007535	ZNF589	0.002395	BCAT2	-0.000161	ECM2	-0.006148
SLC16A1	0.007534	KMT2D	0.002394	SIK3	-0.000161	MTMR8	-0.006148
ACTL8	0.007533	MRPL37	0.002393	MYCBP	-0.000162	PRR13	-0.006149
CEP76	0.007530	FETUB	0.002393	CDK9	-0.000162	VCL	-0.006150
RBL1	0.007528	CUTA	0.002393	RSG1	-0.000162	LMTK3	-0.006151
PM20D2	0.007528	ZNF646	0.002391	CCDC81	-0.000163	SPTBN1	-0.006151
OTUD7A	0.007527	GNL2	0.002391	PPP1R36	-0.000163	CYB5R2	-0.006153
DQX1	0.007523	C20orf173	0.002391	IST1	-0.000164	ARHGAP15	-0.006159
FHOD3	0.007522	PRMT1	0.002390	PSMA6	-0.000164	GALNT12	-0.006161
FAM156A	0.007518	GOLGA8O	0.002390	RER1	-0.000165	FCMR	-0.006161
MDM1	0.007517	SNRPG	0.002390	AP1M2	-0.000166	43526	-0.006162
RHBG	0.007515	HAT1	0.002389	SLC38A7	-0.000166	HSPG2	-0.006163
DOCK3	0.007513	MAT2A	0.002389	UBE2D1	-0.000167	CD99	-0.006166
HAUS8	0.007505	ENDOV	0.002388	ERICH1	-0.000167	NPNT	-0.006169
OTUD3	0.007505	PGBD3	0.002387	TRIML1	-0.000170	TNFSF15	-0.006182
ZNF177	0.007503	BRCC3	0.002387	C12orf10	-0.000170	GLB1	-0.006183
PLGLB2	0.007500	CCDC59	0.002387	ARHGEF2	-0.000171	C1orf210	-0.006185
REC8	0.007499	EPHB3	0.002385	CCDC25	-0.000171	KCNAB1	-0.006188
KRTAP5-3	0.007497	COX8C	0.002383	ZNF563	-0.000171	KERA	-0.006196
PRR4	0.007496	DYM	0.002383	UPB1	-0.000171	CHSY3	-0.006200
ESRRB	0.007489	SOX13	0.002382	TNFRSF18	-0.000172	TMIGD2	-0.006206
EPHA6	0.007486	NDUFA4L2	0.002382	TBC1D28	-0.000172	DIAPH2	-0.006209
DMC1	0.007486	MANSC4	0.002382	BIN3	-0.000173	PLAC4	-0.006210
SOAT2	0.007485	MTA3	0.002382	ADAMTS16	-0.000174	PRDM1	-0.006210
METTL4	0.007483	PRRT4	0.002382	STXBP1	-0.000175	DMRTC1B	-0.006215
TAS2R38	0.007479	MCM3AP	0.002381	CDC37L1	-0.000179	KLK13	-0.006216
SARM1	0.007469	TUFT1	0.002380	TBC1D17	-0.000180	BTN3A3	-0.006217
ZSCAN1	0.007468	DSC1	0.002379	UPRT	-0.000182	ANTXR1	-0.006223
H2BFM	0.007467	ZFAND1	0.002378	RAB10	-0.000183	CD70	-0.006229
KRTAP5-2	0.007465	TMEM246	0.002378	ODF1	-0.000184	RNF145	-0.006229
LCTL	0.007462	VPS26B	0.002378	B3GLCT	-0.000184	CYP3A5	-0.006237
DLL1	0.007459	PSG6	0.002377	RPE65	-0.000184	NRP1	-0.006240

SMTNL1	0.007457	OTOP2	0.002375	ZFPL1	-0.000184	PRKCH	-0.006245
RIMBP3B	0.007457	CCDC182	0.002375	DDX47	-0.000185	MMEL1	-0.006248
ZWILCH	0.007456	UGT3A2	0.002375	C19orf54	-0.000185	REEP6	-0.006249
GNG8	0.007454	NUDCD2	0.002375	TBCEL	-0.000187	SH3KBP1	-0.006253
SLC7A3	0.007449	CES4A	0.002374	GJB6	-0.000187	RNF135	-0.006259
DHRS13	0.007447	USP11	0.002374	PAFAH1B1	-0.000188	LGALS4	-0.006260
CSAD	0.007445	UBR4	0.002373	ARSG	-0.000189	PPP1R1B	-0.006263
NOP56	0.007435	ZNF596	0.002372	COLGALT1	-0.000192	PLCB2	-0.006266
FAM193B	0.007432	TAC4	0.002371	SRBD1	-0.000194	IKZF3	-0.006268
SOGA1	0.007432	TMEM25	0.002371	PRRC1	-0.000194	PRSS57	-0.006269
ZNF572	0.007431	ZNF768	0.002371	RADIL	-0.000195	OAS1	-0.006272
FGFR1OP	0.007429	MALT1	0.002371	CDC42BPG	-0.000195	SPRYD3	-0.006273
RRM1	0.007424	RALGAPA2	0.002371	NID2	-0.000197	SORBS3	-0.006274
SLX4IP	0.007422	SMIM10L1	0.002370	UVRAG	-0.000197	IQSEC2	-0.006274
TSSK3	0.007421	WAC	0.002370	TESK1	-0.000199	CEBPB	-0.006276
FBXL21	0.007414	CALR3	0.002369	PKN3	-0.000199	BAIAP2	-0.006277
UCP3	0.007413	RAD9B	0.002369	FZD1	-0.000200	CD180	-0.006282
EBF2	0.007413	KANSL1L	0.002368	ADGRG1	-0.000201	METTL7A	-0.006284
ANKRD30BL	0.007411	TIMM13	0.002368	RBMY1F	-0.000202	PARP3	-0.006284
CTU1	0.007410	ATP5L2	0.002368	OCIAD1	-0.000202	TUBB1	-0.006285
ZBTB20	0.007410	POU2F2	0.002367	RAB4A	-0.000203	IL15	-0.006289
DDTL	0.007405	SENP6	0.002365	UBA52	-0.000203	SP110	-0.006289
CEP128	0.007403	PPIL2	0.002365	SLC26A3	-0.000204	LPCAT3	-0.006294
EFCAB13	0.007395	CMIP	0.002365	CLTA	-0.000205	NRK	-0.006296
BTN1A1	0.007393	PPP1R9A	0.002364	OPN1MW2	-0.000205	MYO7B	-0.006296
ZNF749	0.007392	KRTAP3-2	0.002362	SPA17	-0.000205	CD79B	-0.006297
ANO8	0.007392	EPB41L4B	0.002362	MAP3K14	-0.000205	UBASH3B	-0.006300
WDR17	0.007390	ZNF16	0.002361	KIAA0825	-0.000206	RASAL3	-0.006302
CLK2	0.007390	PUM2	0.002360	NF2	-0.000207	FASLG	-0.006305
PBX4	0.007390	H3F3A	0.002360	RASA4B	-0.000207	ENDOU	-0.006305
ARHGAP39	0.007389	PRH2	0.002359	ANKRD34C	-0.000208	GRIK4	-0.006308
HIST1H2BB	0.007388	TEAD1	0.002359	GNAI1	-0.000209	SMAD7	-0.006310
PURG	0.007387	CDK12	0.002358	CACNG1	-0.000210	SLC22A18AS	-0.006314
KIAA1586	0.007386	SLC15A5	0.002356	NDUFB9	-0.000210	CYB5R3	-0.006319
TCTEX1D2	0.007386	CNOT2	0.002354	TAB1	-0.000211	FLI1	-0.006321
USP1	0.007385	DEFB103A	0.002354	AVEN	-0.000212	TRIM21	-0.006323
CKAP5	0.007383	SHROOM1	0.002353	SCN10A	-0.000212	FLT4	-0.006324
METTL11B	0.007379	SLC6A7	0.002353	RIMBP3	-0.000212	SHISA5	-0.006324
TMPRSS11A	0.007376	TCF23	0.002353	C3orf84	-0.000213	EPSTI1	-0.006325
PGF	0.007375	SSTR3	0.002352	MRPL45	-0.000213	REST	-0.006332

PIAS2	0.007375	FAM169B	0.002352	FFAR1	-0.000216	NTN1	-0.006334
KLK4	0.007373	ZCCHC14	0.002351	RFXANK	-0.000216	IFITM10	-0.006335
GNAT1	0.007369	N6AMT1	0.002351	C3orf80	-0.000217	ARID5A	-0.006337
RTEL1	0.007368	ZNF846	0.002351	PGM2	-0.000217	DCANP1	-0.006340
ZNF124	0.007367	DIEXF	0.002350	UBE2F	-0.000218	PSMB9	-0.006341
ZNF680	0.007362	RBM17	0.002350	PITPNC1	-0.000218	OPN3	-0.006341
CENPT	0.007361	ANKRD16	0.002349	ABCF2	-0.000219	OSTF1	-0.006342
SLC25A29	0.007359	KRT81	0.002347	HECTD3	-0.000219	SLC5A7	-0.006342
NPBWR1	0.007357	ZNF19	0.002347	OPN1LW	-0.000219	CFAP45	-0.006343
ZNF85	0.007355	CNTNAP3	0.002344	FAM126A	-0.000221	EPGN	-0.006349
KLK14	0.007355	ACOT11	0.002344	PTHLH	-0.000221	LY6D	-0.006350
PLA2G4D	0.007352	ABCA7	0.002343	ZDHHC4	-0.000221	SIRPG	-0.006351
GPR179	0.007350	CREB1	0.002343	IDI2	-0.000221	ETHE1	-0.006354
ISL2	0.007344	PKP4	0.002342	BBC3	-0.000224	GLIS2	-0.006358
SLC30A8	0.007343	MORC3	0.002342	PADI2	-0.000224	UBASH3A	-0.006361
KLHL17	0.007336	DNAJC11	0.002341	DPP8	-0.000225	IL18RAP	-0.006364
ZNF286B	0.007335	MRPL41	0.002341	DGKQ	-0.000225	MXRA5	-0.006364
MUTYH	0.007334	TMEM39B	0.002341	E2F4	-0.000225	ZNF474	-0.006365
TMEM240	0.007332	MRRF	0.002341	RNF170	-0.000227	TUBB6	-0.006369
MSH6	0.007329	USP46	0.002340	OMA1	-0.000229	KIR2DS4	-0.006369
LRRC37A	0.007326	CCDC158	0.002338	ABHD13	-0.000230	AIM1	-0.006371
ALG1L	0.007321	ZNF561	0.002337	LPCAT4	-0.000233	RBKS	-0.006372
CYP26A1	0.007320	SRGAP2	0.002337	B3GALNT1	-0.000233	PXMP4	-0.006375
STOX1	0.007318	TDRD1	0.002335	ANKMY2	-0.000234	MYBPHL	-0.006378
SMAD9	0.007317	KPRP	0.002335	DEFB131	-0.000234	SMAD3	-0.006382
CYP46A1	0.007316	UTP23	0.002335	SEC22B	-0.000234	TM4SF19	-0.006383
NPY	0.007315	AP5Z1	0.002335	EP300	-0.000235	HES2	-0.006384
TMEM262	0.007312	PARP6	0.002335	PIK3CB	-0.000235	RNH1	-0.006385
SYT11	0.007310	NELFA	0.002334	HERC3	-0.000236	ACSL4	-0.006387
PKD1L3	0.007309	NRL	0.002333	PEX16	-0.000237	BCAR3	-0.006387
SFI1	0.007304	GAGE12J	0.002330	SSU72	-0.000237	C1orf198	-0.006388
EDRF1	0.007302	HYDIN	0.002330	FAM151B	-0.000237	RAET1E	-0.006389
TTC32	0.007302	GAB4	0.002328	CCDC102B	-0.000237	LITAF	-0.006400
CDK5RAP3	0.007301	USP22	0.002327	PDE8A	-0.000238	IRAK2	-0.006401
PRL	0.007296	ASTE1	0.002326	BMPR1A	-0.000240	UBD	-0.006404
SYNGAP1	0.007295	TOP2B	0.002325	RBM7	-0.000240	MSMO1	-0.006408
SETBP1	0.007294	OR52A5	0.002325	FN3K	-0.000240	MFAP3L	-0.006409
MIS18A	0.007294	PKN1	0.002325	VPS35	-0.000241	SYT3	-0.006410
SPEG	0.007292	MT-CO3	0.002324	IKZF2	-0.000241	TMEM133	-0.006410
C1QTNF3	0.007290	UBQLN3	0.002324	RMDN1	-0.000241	AGTRAP	-0.006413
CRP	0.007286	MAEL	0.002324	DUPD1	-0.000242	GPC5	-0.006419

SYT9	0.007286	IPO13	0.002323	UACA	-0.000242	HLA-A	-0.006421
CNBD2	0.007285	FRA10AC1	0.002321	NBEAL2	-0.000242	NAB2	-0.006422
OTOR	0.007283	TRMT61A	0.002321	BET1	-0.000243	SLC43A2	-0.006424
ZNF473	0.007275	ADAM30	0.002321	FAM170B	-0.000243	LRRC43	-0.006424
FNDC9	0.007275	ARFGEF1	0.002320	URM1	-0.000243	APOE	-0.006425
PHF19	0.007275	APOA4	0.002320	CRCT1	-0.000244	LAX1	-0.006430
CLASRP	0.007273	PLIN4	0.002319	LAMTOR5	-0.000245	CRB3	-0.006433
ZDHHC13	0.007271	MED6	0.002319	GLRB	-0.000245	TMEM64	-0.006436
C8orf86	0.007271	RBPJL	0.002319	RPP25L	-0.000247	C4orf32	-0.006439
NUDT11	0.007268	LETMD1	0.002319	GOLGA4	-0.000249	STK17B	-0.006441
ZNF292	0.007268	C1QTNF8	0.002318	GUCY1B3	-0.000250	CYP4Z1	-0.006446
BEST2	0.007266	HDAC8	0.002318	TP53RK	-0.000250	TCTE1	-0.006446
NARF	0.007265	MED9	0.002318	SLC25A4	-0.000251	CHRM2	-0.006446
WDR72	0.007264	WDR20	0.002318	UBE2J1	-0.000251	C1QTNF5	-0.006447
43720	0.007259	NPY2R	0.002318	ZNF592	-0.000251	FAM167A	-0.006449
POLG2	0.007257	MRPS21	0.002316	FBXO18	-0.000251	DNAAF1	-0.006449
CCDC73	0.007251	OR52H1	0.002315	PTGFRN	-0.000252	B3GNT6	-0.006451
SNRNP70	0.007250	MUC2	0.002315	KLLN	-0.000252	RNF212	-0.006455
BEX2	0.007245	GPS1	0.002315	HMGCR	-0.000252	RIN1	-0.006460
OXCT1	0.007245	IPO4	0.002315	METTL13	-0.000252	PDCD1	-0.006461
GFI1	0.007240	GPD2	0.002315	DLD	-0.000253	CMTM8	-0.006465
IL17A	0.007236	MC3R	0.002314	SCFD2	-0.000253	HGD	-0.006466
ZNF569	0.007232	KBTBD7	0.002314	COX7A2L	-0.000253	H6PD	-0.006469
FANCM	0.007228	KRTAP10-3	0.002313	ATP6V1G1	-0.000253	CMTM2	-0.006469
LIME1	0.007227	INPP4A	0.002313	DEDD	-0.000255	RMDN3	-0.006473
HAUS6	0.007227	AHDC1	0.002313	DHX38	-0.000260	ID1	-0.006476
SCN3B	0.007226	SLC39A10	0.002313	CCDC94	-0.000261	IGFALS	-0.006477
GSX1	0.007223	TLR9	0.002312	SPTLC1	-0.000262	KIR2DL1	-0.006478
OPCML	0.007223	SCNM1	0.002312	DHX29	-0.000263	P2RX7	-0.006481
DDIAS	0.007221	DRD3	0.002312	RIMS1	-0.000263	ACKR2	-0.006481
DTX3	0.007220	CHAMP1	0.002311	MTFMT	-0.000264	EXD1	-0.006483
PKD2L2	0.007218	ATP2B1	0.002311	WDR44	-0.000264	IFT57	-0.006484
ABCG5	0.007218	PUM1	0.002309	ATP5E	-0.000267	EZR	-0.006487
ZNF81	0.007217	FUNDC1	0.002309	PGA4	-0.000268	NXN	-0.006491
ANO9	0.007216	COL5A3	0.002308	ZNF32	-0.000268	TTC7A	-0.006492
TIA1	0.007215	OR8B2	0.002308	RYR2	-0.000270	ASAP3	-0.006493
SLC26A6	0.007214	DHX37	0.002307	CIAPIN1	-0.000270	LDLRAD2	-0.006494
GLRA2	0.007212	LYPD6B	0.002307	TBC1D3G	-0.000270	HS3ST2	-0.006497
SLC35G2	0.007211	TATDN1	0.002307	SPINT3	-0.000270	CNTN1	-0.006501
CDH4	0.007211	HIST3H3	0.002306	TCF4	-0.000271	OTUD1	-0.006501
GRPR	0.007206	FRG2C	0.002306	PDP2	-0.000271	SULT1A1	-0.006502

RFPL2	0.007203	FAM220A	0.002306	RPS27A	-0.000272	PPP2R5A	-0.006514
PLCB1	0.007201	FAM127B	0.002305	COMMD7	-0.000273	CFAP99	-0.006515
RFX8	0.007200	PRKD1	0.002305	WFDC9	-0.000273	RYR1	-0.006517
GREM1	0.007197	ZSCAN5B	0.002305	FAM69A	-0.000274	KANK2	-0.006518
NINL	0.007196	DCAF7	0.002305	STYX	-0.000274	IFI44L	-0.006521
HOXB4	0.007194	MAPK10	0.002304	HMCN2	-0.000274	SYDE1	-0.006530
ANKRD26	0.007193	TRIM49	0.002304	SPANXA1	-0.000275	MMP15	-0.006531
PIRT	0.007187	PPP2R5E	0.002304	ZNF454	-0.000276	PRRG4	-0.006533
CCDC62	0.007186	TBL1X	0.002303	PMF1	-0.000276	JADE2	-0.006534
ZNF675	0.007185	KRTAP10-9	0.002303	CXCL13	-0.000277	CASP4	-0.006534
SLC6A3	0.007185	OSBPL7	0.002302	C1orf43	-0.000281	ZDHHC3	-0.006537
AFP	0.007184	ERCC3	0.002302	CASP9	-0.000282	KIF17	-0.006538
EFHC1	0.007177	NKAIN4	0.002301	COL28A1	-0.000283	NCOA7	-0.006541
ZNF91	0.007175	URI1	0.002301	GCA	-0.000283	PPM1M	-0.006543
XKR6	0.007175	RHEB	0.002300	CLDND2	-0.000285	GJA4	-0.006548
PLXNA3	0.007175	KPNA1	0.002299	ITM2C	-0.000286	TNFRSF13B	-0.006552
HOXC5	0.007174	RLBP1	0.002299	TOMM40L	-0.000289	ZNF385D	-0.006554
SLC13A5	0.007168	UBXN2A	0.002299	IDE	-0.000290	PTGIR	-0.006555
CDKL4	0.007167	DEFB103B	0.002299	RRP7A	-0.000291	C1RL	-0.006556
SLC3A1	0.007161	TGM6	0.002298	ZNF552	-0.000291	PBXIP1	-0.006556
SEC14L5	0.007160	GORAB	0.002297	CRH	-0.000292	TTC22	-0.006556
ZNF605	0.007159	TTC37	0.002297	SPATA19	-0.000292	PCDH7	-0.006556
ZNF141	0.007157	CARD18	0.002296	TMEM176A	-0.000292	VSIG10L	-0.006560
TDG	0.007155	OR52B2	0.002296	SMPD2	-0.000295	BGN	-0.006566
FAM229A	0.007154	RGPD6	0.002295	CABP5	-0.000295	AKAP13	-0.006568
FAM131B	0.007153	ANKRD17	0.002295	RNF7	-0.000295	LYL1	-0.006569
NPIPA8	0.007153	RAB3GAP2	0.002294	ADPRM	-0.000296	FBXO6	-0.006572
EPB41	0.007151	PPP1R14D	0.002294	NUTF2	-0.000296	KCNE1	-0.006579
TBC1D29	0.007148	ABCB4	0.002294	ITPK1	-0.000297	FOXO1	-0.006584
SLC35G6	0.007148	MTRNR2L6	0.002293	L3MBTL2	-0.000298	ADCY4	-0.006593
SHPRH	0.007146	SNAP47	0.002292	CYP2J2	-0.000298	ATP2B4	-0.006596
TMEM158	0.007146	IFT20	0.002290	BAP1	-0.000300	TLR1	-0.006599
MAGEA4	0.007145	PRR34	0.002290	GRHL2	-0.000300	MAN1A1	-0.006600
MCIDAS	0.007134	OR11L1	0.002289	ADAMTS5	-0.000301	ADGRE2	-0.006600
C2orf66	0.007132	RAP2A	0.002288	TRIM35	-0.000301	CTDSPL	-0.006601
MNS1	0.007130	FAM153A	0.002288	MYH8	-0.000301	SAA1	-0.006609
CTPS1	0.007130	ALDOB	0.002287	PDE1A	-0.000301	SOWAHD	-0.006614
TUBB2A	0.007130	HCFC2	0.002287	DNAH7	-0.000302	EHD4	-0.006617
FANCC	0.007127	C8orf76	0.002286	TRIM26	-0.000303	SRXN1	-0.006633
ZNF443	0.007123	ARL3	0.002285	ADA	-0.000304	KIAA0513	-0.006634
STK32A	0.007122	PITHD1	0.002285	TCHH	-0.000305	MEOX1	-0.006635

RBM4B	0.007121	DMXL1	0.002284	PSMA8	-0.000305	ADCY9	-0.006636
NWD1	0.007121	TRAPPC9	0.002284	GAPVD1	-0.000307	TPST2	-0.006636
RPL3L	0.007119	SCAPER	0.002283	LARP4B	-0.000308	SUCLG2	-0.006645
ZNF607	0.007119	NOC3L	0.002283	WBP4	-0.000308	MS4A14	-0.006648
TMTC4	0.007112	ZC3H14	0.002283	ATP5SL	-0.000308	MS4A6A	-0.006657
ZNF417	0.007112	SLC22A25	0.002283	DDX24	-0.000309	FGF2	-0.006659
EFCAB7	0.007109	HYPM	0.002282	TNRC18	-0.000310	SLC37A2	-0.006660
VCX	0.007103	THEGL	0.002281	MRPL49	-0.000312	EVA1C	-0.006661
MTRNR2L3	0.007103	PABPC3	0.002280	EIF1B	-0.000313	CXCL8	-0.006661
SPATS2	0.007103	METTL2A	0.002280	VASH1	-0.000315	IRAK3	-0.006664
LY6H	0.007102	BSPRY	0.002280	PNLIPRP2	-0.000316	ARHGAP24	-0.006668
CBX1	0.007099	SUPV3L1	0.002280	ANKRD35	-0.000317	TSPAN7	-0.006668
RDH16	0.007097	KLHDC2	0.002279	DESI2	-0.000318	DDX43	-0.006671
ZNF497	0.007084	CABS1	0.002279	ALKBH5	-0.000320	NUCB1	-0.006672
G2E3	0.007083	FBXO47	0.002279	GRHPR	-0.000320	CHP2	-0.006677
BCL2	0.007080	SMYD2	0.002278	MRPL23	-0.000321	CHRNA2	-0.006677
CERS6	0.007080	MCUR1	0.002278	TRPC4AP	-0.000321	LGALS9B	-0.006677
SLC2A1	0.007077	CXorf40B	0.002278	FBXO38	-0.000321	HPCAL1	-0.006677
ZCCHC11	0.007075	YY1	0.002277	STC1	-0.000323	CCNJL	-0.006681
PRR3	0.007075	SOX10	0.002277	SPANXC	-0.000323	MSMB	-0.006684
SYCP3	0.007073	ABCB11	0.002276	CLEC16A	-0.000324	MEOX2	-0.006687
MYH6	0.007067	CTAGE1	0.002276	SNX27	-0.000324	TMEM102	-0.006693
PLAC8L1	0.007065	SH3PXD2A	0.002274	FAM214A	-0.000326	S100A2	-0.006693
ILF3	0.007065	NDRG3	0.002274	MT1B	-0.000330	RORC	-0.006696
CMTM1	0.007062	AOC2	0.002273	PRKAG2	-0.000331	NOTUM	-0.006696
UCN	0.007058	XRRA1	0.002273	PAOX	-0.000332	FAM212A	-0.006698
SLC7A1	0.007051	SOS2	0.002273	SH3PXD2B	-0.000332	ITIH2	-0.006699
BUB3	0.007050	HTN3	0.002272	CNEP1R1	-0.000332	IQGAP2	-0.006702
NPIPB6	0.007045	RBM18	0.002271	SULT1A3	-0.000332	PCTP	-0.006703
TBX15	0.007044	ULK2	0.002270	SPG11	-0.000332	SOST	-0.006711
SV2C	0.007040	MDP1	0.002270	ZNF608	-0.000334	ITPRIPL2	-0.006712
KHDC1L	0.007040	C6orf52	0.002270	IFNA1	-0.000334	CDC42EP2	-0.006714
MTA1	0.007039	BAG4	0.002270	SEC14L1	-0.000334	SLC6A9	-0.006719
CCNA1	0.007038	USP36	0.002269	EIF3H	-0.000335	C6orf118	-0.006720
CNNM1	0.007038	ZBTB49	0.002269	PRR16	-0.000337	GAS2L1	-0.006721
SAC3D1	0.007032	RBM12	0.002268	DDR1	-0.000337	PSAP	-0.006723
KLHL11	0.007032	KDM4C	0.002268	PRKAA1	-0.000337	LAIR2	-0.006725
GABBR1	0.007031	KLHL22	0.002267	SLC30A5	-0.000338	UNC5C	-0.006726
PTPRT	0.007029	FAM212B	0.002267	SPANXA2	-0.000339	KIF13A	-0.006728
CREB3L4	0.007024	POTEB3	0.002266	SMIM15	-0.000339	DRC1	-0.006729
SLC25A34	0.007022	C2orf68	0.002266	CHMP7	-0.000340	NOS3	-0.006735

LRR1	0.007022	LETM2	0.002266	FAM58A	-0.000342	ABHD14B	-0.006735
GAS2	0.007020	BBS10	0.002266	RNF41	-0.000343	AMN	-0.006737
LSMEM1	0.007017	LGI1	0.002266	REEP4	-0.000343	FAM49A	-0.006743
TRIM74	0.007016	IL5	0.002265	AP2M1	-0.000344	CYP4X1	-0.006743
NXPH2	0.007015	LACE1	0.002264	SOCS6	-0.000345	ENPP6	-0.006762
CIB2	0.007013	TBC1D12	0.002264	HIPK1	-0.000345	RHOC	-0.006764
CABLES2	0.007011	ICK	0.002264	ART3	-0.000347	RIMBP3C	-0.006767
LMAN1L	0.007010	NDUFB11	0.002263	PDIA6	-0.000347	ESR1	-0.006774
GC	0.007010	CNNM2	0.002263	ALKBH7	-0.000347	MEF2C	-0.006778
TMEM132B	0.007002	MS4A18	0.002263	CALM2	-0.000348	M1AP	-0.006778
GCH1	0.007000	C12orf45	0.002260	ZFYVE1	-0.000349	WFDC5	-0.006781
POC1A	0.006998	SOX3	0.002260	SLC35A3	-0.000350	PNPLA4	-0.006782
PIPOX	0.006997	CMC4	0.002259	SLC25A37	-0.000350	WFIKKN2	-0.006784
BARHL2	0.006994	DNAJC27	0.002258	SULT1E1	-0.000350	PDLIM4	-0.006788
CCDC175	0.006994	KLHL12	0.002258	CTNND2	-0.000350	ACTA2	-0.006790
MBTD1	0.006994	IFITM5	0.002257	RRP12	-0.000350	RAB34	-0.006791
GIGYF1	0.006994	TMTC3	0.002256	TM9SF3	-0.000352	AMBP	-0.006795
ZNF345	0.006991	NOL10	0.002255	ANKRD28	-0.000353	DLX4	-0.006796
RASD2	0.006988	CASC3	0.002255	BRDT	-0.000354	C11orf70	-0.006798
EGLN3	0.006988	IFNL4	0.002254	ISOC1	-0.000355	CCL4	-0.006801
CRB1	0.006988	MAGOH	0.002254	RPS2	-0.000358	SIGLEC12	-0.006804
SOX12	0.006987	OR4F17	0.002253	SMURF2	-0.000358	LDLRAP1	-0.006805
HIST1H2BD	0.006981	TAT	0.002252	WHAMM	-0.000359	COL8A2	-0.006806
ZAR1	0.006980	MORN3	0.002252	TBC1D3F	-0.000359	43526	-0.006810
UQCC2	0.006979	CDC27	0.002251	THEM4	-0.000360	TNS2	-0.006814
CHORDC1	0.006973	SPDYE3	0.002250	AEN	-0.000361	CAPN2	-0.006820
SYCP2L	0.006972	ANKS4B	0.002249	NDUFS4	-0.000361	SLC44A2	-0.006823
PCGF3	0.006971	TRPM7	0.002249	TP53INP2	-0.000362	PDE4C	-0.006830
LZTS1	0.006968	ZNF205	0.002246	HIGD1A	-0.000362	CMTM5	-0.006830
CFAP44	0.006967	ATG14	0.002244	HAND1	-0.000362	ADORA3	-0.006831
FOXA1	0.006962	RAX2	0.002244	GAR1	-0.000363	TDRD9	-0.006832
DEK	0.006959	SMARCE1	0.002244	TIMMDC1	-0.000363	PLA2G15	-0.006837
GDPD4	0.006958	C19orf47	0.002243	TRIM69	-0.000363	CD27	-0.006841
ARL10	0.006956	TPGS2	0.002243	RNF26	-0.000363	DPP6	-0.006848
LRRC37B	0.006956	FAAP20	0.002242	AEBP2	-0.000364	FOXA2	-0.006852
C22orf42	0.006950	TGDS	0.002242	UBE2D3	-0.000364	TMEM109	-0.006853
C6orf141	0.006949	CLOCK	0.002242	FUT1	-0.000365	FGD2	-0.006858
ANKRD24	0.006949	NME2	0.002242	RPL23A	-0.000365	GNG12	-0.006858
KLHL31	0.006947	RAB19	0.002242	KLK9	-0.000365	IFI16	-0.006860
SGCZ	0.006946	CSNK1G1	0.002241	OPA3	-0.000366	CXCR6	-0.006860
ZNF112	0.006940	ABCC12	0.002241	RPUSD3	-0.000366	IL6ST	-0.006861

GPR22	0.006937	ROR2	0.002241	SRA1	-0.000367	LMNTD1	-0.006862
ASIC1	0.006935	PAAF1	0.002241	IFNLR1	-0.000368	LANCL3	-0.006871
FSCN3	0.006932	TOPAZ1	0.002240	NBAS	-0.000368	C22orf23	-0.006872
PABPC1L2B	0.006931	PAPOLG	0.002239	ZFYVE26	-0.000368	STARD13	-0.006875
BEND3	0.006929	RPF2	0.002239	COBL	-0.000369	FMO1	-0.006876
CITED1	0.006928	ME2	0.002239	MMP3	-0.000369	HEBP1	-0.006885
SLC26A5	0.006927	LEF1	0.002239	SMCR8	-0.000370	PARD6B	-0.006891
ZNF266	0.006925	C16orf95	0.002238	SLC34A1	-0.000371	TMEM88	-0.006893
HTR5A	0.006924	FAM110B	0.002237	RNASE13	-0.000371	PSMB10	-0.006895
HILPDA	0.006922	GPN2	0.002235	UQCR11	-0.000371	ZEB2	-0.006895
TP53TG3C	0.006920	CBX4	0.002233	PLS1	-0.000372	PAK6	-0.006897
POPDC3	0.006919	POLR2K	0.002233	NUDT12	-0.000372	ST6GALNAC4	-0.006899
DEPDC4	0.006911	MYL5	0.002233	SNX5	-0.000372	PLAT	-0.006902
TAS2R3	0.006904	CILP2	0.002232	MDH2	-0.000373	CYP4F12	-0.006909
FAM184B	0.006893	CYB5R4	0.002231	MB21D2	-0.000373	RAB11FIP5	-0.006916
RNPC3	0.006893	FOXD4L6	0.002230	C4orf33	-0.000377	ACSM1	-0.006918
RGS11	0.006892	AMY2A	0.002230	TUBA1C	-0.000377	GLP2R	-0.006918
CNGA3	0.006891	GLTPD2	0.002230	GKN1	-0.000377	PLAU	-0.006918
ZNF648	0.006889	UCP1	0.002229	RPL24	-0.000377	GABARAPL1	-0.006920
CBWD7	0.006888	LGR5	0.002228	EPHA4	-0.000378	IFI35	-0.006921
FAN1	0.006883	ATXN7L1	0.002227	XRCC4	-0.000378	SPRY4	-0.006921
NTSR2	0.006883	RPUSD1	0.002227	MMD	-0.000379	TRIM16	-0.006923
CTCFL	0.006881	TRPV3	0.002227	PAPD4	-0.000379	HTR2A	-0.006923
STK36	0.006877	STX17	0.002226	HMGCS1	-0.000380	SYNGR2	-0.006926
SHC2	0.006875	ARL5C	0.002226	HINT3	-0.000383	SUMF1	-0.006929
CDK19	0.006871	PPID	0.002226	EIF3G	-0.000384	TMEM232	-0.006934
ZFP62	0.006870	C6orf203	0.002225	PPP2R2A	-0.000384	CD83	-0.006935
TSPYL4	0.006869	ZNF414	0.002223	ASNA1	-0.000384	ANKRD2	-0.006937
HSF2	0.006869	GLYCTK	0.002221	C4orf47	-0.000386	ST6GALNAC2	-0.006945
SLC38A1	0.006868	CHKA	0.002221	TPM1	-0.000386	PRTG	-0.006947
CNTF	0.006863	NSUN3	0.002220	TMEM11	-0.000387	CYTH4	-0.006953
DCAF4L1	0.006853	RPUSD4	0.002220	OR2A1	-0.000388	SH3BP5	-0.006957
KLF14	0.006852	RMND1	0.002220	RPS5	-0.000388	RETSAT	-0.006957
43530	0.006843	KDM4D	0.002220	SLC2A13	-0.000388	FMN1	-0.006962
GPR152	0.006841	DNAL1	0.002218	FA2H	-0.000388	MYH14	-0.006967
FSTL4	0.006839	PRKACB	0.002217	FAM175B	-0.000388	GBGT1	-0.006969
DCAF16	0.006838	SPATA31D4	0.002217	C16orf78	-0.000388	PRR29	-0.006970
ALS2CR11	0.006837	KAT6B	0.002217	BCL2L2	-0.000389	CYP1B1	-0.006971
PLA2G4B	0.006836	ANO7	0.002217	CCDC155	-0.000389	SPSB2	-0.006973

KLF12	0.006836	YRDC	0.002216	MYLIP	-0.000389	SP100	-0.006973
CHD6	0.006835	ZNF645	0.002216	MYL1	-0.000389	APOBEC3H	-0.006973
MST1	0.006835	RECQL	0.002215	CPEB1	-0.000390	SLC16A11	-0.006974
AGAP9	0.006831	FAM91A1	0.002215	GPR18	-0.000390	PDGFB	-0.006975
ERICH6B	0.006831	VIPAS39	0.002215	GALNT13	-0.000392	EMILIN2	-0.006983
APOA2	0.006828	PPIL1	0.002214	AATF	-0.000392	UBL3	-0.006983
ZNF460	0.006824	JMJD6	0.002214	GOLPH3L	-0.000393	LPAR5	-0.006984
KAT2A	0.006822	OR56A4	0.002213	FBRS	-0.000393	CFAP46	-0.006989
CCSAP	0.006820	UBE2I	0.002212	MT-ND2	-0.000396	P4HA2	-0.006989
MAFA	0.006817	GADD45GIP1	0.002210	RTFDC1	-0.000396	GBP1	-0.006994
UNG	0.006817	OR10A4	0.002209	ALKBH8	-0.000397	KCNK6	-0.006997
HIST1H2BI	0.006813	DECR2	0.002208	ATG2A	-0.000397	TXNIP	-0.007001
RAD52	0.006812	DACH1	0.002203	TINF2	-0.000398	GCHFR	-0.007001
TAS2R14	0.006812	MFSD3	0.002202	CPB1	-0.000401	TRIB1	-0.007004
HDAC2	0.006811	ZDHHC14	0.002202	BPGM	-0.000401	IQSEC3	-0.007007
NLGN4X	0.006806	ZNF98	0.002201	DDX21	-0.000401	CHRM3	-0.007008
UBN2	0.006804	CCDC134	0.002201	TAF3	-0.000401	SMIM1	-0.007014
CLCN2	0.006803	FABP2	0.002200	OR6N1	-0.000402	ANKRD45	-0.007014
KIF4B	0.006802	R3HDM2	0.002199	ATG9A	-0.000403	PRNP	-0.007019
GLMN	0.006799	HIST1H2BC	0.002199	PPP2R1A	-0.000403	IL1RAP	-0.007024
USP37	0.006798	CASP14	0.002198	SUPT6H	-0.000404	FAM78A	-0.007026
HMGN2	0.006793	FNIP1	0.002198	SNX29	-0.000405	CEBPE	-0.007027
CHST5	0.006793	C2orf16	0.002197	FAM160A1	-0.000405	OR2A7	-0.007031
HOXB6	0.006792	SLC22A11	0.002197	RPLP0	-0.000406	QKI	-0.007034
FAM76B	0.006791	NEK4	0.002197	ANXA10	-0.000406	LGALS9C	-0.007034
DCST2	0.006790	LRRCC1	0.002196	WASL	-0.000407	GPX1	-0.007036
SH3D21	0.006790	LYRM4	0.002196	RPN1	-0.000407	SPIB	-0.007043
FAM122B	0.006787	PHF3	0.002195	C19orf53	-0.000409	TEAD2	-0.007046
GALNT16	0.006785	PRRT1	0.002195	PLEKHH2	-0.000410	CMTM7	-0.007051
MCM3	0.006783	STAR	0.002195	TIMM22	-0.000410	ARHGEF5	-0.007053
ZNF254	0.006779	NUCB2	0.002195	CD300LD	-0.000411	ZBTB4	-0.007054
ENC1	0.006774	MED13	0.002195	MLF2	-0.000413	PON2	-0.007058
ZNF774	0.006773	SLC25A51	0.002194	KLHL18	-0.000413	GAS6	-0.007061
ZNF26	0.006773	C11orf57	0.002193	PNLIPRP3	-0.000414	TMEM106A	-0.007062
ZNF700	0.006772	NIT2	0.002192	MAP1S	-0.000415	CYP24A1	-0.007066
ECE2	0.006768	FN3KRP	0.002191	PPP1R10	-0.000416	KIAA0040	-0.007073
TMEM59L	0.006766	SLC4A9	0.002191	MAX	-0.000417	NAT1	-0.007074
SORD	0.006764	NARFL	0.002190	CLCN1	-0.000417	DAAM2	-0.007076
VRK1	0.006758	GDAP2	0.002190	PXDN	-0.000417	CARD11	-0.007078
PRKDC	0.006757	CXorf67	0.002189	NT5C2	-0.000417	INPP5D	-0.007080

UBXN7	0.006756	MED12	0.002188	TRIML2	-0.000417	TIMD4	-0.007082
RALGPS1	0.006755	TDP2	0.002186	NME3	-0.000418	C20orf202	-0.007083
GJD2	0.006752	RBM4	0.002186	SSNA1	-0.000418	PM20D1	-0.007085
C7orf33	0.006751	FAM231C	0.002185	TBC1D25	-0.000419	KDELR3	-0.007085
NOS1AP	0.006750	PAM16	0.002185	MRPL28	-0.000419	PAEP	-0.007086
MTRNR2L8	0.006745	DTWD1	0.002184	RRS1	-0.000419	VASN	-0.007092
SNRNP48	0.006738	TFDP3	0.002182	RSPH3	-0.000420	ENTPD3	-0.007093
KIF21B	0.006737	DGAT2L6	0.002182	IWS1	-0.000420	GNAI2	-0.007096
ZNF814	0.006736	ZBTB34	0.002182	TAOK2	-0.000420	TMIE	-0.007098
WRAP73	0.006727	ALOX12	0.002181	RPL41	-0.000421	MT-ND6	-0.007099
FAM163A	0.006722	THNSL1	0.002181	TMEM165	-0.000421	CAST	-0.007100
MYSM1	0.006718	CCER1	0.002181	DNAJC8	-0.000421	CREG1	-0.007103
HSPA4L	0.006716	SULT1C3	0.002180	EI24	-0.000422	RGL1	-0.007110
RGPD3	0.006715	HSPA6	0.002179	EHHADH	-0.000424	CST3	-0.007115
GPR37L1	0.006714	PIM1	0.002179	UTP14C	-0.000424	AMOTL2	-0.007117
FBLN7	0.006710	ASIP	0.002178	PLD5	-0.000424	NUPR1	-0.007118
DCUN1D2	0.006709	NUAK2	0.002178	TMED2	-0.000424	43718	-0.007119
BTBD3	0.006708	PHC3	0.002178	C20orf141	-0.000425	MN1	-0.007119
CFHR4	0.006707	PYY	0.002177	RBMXL1	-0.000425	P2RY1	-0.007125
HIST1H1T	0.006707	PPP6R3	0.002177	PRKAG1	-0.000426	RTKN2	-0.007128
KCNK2	0.006705	ZSWIM1	0.002177	RNF225	-0.000427	MARVELD1	-0.007130
CPSF6	0.006704	CKM	0.002177	RPL18A	-0.000428	PPP1R42	-0.007134
FGF9	0.006700	VPS52	0.002177	NICN1	-0.000428	BCL6B	-0.007134
ADAMTSL1	0.006698	FOXD4L1	0.002177	EXOC8	-0.000429	ABCB1	-0.007138
STRBP	0.006686	C10orf53	0.002177	TUBGCP2	-0.000430	PREX2	-0.007138
SLC15A1	0.006685	LDB3	0.002176	DNM2	-0.000430	AICDA	-0.007139
ADM2	0.006680	NKIRAS2	0.002176	CERKL	-0.000431	FRMD4B	-0.007147
GRK7	0.006676	MAN2C1	0.002176	CANX	-0.000432	EMILIN1	-0.007160
RIT2	0.006672	ZNF717	0.002175	CRYBB2	-0.000432	TRIM63	-0.007160
ZNF10	0.006671	43719	0.002175	CKLF	-0.000433	SUSD3	-0.007165
ZNF227	0.006669	MAEA	0.002175	THAP4	-0.000434	PLA2G3	-0.007165
KIAA1841	0.006665	FXYD2	0.002175	LRFN1	-0.000434	CD80	-0.007166
ZBTB26	0.006663	SNW1	0.002175	HOXA7	-0.000435	PCDH1	-0.007172
ZNF567	0.006663	TAS2R7	0.002175	MROH2A	-0.000435	ST6GALNAC6	-0.007176
C10orf71	0.006662	TBC1D3D	0.002173	C6orf89	-0.000435	MYD88	-0.007178
NDC1	0.006661	YBEY	0.002173	TG	-0.000436	SLC46A3	-0.007179
HOXB5	0.006660	ITPKA	0.002172	VPS51	-0.000436	TPP1	-0.007180
MOK	0.006657	PSME4	0.002172	TMEM114	-0.000437	FUCA1	-0.007181
TMOD2	0.006656	TMEM18	0.002171	NKX3-1	-0.000438	MLKL	-0.007187
MTRNR2L4	0.006656	RXRB	0.002170	CBR3	-0.000440	LRRC4	-0.007192

ACTL6A	0.006654	FOXS1	0.002168	TSTA3	-0.000440	TGFB2	-0.007192
SSTR5	0.006651	MTHFSD	0.002168	INPP4B	-0.000441	ST3GAL1	-0.007193
AP1G2	0.006651	NPFFR2	0.002167	CD164	-0.000441	FN1	-0.007194
QSER1	0.006645	METTL18	0.002166	HABP2	-0.000441	ABCD2	-0.007196
SATB2	0.006643	IREB2	0.002165	LCE3D	-0.000443	SLC2A9	-0.007197
C1orf159	0.006639	SLX1A	0.002165	PGGT1B	-0.000444	IRX3	-0.007203
CPA1	0.006637	CNOT6L	0.002164	NBN	-0.000444	TNS3	-0.007210
HIST2H2BF	0.006637	ERAL1	0.002162	PRKX	-0.000445	SERPINB2	-0.007210
VAMP1	0.006636	COPS8	0.002162	DIO1	-0.000445	KCTD12	-0.007211
CACNB2	0.006635	TCEA2	0.002162	EDDM3B	-0.000449	ABLIM3	-0.007214
PRPF3	0.006635	PRAMEF1	0.002161	GCKR	-0.000450	ASB9	-0.007215
YEATS2	0.006634	OR9K2	0.002161	CDH26	-0.000451	CSTB	-0.007221
ZNF248	0.006633	C12orf4	0.002161	HCCS	-0.000451	PLEKHF1	-0.007224
PPP1R27	0.006633	CST4	0.002161	USP51	-0.000451	IFIT1	-0.007227
JSRP1	0.006631	ZNF720	0.002160	DUSP11	-0.000454	CD6	-0.007228
PHF8	0.006629	TSSK1B	0.002159	COX15	-0.000454	COLEC10	-0.007229
MCMDC2	0.006626	MIOS	0.002158	ALOXE3	-0.000455	TACC1	-0.007230
PAICS	0.006622	C9	0.002158	FAM134C	-0.000455	TGFBI	-0.007232
STARD6	0.006618	CAPRIN1	0.002158	BZW1	-0.000456	PIEZO1	-0.007236
IFT81	0.006617	MRTO4	0.002158	USP38	-0.000458	TSPAN13	-0.007242
STC2	0.006616	TTC34	0.002158	METAP2	-0.000458	TMEM200B	-0.007242
DLG5	0.006616	ZFP91	0.002157	CCDC22	-0.000458	C5orf38	-0.007244
DDX39B	0.006615	ZNF468	0.002155	FAM13A	-0.000460	RTN4RL1	-0.007253
RTTN	0.006614	HSPA2	0.002155	EEF2	-0.000461	RASSF2	-0.007256
BTBD18	0.006607	ZNF813	0.002154	FBXO34	-0.000461	FZD7	-0.007258
ADAMTS13	0.006606	SPATA32	0.002153	PTGDR2	-0.000462	MYC	-0.007258
ZNF667	0.006606	OR5H8	0.002153	RPL37A	-0.000462	ZNF750	-0.007260
TAS2R13	0.006606	ARNT2	0.002153	ZNF394	-0.000462	SERPINF1	-0.007261
SNX32	0.006605	CFAP69	0.002153	NGLY1	-0.000463	CYP1A1	-0.007264
BAIAP2L2	0.006605	PRKAR2B	0.002152	ATP5F1	-0.000464	ATP6V0D2	-0.007266
EGFL8	0.006603	FAM47A	0.002152	EAPP	-0.000464	UGT2B4	-0.007267
LENEP	0.006602	OR6B2	0.002151	FADD	-0.000464	BCAM	-0.007268
LCORL	0.006598	SUMO2	0.002151	MYH4	-0.000464	RASGRP2	-0.007272
DGKE	0.006598	CRACR2A	0.002149	SPTY2D1	-0.000465	DIO3	-0.007281
RIC8B	0.006595	GOLGA8R	0.002148	SLC36A2	-0.000466	KCNMB1	-0.007285
BORA	0.006593	KCNK4	0.002148	SPESP1	-0.000466	CRYM	-0.007286
ZNF883	0.006591	RIPPLY1	0.002148	OTUD7B	-0.000466	IGF2BP2	-0.007288
ZCCHC12	0.006589	TMEM185A	0.002148	SAV1	-0.000468	DEFA3	-0.007291
STXBP5	0.006586	PRMT5	0.002148	CIDEA	-0.000470	PGR	-0.007292
ZCCHC16	0.006585	WBP2NL	0.002147	SPATA20	-0.000470	PTK6	-0.007293
ZNF251	0.006584	PET117	0.002147	MATN4	-0.000471	FLT3	-0.007298

CDH8	0.006583	TIFA	0.002146	TMEM106B	-0.000475	EDEM1	-0.007298
DDX55	0.006581	POTEM	0.002144	HELZ2	-0.000475	GATSL3	-0.007299
ZNF184	0.006580	WDR36	0.002142	SYVN1	-0.000476	C10orf11	-0.007300
NANOS3	0.006576	CHM	0.002141	DHRS7	-0.000477	NOTCH2	-0.007302
ZNF285	0.006575	L3HYPDH	0.002141	SLC39A2	-0.000477	CYGB	-0.007306
SDR9C7	0.006575	CAMKK1	0.002140	RNFT1	-0.000477	ABCA6	-0.007306
DNAJC5G	0.006573	KRTAP12-2	0.002139	ADSS	-0.000478	KANK4	-0.007312
LRRC49	0.006571	KMT2E	0.002138	MEPCE	-0.000478	SERPINB6	-0.007316
PNPLA5	0.006570	ZNF492	0.002137	TXNDC9	-0.000478	WSCD2	-0.007316
C11orf80	0.006569	DCTN4	0.002136	ADAMTSL2	-0.000479	FMOD	-0.007318
RBM15	0.006568	C11orf95	0.002136	ALG3	-0.000479	RHOG	-0.007320
NDUFAF5	0.006567	ZNF583	0.002136	OTUB1	-0.000479	ETV5	-0.007320
IMPG2	0.006566	UBE2N	0.002134	TMEM205	-0.000479	SP140	-0.007321
TTC3	0.006565	RBBP8NL	0.002134	KRTCAP2	-0.000481	P2RY14	-0.007325
WNK4	0.006565	POU3F4	0.002133	MOGS	-0.000481	EPB41L2	-0.007326
ZSCAN9	0.006563	TUT1	0.002132	MYO18A	-0.000481	STAT6	-0.007329
INPPL1	0.006562	WISP1	0.002131	RCL1	-0.000481	AFF2	-0.007330
ZNF280C	0.006559	SF3B3	0.002131	SMIM19	-0.000481	KCNK5	-0.007335
SLC6A19	0.006558	ZFAT	0.002131	IAH1	-0.000482	ITM2B	-0.007339
VCX3B	0.006556	ELFN1	0.002131	LIPK	-0.000483	GALNT4	-0.007342
TNFRSF11A	0.006555	COX7A2	0.002130	43532	-0.000485	BLVRA	-0.007342
N4BP2	0.006554	DNAH8	0.002129	UBXN6	-0.000487	PPP1R15A	-0.007342
ADGRF3	0.006552	USP7	0.002128	VAMP7	-0.000489	WFDC10B	-0.007344
PPP2R2B	0.006551	MYLK4	0.002128	PPA2	-0.000489	PLCXD3	-0.007346
PAXIP1	0.006550	SDHAF4	0.002128	LCN10	-0.000489	LPCAT1	-0.007350
HNRNPH1	0.006549	IL17B	0.002127	ZNF267	-0.000491	CORIN	-0.007356
S100PBP	0.006549	SEMA4C	0.002126	KRT76	-0.000491	ALPK1	-0.007357
ZNF397	0.006549	MRPS22	0.002125	NCLN	-0.000492	MAMLD1	-0.007358
TMEM191C	0.006544	UBE2Q2L	0.002125	BTBD16	-0.000493	KLF6	-0.007358
MIP	0.006544	TUBG2	0.002124	LRRC74A	-0.000493	PRKCDBP	-0.007359
UNC13C	0.006543	ZFYVE27	0.002123	FSHR	-0.000493	XCL2	-0.007360
NR1I2	0.006542	UBE2G2	0.002122	TMEM19	-0.000495	SLC9A9	-0.007362
ZSCAN16	0.006540	ASCL3	0.002122	UFSP1	-0.000497	TIMP2	-0.007363
TCERG1	0.006536	AKAP1	0.002120	NEK10	-0.000497	NXPH3	-0.007363
NPIPB11	0.006535	RHOBTB3	0.002119	ATP6V1H	-0.000498	MTUS1	-0.007368
C12orf50	0.006535	ACTL7A	0.002119	MXI1	-0.000498	KCNK15	-0.007369
ICA1	0.006533	MRPS14	0.002119	SZRD1	-0.000499	LRRC23	-0.007371
NEURL1B	0.006533	SEMA4D	0.002119	CACNA1F	-0.000499	SH3BGRL3	-0.007371
MDK	0.006532	COQ4	0.002119	MT-ND4	-0.000500	DOK7	-0.007377
TFDP1	0.006529	ERCC8	0.002118	ROM1	-0.000502	TRIM71	-0.007377
PLA2G6	0.006529	KRTAP10-5	0.002116	DPEP1	-0.000502	SLC6A13	-0.007378

MAGEA8	0.006528	TMEM175	0.002115	VDAC1	-0.000504	FYCO1	-0.007379
C17orf78	0.006528	OR51F1	0.002115	PEX2	-0.000507	CCND3	-0.007379
ADAM12	0.006527	TRIM44	0.002114	MMADHC	-0.000509	GALNT18	-0.007384
CLIP3	0.006526	METTL6	0.002114	BAX	-0.000511	TEX26	-0.007387
SPHKAP	0.006525	ELAC1	0.002114	NDUFA2	-0.000511	USHBP1	-0.007390
ZSCAN12	0.006523	KRTAP10-1	0.002114	GPR78	-0.000511	DUOX2	-0.007391
C6orf163	0.006523	TRIM54	0.002113	KCNJ18	-0.000512	HLA-C	-0.007395
SRSF11	0.006520	RPA2	0.002113	SUGCT	-0.000515	ZFP36L2	-0.007396
NMNAT2	0.006512	KCNK7	0.002112	MTMR12	-0.000515	ARHGAP6	-0.007397
KRT20	0.006512	POLR1B	0.002111	S1PR3	-0.000516	GNLY	-0.007398
MRGPRE	0.006511	KIAA1429	0.002111	FAM127C	-0.000516	PNMT	-0.007411
LRIT2	0.006508	TCAF1	0.002110	EIF2D	-0.000516	CCR3	-0.007412
ACTR3B	0.006508	MED19	0.002110	HTT	-0.000516	SH2D1A	-0.007412
PSPH	0.006506	FH	0.002109	CSNK2A2	-0.000520	DNAJC15	-0.007412
RUFY4	0.006501	LEP	0.002108	SOX8	-0.000520	CEBPD	-0.007413
CYP2W1	0.006501	HNRNPLL	0.002108	MYPN	-0.000521	TMEM132C	-0.007414
ZNF705D	0.006499	NLRP9	0.002107	MSX1	-0.000523	PRND	-0.007417
CPNE6	0.006496	TMPRSS11B	0.002105	GUCY2F	-0.000523	KIAA1217	-0.007421
ANKRD7	0.006496	HNRNPA1	0.002104	UBXN8	-0.000524	PHACTR2	-0.007437
ZNF439	0.006495	CRIPAK	0.002103	MAGI1	-0.000524	SIRPD	-0.007441
CBX5	0.006493	NUP88	0.002103	AGPAT3	-0.000525	ELK3	-0.007442
ZMYND19	0.006491	CCDC169	0.002103	SLC25A5	-0.000525	MORN5	-0.007445
CHML	0.006490	C14orf105	0.002103	RASSF1	-0.000528	DNAH10	-0.007445
HAPLN2	0.006490	UGGT2	0.002102	TOP1	-0.000530	SERPINB9	-0.007453
POU5F1B	0.006489	CLCC1	0.002101	CHCHD10	-0.000530	KLRD1	-0.007454
LPGAT1	0.006489	USP17L15	0.002101	SDF4	-0.000531	DAPK1	-0.007463
FAM69C	0.006489	KANSL3	0.002101	POMGNT2	-0.000532	PRKCB	-0.007466
C10orf82	0.006488	HSBP1	0.002101	MYCBP2	-0.000532	IL21R	-0.007467
POLR3G	0.006484	COG3	0.002100	ARRDC1	-0.000533	PIK3IP1	-0.007471
CKS1B	0.006483	NDUFB4	0.002100	SDE2	-0.000534	VEGFC	-0.007473
MSS51	0.006482	ZNF613	0.002100	SPATA2	-0.000538	SLC1A3	-0.007473
PDZD7	0.006482	NOBOX	0.002099	TMEM33	-0.000539	FAM129B	-0.007478
ZNF354B	0.006480	CAAP1	0.002098	BLZF1	-0.000539	PLA2G5	-0.007478
ALKBH6	0.006480	PPM1B	0.002098	SPINK14	-0.000539	ARHGAP23	-0.007485
ZNF195	0.006478	NSL1	0.002097	EPN1	-0.000540	B4GALT1	-0.007485
ELOVL7	0.006478	CDKN2AIP	0.002096	RALA	-0.000540	TRPM4	-0.007490
HCRT	0.006475	EPC1	0.002096	FKBP7	-0.000541	SPG20	-0.007494
CEBPG	0.006474	GABRA2	0.002095	SHROOM2	-0.000541	ATP11A	-0.007495
CHEK2	0.006473	FAM219B	0.002095	COG7	-0.000542	TNFSF13B	-0.007496
NTF3	0.006469	MRPL36	0.002094	ERMN	-0.000542	SMIM10	-0.007500
TRPC1	0.006463	CRYZL1	0.002094	PHB	-0.000543	TAX1BP3	-0.007501

CCDC77	0.006463	VSX2	0.002093	GSTA4	-0.000543	ARHGEF6	-0.007501
A3GALT2	0.006461	C6orf58	0.002093	PIGS	-0.000544	CSDC2	-0.007513
ZNF229	0.006451	ZNF384	0.002093	POLR2M	-0.000544	BAG3	-0.007516
FGFBP3	0.006449	N4BP2L2	0.002092	PCIF1	-0.000545	IFNGR1	-0.007519
U2SURP	0.006447	DDX23	0.002092	PF4V1	-0.000546	PCED1B	-0.007536
AKAP8L	0.006446	UBR3	0.002092	TWISTNB	-0.000546	DRC7	-0.007538
TAS2R46	0.006444	NAP1L1	0.002090	MSC	-0.000547	C9orf66	-0.007542
KCTD16	0.006441	PMCH	0.002089	PHB2	-0.000547	SNX33	-0.007550
ZNF235	0.006441	MCCD1	0.002089	CRACR2B	-0.000548	CLEC1B	-0.007556
HOXC13	0.006441	RARS2	0.002088	TXNDC15	-0.000548	CYP2A13	-0.007556
PPEF2	0.006439	TXNDC8	0.002087	ADAM10	-0.000551	PRKCZ	-0.007558
PRSS37	0.006435	OR2A2	0.002087	ZC3H7B	-0.000552	ANKDD1B	-0.007559
LRRN2	0.006434	POP5	0.002086	PLAGL2	-0.000553	AKAP7	-0.007562
ZNF337	0.006433	CPNE5	0.002085	SSR4	-0.000553	IQCA1	-0.007564
PROP1	0.006431	SATB1	0.002085	PLGRKT	-0.000554	PDE6G	-0.007564
TNK2	0.006430	OR1J2	0.002084	SUSD4	-0.000555	KCNJ8	-0.007578
CLHC1	0.006426	H2AFB2	0.002083	IARS2	-0.000555	TRIM61	-0.007579
BHMT	0.006426	OR1L1	0.002083	ANKRD31	-0.000556	SAMHD1	-0.007579
ZNF326	0.006425	ESX1	0.002083	HMG20A	-0.000556	SH3BGRL	-0.007580
EML5	0.006424	DDX20	0.002082	PKD2	-0.000556	KIR2DL3	-0.007581
POMT2	0.006424	OR2K2	0.002082	SMIM20	-0.000558	LILRB4	-0.007585
POLD1	0.006422	LYPD4	0.002082	RPS13	-0.000558	CR2	-0.007586
C9orf131	0.006422	UBE2K	0.002081	STARD5	-0.000559	RBM47	-0.007586
FAM155A	0.006422	TARS2	0.002081	FAM160B1	-0.000560	PRICKLE2	-0.007592
TMC3	0.006420	PIP5K1A	0.002079	ZC3HAV1	-0.000560	TMEM255A	-0.007594
HOXA6	0.006419	HTR3E	0.002079	ACER1	-0.000561	PDLIM1	-0.007594
IZUMO1	0.006417	KCP	0.002078	GPATCH4	-0.000562	INHBA	-0.007596
FBXO16	0.006416	BLCAP	0.002078	LSR	-0.000563	ANKRD33B	-0.007599
SRSF10	0.006415	TPRX1	0.002078	TXNDC12	-0.000563	C7orf57	-0.007600
PTPDC1	0.006414	CHD1	0.002077	APLF	-0.000565	PIFO	-0.007602
MPP6	0.006411	GOLGA8H	0.002077	MANBAL	-0.000565	IL1R2	-0.007602
ZSCAN30	0.006404	CEP68	0.002077	TMC1	-0.000566	NCCRP1	-0.007603
MAMSTR	0.006397	WRB	0.002076	MVB12A	-0.000567	NRROS	-0.007608
PDCL2	0.006394	PPP1R8	0.002076	RRP9	-0.000567	VSTM1	-0.007612
DEPDC7	0.006392	WDFY3	0.002076	C11orf63	-0.000568	TNF	-0.007612
GDPD2	0.006391	MRPL13	0.002075	EIF4B	-0.000568	ENPP3	-0.007614
ZNF514	0.006391	IRAK1	0.002072	SH3GLB1	-0.000568	VENTX	-0.007633
TBX20	0.006391	ZNF433	0.002072	CDH6	-0.000568	PXDC1	-0.007635
ADGRF2	0.006390	NDUFS6	0.002071	ARFIP1	-0.000569	UPP1	-0.007642
RIF1	0.006387	SYTL1	0.002071	C19orf24	-0.000569	LY96	-0.007648
ATG4D	0.006386	HACD3	0.002071	TSPAN10	-0.000569	EDIL3	-0.007648

DUSP28	0.006385	AHCY	0.002070	KLHL33	-0.000570	GM2A	-0.007659
TMEM150C	0.006381	ZIM2	0.002070	SLC16A9	-0.000571	TBX2	-0.007662
NPIPB9	0.006378	CST2	0.002069	TSG101	-0.000571	ITGB7	-0.007669
DOT1L	0.006377	DYTN	0.002068	RASGEF1B	-0.000573	LBH	-0.007672
HACE1	0.006375	PGS1	0.002068	PSMD9	-0.000575	AEBP1	-0.007676
PRR22	0.006373	GPLD1	0.002068	CCDC71L	-0.000575	TES	-0.007677
GBX1	0.006367	DGAT2	0.002067	CYB5D1	-0.000577	PRR5L	-0.007677
TSPYL6	0.006364	CLDND1	0.002064	TNFAIP6	-0.000577	LAD1	-0.007685
CIT	0.006364	NKX2-3	0.002064	PPP6C	-0.000577	PRKCE	-0.007688
DUSP15	0.006362	TAF6	0.002063	GALNT1	-0.000578	PYHIN1	-0.007691
ZNF682	0.006361	ZNF148	0.002063	RABGGTA	-0.000578	ENPP2	-0.007691
TMEM86B	0.006350	MRPL9	0.002059	SORBS2	-0.000578	FLNA	-0.007698
H2AFZ	0.006350	SCN11A	0.002058	CNOT8	-0.000578	RIN2	-0.007699
C12orf73	0.006347	CRCP	0.002057	SDHC	-0.000578	CLC	-0.007700
HECTD4	0.006345	ASB6	0.002057	PGLYRP3	-0.000579	TMEM144	-0.007703
DHRS2	0.006345	SPAM1	0.002054	UBE2Q2	-0.000580	GLUD2	-0.007703
EFR3B	0.006343	GLRX3	0.002054	TXN	-0.000581	COL14A1	-0.007707
XPO5	0.006343	CSTF1	0.002054	VCP	-0.000581	CCDC85A	-0.007708
ZKSCAN1	0.006343	MLLT6	0.002053	SRY	-0.000582	RNF125	-0.007708
TRIM37	0.006340	OR4K1	0.002053	HEPN1	-0.000583	TNFAIP3	-0.007708
BICD1	0.006337	TRAPPC13	0.002052	PRR5	-0.000583	DLX3	-0.007709
PXYLP1	0.006337	ZNF781	0.002051	EQTN	-0.000583	RENBP	-0.007711
CLK1	0.006337	OR1L6	0.002051	LAMTOR4	-0.000584	GFPT2	-0.007711
ZNF568	0.006336	HIPK2	0.002051	PCMTD1	-0.000587	NCR1	-0.007714
LRRC37A2	0.006333	OR2W5	0.002051	IL11RA	-0.000588	GLRX	-0.007716
ZNF419	0.006332	OXLD1	0.002051	DNAJB14	-0.000588	KCNA5	-0.007721
ZNF100	0.006331	TMEM255B	0.002050	SLC25A28	-0.000589	TPD52L1	-0.007723
TK1	0.006330	MEA1	0.002050	IMPACT	-0.000591	LDOC1	-0.007724
AKAP17A	0.006330	CTCF	0.002050	SP2	-0.000592	KLB	-0.007730
LGI2	0.006328	SLC23A2	0.002049	SEMA6A	-0.000592	FAM46C	-0.007731
LYSMD1	0.006328	MOAP1	0.002048	SNAP29	-0.000593	RHOB	-0.007735
ZNF566	0.006328	SGTB	0.002047	ZMAT2	-0.000593	FOSL2	-0.007739
ZNF709	0.006327	SF3A3	0.002047	ACOT13	-0.000593	TRAT1	-0.007750
GDI1	0.006326	PQBP1	0.002046	SLC9A3R1	-0.000593	NIM1K	-0.007751
PDE7A	0.006326	CHD2	0.002045	ARL4A	-0.000593	SLC7A8	-0.007758
CYB5RL	0.006322	NDUFA11	0.002045	GBE1	-0.000594	GALNT6	-0.007760
BEND5	0.006321	DNAH1	0.002043	PTPN18	-0.000595	LRAT	-0.007761
INHBC	0.006314	RCBTB1	0.002043	COL16A1	-0.000595	SCNN1G	-0.007766
SIAH3	0.006314	C2orf80	0.002043	CKAP4	-0.000595	MOCOS	-0.007769
CEP135	0.006311	TOPORS	0.002042	PABPC1	-0.000596	SLC24A4	-0.007770
PKLR	0.006309	PTTG2	0.002041	SHQ1	-0.000596	CD59	-0.007772

ZNF135	0.006308	CLPSL1	0.002041	EIF3A	-0.000599	ADAMTS15	-0.007781
BEND4	0.006299	ADAD2	0.002041	DMRTC1	-0.000599	CHRDL2	-0.007783
PTS	0.006297	RNF151	0.002040	DERL1	-0.000600	CYSTM1	-0.007783
MZF1	0.006297	DDI2	0.002040	PVR	-0.000600	TCN1	-0.007785
MYRFL	0.006296	PAK1IP1	0.002039	RNF11	-0.000601	GPR34	-0.007790
SMCHD1	0.006295	TMX3	0.002037	GDI2	-0.000602	CAMK2A	-0.007790
TMEM206	0.006291	FANCD2OS	0.002036	SNAPC2	-0.000604	METRNL	-0.007797
RAG2	0.006290	BYSL	0.002036	GUSB	-0.000604	JUNB	-0.007806
SERPINA11	0.006287	SKAP1	0.002035	RTP5	-0.000605	TLR4	-0.007811
ITIH6	0.006286	CTXN3	0.002035	PYROXD1	-0.000607	TAGLN	-0.007811
KDM1A	0.006286	SUGT1	0.002034	ZNF208	-0.000610	NES	-0.007813
MAP3K10	0.006285	ARL6	0.002033	ACBD5	-0.000610	CETP	-0.007818
UBAP1L	0.006285	RBM27	0.002033	TSSC4	-0.000611	NTRK2	-0.007820
TMEM191B	0.006285	NUBP2	0.002032	MFHAS1	-0.000612	GLIS3	-0.007821
C1GALT1C1L	0.006283	PTX4	0.002031	CDC14A	-0.000612	SIAE	-0.007826
RAB3IP	0.006283	MAK16	0.002030	PYURF	-0.000612	FYB	-0.007828
LMX1A	0.006281	C17orf62	0.002029	SOX5	-0.000613	SCD	-0.007830
MIS18BP1	0.006280	TCEAL2	0.002029	SSR3	-0.000614	SAMD9L	-0.007835
KRTAP17-1	0.006280	DIABLO	0.002028	FUT10	-0.000615	ZBTB16	-0.007837
PPIP5K1	0.006280	FAM98B	0.002028	AMZ1	-0.000615	BRINP3	-0.007839
CLNK	0.006277	FASTK	0.002026	SLC25A44	-0.000617	C8orf48	-0.007842
HIST1H4L	0.006272	ETNK1	0.002025	DDX19A	-0.000620	RNASE6	-0.007844
PKDREJ	0.006269	OSBPL2	0.002024	RNF6	-0.000621	ESYT3	-0.007846
SLC32A1	0.006268	DDX42	0.002023	GRAMD1A	-0.000621	OSM	-0.007846
PPP3R2	0.006268	DYNAP	0.002023	AP3S1	-0.000621	PLN	-0.007853
HOXC12	0.006267	OR52E4	0.002022	GSK3A	-0.000622	PRKCD	-0.007854
CDK2	0.006266	DCAF12L1	0.002021	CARD17	-0.000622	GPD1L	-0.007854
ACAD11	0.006265	CALML4	0.002021	RTN4RL2	-0.000623	ZDHHC19	-0.007857
SLC1A4	0.006264	RAET1L	0.002021	ELL	-0.000623	CD84	-0.007869
KEL	0.006262	HNRNPUL1	0.002021	OR5P2	-0.000623	RASIP1	-0.007870
NKTR	0.006261	ASCL2	0.002020	ABR	-0.000623	KCTD11	-0.007872
POLA2	0.006259	PSMC1	0.002020	RPL18	-0.000625	B2M	-0.007880
GEMIN2	0.006258	CACNA1D	0.002019	TAF12	-0.000626	PDGFC	-0.007884
ZNF280A	0.006258	COX5B	0.002018	SCAP	-0.000627	IL7	-0.007884
HUNK	0.006256	SLC13A1	0.002018	TOMM6	-0.000627	ELOVL3	-0.007885
SLC25A53	0.006255	OTUB2	0.002017	MON1B	-0.000628	UNC93B1	-0.007885
PBOV1	0.006253	TEX11	0.002016	GALNS	-0.000628	NKD1	-0.007892
RPS6KA5	0.006248	CYC1	0.002015	MMAB	-0.000629	ENDOD1	-0.007893
C5orf46	0.006247	ZNF799	0.002015	MPND	-0.000629	PQLC3	-0.007895
GLP1R	0.006245	CKMT2	0.002013	SLC25A3	-0.000629	SCARF1	-0.007896

ZRANB3	0.006243	CSNK1G3	0.002013	MFAP2	-0.000629	PLIN3	-0.007896
E2F5	0.006238	DAXX	0.002012	TTC27	-0.000630	IFITM1	-0.007901
POLN	0.006235	BOLA3	0.002011	FAM175A	-0.000631	TSPAN12	-0.007903
SPATA21	0.006235	API5	0.002011	METTL21B	-0.000631	PITPNM3	-0.007904
ZNF527	0.006232	SENP2	0.002009	DNTTIP2	-0.000631	CASP5	-0.007904
ARHGEF7	0.006232	SNRPB2	0.002008	HIST1H4K	-0.000631	GRIN3B	-0.007916
INTS7	0.006230	PHKG2	0.002008	BEND2	-0.000632	CLEC4A	-0.007919
PTOV1	0.006230	PRR23B	0.002007	ASGR1	-0.000632	RARG	-0.007924
CLPSL2	0.006228	WDR45B	0.002006	RBX1	-0.000632	QPRT	-0.007929
ALMS1	0.006227	ANHX	0.002006	RNF212B	-0.000634	LGALS1	-0.007930
APCDD1L	0.006226	TMEM108	0.002006	GPR82	-0.000635	RAPGEF3	-0.007931
DMAP1	0.006225	PCMT1	0.002006	RFPL4AL1	-0.000635	BMPER	-0.007931
PABPC1L2A	0.006223	SLC9A2	0.002006	C20orf27	-0.000636	HBG2	-0.007932
GABBR2	0.006223	GPS2	0.002005	CXCL6	-0.000636	ROBO2	-0.007933
FKBP3	0.006219	SLC25A42	0.002005	KRT72	-0.000637	LGALS3BP	-0.007934
KCNIP3	0.006219	TFCP2	0.002003	DNAL4	-0.000637	TMC6	-0.007939
NTSR1	0.006218	CHD1L	0.002002	CRTC2	-0.000637	CTSL	-0.007939
FAM19A3	0.006214	SETMAR	0.002002	TMED10	-0.000637	AK8	-0.007940
CTRL	0.006212	MC5R	0.002001	TBC1D4	-0.000637	IFIT2	-0.007953
AGO2	0.006212	TUBD1	0.002000	ZNF671	-0.000638	PLEKHG7	-0.007968
C11orf84	0.006212	LYRM2	0.001999	UBE2NL	-0.000638	F2RL3	-0.007978
RHO	0.006211	C11orf49	0.001998	LRRTM4	-0.000638	CYP39A1	-0.007982
GPR148	0.006211	CIRBP	0.001998	EML1	-0.000639	GBP3	-0.007983
TCEAL6	0.006211	LRRN1	0.001998	DPPA3	-0.000639	TFAP2C	-0.007984
DCAF4L2	0.006211	NFYB	0.001998	CHODL	-0.000639	CFP	-0.007986
PRTFDC1	0.006209	SLC8A3	0.001995	HSPA4	-0.000640	APLP2	-0.007991
OXTR	0.006209	DIS3L	0.001995	FAM90A1	-0.000640	SLC28A3	-0.007994
METTL3	0.006207	SYT17	0.001994	WDTC1	-0.000640	EDNRA	-0.007995
LRFN4	0.006206	SFXN2	0.001992	ST8SIA4	-0.000641	TKT	-0.007996
TNNT1	0.006201	NADK2	0.001992	ARFGAP2	-0.000641	PCDH12	-0.007997
FAM19A1	0.006200	SLC26A11	0.001991	GRAMD4	-0.000641	ITGB5	-0.008000
OVOL2	0.006200	FAM20B	0.001990	SLC2A4RG	-0.000641	TMEM243	-0.008004
IGFN1	0.006200	GGNBP2	0.001989	RPUSD2	-0.000643	IGSF6	-0.008009
GPR52	0.006199	ALG1L2	0.001988	GALK2	-0.000643	GFI1B	-0.008010
KCNJ14	0.006198	THBS4	0.001988	CNPY3	-0.000644	CD8A	-0.008019
ZNF74	0.006197	NDUFA10	0.001987	MAST3	-0.000644	KIR3DL1	-0.008019
BRWD3	0.006197	TTC9C	0.001986	TFEB	-0.000644	TMEM159	-0.008029
NUP85	0.006195	RYK	0.001986	CLPX	-0.000645	CIB1	-0.008031
MYO15B	0.006193	GAPDHS	0.001986	SF3B5	-0.000646	LY9	-0.008033
TNPO2	0.006193	NADSYN1	0.001986	MMP27	-0.000646	MAG	-0.008038
PRSS1	0.006191	ZNF57	0.001985	C16orf58	-0.000647	CPQ	-0.008039

SSPO	0.006190	C14orf180	0.001984	RUFY1	-0.000647	CD274	-0.008049
CCNO	0.006187	RPF1	0.001984	FMNL3	-0.000649	DMKN	-0.008054
ZNF679	0.006184	SMAD2	0.001983	NMT1	-0.000652	TNFAIP8L3	-0.008060
AP3M2	0.006182	HARS2	0.001982	GLYR1	-0.000652	CD247	-0.008067
PLCG1	0.006180	ZNF358	0.001982	MESDC2	-0.000653	ARHGEF35	-0.008069
ZFP14	0.006180	SETD1A	0.001982	CTIF	-0.000653	MOB3B	-0.008071
SLC25A14	0.006180	TOR2A	0.001982	BACH1	-0.000653	HEPH	-0.008072
SCGB2A1	0.006178	SCN4A	0.001982	SMIM12	-0.000655	ITGA2	-0.008073
DFFB	0.006178	C17orf74	0.001980	TMEM9	-0.000656	CD5	-0.008076
ZNF718	0.006176	RAD51AP2	0.001979	ATL2	-0.000656	EPHB6	-0.008077
SH2D7	0.006175	GATAD1	0.001977	FAM159A	-0.000657	ERBB3	-0.008077
ZNF239	0.006175	CLDN12	0.001977	CCDC186	-0.000658	SLAMF1	-0.008083
SPATA33	0.006170	43529	0.001976	PSMF1	-0.000658	REM1	-0.008084
SPDYE1	0.006169	SHCBP1L	0.001976	CCDC9	-0.000659	VAV1	-0.008088
PFKP	0.006168	ANGEL1	0.001976	SETDB2	-0.000659	PCYOX1	-0.008097
SPICE1	0.006167	ZNF804A	0.001976	CD99L2	-0.000659	HLA-F	-0.008099
TCP10L2	0.006166	IRF2BP1	0.001975	PATL2	-0.000660	NFATC1	-0.008102
PHIP	0.006165	RB1CC1	0.001975	PIP5K1C	-0.000660	PDGFA	-0.008103
CTAG1B	0.006164	MLST8	0.001973	ENPP7	-0.000663	TSPAN4	-0.008106
NAIP	0.006161	PDXDC1	0.001973	GIP	-0.000664	POLR2J2	-0.008108
CCDC40	0.006159	MFSD8	0.001972	USP8	-0.000664	PTH1R	-0.008110
TMEM132D	0.006158	KRTAP1-5	0.001971	RPL30	-0.000666	SLC14A1	-0.008111
TBX10	0.006157	BPIFB4	0.001971	DSG3	-0.000666	ZC3H12A	-0.008115
ABCG4	0.006152	GTF2IRD2	0.001971	CYSLTR2	-0.000667	GIPC2	-0.008119
ULK3	0.006149	CERS5	0.001971	CGB8	-0.000669	CDH15	-0.008121
FAM71F2	0.006148	TMEM229B	0.001971	GABARAPL2	-0.000671	GZMK	-0.008125
CSMD3	0.006146	ABCE1	0.001971	RAB18	-0.000671	SLC4A4	-0.008126
RCC2	0.006146	KCNA6	0.001970	KY	-0.000672	THBS1	-0.008131
PTH2	0.006146	ABCB8	0.001970	RPS29	-0.000673	IGLL5	-0.008132
FOXRED2	0.006145	VRTN	0.001970	IQCK	-0.000674	TPK1	-0.008134
TMEM81	0.006143	TMEM257	0.001969	UBA3	-0.000675	BCL9L	-0.008136
SLC4A11	0.006142	HNRNPA0	0.001969	FAM35A	-0.000675	DNAJC5B	-0.008136
E4F1	0.006142	OR52N1	0.001968	ULBP2	-0.000675	PSCA	-0.008136
RPAIN	0.006141	HSP90B1	0.001968	SLU7	-0.000676	TGFBR3	-0.008141
TBC1D3I	0.006140	BCKDHB	0.001968	UQCRC2	-0.000678	SLC22A4	-0.008141
SPATA16	0.006139	SNRPC	0.001967	CCL28	-0.000678	NRP2	-0.008147
ZBTB25	0.006135	IRAK4	0.001966	SLC25A38	-0.000678	CD300LB	-0.008150
ABCC11	0.006133	CCDC122	0.001965	POU1F1	-0.000679	C19orf35	-0.008150
ZNF3	0.006130	KRT2	0.001965	RBM42	-0.000679	CPA6	-0.008152
GLIPR1L1	0.006128	PDHA1	0.001963	FAM98A	-0.000679	LRRC31	-0.008153
PROSER3	0.006125	ZNF444	0.001963	CAPN5	-0.000680	LAMA2	-0.008154

NDUFAF6	0.006123	ZCCHC3	0.001963	SEC24C	-0.000682	CRTAP	-0.008158
LRRC37A3	0.006121	ZNF396	0.001960	IDH3A	-0.000682	TNFSF8	-0.008174
BNIP3	0.006120	FAM196B	0.001959	RAB12	-0.000683	EGR3	-0.008185
TSHZ2	0.006120	ATG12	0.001957	BCR	-0.000683	C15orf52	-0.008196
SHMT2	0.006112	B9D1	0.001957	TRAFD1	-0.000684	ASS1	-0.008198
NIPSNAP3B	0.006112	NDUFS5	0.001957	PGLYRP4	-0.000685	RAI2	-0.008198
GALR3	0.006111	OR8B8	0.001956	ERN1	-0.000689	CITED2	-0.008201
KDM4E	0.006111	SHTN1	0.001955	UBE2U	-0.000690	TCL1A	-0.008201
SRPK1	0.006110	PYDC1	0.001954	CHRNE	-0.000692	CCDC80	-0.008202
TIAM1	0.006108	NAALADL1	0.001954	RORB	-0.000693	GHR	-0.008203
STK39	0.006105	GIN1	0.001954	EDF1	-0.000695	ANGPTL7	-0.008205
SP4	0.006105	ZSCAN25	0.001954	SGK3	-0.000695	MAML2	-0.008210
TUSC3	0.006105	AP1S1	0.001952	AP2B1	-0.000696	FCRL6	-0.008224
ZNF660	0.006104	COX7B	0.001951	RPS10	-0.000696	SFN	-0.008224
ASIC2	0.006101	RSBN1	0.001951	DPPA4	-0.000696	RERG	-0.008231
AIPL1	0.006100	GPR37	0.001951	DCXR	-0.000698	SLAMF8	-0.008235
DHPS	0.006100	SEC61G	0.001950	LOXL1	-0.000699	GZMA	-0.008236
CDK8	0.006096	OR2A5	0.001950	TRPC4	-0.000700	RNF175	-0.008237
ZNF529	0.006095	OR2L8	0.001949	CWF19L2	-0.000701	CDC42EP5	-0.008242
POU4F3	0.006095	TBC1D22B	0.001949	C15orf53	-0.000703	HRH1	-0.008247
TOP3B	0.006095	ZNF654	0.001949	MATN2	-0.000704	GPR171	-0.008248
FANCF	0.006092	FAM110A	0.001948	SDF2	-0.000705	ANXA11	-0.008253
RAD51C	0.006091	LIN7C	0.001948	RPL5	-0.000706	CASP12	-0.008261
SPPL2C	0.006087	TLE2	0.001948	SFR1	-0.000708	FAM181A	-0.008262
XYLB	0.006085	C8orf74	0.001948	BCAS4	-0.000708	ITPRIP	-0.008262
CLDN20	0.006085	SMARCA1	0.001947	TRIM2	-0.000709	C2orf15	-0.008263
ARNTL2	0.006084	OR13C2	0.001946	CTTN	-0.000709	CD63	-0.008263
GDF11	0.006084	UBE4B	0.001946	IMPDH2	-0.000710	TAL1	-0.008269
SLC39A6	0.006081	SIPA1L3	0.001945	UNC45A	-0.000712	SLFN5	-0.008272
INTS8	0.006077	GBAS	0.001944	PTRHD1	-0.000714	RMDN2	-0.008279
DTYMK	0.006076	IFT52	0.001944	SYAP1	-0.000716	IFIT3	-0.008284
RANBP1	0.006075	GSC2	0.001943	EXT2	-0.000717	SPAG6	-0.008284
ATP6V0E2	0.006070	PIGU	0.001943	HYAL4	-0.000717	BCL2L14	-0.008286
GADL1	0.006069	CLEC2D	0.001943	ABI1	-0.000719	HYAL2	-0.008289
ZNF420	0.006069	AP3D1	0.001943	MOB2	-0.000719	VSTM4	-0.008289
MSTN	0.006065	ID2	0.001943	LRRC38	-0.000719	CYB5A	-0.008290
NBPF8	0.006064	BEX4	0.001942	COPG1	-0.000720	IL1RL2	-0.008295
CPSF1	0.006064	CSH1	0.001940	SLC39A7	-0.000720	KLHL6	-0.008299
SLITRK3	0.006064	SPINK8	0.001940	LSAMP	-0.000722	TMEM150A	-0.008301
JADE3	0.006064	NLRP14	0.001940	GPATCH3	-0.000722	AOAH	-0.008302
AQP12A	0.006062	MRPS5	0.001939	CDH23	-0.000723	VNN1	-0.008308

PMS1	0.006061	GPBP1	0.001937	MAP2K4	-0.000723	EGFL7	-0.008308
C17orf47	0.006057	RRP15	0.001937	WBP11	-0.000723	ARSD	-0.008309
C1orf74	0.006052	PRPH2	0.001934	DBNL	-0.000724	MT1E	-0.008314
ZNF852	0.006051	TMX4	0.001934	CTLA4	-0.000724	RARA	-0.008316
GPR151	0.006050	HMGN3	0.001934	WDR82	-0.000725	CTSB	-0.008320
ZNF551	0.006047	CEACAM20	0.001933	ARHGEF1	-0.000725	BHLHE40	-0.008322
SFPQ	0.006047	MDGA1	0.001933	MCCC2	-0.000726	GNA14	-0.008323
ZNF577	0.006043	TRIM13	0.001932	RPL35	-0.000728	MYL12A	-0.008326
LRRC69	0.006043	OR2A12	0.001931	RAB8A	-0.000729	IL17RE	-0.008329
SOCS7	0.006042	PSMB11	0.001931	FXN	-0.000730	TEKT4	-0.008341
THAP9	0.006042	ZSWIM3	0.001930	HTR2B	-0.000731	CAPN9	-0.008343
PRKAA2	0.006039	EXOSC6	0.001928	TEX2	-0.000731	GSTM1	-0.008344
CT55	0.006037	NOP9	0.001926	PPARA	-0.000732	FCRL1	-0.008347
TUBE1	0.006036	NMT2	0.001926	KCNN4	-0.000732	TFEC	-0.008352
LRRC45	0.006036	PDYN	0.001926	AIF1L	-0.000732	ISLR	-0.008352
BRD8	0.006035	SCYL2	0.001926	CRYBA4	-0.000732	PLA2G2D	-0.008364
ASRGL1	0.006034	PARP11	0.001926	TMEM72	-0.000733	CPXM2	-0.008365
ZNF260	0.006033	KLHL40	0.001925	ROCK2	-0.000733	DDR2	-0.008365
FBXL6	0.006032	PDE6D	0.001925	AP1M1	-0.000733	LILRB1	-0.008368
FAM71D	0.006030	AASDHPPT	0.001925	TBC1D13	-0.000736	JPH2	-0.008370
ANGPT2	0.006029	USP13	0.001924	NFKBIB	-0.000737	GPC3	-0.008372
HOOK2	0.006027	LCA5	0.001923	KIAA0141	-0.000737	CCR7	-0.008373
AADAT	0.006026	PLEKHA5	0.001921	OR10A3	-0.000737	CD151	-0.008375
SYCE1L	0.006025	IFNB1	0.001918	KLF7	-0.000738	AMPD1	-0.008381
EED	0.006023	MRPL21	0.001917	SYCN	-0.000738	ABCC4	-0.008382
DLGAP1	0.006021	LSM14A	0.001917	INSIG1	-0.000739	RAB27A	-0.008389
BDKRB1	0.006020	RPL22L1	0.001916	GNAL	-0.000741	KCNA3	-0.008392
ZNF250	0.006020	MKLN1	0.001915	ERLIN2	-0.000742	HLA-B	-0.008398
KCNJ10	0.006018	LRRC73	0.001914	POLDIP3	-0.000742	RARRES1	-0.008403
GPR50	0.006017	ZNF576	0.001913	ZHX3	-0.000743	FLNC	-0.008408
NCBP1	0.006015	SUPT5H	0.001913	TRPM6	-0.000744	CYP4F22	-0.008413
GLRA1	0.006015	ZGPAT	0.001912	FAM86B2	-0.000744	PACSIN3	-0.008414
ATL1	0.006014	TMC2	0.001912	MLYCD	-0.000744	GATA2	-0.008417
BEST4	0.006012	ATP6AP1L	0.001912	C9orf3	-0.000746	C19orf38	-0.008421
MZT1	0.006011	TXLNB	0.001911	PDLIM5	-0.000746	PPIC	-0.008423
ITGB1BP2	0.006010	IPO8	0.001911	FLYWCH2	-0.000746	BCL3	-0.008423
MTMR4	0.006006	ZNF584	0.001911	CCDC149	-0.000747	PILRA	-0.008426
DLK2	0.006004	TTC24	0.001909	CATSPERB	-0.000747	SPRED1	-0.008431
TM6SF2	0.006001	SPIN2B	0.001909	TSPAN6	-0.000749	DUSP5	-0.008433
ASIC4	0.005996	XAB2	0.001909	PTPN23	-0.000749	KL	-0.008442
AMACR	0.005995	BMP10	0.001909	ARHGEF4	-0.000749	MATK	-0.008444

TIGD4	0.005994	ZNF830	0.001908	SLC25A35	-0.000750	NKD2	-0.008445
SLC9A7	0.005988	PFKM	0.001908	ADRM1	-0.000750	ABCA13	-0.008445
LRRC63	0.005987	NPEPL1	0.001907	APOA1	-0.000751	RERGL	-0.008448
ZNF461	0.005985	SPATA31A6	0.001906	RIC8A	-0.000751	C15orf59	-0.008453
HPRT1	0.005984	ISG20L2	0.001906	CSNK1A1	-0.000753	SFRP4	-0.008461
HIST2H2BE	0.005984	PDZD9	0.001905	PPP1R13B	-0.000753	TAGLN2	-0.008483
MDC1	0.005983	APOOL	0.001905	ADH4	-0.000754	FGL2	-0.008485
FOXD4L3	0.005982	SPATA31A3	0.001905	SKP1	-0.000754	RNF144B	-0.008488
HYPK	0.005982	SPATA8	0.001904	ARHGEF37	-0.000755	CYTL1	-0.008489
SRGAP1	0.005979	MAGEB10	0.001903	SC5D	-0.000756	RAB44	-0.008491
CCDC142	0.005978	GPANK1	0.001903	PEX14	-0.000757	LMCD1	-0.008494
CCDC130	0.005977	BCCIP	0.001902	TRAM2	-0.000757	LTA4H	-0.008497
ADCK5	0.005977	FGF14	0.001902	VPS53	-0.000758	SMTNL2	-0.008498
PAPOLB	0.005976	PTH	0.001901	SRP68	-0.000758	GP9	-0.008503
ZNF302	0.005975	PDCD11	0.001900	PRELID1	-0.000759	ADRA1B	-0.008504
ZNF543	0.005973	NEIL1	0.001899	ZNF655	-0.000759	HCLS1	-0.008508
ZNF232	0.005973	OR11H1	0.001898	FAM53B	-0.000760	SEMA5A	-0.008509
SRRT	0.005970	KIDINS220	0.001897	SLC14A2	-0.000761	THSD4	-0.008510
BRWD1	0.005969	CGGBP1	0.001897	XRCC6	-0.000763	NAGS	-0.008513
NEUROD6	0.005968	SYNRG	0.001897	S100A7	-0.000763	MEFV	-0.008515
KIAA0895	0.005968	OR2A25	0.001896	PBX2	-0.000763	TMEM252	-0.008519
RIMS4	0.005966	CEP126	0.001895	ENTHD1	-0.000764	FAXDC2	-0.008520
ARGLU1	0.005964	EHBP1	0.001894	DDAH2	-0.000764	ICAM3	-0.008525
PXT1	0.005962	SMOX	0.001894	NCK1	-0.000766	THSD1	-0.008525
ASAH2	0.005958	DHRS7C	0.001894	HSF5	-0.000766	COMT	-0.008526
TMEM201	0.005957	TGIF2LY	0.001893	DEFB1	-0.000766	MUC22	-0.008527
C14orf80	0.005954	CCAR2	0.001892	IKBKG	-0.000768	PRKG1	-0.008530
FOXD4L4	0.005954	SLC30A4	0.001892	RIPK1	-0.000768	RCSD1	-0.008532
DKC1	0.005954	CMYA5	0.001892	MARVELD2	-0.000769	TGFA	-0.008534
NPIPB8	0.005946	FEM1B	0.001891	ZNF331	-0.000769	PCSK5	-0.008538
PNMAL1	0.005942	PHRF1	0.001891	LUZP2	-0.000771	ATP13A5	-0.008543
ZNF571	0.005940	SERBP1	0.001889	B9D2	-0.000774	TRIP6	-0.008544
SLC9C1	0.005938	KCNG4	0.001888	OCM	-0.000775	CIITA	-0.008548
ZNF772	0.005936	RGL2	0.001888	MYO6	-0.000777	SMPDL3B	-0.008551
SCLT1	0.005935	FUBP3	0.001887	MRPS18A	-0.000778	CXorf36	-0.008557
TIGD7	0.005935	INTS6	0.001887	SLC35F5	-0.000779	CGNL1	-0.008557
CCDC178	0.005932	POLE3	0.001887	ENPEP	-0.000780	ERG	-0.008559
HSD17B3	0.005930	RPL36A	0.001887	GPR107	-0.000781	AARD	-0.008560
CEP89	0.005929	THOC6	0.001886	TDRD3	-0.000782	FBXO27	-0.008561
ZNF283	0.005928	LAG3	0.001886	GALNT2	-0.000783	DEFA1B	-0.008562
HAGHL	0.005928	OR13C5	0.001886	PKM	-0.000783	KLHDC7A	-0.008565

SORCS3	0.005924	RAD23B	0.001886	PHYH	-0.000783	EHD1	-0.008568
USP45	0.005923	NUTM1	0.001885	DUS2	-0.000783	CXCL14	-0.008572
LRP5L	0.005922	SLC29A2	0.001885	DGKA	-0.000785	SH3D19	-0.008573
XPO1	0.005920	ABCB10	0.001885	COMMD9	-0.000789	SPRY2	-0.008575
HECTD2	0.005917	UBXN4	0.001885	SND1	-0.000790	ARL6IP5	-0.008577
ZNF322	0.005916	AP1S2	0.001885	SEC23A	-0.000794	DYSF	-0.008577
PCMTD2	0.005915	EAF2	0.001885	HSPA1L	-0.000794	ACY3	-0.008578
NT5DC4	0.005914	ATP8B2	0.001883	SPRR2G	-0.000794	MILR1	-0.008580
MAATS1	0.005911	HSD17B7	0.001883	ADAMTS7	-0.000796	FAM110D	-0.008583
SLC16A14	0.005909	HEMK1	0.001882	EEA1	-0.000796	EFCAB1	-0.008583
AK9	0.005907	TAAR6	0.001882	SUN2	-0.000796	SLC25A23	-0.008583
C2CD4A	0.005905	BRD4	0.001881	DCTN6	-0.000797	KRT17	-0.008588
PPP1R14B	0.005902	PIGH	0.001880	ACRBP	-0.000799	TBX21	-0.008591
ATG16L2	0.005900	ITGA11	0.001880	OSBPL9	-0.000800	TRIM5	-0.008592
WIPF3	0.005896	GPX7	0.001880	IFNAR1	-0.000801	IL10RA	-0.008596
USP17L7	0.005895	PDHA2	0.001879	NSA2	-0.000801	AGRN	-0.008596
DMRT1	0.005895	MPC2	0.001879	EIF3F	-0.000802	CLEC2B	-0.008599
IGSF21	0.005892	ACOT7	0.001879	MFAP1	-0.000802	RXRA	-0.008600
VCPKMT	0.005892	CXADR	0.001879	KCTD2	-0.000802	FBXO2	-0.008600
KRTAP5-5	0.005890	PDCD10	0.001878	TANC2	-0.000803	VWA5A	-0.008604
NPHP4	0.005890	NT5C3B	0.001878	LIMK2	-0.000803	RASSF8	-0.008614
DMPK	0.005889	OR4F16	0.001878	CCDC114	-0.000804	BOK	-0.008618
PLSCR2	0.005889	OR4F29	0.001878	PRR33	-0.000804	EDAR	-0.008621
DMRT3	0.005889	PIK3CA	0.001878	RPS15A	-0.000804	ST3GAL5	-0.008622
RHD	0.005888	CUL5	0.001878	SLC35E1	-0.000808	MAP3K19	-0.008626
KCTD4	0.005887	DYNLL2	0.001877	CHSY1	-0.000809	CD96	-0.008628
TTF2	0.005886	CPO	0.001874	IQUB	-0.000809	TMEM204	-0.008628
C6orf222	0.005885	NIPSNAP3A	0.001874	OR3A2	-0.000810	CD109	-0.008633
TUBA1A	0.005882	SPINK7	0.001873	COPZ1	-0.000810	SLC2A3	-0.008638
ZNF432	0.005880	RPRD2	0.001872	PRKAR1B	-0.000811	C15orf48	-0.008642
HMX1	0.005878	SSB	0.001872	TMEM104	-0.000814	BATF2	-0.008644
C15orf41	0.005877	REXO4	0.001872	PAFAH1B2	-0.000815	WFDC6	-0.008645
EFNB3	0.005876	OR1N1	0.001872	SUMO3	-0.000815	ATP12A	-0.008649
DXO	0.005875	DCTPP1	0.001871	KLHL10	-0.000815	MFAP5	-0.008658
CACNB3	0.005875	XRN2	0.001871	ANKFY1	-0.000816	SLC10A2	-0.008662
METAP1D	0.005875	TRAPPC10	0.001871	CCR9	-0.000818	LPXN	-0.008662
FAM60A	0.005873	BCDIN3D	0.001870	THG1L	-0.000819	PDE1B	-0.008665
CAPN10	0.005872	FECH	0.001867	NACA	-0.000819	LMOD3	-0.008667
HDAC6	0.005871	KRTAP11-1	0.001867	COL4A1	-0.000820	MGAT3	-0.008677
TIPIN	0.005871	CXorf49	0.001867	SDHB	-0.000820	TNNT3	-0.008677
MYL6B	0.005869	EPS15L1	0.001866	PGLS	-0.000821	GPR87	-0.008681

C5orf42	0.005868	DPH5	0.001866	PGPEP1L	-0.000822	TREML1	-0.008682
ELL3	0.005868	SCOC	0.001865	LMAN2L	-0.000823	FAS	-0.008683
ZMYM1	0.005867	C2orf83	0.001864	DYRK3	-0.000824	DSC2	-0.008697
BHLHB9	0.005866	EXOC3	0.001864	EIF4A1	-0.000825	GRK5	-0.008698
ZBTB37	0.005865	ETNPPL	0.001863	CDK7	-0.000825	LPCAT2	-0.008698
SMS	0.005864	GDF6	0.001863	RAB35	-0.000828	COL13A1	-0.008699
ING5	0.005859	MRPS25	0.001862	NTRK1	-0.000828	CCL11	-0.008703
BASP1	0.005855	ZSCAN5A	0.001861	DYNLRB1	-0.000829	DLEC1	-0.008706
PAFAH1B3	0.005854	FLCN	0.001860	FAM25A	-0.000830	TINAGL1	-0.008707
TMEM106C	0.005851	GOLGA8M	0.001860	CHRAC1	-0.000832	TCTEX1D1	-0.008707
MAPK8	0.005849	SEMA6D	0.001859	PDHB	-0.000832	IL2RB	-0.008709
MTF2	0.005845	LYRM7	0.001857	CDC42SE1	-0.000833	APOBEC4	-0.008710
H1FX	0.005844	ANKRD9	0.001857	ETV4	-0.000834	YBX3	-0.008711
GMPS	0.005842	OR6V1	0.001857	TPRA1	-0.000836	RNASE2	-0.008712
ZKSCAN8	0.005840	FBXO40	0.001857	SF3B4	-0.000838	GBP2	-0.008715
HAUS1	0.005838	C4orf51	0.001856	43717	-0.000839	SAMD4A	-0.008715
TCAP	0.005838	GLRX2	0.001854	ACSBG1	-0.000839	GSN	-0.008717
TMEM178A	0.005838	MSANTD4	0.001854	COX7C	-0.000839	CYBA	-0.008718
ASCL5	0.005836	HMGB1	0.001854	PPP4C	-0.000839	TNFRSF10D	-0.008720
TPO	0.005836	ZNF784	0.001852	TMEM167A	-0.000839	CDKL2	-0.008724
MIB2	0.005835	OR4M1	0.001852	NFAT5	-0.000840	ABI3	-0.008726
VANGL2	0.005834	CFAP36	0.001852	MRFAP1	-0.000840	DENND2C	-0.008729
IL17C	0.005832	THYN1	0.001852	C9orf16	-0.000841	KLF5	-0.008737
LIN9	0.005829	GLE1	0.001851	CDADC1	-0.000841	KCNS3	-0.008738
ZNF418	0.005828	DCHS1	0.001851	GOLIM4	-0.000843	ALAS2	-0.008739
SYN3	0.005827	EGFLAM	0.001850	UBAC2	-0.000844	SAMSN1	-0.008740
RBM38	0.005825	HCAR1	0.001850	DDX54	-0.000848	CCDC102A	-0.008743
FAM218A	0.005824	BLOC1S5	0.001849	NRN1L	-0.000849	SPINK1	-0.008746
PIGX	0.005820	GSKIP	0.001849	USP19	-0.000849	CLCF1	-0.008752
FAM186A	0.005819	PANX1	0.001849	DDRGK1	-0.000850	CD207	-0.008754
GFRA4	0.005819	AAGAB	0.001848	S100G	-0.000850	LRRC52	-0.008755
ZNF669	0.005817	OR2J2	0.001847	TMCO5A	-0.000850	RFTN1	-0.008756
CCDC57	0.005817	CCDC127	0.001847	CBLN3	-0.000851	LIPA	-0.008760
FNDC7	0.005816	ZNF865	0.001846	LCE2A	-0.000851	PRSS35	-0.008762
CA7	0.005815	USP16	0.001845	CUBN	-0.000853	ITK	-0.008763
BTAF1	0.005810	POLG	0.001845	IKBIP	-0.000853	PTPRCAP	-0.008763
AGO3	0.005809	MIA3	0.001845	PRCD	-0.000854	ARMC4	-0.008766
RUFY3	0.005809	AMELX	0.001844	IP6K1	-0.000854	ACSS2	-0.008769
PRR19	0.005808	TAF15	0.001844	VPS28	-0.000854	CP	-0.008771
IL19	0.005808	SMTN	0.001843	STOX2	-0.000855	SSC5D	-0.008776
C5orf30	0.005807	ATP5S	0.001842	C6orf47	-0.000855	LTB	-0.008778

TAF2	0.005806	IRF2BPL	0.001842	TRMT1L	-0.000855	ADH1A	-0.008779
PARD6G	0.005802	ARFGEF2	0.001842	USP2	-0.000857	C6orf229	-0.008781
VPS13A	0.005801	DPM1	0.001841	VPS36	-0.000857	HPR	-0.008787
CBWD3	0.005800	C21orf2	0.001840	DHCR7	-0.000858	L1TD1	-0.008795
SCRIB	0.005800	TYW1	0.001840	OR2B11	-0.000859	LRP1	-0.008796
RTN2	0.005798	PNLIPRP1	0.001840	MPRIP	-0.000859	FREM2	-0.008804
CADM4	0.005797	BPIFA3	0.001840	TMEM147	-0.000861	NCEH1	-0.008805
MICAL1	0.005797	CFC1B	0.001840	ADPRHL2	-0.000861	THEMIS	-0.008808
TAF1D	0.005796	FAM104B	0.001839	RSL1D1	-0.000861	FUOM	-0.008809
CYP2C8	0.005794	CALM3	0.001839	ZNF277	-0.000863	LRP10	-0.008811
PSMG4	0.005791	SCRN1	0.001838	SAR1B	-0.000864	LCN6	-0.008814
LRGUK	0.005781	AARSD1	0.001837	RNF17	-0.000865	PLSCR4	-0.008816
LBX2	0.005781	ELMOD3	0.001837	PSMB3	-0.000865	AGPAT2	-0.008818
TSGA10	0.005776	OR10K1	0.001836	FER1L6	-0.000867	MYLK	-0.008828
SAMD1	0.005775	C16orf70	0.001835	GTF2B	-0.000867	SLC25A43	-0.008829
PHC1	0.005774	PTGES3	0.001834	NIPAL3	-0.000868	NDRG2	-0.008829
ARHGEF33	0.005774	EGLN1	0.001832	MT-ND3	-0.000869	ZCCHC24	-0.008832
FAM65C	0.005774	CDC40	0.001832	MYO1A	-0.000869	PIK3R5	-0.008833
GPR75	0.005773	KRTAP10-8	0.001832	OR5P3	-0.000869	CLEC4D	-0.008837
DHX34	0.005773	INSL6	0.001831	CGB5	-0.000869	TM6SF1	-0.008838
KCNE2	0.005768	MRGPRD	0.001831	MRPL16	-0.000869	ME1	-0.008844
SNAPC3	0.005763	L3MBTL3	0.001830	ZNHIT1	-0.000872	LRRC36	-0.008845
NPIPB5	0.005760	FBXO3	0.001829	PDZD8	-0.000872	CAV3	-0.008847
ZKSCAN7	0.005760	CNOT10	0.001826	USP40	-0.000872	TCN2	-0.008850
ADGRL1	0.005760	ZYG11B	0.001826	RGMA	-0.000872	PTGS1	-0.008851
NEU3	0.005759	CRYBA1	0.001825	SLC10A7	-0.000873	LCP2	-0.008855
SRMS	0.005759	PMPCA	0.001825	TREX1	-0.000875	DEFA1	-0.008863
C2CD4D	0.005758	ACAT2	0.001824	PEX7	-0.000875	ACE	-0.008866
SLC25A47	0.005757	LARP4	0.001824	GRAMD1C	-0.000875	DOK4	-0.008870
TMEM89	0.005756	AMMECR1	0.001822	FAM8A1	-0.000876	IGFBP6	-0.008877
MEX3D	0.005755	KRTAP10-12	0.001822	RBP7	-0.000878	IRF8	-0.008879
TMEM31	0.005754	ANAPC11	0.001821	C16orf86	-0.000879	PLAC8	-0.008879
LFNG	0.005754	CAMKMT	0.001820	FLRT2	-0.000879	PDK4	-0.008882
LRRC14	0.005752	HINT2	0.001819	RBSN	-0.000882	P2RY10	-0.008884
ZMYM2	0.005749	POM121	0.001818	OR2W3	-0.000884	GPR132	-0.008885
CKB	0.005747	ZNF619	0.001818	TRMT112	-0.000888	EFEMP2	-0.008887
TPTE	0.005747	FOCAD	0.001818	ZNF469	-0.000888	TRIM29	-0.008887
R3HDM1	0.005746	MYOT	0.001817	OR5G3	-0.000889	TLL1	-0.008887
EXOSC2	0.005746	OR4N2	0.001815	EIF3E	-0.000890	SLC16A12	-0.008897
ESR2	0.005745	OTOL1	0.001815	CYP7A1	-0.000891	ARPC1B	-0.008898
ZDBF2	0.005744	BUD13	0.001813	MRGPRX2	-0.000892	BCHE	-0.008902

CEP83	0.005744	STK38	0.001813	TMEM87B	-0.000893	FPR3	-0.008903
AKT3	0.005744	PSMD14	0.001812	TEN1	-0.000894	LYPD2	-0.008908
SLC13A4	0.005743	EZH1	0.001812	PDE12	-0.000895	GPC4	-0.008911
ZNF775	0.005743	OR2M3	0.001810	CTNNBL1	-0.000896	MYO1C	-0.008914
SLC6A11	0.005743	ZFP64	0.001810	STT3B	-0.000897	PPL	-0.008914
AACS	0.005742	CSN2	0.001809	RGS14	-0.000898	IL5RA	-0.008917
TMEM136	0.005739	ATRIP	0.001808	PCDH10	-0.000898	HPD	-0.008926
ZNF510	0.005738	MRPL52	0.001808	UBE2B	-0.000899	CELA2B	-0.008927
MRI1	0.005737	ZIM3	0.001806	PSMA5	-0.000899	SYNE1	-0.008931
SUZ12	0.005736	HACD2	0.001806	ADI1	-0.000899	TNFRSF10A	-0.008932
HIST2H2AA3	0.005735	HPS3	0.001806	GPR150	-0.000901	KLF9	-0.008933
ZNF404	0.005735	YIPF6	0.001804	FAM86C1	-0.000902	IL15RA	-0.008937
CDC25B	0.005730	NFE2L3	0.001804	RCN3	-0.000904	ZNF185	-0.008941
SLC25A2	0.005730	C22orf39	0.001803	FRMD4A	-0.000905	IER3	-0.008943
EBLN2	0.005728	SRP54	0.001803	ITSN2	-0.000906	GNG7	-0.008945
DBNDD1	0.005725	TRNT1	0.001802	CYP4A22	-0.000907	APOL3	-0.008950
SENP5	0.005723	SGCB	0.001801	TSPAN33	-0.000907	KDR	-0.008952
MASTL	0.005720	FAM71B	0.001801	CHID1	-0.000910	LILRB2	-0.008957
ZNF611	0.005719	LNP1	0.001798	IRF9	-0.000910	CHP1	-0.008962
KRTAP5-7	0.005718	AGGF1	0.001798	RNF213	-0.000912	EPHX3	-0.008963
HDGFL1	0.005717	DSG4	0.001797	TMEM41B	-0.000912	TMEM105	-0.008964
TULP4	0.005714	TRIM23	0.001797	CCSER2	-0.000912	CTSO	-0.008975
NUP43	0.005710	MRPL50	0.001797	RABEPK	-0.000913	TSPAN1	-0.008975
CHRNA1	0.005709	N4BP3	0.001796	ABCB5	-0.000914	GPSM3	-0.008981
GRIN2D	0.005708	VN1R2	0.001796	MSMP	-0.000915	CD164L2	-0.008981
NAA11	0.005708	ABHD17A	0.001795	DNAJB2	-0.000915	MPEG1	-0.008982
TMEM181	0.005705	EID3	0.001794	UBR1	-0.000916	SMAGP	-0.008989
ZNF704	0.005705	FAM135A	0.001794	DNPH1	-0.000916	AK1	-0.008991
ZNF785	0.005703	C17orf51	0.001793	KIF9	-0.000916	FEZ1	-0.008993
FBXW7	0.005702	CHCHD2	0.001791	KAT5	-0.000917	BMX	-0.008999
ROBO1	0.005701	ZNF788	0.001790	MRPL10	-0.000917	BMPR1B	-0.009003
ZNF776	0.005699	UBTD2	0.001788	RAB11FIP2	-0.000919	APLNR	-0.009007
POU2F1	0.005698	FAIM	0.001788	TFRC	-0.000919	NRGN	-0.009007
ZFR2	0.005696	RUVBL2	0.001788	PES1	-0.000923	PDE4D	-0.009009
RBMX	0.005695	TGFBRAP1	0.001786	NRAP	-0.000924	SPNS3	-0.009009
CBWD5	0.005694	DDX31	0.001785	NDUFC1	-0.000926	ATP6V0A4	-0.009011
ERICH6	0.005690	AGL	0.001784	HTR1D	-0.000927	ITGA5	-0.009016
TAF5	0.005690	PLEK2	0.001784	CRISPLD1	-0.000928	ADORA2B	-0.009019
TACR3	0.005689	TASP1	0.001783	PPP1CB	-0.000929	PLA2G2A	-0.009027
LSM14B	0.005689	GABRA4	0.001783	TCF7	-0.000931	TAGAP	-0.009029
SACS	0.005689	SSX2	0.001783	CLTC	-0.000931	DHCR24	-0.009043

BAALC	0.005688	FAT3	0.001783	CCDC51	-0.000932	EPHA1	-0.009044
ZNF333	0.005687	SLURP1	0.001782	ATP6V1G3	-0.000932	CECR1	-0.009046
EPX	0.005687	WDSUB1	0.001780	PTPRF	-0.000933	GZMM	-0.009046
TMEM260	0.005684	MIXL1	0.001780	ZNF622	-0.000933	PRRG1	-0.009061
DCAF8L1	0.005683	GABPA	0.001780	ASCC1	-0.000935	CYYR1	-0.009062
MOGAT2	0.005683	ZNF787	0.001780	SMIM4	-0.000935	HAS2	-0.009063
XPOT	0.005682	C4orf45	0.001780	IMMP2L	-0.000937	CLMP	-0.009066
NSMF	0.005682	EIF2AK1	0.001779	MAPKAP1	-0.000938	KMO	-0.009066
ZNF518B	0.005678	OR2AT4	0.001779	DPF3	-0.000939	BTNL9	-0.009068
CPNE4	0.005677	DMRTB1	0.001776	SH3BGRL2	-0.000940	SLAMF6	-0.009072
ZNF75A	0.005675	IGSF23	0.001776	HSCB	-0.000940	NBL1	-0.009072
IVNS1ABP	0.005675	YTHDF1	0.001775	SLC8A1	-0.000941	PLAUR	-0.009073
ZSWIM2	0.005673	LARP1	0.001775	BCL7C	-0.000941	SYNPO2	-0.009078
RBM44	0.005673	ZC3HC1	0.001775	STX3	-0.000941	GLI3	-0.009078
SRSF2	0.005673	OR8D4	0.001775	NDFIP1	-0.000942	ZNF831	-0.009079
ZNF549	0.005673	OR4A15	0.001775	DUSP14	-0.000943	SPDEF	-0.009079
RAD9A	0.005664	ZBTB8OS	0.001774	SYTL2	-0.000944	DNAH12	-0.009082
SLC2A2	0.005664	CCDC117	0.001774	AGPS	-0.000945	FMO5	-0.009085
ABCB6	0.005661	GTPBP4	0.001774	VKORC1	-0.000945	GPR146	-0.009090
ANK2	0.005657	NDUFS1	0.001773	SNX11	-0.000946	ZNF366	-0.009093
ZNF493	0.005654	AXIN1	0.001772	ZNF311	-0.000947	STXBP6	-0.009093
CRHBP	0.005654	MEI4	0.001772	NTS	-0.000948	XPNPEP2	-0.009095
WDR34	0.005652	TRIM64B	0.001772	NFATC2	-0.000948	ZFPM2	-0.009098
NCAPD2	0.005646	RBFOX2	0.001771	SNX14	-0.000950	TRIM31	-0.009103
POLR2H	0.005645	ADSSL1	0.001771	MAP3K5	-0.000951	WBSCR17	-0.009107
OPA1	0.005644	PTK2	0.001770	ATP6V1B2	-0.000953	ACSM3	-0.009108
SAMD15	0.005642	HDAC10	0.001769	ABHD2	-0.000953	TM4SF4	-0.009109
TMED8	0.005641	ARNTL	0.001768	GLS	-0.000953	HAS3	-0.009115
TRA2B	0.005638	OR11H4	0.001768	SHANK3	-0.000954	ITPKC	-0.009116
PABPN1	0.005635	ZNF687	0.001768	HAVCR1	-0.000956	NKAPL	-0.009118
TRAF5	0.005635	CHRNB3	0.001767	GSR	-0.000959	RIN3	-0.009119
AANAT	0.005635	PINX1	0.001766	SDF2L1	-0.000959	RAB20	-0.009124
TCF3	0.005633	ANKRD46	0.001765	CHL1	-0.000959	CD81	-0.009133
MTERF2	0.005631	TTC30A	0.001765	TBC1D9B	-0.000960	TMED6	-0.009135
IL12RB2	0.005630	GOLGA8N	0.001763	CCDC152	-0.000961	NOG	-0.009136
RFX6	0.005626	RTN4IP1	0.001762	MAF1	-0.000962	NMUR1	-0.009138
TADA2A	0.005623	PTPRA	0.001762	CHMP1B	-0.000962	MLC1	-0.009142
NKX1-2	0.005622	CREB3L3	0.001762	SYNE4	-0.000964	TJP3	-0.009148
KCNMA1	0.005618	PIGZ	0.001760	DUSP13	-0.000966	FGFR3	-0.009150
ABAT	0.005618	PIGF	0.001760	IGBP1	-0.000966	CYP2A6	-0.009152
ENOX1	0.005617	NME7	0.001760	MTMR10	-0.000966	HGF	-0.009153

NUP205	0.005617	PATL1	0.001759	CDKN1C	-0.000967	PLCD1	-0.009160
QTRT1	0.005614	MRPS10	0.001759	SKIL	-0.000969	KHDRBS2	-0.009177
CAMK4	0.005613	COX5A	0.001757	TPPP2	-0.000969	BIN2	-0.009178
SLC28A1	0.005613	POPDC2	0.001757	SHISA6	-0.000970	EFNA1	-0.009178
NAA16	0.005613	ENOX2	0.001756	FAM127A	-0.000970	DKK3	-0.009178
MYO15A	0.005610	ITIH1	0.001756	DPAGT1	-0.000971	TRIM22	-0.009181
CHAT	0.005607	TRIM68	0.001755	PLP2	-0.000971	CDH11	-0.009184
PYCR1	0.005607	YARS2	0.001755	MLX	-0.000973	MFNG	-0.009186
C16orf87	0.005605	UBE3A	0.001754	STARD7	-0.000973	PTCHD1	-0.009186
GINS3	0.005604	GPR176	0.001754	BID	-0.000973	RAB32	-0.009188
ZNF544	0.005601	MRGPRX3	0.001754	CEP112	-0.000973	IL20RA	-0.009192
ODF2	0.005601	ELK4	0.001754	MBOAT7	-0.000974	LMNA	-0.009196
RNF113B	0.005599	GPR1	0.001752	AP1G1	-0.000975	SLC18A2	-0.009206
CCDC30	0.005597	CBL	0.001752	C1GALT1C1	-0.000978	KIR3DL2	-0.009206
PRDM9	0.005594	TRUB2	0.001751	NAPA	-0.000980	GAS1	-0.009212
BCOR	0.005594	FAM151A	0.001751	STAT1	-0.000980	LIF	-0.009212
C2orf78	0.005591	OR7C1	0.001748	STK16	-0.000981	TOR4A	-0.009212
CSTF3	0.005590	ZNF600	0.001747	FKBP14	-0.000982	CFH	-0.009227
PRSS46	0.005589	XPNPEP3	0.001746	C7orf50	-0.000982	GBP4	-0.009230
OR2H2	0.005588	OR56A1	0.001745	RUNX2	-0.000982	FMO4	-0.009231
SLC6A8	0.005588	KDM8	0.001744	ZCWPW1	-0.000983	PDGFRA	-0.009233
UVSSA	0.005586	MFAP3	0.001743	ELMSAN1	-0.000983	NHLRC4	-0.009236
MARCKS	0.005586	OR11A1	0.001743	RPN2	-0.000986	GIMAP2	-0.009241
ZNF180	0.005585	MAVS	0.001742	OR1L8	-0.000986	EPHX1	-0.009243
MSANTD2	0.005585	EPHX4	0.001742	NKIRAS1	-0.000987	ELN	-0.009264
PHOSPHO2	0.005584	RC3H1	0.001741	PEX11A	-0.000988	TSKS	-0.009269
CCNL1	0.005581	USP29	0.001740	AP3S2	-0.000988	MTRNR2L12	-0.009275
RASGEF1C	0.005579	ZP3	0.001739	ZBTB22	-0.000989	RASL11A	-0.009278
APOO	0.005577	ISCA1	0.001739	TRIM4	-0.000991	EIF4EBP3	-0.009280
DDX4	0.005575	ATXN7L3	0.001739	CIDEC	-0.000991	GPR157	-0.009284
CCNJ	0.005573	DMRTC2	0.001738	PGA3	-0.000992	SLC9A3R2	-0.009294
PDIK1L	0.005573	EEPD1	0.001735	CTAGE5	-0.000992	ACOXL	-0.009294
PPP1R37	0.005572	MTHFD1L	0.001735	RGS7BP	-0.000993	IL34	-0.009295
NUTM2G	0.005572	MYF6	0.001734	MAPK1	-0.000994	EPHB4	-0.009297
RPAP2	0.005568	SLC6A18	0.001734	ELP3	-0.000998	CTSZ	-0.009297
PDE6C	0.005568	PTMS	0.001733	LRRC3C	-0.001000	CD40	-0.009301
ZNF528	0.005567	EPRS	0.001731	LRRFIP2	-0.001001	CPZ	-0.009306
ZNF224	0.005565	C14orf178	0.001729	UBE2E1	-0.001003	ANGPTL5	-0.009308
CACNA1I	0.005565	TFB2M	0.001728	ZNF710	-0.001003	NOD2	-0.009309
NOX5	0.005563	SYTL5	0.001728	AP2A2	-0.001004	SH2D3C	-0.009310

THSD7B	0.005563	KRT82	0.001728	PKD1L1	-0.001004	CDK15	-0.009312
HES7	0.005562	POM121L2	0.001728	TNFRSF14	-0.001005	PLEKHO2	-0.009320
ABHD1	0.005560	NUDT4	0.001728	TSTD1	-0.001005	MAP3K8	-0.009321
BCL2L11	0.005559	C9orf85	0.001728	RNF139	-0.001006	SLC52A1	-0.009333
MAZ	0.005558	TRIM49D1	0.001728	RPL7A	-0.001006	ABCG2	-0.009336
LARP1B	0.005555	APTX	0.001727	C1D	-0.001006	CCIN	-0.009337
TBPL1	0.005554	KRTAP24-1	0.001727	ACSL3	-0.001008	WTIP	-0.009349
GPR62	0.005553	KCTD15	0.001725	FGB	-0.001010	B4GALNT2	-0.009351
PHF10	0.005551	NSMCE2	0.001725	CLP1	-0.001010	TMC8	-0.009354
UBR7	0.005550	C14orf166	0.001725	STAP2	-0.001010	ANKFN1	-0.009361
GGN	0.005549	CNTN4	0.001725	MBD2	-0.001013	CMKLR1	-0.009362
ZNF133	0.005549	PSMG2	0.001724	TRPS1	-0.001015	GPR183	-0.009363
TSSK6	0.005546	HEXIM2	0.001724	ARCN1	-0.001017	C9orf135	-0.009369
CNDP1	0.005545	OR4D2	0.001724	PEBP1	-0.001021	CRYAB	-0.009370
NAT8	0.005544	SS18L2	0.001723	SH3RF3	-0.001022	ITGBL1	-0.009373
CFC1	0.005542	ZNF415	0.001722	RIOK2	-0.001022	IGF1	-0.009383
BHLHE23	0.005541	BTBD2	0.001721	NHEJ1	-0.001023	FBLN2	-0.009384
LRP3	0.005537	SLC7A4	0.001721	PARP10	-0.001024	DAPK2	-0.009390
DBN1	0.005536	CDY2A	0.001721	RPS6	-0.001025	FOLR2	-0.009396
FAM129C	0.005536	PPP6R1	0.001718	SYF2	-0.001025	SOCS2	-0.009400
CTAG1A	0.005534	AGBL3	0.001718	PADI1	-0.001027	ITPR1	-0.009401
SLC1A6	0.005534	SPEM1	0.001718	PMM2	-0.001029	RGS18	-0.009410
SLITRK5	0.005532	AGO4	0.001717	PAX7	-0.001030	ST8SIA1	-0.009420
EFCAB5	0.005531	RNF115	0.001715	MYBPC3	-0.001031	MAPKAPK3	-0.009423
NXPE2	0.005529	WDR33	0.001714	GLCE	-0.001033	KLF15	-0.009427
ADAMTS6	0.005528	PISD	0.001714	TMEM42	-0.001033	FILIP1L	-0.009430
DOPEY1	0.005524	PUS3	0.001713	TTC9	-0.001034	SH2D1B	-0.009433
HSPB11	0.005523	C8orf33	0.001713	DGCR6L	-0.001037	HAS1	-0.009435
LSM7	0.005522	CLSTN1	0.001712	SSX5	-0.001037	HIF3A	-0.009436
PARP1	0.005521	XPO6	0.001712	CLEC19A	-0.001040	PLTP	-0.009445
ZBTB39	0.005520	GEMIN6	0.001712	C6orf1	-0.001040	KRT1	-0.009451
COQ10A	0.005517	OR1S2	0.001711	DNTTIP1	-0.001041	LY75	-0.009452
PSD3	0.005515	SERPINB13	0.001711	TMEM128	-0.001042	FCGRT	-0.009452
SCGB2B2	0.005515	TSSC1	0.001710	FPGS	-0.001043	SCARA3	-0.009453
C8orf88	0.005515	AMDHD2	0.001710	CSDE1	-0.001044	ERICH2	-0.009453
PIWIL2	0.005514	KRAS	0.001710	IK	-0.001044	AWAT2	-0.009457
TSSK4	0.005514	NME9	0.001710	SLFNL1	-0.001044	C5AR2	-0.009463
ALPK2	0.005514	MORC4	0.001710	TRAK1	-0.001045	MUC4	-0.009467
KIF21A	0.005513	GTF2E1	0.001709	HSH2D	-0.001045	CD3D	-0.009469
TBC1D16	0.005512	NOL9	0.001709	KLHL20	-0.001047	S100B	-0.009471
STX1B	0.005510	RPL10L	0.001709	NME6	-0.001048	LRRC15	-0.009476

LCOR	0.005508	EIF3B	0.001709	C5orf15	-0.001048	IL16	-0.009476
HSF2BP	0.005506	OR8B3	0.001707	C7orf77	-0.001049	VILL	-0.009488
RNF144A	0.005504	UPF1	0.001707	UQCRC1	-0.001049	CYP11A1	-0.009488
APOBEC3B	0.005504	NOLC1	0.001706	GLIS1	-0.001050	NOSTRIN	-0.009490
USP6	0.005504	PAK2	0.001706	PITPNM1	-0.001051	AHNAK2	-0.009494
SENP1	0.005503	ECI1	0.001706	TMED1	-0.001051	KLF17	-0.009499
PELI2	0.005503	IQCE	0.001706	PCYT1A	-0.001051	RPS6KA2	-0.009499
KIF27	0.005503	CIAO1	0.001705	UBB	-0.001051	MUC16	-0.009502
CCDC171	0.005503	WDR77	0.001705	VGLL4	-0.001052	KLF8	-0.009504
KRTAP4-1	0.005501	TTC33	0.001705	TMEM129	-0.001053	APOBEC3C	-0.009505
ARHGAP32	0.005499	COQ7	0.001705	PSEN1	-0.001055	GATA1	-0.009506
C17orf75	0.005497	MROH7	0.001704	SMPDL3A	-0.001056	CDO1	-0.009509
PATE1	0.005494	ADM5	0.001704	LYAR	-0.001056	MMRN2	-0.009516
FUBP1	0.005492	MRPL39	0.001704	RNF10	-0.001057	CD7	-0.009518
DIP2A	0.005492	EFS	0.001703	BLOC1S4	-0.001058	FGFRL1	-0.009524
CLDN3	0.005489	MFF	0.001703	HRH4	-0.001060	KLRF1	-0.009530
USP17L2	0.005489	TRIM51	0.001703	CD72	-0.001060	PLG	-0.009539
ARL6IP1	0.005487	TCEA1	0.001702	ARL8A	-0.001063	MECOM	-0.009540
NRXN2	0.005485	ARIH2	0.001702	ECHS1	-0.001064	FBXO17	-0.009542
DAZ4	0.005485	DDX41	0.001702	NDP	-0.001065	ROPN1L	-0.009542
PCED1A	0.005484	OSER1	0.001701	TBL2	-0.001066	BANK1	-0.009544
XKR9	0.005479	CES5A	0.001700	SARS	-0.001066	CXorf21	-0.009550
ZNF559	0.005479	CEP120	0.001699	KCNN2	-0.001066	BST1	-0.009551
CEP170	0.005478	OR51B6	0.001699	RPS20	-0.001069	DYNLRB2	-0.009552
TRIM52	0.005478	RNF215	0.001698	CLPTM1L	-0.001069	TNFRSF10B	-0.009555
EXO5	0.005477	TATDN3	0.001698	CAPZA1	-0.001070	PIK3CG	-0.009556
OTX1	0.005475	PABPC5	0.001697	GPR33	-0.001071	SGK1	-0.009558
CNGB3	0.005474	PRDM14	0.001697	SSR2	-0.001071	PIP5K1B	-0.009558
KIF2A	0.005474	IDH3B	0.001697	RASAL2	-0.001071	RXRG	-0.009559
CCDC87	0.005474	VPS37A	0.001697	ADCK2	-0.001071	LRRC32	-0.009563
NTN5	0.005474	CALB2	0.001696	FATE1	-0.001072	LRRN4CL	-0.009563
CCDC144NL	0.005474	MRGPRX1	0.001696	IFNGR2	-0.001073	FTL	-0.009563
POLI	0.005473	NPSR1	0.001696	CPEB4	-0.001073	CCR5	-0.009564
TRDN	0.005471	KRT86	0.001693	FNDC3A	-0.001073	HVCN1	-0.009571
ANKRD49	0.005471	PIP4K2B	0.001693	WNT2B	-0.001073	PTPN14	-0.009579
TAF1L	0.005470	BTBD7	0.001693	TMEM50B	-0.001074	DOCK2	-0.009590
MTHFD2L	0.005470	OR4K5	0.001691	TRAF3IP1	-0.001075	CD34	-0.009599
ANKRD30A	0.005470	CYP2C19	0.001691	CA5B	-0.001076	PLD4	-0.009600
SAXO1	0.005469	TMEM211	0.001690	TDRD7	-0.001076	DAPP1	-0.009604
ATP13A3	0.005469	ARHGAP35	0.001687	ENPP4	-0.001077	GLDN	-0.009615
COL9A2	0.005466	NELFE	0.001687	PEX11B	-0.001079	ARL11	-0.009615

DGCR8	0.005466	APOL5	0.001685	GMPR	-0.001079	NFAM1	-0.009616
RPGRIP1L	0.005465	R3HCC1L	0.001685	CLEC11A	-0.001079	C4A	-0.009620
PPP1R35	0.005462	OR56B1	0.001684	RAB3GAP1	-0.001080	CRIM1	-0.009621
RALGAPA1	0.005462	GNPAT	0.001683	SEC23IP	-0.001080	NFKBIA	-0.009631
RNF138	0.005461	S100A1	0.001683	OGFR	-0.001081	FAT4	-0.009633
SYNGR1	0.005458	DPH1	0.001682	SAP18	-0.001082	RAB11FIP1	-0.009639
SLC22A16	0.005458	TRIM32	0.001682	SHARPIN	-0.001083	WAS	-0.009652
TAF4	0.005456	KIAA0355	0.001680	CADPS2	-0.001083	VWA3A	-0.009656
KRI1	0.005451	AFMID	0.001680	MFSD2B	-0.001084	C9orf152	-0.009658
METTL17	0.005450	RNF31	0.001680	CC2D2B	-0.001086	GPER1	-0.009662
GSDMB	0.005449	CHST10	0.001680	WNT4	-0.001087	NPY4R	-0.009672
TEKT5	0.005447	MTRNR2L5	0.001679	SEL1L	-0.001089	MGP	-0.009676
PPM1H	0.005447	JADE1	0.001678	ATP1B3	-0.001090	FAH	-0.009679
FSIP1	0.005447	MCTS1	0.001678	CPNE3	-0.001090	C10orf10	-0.009682
TTLL3	0.005446	GCG	0.001678	POLR2E	-0.001090	TSPAN32	-0.009685
ACAN	0.005445	EFCAB12	0.001678	RPL13A	-0.001091	OSR1	-0.009685
RBP1	0.005445	PREP	0.001678	KDM6B	-0.001092	NLRP3	-0.009685
AGAP5	0.005445	C1orf185	0.001677	SPOP	-0.001092	PRDM6	-0.009686
TOP3A	0.005444	ENTPD7	0.001676	ZBTB7B	-0.001092	FAM180A	-0.009690
TF	0.005440	HERC4	0.001676	NOS2	-0.001093	CPVL	-0.009692
NPIPA3	0.005439	TTLL12	0.001675	IFNL1	-0.001095	FERMT3	-0.009696
RPRD1A	0.005438	EMC8	0.001675	ZNF524	-0.001096	ABCA4	-0.009697
ANKRD20A2	0.005438	FER1L5	0.001675	PRKD2	-0.001096	ICAM2	-0.009704
PADI3	0.005437	TRIM50	0.001675	BLK	-0.001096	AQP10	-0.009706
ASB18	0.005436	UBE2D2	0.001674	ABRA	-0.001097	RAMP2	-0.009707
PLK5	0.005435	ZNF143	0.001673	GCSAM	-0.001097	SLC6A12	-0.009721
ROPN1	0.005435	HEPACAM	0.001671	WNT3	-0.001098	SEMA3C	-0.009730
ZNF445	0.005434	SMAP1	0.001671	HOXA3	-0.001098	TGFB1	-0.009731
HAUS3	0.005434	ZSWIM8	0.001671	EMC4	-0.001098	NCF4	-0.009736
WEE1	0.005431	WDR59	0.001671	FAM50B	-0.001099	PIH1D3	-0.009736
ZNF385C	0.005431	NUDT16L1	0.001670	EIF3I	-0.001099	POU2F3	-0.009737
FAM117B	0.005430	TNNI3K	0.001670	SEPHS2	-0.001100	MET	-0.009738
RGAG4	0.005429	LEO1	0.001669	SRP14	-0.001103	CAT	-0.009738
PAIP2B	0.005428	DDX59	0.001667	RPL39	-0.001103	HMOX1	-0.009739
SLX4	0.005424	HIRA	0.001667	IKZF4	-0.001103	EPS8L1	-0.009743
KPTN	0.005424	CARD8	0.001667	KCNT2	-0.001104	NCKAP5	-0.009749
NDST3	0.005422	STRN	0.001666	HOMEZ	-0.001104	NPIPA5	-0.009751
RLN2	0.005420	SYNE3	0.001665	CHST2	-0.001106	ITGAX	-0.009752
RBBP7	0.005419	SLC35G3	0.001665	SNUPN	-0.001106	ADAP1	-0.009758
TAS2R50	0.005417	MRPL35	0.001664	PTPN9	-0.001107	ADRA1D	-0.009768
DOPEY2	0.005417	CHRNA7	0.001664	PIGT	-0.001107	THEMIS2	-0.009779

UNKL	0.005417	OR1B1	0.001664	IL26	-0.001107	HFE	-0.009780
LSM8	0.005414	SMAD1	0.001663	DALRD3	-0.001107	PTPN22	-0.009792
ANKRD10	0.005412	ROCK1	0.001663	PCK2	-0.001108	CDH19	-0.009793
CCDC83	0.005411	KIF2B	0.001661	ZMYND11	-0.001108	TRPV4	-0.009796
POTEC	0.005409	ERMARD	0.001661	PUS10	-0.001108	SERPINB3	-0.009798
UPP2	0.005408	MTRNR2L13	0.001661	SUCLG1	-0.001110	BATF	-0.009804
PSTK	0.005407	SLC17A1	0.001660	43710	-0.001110	LEPR	-0.009810
UMOD	0.005407	ARL4C	0.001660	BNIP3L	-0.001111	GNA15	-0.009812
RGPD5	0.005407	CNOT4	0.001659	GPM6B	-0.001111	BHLHE41	-0.009814
RPEL1	0.005407	HTRA2	0.001659	APOBEC2	-0.001111	RAB37	-0.009819
C2CD3	0.005405	ZC3H15	0.001658	ACTG1	-0.001112	NR4A1	-0.009820
ATOH1	0.005403	ACADM	0.001656	SPTAN1	-0.001112	OTC	-0.009830
PHTF2	0.005401	KRT31	0.001656	BECN1	-0.001115	CWH43	-0.009833
C19orf18	0.005401	SLC25A19	0.001654	TUFM	-0.001116	GSDMC	-0.009837
HKR1	0.005399	SNTA1	0.001654	UBE2V1	-0.001118	HLA-DOB	-0.009840
OSBP2	0.005398	GRM1	0.001654	ATP8A1	-0.001120	TNFRSF8	-0.009843
FAM19A2	0.005396	PC	0.001653	BTF3	-0.001121	ELANE	-0.009844
KRBA2	0.005394	CCDC50	0.001653	ENO1	-0.001121	TSPAN18	-0.009845
NONO	0.005393	BACE1	0.001651	CCNI2	-0.001123	CDKL1	-0.009868
C8orf82	0.005391	TMEM238	0.001651	NOMO1	-0.001124	ZFP36L1	-0.009869
ZFC3H1	0.005390	RBMY1D	0.001651	EPS15	-0.001124	VNN3	-0.009869
ZNF771	0.005390	NIPAL1	0.001650	RPS3A	-0.001125	LRRC8E	-0.009870
ZNF518A	0.005390	TMOD4	0.001650	UNC50	-0.001126	GBP6	-0.009874
GALR2	0.005389	CLDN25	0.001650	EMC2	-0.001127	TBXAS1	-0.009877
FAM118A	0.005387	CAPZA3	0.001650	CDC26	-0.001127	SORCS2	-0.009878
MNAT1	0.005386	PHF20	0.001649	ATP5G2	-0.001127	C1orf141	-0.009882
TMEM44	0.005386	ODC1	0.001649	FBXO39	-0.001129	KLHL30	-0.009885
EPO	0.005386	TXNRD3	0.001648	AHSP	-0.001129	ADAMTSL5	-0.009885
SETD6	0.005386	PLAA	0.001648	GALNT11	-0.001131	LRRC71	-0.009888
ZIK1	0.005385	BAG5	0.001648	XIRP2	-0.001132	IKZF1	-0.009897
PRODH2	0.005384	PTPN3	0.001647	C2CD2	-0.001132	HSD11B1	-0.009900
ZNF506	0.005384	ZFAND4	0.001647	ARHGEF38	-0.001135	FAM124B	-0.009903
CHRNG	0.005383	ATXN2	0.001647	MAP2K5	-0.001136	LRRC2	-0.009904
POP1	0.005382	ALDH5A1	0.001646	SCARB2	-0.001136	BPIFA1	-0.009906
PAGE2B	0.005379	SCHIP1	0.001644	RRAGC	-0.001137	LYN	-0.009910
ZNF783	0.005376	ADCK1	0.001644	UBE2D4	-0.001138	MGST1	-0.009913
DZANK1	0.005376	CETN1	0.001642	UFM1	-0.001138	MYO1G	-0.009920
ZNF761	0.005376	LURAP1	0.001641	ZER1	-0.001139	ERBB2	-0.009924
KIF26B	0.005375	FBXL15	0.001641	CRTC3	-0.001139	TMEM71	-0.009926
NPDC1	0.005374	TRAPPC8	0.001640	OXER1	-0.001140	CRIP1	-0.009938
ANKRD30B	0.005374	NHP2	0.001640	MAN1C1	-0.001141	JDP2	-0.009938

ATF5	0.005373	TRMT2B	0.001639	DCAF6	-0.001142	PYCARD	-0.009950
ZNF507	0.005370	EIF5	0.001638	PIP4K2C	-0.001144	LPAR3	-0.009967
ATP6V1B1	0.005369	DFFA	0.001638	C10orf99	-0.001144	CCL19	-0.009967
NPAP1	0.005369	PRPF31	0.001637	ACBD3	-0.001145	C3orf36	-0.009971
ATAD2B	0.005369	ARL14EP	0.001637	ATG101	-0.001145	IL12RB1	-0.009975
SGK2	0.005369	USP17L22	0.001636	ENPP5	-0.001145	CASP10	-0.009976
TRMT13	0.005368	OR2B3	0.001636	TMEM189	-0.001145	PTPN21	-0.009982
FOXD4L5	0.005367	RWDD4	0.001636	DAD1	-0.001145	F13A1	-0.009982
SDR39U1	0.005365	MKRN1	0.001636	MKRN2OS	-0.001146	LILRB3	-0.009986
NEURL4	0.005364	GSG1	0.001635	SMPX	-0.001147	IL27RA	-0.009988
ZNF674	0.005363	CCDC43	0.001634	TMEM91	-0.001148	LIMCH1	-0.009990
MZT2A	0.005361	BOLA1	0.001634	TVP23B	-0.001148	ARHGAP44	-0.009990
RLN1	0.005360	CLIP2	0.001633	KDELR1	-0.001151	SPARCL1	-0.009991
MIPOL1	0.005358	ISY1	0.001632	RIT1	-0.001154	PLEK	-0.009993
HSPB9	0.005358	COQ5	0.001631	ANKUB1	-0.001154	CD2	-0.009994
ZRANB2	0.005357	SLC6A1	0.001630	RFX5	-0.001154	MICA	-0.009997
C17orf80	0.005356	PEX26	0.001629	TNFSF18	-0.001156	CD14	-0.009997
ZNF610	0.005354	KRTAP20-2	0.001629	EIF4H	-0.001160	AKAP14	-0.010000
EIF4EBP1	0.005353	GP5	0.001629	RGS3	-0.001161	WDR63	-0.010002
PRSS27	0.005351	CACNA1C	0.001629	CREB5	-0.001164	SLCO4C1	-0.010005
ABCG8	0.005350	ANKRD13C	0.001628	TMEM192	-0.001164	OMG	-0.010011
ZNF532	0.005350	MINPP1	0.001628	PAM	-0.001165	TST	-0.010015
CHRNA10	0.005349	CLYBL	0.001628	APLN	-0.001167	SSPN	-0.010018
ZNF77	0.005349	LCMT2	0.001627	MPC1	-0.001167	VSNL1	-0.010024
SREK1	0.005347	MED7	0.001627	SLCO4A1	-0.001167	SASH3	-0.010026
RFWD3	0.005347	YPEL2	0.001627	DENND5A	-0.001168	SERPINA9	-0.010028
RSPH6A	0.005345	AHSA1	0.001626	AGFG2	-0.001171	MOXD1	-0.010031
PHKA2	0.005345	TOM1L1	0.001626	MPPE1	-0.001171	ECHDC3	-0.010034
FOXRED1	0.005343	NUP37	0.001626	BEST1	-0.001171	SERTAD1	-0.010035
FNBP4	0.005343	ATP6V0B	0.001624	TMF1	-0.001172	EGFR	-0.010046
FAM181B	0.005342	SRR	0.001624	NUB1	-0.001172	FCAR	-0.010051
SOBP	0.005340	MAPRE1	0.001624	HNRNPH2	-0.001173	CCND2	-0.010061
SMC3	0.005340	SNRPD3	0.001622	POMP	-0.001173	CD302	-0.010065
CRB2	0.005340	AMZ2	0.001622	SETD3	-0.001173	MISP	-0.010074
MCHR1	0.005338	ZNF479	0.001621	ANAPC13	-0.001177	RIPK3	-0.010076
TUBG1	0.005337	TMEM38A	0.001621	SPATC1	-0.001177	WNT7B	-0.010079
PNMA1	0.005336	PSMD2	0.001621	MYO1E	-0.001180	CYTIP	-0.010079
LIMD2	0.005335	CHD4	0.001621	ZNF727	-0.001183	TNFRSF1B	-0.010084
C2CD5	0.005334	KAT8	0.001620	ZNF705A	-0.001183	IFI27	-0.010086
SRGAP3	0.005334	CCDC120	0.001619	ATF7	-0.001186	FXYD4	-0.010087
TUBGCP6	0.005334	CST9	0.001619	TAPT1	-0.001186	CD48	-0.010090

KLHL32	0.005331	VPS29	0.001619	SLC3A2	-0.001187	TLR5	-0.010093
GOLM1	0.005330	MBD5	0.001618	EID1	-0.001190	LMO3	-0.010100
TUBA8	0.005329	WDR3	0.001618	CCDC85B	-0.001190	OAS2	-0.010104
TSPYL2	0.005329	OR1F1	0.001617	TTC25	-0.001191	AIF1	-0.010108
REV3L	0.005329	PDE3B	0.001617	ESRRA	-0.001192	LCP1	-0.010122
RAE1	0.005328	GNB1	0.001615	HDDC3	-0.001193	PLA2G16	-0.010125
PNPLA7	0.005326	C1orf122	0.001613	PTRH1	-0.001193	LAMB2	-0.010131
GLS2	0.005326	FAM120B	0.001613	RPS17	-0.001193	EVI2A	-0.010139
NAA25	0.005326	C17orf98	0.001613	RPSA	-0.001193	CFB	-0.010143
DYRK2	0.005326	TEX40	0.001613	SGCE	-0.001194	TMC5	-0.010146
GPATCH2L	0.005325	PPP3R1	0.001612	INSL3	-0.001194	LPL	-0.010146
LMX1B	0.005324	KDM4A	0.001612	ARHGAP17	-0.001195	ARHGAP18	-0.010148
RTN1	0.005323	GTF2F2	0.001611	PNPO	-0.001197	BDNF	-0.010149
BPHL	0.005323	PIWIL4	0.001610	ARNT	-0.001199	CRLF2	-0.010159
GPR135	0.005321	PSMB7	0.001609	PRDM5	-0.001200	IL4R	-0.010159
ZNF804B	0.005321	GGA3	0.001609	FABP5	-0.001202	C4B	-0.010161
GPRASP1	0.005319	NDUFV1	0.001608	CCT6B	-0.001204	IL18R1	-0.010166
URB2	0.005319	TMEM131	0.001608	RPS25	-0.001205	C1R	-0.010166
NUP107	0.005318	FAM43B	0.001608	GH1	-0.001207	CEACAM3	-0.010169
RYR3	0.005317	MTO1	0.001608	BTG1	-0.001207	GJB3	-0.010169
SPP1	0.005317	SLITRK4	0.001607	FCGR2C	-0.001209	CAPN6	-0.010170
CAD	0.005315	GNE	0.001607	CHCHD7	-0.001210	GIMAP4	-0.010174
NRARP	0.005314	HSD17B10	0.001607	NANS	-0.001210	SIRPA	-0.010183
ZNF431	0.005312	CCDC33	0.001606	SEC24A	-0.001211	CGN	-0.010187
NRM	0.005311	TMEM199	0.001606	MPV17L	-0.001211	TNFSF10	-0.010190
ZNF117	0.005309	OR4C5	0.001606	ADHFE1	-0.001211	FCGR1B	-0.010192
KDELC1	0.005306	YES1	0.001605	FAM120A	-0.001212	CCL15	-0.010194
PLEKHA6	0.005306	CAPN7	0.001604	NAA38	-0.001213	C1orf189	-0.010208
LPAR2	0.005305	SSBP1	0.001604	KLF3	-0.001214	GGT1	-0.010212
LKAAEAR1	0.005305	EBF1	0.001603	TACR1	-0.001215	RASL12	-0.010224
RBAK	0.005304	VSIG10	0.001603	GUK1	-0.001217	FMO3	-0.010226
PTAR1	0.005303	ATP9B	0.001602	CRIP2	-0.001219	GOLT1A	-0.010229
ZNF182	0.005302	MAN2A2	0.001602	TRIP4	-0.001219	TNFAIP8L2	-0.010231
EXOSC8	0.005301	GPAM	0.001602	SHOC2	-0.001219	PALM3	-0.010231
LIMS3	0.005299	PIK3R4	0.001602	SUPT4H1	-0.001219	HAVCR2	-0.010232
PXMP2	0.005297	FAM149B1	0.001601	SLC6A2	-0.001222	CPNE8	-0.010241
PKIA	0.005295	TLE3	0.001601	LRRC59	-0.001222	GZMB	-0.010244
UCKL1	0.005295	OR4K14	0.001601	RPS11	-0.001223	ADAMTS1	-0.010255
CLDN9	0.005294	FRAT2	0.001600	RAB42	-0.001223	CD244	-0.010259
ZNF131	0.005292	FERD3L	0.001600	KARS	-0.001225	PTGFR	-0.010262
PDE6A	0.005292	DOK6	0.001600	PLCB3	-0.001225	P2RX2	-0.010274

ZFP82	0.005292	NPM3	0.001600	CCL26	-0.001227	SHC3	-0.010282
NXPE1	0.005291	NPLOC4	0.001600	FBXO4	-0.001227	CA12	-0.010284
KCNC4	0.005290	MAPRE3	0.001599	PSORS1C2	-0.001228	C18orf63	-0.010285
DROSHA	0.005287	SPX	0.001599	MYL2	-0.001229	TNFRSF1A	-0.010291
IKBKAP	0.005282	PTPN4	0.001599	RAB21	-0.001230	GPNMB	-0.010293
LRP12	0.005279	SDAD1	0.001598	EPN2	-0.001230	ENKUR	-0.010297
PIGL	0.005276	HNRNPK	0.001597	KIF6	-0.001230	DHRS3	-0.010298
SLC27A5	0.005275	BRAP	0.001596	TOMM20L	-0.001230	PLCD3	-0.010298
MRPS26	0.005274	B3GALT6	0.001596	DDOST	-0.001232	HACD4	-0.010298
LMOD2	0.005271	DEFA6	0.001596	MEP1A	-0.001233	PTPRC	-0.010300
KLC2	0.005270	TAF9	0.001595	PEX19	-0.001234	HIGD1B	-0.010300
FAM102B	0.005270	MMP10	0.001595	NBPF19	-0.001236	CD3G	-0.010312
SDK1	0.005265	CUEDC1	0.001595	IL4	-0.001236	COPZ2	-0.010318
STKLD1	0.005264	BBS5	0.001595	TFIP11	-0.001237	PALMD	-0.010318
C10orf62	0.005261	HSPA9	0.001593	C3orf33	-0.001238	ADH7	-0.010320
APCS	0.005260	NEK3	0.001593	EIF4EBP2	-0.001238	IL3RA	-0.010330
BRIX1	0.005259	AADACL3	0.001593	ERGIC3	-0.001240	IL13RA2	-0.010332
WDR4	0.005249	NIF3L1	0.001593	MPV17	-0.001240	C10orf67	-0.010333
RSRC1	0.005244	VMP1	0.001592	DOCK10	-0.001240	FAM20A	-0.010333
RUFY2	0.005243	ASH2L	0.001592	C3orf18	-0.001243	FAM83A	-0.010338
PRIM2	0.005242	OR9G1	0.001592	C11orf1	-0.001243	ARHGAP40	-0.010339
CCR10	0.005240	BCO2	0.001592	GRB14	-0.001244	ZNF670	-0.010345
SNX31	0.005240	ADAMTS2	0.001592	CDX1	-0.001244	TMEM163	-0.010351
ZNF146	0.005239	KRTAP9-3	0.001591	EPB42	-0.001245	GRN	-0.010355
MBLAC1	0.005238	EIF2B2	0.001591	TEX261	-0.001246	LPAR1	-0.010357
ZNF496	0.005232	CCDC82	0.001591	WBSCR27	-0.001246	ACTN2	-0.010359
TEDDM1	0.005231	OR4Q3	0.001590	NRBP1	-0.001247	BCAT1	-0.010360
NBPF11	0.005230	DUSP9	0.001590	FHDC1	-0.001247	PLS3	-0.010362
ZNF226	0.005230	OR1I1	0.001590	PEX5	-0.001248	SIGLEC9	-0.010366
RGL3	0.005230	NXT1	0.001589	PRICKLE3	-0.001251	WFDC2	-0.010368
MAP10	0.005228	PHF1	0.001589	VPREB3	-0.001253	FSTL3	-0.010382
VSX1	0.005227	TSPAN16	0.001588	MMP1	-0.001254	ART4	-0.010389
DCST1	0.005227	OR4K15	0.001588	ACTR3C	-0.001255	B3GNT8	-0.010392
HMGN1	0.005226	C17orf99	0.001587	FEM1C	-0.001256	MFSD7	-0.010396
FASTKD1	0.005225	OR52J3	0.001587	PPRC1	-0.001258	ADRA1A	-0.010403
USP17L1	0.005224	DHX16	0.001586	OLFML2B	-0.001258	C11orf96	-0.010410
CR1L	0.005222	MRPS16	0.001586	RIIAD1	-0.001259	GIMAP5	-0.010413
ZNF236	0.005222	TP53I13	0.001586	GSPT1	-0.001259	LGALS9	-0.010418
MORN1	0.005220	NCOA2	0.001586	PDE7B	-0.001259	HMGCS2	-0.010421
SCML1	0.005218	NUDT17	0.001586	OBSCN	-0.001260	P2RX1	-0.010422
SKA2	0.005218	OR2M5	0.001586	GYG1	-0.001261	CLEC6A	-0.010438

ST20	0.005218	ENDOG	0.001585	PPIAL4C	-0.001261	NLRC4	-0.010447
ARL17B	0.005217	HSD3B1	0.001585	GNPDA1	-0.001261	PPP1R14A	-0.010448
SLC22A14	0.005216	FAM189B	0.001584	GPR42	-0.001261	SLC31A2	-0.010457
SIMC1	0.005215	TEX37	0.001584	PLA2G7	-0.001262	AKAP2	-0.010461
DHRS11	0.005215	CCS	0.001584	GNPTAB	-0.001262	BIRC3	-0.010464
SPDYE6	0.005213	PRRC2C	0.001582	NOTO	-0.001263	FAM92B	-0.010472
ADAMDEC1	0.005213	ZC2HC1C	0.001580	TSR3	-0.001264	TCF7L1	-0.010477
ING1	0.005210	ZNF214	0.001580	EXOC6B	-0.001265	LIPN	-0.010481
UPF3A	0.005209	ZBED1	0.001580	PCDH9	-0.001265	TPPP3	-0.010481
CERS3	0.005208	PYCR2	0.001579	MCEE	-0.001265	IVL	-0.010486
RBM39	0.005207	AMT	0.001579	TNFAIP2	-0.001266	TNFSF14	-0.010488
CAPN14	0.005205	ZSCAN32	0.001579	UQCR10	-0.001266	PER1	-0.010488
SDR42E1	0.005204	OR2T6	0.001578	RPS4X	-0.001266	CLEC7A	-0.010492
RHOT2	0.005204	CANT1	0.001578	R3HDML	-0.001267	GIMAP7	-0.010493
TRMT11	0.005203	SRCAP	0.001577	COL1A2	-0.001268	DUSP6	-0.010494
C1orf35	0.005202	PRSS56	0.001577	RPS18	-0.001269	MUM1L1	-0.010494
CPSF4	0.005201	CEP104	0.001574	DIRC2	-0.001270	RBMS2	-0.010506
NAB1	0.005200	EDC3	0.001574	CTRB1	-0.001270	SPINK5	-0.010508
KRTAP12-1	0.005199	CCDC125	0.001574	SLC39A13	-0.001270	SLC40A1	-0.010509
ZNF696	0.005199	EXOC7	0.001573	G6PC3	-0.001272	ASAH1	-0.010520
LRRC74B	0.005197	OR1G1	0.001573	ZNF503	-0.001272	TWIST2	-0.010524
ANKS3	0.005196	NSF	0.001573	ADORA2A	-0.001274	PLEKHS1	-0.010526
FAM111A	0.005195	C2orf81	0.001572	H3F3C	-0.001274	ARHGAP30	-0.010532
MMACHC	0.005195	FAM86B1	0.001572	PEX12	-0.001274	SLIT2	-0.010532
IDH2	0.005193	ENTPD5	0.001572	NDRG1	-0.001274	LILRA1	-0.010532
ACTA1	0.005193	SPECC1	0.001569	CCDC3	-0.001274	CAPN13	-0.010534
INSR	0.005193	RSAD1	0.001568	DDX58	-0.001276	RILPL2	-0.010534
UBA6	0.005191	TRIM41	0.001567	TBC1D3E	-0.001280	ASPG	-0.010536
UNK	0.005191	OR2T4	0.001567	GCC1	-0.001281	APOL1	-0.010537
LCE1E	0.005191	TMEM138	0.001566	GRPEL1	-0.001281	GPR65	-0.010539
PNKP	0.005190	CRISP1	0.001566	SH3YL1	-0.001281	VNN2	-0.010539
ASB14	0.005185	RRP36	0.001565	DERA	-0.001283	HMCN1	-0.010546
RBM41	0.005185	SEC14L2	0.001565	KDELR2	-0.001283	FAM150B	-0.010555
C4orf26	0.005184	PHC2	0.001564	FAM3C	-0.001284	PENK	-0.010558
H2BFWT	0.005181	STRADB	0.001564	PER2	-0.001284	MFRP	-0.010560
MYO1H	0.005181	PSMC4	0.001564	CPT1A	-0.001284	TNFRSF12A	-0.010573
SLC20A1	0.005180	OR6M1	0.001563	TVP23A	-0.001285	MT1L	-0.010576
CDK10	0.005178	IQCF1	0.001563	LUZP6	-0.001285	MYO1F	-0.010578
LBR	0.005177	NDUFAB1	0.001560	PEX13	-0.001286	PROCR	-0.010581
CYTH2	0.005177	RUNDC1	0.001560	DTX3L	-0.001288	DPYD	-0.010592
MAP6	0.005177	RNF44	0.001560	PLEKHM2	-0.001290	QSOX1	-0.010594

SAMD10	0.005176	ZNF879	0.001560	ASCC2	-0.001290	CMA1	-0.010598
CCSER1	0.005173	DNAJC13	0.001560	COMMD8	-0.001291	VIM	-0.010599
MPP4	0.005172	PPP1R12A	0.001560	BAK1	-0.001292	ICOS	-0.010600
H2AFB3	0.005172	CNBD1	0.001558	MAGEE1	-0.001293	PTPN13	-0.010601
MT1H	0.005170	ZSCAN31	0.001558	RNF208	-0.001294	ROR1	-0.010607
SNAPC4	0.005169	TRNAU1AP	0.001558	C5orf67	-0.001295	LAMC3	-0.010613
NCS1	0.005169	TMCO3	0.001558	CYP2A7	-0.001296	MASP1	-0.010614
SLC35E2B	0.005168	PIGM	0.001557	FHL2	-0.001297	CLEC9A	-0.010616
GPC6	0.005168	GH2	0.001556	ACBD4	-0.001298	TRIM6	-0.010616
HES5	0.005166	IRF7	0.001555	ZNF792	-0.001299	CLEC1A	-0.010625
RHCE	0.005165	RPA1	0.001554	AKAP3	-0.001299	COX7A1	-0.010625
FAM71E2	0.005164	TRABD	0.001554	NDUFAF2	-0.001301	CLDN1	-0.010626
SUN1	0.005163	ALDH1L2	0.001554	APOA5	-0.001303	TM4SF1	-0.010636
ZNF480	0.005163	OR1D5	0.001553	OGFOD1	-0.001305	TMEM173	-0.010636
SOCS4	0.005162	GOT1	0.001553	SIRT3	-0.001306	MYOCD	-0.010637
DPYSL3	0.005162	SYNJ2BP	0.001553	EEF2KMT	-0.001308	VDR	-0.010651
CCDC112	0.005161	GOSR1	0.001552	UGCG	-0.001308	ARAP2	-0.010654
CHRNA4	0.005160	METTL23	0.001552	VPS39	-0.001308	SIGLEC7	-0.010666
JAM3	0.005157	ABL1	0.001551	DPP9	-0.001311	KLF4	-0.010668
KIZ	0.005157	CCDC121	0.001551	STX5	-0.001313	FUT3	-0.010668
PRDM10	0.005156	CORO7	0.001551	RPS16	-0.001313	TESPA1	-0.010670
YY2	0.005155	UBE2W	0.001551	FICD	-0.001313	C11orf21	-0.010678
LIPI	0.005151	NELFB	0.001550	DNAJA2	-0.001314	TSPO	-0.010680
TTC13	0.005151	CLSTN3	0.001550	NFATC3	-0.001315	PLA2G4E	-0.010683
SLC5A11	0.005151	CSN3	0.001549	CT45A10	-0.001316	CLDN23	-0.010687
SUPT16H	0.005151	OR8K1	0.001549	WFDC11	-0.001316	HSPB2	-0.010696
PDCD2L	0.005149	OR6K2	0.001549	FDPS	-0.001316	ALS2CL	-0.010699
TBC1D7	0.005148	TTC21A	0.001548	TM9SF1	-0.001316	GJA1	-0.010700
NUTM2F	0.005147	KRT38	0.001548	ZNF676	-0.001317	MYCT1	-0.010709
SLC27A2	0.005145	BMS1	0.001547	RPS24	-0.001317	SPATA18	-0.010711
ALG6	0.005144	HYOU1	0.001547	GAL3ST4	-0.001318	KCNQ1	-0.010713
TEX9	0.005143	KIF3B	0.001547	APOBEC3F	-0.001318	FCGR2B	-0.010714
NR2E1	0.005142	DCLRE1B	0.001545	AGAP2	-0.001320	SDC1	-0.010716
ASAH2B	0.005137	MED22	0.001545	MAP2K1	-0.001321	RXFP1	-0.010722
AGAP1	0.005136	FBXO21	0.001544	C17orf49	-0.001321	EVA1A	-0.010724
NSUN6	0.005135	MSH3	0.001544	FHIT	-0.001322	LRRC25	-0.010724
CLDN15	0.005133	SLC5A10	0.001544	SERP1	-0.001323	FBLN1	-0.010726
BAHCC1	0.005132	NRXN3	0.001543	DNAJB9	-0.001323	SMAD6	-0.010732
ZSCAN2	0.005131	MT1F	0.001543	CTTNBP2NL	-0.001324	FOXN1	-0.010741
TUBA3E	0.005128	ZNF624	0.001542	SSSCA1	-0.001324	NCF1	-0.010742
SNRPD1	0.005127	RFC1	0.001542	STX19	-0.001325	HSPA12B	-0.010746

CNTNAP4	0.005124	ABHD8	0.001542	SMG6	-0.001327	OLFML3	-0.010751
ISYNA1	0.005121	LMLN	0.001542	FBXW5	-0.001327	PKNOX2	-0.010755
RBBP4	0.005121	EVI5L	0.001542	FAM180B	-0.001328	PTPRE	-0.010762
ADCY5	0.005120	C1orf101	0.001541	KBTBD8	-0.001330	C1S	-0.010766
ZNF547	0.005119	NCR2	0.001540	AKR1B15	-0.001332	MYOZ1	-0.010766
TTC21B	0.005118	IGF2BP1	0.001538	CHMP4A	-0.001333	EDN3	-0.010768
TEX12	0.005116	UBE4A	0.001538	FAM96B	-0.001333	STARD8	-0.010769
ZNF765	0.005113	RTP2	0.001538	RWDD2B	-0.001333	MGLL	-0.010770
HEXDC	0.005112	C9orf57	0.001538	KCTD18	-0.001334	KIF1C	-0.010770
VMAC	0.005111	DR1	0.001537	HEATR5A	-0.001334	MRC2	-0.010772
PRDX2	0.005107	WDR74	0.001537	INSIG2	-0.001334	SPOCD1	-0.010772
RBM25	0.005105	ZFX	0.001534	CD163L1	-0.001335	ANXA4	-0.010780
PCP2	0.005104	ZFYVE16	0.001534	RAP2C	-0.001337	MDFIC	-0.010780
SMC1A	0.005103	SETD1B	0.001532	OSTN	-0.001338	CSF2RB	-0.010783
DMXL2	0.005102	KRTAP2-3	0.001532	ACER3	-0.001339	SNTB1	-0.010784
ZBED5	0.005101	SLC22A24	0.001532	MOB1B	-0.001339	PADI4	-0.010788
GCDH	0.005101	ZC2HC1B	0.001531	INO80	-0.001340	GNGT2	-0.010792
OR2L13	0.005097	OTUD6A	0.001531	IL22RA2	-0.001341	SELL	-0.010795
HSFY2	0.005097	TBL1Y	0.001531	THRA	-0.001341	ARRB1	-0.010801
FAR1	0.005097	MCCC1	0.001530	TGM4	-0.001341	JAM2	-0.010803
RFC2	0.005097	CCNC	0.001530	RPLP2	-0.001342	LEFTY2	-0.010809
CAMK1D	0.005096	MPHOSPH10	0.001530	CPT2	-0.001343	GSTP1	-0.010811
GTPBP2	0.005095	KIAA1755	0.001530	BSG	-0.001343	MR1	-0.010811
ZBTB10	0.005095	ASPRV1	0.001529	LPIN2	-0.001344	NTNG1	-0.010817
TSEN54	0.005095	RGS21	0.001529	PIR	-0.001346	ACKR4	-0.010823
OR14A16	0.005092	PAK1	0.001528	FAM118B	-0.001350	RHOF	-0.010827
SLC25A33	0.005091	OR10H5	0.001527	UROD	-0.001350	ZNF365	-0.010827
GPR180	0.005090	OR5A2	0.001526	UBE2L3	-0.001351	SCN4B	-0.010830
IFT122	0.005088	SLTM	0.001526	LMO2	-0.001352	CD82	-0.010834
TET3	0.005087	LIPF	0.001526	SPCS3	-0.001352	MIA2	-0.010838
PRPF40B	0.005087	CWC15	0.001525	CSK	-0.001352	TPRG1	-0.010845
ADGRV1	0.005087	NUFIP1	0.001524	PIGBOS1	-0.001352	SIGLEC1	-0.010845
KDM4B	0.005087	TRIM49B	0.001524	ACACB	-0.001354	BST2	-0.010845
FZR1	0.005085	POLR3B	0.001523	SYNDIG1	-0.001355	MYH1	-0.010846
MGME1	0.005082	GNL1	0.001523	HECW1	-0.001355	CD9	-0.010856
FOXB2	0.005082	IFNA5	0.001523	C16orf62	-0.001355	FCER2	-0.010857
TSNARE1	0.005078	FAM47E	0.001522	TRAPPC2L	-0.001355	TRIM34	-0.010862
ZBED9	0.005076	CUL4A	0.001521	PPP4R1	-0.001356	ATP2C2	-0.010869
INPP5E	0.005074	FAM96A	0.001521	CHMP5	-0.001356	PF4	-0.010869
UGT2B28	0.005074	OR6S1	0.001521	CNKSR1	-0.001359	CA3	-0.010871
GCM2	0.005072	ANKK1	0.001521	TCAIM	-0.001359	MPP7	-0.010875

RBM6	0.005072	ARFGAP3	0.001520	KIAA1324L	-0.001359	HRASLS2	-0.010875
IL1RAPL1	0.005070	C12orf60	0.001520	ODF3L2	-0.001361	TMEM236	-0.010877
CENPQ	0.005070	ZNF22	0.001519	AGFG1	-0.001361	MSRB3	-0.010880
SRSF1	0.005070	KBTBD2	0.001519	CCNY	-0.001362	DAB2	-0.010889
MTSS1	0.005067	STOML2	0.001519	SLC11A2	-0.001363	GAS7	-0.010897
CCL25	0.005067	MYOM3	0.001519	PGAM1	-0.001364	P2RY13	-0.010899
KLC1	0.005066	NYX	0.001519	SLN	-0.001364	ATP10A	-0.010900
HFE2	0.005066	OR9Q1	0.001518	HEXIM1	-0.001365	MLPH	-0.010901
IRS4	0.005065	ZDHHC11B	0.001518	ALDH6A1	-0.001365	CCR4	-0.010907
CARTPT	0.005065	PREB	0.001518	NBEAL1	-0.001366	OMD	-0.010910
IL1RAPL2	0.005065	FKRP	0.001517	SLC39A12	-0.001366	CD38	-0.010919
PLEKHD1	0.005065	CNST	0.001516	DNMBP	-0.001366	IGSF10	-0.010921
PFKFB4	0.005064	PLEKHA7	0.001516	CERCAM	-0.001366	TRHDE	-0.010923
FBN2	0.005063	GOLGA1	0.001516	ATF1	-0.001367	CXCL12	-0.010929
KLHL25	0.005061	NPHP3	0.001515	MBTPS1	-0.001367	CSF1	-0.010932
ZNF557	0.005059	MAP3K13	0.001515	TCF25	-0.001368	CYP3A7	-0.010933
CRISP3	0.005057	ROGDI	0.001515	RP2	-0.001368	RNF223	-0.010940
POGZ	0.005054	ZNF264	0.001514	CHPF2	-0.001371	LDLR	-0.010943
B3GALNT2	0.005053	CCDC86	0.001514	KIF13B	-0.001374	CCL2	-0.010944
NLN	0.005052	FBXW8	0.001514	ARL1	-0.001374	CDA	-0.010944
FAM173B	0.005052	OR52D1	0.001513	GBF1	-0.001375	LAMA3	-0.010954
TP53TG5	0.005051	KLRC4	0.001513	ITGAE	-0.001376	CCDC141	-0.010959
OR2T33	0.005049	DDB2	0.001512	DNASE1L1	-0.001376	COL8A1	-0.010963
GK5	0.005048	C15orf65	0.001512	ESYT2	-0.001378	GZMH	-0.010965
AKAP5	0.005047	MNT	0.001512	ZNF860	-0.001380	CXCR3	-0.010967
EHMT2	0.005047	OR5V1	0.001511	ALG12	-0.001380	NEXN	-0.010980
CELF1	0.005047	ABL2	0.001511	RFT1	-0.001381	MSN	-0.010986
TTR	0.005042	DCTN3	0.001511	NDUFB8	-0.001382	WFS1	-0.010988
FAM136A	0.005039	NMD3	0.001508	VAC14	-0.001382	RGN	-0.011001
PRAP1	0.005039	PA2G4	0.001508	GFRA3	-0.001382	CLDN8	-0.011001
DVL3	0.005038	OR4B1	0.001508	SIK2	-0.001386	WFDC1	-0.011005
CYP4F2	0.005036	NFKBID	0.001508	CTNNAL1	-0.001387	HNMT	-0.011008
PABPC4L	0.005035	KLHL9	0.001506	TRIM40	-0.001389	TRPC6	-0.011014
AQP6	0.005032	TRIM60	0.001504	MON1A	-0.001389	CTSC	-0.011021
ATAD3A	0.005032	BSDC1	0.001503	HM13	-0.001390	ARHGDIB	-0.011026
SERGEF	0.005031	NDUFA5	0.001502	EEF1G	-0.001391	GNG11	-0.011027
ARMC12	0.005031	OR2T5	0.001502	GJB1	-0.001394	ZNF385B	-0.011028
ELOVL6	0.005031	COPS6	0.001501	BCKDK	-0.001396	ALDH1A2	-0.011033
RGPD8	0.005029	ATP5J2	0.001501	IGSF8	-0.001398	SLC5A9	-0.011038
PUS7L	0.005028	RPS6KB2	0.001501	CDNF	-0.001398	MME	-0.011039
GHRHR	0.005027	MTMR2	0.001500	SERP2	-0.001399	CEACAM4	-0.011050

KCNIP4	0.005026	THOC5	0.001499	FLOT1	-0.001400	ACTG2	-0.011052
YIPF7	0.005024	B4GALT3	0.001498	LRRC70	-0.001401	CATIP	-0.011055
MSL1	0.005024	CXorf40A	0.001496	PRICKLE4	-0.001401	DUSP27	-0.011061
TBC1D8	0.005023	OR4M2	0.001496	SCN1B	-0.001402	C3AR1	-0.011062
HSPA14	0.005021	CDK14	0.001495	PPM1J	-0.001403	CR1	-0.011063
C1orf109	0.005019	KRTAP4-7	0.001495	CDK18	-0.001404	ALDH1A1	-0.011065
TRIM3	0.005018	CSRP3	0.001495	CRADD	-0.001405	CRTAM	-0.011066
ARID3C	0.005016	GCNT6	0.001495	OXR1	-0.001406	IL1B	-0.011067
ACTL10	0.005014	GNAI3	0.001495	SEMA6B	-0.001407	FAM166B	-0.011069
SOX30	0.005013	LZTS3	0.001493	SMDT1	-0.001407	LY6E	-0.011073
TAF1A	0.005013	C6orf62	0.001493	SLC35F2	-0.001407	PLXDC2	-0.011076
ZNF318	0.005012	UPF2	0.001492	DNAH2	-0.001409	RHOD	-0.011081
GTF2IRD1	0.005009	GCC2	0.001491	BTG3	-0.001409	PID1	-0.011103
TGIF2LX	0.005004	COMMD2	0.001491	C17orf50	-0.001411	KLF2	-0.011105
UBE2O	0.005002	43800	0.001490	ZSWIM7	-0.001411	CD86	-0.011108
GRIP2	0.005001	DNAJC25	0.001490	RGS16	-0.001413	FCGR1A	-0.011112
ZNF623	0.005000	ZCCHC4	0.001489	DACT1	-0.001413	ARHGEF15	-0.011112
MAP3K9	0.005000	KIAA0556	0.001489	AIG1	-0.001414	EGFL6	-0.011118
ARMCX4	0.004999	POLR2G	0.001488	LRIG3	-0.001416	SPON1	-0.011121
DNM1L	0.004997	SON	0.001488	CHMP1A	-0.001416	OLFML1	-0.011126
ZDHHC17	0.004996	ADAT1	0.001486	GIT2	-0.001416	ADCY7	-0.011135
MAP3K12	0.004995	OR2T34	0.001486	STAM	-0.001418	SLC15A2	-0.011137
BOP1	0.004993	RNF38	0.001485	TNNI1	-0.001418	CCR1	-0.011138
BDP1	0.004992	ACSM2A	0.001484	CITED4	-0.001418	SOX7	-0.011138
PRDM7	0.004991	SPANXN1	0.001484	ERLIN1	-0.001421	ACOX2	-0.011139
ZNF215	0.004991	GFM1	0.001483	TGFB3	-0.001422	GGT2	-0.011152
IQCB1	0.004986	COX6A1	0.001483	CEMIP	-0.001423	WWTR1	-0.011159
VAV2	0.004985	GOLGA6L4	0.001483	BAG2	-0.001427	COX4I2	-0.011163
LIG3	0.004985	COL25A1	0.001482	BMP15	-0.001427	CELF2	-0.011163
MLANA	0.004983	RCHY1	0.001482	GLA	-0.001427	ADAMTSL3	-0.011164
ZNF546	0.004983	KCTD17	0.001481	MRPS36	-0.001428	KLHL4	-0.011166
MYRIP	0.004982	LRRC75B	0.001481	CRYBB1	-0.001428	MYL3	-0.011184
C10orf131	0.004980	ZNF174	0.001480	PLEKHA1	-0.001428	THRB	-0.011193
C10orf35	0.004977	AP4E1	0.001480	C11orf54	-0.001431	FAM89A	-0.011200
ZNF662	0.004977	XAGE5	0.001480	SLC25A11	-0.001432	RBPMS	-0.011202
BRF1	0.004976	TMUB1	0.001479	CDV3	-0.001435	GYPC	-0.011206
CYP3A4	0.004974	NIT1	0.001479	SLC10A6	-0.001436	C4BPB	-0.011207
FOXJ3	0.004973	CYP8B1	0.001478	NTAN1	-0.001439	CXCL1	-0.011220
LSM11	0.004972	CCZ1	0.001477	AP3B1	-0.001440	FXYD5	-0.011221
RSC1A1	0.004971	IL20	0.001476	C17orf105	-0.001441	APBB1IP	-0.011221
PLEKHG3	0.004971	OR2G2	0.001476	WASF2	-0.001442	PTGER2	-0.011222

CEP44	0.004970	PRAMEF14	0.001476	PTPRJ	-0.001444	HTR3C	-0.011223
PHKA1	0.004969	ATP5G1	0.001476	TMEM8A	-0.001444	DOCK8	-0.011229
NBPF1	0.004967	GIT1	0.001476	PLOD3	-0.001447	VSIG1	-0.011232
LRRIQ3	0.004965	OR51G1	0.001476	STAM2	-0.001447	CACNA2D2	-0.011233
SMG1	0.004963	OR2AG1	0.001475	RPL26	-0.001447	NT5E	-0.011244
ZNF428	0.004960	KDM5A	0.001475	HAPLN3	-0.001448	CA2	-0.011245
RASL11B	0.004957	FAM207A	0.001475	FAM117A	-0.001448	VWA3B	-0.011245
ZSCAN26	0.004953	RASD1	0.001475	FHAD1	-0.001449	HACD1	-0.011245
NBPF6	0.004950	NRSN2	0.001474	OAZ1	-0.001449	CYP27A1	-0.011246
HP1BP3	0.004950	OR6T1	0.001473	OPLAH	-0.001454	STOM	-0.011249
MPZ	0.004947	TRUB1	0.001472	PICALM	-0.001454	LATS2	-0.011249
MTX3	0.004947	SPANXN2	0.001472	TXNRD2	-0.001454	CD3E	-0.011257
SEH1L	0.004946	ZNF677	0.001472	SLC35A2	-0.001454	CLDN16	-0.011260
KLHL15	0.004946	TBPL2	0.001471	NSMCE1	-0.001456	PSAPL1	-0.011260
KCTD3	0.004945	SETD2	0.001471	NRN1	-0.001458	ASPA	-0.011261
SARS2	0.004944	TRIM77	0.001471	ALDH7A1	-0.001460	TIE1	-0.011270
ZNF449	0.004943	UTP14A	0.001469	FAM45A	-0.001461	MITF	-0.011274
PRMT6	0.004940	CALHM3	0.001469	TXNDC5	-0.001461	PRSS22	-0.011287
OR56B4	0.004940	ADSL	0.001469	APP	-0.001462	RAB38	-0.011290
RNGTT	0.004937	KLHL13	0.001468	PYROXD2	-0.001463	ZNF683	-0.011307
ULK1	0.004936	KDF1	0.001468	HACL1	-0.001463	FABP3	-0.011310
GSE1	0.004933	RABEP1	0.001468	NOX1	-0.001464	CYP17A1	-0.011312
MYH3	0.004933	OR52I2	0.001466	SLC9A8	-0.001464	SNCG	-0.011317
TIAM2	0.004925	CCDC179	0.001466	CCDC97	-0.001466	IFITM2	-0.011319
HES4	0.004924	CIZ1	0.001466	SF3A1	-0.001467	ARSI	-0.011321
KNOP1	0.004924	PPIL4	0.001466	LRRC19	-0.001468	GIMAP6	-0.011324
ZNF678	0.004923	FBXL2	0.001466	ORMDL3	-0.001468	GALM	-0.011334
PLEKHJ1	0.004922	OTOP1	0.001465	ACKR3	-0.001469	IL32	-0.011339
CCDC85C	0.004922	TRIM49C	0.001465	ATP6AP2	-0.001471	LUM	-0.011345
ZNF346	0.004921	SYCE3	0.001464	MINK1	-0.001472	G0S2	-0.011348
F13B	0.004920	WDR64	0.001464	FBXO7	-0.001473	LSP1	-0.011360
ZNF585A	0.004919	PRPS1L1	0.001464	RHCG	-0.001473	PQLC2L	-0.011366
ABTB2	0.004919	CLDN19	0.001464	OR52N2	-0.001474	IFI30	-0.011368
MTERF1	0.004919	IRF3	0.001463	FDXACB1	-0.001474	HK3	-0.011369
ZNF721	0.004918	TMEM186	0.001462	TMEM86A	-0.001474	CSF1R	-0.011372
TENM2	0.004914	FASTKD2	0.001462	GPCPD1	-0.001475	CD101	-0.011381
CAMSAP1	0.004913	UBAP2L	0.001462	HSPA5	-0.001475	CASP1	-0.011389
VWA5B1	0.004913	CSNK2B	0.001462	FKBP1A	-0.001476	PPP1R14C	-0.011396
CCDC39	0.004911	APPBP2	0.001462	MEIS2	-0.001477	TLR7	-0.011397
RNF168	0.004910	BOLA2B	0.001461	OGFRL1	-0.001479	RAB31	-0.011399
TTLL8	0.004909	TMEM74B	0.001461	OVOL1	-0.001480	DTX4	-0.011400

SLC25A15	0.004909	MGAT2	0.001461	CHCHD4	-0.001483	SPNS2	-0.011403
PLOD2	0.004909	FBXO24	0.001461	TCP11	-0.001484	KANK3	-0.011404
TRPC7	0.004907	TECTB	0.001460	ARMC9	-0.001486	MS4A4A	-0.011417
HUS1B	0.004907	OR10J3	0.001459	DEPTOR	-0.001486	BNIPL	-0.011422
CEP57	0.004903	SCARB1	0.001459	TLN2	-0.001487	LILRA6	-0.011424
PMAIP1	0.004903	MS4A12	0.001458	ACTR1A	-0.001488	BMP4	-0.011425
ZMYM3	0.004902	CHMP4C	0.001457	LBX1	-0.001489	EGR2	-0.011426
CSE1L	0.004901	FAHD2A	0.001457	MACF1	-0.001490	TNFSF12	-0.011431
TCL1B	0.004900	WDR24	0.001456	FAM63B	-0.001493	CDH5	-0.011432
TERF1	0.004899	ABCF1	0.001455	LYRM1	-0.001493	KRT19	-0.011432
LPO	0.004899	OR2T12	0.001455	ISOC2	-0.001494	GIMAP1	-0.011433
MBL2	0.004898	JMJD1C	0.001455	SLCO3A1	-0.001494	CLEC5A	-0.011434
LRIT3	0.004898	GTF2A2	0.001454	KAZN	-0.001498	CLIC6	-0.011435
USP20	0.004897	ANTXRL	0.001454	SLC30A1	-0.001499	FOS	-0.011437
C9orf142	0.004896	FAM168B	0.001454	NIPAL2	-0.001503	NKG7	-0.011438
TUBB	0.004895	MRPS6	0.001453	MAGT1	-0.001504	MUSK	-0.011441
SLC25A36	0.004893	SPATA24	0.001452	SLCO1B3	-0.001506	CCL5	-0.011452
COQ3	0.004893	PRAMEF15	0.001452	ANO5	-0.001508	GMFG	-0.011456
TDRD5	0.004889	COG8	0.001452	CAMTA2	-0.001508	SELE	-0.011460
RCC1	0.004888	OR4K2	0.001452	PHF23	-0.001508	CLEC14A	-0.011467
EXOSC3	0.004888	UTP15	0.001451	TMEM30B	-0.001509	TMPRSS13	-0.011467
TSPYL5	0.004884	KRTAP3-1	0.001451	POLR2A	-0.001509	ESAM	-0.011469
NAT14	0.004884	GHRL	0.001450	SAMD14	-0.001512	ADPRH	-0.011472
ZNF786	0.004884	SLC38A2	0.001449	SNTB2	-0.001513	IL18	-0.011473
HNRNPA2B1	0.004883	MAD2L1BP	0.001449	ANKRD40	-0.001513	KIAA1462	-0.011473
TYW5	0.004882	OR11H6	0.001448	ASB11	-0.001513	SCUBE1	-0.011476
ZNF484	0.004880	MCMBP	0.001447	NCBP2L	-0.001515	TDRD10	-0.011479
ZNF821	0.004880	ATPIF1	0.001447	PRR9	-0.001515	FHL5	-0.011481
PFKFB1	0.004877	HS3ST5	0.001446	CYB5R1	-0.001516	FCGR3A	-0.011489
POTEG	0.004876	PDS5A	0.001446	ROBO3	-0.001517	SPATS1	-0.011489
ZNF256	0.004876	RCOR1	0.001446	DTWD2	-0.001518	PDLIM2	-0.011492
SENP7	0.004876	DUSP10	0.001445	CDIPT	-0.001518	SERTM1	-0.011499
RBM28	0.004876	ALKBH4	0.001444	ADAMTS4	-0.001520	SEMA3B	-0.011502
ARID2	0.004875	ZC3H7A	0.001444	GNB4	-0.001522	CFAP52	-0.011511
C2orf72	0.004874	CXorf56	0.001443	MRPL24	-0.001523	DNASE1L3	-0.011513
ZNF536	0.004873	TRIM43B	0.001443	YWHAB	-0.001523	CEACAM8	-0.011515
SLC7A5	0.004873	TRIP11	0.001443	CPS1	-0.001524	CD93	-0.011516
ZNF48	0.004873	RPIA	0.001443	VTN	-0.001525	GAS2L2	-0.011518
MAGOHB	0.004871	OR5D14	0.001442	RRAGA	-0.001525	EPDR1	-0.011520
HERC2	0.004870	DCAF5	0.001441	FARS2	-0.001526	MMP2	-0.011522
METTL22	0.004867	HNF4G	0.001441	TANGO6	-0.001528	CACNG6	-0.011525

CUL9	0.004865	MS4A13	0.001439	PDLIM7	-0.001528	RND1	-0.011526
NBPF12	0.004864	POP4	0.001439	ERP44	-0.001528	VWF	-0.011529
TCP10	0.004863	CETN3	0.001438	THSD7A	-0.001531	SLC44A4	-0.011531
SUV39H1	0.004862	PSG3	0.001438	FKBP2	-0.001532	TNFRSF10C	-0.011541
RBM33	0.004861	OR9Q2	0.001437	OR8S1	-0.001534	SOX17	-0.011542
KCTD13	0.004860	CHCHD3	0.001436	ATN1	-0.001534	HLA-DMB	-0.011550
GABRD	0.004860	ABCF3	0.001436	PRDM11	-0.001536	FCGR2A	-0.011552
SPRR2F	0.004859	CYB561D1	0.001435	THOC7	-0.001536	MS4A7	-0.011554
GRPEL2	0.004858	ZNRF4	0.001434	PHACTR3	-0.001536	ZYX	-0.011558
PLXNB1	0.004858	MRPS11	0.001433	ZFYVE21	-0.001536	SCIMP	-0.011559
GOLGA6B	0.004858	KRTAP5-10	0.001432	ZDHHC12	-0.001537	CD37	-0.011562
GCNT7	0.004857	SPIDR	0.001432	SUSD6	-0.001539	TEPP	-0.011562
METTL12	0.004857	TULP3	0.001432	THAP11	-0.001540	FAM162B	-0.011564
USP31	0.004856	GOLGB1	0.001431	TRAPPC6A	-0.001541	PTGER4	-0.011566
EEF1E1	0.004847	KRT84	0.001431	SETD9	-0.001541	KRT79	-0.011576
SMC6	0.004846	OR13C3	0.001430	CMPK1	-0.001542	CLIP4	-0.011591
OLIG3	0.004839	OR52M1	0.001429	MUC13	-0.001542	TYRP1	-0.011595
KIF7	0.004839	NDUFB3	0.001429	ANO2	-0.001542	C4orf19	-0.011604
ACTRT1	0.004839	KIAA1109	0.001429	NAT8B	-0.001543	ACSF2	-0.011607
UBA2	0.004839	IFNA21	0.001428	NXPE3	-0.001547	LTBP2	-0.011610
PRPF4B	0.004838	PPP2R3C	0.001427	MGRN1	-0.001548	ZMYND15	-0.011613
KLHL42	0.004838	NEK1	0.001427	ST13	-0.001549	GUCA2A	-0.011613
CSH2	0.004836	SDR42E2	0.001425	GDPGP1	-0.001551	USP44	-0.011615
TCF12	0.004835	RBPJ	0.001425	SUFU	-0.001552	PLA1A	-0.011617
VBP1	0.004834	CCT4	0.001424	FAM114A2	-0.001553	UNC45B	-0.011619
PLCD4	0.004833	TRMT12	0.001423	FZD6	-0.001553	SOCS3	-0.011621
TDRD15	0.004831	OR13C4	0.001422	SCT	-0.001553	RILP	-0.011626
CPN2	0.004829	TBCK	0.001420	GNA12	-0.001554	LONRF3	-0.011632
ARL6IP6	0.004829	MRPL15	0.001420	S1PR5	-0.001555	LTBP4	-0.011633
PLEKHA8	0.004827	MLLT3	0.001420	ENO4	-0.001555	PI3	-0.011634
CCNT2	0.004825	VPS54	0.001420	ARHGEF18	-0.001558	LAIR1	-0.011636
KIAA1468	0.004824	OR2M2	0.001417	DAO	-0.001558	CFAP126	-0.011640
FBXO32	0.004822	ARGFX	0.001417	FBXL7	-0.001559	PHLDA3	-0.011650
OR51T1	0.004821	ZNF154	0.001416	PTCHD4	-0.001559	TSC22D3	-0.011662
ATR	0.004821	RIMKLB	0.001416	MAF	-0.001560	AHR	-0.011664
UBE3D	0.004819	GAGE12E	0.001415	GNG10	-0.001560	SLA	-0.011666
PANK1	0.004818	ZNF44	0.001415	NMRK2	-0.001560	KYNU	-0.011688
IPO9	0.004815	VTI1A	0.001415	MT-CYB	-0.001561	MMP7	-0.011697
TTI1	0.004813	CDKN1B	0.001414	ZFYVE28	-0.001562	PODN	-0.011708
DDIT3	0.004812	ZNRF1	0.001413	TXNDC17	-0.001563	ICAM5	-0.011709
SMIM8	0.004812	SORL1	0.001413	DDIT4	-0.001563	SFRP2	-0.011716

ZNF202	0.004811	C11orf58	0.001413	PSENEN	-0.001563	PLLP	-0.011719
SUDS3	0.004811	CTU2	0.001411	TM7SF3	-0.001564	GADD45B	-0.011722
SLC17A8	0.004810	KDELC2	0.001411	ATL3	-0.001564	CNN1	-0.011733
TPTE2	0.004803	POLR1D	0.001410	SNAPC5	-0.001567	NCKAP1L	-0.011735
KMT2B	0.004801	IL31	0.001410	SLX1B	-0.001567	FAM3D	-0.011740
PIGW	0.004800	OR13C8	0.001410	DGKK	-0.001570	PTGES	-0.011745
SPATA1	0.004800	PPIG	0.001410	C1orf115	-0.001572	ADGB	-0.011745
ZNF573	0.004799	LHCGR	0.001409	ATP6AP1	-0.001572	PRSS12	-0.011750
SH2D6	0.004798	LRRC47	0.001409	RAP1B	-0.001572	LDB2	-0.011763
REPIN1	0.004798	SPOPL	0.001409	CYP2C9	-0.001573	HEG1	-0.011773
DCK	0.004798	C16orf72	0.001407	MRPL43	-0.001573	RAB7B	-0.011774
SVIP	0.004796	ZNF410	0.001406	CYB561	-0.001575	DNASE2B	-0.011776
HHIPL2	0.004795	RSBN1L	0.001406	SSH1	-0.001575	EMP3	-0.011785
TMEM171	0.004795	PFDN2	0.001405	GATM	-0.001575	MVP	-0.011796
HTR1E	0.004795	FBXL20	0.001405	CCDC181	-0.001576	C1QC	-0.011808
AHRR	0.004794	MUT	0.001405	HOGA1	-0.001577	FOXF2	-0.011810
SLC10A5	0.004792	LCE1B	0.001405	IL17RC	-0.001577	CLDN5	-0.011814
ANKRD33	0.004792	STARD4	0.001404	RIPK4	-0.001578	KLRB1	-0.011827
ZNF485	0.004791	SIN3A	0.001403	KBTBD11	-0.001579	F10	-0.011832
KRTAP5-4	0.004791	TIMM8B	0.001402	MFN2	-0.001579	IFITM3	-0.011841
RLF	0.004791	SNIP1	0.001402	CALU	-0.001580	IL2RG	-0.011848
HAPLN4	0.004790	P3H3	0.001401	INSC	-0.001580	BMP2	-0.011857
GLRA3	0.004789	NR2E3	0.001400	CEACAM5	-0.001581	CD33	-0.011859
PUS7	0.004788	ZCCHC6	0.001398	RANGRF	-0.001581	WDFY4	-0.011862
ZNF579	0.004788	ZNF429	0.001398	APH1A	-0.001584	CLEC4M	-0.011862
SPDYE2B	0.004787	GALT	0.001397	C19orf70	-0.001584	ENG	-0.011863
HRG	0.004786	OR14I1	0.001397	MEIS1	-0.001584	WWC2	-0.011869
PATE3	0.004783	MRPL22	0.001394	DHRS1	-0.001584	UBXN10	-0.011873
ZNF653	0.004781	SCRN3	0.001391	HAL	-0.001585	C10orf128	-0.011873
RCOR3	0.004781	DYNC1H1	0.001391	ADAMTS17	-0.001586	IGFBP4	-0.011878
IAPP	0.004780	TMEM239	0.001390	VPS13D	-0.001586	METTL7B	-0.011879
CEP162	0.004778	IKBKB	0.001390	SAMD11	-0.001586	HCK	-0.011882
GDA	0.004778	GNA13	0.001390	DEXI	-0.001587	TMEM119	-0.011884
PPP1R3A	0.004776	IGFBP1	0.001389	TMEM41A	-0.001587	NCR3	-0.011889
SAFB2	0.004776	KEAP1	0.001389	PLEKHF2	-0.001588	GIMAP8	-0.011891
AARS2	0.004775	PTBP3	0.001389	SPCS1	-0.001591	P2RY12	-0.011893
RBBP8	0.004771	TIMM10	0.001387	MRPS18B	-0.001591	TNFRSF6B	-0.011898
EXOG	0.004770	H1F0	0.001387	ZNF575	-0.001591	SPTLC3	-0.011903
FAM132A	0.004769	THTPA	0.001387	PARP12	-0.001592	CTF1	-0.011907
CEP85L	0.004769	SCYL3	0.001386	OXA1L	-0.001593	MMP19	-0.011908
JAG2	0.004767	COG2	0.001386	ABCD3	-0.001593	IDO1	-0.011912

C1orf131	0.004766	YWHAG	0.001386	PAQR8	-0.001595	SEMA4A	-0.011915
DIO2	0.004766	MBTPS2	0.001385	TAX1BP1	-0.001596	HPN	-0.011916
CROCC	0.004765	DHX30	0.001385	NFU1	-0.001598	SECTM1	-0.011929
LGSN	0.004763	PDCL	0.001385	TM9SF2	-0.001598	SIRPB2	-0.011937
PLEKHG4	0.004763	MACROD1	0.001385	GPR31	-0.001598	VGLL3	-0.011941
RAD21	0.004763	POM121C	0.001384	NAT6	-0.001599	PROS1	-0.011955
DCLRE1A	0.004762	ZNF189	0.001384	PQLC1	-0.001599	PRICKLE1	-0.011957
TARBP1	0.004761	RGL4	0.001384	RTCB	-0.001601	GREM2	-0.011962
PAX2	0.004760	ACSM2B	0.001384	EIF3K	-0.001601	RBMS3	-0.011966
NFXL1	0.004760	UBQLN1	0.001383	MRPL54	-0.001601	FAM83E	-0.011967
RNF150	0.004759	MRGPRG	0.001383	TXNDC2	-0.001603	CCR2	-0.011968
FKBP4	0.004757	NPHP1	0.001382	TNN	-0.001604	PTPRB	-0.011973
PEX1	0.004756	OR5M11	0.001382	YIPF3	-0.001606	AXL	-0.011977
ZNF23	0.004753	USP39	0.001382	MYO16	-0.001606	FCER1G	-0.011979
RTP1	0.004752	BOD1L1	0.001381	RPL10A	-0.001607	CYSLTR1	-0.011983
ZBTB5	0.004751	MRPL4	0.001381	KRT39	-0.001609	PLA2G12B	-0.011983
PLIN1	0.004747	NDUFB6	0.001380	ALG5	-0.001609	ANXA2	-0.011990
HPSE	0.004745	SF1	0.001379	ANKRD42	-0.001609	PDCD1LG2	-0.011991
TRERF1	0.004744	WDR60	0.001379	EIF3D	-0.001610	ATP1A2	-0.011996
ZNF320	0.004744	GLTSCR1L	0.001378	ZBTB7C	-0.001610	KLK5	-0.011997
GALP	0.004743	SLC41A3	0.001378	MAPK13	-0.001611	APOBEC3A	-0.012015
CDK5RAP2	0.004742	LRRIQ1	0.001378	MOCS2	-0.001612	SLC15A3	-0.012020
KRBA1	0.004741	ELMO2	0.001377	MOSPD3	-0.001613	ITGA3	-0.012031
CXXC1	0.004740	SS18	0.001377	SPATA2L	-0.001614	CD300E	-0.012035
RNF222	0.004740	KIF1BP	0.001376	MIDN	-0.001614	SLC38A5	-0.012040
KCND3	0.004738	TPI1	0.001375	BAD	-0.001615	RNASE4	-0.012052
SH3BP4	0.004737	YKT6	0.001375	FOXO4	-0.001615	S100A11	-0.012057
PRRT3	0.004737	TNFAIP8L1	0.001375	UBXN1	-0.001616	NNMT	-0.012078
SMYD3	0.004736	PELP1	0.001374	SEC31A	-0.001616	TRPV2	-0.012088
WDR5	0.004734	OR2F2	0.001373	CCDC173	-0.001619	PMP22	-0.012090
KIF3A	0.004733	OR5M10	0.001373	LRIG1	-0.001620	STAC	-0.012091
CCDC88C	0.004733	SCD5	0.001373	ZSCAN4	-0.001622	XAGE1B	-0.012103
KCNK17	0.004733	UQCRFS1	0.001373	RAPGEF2	-0.001623	SNX20	-0.012107
THUMPD2	0.004731	GADD45A	0.001372	GPR25	-0.001623	MROH9	-0.012108
F7	0.004731	NUDT3	0.001371	NID1	-0.001625	CTSD	-0.012110
OR11H7	0.004730	NAIF1	0.001371	FAM187B	-0.001625	TNS4	-0.012115
GRIN2B	0.004726	SNRNP27	0.001370	GCLM	-0.001626	MFSD2A	-0.012119
KMT2A	0.004724	OR10W1	0.001370	MEF2A	-0.001628	PTGIS	-0.012120
DUS1L	0.004723	ARSH	0.001370	PGRMC1	-0.001629	PARM1	-0.012126
SMARCAD1	0.004723	CEBPZ	0.001370	MFSD10	-0.001630	VIPR1	-0.012129
SPAST	0.004723	TSPAN17	0.001369	PRR32	-0.001633	FHL1	-0.012138

GRID2IP	0.004722	DNAH17	0.001369	HES1	-0.001634	AHCYL2	-0.012140
TIMM44	0.004720	LYZL2	0.001367	FCHSD2	-0.001634	CD53	-0.012150
DENND5B	0.004718	FRMD8	0.001367	SCYL1	-0.001635	SLC47A1	-0.012156
IRGQ	0.004717	TGS1	0.001367	KCNE5	-0.001636	PECAM1	-0.012161
FAM200B	0.004716	IFNL2	0.001367	HDLBP	-0.001636	SIK1	-0.012165
PGP	0.004714	CDY2B	0.001366	CBY1	-0.001636	SLC1A7	-0.012175
IL36G	0.004714	FARP1	0.001366	DDX28	-0.001636	CYP2F1	-0.012182
C16orf92	0.004712	EIF2A	0.001365	SNX12	-0.001638	TMEM37	-0.012190
AGMAT	0.004712	MRM1	0.001365	COL27A1	-0.001638	CLIC2	-0.012200
MUC17	0.004711	YWHAZ	0.001364	TP53I3	-0.001639	RHOBTB2	-0.012210
ZKSCAN4	0.004710	OR2A4	0.001364	CAMK2G	-0.001642	MYADM	-0.012246
PLXDC1	0.004710	LMAN1	0.001364	SEC11A	-0.001644	CLCA2	-0.012249
GIF	0.004709	DDX6	0.001363	RPL4	-0.001647	PRKCQ	-0.012254
NPAT	0.004709	COMMD4	0.001362	NEDD4	-0.001647	BLVRB	-0.012275
P2RX3	0.004708	FAM78B	0.001362	STYXL1	-0.001647	ODF3L1	-0.012277
CCDC167	0.004708	KRTAP19-3	0.001361	CREBRF	-0.001649	SLC1A1	-0.012281
DFNB59	0.004707	CISD1	0.001361	SFRP5	-0.001649	RSPO3	-0.012290
GPATCH1	0.004706	ZNF652	0.001360	CRELD1	-0.001651	CISH	-0.012293
IFRD1	0.004702	PRR12	0.001360	SEC13	-0.001652	CPED1	-0.012298
OSGEP	0.004701	TBX6	0.001360	ATF6	-0.001655	TP63	-0.012308
TCHP	0.004700	ACOT8	0.001360	AK7	-0.001656	LMOD1	-0.012309
LVRN	0.004699	WDR11	0.001360	TSPYL1	-0.001657	ORM2	-0.012321
TTLL5	0.004698	WDR13	0.001359	FAM83H	-0.001658	MACC1	-0.012327
GRID2	0.004698	MOG	0.001359	TINAG	-0.001658	RBP2	-0.012337
TEX38	0.004696	C21orf140	0.001359	SMCO4	-0.001660	MUSTN1	-0.012340
ZZZ3	0.004694	CSMD1	0.001359	RHBDD1	-0.001661	NR3C2	-0.012349
TBCCD1	0.004694	KLK1	0.001358	AIP	-0.001663	SLCO2B1	-0.012353
CBX3	0.004692	SHPK	0.001358	TOMM22	-0.001663	C1orf158	-0.012354
MDH1B	0.004692	OR7A17	0.001357	RDX	-0.001663	GPRIN2	-0.012360
CPN1	0.004692	HARBI1	0.001357	ZDHHC5	-0.001664	SH3GL3	-0.012363
GRIPAP1	0.004690	GGACT	0.001357	OAT	-0.001664	CARD16	-0.012363
DARS2	0.004690	TUBB4A	0.001356	MVD	-0.001669	PTCRA	-0.012371
EIF4E1B	0.004689	PRKAG3	0.001355	RPS27L	-0.001670	C6orf223	-0.012376
SALL2	0.004689	POTED	0.001355	FITM2	-0.001672	CCDC60	-0.012378
SLC25A10	0.004688	PPM1G	0.001355	ATP1A4	-0.001673	CYP1A2	-0.012389
NOXO1	0.004688	TAAR2	0.001355	IFNG	-0.001680	PAQR5	-0.012403
AGK	0.004687	OR2T29	0.001355	PORCN	-0.001680	CYP2C18	-0.012413
NODAL	0.004687	ARFIP2	0.001355	SPINK4	-0.001681	GATA6	-0.012425
FGF11	0.004686	GUCA1C	0.001354	AZI2	-0.001682	CELSR1	-0.012430
ZNF570	0.004685	BEND6	0.001353	ERMAP	-0.001682	LGALS2	-0.012431
ZNF234	0.004681	PRAMEF12	0.001353	DRAM2	-0.001683	HSPB7	-0.012432

KAAG1	0.004679	OR2J1	0.001353	SESN1	-0.001684	CD40LG	-0.012436
SLITRK6	0.004678	KRT34	0.001352	ATAD3C	-0.001685	ANOS1	-0.012443
WDR5B	0.004678	PSMD3	0.001352	YIPF1	-0.001687	CST7	-0.012449
DNTT	0.004677	MYO9B	0.001352	DCHS2	-0.001687	C16orf54	-0.012451
NEDD1	0.004677	C1orf27	0.001352	ALDH9A1	-0.001688	GRAMD2	-0.012451
PPP5D1	0.004675	ZNF395	0.001352	PPIAL4A	-0.001688	GDF5	-0.012453
ATP2A3	0.004675	WBSCR22	0.001351	CLN8	-0.001689	CDH16	-0.012454
PITX2	0.004674	PPP1R12C	0.001351	NXT2	-0.001689	LMO7	-0.012455
YEATS4	0.004674	GAGE10	0.001351	VIP	-0.001691	FGD5	-0.012471
GPR139	0.004673	KIAA1328	0.001350	TSSK2	-0.001693	SERPINF2	-0.012475
S100Z	0.004673	IFNA10	0.001349	LYPLA2	-0.001694	MAOB	-0.012485
HIC2	0.004673	EDEM3	0.001348	TAF4B	-0.001695	ITM2A	-0.012488
G6PC	0.004672	MICU2	0.001348	MYOM1	-0.001696	SLC27A6	-0.012495
EXOSC9	0.004671	AASDH	0.001348	RSPH10B	-0.001697	C2orf40	-0.012495
PRIMA1	0.004671	RMND5B	0.001348	ADIPOR1	-0.001699	SLC13A2	-0.012498
MTURN	0.004670	EIF2S3	0.001347	AQP8	-0.001699	SLC52A3	-0.012514
MORN4	0.004670	TRAPPC11	0.001346	VAPA	-0.001701	LGALS12	-0.012528
HNRNPR	0.004669	OR11H2	0.001346	ALDH4A1	-0.001702	UNC13D	-0.012532
C19orf67	0.004669	FAM170A	0.001346	GYS1	-0.001703	KCNJ5	-0.012535
ADGRA3	0.004669	MTRNR2L7	0.001345	UROS	-0.001704	FFAR4	-0.012537
DCAF13	0.004665	GMFB	0.001345	UBL7	-0.001705	NACA2	-0.012549
ARL16	0.004664	PRR23C	0.001345	PARP9	-0.001705	XCR1	-0.012554
KCTD7	0.004664	ZC3H12C	0.001345	IGF1R	-0.001708	SQRDL	-0.012555
IQCJ	0.004663	OR4D10	0.001344	CYP4A11	-0.001708	OVCH1	-0.012555
NDE1	0.004660	THY1	0.001344	FRMD6	-0.001710	RARRES3	-0.012565
TRMT1	0.004660	WSB1	0.001343	FUT11	-0.001710	TMEM265	-0.012567
RBM20	0.004659	RTKN	0.001343	VPS26A	-0.001710	SEMA3G	-0.012570
FAM205A	0.004656	RNF19A	0.001342	LZTFL1	-0.001710	TMBIM1	-0.012570
CCDC66	0.004654	KRTAP21-1	0.001342	SPACA4	-0.001711	HPSE2	-0.012575
ZNF805	0.004654	PRAMEF8	0.001342	LRRC3	-0.001711	PLAC9	-0.012583
VARS2	0.004653	PDE6H	0.001342	USP50	-0.001711	PDZD2	-0.012605
GPR156	0.004653	OR5AN1	0.001341	PTPMT1	-0.001712	SERPINB1	-0.012622
PHKG1	0.004651	PRR14	0.001341	ESYT1	-0.001713	FILIP1	-0.012633
HSD11B2	0.004651	IFNW1	0.001340	DFNA5	-0.001715	HLA-E	-0.012642
HCRTR1	0.004650	C16orf52	0.001339	MOCS1	-0.001718	CARD6	-0.012661
TMEM234	0.004650	PSMD11	0.001339	CLINT1	-0.001718	FGF7	-0.012664
ACVR2A	0.004649	NOP16	0.001339	ACR	-0.001720	MYOF	-0.012683
HSPD1	0.004649	KIAA1211L	0.001339	ENTPD1	-0.001723	RASSF9	-0.012687
YOD1	0.004649	MKL2	0.001339	MAP3K7CL	-0.001723	MAL	-0.012690
GDPD1	0.004649	IGFBP3	0.001338	C4orf36	-0.001728	TPSD1	-0.012691
GPR149	0.004647	SLCO1B7	0.001338	FOXJ2	-0.001729	CD22	-0.012697

LHFPL1	0.004646	FOXR1	0.001337	MYDGF	-0.001730	FXYD3	-0.012700
PON1	0.004644	ABHD12	0.001337	NDFIP2	-0.001730	BTK	-0.012702
ADAT2	0.004644	OR6C1	0.001337	43714	-0.001732	ABCA3	-0.012714
TUBGCP3	0.004641	HAUS2	0.001336	TACR2	-0.001733	CHRM1	-0.012714
APAF1	0.004641	DPP3	0.001336	CFAP57	-0.001735	HMGCLL1	-0.012717
ZNF562	0.004639	LCAT	0.001335	FKBP8	-0.001737	SRD5A2	-0.012727
CAND1	0.004638	CHIC2	0.001334	MPO	-0.001738	ADAMTSL4	-0.012745
LMBRD2	0.004637	KXD1	0.001334	JAZF1	-0.001738	UBTD1	-0.012761
GGCT	0.004633	IKZF5	0.001333	CCNB3	-0.001739	VMO1	-0.012774
DPH2	0.004632	USP15	0.001332	IGSF3	-0.001740	SMIM6	-0.012789
LSG1	0.004630	OR2T1	0.001332	SCAMP3	-0.001740	GCNT4	-0.012794
PANK3	0.004629	MRGPRX4	0.001330	SERTAD2	-0.001741	GLIPR2	-0.012799
ZNF169	0.004629	TM7SF2	0.001330	GRIA3	-0.001741	ANGPTL1	-0.012802
KDM3A	0.004627	PNPLA1	0.001329	CCDC7	-0.001742	VAMP8	-0.012818
USP48	0.004626	LRP6	0.001328	RPS27	-0.001743	PROSER2	-0.012819
SLC17A7	0.004626	PFKL	0.001328	ARHGEF28	-0.001743	VAMP5	-0.012819
CC2D1A	0.004624	NDUFA9	0.001327	EEF1D	-0.001744	SNURF	-0.012822
THPO	0.004623	VPS33B	0.001327	PARN	-0.001746	COL6A6	-0.012827
SNRPE	0.004623	PAGE5	0.001326	GMPR2	-0.001746	KCNS1	-0.012832
MMP21	0.004621	ZNF746	0.001326	CAP2	-0.001748	BCL2A1	-0.012836
OFD1	0.004620	TSEN34	0.001325	RSPH14	-0.001749	PDE4A	-0.012845
JARID2	0.004619	CCNK	0.001325	GYPB	-0.001752	PHYHD1	-0.012851
CEP164	0.004619	NARS	0.001324	NLRP7	-0.001755	CAPG	-0.012865
ADRA2B	0.004619	PPIA	0.001324	GFOD1	-0.001756	EGF	-0.012870
TOX	0.004617	AFF4	0.001323	FZD10	-0.001758	NR4A3	-0.012871
TXNRD3NB	0.004617	HEATR5B	0.001323	LAMTOR2	-0.001758	CD163	-0.012873
GOLGA6D	0.004615	IZUMO3	0.001322	WNK1	-0.001761	CHI3L1	-0.012874
ZNF284	0.004615	RANBP10	0.001321	CHST12	-0.001761	TRABD2A	-0.012876
WISP3	0.004614	SMNDC1	0.001320	CUTC	-0.001763	HDC	-0.012884
SLC10A1	0.004612	RBM34	0.001320	MGST2	-0.001763	PZP	-0.012889
HN1	0.004612	POMGNT1	0.001319	RPS3	-0.001763	HLF	-0.012920
KIAA0586	0.004612	USF2	0.001319	P4HB	-0.001764	C2orf91	-0.012932
ZNF699	0.004610	FOXR2	0.001319	DNAJC30	-0.001764	CALCRL	-0.012944
RNF224	0.004608	ZC3H18	0.001318	CHAD	-0.001765	PSORS1C1	-0.012947
DDX51	0.004606	EIF4E	0.001317	EFHD2	-0.001765	HSPB3	-0.012952
SMOC2	0.004602	ODF4	0.001316	IL36RN	-0.001767	EVI2B	-0.012965
THOC3	0.004602	OR12D3	0.001315	CYP51A1	-0.001767	CD5L	-0.012982
CCKAR	0.004602	MDM2	0.001314	DIRAS3	-0.001772	SERPIND1	-0.012985
DLG3	0.004595	AP4S1	0.001314	PRKAB1	-0.001773	BTC	-0.012988
SLC22A1	0.004594	REG1B	0.001314	LYPLAL1	-0.001774	DTHD1	-0.012988
CCDC24	0.004592	MIEN1	0.001313	NBR1	-0.001774	SYNPO	-0.012989

XXYLT1	0.004591	NPVF	0.001313	RPL11	-0.001774	ANG	-0.012990
TRAPPC2	0.004591	NECAP1	0.001313	ARF1	-0.001775	ACVRL1	-0.012998
OPN5	0.004590	SLC22A8	0.001312	PPCS	-0.001776	ALOX5	-0.012999
EXTL3	0.004590	FAM208A	0.001312	BHMT2	-0.001776	TMEM52B	-0.013018
CCAR1	0.004589	OR13F1	0.001312	CYP2U1	-0.001777	EMP2	-0.013018
IGLON5	0.004589	WDR48	0.001312	HBZ	-0.001779	CCL24	-0.013022
TMEM210	0.004588	TTC17	0.001311	SCO2	-0.001781	LAPTM5	-0.013023
C5orf63	0.004588	PIWIL3	0.001311	ATXN7	-0.001782	S1PR1	-0.013035
TRMT10B	0.004586	GOLGA3	0.001310	STARD3NL	-0.001783	RGS13	-0.013044
COX7B2	0.004586	OR6C76	0.001309	ANXA9	-0.001784	CSF2RA	-0.013058
GLB1L3	0.004586	SLC12A7	0.001309	DCTD	-0.001784	S100A12	-0.013059
PIAS4	0.004586	NEK9	0.001307	EML2	-0.001786	ABO	-0.013062
SERPINI1	0.004583	GTSF1L	0.001307	CHTF8	-0.001789	RAB43	-0.013063
SNRPA1	0.004583	OR14C36	0.001306	RHOBTB1	-0.001790	EMCN	-0.013064
HINFP	0.004582	CCT8L2	0.001306	PLVAP	-0.001790	SLC16A4	-0.013065
FAM3B	0.004581	ZNF574	0.001306	UNC5B	-0.001791	FAM46B	-0.013075
IFT80	0.004578	C1orf68	0.001306	AAR2	-0.001793	NCMAP	-0.013076
PAQR3	0.004578	PAK4	0.001305	HIGD2A	-0.001797	CDHR4	-0.013099
ODF3	0.004577	STAMBP	0.001305	DIXDC1	-0.001798	CASS4	-0.013117
NUPL2	0.004576	ZNF219	0.001304	CTTNBP2	-0.001798	PRF1	-0.013121
KCNA2	0.004576	GPBP1L1	0.001304	GDF3	-0.001799	BTNL8	-0.013128
LIN7B	0.004575	TBC1D23	0.001303	PLXNC1	-0.001800	SRGN	-0.013130
ZSCAN21	0.004574	SCFD1	0.001302	CLIP1	-0.001801	PIP	-0.013133
ZBTB18	0.004573	TCTN1	0.001301	SLC41A1	-0.001802	RASGRP4	-0.013147
CMC2	0.004573	OR52B6	0.001301	MAP3K3	-0.001802	EDNRB	-0.013156
ZNF7	0.004570	LALBA	0.001300	CHPF	-0.001805	PCDH15	-0.013159
ACBD6	0.004568	MLXIP	0.001300	CREM	-0.001806	CTGF	-0.013176
ADAM7	0.004566	TRMT10C	0.001300	AIM1L	-0.001807	AGTR1	-0.013193
NR1I3	0.004565	ARMC5	0.001300	CALCOCO1	-0.001811	CD44	-0.013194
TEFM	0.004565	PLEKHA3	0.001300	HSD17B13	-0.001811	C1QB	-0.013206
ABCA2	0.004564	RGPD1	0.001298	GSPT2	-0.001812	RARRES2	-0.013208
FGF22	0.004563	BBS2	0.001298	FBXO8	-0.001813	TLR3	-0.013209
FARSB	0.004562	OR6B1	0.001297	TADA2B	-0.001816	CDC42EP1	-0.013209
POTEH	0.004561	PXDNL	0.001297	ATOX1	-0.001816	EFCC1	-0.013213
WRN	0.004561	WFDC8	0.001295	PTPN12	-0.001817	ACE2	-0.013222
GAGE1	0.004561	C6orf15	0.001295	SPINK6	-0.001819	COL4A4	-0.013224
OTUD6B	0.004560	KRTAP9-4	0.001294	EPB41L3	-0.001819	RP1	-0.013230
SGSM1	0.004557	FRS2	0.001294	MMP8	-0.001820	PRAM1	-0.013233
HSPA1A	0.004556	TMEM8B	0.001293	SLC24A1	-0.001822	GCSAML	-0.013236
GPATCH2	0.004554	DDT	0.001293	BBOX1	-0.001823	C1QA	-0.013240
PCSK4	0.004553	GPR161	0.001293	LLGL2	-0.001825	AQP7	-0.013246

CSRP2	0.004553	EIF2S1	0.001293	TPCN1	-0.001827	SOD3	-0.013250
C1orf100	0.004551	SLC39A9	0.001292	SPRR3	-0.001828	GATA3	-0.013261
KBTBD6	0.004550	ZG16	0.001291	PTCHD3	-0.001828	HLA-G	-0.013271
ACIN1	0.004543	MAN1A2	0.001291	CETN2	-0.001828	CEACAM21	-0.013271
ZNF347	0.004542	TRIM25	0.001290	NEO1	-0.001828	FGFBP2	-0.013274
PPIF	0.004542	COG5	0.001289	RPL9	-0.001829	CXCL3	-0.013277
ATG4B	0.004541	SAP130	0.001289	EIF5B	-0.001830	RSPO4	-0.013288
TNKS	0.004541	WDFY2	0.001287	OLFM2	-0.001830	YAP1	-0.013294
GTF3C5	0.004541	CDY1	0.001287	WIPF2	-0.001830	HCST	-0.013302
FAM171A1	0.004540	GFRAL	0.001286	FZD2	-0.001831	PON3	-0.013312
GCLC	0.004539	PCCA	0.001286	HBP1	-0.001832	CCND1	-0.013313
BAZ2B	0.004539	OR4K17	0.001286	RREB1	-0.001832	TNFSF9	-0.013318
DDHD2	0.004539	OR4F6	0.001286	MX2	-0.001833	DUSP1	-0.013323
CASP2	0.004539	PRCC	0.001286	EML3	-0.001837	C1orf186	-0.013338
CACNG7	0.004537	GNAS	0.001285	CRISP2	-0.001837	NXF3	-0.013340
GRM3	0.004537	METAP1	0.001285	BSCL2	-0.001839	CD4	-0.013344
WDR12	0.004537	RNF121	0.001284	BEX5	-0.001842	FREM3	-0.013346
CEP290	0.004534	KRT36	0.001283	PNMA2	-0.001843	AJUBA	-0.013347
KLHDC9	0.004534	CLCA1	0.001283	MIPEP	-0.001844	CSRNP1	-0.013363
HS3ST4	0.004529	ZNF502	0.001282	FAM174B	-0.001844	PCP4L1	-0.013370
BOC	0.004529	NLRP4	0.001282	CYLD	-0.001844	ABCC3	-0.013379
CYP3A43	0.004529	VN1R4	0.001281	NELL2	-0.001845	APOC1	-0.013382
C19orf73	0.004529	RPL38	0.001281	TXK	-0.001847	CATSPERD	-0.013384
CENPC	0.004528	OR4N5	0.001281	SMAP2	-0.001847	BCAS1	-0.013387
FAM71C	0.004527	SDS	0.001280	ANKRD13A	-0.001851	ITGAL	-0.013391
POLD3	0.004526	PRR30	0.001279	PPP1R3G	-0.001851	DHRS9	-0.013396
TCEANC2	0.004526	MROH5	0.001279	CDC42SE2	-0.001853	CD300LF	-0.013405
PLCXD1	0.004526	OR4D1	0.001278	ACOX1	-0.001853	NPR3	-0.013410
CYP26C1	0.004526	OR52K1	0.001278	MMP9	-0.001853	IRX1	-0.013430
PDRG1	0.004525	OR5M8	0.001277	MTMR6	-0.001854	C1orf162	-0.013430
SF3A2	0.004525	MIIP	0.001277	RPL34	-0.001855	LST1	-0.013442
NLRP1	0.004523	RPGRIP1	0.001276	TRIM14	-0.001855	FLVCR2	-0.013442
DDHD1	0.004521	GTF3A	0.001275	RASA3	-0.001857	SH2D4A	-0.013458
NLRP5	0.004521	CDKL3	0.001274	RAB5A	-0.001859	LRP2	-0.013469
GBA2	0.004518	PBX1	0.001273	CYB5B	-0.001861	C8orf34	-0.013469
ALG10	0.004517	ANP32B	0.001273	LIX1L	-0.001863	GATA5	-0.013487
ZNF627	0.004517	TFB1M	0.001273	CDC14B	-0.001864	SEC14L3	-0.013495
TAF6L	0.004516	ANKMY1	0.001273	ZNF217	-0.001864	SRPX	-0.013496
ABI2	0.004515	KRTAP26-1	0.001271	FAM124A	-0.001864	C1orf106	-0.013516
CDRT15	0.004515	ATPAF2	0.001271	GPR15	-0.001864	CEBPA	-0.013518
HDAC9	0.004515	OR2W1	0.001270	ACO2	-0.001865	TBC1D2	-0.013519

ASTL	0.004514	PNLIP	0.001269	WDR66	-0.001867	ITGB2	-0.013523
LIN37	0.004513	ATP5J	0.001269	TTC38	-0.001867	CYBB	-0.013526
STX16	0.004512	HMGXB3	0.001268	PXK	-0.001868	AMY1A	-0.013533
TMEM161B	0.004509	OR4N4	0.001268	AHCYL1	-0.001869	AKR1C1	-0.013534
ERI2	0.004507	BAZ2A	0.001267	MYLPF	-0.001869	SVEP1	-0.013535
PCDH11X	0.004504	PIGG	0.001264	DAP	-0.001870	FOSL1	-0.013540
PDCD5	0.004503	ARID4A	0.001264	PIP4K2A	-0.001872	OSGIN1	-0.013555
UBR5	0.004501	PIBF1	0.001262	IL37	-0.001874	ROBO4	-0.013561
SLC22A13	0.004497	GEMIN7	0.001262	GINM1	-0.001874	OVCH2	-0.013564
BPIFC	0.004496	DNAJC7	0.001261	MORF4L1	-0.001878	SDC4	-0.013565
LIN54	0.004493	CUL3	0.001259	PPIAL4D	-0.001882	PRDM16	-0.013575
SLC30A2	0.004488	HS6ST1	0.001259	CXorf57	-0.001883	IL1R1	-0.013578
DUT	0.004488	NACC1	0.001258	NUDT9	-0.001884	EMP1	-0.013588
MUM1	0.004487	SCCPDH	0.001258	UEVLD	-0.001884	CD36	-0.013589
P2RY4	0.004485	COL1A1	0.001258	ACTR3	-0.001885	SLC7A7	-0.013601
ADPRHL1	0.004484	TCEAL3	0.001257	CAMK2D	-0.001888	APOBR	-0.013622
UNCX	0.004483	TXNL1	0.001257	GORASP2	-0.001893	KRT27	-0.013623
FEM1A	0.004479	PYCRL	0.001256	SETD7	-0.001894	SLC5A8	-0.013624
NT5C1B	0.004478	FAM102A	0.001256	PIM2	-0.001894	SCN1A	-0.013635
COLQ	0.004478	CNP	0.001256	NIP7	-0.001894	GGTLC2	-0.013656
OR8A1	0.004477	OR10K2	0.001255	SOWAHB	-0.001894	MMRN1	-0.013662
GJA9	0.004477	HELQ	0.001255	PALM	-0.001895	TBX5	-0.013670
RASA2	0.004476	GOSR2	0.001252	FNDC4	-0.001896	OSMR	-0.013672
BCL7A	0.004475	KCNV1	0.001251	NSDHL	-0.001896	MRGPRF	-0.013688
TRAPPC5	0.004475	PRAMEF26	0.001251	FKBP10	-0.001896	SPI1	-0.013712
HDX	0.004475	MRPL12	0.001251	DBNDD2	-0.001897	S100P	-0.013716
WDYHV1	0.004475	OR2G6	0.001250	GBP7	-0.001898	MYL9	-0.013726
STYK1	0.004472	KRTAP13-2	0.001250	CHCHD5	-0.001899	TMEM130	-0.013730
SKOR2	0.004469	LIPT1	0.001250	EXTL1	-0.001902	TMEM125	-0.013732
TMEM160	0.004468	SAP30BP	0.001249	RAPGEF5	-0.001903	NPC2	-0.013740
ZNF71	0.004466	TMA16	0.001249	SLC38A10	-0.001903	EVPL	-0.013740
BOD1	0.004466	CDK5	0.001248	SLC12A2	-0.001903	HSD17B6	-0.013742
ZNF558	0.004464	RNF152	0.001248	CTH	-0.001903	LDHD	-0.013764
TMEM38B	0.004461	POLR1E	0.001248	UGP2	-0.001904	CCRL2	-0.013768
PCYOX1L	0.004461	CPNE1	0.001247	RPL31	-0.001907	MT1M	-0.013768
ZNF517	0.004461	OR6K6	0.001247	IGIP	-0.001908	C8orf4	-0.013773
SHANK1	0.004459	OR2A42	0.001247	SLC38A4	-0.001909	S100A3	-0.013779
PRB2	0.004459	CNTROB	0.001247	EIF1	-0.001911	ANPEP	-0.013786
LAGE3	0.004458	RAB28	0.001247	CLIC4	-0.001911	SERPING1	-0.013801
MIB1	0.004456	GMPPB	0.001247	SHKBP1	-0.001913	PRELP	-0.013801
TADA1	0.004455	TDO2	0.001246	ZFYVE9	-0.001914	CTSS	-0.013804

ZMIZ2	0.004455	UBN1	0.001246	SLC45A4	-0.001918	PTRF	-0.013804
DISC1	0.004454	KIAA1683	0.001246	LIFR	-0.001921	ANKRD66	-0.013817
FBN3	0.004453	KRT35	0.001246	MPP3	-0.001922	AGBL1	-0.013822
FAM83B	0.004452	DMGDH	0.001246	FXYD7	-0.001923	CCR6	-0.013827
ZNF76	0.004449	OR6C75	0.001245	FFAR3	-0.001923	ADGRG6	-0.013828
EXTL2	0.004449	CHD9	0.001245	SEC16B	-0.001924	SEMA3E	-0.013830
SPZ1	0.004448	OR5M9	0.001245	TP53	-0.001925	SLIT3	-0.013833
EPOR	0.004446	CDC23	0.001245	PJA2	-0.001925	GSTA3	-0.013858
NIN	0.004445	PDZD11	0.001245	NT5C1A	-0.001926	EGR1	-0.013865
OR7D2	0.004445	GJA10	0.001245	SERINC4	-0.001926	TMEM150B	-0.013872
RNF34	0.004445	TTI2	0.001244	KDSR	-0.001926	AOX1	-0.013893
IGFBP5	0.004444	IQCD	0.001243	PHLDA1	-0.001927	PTPRQ	-0.013898
F8A3	0.004443	CYP19A1	0.001243	PTP4A2	-0.001927	SIGLEC14	-0.013905
PHF20L1	0.004442	MTFR1L	0.001240	TRAF3IP2	-0.001928	C10orf107	-0.013926
ZNF430	0.004442	HIRIP3	0.001239	CCDC88B	-0.001932	S100A16	-0.013926
VAX1	0.004441	C5orf58	0.001239	C10orf76	-0.001933	ERN2	-0.013928
PPT2	0.004441	COA4	0.001238	SERPINB10	-0.001935	CAMP	-0.013928
TIMM8A	0.004440	PSMD10	0.001238	MPZL1	-0.001937	C5AR1	-0.013933
PLP1	0.004439	SMG8	0.001238	LACTB2	-0.001937	IHH	-0.013933
SLC25A40	0.004439	MAPRE2	0.001237	USP4	-0.001937	HBA1	-0.013935
RAB30	0.004439	KCNK18	0.001236	ALDOA	-0.001938	S100A6	-0.013937
SOX9	0.004438	BHLHA9	0.001236	ARMCX1	-0.001941	ANGPT4	-0.013941
CCDC116	0.004437	ALDH18A1	0.001235	SPG21	-0.001942	GAPT	-0.013950
BCS1L	0.004436	OR52E2	0.001235	UTP3	-0.001946	TNS1	-0.013960
ZNF211	0.004435	THEM6	0.001235	CTNNBIP1	-0.001947	RRAS	-0.013962
NGEF	0.004434	IFIT1B	0.001235	TMEM233	-0.001947	AGRP	-0.013962
SERPINA7	0.004433	FRG2B	0.001235	APOL4	-0.001949	LTF	-0.013962
NELFCD	0.004433	ELP4	0.001234	PPARGC1A	-0.001949	CASQ2	-0.013982
ICE1	0.004432	XPR1	0.001233	DDX19B	-0.001952	AMY1B	-0.013989
RAB33A	0.004432	UQCRB	0.001233	COMMD6	-0.001953	FGR	-0.013989
DPY19L3	0.004432	CHUK	0.001233	RNF185	-0.001953	LIMS2	-0.013998
OR2B2	0.004431	RESP18	0.001231	H1FNT	-0.001953	CLU	-0.014001
LMBR1L	0.004431	HIST1H2AA	0.001231	COA3	-0.001954	ITIH5	-0.014003
MAPK4	0.004430	RDH8	0.001231	SLC22A10	-0.001955	ACADL	-0.014012
IMPG1	0.004430	MAP1A	0.001230	LINGO4	-0.001960	AVPI1	-0.014016
NUDT1	0.004430	THRAP3	0.001230	BLOC1S2	-0.001961	C1orf87	-0.014023
TUB	0.004429	PNPLA8	0.001229	TRAK2	-0.001962	LRRC18	-0.014031
FRS3	0.004428	HGH1	0.001229	NAPRT	-0.001965	NLRP12	-0.014032
SBNO1	0.004427	SOD1	0.001227	TTC1	-0.001966	OASL	-0.014035
REEP1	0.004427	PSMB2	0.001227	NOMO2	-0.001966	PCOLCE2	-0.014037
C9orf72	0.004426	TMPRSS12	0.001227	SLMAP	-0.001966	TGM2	-0.014057

LNX1	0.004425	TMEM95	0.001227	PTEN	-0.001967	SLC26A9	-0.014058
RNF219	0.004420	TAF10	0.001226	FOXP3	-0.001967	CD1B	-0.014082
ZUFSP	0.004419	TTC30B	0.001226	RPL27	-0.001968	RAC2	-0.014095
CACYBP	0.004419	SF3B6	0.001225	JUN	-0.001968	TLR2	-0.014097
TIAF1	0.004417	ZDHHC6	0.001225	DHRS4L2	-0.001970	ARHGAP31	-0.014111
ZNF14	0.004416	KRTAP21-2	0.001225	PPP1R1C	-0.001970	XAGE1A	-0.014118
SULT2A1	0.004416	HCN1	0.001223	PECR	-0.001971	KPNA7	-0.014119
RPP21	0.004416	SEBOX	0.001222	LACC1	-0.001972	SIGLEC5	-0.014124
ADAM2	0.004415	DEFB125	0.001222	RPL19	-0.001974	CFI	-0.014129
DCAF15	0.004415	EBNA1BP2	0.001221	ARHGEF12	-0.001977	TNFSF13	-0.014135
QRFP	0.004415	GMEB1	0.001220	EBAG9	-0.001978	CCL20	-0.014138
PPME1	0.004414	RPTN	0.001220	DNAH3	-0.001979	AHNAK	-0.014152
TRPV5	0.004414	GTF2H3	0.001218	CDSN	-0.001982	CREB3L1	-0.014159
DCLK1	0.004412	SLC25A31	0.001217	OST4	-0.001984	DOK2	-0.014170
ETNK2	0.004410	OR5B21	0.001217	PPFIBP2	-0.001984	TNIP3	-0.014183
LTN1	0.004410	ARHGEF11	0.001216	TWSG1	-0.001985	MALRD1	-0.014188
SAG	0.004407	GJB4	0.001216	YIF1A	-0.001985	TTC29	-0.014195
KPNA5	0.004406	TBC1D10B	0.001216	ARL5A	-0.001986	RAMP3	-0.014199
OPTC	0.004404	MRPL11	0.001215	MRAP	-0.001986	TLR8	-0.014217
C9orf129	0.004404	MT-ATP8	0.001213	CCDC47	-0.001987	TIMP3	-0.014230
HRASLS	0.004403	GHSR	0.001213	RNF167	-0.001988	CLEC12A	-0.014230
RC3H2	0.004403	FAM213B	0.001213	CHURC1	-0.001988	NTN4	-0.014244
AP4M1	0.004402	RNF133	0.001213	STEAP3	-0.001988	SYNDIG1L	-0.014249
VPS8	0.004400	PLET1	0.001212	LYRM9	-0.001989	IL6R	-0.014276
SLC22A17	0.004400	TRPV6	0.001212	ALDH1L1	-0.001990	LILRA5	-0.014282
TAZ	0.004399	MRPL32	0.001211	PELO	-0.001991	SULT1A2	-0.014291
ENOSF1	0.004398	SYTL4	0.001210	SBK3	-0.001991	ZFP36	-0.014307
ZNF354C	0.004398	OR10T2	0.001210	CREB3	-0.001991	PTAFR	-0.014316
ESCO1	0.004397	TTC7B	0.001209	CTAGE15	-0.001992	MPZL2	-0.014319
MBNL3	0.004397	GJD3	0.001208	RASGRF2	-0.001992	SULT2B1	-0.014324
SLC5A3	0.004396	ARHGEF9	0.001208	IFRD2	-0.001992	TYROBP	-0.014333
HELB	0.004396	NAALAD2	0.001207	FTO	-0.001993	AKR1C2	-0.014336
LECT2	0.004396	KRTAP9-7	0.001207	DEGS1	-0.001993	DNAH9	-0.014346
LRRC8B	0.004396	B3GALT2	0.001206	GNPTG	-0.001994	MYH11	-0.014346
KDM1B	0.004395	TSR1	0.001206	MPG	-0.001994	CCBE1	-0.014404
OR1J1	0.004394	LCMT1	0.001205	PELI1	-0.001997	ACP5	-0.014416
LRRC34	0.004394	ZZEF1	0.001205	TMEM248	-0.001997	SYT15	-0.014433
FXR1	0.004393	KRTAP9-8	0.001205	GPX4	-0.001998	HBEGF	-0.014442
PLAC1	0.004393	RAB23	0.001203	CPXCR1	-0.002000	SLCO2A1	-0.014514
HAO2	0.004393	OR5A1	0.001203	FLNB	-0.002003	SELENBP1	-0.014538
RSRC2	0.004391	ARMCX2	0.001203	PDE4DIP	-0.002004	P2RY2	-0.014545

GPRC5B	0.004391	UBQLN2	0.001203	SEC24D	-0.002007	CYBRD1	-0.014549
UBE2E3	0.004390	OR5K4	0.001202	ZDHHC24	-0.002007	LY86	-0.014549
MCHR2	0.004388	TFAP2E	0.001202	ALS2CR12	-0.002008	IL1RN	-0.014550
AWAT1	0.004388	ZFYVE19	0.001201	CIR1	-0.002008	ANXA1	-0.014553
GPR89B	0.004387	EARS2	0.001201	CYP26B1	-0.002009	SHROOM4	-0.014561
TUBGCP4	0.004385	THAP1	0.001201	TADA3	-0.002009	SGCG	-0.014570
FRG2	0.004385	EMC1	0.001201	CORO2A	-0.002011	HSPB8	-0.014584
ELF2	0.004384	OR4D6	0.001200	LOXHD1	-0.002013	NCF2	-0.014617
ZNF534	0.004384	ZNF257	0.001200	FFAR2	-0.002013	MT1A	-0.014634
CCDC84	0.004382	CHIC1	0.001200	VTI1B	-0.002013	CD69	-0.014636
LDHAL6A	0.004381	PRDX4	0.001198	PDIA5	-0.002013	MAOA	-0.014655
RGSL1	0.004380	SLC25A18	0.001198	THNSL2	-0.002015	TMEM212	-0.014669
HSPA1B	0.004380	PSMA3	0.001197	PPP3CC	-0.002016	LILRA2	-0.014672
CEP19	0.004380	PRKD3	0.001196	RPL12	-0.002016	CATSPER1	-0.014675
TULP1	0.004379	TMEM117	0.001196	MMAA	-0.002018	F3	-0.014689
GTF2H4	0.004377	CYLC1	0.001196	TP53I11	-0.002021	ITGAM	-0.014690
ODF2L	0.004377	NDUFV3	0.001196	CLPTM1	-0.002021	TMEM190	-0.014708
PRKAB2	0.004377	OXNAD1	0.001194	ESD	-0.002022	TEK	-0.014710
INTS2	0.004377	C1orf146	0.001193	UBE2H	-0.002023	CSF2	-0.014721
ATP7B	0.004376	C21orf62	0.001193	FGFR1	-0.002024	TLCD2	-0.014721
IRGC	0.004374	MCRS1	0.001192	FKBP15	-0.002024	SPOCK2	-0.014729
UGT2B11	0.004373	ZC2HC1A	0.001192	CMPK2	-0.002025	SERPINA3	-0.014729
STH	0.004373	ABTB1	0.001191	FBXL3	-0.002025	ABCC6	-0.014750
FOXD4	0.004373	INO80B	0.001190	UMAD1	-0.002025	ADGRF5	-0.014755
STK32C	0.004372	TM2D1	0.001190	ATP8B1	-0.002026	RGCC	-0.014766
DAZ2	0.004371	MEIS3	0.001190	VEGFB	-0.002028	SLC11A1	-0.014768
ORC2	0.004371	SURF6	0.001189	SDC3	-0.002030	SFTA3	-0.014790
FASTKD3	0.004371	BAZ1A	0.001189	WFDC10A	-0.002031	TFPI2	-0.014790
SYNE2	0.004370	FTSJ1	0.001188	SLC50A1	-0.002034	CLEC4E	-0.014792
C9orf153	0.004370	OR5AU1	0.001188	ADIPOR2	-0.002035	B3GNT3	-0.014796
ZNF316	0.004370	OR8K5	0.001188	PDIA3	-0.002037	CFAP221	-0.014802
NDOR1	0.004370	OR5I1	0.001187	ZNF843	-0.002038	COL4A3	-0.014803
CRTC1	0.004369	ENKD1	0.001186	GSG1L	-0.002040	MATN3	-0.014816
PDDC1	0.004368	TBATA	0.001186	PPP1R18	-0.002041	SHE	-0.014828
SLBP	0.004365	MT-CO2	0.001186	COX4I1	-0.002041	SULT1A4	-0.014828
PTPRS	0.004364	GSS	0.001185	PGLYRP1	-0.002042	GSTA2	-0.014834
ZNF17	0.004364	PDCD7	0.001185	WDR91	-0.002043	ITGA8	-0.014846
U2AF1L4	0.004364	VPS13C	0.001185	GALK1	-0.002045	HLA-DMA	-0.014862
TRIM62	0.004364	PPIL3	0.001185	HOMER3	-0.002046	ODAM	-0.014870
HMG20B	0.004363	OR4K3	0.001184	ZAP70	-0.002046	ST8SIA6	-0.014871
NR2C2AP	0.004361	OR1A2	0.001184	TANK	-0.002048	A2M	-0.014877

ZNF664	0.004361	PPP4R2	0.001184	NDUFAF1	-0.002048	PLA2G4A	-0.014887
ZFP90	0.004359	RNF2	0.001182	C9orf64	-0.002048	SIGLEC11	-0.014916
MAGEF1	0.004357	AARS	0.001181	CNIH4	-0.002050	FOXF1	-0.014919
LEMD2	0.004355	NET1	0.001181	XKR8	-0.002050	ACSL5	-0.014931
DUS4L	0.004354	SSX4	0.001181	ITGAV	-0.002050	CHIT1	-0.014947
FSCN2	0.004354	CXorf66	0.001181	SEMA3F	-0.002052	GPR39	-0.014948
TTYH3	0.004352	MRPS18C	0.001181	C14orf159	-0.002055	NPR1	-0.014960
C8orf37	0.004351	LGALS13	0.001180	JOSD1	-0.002055	SHISA3	-0.014966
PROB1	0.004349	OR6C4	0.001179	KRBOX1	-0.002056	TFPI	-0.014968
TMEM61	0.004348	GGA1	0.001179	TOR1AIP2	-0.002056	CYR61	-0.014969
PDF	0.004348	KRT85	0.001179	APOL2	-0.002057	TMEM139	-0.015019
FRMD7	0.004348	KTI12	0.001179	RPL23	-0.002057	CTSW	-0.015021
FAF1	0.004347	ATP2A2	0.001179	GSTM3	-0.002057	FGFR2	-0.015034
ZNF512B	0.004346	ARHGAP5	0.001178	HS3ST3A1	-0.002058	PPARG	-0.015036
MTG1	0.004346	KRTAP7-1	0.001178	SERF2	-0.002059	EPHA2	-0.015061
ID4	0.004344	KRTAP12-3	0.001177	YWHAH	-0.002060	HRCT1	-0.015083
PDC	0.004342	KRTAP2-4	0.001176	SPPL2A	-0.002061	CX3CL1	-0.015087
SERF1A	0.004342	FAM49B	0.001176	INSL4	-0.002064	FCGR3B	-0.015092
TELO2	0.004341	CDK11B	0.001176	NDUFA4	-0.002067	LDLRAD1	-0.015104
RNF32	0.004341	OR10H3	0.001175	SLC25A26	-0.002067	TGFBR2	-0.015107
KLHL29	0.004340	HAMP	0.001175	PRKAR1A	-0.002068	CRTAC1	-0.015136
TRHR	0.004340	SFT2D2	0.001174	MICU1	-0.002069	MNDA	-0.015138
DNAJC24	0.004340	KRT12	0.001174	CHRNA6	-0.002069	TNNI2	-0.015138
EFCAB11	0.004335	VARS	0.001173	TMEM51	-0.002075	CX3CR1	-0.015138
COLCA2	0.004335	ISCA2	0.001173	IMP3	-0.002077	ALOX15	-0.015139
TMEM78	0.004334	ZBTB9	0.001172	GSTM2	-0.002077	DKK1	-0.015170
PPP1R16A	0.004332	GSTT2B	0.001171	OPTN	-0.002078	THBD	-0.015178
RALGPS2	0.004330	OR10AG1	0.001171	BCL2L13	-0.002081	CSF3R	-0.015218
UNC5CL	0.004330	UBE3C	0.001171	FERMT1	-0.002082	DCSTAMP	-0.015220
GYS2	0.004330	HTR3B	0.001170	WWP1	-0.002083	DCN	-0.015230
NABP2	0.004329	TAS2R41	0.001170	EIF3C	-0.002084	KRT13	-0.015264
ANKRD13D	0.004328	TMED4	0.001170	ZNF330	-0.002085	CA4	-0.015265
PPM1L	0.004327	OR4C12	0.001170	MAP7D1	-0.002085	GYPE	-0.015291
PPOX	0.004327	TAS2R16	0.001169	BNIP2	-0.002085	MYH2	-0.015319
GNL3L	0.004327	WDR43	0.001169	SEC62	-0.002086	PAPSS2	-0.015329
KLHL34	0.004325	OR4C15	0.001169	UGDH	-0.002086	SELPLG	-0.015331
GRAMD1B	0.004325	CCNG1	0.001167	TJP2	-0.002087	PRSS21	-0.015360
ZNF638	0.004325	DAZ3	0.001164	CCL16	-0.002087	C2orf71	-0.015365
GSX2	0.004324	STX18	0.001164	ITFG1	-0.002088	ABCA8	-0.015365
CNKSR2	0.004323	OR2T3	0.001164	ZFAND6	-0.002088	HBA2	-0.015366
TBC1D26	0.004322	SMYD4	0.001163	COL15A1	-0.002089	DPEP2	-0.015368

FNBP1L	0.004321	GARS	0.001163	GABRP	-0.002093	NEDD9	-0.015375
SFXN5	0.004319	GOLGA7	0.001162	BTG4	-0.002095	CLEC10A	-0.015384
CTAG2	0.004317	KIF26A	0.001162	MRPL40	-0.002095	SYNC	-0.015399
C14orf37	0.004317	KRTAP2-1	0.001162	STX7	-0.002098	C2	-0.015413
ILKAP	0.004314	OR52A1	0.001161	CCDC12	-0.002099	CCDC69	-0.015415
ZNF33A	0.004314	OR5K3	0.001161	FOXN3	-0.002100	ORM1	-0.015450
ELAVL1	0.004313	NANOG	0.001161	DCTN1	-0.002101	CSTA	-0.015470
PCID2	0.004312	ARF5	0.001161	PIGA	-0.002102	MYRF	-0.015476
SCUBE3	0.004310	SARNP	0.001161	MGST3	-0.002104	CD1A	-0.015494
GOLGA6L22	0.004309	INO80C	0.001161	ABCD1	-0.002104	PLBD1	-0.015532
TAF9B	0.004309	CEACAM19	0.001160	TLDC2	-0.002105	FIBIN	-0.015533
C21orf59	0.004309	TMEM247	0.001160	MT-ND1	-0.002106	DLC1	-0.015534
TRIM17	0.004307	HMBS	0.001160	MAN2A1	-0.002106	CLDN2	-0.015544
CDRT4	0.004306	GLO1	0.001158	TCP11L2	-0.002106	EPAS1	-0.015576
GAMT	0.004305	TRMT44	0.001158	TMEM187	-0.002107	ABI3BP	-0.015577
FADS2	0.004304	KIAA1143	0.001158	ADPGK	-0.002110	HLA-DPB1	-0.015588
FAM168A	0.004304	PIGN	0.001157	NRG1	-0.002113	SYT8	-0.015594
SMARCA4	0.004303	RAD54L2	0.001157	DYDC2	-0.002113	S1PR4	-0.015630
MCM5	0.004302	OR7G2	0.001157	RPL36AL	-0.002115	TREM2	-0.015641
TEX10	0.004302	OR6C74	0.001157	AKR1E2	-0.002115	EREG	-0.015652
C3orf20	0.004301	MB21D1	0.001156	RPL8	-0.002119	ERP27	-0.015669
SETD4	0.004301	MAGEB16	0.001155	DNPEP	-0.002120	PGM5	-0.015672
MSL2	0.004299	POLR1A	0.001155	POLR3GL	-0.002123	CNN2	-0.015692
TTL	0.004294	SSX3	0.001155	PLD2	-0.002123	IL6	-0.015712
ZNF862	0.004293	NIFK	0.001155	FUT6	-0.002124	S100A8	-0.015720
AJAP1	0.004291	RD3L	0.001154	LEPROTL1	-0.002124	PRODH	-0.015775
HNRNPDL	0.004290	OR4D11	0.001154	CNIH3	-0.002126	HLA-DQA2	-0.015779
ZNF764	0.004290	TRAF7	0.001153	OSBPL10	-0.002127	ALDH2	-0.015779
CLDN11	0.004289	OR10A7	0.001153	TM2D2	-0.002130	FAM189A2	-0.015781
TRPM3	0.004288	OR10J1	0.001153	EXOSC7	-0.002130	LGALS3	-0.015781
TPGS1	0.004287	HIST1H2BK	0.001153	CFL1	-0.002130	IRX6	-0.015782
NPIPB3	0.004287	NOL7	0.001152	LRRC8C	-0.002130	HLA-DPA1	-0.015784
HTR4	0.004282	HNRNPUL2	0.001151	PHKB	-0.002131	CFD	-0.015788
TMEM5	0.004282	RABEP2	0.001150	TTLL10	-0.002133	SLC51B	-0.015789
KIAA1644	0.004281	IFT22	0.001149	RAC1	-0.002133	IL1A	-0.015822
ZFP69	0.004279	BBS4	0.001149	FLT1	-0.002134	RAB27B	-0.015843
POLR3A	0.004278	BABAM1	0.001149	TMED3	-0.002136	ADRB2	-0.015848
FBXL19	0.004277	C1orf56	0.001149	RTN4	-0.002137	RBP4	-0.015849
TRIB2	0.004275	SDHA	0.001148	CHMP2B	-0.002137	IL33	-0.015862
C12orf65	0.004275	KPNA6	0.001146	PFDN1	-0.002138	FGF10	-0.015888
POLRMT	0.004274	TSFM	0.001146	DPP7	-0.002139	FAM81B	-0.015898

EXOC5	0.004273	MT1G	0.001145	EVA1B	-0.002139	CST5	-0.015922
TMPRSS6	0.004273	UAP1	0.001145	GMIP	-0.002140	ADCY8	-0.015925
SH3GLB2	0.004272	NTMT1	0.001144	STMND1	-0.002141	CXCL16	-0.015930
PPP5C	0.004272	STAT2	0.001142	ZDHHC2	-0.002142	GJA5	-0.015951
KIAA0753	0.004271	OR6Y1	0.001141	CA11	-0.002142	HBB	-0.015965
ZDHHC21	0.004270	OR14J1	0.001141	RAMP1	-0.002143	MSR1	-0.015978
TMEM121	0.004269	IFNA17	0.001141	TMOD1	-0.002146	JCHAIN	-0.015985
TREX2	0.004265	OR2S2	0.001141	AAMDC	-0.002147	GGT6	-0.015994
TSPY3	0.004264	TSEN15	0.001141	RSPH9	-0.002149	CCL18	-0.016010
TBX19	0.004263	BIRC8	0.001140	RB1	-0.002149	HLA-DQB1	-0.016015
GPRASP2	0.004262	KIAA0368	0.001140	ITGA6	-0.002149	NFE2	-0.016025
NME1	0.004261	SESTD1	0.001140	BACE2	-0.002150	ANGPT1	-0.016041
DCAF17	0.004260	PDAP1	0.001140	GLI2	-0.002150	RNF128	-0.016064
RANBP17	0.004260	OR1P1	0.001140	PGAP3	-0.002152	FPR1	-0.016087
RAB2B	0.004259	SNX22	0.001139	RPL27A	-0.002152	ADRB1	-0.016091
GPR35	0.004259	POM121L12	0.001139	PFDN5	-0.002153	C1QTNF7	-0.016095
BLMH	0.004257	KRTAP9-9	0.001139	PRKG2	-0.002154	FGFR4	-0.016127
ZNF343	0.004255	OR10H4	0.001138	HERPUD2	-0.002155	STOML3	-0.016201
DNAAF2	0.004255	MAPKBP1	0.001138	CPTP	-0.002155	PLA2G10	-0.016203
U2AF2	0.004255	OR4Q2	0.001138	PYGB	-0.002155	HLA-DOA	-0.016206
LRP1B	0.004254	SHC4	0.001137	ADRA2C	-0.002156	CCDC68	-0.016220
RNASEH2C	0.004252	VRK3	0.001137	STAB1	-0.002156	ACKR1	-0.016226
C15orf62	0.004252	ITFG2	0.001136	MBP	-0.002157	FOXQ1	-0.016233
AHCTF1	0.004252	OR5K1	0.001135	FAU	-0.002157	CCL13	-0.016253
PHLDB3	0.004251	MRPL2	0.001135	GAB3	-0.002157	HCAR3	-0.016261
SMCO1	0.004251	GPR162	0.001134	C2orf50	-0.002158	COLEC12	-0.016264
HENMT1	0.004251	ZFAND2B	0.001133	HBE1	-0.002160	CD300C	-0.016272
APOC3	0.004249	OR12D1	0.001133	ARPC3	-0.002160	SCNN1B	-0.016302
ZNF230	0.004248	MPHOSPH6	0.001133	EEF1B2	-0.002161	ADIRF	-0.016310
WDR35	0.004247	SLC35B2	0.001131	FAM177A1	-0.002163	CCDC170	-0.016332
TSTD2	0.004245	MRPL38	0.001131	TMEM14C	-0.002164	ADTRP	-0.016334
PFAS	0.004244	ANKRD65	0.001131	AXIN2	-0.002164	HLA-DQA1	-0.016339
GPR45	0.004244	EIF2B3	0.001131	RBL2	-0.002165	C2orf54	-0.016346
CCZ1B	0.004242	TPBG	0.001130	HTR1B	-0.002167	CXCR1	-0.016350
ZNF827	0.004241	HERC1	0.001130	APOB	-0.002167	ADGRE5	-0.016360
OR13G1	0.004241	IL22RA1	0.001130	XPC	-0.002168	HSPB6	-0.016411
TAS2R43	0.004241	CDC20B	0.001129	CACNB4	-0.002169	HP	-0.016414
CHRND	0.004240	YIF1B	0.001129	SHROOM3	-0.002169	WFDC12	-0.016428
ZNF24	0.004240	NLRP10	0.001129	MKNK1	-0.002169	ELF5	-0.016456
ZNF540	0.004239	DNAJC16	0.001128	FGD4	-0.002169	MYZAP	-0.016540
NCAPH2	0.004239	SULT6B1	0.001128	TESC	-0.002169	TEKT1	-0.016543

KIAA1958	0.004238	KRT26	0.001127	KCNJ2	-0.002169	SGMS2	-0.016549
TCP1	0.004238	BUD31	0.001127	CLCA4	-0.002171	CH25H	-0.016552
ORAOV1	0.004238	ARFRP1	0.001127	UCP2	-0.002172	HLA-DRA	-0.016601
CPSF7	0.004237	DEFB118	0.001126	CDR2	-0.002172	SELP	-0.016609
ABCB9	0.004236	TWF1	0.001126	ZNF888	-0.002174	STX11	-0.016626
D2HGDH	0.004236	OR5L2	0.001126	SLC22A15	-0.002175	MAMDC2	-0.016640
OR1Q1	0.004235	OR10G4	0.001124	PLXND1	-0.002177	ATOH8	-0.016642
ADNP	0.004235	C4orf17	0.001124	CXXC5	-0.002177	FBP1	-0.016669
MSANTD1	0.004234	DGUOK	0.001124	MOB1A	-0.002178	LYZ	-0.016687
HRAS	0.004233	DEFB105A	0.001123	FRZB	-0.002178	ADGRF1	-0.016700
SEPSECS	0.004233	APOM	0.001123	FOXC2	-0.002178	LYVE1	-0.016734
FAAP100	0.004229	ZNF35	0.001123	ITGA4	-0.002179	S100A9	-0.016754
GLI4	0.004229	VCPIP1	0.001122	GRAMD3	-0.002181	DKK2	-0.016758
ZNF30	0.004227	MRPL18	0.001122	HBG1	-0.002182	WNT2	-0.016770
BAMBI	0.004226	TBC1D3	0.001122	TMEM154	-0.002183	SPN	-0.016782
ZNF101	0.004226	UBTFL1	0.001122	SLC4A1	-0.002183	SLC16A5	-0.016785
KHK	0.004225	IZUMO1R	0.001121	CELA1	-0.002184	B3GNT7	-0.016822
PSMG1	0.004223	PERP	0.001119	SGPP1	-0.002184	CD68	-0.016872
TKTL2	0.004223	PRAMEF2	0.001119	FCGBP	-0.002184	PRX	-0.016925
OTOS	0.004223	NAPEPLD	0.001119	IGF2R	-0.002188	CPM	-0.016927
CHRD	0.004222	TRIM10	0.001119	GLG1	-0.002192	SIGLEC6	-0.016962
LRP4	0.004220	PAIP2	0.001118	CDH1	-0.002193	ADH1C	-0.016969
LIPE	0.004220	LIX1	0.001118	CASQ1	-0.002193	CD1E	-0.016972
NVL	0.004220	RRNAD1	0.001117	C1orf168	-0.002194	DUOX1	-0.016986
OR51H1	0.004218	TMEM251	0.001117	FBXL17	-0.002195	EFEMP1	-0.017000
FBXO10	0.004218	ZNF672	0.001117	SACM1L	-0.002195	CTSG	-0.017006
KLHL3	0.004215	TECPR1	0.001116	CT45A6	-0.002195	EVPLL	-0.017036
CACNA2D3	0.004215	SPATA31A7	0.001116	TMEM164	-0.002196	C6	-0.017049
CACTIN	0.004213	BCORL1	0.001115	RPL32	-0.002197	ITLN1	-0.017050
PLCH2	0.004212	GPATCH11	0.001115	AP1B1	-0.002198	HLA-DRB1	-0.017058
WDR53	0.004212	NHLRC1	0.001114	TMEM176B	-0.002200	C11orf88	-0.017069
S100A7A	0.004208	OR52E8	0.001114	DYRK4	-0.002201	LRG1	-0.017071
MED14	0.004207	KRTAP13-1	0.001113	A4GNT	-0.002202	TMEM213	-0.017072
SUCO	0.004206	POLR2J	0.001113	ISPD	-0.002203	PI16	-0.017077
DGKZ	0.004205	UBE2R2	0.001113	ATXN1L	-0.002203	PRSS8	-0.017085
MAU2	0.004204	PRAMEF7	0.001112	BBS12	-0.002204	AKR1C3	-0.017116
ADGRB3	0.004204	GRHL1	0.001112	CD46	-0.002205	CAPSL	-0.017128
SRSF6	0.004202	OR4A8	0.001111	ADGRG5	-0.002207	EHD2	-0.017157
MADD	0.004201	OR8D2	0.001109	UFSP2	-0.002207	PRG4	-0.017161
ZNF614	0.004201	OR2C1	0.001108	LYSMD3	-0.002208	BMP5	-0.017207
PHTF1	0.004194	TFPT	0.001108	SNRPN	-0.002214	ANKRD29	-0.017213

PACS2	0.004193	ZSWIM4	0.001107	OAS3	-0.002214	OGN	-0.017222
GRK4	0.004193	GLOD4	0.001107	WT1	-0.002214	AOC3	-0.017232
CEP63	0.004192	DCPS	0.001106	IDUA	-0.002217	GPD1	-0.017233
LSM4	0.004192	OR9I1	0.001106	GORASP1	-0.002219	TNXB	-0.017236
NT5DC2	0.004191	WBP1	0.001106	RAB14	-0.002220	GPX3	-0.017251
HNRNPD	0.004191	COA6	0.001105	RUSC2	-0.002223	HKDC1	-0.017251
CEP70	0.004190	ANKDD1A	0.001105	SKAP2	-0.002228	ALDH3A1	-0.017290
MRPL42	0.004189	OR7D4	0.001105	SLC4A2	-0.002229	CD74	-0.017314
DNHD1	0.004189	FOXN2	0.001104	EMID1	-0.002231	LAMC2	-0.017377
OR51G2	0.004189	CSHL1	0.001104	TRIM58	-0.002233	GSTM5	-0.017390
OCRL	0.004187	OR5B2	0.001104	RBM11	-0.002234	DRAM1	-0.017406
BRAT1	0.004185	KLRC3	0.001103	C14orf1	-0.002235	CD55	-0.017413
CREG2	0.004183	SYCP1	0.001103	ABCC1	-0.002235	NINJ2	-0.017424
HTATSF1	0.004182	DDX50	0.001103	DUSP16	-0.002237	HRASLS5	-0.017443
FRAS1	0.004182	OR6X1	0.001101	GDF2	-0.002239	S100A10	-0.017458
OTULIN	0.004181	VLDLR	0.001101	EIF3L	-0.002241	KNDC1	-0.017464
EIF4A2	0.004180	PCGF2	0.001101	SLITRK2	-0.002241	SNTN	-0.017477
FBRSL1	0.004179	DVL1	0.001101	STEAP1	-0.002241	WDR38	-0.017483
KIAA1147	0.004178	BACH2	0.001101	PSMB6	-0.002246	HYAL1	-0.017485
SLC9B2	0.004177	RSPRY1	0.001101	SHBG	-0.002246	PDPN	-0.017496
MFN1	0.004176	OR8H1	0.001099	FRAT1	-0.002247	AGR2	-0.017498
TP53BP1	0.004176	TPRN	0.001098	POU5F1	-0.002247	FBLN5	-0.017535
SERPINE2	0.004172	ATP1B4	0.001098	43712	-0.002248	AQP9	-0.017540
SERF1B	0.004171	IQCF3	0.001098	HEMGN	-0.002248	DPT	-0.017561
MTHFD1	0.004170	PSMB1	0.001098	GNAT2	-0.002249	NTF4	-0.017601
IGFL1	0.004170	KLHL36	0.001097	RPL10	-0.002250	EDN1	-0.017638
TXNL4A	0.004169	NRAS	0.001097	VWA8	-0.002251	MUC5B	-0.017685
KLHDC4	0.004166	C10orf120	0.001097	JMJD8	-0.002252	FGA	-0.017698
FANCE	0.004164	DENND6B	0.001097	DEFA4	-0.002255	CPAMD8	-0.017709
SOX14	0.004163	COL3A1	0.001096	INPP1	-0.002256	SEC14L4	-0.017780
ZXDC	0.004163	ERI1	0.001095	RAB1A	-0.002256	PPBP	-0.017789
SEZ6L2	0.004162	ZC3H4	0.001094	SPATA22	-0.002258	ADGRE1	-0.017848
FAAH	0.004160	ZFAND2A	0.001094	STUB1	-0.002258	S100A4	-0.017855
MED23	0.004159	KATNB1	0.001094	WDR93	-0.002259	ADGRE3	-0.017937
NAT9	0.004158	MAPK1IP1L	0.001093	YIPF5	-0.002259	HPGDS	-0.017937
MTOR	0.004158	SIGMAR1	0.001093	SPRR2A	-0.002261	ALPL	-0.017943
USP42	0.004157	KRTAP5-11	0.001093	TBC1D2B	-0.002264	ADGRD1	-0.017944
THBS3	0.004157	OR5AC1	0.001092	CTDNEP1	-0.002267	IYD	-0.017945
OR6F1	0.004155	EIF1AD	0.001091	PLXNB2	-0.002267	APOC2	-0.017947
SP6	0.004154	ITCH	0.001091	MYEOV	-0.002269	CXCR2	-0.017956
ME3	0.004153	AUH	0.001090	BAHD1	-0.002270	OSCAR	-0.017960

DUX4	0.004152	TMEM70	0.001090	SNX1	-0.002275	C7	-0.017977
RGPD4	0.004150	C22orf29	0.001089	CGB7	-0.002276	SCN2B	-0.018037
TIMM21	0.004150	BHMG1	0.001089	WNT9A	-0.002277	SHH	-0.018037
TARS	0.004149	ACTR8	0.001088	MKL1	-0.002278	SIRPB1	-0.018058
C9orf47	0.004149	ORAI2	0.001088	AASS	-0.002279	C1orf167	-0.018098
ABHD10	0.004147	CUL2	0.001088	TMEM141	-0.002280	KLK7	-0.018119
MAPK11	0.004147	RING1	0.001087	TMPPE	-0.002280	CYS1	-0.018145
MUS81	0.004145	ENSA	0.001086	FADS3	-0.002281	TUBB3	-0.018181
USP35	0.004145	LRP2BP	0.001085	ACTR2	-0.002283	ITGB4	-0.018226
CCNG2	0.004145	PARP16	0.001084	PVRIG	-0.002284	MAP1LC3C	-0.018255
ZBED4	0.004145	ZNF705B	0.001084	CASC4	-0.002284	KLK10	-0.018290
FAAP24	0.004144	AP3M1	0.001083	BLOC1S3	-0.002288	BMP3	-0.018298
NUP62	0.004141	PSMD12	0.001083	FNBP1	-0.002288	CCL14	-0.018313
SLIRP	0.004141	FGFR1OP2	0.001083	SAMD9	-0.002288	CYP2S1	-0.018375
CORO6	0.004140	CEP170B	0.001083	DDIT4L	-0.002289	P3H2	-0.018382
PIN1	0.004140	OR1D2	0.001082	FREM1	-0.002289	CHRDL1	-0.018388
TAF11	0.004140	GTF3C2	0.001081	KREMEN1	-0.002290	CAPN8	-0.018437
H2AFV	0.004135	CDYL	0.001080	SSMEM1	-0.002290	AADAC	-0.018447
SRP9	0.004135	DLGAP4	0.001079	ST3GAL2	-0.002293	HHLA2	-0.018498
TRIO	0.004132	DGCR14	0.001079	JUP	-0.002295	CXCL2	-0.018506
PHLPP2	0.004132	APIP	0.001079	CREBL2	-0.002295	CTSH	-0.018528
TRIM24	0.004131	NUDT2	0.001079	UFC1	-0.002297	DUOXA1	-0.018529
ZNF701	0.004130	GJB7	0.001078	PAQR7	-0.002297	SGCA	-0.018533
SERPINC1	0.004130	C7orf25	0.001077	BCL7B	-0.002300	FLRT3	-0.018574
ANKEF1	0.004130	GAGE12H	0.001076	OOEP	-0.002300	RS1	-0.018588
AGO1	0.004129	MRO	0.001076	MPP5	-0.002302	RSPO1	-0.018610
RUSC1	0.004129	CASP6	0.001075	PPP1R12B	-0.002304	FCN1	-0.018617
FUS	0.004128	OR6C3	0.001075	CDIP1	-0.002304	SLC39A8	-0.018665
RAD51D	0.004126	EIF1AX	0.001074	BCL2L1	-0.002304	C1orf116	-0.018713
RBM10	0.004126	OR5H2	0.001073	ARHGAP26	-0.002305	PTGS2	-0.018732
KRTAP1-3	0.004124	ZSWIM6	0.001073	CISD3	-0.002306	HCAR2	-0.018748
ZNF37A	0.004122	NISCH	0.001072	ZMAT5	-0.002306	RNASE1	-0.018771
RAD1	0.004121	TTC4	0.001071	TOX2	-0.002308	ALPPL2	-0.018779
EPHB2	0.004120	CCDC172	0.001071	TBX3	-0.002309	CD1C	-0.018780
PRMT3	0.004118	OR2T2	0.001070	CTDSP2	-0.002309	VSIG2	-0.018792
EXOSC10	0.004117	SENP3	0.001070	SREK1IP1	-0.002310	VSIG4	-0.018795
DERL3	0.004115	NXF5	0.001070	EFHD1	-0.002311	HLA-DQB2	-0.018804
CCNB1IP1	0.004114	DYNLT3	0.001069	IPCEF1	-0.002312	AQP1	-0.018856
POLR3F	0.004112	MARK4	0.001067	CRK	-0.002313	IL7R	-0.018912
TBL1XR1	0.004110	TTC19	0.001066	TMEM59	-0.002315	CD52	-0.018928
CTDSPL2	0.004110	FUT8	0.001066	ITGA10	-0.002316	SCN7A	-0.018972

MGA	0.004109	ELP6	0.001066	VIPR2	-0.002317	KRT7	-0.019005
NAE1	0.004106	DNAJC14	0.001066	APEH	-0.002319	RSPO2	-0.019020
PRKRIP1	0.004106	TAS1R2	0.001065	ARPC5	-0.002319	FMO2	-0.019028
APBA1	0.004105	DEFB126	0.001063	GUCY1A3	-0.002320	C20orf85	-0.019046
PMP2	0.004104	DNAJC5	0.001062	C11orf74	-0.002320	MUC1	-0.019101
BCL9	0.004104	OR51I2	0.001062	PPIB	-0.002321	FXYD1	-0.019213
EIF2B5	0.004104	DCTN5	0.001062	TMED9	-0.002321	RRAD	-0.019241
TRIM27	0.004103	TACO1	0.001061	UBLCP1	-0.002322	ICAM1	-0.019256
MITD1	0.004102	BCL11B	0.001061	RPS12	-0.002323	PCSK9	-0.019290
MLH3	0.004098	ANP32A	0.001061	TBKBP1	-0.002325	MYOC	-0.019323
POT1	0.004098	LRFN3	0.001061	CDR2L	-0.002326	ALDH3B1	-0.019325
CCL27	0.004098	DYNC2H1	0.001061	TBC1D5	-0.002326	TACSTD2	-0.019333
GPR89A	0.004098	SLC35E3	0.001060	ASMTL	-0.002331	FPR2	-0.019339
SLCO1B1	0.004097	ZNHIT6	0.001060	C9orf116	-0.002331	MFAP4	-0.019360
NLK	0.004096	CDKN2AIPNL	0.001060	CDC42EP3	-0.002335	CHIA	-0.019366
H2AFY	0.004095	DEFA5	0.001059	C14orf119	-0.002335	ARSE	-0.019412
OMP	0.004095	OOSP2	0.001059	RPS6KA3	-0.002336	TMEM92	-0.019416
ZKSCAN3	0.004094	CLEC2A	0.001058	TRIM16L	-0.002337	CCL21	-0.019437
PDE10A	0.004093	MID1	0.001057	SNAI1	-0.002339	LIPH	-0.019455
MTCP1	0.004093	CIB3	0.001057	BPI	-0.002340	SLC22A3	-0.019466
DZIP3	0.004090	GAS8	0.001057	TMEM208	-0.002340	FAM216B	-0.019483
GOLGA8K	0.004090	SLC35D1	0.001056	SREBF2	-0.002342	GPIHBP1	-0.019542
PTPRD	0.004090	OR10J4	0.001056	NFIA	-0.002343	CCL22	-0.019553
SMG9	0.004088	OR10R2	0.001056	RASSF4	-0.002343	WISP2	-0.019587
ZNF45	0.004087	CEBPZOS	0.001056	TMED7	-0.002345	LCN2	-0.019592
THOC2	0.004086	OR5W2	0.001055	STX4	-0.002347	FAM107A	-0.019607
PCDH11Y	0.004085	SIRT2	0.001054	DENND1B	-0.002348	GPM6A	-0.019613
ALG13	0.004083	MIER2	0.001054	MANSC1	-0.002349	CLEC3B	-0.019670
GAN	0.004083	EIF4ENIF1	0.001052	AFF3	-0.002349	GSTA1	-0.019745
UPK3BL	0.004083	LELP1	0.001052	AKAP12	-0.002352	DPP4	-0.019878
TMEM88B	0.004082	PRPF18	0.001052	EHD3	-0.002353	TREM1	-0.019900
SPAG16	0.004082	MED24	0.001051	GP6	-0.002354	XAGE2	-0.019902
ENGASE	0.004082	GOT2	0.001050	IL12A	-0.002355	FOLR3	-0.019904
AMN1	0.004079	FNTB	0.001049	SERTAD4	-0.002355	LAMP3	-0.019949
SPDYE5	0.004079	CRLF3	0.001048	SDHD	-0.002356	VGLL1	-0.019975
ZNF766	0.004079	RBMY1B	0.001047	FAM63A	-0.002356	SH3RF2	-0.019994
COLEC11	0.004076	AMD1	0.001047	SERPINB7	-0.002357	CAV2	-0.020013
ARHGEF16	0.004075	VN1R3	0.001046	VKORC1L1	-0.002357	WNT3A	-0.020016
KIF1B	0.004075	CAMKK2	0.001046	NQO2	-0.002358	CSF3	-0.020038
ZNF836	0.004073	TERF2IP	0.001045	TMEM26	-0.002359	MALL	-0.020045

PKNOX1	0.004073	PRDM4	0.001045	HGSNAT	-0.002360	MRC1	-0.020063
THAP10	0.004072	CLUH	0.001044	PBDC1	-0.002361	CCL17	-0.020065
HAO1	0.004072	TNP1	0.001043	ART1	-0.002361	FOSB	-0.020112
KDM5B	0.004072	STK38L	0.001043	RPS23	-0.002362	ZBED2	-0.020165
BPTF	0.004072	LACTBL1	0.001043	BLOC1S1	-0.002363	TMEM100	-0.020247
NFYA	0.004071	ATP6V0A1	0.001043	ZNF467	-0.002363	HOPX	-0.020316
LCLAT1	0.004071	EMC10	0.001041	TOR1AIP1	-0.002364	CXCL5	-0.020457
SBSN	0.004069	FAM222B	0.001041	FCRL2	-0.002367	PLA2G4F	-0.020487
HIST1H1A	0.004069	CS	0.001041	ECE1	-0.002367	COL6A5	-0.020506
DHX35	0.004068	OR6J1	0.001040	ARF3	-0.002367	C3	-0.020551
TAF1	0.004068	PTPN11	0.001040	ADD1	-0.002367	ANXA3	-0.020557
OR2T8	0.004066	SURF2	0.001040	TREML4	-0.002369	ALOX5AP	-0.020596
GART	0.004066	STK26	0.001039	SNRK	-0.002369	SDPR	-0.020600
SETD5	0.004065	RNF216	0.001039	FLOT2	-0.002370	APOH	-0.020622
ASB5	0.004062	USP47	0.001038	SERPINA2	-0.002373	ST6GALNAC1	-0.020708
HMGXB4	0.004062	OR6C65	0.001037	CNR1	-0.002373	STEAP4	-0.020716
ARHGEF19	0.004062	MAGEB18	0.001036	PLOD1	-0.002373	F11	-0.020907
F9	0.004061	LMTK2	0.001036	PIGB	-0.002374	CCL23	-0.020920
EYA3	0.004060	NDUFS7	0.001035	TREH	-0.002375	MUC15	-0.021057
CHAC2	0.004059	C2orf42	0.001034	TNFAIP8	-0.002377	SERPINA1	-0.021091
RAPSN	0.004058	NPM1	0.001033	RAB9A	-0.002380	GALNT5	-0.021097
SMN2	0.004058	NKX1-1	0.001032	SP140L	-0.002380	CLIC5	-0.021171
BRD9	0.004057	DPH6	0.001030	RNPEP	-0.002382	LRRK2	-0.021177
ZNF565	0.004057	CHST13	0.001030	CCR8	-0.002382	IL1RL1	-0.021193
SGSM2	0.004056	NFS1	0.001030	KPNA3	-0.002382	SCTR	-0.021220
SNRPA	0.004055	FGF8	0.001029	FIBCD1	-0.002382	HPGD	-0.021259
HNRNPH3	0.004054	RTCA	0.001028	SRSF8	-0.002383	DAW1	-0.021279
RRAGB	0.004053	AP5S1	0.001028	SLK	-0.002386	INMT	-0.021287
ENAH	0.004052	NAP1L5	0.001027	LCK	-0.002387	DES	-0.021311
CEP295NL	0.004051	MS4A10	0.001026	NR5A2	-0.002388	PTGDS	-0.021317
FAM120C	0.004050	OR10J5	0.001026	HIBADH	-0.002388	SLC19A3	-0.021412
HNRNPA3	0.004048	ANAPC15	0.001025	ETV3	-0.002389	CFTR	-0.021445
MEX3C	0.004047	ZBTB32	0.001025	NUP210L	-0.002389	LRRN4	-0.021477
TTPAL	0.004047	CES3	0.001024	CNN3	-0.002390	ITLN2	-0.021478
AVL9	0.004047	MGAT4A	0.001024	TNFRSF11B	-0.002390	FCER1A	-0.021492
ZNF630	0.004047	MBD3L3	0.001023	RNF141	-0.002390	VEPH1	-0.021507
TMEM237	0.004046	SLC16A7	0.001023	PDE5A	-0.002391	CNTN6	-0.021551
TMPRSS3	0.004044	B3GNT5	0.001022	PODXL	-0.002392	HLA-DRB5	-0.021553
DVL2	0.004043	PPP6R2	0.001021	TUSC1	-0.002392	MMP28	-0.021581
HOXA1	0.004043	C2CD4B	0.001020	CCDC36	-0.002392	ADAMTS8	-0.021583

LPIN1	0.004042	KIAA0100	0.001020	ANKRD44	-0.002396	CHI3L2	-0.021649
FAM208B	0.004040	SNX13	0.001020	NAA60	-0.002397	ANXA8L1	-0.021694
LSM5	0.004040	OR2G3	0.001020	REPS2	-0.002398	PDZK1IP1	-0.021825
NDUFAF7	0.004039	VEGFA	0.001020	POLR2C	-0.002399	ATP13A4	-0.021902
PSPC1	0.004038	OR4S1	0.001019	RPL13	-0.002399	AGR3	-0.021930
SNRNP25	0.004038	STPG1	0.001019	KRT78	-0.002399	CAV1	-0.021931
C1QTNF9B	0.004037	SPECC1L	0.001019	CCDC92	-0.002401	MS4A2	-0.021967
NUCKS1	0.004034	OR51A2	0.001019	PLEKHA2	-0.002401	TMPRSS2	-0.022039
TBCB	0.004031	YIPF4	0.001019	KCNK1	-0.002401	HNF1B	-0.022090
ACER2	0.004030	C9orf84	0.001018	C11orf68	-0.002404	FCN3	-0.022133
NMBR	0.004029	TRAPPC12	0.001018	RFTN2	-0.002404	AREG	-0.022186
SUGP1	0.004028	FAM53C	0.001017	SBSPON	-0.002405	SOSTDC1	-0.022189
LIPJ	0.004026	KIF5B	0.001017	LIPM	-0.002405	AQP5	-0.022201
BIVM	0.004026	HDHD3	0.001017	SPINK13	-0.002406	LAMB3	-0.022222
SMLR1	0.004025	G3BP1	0.001016	EGLN2	-0.002408	SEC14L6	-0.022237
MRGBP	0.004025	CLCN7	0.001016	DGCR2	-0.002410	FGFBP1	-0.022319
GLRX5	0.004025	AKIRIN1	0.001016	DCBLD1	-0.002411	HHIP	-0.022383
MLIP	0.004024	MRPL19	0.001015	C8A	-0.002411	ITGB6	-0.022413
WDR87	0.004024	NCK2	0.001013	TMPRSS11E	-0.002411	ALOX15B	-0.022430
MDN1	0.004021	DIS3L2	0.001013	DTD2	-0.002414	GPA33	-0.022447
KIAA1324	0.004021	OR1E3	0.001013	SCAMP4	-0.002415	ANXA8	-0.022470
TMEM259	0.004020	ADAMTS12	0.001012	ANAPC16	-0.002417	KCNJ15	-0.022524
STAG1	0.004017	RNF5	0.001011	NEBL	-0.002418	C8B	-0.022649
C14orf79	0.004017	LDHA	0.001011	PPP2R3A	-0.002418	CD300LG	-0.022741
NLGN2	0.004017	PRSS54	0.001010	IDI1	-0.002421	TBX4	-0.022883
HAUS7	0.004015	DPCD	0.001010	SLC27A3	-0.002423	SLC6A4	-0.022884
GPR3	0.004015	USMG5	0.001009	RAB7A	-0.002423	SUSD2	-0.023013
TDRD6	0.004011	NGF	0.001009	CTNS	-0.002424	ADH1B	-0.023061
FMR1	0.004010	CNTNAP1	0.001009	CTNND1	-0.002424	FABP4	-0.023078
ZNF451	0.004010	OR5M3	0.001008	SMIM5	-0.002426	AQP3	-0.023172
ZNF548	0.004006	ZNF268	0.001005	MAPK15	-0.002427	SCARA5	-0.023264
PWWP2A	0.004005	SCAF11	0.001005	RPL28	-0.002427	SLC22A31	-0.023313
MED17	0.004005	MRPS31	0.001003	OSBPL11	-0.002427	FGG	-0.023493
RPP40	0.004002	HMGA2	0.001003	RELL1	-0.002428	CPB2	-0.023507
CAMTA1	0.004000	PCBP2	0.001003	TMEM231	-0.002432	RASGRF1	-0.023524
ZNF615	0.003999	IMMT	0.001003	ZMYND10	-0.002434	ANKRD1	-0.023574
CNTRL	0.003999	CD160	0.001002	CCL3L3	-0.002436	GDF10	-0.023584
ZNF181	0.003999	IL21	0.001001	RELA	-0.002438	WNT7A	-0.023672
NRDE2	0.003998	RFFL	0.001000	ATP8B3	-0.002439	S100A14	-0.023674
LRRC58	0.003998	DNAAF5	0.001000	CADM1	-0.002440	ICAM4	-0.023711
AKT2	0.003998	OR5B3	0.001000	PCBD1	-0.002440	CLIC3	-0.023723

CSNK1E	0.003997	HDAC3	0.000999	AIFM2	-0.002440	DPCR1	-0.023820
DHX36	0.003996	SEL1L2	0.000999	IER5	-0.002441	RETN	-0.023868
PRSS2	0.003995	LIG4	0.000997	OS9	-0.002442	CST6	-0.023877
ENOPH1	0.003995	OR4F5	0.000997	EIF5A	-0.002444	OLR1	-0.023965
CCDC93	0.003995	TPD52L2	0.000996	SERINC1	-0.002446	AGER	-0.024176
HTR2C	0.003995	JKAMP	0.000995	ZNF90	-0.002446	TCF21	-0.024208
FAM122C	0.003994	RBM22	0.000995	ATP10D	-0.002446	ALPP	-0.024401
TFDP2	0.003994	MTCH2	0.000995	TAF13	-0.002447	MS4A15	-0.024495
SRSF7	0.003994	PLEKHM3	0.000995	IFNAR2	-0.002447	CLDN18	-0.024795
ZNF684	0.003994	LETM1	0.000995	IVD	-0.002449	SLC46A2	-0.025004
DOCK7	0.003993	COL18A1	0.000994	ACTN1	-0.002450	BPIFB1	-0.025089
SH2B1	0.003992	RPL36	0.000994	SNX10	-0.002452	SDR16C5	-0.025341
C7orf73	0.003992	GOLT1B	0.000994	PDE6B	-0.002452	TNNC1	-0.025531
ABHD3	0.003989	DPF2	0.000993	MMP23B	-0.002452	CPA3	-0.025846
EID2	0.003987	ATRN	0.000993	TMCO2	-0.002453	NOTCH2NL	-0.025885
ZNF446	0.003986	OR52E1	0.000993	TMPRSS7	-0.002455	C19orf33	-0.025997
SSBP3	0.003986	RHOT1	0.000992	C6orf106	-0.002457	PLA2G1B	-0.026059
MAP2K6	0.003986	DCTN2	0.000992	GK	-0.002458	SLPI	-0.026184
CEACAM7	0.003986	ATF6B	0.000992	RASSF7	-0.002459	CES1	-0.026311
ZNF639	0.003986	RTN4R	0.000992	DGCR6	-0.002464	NDNF	-0.026596
STK25	0.003985	CLDN34	0.000991	FBP2	-0.002464	CXCL17	-0.026697
ZNF383	0.003984	SMIM7	0.000991	SUSD5	-0.002466	UPK3B	-0.026718
RBM26	0.003984	CUL7	0.000991	IMPDH1	-0.002466	CEACAM6	-0.026889
BANP	0.003982	OR8J3	0.000990	SLC2A6	-0.002467	KRT4	-0.026975
UHRF1BP1	0.003980	SRL	0.000990	ITGB1	-0.002468	GKN2	-0.027021
CMSS1	0.003979	TMEM174	0.000989	ALCAM	-0.002468	CTSE	-0.027329
ZXDA	0.003978	ZHX1	0.000989	PPTC7	-0.002472	AMY1C	-0.027356
CCDC140	0.003976	TBRG1	0.000989	TSGA10IP	-0.002474	SLC6A14	-0.027418
GLYAT	0.003975	NUP93	0.000988	ASPN	-0.002474	TPSAB1	-0.027421
RUNX1T1	0.003975	PIK3C2A	0.000988	SCN9A	-0.002475	AGTR2	-0.027492
ASB4	0.003973	KRT73	0.000988	MYO5B	-0.002475	WIF1	-0.027701
ANKRD6	0.003973	CBX6	0.000988	EVI5	-0.002476	TPSB2	-0.027882
FUT5	0.003973	OR1E2	0.000988	AFAP1L2	-0.002480	LGI3	-0.028047
ZCCHC8	0.003973	SLC36A3	0.000987	MCAM	-0.002481	FOLR1	-0.028416
UQCC1	0.003971	COG4	0.000987	HIC1	-0.002483	ROS1	-0.028783
OBSL1	0.003971	OR10H2	0.000987	PLCL1	-0.002486	MUC21	-0.028905
DLG2	0.003969	GEMIN5	0.000986	CTRB2	-0.002486	MARCO	-0.029014
TESK2	0.003969	CRELD2	0.000986	HTATIP2	-0.002487	AQP4	-0.029183
ACTL7B	0.003968	OR4L1	0.000986	FASN	-0.002489	C16orf89	-0.029663
FAM219A	0.003967	SRGAP2B	0.000985	FDX1	-0.002491	PIGR	-0.029974
KDM2B	0.003965	NR1D1	0.000985	KLHL21	-0.002492	GPRC5A	-0.030127

MTERF3	0.003965	OR4E2	0.000984	LMO7DN	-0.002493	MCEMP1	-0.030373
NPIPB15	0.003963	DCAF11	0.000984	KLF13	-0.002493	CYP4B1	-0.030385
GLT1D1	0.003962	LIAS	0.000984	EIF6	-0.002494	PEBP4	-0.030870
C14orf93	0.003962	NMRAL1	0.000983	FAM20C	-0.002494	DMBT1	-0.030938
FAM71E1	0.003960	DUSP8	0.000983	MTHFR	-0.002496	C4BPA	-0.031076
KMT2C	0.003958	DIRC1	0.000982	PGD	-0.002497	GGTLC1	-0.031540
ATXN3	0.003958	OR6N2	0.000982	FAM189A1	-0.002499	SCGB3A1	-0.032282
ZNF665	0.003958	ZC3H10	0.000981	ST3GAL4	-0.002501	NAPSA	-0.032301
ANKRD39	0.003957	LDB1	0.000981	ARHGAP8	-0.002502	SCGB3A2	-0.032459
C3orf14	0.003957	SLC30A6	0.000981	CYTH3	-0.002503	SFTPD	-0.032991
SLC2A12	0.003956	MROH2B	0.000981	SEMA4B	-0.002504	SCEL	-0.033338
TUBA1B	0.003955	OR4K13	0.000980	SEL1L3	-0.002504	SCGB1A1	-0.033482
TNRC6A	0.003954	NTHL1	0.000980	EIF4E2	-0.002506	MSLN	-0.034377
MAPKAPK5	0.003952	PRAMEF18	0.000979	AKTIP	-0.002508	PCDH20	-0.034771
AKNAD1	0.003952	C21orf91	0.000978	MZB1	-0.002508	SLC34A2	-0.036437
C11orf53	0.003951	GTF2A1L	0.000978	NFE4	-0.002509	PGC	-0.036730
C19orf44	0.003947	TAAR5	0.000978	AMIGO1	-0.002510	SFTPB	-0.037152
NRBP2	0.003947	KIAA0232	0.000977	FGGY	-0.002511	SFTA2	-0.037941
LRRC8D	0.003946	HNRNPF	0.000977	COL4A3BP	-0.002513	NDUFA7	-0.038592
RBFA	0.003946	DPPA2	0.000977	BRK1	-0.002514	SFTPA2	-0.041274
INTU	0.003944	HYKK	0.000976	CRAT	-0.002515	SFTPA1	-0.044867
YAE1D1	0.003941	THUMPD3	0.000976	RBP5	-0.002515	SFTPC	-0.049137
TJAP1	0.003938	PCNP	0.000974	GABRB2	-0.002518		
VHL	0.003935	INTS10	0.000974	OLFM1	-0.002519		

Table 2: SCN gene signature weights, top 100 and bottom 100 genes

Gene	SCN signature weight	**Gene**	SCN signature weight	**Gene**	SCN signature weight	**Gene**	SCN signature weight
TARDBP	0.050046	HEPACAM2	0.029840	SFTPC	-0.049137	TNNC1	-0.025531
PIK3R3	0.049087	ST8SIA3	0.029799	SFTPA1	-0.044867	SDR16C5	-0.025341
DPYSL5	0.044226	DLX6	0.029756	SFTPA2	-0.041274	BPIFB1	-0.025089
TMBIM4	0.042018	SCG3	0.029402	NDUFA7	-0.038592	SLC46A2	-0.025004
PIK3R2	0.041165	PHF21B	0.029396	SFTA2	-0.037941	CLDN18	-0.024795
INSM1	0.040721	DLX1	0.029377	SFTPB	-0.037152	MS4A15	-0.024495
TIMM10B	0.039219	ACSL6	0.029205	PGC	-0.036730	ALPP	-0.024401

KIF1A	0.038317	SPATA13	0.029188	SLC34A2	-0.036437	TCF21	-0.024208
PSMA1	0.037698	NOL4	0.029159	PCDH20	-0.034771	AGER	-0.024176
STXBP5L	0.037609	SEZ6L	0.029159	MSLN	-0.034377	OLR1	-0.023965
CHGA	0.036387	CDK5R2	0.029034	SCGB1A1	-0.033482	CST6	-0.023877
PAPD7	0.036124	CAMK2B	0.028906	SCEL	-0.033338	RETN	-0.023868
ELAVL3	0.035688	B4GALNT4	0.028815	SFTPD	-0.032991	DPCR1	-0.023820
DLL3	0.034705	TMEM179	0.028799	SCGB3A2	-0.032459	CLIC3	-0.023723
ASCL1	0.034372	CHGB	0.028725	NAPSA	-0.032301	ICAM4	-0.023711
PI4K2B	0.034356	RGS5	0.028715	SCGB3A1	-0.032282	S100A14	-0.023674
ZIC5	0.034346	KCNH5	0.028658	GGTLC1	-0.031540	WNT7A	-0.023672
DLK1	0.034262	KIF5C	0.028640	C4BPA	-0.031076	GDF10	-0.023584
SEZ6	0.034028	MAST1	0.028625	DMBT1	-0.030938	ANKRD1	-0.023574
FOXG1	0.033796	TMEM151B	0.028579	PEBP4	-0.030870	RASGRF1	-0.023524
GNG4	0.033750	ZBTB8B	0.028501	CYP4B1	-0.030385	CPB2	-0.023507
ATCAY	0.033655	MYT1	0.028396	MCEMP1	-0.030373	FGG	-0.023493
ZIC2	0.033534	VGF	0.028366	GPRC5A	-0.030127	SLC22A31	-0.023313
RAB3B	0.033273	RALYL	0.028332	PIGR	-0.029974	SCARA5	-0.023264
RIMS2	0.033236	SLC7A14	0.028238	C16orf89	-0.029663	AQP3	-0.023172
ACTL6B	0.033103	SYT13	0.028114	AQP4	-0.029183	FABP4	-0.023078
ZNF286A	0.033099	UNC13A	0.027888	MARCO	-0.029014	ADH1B	-0.023061
ONECUT2	0.032991	ST8SIA5	0.027832	MUC21	-0.028905	SUSD2	-0.023013
INA	0.032957	CAMK2N2	0.027811	ROS1	-0.028783	SLC6A4	-0.022884
NRSN1	0.032855	SCGN	0.027799	FOLR1	-0.028416	TBX4	-0.022883
PAGR1	0.032600	MPPED1	0.027698	LGI3	-0.028047	CD300LG	-0.022741
CPLX2	0.032351	UNC80	0.027571	TPSB2	-0.027882	C8B	-0.022649

BEST3	0.032243	NRXN1	0.027371	WIF1	-0.027701	KCNJ15	-0.022524
CELF3	0.032012	HRH3	0.027336	AGTR2	-0.027492	ANXA8	-0.022470
DCX	0.031961	ELAVL4	0.027325	TPSAB1	-0.027421	GPA33	-0.022447
ST18	0.031529	CNTNAP2	0.027288	SLC6A14	-0.027418	ALOX15B	-0.022430
CACNA1A	0.031512	SYT14	0.027228	AMY1C	-0.027356	ITGB6	-0.022413
XKR7	0.031507	OGDHL	0.027225	CTSE	-0.027329	HHIP	-0.022383
LHX2	0.031425	ZMAT4	0.027169	GKN2	-0.027021	FGFBP1	-0.022319
CACNA1B	0.031268	TCERG1L	0.026964	KRT4	-0.026975	SEC14L6	-0.022237
SYT4	0.031045	ZDHHC22	0.026950	CEACAM6	-0.026889	LAMB3	-0.022222
C17orf100	0.031021	GRM4	0.026729	UPK3B	-0.026718	AQP5	-0.022201
PCSK1	0.030989	AMH	0.026692	CXCL17	-0.026697	SOSTDC1	-0.022189
TAGLN3	0.030809	SRRM4	0.026690	NDNF	-0.026596	AREG	-0.022186
SOX11	0.030603	DGKB	0.026580	CES1	-0.026311	FCN3	-0.022133
FAM57B	0.030310	FOXN4	0.026556	SLPI	-0.026184	HNF1B	-0.022090
CHRNB2	0.030170	NEUROD1	0.026519	PLA2G1B	-0.026059	TMPRSS2	-0.022039
NKX2-2	0.030022	PCDH8	0.026511	C19orf33	-0.025997	MS4A2	-0.021967
KCNC1	0.029939	RIMBP2	0.026498	NOTCH2NL	-0.025885	CAV1	-0.021931
ISL1	0.029906	SULT4A1	0.026466	CPA3	-0.025846	AGR3	-0.021930

Table 3: SCN gene signature weights, top 500 and bottom 500 genes

Gene	SCN signature weight	**Gene**	SCN signature weight	**Gene**	SCN signature weight	**Gene**	SCN signature weight
TARDBP	0.050046	NEURL1	0.020268	SFTPC	-0.049137	KNDC1	-0.017464
PIK3R3	0.049087	DMRTA2	0.020162	SFTPA1	-0.044867	S100A10	-0.017458
DPYSL5	0.044226	SHISA9	0.020137	SFTPA2	-0.041274	HRASLS5	-0.017443
TMBIM4	0.042018	ABCC8	0.020127	NDUFA7	-0.038592	NINJ2	-0.017424

PIK3R2	0.041165	SCRT1	0.020095	SFTA2	-0.037941	CD55	-0.017413
INSM1	0.040721	CCDC150	0.020087	SFTPB	-0.037152	DRAM1	-0.017406
TIMM10B	0.039219	FAM83F	0.020080	PGC	-0.036730	GSTM5	-0.017390
KIF1A	0.038317	KCNK10	0.020062	SLC34A2	-0.036437	LAMC2	-0.017377
PSMA1	0.037698	HOXB8	0.020056	PCDH20	-0.034771	CD74	-0.017314
STXBP5L	0.037609	ATOH7	0.020053	MSLN	-0.034377	ALDH3A1	-0.017290
CHGA	0.036387	TTK	0.020048	SCGB1A1	-0.033482	HKDC1	-0.017251
PAPD7	0.036124	NEUROG2	0.020024	SCEL	-0.033338	GPX3	-0.017251
ELAVL3	0.035688	TTBK1	0.019983	SFTPD	-0.032991	TNXB	-0.017236
DLL3	0.034705	STMN4	0.019952	SCGB3A2	-0.032459	GPD1	-0.017233
ASCL1	0.034372	PDIA2	0.019920	NAPSA	-0.032301	AOC3	-0.017232
PI4K2B	0.034356	GLYATL1	0.019856	SCGB3A1	-0.032282	OGN	-0.017222
ZIC5	0.034346	POTEI	0.019788	GGTLC1	-0.031540	ANKRD29	-0.017213
DLK1	0.034262	DLGAP5	0.019781	C4BPA	-0.031076	BMP5	-0.017207
SEZ6	0.034028	PBK	0.019738	DMBT1	-0.030938	PRG4	-0.017161
FOXG1	0.033796	DLGAP3	0.019721	PEBP4	-0.030870	EHD2	-0.017157
GNG4	0.033750	NXPH1	0.019719	CYP4B1	-0.030385	CAPSL	-0.017128
ATCAY	0.033655	TMEM63C	0.019718	MCEMP1	-0.030373	AKR1C3	-0.017116
ZIC2	0.033534	LRTM2	0.019709	GPRC5A	-0.030127	PRSS8	-0.017085
RAB3B	0.033273	FAM111B	0.019709	PIGR	-0.029974	PI16	-0.017077
RIMS2	0.033236	HOXA10	0.019707	C16orf89	-0.029663	TMEM213	-0.017072
ACTL6B	0.033103	FOXD1	0.019695	AQP4	-0.029183	LRG1	-0.017071
ZNF286A	0.033099	CENPA	0.019689	MARCO	-0.029014	C11orf88	-0.017069
ONECUT2	0.032991	DPYSL4	0.019676	MUC21	-0.028905	HLA-DRB1	-0.017058
INA	0.032957	CNTN2	0.019641	ROS1	-0.028783	ITLN1	-0.017050

NRSN1	0.032855	SHD	0.019618	FOLR1	-0.028416	C6	-0.017049
PAGR1	0.032600	HOXA13	0.019618	LGI3	-0.028047	EVPLL	-0.017036
CPLX2	0.032351	FAM163B	0.019603	TPSB2	-0.027882	CTSG	-0.017006
BEST3	0.032243	MEX3A	0.019558	WIF1	-0.027701	EFEMP1	-0.017000
CELF3	0.032012	OR51E2	0.019553	AGTR2	-0.027492	DUOX1	-0.016986
DCX	0.031961	CALCB	0.019531	TPSAB1	-0.027421	CD1E	-0.016972
ST18	0.031529	SP8	0.019520	SLC6A14	-0.027418	ADH1C	-0.016969
CACNA1A	0.031512	WNK2	0.019514	AMY1C	-0.027356	SIGLEC6	-0.016962
XKR7	0.031507	RAB26	0.019503	CTSE	-0.027329	CPM	-0.016927
LHX2	0.031425	PPFIA4	0.019480	GKN2	-0.027021	PRX	-0.016925
CACNA1B	0.031268	SPOCK1	0.019470	KRT4	-0.026975	CD68	-0.016872
SYT4	0.031045	RBFOX1	0.019457	CEACAM6	-0.026889	B3GNT7	-0.016822
C17orf100	0.031021	MATR3	0.019445	UPK3B	-0.026718	SLC16A5	-0.016785
PCSK1	0.030989	MAGEA3	0.019440	CXCL17	-0.026697	SPN	-0.016782
TAGLN3	0.030809	SAPCD2	0.019393	NDNF	-0.026596	WNT2	-0.016770
SOX11	0.030603	ESPL1	0.019386	CES1	-0.026311	DKK2	-0.016758
FAM57B	0.030310	HOXD4	0.019380	SLPI	-0.026184	S100A9	-0.016754
CHRNB2	0.030170	SLC18A1	0.019365	PLA2G1B	-0.026059	LYVE1	-0.016734
NKX2-2	0.030022	ATP1A3	0.019364	C19orf33	-0.025997	ADGRF1	-0.016700
KCNC1	0.029939	GRM8	0.019360	NOTCH2NL	-0.025885	LYZ	-0.016687
ISL1	0.029906	FOXD3	0.019355	CPA3	-0.025846	FBP1	-0.016669
HEPACAM2	0.029840	INHBE	0.019344	TNNC1	-0.025531	ATOH8	-0.016642
ST8SIA3	0.029799	NDST4	0.019336	SDR16C5	-0.025341	MAMDC2	-0.016640
DLX6	0.029756	BSN	0.019310	BPIFB1	-0.025089	STX11	-0.016626
SCG3	0.029402	CER1	0.019298	SLC46A2	-0.025004	SELP	-0.016609

PHF21B	0.029396	HIST1H2BH	0.019294	CLDN18	-0.024795	HLA-DRA	-0.016601
DLX1	0.029377	KIF4A	0.019288	MS4A15	-0.024495	CH25H	-0.016552
ACSL6	0.029205	GRM2	0.019262	ALPP	-0.024401	SGMS2	-0.016549
SPATA13	0.029188	FRRS1L	0.019244	TCF21	-0.024208	TEKT1	-0.016543
NOL4	0.029159	SOWAHA	0.019237	AGER	-0.024176	MYZAP	-0.016540
SEZ6L	0.029159	SCG2	0.019209	OLR1	-0.023965	ELF5	-0.016456
CDK5R2	0.029034	ACRV1	0.019190	CST6	-0.023877	WFDC12	-0.016428
CAMK2B	0.028906	KCNQ2	0.019163	RETN	-0.023868	HP	-0.016414
B4GALNT4	0.028815	UHRF1	0.019149	DPCR1	-0.023820	HSPB6	-0.016411
TMEM179	0.028799	LCN15	0.019148	CLIC3	-0.023723	ADGRE5	-0.016360
CHGB	0.028725	RDM1	0.019132	ICAM4	-0.023711	CXCR1	-0.016350
RGS5	0.028715	BUB1B	0.019102	S100A14	-0.023674	C2orf54	-0.016346
KCNH5	0.028658	CALB1	0.019033	WNT7A	-0.023672	HLA-DQA1	-0.016339
KIF5C	0.028640	RGS17	0.019032	GDF10	-0.023584	ADTRP	-0.016334
MAST1	0.028625	CDC25C	0.019021	ANKRD1	-0.023574	CCDC170	-0.016332
TMEM151B	0.028579	CLGN	0.018981	RASGRF1	-0.023524	ADIRF	-0.016310
ZBTB8B	0.028501	IQGAP3	0.018974	CPB2	-0.023507	SCNN1B	-0.016302
MYT1	0.028396	LHFPL5	0.018970	FGG	-0.023493	CD300C	-0.016272
VGF	0.028366	CLVS2	0.018965	SLC22A31	-0.023313	COLEC12	-0.016264
RALYL	0.028332	CNIH2	0.018937	SCARA5	-0.023264	HCAR3	-0.016261
SLC7A14	0.028238	ATP2B3	0.018936	AQP3	-0.023172	CCL13	-0.016253
SYT13	0.028114	CCDC177	0.018929	FABP4	-0.023078	FOXQ1	-0.016233
UNC13A	0.027888	UBE2C	0.018927	ADH1B	-0.023061	ACKR1	-0.016226
ST8SIA5	0.027832	NCAM1	0.018922	SUSD2	-0.023013	CCDC68	-0.016220
CAMK2N2	0.027811	POLQ	0.018917	SLC6A4	-0.022884	HLA-DOA	-0.016206

SCGN	0.027799	NEK2	0.018907	TBX4	-0.022883	PLA2G10	-0.016203
MPPED1	0.027698	TMSB15A	0.018905	CD300LG	-0.022741	STOML3	-0.016201
UNC80	0.027571	NDC80	0.018901	C8B	-0.022649	FGFR4	-0.016127
NRXN1	0.027371	PCP4	0.018866	KCNJ15	-0.022524	C1QTNF7	-0.016095
HRH3	0.027336	MKRN3	0.018863	ANXA8	-0.022470	ADRB1	-0.016091
ELAVL4	0.027325	MELK	0.018847	GPA33	-0.022447	FPR1	-0.016087
CNTNAP2	0.027288	GTSE1	0.018820	ALOX15B	-0.022430	RNF128	-0.016064
SYT14	0.027228	SKA1	0.018761	ITGB6	-0.022413	ANGPT1	-0.016041
OGDHL	0.027225	EZH2	0.018753	HHIP	-0.022383	NFE2	-0.016025
ZMAT4	0.027169	SLIT1	0.018740	FGFBP1	-0.022319	HLA-DQB1	-0.016015
TCERG1L	0.026964	ST8SIA2	0.018740	SEC14L6	-0.022237	CCL18	-0.016010
ZDHHC22	0.026950	GABRQ	0.018736	LAMB3	-0.022222	GGT6	-0.015994
GRM4	0.026729	CBS	0.018664	AQP5	-0.022201	JCHAIN	-0.015985
AMH	0.026692	UCHL1	0.018653	SOSTDC1	-0.022189	MSR1	-0.015978
SRRM4	0.026690	NMU	0.018651	AREG	-0.022186	HBB	-0.015965
DGKB	0.026580	LRRC7	0.018635	FCN3	-0.022133	GJA5	-0.015951
FOXN4	0.026556	MYBL2	0.018623	HNF1B	-0.022090	CXCL16	-0.015930
NEUROD1	0.026519	DDC	0.018576	TMPRSS2	-0.022039	ADCY8	-0.015925
PCDH8	0.026511	EXO1	0.018534	MS4A2	-0.021967	CST5	-0.015922
RIMBP2	0.026498	FGF17	0.018531	CAV1	-0.021931	FAM81B	-0.015898
SULT4A1	0.026466	ARHGAP33	0.018529	AGR3	-0.021930	FGF10	-0.015888
AMER3	0.026430	SIX2	0.018518	ATP13A4	-0.021902	IL33	-0.015862
TMEFF1	0.026347	SRSF12	0.018518	PDZK1IP1	-0.021825	RBP4	-0.015849
NKAIN1	0.026332	TPX2	0.018506	ANXA8L1	-0.021694	ADRB2	-0.015848
BTBD17	0.026300	CDH2	0.018498	CHI3L2	-0.021649	RAB27B	-0.015843

SCN3A	0.026154	NTN3	0.018492	ADAMTS8	-0.021583	IL1A	-0.015822
SVOP	0.026100	EMX1	0.018483	MMP28	-0.021581	SLC51B	-0.015789
POU4F1	0.026037	NEIL3	0.018461	HLA-DRB5	-0.021553	CFD	-0.015788
HOXD13	0.025985	OR51E1	0.018440	CNTN6	-0.021551	HLA-DPA1	-0.015784
CBLN2	0.025911	NEUROG3	0.018429	VEPH1	-0.021507	IRX6	-0.015782
TRPM8	0.025897	KCNK16	0.018396	FCER1A	-0.021492	LGALS3	-0.015781
RUNDC3A	0.025835	CKAP2L	0.018388	ITLN2	-0.021478	FAM189A2	-0.015781
IDS	0.025572	E2F2	0.018386	LRRN4	-0.021477	ALDH2	-0.015779
GRIK3	0.025522	KIF2C	0.018371	CFTR	-0.021445	HLA-DQA2	-0.015779
FSD1	0.025345	KIF15	0.018341	SLC19A3	-0.021412	PRODH	-0.015775
HOXB9	0.025242	ELOVL4	0.018340	PTGDS	-0.021317	S100A8	-0.015720
HOXD11	0.025228	43711	0.018318	DES	-0.021311	IL6	-0.015712
BEX1	0.025117	HIST1H2BG	0.018297	INMT	-0.021287	CNN2	-0.015692
SLC6A17	0.025088	PROX1	0.018274	DAW1	-0.021279	PGM5	-0.015672
CLN3	0.024931	L1CAM	0.018270	HPGD	-0.021259	ERP27	-0.015669
CRYBA2	0.024927	ACBD7	0.018253	SCTR	-0.021220	EREG	-0.015652
NGB	0.024816	OPRD1	0.018246	IL1RL1	-0.021193	TREM2	-0.015641
KCNH7	0.024805	SRPK3	0.018213	LRRK2	-0.021177	S1PR4	-0.015630
KIF5A	0.024804	PAH	0.018204	CLIC5	-0.021171	SYT8	-0.015594
43535	0.024730	RPRM	0.018194	GALNT5	-0.021097	HLA-DPB1	-0.015588
COL2A1	0.024673	SLC45A2	0.018157	SERPINA1	-0.021091	ABI3BP	-0.015577
TUBB2B	0.024657	PIF1	0.018150	MUC15	-0.021057	EPAS1	-0.015576
UNC79	0.024609	GPRIN1	0.018138	CCL23	-0.020920	CLDN2	-0.015544
BARX1	0.024534	NCAPG	0.018130	F11	-0.020907	DLC1	-0.015534
TRIM9	0.024446	CRHR1	0.018103	STEAP4	-0.020716	FIBIN	-0.015533

POU3F2	0.024437	SHISA8	0.018100	ST6GALNAC1	-0.020708	PLBD1	-0.015532
KCNB2	0.024396	MED12L	0.018065	APOH	-0.020622	CD1A	-0.015494
KCNK9	0.024392	CCKBR	0.018033	SDPR	-0.020600	MYRF	-0.015476
DRD2	0.024382	MTHFS	0.018020	ALOX5AP	-0.020596	CSTA	-0.015470
SYT5	0.024358	DDX25	0.017979	ANXA3	-0.020557	ORM1	-0.015450
KCNA1	0.024348	GHRH	0.017948	C3	-0.020551	CCDC69	-0.015415
C12orf56	0.024274	LRFN2	0.017940	COL6A5	-0.020506	C2	-0.015413
PRAME	0.024245	C19orf45	0.017932	PLA2G4F	-0.020487	SYNC	-0.015399
SOX1	0.024178	NCAN	0.017921	CXCL5	-0.020457	CLEC10A	-0.015384
PEX5L	0.024159	DSCAM	0.017910	HOPX	-0.020316	NEDD9	-0.015375
CAMKV	0.024143	MAGEA6	0.017900	TMEM100	-0.020247	DPEP2	-0.015368
SALL1	0.024140	HPCA	0.017899	ZBED2	-0.020165	HBA2	-0.015366
CABP7	0.024106	ASXL3	0.017861	FOSB	-0.020112	ABCA8	-0.015365
BRSK2	0.024054	SPAG5	0.017821	CCL17	-0.020065	C2orf71	-0.015365
PHYHIPL	0.024008	NUSAP1	0.017814	MRC1	-0.020063	PRSS21	-0.015360
DLX2	0.023887	C16orf59	0.017808	MALL	-0.020045	SELPLG	-0.015331
PTPRN	0.023751	RHBDL3	0.017805	CSF3	-0.020038	PAPSS2	-0.015329
GAD1	0.023747	CDCA3	0.017797	WNT3A	-0.020016	MYH2	-0.015319
C11orf71	0.023739	FAM155B	0.017792	CAV2	-0.020013	GYPE	-0.015291
FUT9	0.023668	BIRC5	0.017769	SH3RF2	-0.019994	CA4	-0.015265
KCNH8	0.023608	RCOR2	0.017761	VGLL1	-0.019975	KRT13	-0.015264
ELOVL2	0.023538	CALCA	0.017757	LAMP3	-0.019949	DCN	-0.015230
GPC2	0.023503	SKA3	0.017743	FOLR3	-0.019904	DCSTAMP	-0.015220
EPHA8	0.023369	FLRT1	0.017734	XAGE2	-0.019902	CSF3R	-0.015218
COL22A1	0.023360	KLK2	0.017733	TREM1	-0.019900	THBD	-0.015178

NXPH4	0.023348	ADD2	0.017732	DPP4	-0.019878	DKK1	-0.015170
KCNH6	0.023265	XRCC2	0.017706	GSTA1	-0.019745	ALOX15	-0.015139
NKAIN2	0.023157	ELFN2	0.017702	CLEC3B	-0.019670	CX3CR1	-0.015138
GPR6	0.023028	SYNPR	0.017695	GPM6A	-0.019613	TNNI2	-0.015138
HES6	0.023018	KLK12	0.017690	FAM107A	-0.019607	MNDA	-0.015138
DLX5	0.022900	CLSPN	0.017688	LCN2	-0.019592	CRTAC1	-0.015136
AP3B2	0.022896	SIX6	0.017653	WISP2	-0.019587	TGFBR2	-0.015107
CELSR3	0.022882	KCNT1	0.017649	CCL22	-0.019553	LDLRAD1	-0.015104
TERT	0.022839	OTP	0.017637	GPIHBP1	-0.019542	FCGR3B	-0.015092
SNAP91	0.022802	ANK1	0.017597	FAM216B	-0.019483	CX3CL1	-0.015087
SALL3	0.022753	BRINP2	0.017595	SLC22A3	-0.019466	HRCT1	-0.015083
VWA5B2	0.022720	KDM5D	0.017573	LIPH	-0.019455	EPHA2	-0.015061
ECSCR	0.022664	MAGEA2	0.017564	CCL21	-0.019437	PPARG	-0.015036
E2F7	0.022589	CEL	0.017536	TMEM92	-0.019416	FGFR2	-0.015034
RTBDN	0.022574	KCNC2	0.017532	ARSE	-0.019412	CTSW	-0.015021
ZACN	0.022539	TICRR	0.017525	CHIA	-0.019366	TMEM139	-0.015019
GAD2	0.022517	ZNF711	0.017519	MFAP4	-0.019360	CYR61	-0.014969
TPH1	0.022478	HOXD3	0.017504	FPR2	-0.019339	TFPI	-0.014968
CACNA1E	0.022469	SPC24	0.017477	TACSTD2	-0.019333	SHISA3	-0.014966
CALML3	0.022441	GRIK5	0.017450	ALDH3B1	-0.019325	NPR1	-0.014960
CNTNAP5	0.022435	PCSK1N	0.017441	MYOC	-0.019323	GPR39	-0.014948
NEUROD4	0.022395	SLC17A6	0.017424	PCSK9	-0.019290	CHIT1	-0.014947
43528	0.022364	RGS7	0.017418	ICAM1	-0.019256	ACSL5	-0.014931
CADPS	0.022363	ALX3	0.017411	RRAD	-0.019241	FOXF1	-0.014919
GRIA2	0.022350	CDC20	0.017377	FXYD1	-0.019213	SIGLEC11	-0.014916

HOXD10	0.022343	NEB	0.017365	MUC1	-0.019101	PLA2G4A	-0.014887
TMEM145	0.022342	WNK3	0.017353	C20orf85	-0.019046	A2M	-0.014877
SCN8A	0.022120	ADCY2	0.017343	FMO2	-0.019028	ST8SIA6	-0.014871
KIF18B	0.022106	MKI67	0.017323	RSPO2	-0.019020	ODAM	-0.014870
ASPM	0.022076	ORC6	0.017320	KRT7	-0.019005	HLA-DMA	-0.014862
PPM1E	0.022048	SPC25	0.017314	SCN7A	-0.018972	ITGA8	-0.014846
MRPS17	0.022007	FAM72C	0.017257	CD52	-0.018928	GSTA2	-0.014834
C1QL1	0.021997	CELF4	0.017256	IL7R	-0.018912	SULT1A4	-0.014828
HMX2	0.021955	AURKB	0.017243	AQP1	-0.018856	SHE	-0.014828
KCNJ6	0.021950	DNASE1L2	0.017238	HLA-DQB2	-0.018804	MATN3	-0.014816
FBXO43	0.021870	CDCA2	0.017232	VSIG4	-0.018795	COL4A3	-0.014803
RIPPLY3	0.021866	CYB561D2	0.017220	VSIG2	-0.018792	CFAP221	-0.014802
DEPDC1	0.021850	INSM2	0.017207	CD1C	-0.018780	B3GNT3	-0.014796
SLC6A5	0.021804	SLC38A11	0.017198	ALPPL2	-0.018779	CLEC4E	-0.014792
MYT1L	0.021779	RECQL4	0.017194	RNASE1	-0.018771	TFPI2	-0.014790
NELL1	0.021770	SPTBN4	0.017177	HCAR2	-0.018748	SFTA3	-0.014790
CTNNA2	0.021751	KIFC1	0.017161	PTGS2	-0.018732	SLC11A1	-0.014768
CCNE2	0.021716	RAX	0.017156	C1orf116	-0.018713	RGCC	-0.014766
SHOX2	0.021672	GAP43	0.017144	SLC39A8	-0.018665	ADGRF5	-0.014755
GRP	0.021669	CDK5R1	0.017131	FCN1	-0.018617	ABCC6	-0.014750
RNF183	0.021577	SYT1	0.017092	RSPO1	-0.018610	SERPINA3	-0.014729
TROAP	0.021568	DPY19L2	0.017090	RS1	-0.018588	SPOCK2	-0.014729
CHD5	0.021561	T	0.017089	FLRT3	-0.018574	TLCD2	-0.014721
INSRR	0.021543	SCML2	0.017083	SGCA	-0.018533	CSF2	-0.014721
SLC35D3	0.021542	MCM10	0.017074	DUOXA1	-0.018529	TEK	-0.014710

GDAP1L1	0.021492	KIAA1549L	0.017069	CTSH	-0.018528	TMEM190	-0.014708
SCGB1D2	0.021439	KREMEN2	0.017066	CXCL2	-0.018506	ITGAM	-0.014690
TMEM178B	0.021305	OTOG	0.017059	HHLA2	-0.018498	F3	-0.014689
CDH7	0.021291	CCNB2	0.017029	AADAC	-0.018447	CATSPER1	-0.014675
SIX3	0.021267	PPP2R2C	0.017019	CAPN8	-0.018437	LILRA2	-0.014672
CASKIN1	0.021263	ZYG11A	0.017019	CHRDL1	-0.018388	TMEM212	-0.014669
TRIM67	0.021229	CENPE	0.017014	P3H2	-0.018382	MAOA	-0.014655
B3GALT5	0.021163	USP41	0.016986	CYP2S1	-0.018375	CD69	-0.014636
SLCO5A1	0.021156	SRRM3	0.016932	CCL14	-0.018313	MT1A	-0.014634
HGFAC	0.021152	HCN3	0.016911	BMP3	-0.018298	NCF2	-0.014617
FBF1	0.021142	SP9	0.016909	KLK10	-0.018290	HSPB8	-0.014584
EPHA7	0.021141	PRC1	0.016879	MAP1LC3C	-0.018255	SGCG	-0.014570
ADCYAP1	0.021105	TFAP2B	0.016877	ITGB4	-0.018226	SHROOM4	-0.014561
NUF2	0.021039	FSTL5	0.016874	TUBB3	-0.018181	ANXA1	-0.014553
DIRAS2	0.021015	CDC45	0.016862	CYS1	-0.018145	IL1RN	-0.014550
SCN2A	0.021014	CDKN3	0.016858	KLK7	-0.018119	LY86	-0.014549
SNAP25	0.021013	ERCC6L	0.016858	C1orf167	-0.018098	CYBRD1	-0.014549
DPF1	0.020945	MGAT5B	0.016838	SIRPB1	-0.018058	P2RY2	-0.014545
UBE2QL1	0.020938	HIST1H2BO	0.016831	SHH	-0.018037	SELENBP1	-0.014538
RAD54L	0.020914	PGAM2	0.016820	SCN2B	-0.018037	SLCO2A1	-0.014514
GP1BB	0.020880	HELLS	0.016803	C7	-0.017977	HBEGF	-0.014442
CRABP1	0.020879	GFY	0.016782	OSCAR	-0.017960	SYT15	-0.014433
CPLX3	0.020824	HOXA9	0.016780	CXCR2	-0.017956	ACP5	-0.014416
NAT16	0.020801	HIST1H4E	0.016766	APOC2	-0.017947	CCBE1	-0.014404
BRSK1	0.020795	CDCA8	0.016753	IYD	-0.017945	MYH11	-0.014346

KIF14	0.020782	ADGRD2	0.016753	ADGRD1	-0.017944	DNAH9	-0.014346
HJURP	0.020754	SHISA7	0.016741	ALPL	-0.017943	AKR1C2	-0.014336
KCNK12	0.020719	RTL1	0.016737	HPGDS	-0.017937	TYROBP	-0.014333
ADAMTS18	0.020714	DRAXIN	0.016727	ADGRE3	-0.017937	SULT2B1	-0.014324
MNX1	0.020709	BRIP1	0.016714	S100A4	-0.017855	MPZL2	-0.014319
UNC5A	0.020679	GINS2	0.016711	ADGRE1	-0.017848	PTAFR	-0.014316
COCH	0.020621	GPR12	0.016698	PPBP	-0.017789	ZFP36	-0.014307
TOP2A	0.020601	WDR62	0.016689	SEC14L4	-0.017780	SULT1A2	-0.014291
ZNF695	0.020585	HCN2	0.016682	CPAMD8	-0.017709	LILRA5	-0.014282
FAM64A	0.020571	ATP2B2	0.016653	FGA	-0.017698	IL6R	-0.014276
AMER2	0.020562	FEV	0.016618	MUC5B	-0.017685	SYNDIG1L	-0.014249
NPPA	0.020538	FOXO6	0.016602	EDN1	-0.017638	NTN4	-0.014244
CENPF	0.020517	SYNGR4	0.016588	NTF4	-0.017601	CLEC12A	-0.014230
EEF1A2	0.020507	NAT8L	0.016560	DPT	-0.017561	TIMP3	-0.014230
ELAVL2	0.020501	FMN2	0.016554	AQP9	-0.017540	TLR8	-0.014217
DEPDC1B	0.020444	GP2	0.016551	FBLN5	-0.017535	RAMP3	-0.014199
RIPPLY2	0.020407	CENPI	0.016549	AGR2	-0.017498	TTC29	-0.014195
STMN2	0.020406	FAM72B	0.016547	PDPN	-0.017496	MALRD1	-0.014188
TEX15	0.020386	PRDM13	0.016546	HYAL1	-0.017485	TNIP3	-0.014183
APC2	0.020370	MAGED4	0.016525	WDR38	-0.017483	DOK2	-0.014170
MSI1	0.020336	SNCB	0.016521	SNTN	-0.017477	CREB3L1	-0.014159

[00148] Tables 4B and 5B are based on PRISM data analysis. PRISM data was downloaded from https://depmap.org/ (20Q1). For PLSR analyses, lung small cell and lung adenocarcinoma samples were extracted, and missing values were filled by kNN imputation, using k = 10, done on these lung samples only. PLSR was performed using the R package mixOmics, and varimax rotation was applied to the first two components. Loadings (consisting of drug names) were ranked by the first component, and

enrichment of drug targets based on this ranking was assessed using signed KS test. Only drug targets with frequency >8 were included in the list.

Table 4A: GDSC-based Drugs with sensitivity in SCN, SRBCT or Blood cancer types

	SCN - SCLC vs LUAD lung cancer		SRBCT vs OTHER		Blood vs OTHER		SCN & Blood avg. rank	SRBCT & Blood avg. rank	SCN & SRBCT avg. rank	(SCN & SRBCT) & BLOOD avg. rank	Sensitivity in SCN, SRBCT or Blood
DRUG NAME	**signl ogp**	**rank**	**signl ogp**	**rank**	**signl ogp**	**rank**					
ABT-263	10.25	1	5.70	46	22.72	77	39	61.5	23.5	50.25	1
NSC-207895	9.76	2	1.41	126	19.39	88	45	107	64	76	1
NPK76-II-72-1	8.76	3	8.98	10	48.24	9	6	9.5	6.5	7.75	1
XMD13-2	8.72	4	7.83	21	41.47	24	14	22.5	12.5	18.25	1
MP470	8.10	5	3.71	73	13.96	108	56.5	90.5	39	73.5	1
BX-912	7.20	6	7.61	23	31.30	49	27.5	36	14.5	31.75	1
GW-2580	7.04	7	1.51	124	15.91	99	53	111.5	65.5	82.25	1
GSK1070916	6.43	8	8.57	14	22.09	79	43.5	46.5	11	45	1
WZ3105	6.32	9	2.01	109	39.58	28	18.5	68.5	59	43.5	1
GSK690693	6.14	10	2.32	98	19.88	86	48	92	54	70	1
OSI-027	5.97	11	3.84	70	44.33	20	15.5	45	40.5	30.25	1
FK866	5.66	12	6.06	40	29.93	54	33	47	26	40	1
I-BET-762	5.36	13	8.85	11	46.96	13	13	12	12	12.5	1
GSK429286A	5.34	14	5.66	47	32.00	46	30	46.5	30.5	38.25	1
UNC0638	5.29	15	6.42	36	76.46	1	8	18.5	25.5	13.25	1
PHA-793887	5.25	16	3.11	84	49.27	5	10.5	44.5	50	27.5	1
QL-X-138	5.20	17	4.96	53	39.05	30	23.5	41.5	35	32.5	1
Vorinostat	5.19	18	11.84	4	48.37	7	12.5	5.5	11	9	1
Tubastatin A	5.06	19	8.41	16	47.71	10	14.5	13	17.5	13.75	1
CX-5461	5.05	20	10.30	6	26.92	67	43.5	36.5	13	40	1
THZ-2-102-1	4.92	21	4.18	63	43.09	21	21	42	42	31.5	1
KIN001-270	4.47	22	7.60	24	35.57	36	29	30	23	29.5	1
SB52334	4.29	23	14.22	2	11.88	119	71	60.5	12.5	65.75	1
PI-103	4.20	24	3.42	78	36.81	35	29.5	56.5	51	43	1
QL-XI-92	4.18	25	4.72	55	39.94	26	25.5	40.5	40	33	1
AC220	3.92	26	6.46	33	16.57	97	61.5	65	29.5	63.25	1
PIK-93	3.91	27	4.40	58	38.99	31	29	44.5	42.5	36.75	1
TL-2-105	3.85	28	5.65	48	31.82	47	37.5	47.5	38	42.5	1
Belinostat	3.74	29	5.99	41	27.08	65	47	53	35	50	1
BMS-345541	3.71	30	4.37	60	48.43	6	18	33	45	25.5	1
XMD14-99	3.68	31	9.02	9	38.35	32	31.5	20.5	20	26	1

Masitinib	3.66	32	9.05	8	29.57	55	43.5	31.5	20	37.5	1
JW-7-24-1	3.64	33	6.13	37	48.36	8	20.5	22.5	35	21.5	1
KIN001-260	3.56	34	7.52	25	51.85	3	18.5	14	29.5	16.25	1
AR-42	3.38	35	7.42	27	33.61	41	38	34	31	36	1
AV-951	3.38	36	4.47	57	21.33	82	59	69.5	46.5	64.25	1
CAY10603	3.31	37	14.11	3	32.43	43	40	23	20	31.5	1
SB-505124	3.28	38	3.33	80	18.10	93	65.5	86.5	59	76	1
TG101348	3.26	39	8.19	18	45.95	16	27.5	17	28.5	22.25	1
SB-715992	3.23	40	5.88	43	42.83	22	31	32.5	41.5	31.75	1
Methotrexate	3.23	41	3.71	72	47.62	12	26.5	42	56.5	34.25	1
QL-XII-47	3.07	42	1.66	119	32.33	44	43	81.5	80.5	62.25	1
KIN001-244	3.05	43	5.74	45	28.90	58	50.5	51.5	44	51	1
NG-25	2.89	44	6.72	30	27.50	62	53	46	37	49.5	1
Ruxolitinib	2.88	45	3.90	68	18.74	91	68	79.5	56.5	73.75	1
KIN001-236	2.80	46	6.45	35	45.62	18	32	26.5	40.5	29.25	1
UNC1215	2.71	47	3.81	71	45.74	17	32	44	59	38	1
Y-39983	2.58	48	5.95	42	32.33	45	46.5	43.5	45	45	1
T0901317	2.52	49	3.52	77	32.70	42	45.5	59.5	63	52.5	1
Zibotentan	2.33	50	4.07	64	34.08	39	44.5	51.5	57	48	1
ABT-869	2.27	51	2.03	106	9.62	128	89.5	117	78.5	103.25	1
5-Fluorouracil	2.24	52	8.78	13	31.14	50	51	31.5	32.5	41.25	1
Temozolomide	2.22	53	1.30	130	26.93	66	59.5	98	91.5	78.75	1
Genentech Cpd 10	2.20	54	7.99	19	34.16	38	46	28.5	36.5	37.25	1
GSK2126458	2.16	55	1.80	116	22.29	78	66.5	97	85.5	81.75	1
CUDC-101	2.13	56	4.38	59	28.04	59	57.5	59	57.5	58.25	1
VX-702	2.04	57	2.90	87	31.65	48	52.5	67.5	72	60	1
SNX-2112	2.03	58	4.19	62	50.88	4	31	33	60	32	1
XMD15-27	2.00	59	3.63	75	30.75	52	55.5	63.5	67	59.5	1
XL-880	1.63	60	5.80	44	14.43	106	83	75	52	79	1
Axitinib	1.63	61	5.32	51	9.49	130	95.5	90.5	56	93	1
BIX02189	1.61	62	6.11	38	42.52	23	42.5	30.5	50	36.5	1
TL-1-85	1.60	63	7.22	28	29.29	56	59.5	42	45.5	50.75	1
PD-173074	1.56	64	0.33	163	15.08	104	84	133.5	113.5	108.75	1
AT-7519	1.55	65	1.99	110	46.47	14	39.5	62	87.5	50.75	1
TPCA-1	1.54	66	11.56	5	44.68	19	42.5	12	35.5	27.25	1
STF-62247	1.52	67	1.98	111	37.48	33	50	72	89	61	1
VNLG/124	1.46	68	6.46	34	24.64	73	70.5	53.5	51	62	1
QL-XII-61	1.36	69	1.63	120	10.39	124	96.5	122	94.5	109.25	1
YM201636	1.35	70	7.71	22	39.68	27	48.5	24.5	46	36.5	1
LAQ824	1.35	71	1.05	139	16.52	98	84.5	118.5	105	101.5	1

Nilotinib	1.23	72	1.26	132	12.94	114	93	123	102	108	1
Vismodegib	1.14	73	2.34	97	26.15	70	71.5	83.5	85	77.5	1
EX-527	1.10	74	3.90	66	34.34	37	55.5	51.5	70	53.5	1
MPS-1-IN-1	1.09	75	14.35	1	37.38	34	54.5	17.5	38	36	1
Phenformin	0.96	78	-1.32	220	27.48	63	70.5	141.5	149	106	1
FMK	0.88	80	2.64	92	27.74	60	70	76	86	73	1
Olaparib	0.85	82	9.23	7	17.34	94	88	50.5	44.5	69.25	1
CP466722	0.84	83	8.42	15	47.64	11	47	13	49	30	1
KIN001-135	0.78	84	1.23	133	13.12	112	98	122.5	108.5	110.25	1
Lenalidomide	0.76	85	2.92	86	26.54	69	77	77.5	85.5	77.25	1
Cyclopamine	0.63	86	-2.68	237	11.89	118	102	177.5	161.5	139.75	1
SGC0946	0.63	87	3.32	81	30.39	53	70	67	84	68.5	1
ZM-447439	0.63	88	3.41	79	9.68	127	107.5	103	83.5	105.25	1
SL 0101-1	0.58	91	1.78	117	18.30	92	91.5	104.5	104	98	1
KIN001-266	0.55	93	7.88	20	39.07	29	61	24.5	56.5	42.75	1
NVP-BHG712	0.53	94	2.36	96	27.52	61	77.5	78.5	95	78	1
XL-184	0.52	95	2.95	85	13.19	111	103	98	90	100.5	1
CAL-101	0.49	96	2.03	107	23.26	75	85.5	91	101.5	88.25	1
Camptothecin	0.47	97	7.08	29	10.23	126	111.5	77.5	63	94.5	1
KIN001-102	0.47	98	4.06	65	40.59	25	61.5	45	81.5	53.25	1
ABT-888	0.47	99	2.90	88	23.24	76	87.5	82	93.5	84.75	1
AICAR	0.45	100	0.03	178	33.97	40	70	109	139	89.5	1
Cisplatin	0.41	102	4.51	56	2.01	199	150.5	127.5	79	139	1
EHT 1864	0.40	103	1.91	113	12.58	117	110	115	108	112.5	1
Bicalutamide	0.37	104	1.34	128	11.83	120	112	124	116	118	1
JQ1	0.29	110	0.30	164	19.97	85	97.5	124.5	137	111	1
FR-180204	0.23	113	7.43	26	20.99	83	98	54.5	69.5	76.25	1
Crizotinib	0.21	114	0.44	159	12.83	115	114.5	137	136.5	125.75	1
CEP-701	0.18	116	2.53	94	17.27	96	106	95	105	100.5	1
OSI-930	0.17	117	4.97	52	31.12	51	84	51.5	84.5	67.75	1
ZG-10	0.15	119	1.37	127	7.44	143	131	135	123	133	1
AG-014699	0.13	120	6.56	31	3.41	187	153.5	109	75.5	131.25	1
TAK-715	0.12	121	4.79	54	54.97	2	61.5	28	87.5	44.75	1
PF-4708671	0.11	122	0.48	157	13.22	110	116	133.5	139.5	124.75	1
ATRA	0.08	124	3.29	82	17.33	95	109.5	88.5	103	99	1
CP724714	0.08	125	1.02	142	10.48	122	123.5	132	133.5	127.75	1
PAC-1	0.04	127	2.83	89	27.26	64	95.5	76.5	108	86	1
Tamoxifen	0.04	128	0.60	152	26.88	68	98	110	140	104	1
SN-38	0.01	129	3.54	76	6.00	154	141.5	115	102.5	128.25	1
CH5424802	0.00	130	5.33	50	15.23	103	116.5	76.5	90	96.5	1
Etoposide	0.00	131	2.05	105	6.59	145	138	125	118	131.5	1

QS11	-0.01	132	2.72	91	13.05	113	122.5	102	111.5	112.25	1
Shikonin	-0.02	134	1.91	112	7.23	144	139	128	123	133.5	1
BX-795	-0.03	135	2.16	101	9.16	134	134.5	117.5	118	126	1
JQ12	-0.06	136	1.60	121	8.61	137	136.5	129	128.5	132.75	1
BAY 61-3606	-0.15	143	6.53	32	21.60	80	111.5	56	87.5	83.75	1
ZSTK474	-0.16	145	2.46	95	25.35	71	108	83	120	95.5	1
BMS-708163	-0.19	147	2.20	100	19.03	90	118.5	95	123.5	106.75	1
IPA-3	-0.30	151	3.86	69	25.06	72	111.5	70.5	110	91	1
XMD11-85h	-0.31	152	2.12	103	10.43	123	137.5	113	127.5	125.25	1
TW 37	-0.41	154	2.02	108	0.53	224	189	166	131	177.5	1
SB 216763	-0.46	157	2.10	104	7.63	142	149.5	123	130.5	136.25	1
681640	-0.47	158	1.82	115	4.82	167	162.5	141	136.5	151.75	1
PFI-1	-0.54	162	0.15	169	15.50	100	131	134.5	165.5	132.75	1
LFM-A13	-0.67	166	1.59	122	9.28	133	149.5	127.5	144	138.5	1
DMOG	-0.83	172	0.05	176	15.44	101	136.5	138.5	174	137.5	1
BMS-754807	-0.89	174	8.79	12	-1.05	240	207	126	93	166.5	1
VX-11e	-0.92	175	-0.07	188	13.89	109	142	148.5	181.5	145.25	1
AZD8055	-0.97	176	0.07	175	24.64	74	125	124.5	175.5	124.75	1
AMG-706	-1.04	179	1.89	114	0.66	221	200	167.5	146.5	183.75	1
Mitomycin C	-1.06	181	2.31	99	3.84	179	180	139	140	159.5	1
OSI-906	-1.08	182	8.31	17	1.04	211	196.5	114	99.5	155.25	1
CCT007093	-1.10	184	1.71	118	14.94	105	144.5	111.5	151	128	1
JNK Inhibitor VIII	-1.10	185	2.13	102	5.56	160	172.5	131	143.5	151.75	1
OSU-03012	-1.17	188	1.30	129	12.62	116	152	122.5	158.5	137.25	1
AZD7762	-1.20	190	2.60	93	19.15	89	139.5	91	141.5	115.25	1
BMN-673	-1.31	194	6.07	39	0.95	215	204.5	127	116.5	165.75	1
Gemcitabine	-1.32	195	1.58	123	6.20	149	172	136	159	154	1
NU-7441	-1.33	196	0.59	154	10.33	125	160.5	139.5	175	150	1
KU-55933	-1.34	197	0.50	156	20.34	84	140.5	120	176.5	130.25	1
AP-24534	-1.39	200	-0.17	197	11.81	121	160.5	159	198.5	159.75	1
AS605240	-1.39	201	0.68	148	19.56	87	144	117.5	174.5	130.75	1
HG-5-113-01	-1.47	204	4.20	61	3.79	181	192.5	121	132.5	156.75	1
Thapsigargin	-1.53	205	1.47	125	-0.04	235	220	180	165	200	1
Nutlin-3a	-1.62	207	3.20	83	14.11	107	157	95	145	126	1
KIN001-055	-1.97	215	2.82	90	15.30	102	158.5	96	152.5	127.25	1
LY317615	-2.08	216	-0.14	194	29.12	57	136.5	125.5	205	131	1
THZ-2-49	-2.10	217	0.28	166	46.08	15	116	90.5	191.5	103.25	1
EKB-569	-2.30	222	0.83	144	21.38	81	151.5	112.5	183	132	1
HG-5-88-01	-2.77	232	5.46	49	2.50	195	213.5	122	140.5	167.75	1
BMS-536924	-3.87	241	3.90	67	4.68	168	204.5	117.5	154	161	1

PD-0332991	-6.01	249	3.67	74	3.18	190	219.5	132	161.5	175.75	1
NSC-87877	1.03	76	1.06	138	8.84	135	105.5	136.5	107	121	0
PLX4720	0.98	77	-0.48	205	5.41	164	120.5	184.5	141	152.5	0
GSK269962A	0.90	79	0.94	143	8.80	136	107.5	139.5	111	123.5	0
MS-275	0.85	81	-0.12	192	6.14	153	117	172.5	136.5	144.75	0
SB590885	0.62	89	-0.23	198	6.15	152	120.5	175	143.5	147.75	0
IOX2	0.59	90	0.38	161	5.57	159	124.5	160	125.5	142.25	0
Parthenolide	0.58	92	-0.03	185	8.47	139	115.5	162	138.5	138.75	0
Imatinib	0.41	101	1.27	131	8.52	138	119.5	134.5	116	127	0
VX-680	0.36	105	0.03	179	3.44	186	145.5	182.5	142	164	0
GW843682X	0.35	106	-0.93	216	3.00	191	148.5	203.5	161	176	0
S-Trityl-L-cysteine	0.34	107	-0.90	215	4.40	173	140	194	161	167	0
BI-2536	0.30	108	-1.48	224	2.14	198	153	211	166	182	0
YM155	0.29	109	-0.12	193	6.18	150	129.5	171.5	151	150.5	0
Pyrimethamine	0.28	111	0.11	172	5.67	158	134.5	165	141.5	149.75	0
Roscovitine	0.28	112	-1.51	227	4.41	172	142	199.5	169.5	170.75	0
GSK-1904529A	0.19	115	0.01	181	3.62	182	148.5	181.5	148	165	0
GNF-2	0.17	118	-1.37	221	4.98	166	142	193.5	169.5	167.75	0
A-443654	0.10	123	-2.21	235	0.69	220	171.5	227.5	179	199.5	0
Paclitaxel	0.06	126	-2.85	239	0.51	227	176.5	233	182.5	204.75	0
CMK	-0.01	133	0.18	168	5.55	161	147	164.5	150.5	155.75	0
GSK-650394	-0.07	137	-0.08	189	3.90	177	157	183	163	170	0
Sorafenib	-0.08	138	0.04	177	4.48	171	154.5	174	157.5	164.25	0
CGP-60474	-0.08	139	-2.09	232	1.35	206	172.5	219	185.5	195.75	0
Sunitinib	-0.11	140	-0.35	203	9.34	132	136	167.5	171.5	151.75	0
PHA-665752	-0.13	141	1.03	140	4.62	170	155.5	155	140.5	155.25	0
PLX4720 (rescreen)	-0.15	142	0.01	180	5.51	162	152	171	161	161.5	0
MG-132	-0.15	144	-1.78	230	0.52	225	184.5	227.5	187	206	0
Z-LLNle-CHO	-0.17	146	-2.97	241	5.95	156	151	198.5	193.5	174.75	0
Bortezomib	-0.23	148	-2.15	234	0.14	233	190.5	233.5	191	212	0
BMS-509744	-0.26	149	0.60	153	2.90	193	171	173	151	172	0
Salubrinal	-0.26	150	-0.60	210	9.62	129	139.5	169.5	180	154.5	0
PF-562271	-0.34	153	0.13	171	2.83	194	173.5	182.5	162	178	0
XMD8-92	-0.45	155	0.29	165	6.41	148	151.5	156.5	160	154	0
Vinblastine	-0.45	156	0.14	170	7.87	140	148	155	163	151.5	0
CGP-082996	-0.49	159	-2.78	238	5.80	157	158	197.5	198.5	177.75	0
CHIR-99021	-0.52	160	0.52	155	6.45	146	153	150.5	157.5	151.75	0
BIRB 0796	-0.53	161	0.46	158	1.04	212	186.5	185	159.5	185.75	0
FTI-277	-0.58	163	-0.24	199	3.39	188	175.5	193.5	181	184.5	0
piperlongumine	-0.59	164	0.00	182	1.20	209	186.5	195.5	173	191	0

Rapamycin	-0.60	165	-2.56	236	1.94	200	182.5	218	200.5	200.25	0
GDC0941	-0.71	167	0.11	173	3.85	178	172.5	175.5	170	174	0
JW-7-52-1	-0.71	168	-3.13	243	0.40	229	198.5	236	205.5	217.25	0
Pazopanib	-0.72	169	-1.02	218	0.73	217	193	217.5	193.5	205.25	0
Vinorelbine	-0.74	170	-0.01	184	3.58	183	176.5	183.5	177	180	0
MK-2206	-0.81	171	-0.31	202	3.45	185	178	193.5	186.5	185.75	0
TGX221	-0.87	173	-5.56	249	-0.27	237	205	243	211	224	0
XMD8-85	-0.97	177	-0.65	212	7.87	141	159	176.5	194.5	167.75	0
NVP-TAE684	-0.99	178	0.77	146	0.97	214	196	180	162	188	0
MLN4924	-1.05	180	1.02	141	1.46	204	192	172.5	160.5	182.25	0
JNK-9L	-1.09	183	1.11	136	6.17	151	167	143.5	159.5	155.25	0
(5Z)-7-Oxozeaenol	-1.11	186	-0.15	195	0.53	223	204.5	209	190.5	206.75	0
AZD-0530	-1.16	187	-0.49	206	0.41	228	207.5	217	196.5	212.25	0
GW 441756	-1.18	189	0.64	150	1.94	201	195	175.5	169.5	185.25	0
WH-4-023	-1.22	191	-5.52	248	-0.59	239	215	243.5	219.5	229.25	0
Obatoclax Mesylate	-1.23	192	-0.01	183	5.45	163	177.5	173	187.5	175.25	0
Lapatinib	-1.26	193	-3.30	244	-2.24	242	217.5	243	218.5	230.25	0
YK 4-279	-1.36	198	0.74	147	1.40	205	201.5	176	172.5	188.75	0
WZ-1-84	-1.39	199	-1.68	229	1.22	208	203.5	218.5	214	211	0
Doxorubicin	-1.45	202	0.82	145	2.19	197	199.5	171	173.5	185.25	0
Erlotinib	-1.45	203	-0.56	208	-0.48	238	220.5	223	205.5	221.75	0
A-770041	-1.58	206	-4.38	246	0.20	232	219	239	226	229	0
CCT018159	-1.77	208	0.25	167	5.98	155	181.5	161	187.5	171.25	0
NVP-BEZ235	-1.78	209	-0.44	204	4.01	175	192	189.5	206.5	190.75	0
RO-3306	-1.85	210	0.42	160	1.29	207	208.5	183.5	185	196	0
Tipifarnib	-1.87	211	-0.55	207	2.33	196	203.5	201.5	209	202.5	0
Gefitinib	-1.88	212	-0.31	201	0.99	213	212.5	207	206.5	209.75	0
Dabrafenib	-1.89	213	-1.27	219	3.36	189	201	204	216	202.5	0
QL-VIII-58	-1.95	214	-0.03	186	0.63	222	218	204	200	211	0
Bryostatin 1	-2.16	218	-1.50	226	4.64	169	193.5	197.5	222	195.5	0
Cytarabine	-2.20	219	1.17	134	0.72	218	218.5	176	176.5	197.25	0
Bosutinib	-2.26	220	-0.72	213	9.36	131	175.5	172	216.5	173.75	0
AZ628	-2.27	221	-1.00	217	0.80	216	218.5	216.5	219	217.5	0
Dasatinib	-2.33	223	-6.21	250	-1.11	241	232	245.5	236.5	238.75	0
Midostaurin	-2.43	224	-0.30	200	1.17	210	217	205	212	211	0
Elesclomol	-2.43	225	1.14	135	-4.68	244	234.5	189.5	180	212	0
Epothilone B	-2.44	226	-0.11	190	-0.21	236	231	213	208	222	0
AUY922	-2.48	227	0.66	149	5.15	165	196	157	188	176.5	0
JNJ-26854165	-2.52	228	0.36	162	1.47	203	215.5	182.5	195	199	0
Cetuximab	-2.54	229	-0.11	191	-5.53	247	238	219	210	228.5	0

AKT inhibitor VIII	-2.68	230	-1.95	231	0.69	219	224.5	225	230.5	224.75	0
Temsirolimus	-2.69	231	-0.06	187	3.82	180	205.5	183.5	209	194.5	0
AS601245	-3.03	233	-1.45	222	2.96	192	212.5	207	227.5	209.75	0
FH535	-3.03	234	-2.86	240	-2.88	243	238.5	241.5	237	240	0
Embelin	-3.05	235	-0.16	196	0.21	231	233	213.5	215.5	223.25	0
HG-6-64-1	-3.51	236	-1.47	223	3.93	176	206	199.5	229.5	202.75	0
rTRAIL	-3.53	237	1.06	137	6.44	147	192	142	187	167	0
Docetaxel	-3.57	238	-0.87	214	-13.95	254	246	234	226	240	0
Afatinib	-3.70	239	-6.43	252	-7.23	251	245	251.5	245.5	248.25	0
Bexarotene	-3.72	240	-0.62	211	4.39	174	207	192.5	225.5	199.75	0
Bleomycin	-3.89	242	0.09	174	0.51	226	234	200	208	217	0
GDC0941 (rescreen)	-4.24	243	-0.60	209	0.32	230	236.5	219.5	226	228	0
CI-1040	-5.52	244	-1.58	228	0.13	234	239	231	236	235	0
AZD6482	-5.75	245	-2.09	233	3.47	184	214.5	208.5	239	211.5	0
Afatinib (rescreen)	-5.77	246	-3.10	242	-5.06	246	246	244	244	245	0
Bleomycin (50 uM)	-5.89	247	0.61	151	-9.44	252	249.5	201.5	199	225.5	0
PD-0325901	-5.94	248	-4.21	245	-6.84	250	249	247.5	246.5	248.25	0
XAV 939	-6.51	250	-1.49	225	1.69	202	226	213.5	237.5	219.75	0
RDEA119	-9.07	251	-4.88	247	-4.79	245	248	246	249	247	0
17-AAG	-10.47	252	-13.26	255	-31.83	255	253.5	255	253.5	254.25	0
AZD6244	-11.76	253	-6.85	253	-5.54	248	250.5	250.5	253	250.5	0
RDEA119 (rescreen)	-12.88	254	-8.88	254	-5.68	249	251.5	251.5	254	251.5	0
Trametinib	-15.06	255	-6.25	251	-12.52	253	254	252	253	253	0

drug_name	V1 (pos = more sensitive in SCLC)	rank_V1	Sensitivity in SCN	drug_name	V1 (pos = more sensitive in SCLC)	rank_V1	Sensitivity in SCN	drug_name	V1 (pos = more sensitive in SCLC)	rank_V1	Sensitivity in SCN
vorinostat	0.10	1	1	F351	0.00	1563	potential	etomoxir	0.00	3125	0
VU0238429	0.09	2	1	carbadox	0.00	1564	potential	SGC-CBP30	0.00	3126	0
CUDC-101	0.08	3	1	suprofen	0.00	1565	potential	baclofen-(R)	0.00	3127	0
BX-912	0.08	4	1	ginkgolide-b	0.00	1566	potential	huperzine-a	0.00	3128	0
oxaliplatin	0.08	5	1	TAK-875	0.00	1567	potential	nicergoline	0.00	3129	0
alisertib	0.08	6	1	sonidegib	0.00	1568	potential	D-alpha-tocopheryl-succinate	0.00	3130	0
salinomycin	0.08	7	1	tepoxalin	0.00	1569	potential	lomeguatrib	0.00	3131	0
BMS-754807	0.08	8	1	lincomycin	0.00	1570	potential	tavaborole	0.00	3132	0
KX2-391	0.08	9	1	vanoxerine	0.00	1571	potential	rifamycin-sv	0.00	3133	0
D-64131	0.08	10	1	iodixanol	0.00	1572	potential	2-phenylmelatonin	0.00	3134	0
oxyquinoline	0.08	11	1	uridine-triacetate	0.00	1573	potential	allylthiourea	0.00	3135	0
axitinib	0.07	12	1	clobutinol	0.00	1574	potential	HTMT	0.00	3136	0
barasertib	0.07	13	1	altinicline	0.00	1575	potential	propoxur	0.00	3137	0
BI-78D3	0.07	14	1	L-161982	0.00	1576	potential	chloroxine	0.00	3138	0
M-344	0.07	15	1	BMS-299897	0.00	1577	potential	paromomycin	0.00	3139	0
evodiamine	0.07	16	1	imatinib	0.00	1578	potential	efaroxan	0.00	3140	0
UNBS-5162	0.07	17	1	BTS	0.00	1579	potential	preladenant	0.00	3141	0
vinorelbine	0.07	18	1	CEP-33779	0.00	1580	potential	metoprolol	0.00	3142	0
albendazole	0.07	19	1	mabuterol	0.00	1581	potential	cloxyquin	0.00	3143	0
BI-2536	0.07	20	1	meisoindigo	0.00	1582	potential	methyldopa	0.00	3144	0
docetaxel	0.07	21	1	dichloroacetate	0.00	1583	potential	alfaxalone	0.00	3145	0
cetrimonium	0.07	22	1	LY2608204	0.00	1584	potential	daidzein	0.00	3146	0
GSK1070916	0.07	23	1	UH-232-(+)	0.00	1585	potential	dapoxetine	0.00	3147	0
melphalan	0.07	24	1	SKA-31	0.00	1586	potential	purvalanol-b	0.00	3148	0
chlormidazole	0.07	25	1	pregnenolone	0.00	1587	potential	isoleucine	0.00	3149	0
fenbendazole	0.07	26	1	DPO-1	0.00	1588	potential	AGP-103	0.00	3150	0
menadione	0.07	27	1	linsitinib	0.00	1589	potential	zamifenacin	0.00	3151	0
dexrazoxane	0.07	28	1	JNJ-7777120	0.00	1590	potential	bay-w-9798	0.00	3152	0
Diphenyl-eneiodonium	0.07	29	1	cefonicid	0.00	1591	potential	DAU-5884	0.00	3153	0
TH-302	0.06	30	1	cinromide	0.00	1592	potential	gemifloxacin	0.00	3154	0
GW-843682X	0.06	31	1	estetrol	0.00	1593	potential	IPAG	0.00	3155	0
AZ3146	0.06	32	1	sapropterin	0.00	1594	potential	PRIMA1	0.00	3156	0
EVP4593	0.06	33	1	MK-8033	0.00	1595	potential	m-3M3FBS	0.00	3157	0
benzethonium	0.06	34	1	isometheptene-mucate	0.00	1596	potential	xamoterol	0.00	3158	0
PHA-680632	0.06	35	1	cerulenin	0.00	1597	potential	acetylcysteine	0.00	3159	0
Mechlor-ethamine	0.06	36	1	picotamide	0.00	1598	potential	ALX-5407	0.00	3160	0
trifluridine	0.06	37	1	allopurinol-riboside	0.00	1599	potential	SB-657510	0.00	3161	0
indibulin	0.06	38	1	ribitol	0.00	1600	potential	hydroxystilbamidine	0.00	3162	0
PF-477736	0.06	39	1	exisulind	0.00	1601	potential	NVP-TAE226	0.00	3163	0
scriptaid	0.06	40	1	pefloxacin	0.00	1602	potential	NPY-5RA972	0.00	3164	0

tozasertib	0.06	41	1	almitrine	0.00	1603	potential	gestodene	0.00	3165	0
colchicine	0.06	42	1	oxybutynin	0.00	1604	potential	aspirin	0.00	3166	0
salinomycin	0.06	43	1	orphenadrine	0.00	1605	potential	pramipexole	0.00	3167	0
SB-225002	0.06	44	1	dapsone	0.00	1606	potential	capsazepine	0.00	3168	0
NH125	0.06	45	1	triacetin	0.00	1607	potential	diftalone	0.00	3169	0
AVN-944	0.06	46	1	miocamycin	0.00	1608	potential	quinelorane	0.00	3170	0
oxaliplatin	0.06	47	1	cefetamet-pivoxil	0.00	1609	potential	lenalidomide	0.00	3171	0
dolastatin-10	0.06	48	1	MK-0752	0.00	1610	potential	nadifloxacin	0.00	3172	0
SC-144	0.06	49	1	nimorazole	0.00	1611	potential	chloroxylenol	0.00	3173	0
LY2183240	0.06	50	1	LY223982	0.00	1612	potential	asaraldehyde	0.00	3174	0
AR-42	0.06	51	1	alpha-tochopheryl-acetate	0.00	1613	potential	betamethasone-dipropionate	0.00	3175	0
quizartinib	0.06	52	1	tandutinib	0.00	1614	potential	nimesulide	0.00	3176	0
thioguanine	0.06	53	1	buphenine	0.00	1615	potential	polidocanol	0.00	3177	0
SU3327	0.06	54	1	perflubron	0.00	1616	potential	JX-401	0.00	3178	0
methiazole	0.06	55	1	MK-3207	0.00	1617	potential	potassium-canrenoate	0.00	3179	0
resminostat	0.05	56	1	salirasib	0.00	1618	potential	ipsapirone	0.00	3180	0
doxycycline	0.05	57	1	beclomethasone-dipropionate	0.00	1619	potential	dexamethasone-acetate	0.00	3181	0
ZM-447439	0.05	58	1	SC-12267	0.00	1620	potential	hydrochlorothiazide	0.00	3182	0
thonzonium	0.05	59	1	ME0328	0.00	1621	potential	butorphanol-(+)-tartrate	0.00	3183	0
G-1	0.05	60	1	ketorolac	0.00	1622	potential	tenoxicam	0.00	3184	0
PF-477736	0.05	61	1	thiazovivin	0.00	1623	potential	zoxazolamine	0.00	3185	0
erastin	0.05	62	1	pergolide	0.00	1624	potential	sarcosine	0.00	3186	0
narasin	0.05	63	1	nebivolol	0.00	1625	potential	BIBX-1382	0.00	3187	0
NSC-663284	0.05	64	1	salicylamide	0.00	1626	potential	3,3'-diindolylmethane	0.00	3188	0
vincristine	0.05	65	1	isoetharine	0.00	1627	potential	daucosterol	0.00	3189	0
barasertib-HQPA	0.05	66	1	lorglumide	0.00	1628	potential	octopamine	0.00	3190	0
TW-37	0.05	67	1	canrenone	0.00	1629	potential	FGIN-1-27	0.00	3191	0
amonafide	0.05	68	1	urea	0.00	1630	potential	volinanserin	0.00	3192	0
amsacrine	0.05	69	1	lesinurad	0.00	1631	potential	SB-258585	0.00	3193	0
JK-184	0.05	70	1	methoprene-(s)	0.00	1632	potential	adenosine-phosphate	0.00	3194	0
FK-3311	0.05	71	1	nonivamide	0.00	1633	potential	cephalomannine	0.00	3195	0
trovafloxacin	0.05	72	1	PACOCF3	0.00	1634	potential	canagliflozin	0.00	3196	0
amsacrine	0.05	73	1	memantine	0.00	1635	potential	isoprenaline	0.00	3197	0
IKK-2-inhibitor-V	0.05	74	1	REV-5901	0.00	1636	potential	CL316243	0.00	3198	0
verubulin	0.05	75	1	nitrocaramiphen	0.00	1637	potential	ethionamide	0.00	3199	0
bortezomib	0.05	76	1	INT-747	0.00	1638	potential	icomucret	0.00	3200	0
Hexa-chlorophene	0.05	77	1	regorafenib	0.00	1639	potential	quetiapine	0.00	3201	0
AZ960	0.05	78	1	adenosine	0.00	1640	potential	metipranolol	0.00	3202	0
taltobulin	0.05	79	1	nitazoxanide	0.00	1641	potential	nitrofurantoin	0.00	3203	0
plinabulin	0.05	80	1	N-acetyltryptamine	0.00	1642	potential	glutathione	0.00	3204	0
JIB04	0.05	81	1	resatorvid	0.00	1643	potential	idebenone	0.00	3205	0
Dihydro-artemisinin	0.05	82	1	tolmetin	0.00	1644	potential	minaprine	0.00	3206	0
ABT-751	0.05	83	1	phloretin	0.00	1645	potential	benfluorex	0.00	3207	0

Y-320	0.05	84	1	5-hydroxytryptophan	0.00	1646	potential	S-Nitrosoglutathione	0.00	3208	0
ENMD-2076	0.05	85	1	capadenoson	0.00	1647	potential	moxonidine	0.00	3209	0
2-methoxy-estradiol	0.05	86	1	PD-184352	0.00	1648	potential	cortisone	0.00	3210	0
teroxirone	0.05	87	1	esmolol	0.00	1649	potential	bucladesine	0.00	3211	0
AMG900	0.05	88	1	bromantan	0.00	1650	potential	proquazone	0.00	3212	0
AZ20	0.05	89	1	methyclothiazide	0.00	1651	potential	triamcinolone	0.00	3213	0
UNC2250	0.05	90	1	tetrabenazine	0.00	1652	potential	cimetropium	0.00	3214	0
10-deacetyl-baccatin	0.05	91	1	delavirdine	0.00	1653	potential	AD-5467	0.00	3215	0
JNJ-7706621	0.05	92	1	vecuronium	0.00	1654	potential	metformin	0.00	3216	0
broxuridine	0.05	93	1	rucinol	0.00	1655	potential	acyclovir	0.00	3217	0
CYC116	0.05	94	1	celecoxib	0.00	1656	potential	ampalex	0.00	3218	0
KW-2449	0.05	95	1	tibolone	0.00	1657	potential	sulphadimethoxine	0.00	3219	0
tedizolid	0.05	96	1	MEK1-2-inhibitor	0.00	1658	potential	KBG	0.00	3220	0
SNS-314	0.05	97	1	odanacatib	0.00	1659	potential	1-octanol	0.00	3221	0
polydatin	0.05	98	1	2-[1-(4-piperonyl)piperazinyl]-benzothiazole	0.00	1660	potential	aminophylline	0.00	3222	0
NSC-3852	0.04	99	1	BMS-927711	0.00	1661	potential	IKK-2-inhibitor	0.00	3223	0
gambogic-acid	0.04	100	1	rivanicline	0.00	1662	potential	ciprofloxacin	0.00	3224	0
PFI-1	0.04	101	1	sulfamethazine	0.00	1663	potential	hexamethylenebisacetamide	0.00	3225	0
mubritinib	0.04	102	1	propylhexedrine	0.00	1664	potential	6-chloromelatonin	0.00	3226	0
litronesib	0.04	103	1	irsogladine	0.00	1665	potential	elagolix	0.00	3227	0
tyrphostin-A9	0.04	104	1	AR-A014418	0.00	1666	potential	1-ethyl-2-pyrrolidone	0.00	3228	0
niclosamide	0.04	105	1	difluprednate	0.00	1667	potential	saccharin	0.00	3229	0
bardoxolone	0.04	106	1	clindamycin-phosphate	0.00	1668	potential	PF-04217903	0.00	3230	0
maytansinol-isobutyrate	0.04	107	1	metaraminol	0.00	1669	potential	felodipine	0.00	3231	0
apatinib	0.04	108	1	triamcinolone-acetonide	0.00	1670	potential	pibenzimol	0.00	3232	0
chidamide	0.04	109	1	sotrastaurin	0.00	1671	potential	amfenac	0.00	3233	0
chlorhexidine	0.04	110	1	BMY-45778	0.00	1672	potential	proflavine-hemisulfate	0.00	3234	0
KPT-185	0.04	111	1	AM-92016	0.00	1673	potential	testosterone-enanthate	0.00	3235	0
NMS-873	0.04	112	1	alclofenac	0.00	1674	potential	mepivacaine	0.00	3236	0
ryuvidine	0.04	113	1	PF-04457845	0.00	1675	potential	barbital	0.00	3237	0
dequalinium	0.04	114	1	JNJ-26990990	0.00	1676	potential	metacresol	0.00	3238	0
epothilone-d	0.04	115	1	BRL-37344	0.00	1677	potential	atazanavir	0.00	3239	0
danusertib	0.04	116	1	medica-16	0.00	1678	potential	PD-407824	0.00	3240	0
KF-38789	0.04	117	1	BMS-599626	0.00	1679	potential	ODM-201	0.00	3241	0
lasalocid	0.04	118	1	thonzylamine	0.00	1680	potential	dihomo-gamma-linolenic-acid	0.00	3242	0
foretinib	0.04	119	1	nithiamide	0.00	1681	potential	EPZ005687	0.00	3243	0
OTX015	0.04	120	1	flunixin-meglumin	0.00	1682	potential	irbesartan	0.00	3244	0
parbendazole	0.04	121	1	L-proline	0.00	1683	potential	palonosetron	0.00	3245	0
BAY-11-7082	0.04	122	1	tetracaine	0.00	1684	potential	pepstatin	0.00	3246	0
PF-03814735	0.04	123	1	anandamide	0.00	1685	potential	sulfamerazine	0.00	3247	0
fosbretabulin	0.04	124	1	guanfacine	0.00	1686	potential	ozanimod	0.00	3248	0

SB-743921	0.04	125	1	SKF-81297	0.00	1687	potential	ZD-7155	0.00	3249	0
sclareol	0.04	126	1	famciclovir	0.00	1688	potential	glucosamine	0.00	3250	0
digoxin	0.04	127	1	iopodic-acid	0.00	1689	potential	acetarsol	0.00	3251	0
BIX-01294	0.04	128	1	acetazolamide	0.00	1690	potential	cinnarazine	0.00	3252	0
PFK-015	0.04	129	1	voriconazole	0.00	1691	potential	dyphylline	0.00	3253	0
etoposide	0.04	130	1	pyrithione-zinc	0.00	1692	potential	lycopene	0.00	3254	0
oxiracetam	0.04	131	1	flindokalner	0.00	1693	potential	nerbacadol	0.00	3255	0
rubitecan	0.04	132	1	BP-897	0.00	1694	potential	MR-16728	0.00	3256	0
panobinostat	0.04	133	1	parthenolide	0.00	1695	potential	quinolinic-acid	0.00	3257	0
crizotinib	0.04	134	1	idronoxil	0.00	1696	potential	SB-756050	0.00	3258	0
MLN0128	0.04	135	1	ubenimex	0.00	1697	potential	pyrazinamide	0.00	3259	0
NVP-TAE684	0.04	136	1	trimipramine	0.00	1698	potential	camylofine-chlorhydrate	0.00	3260	0
BAY-11-7085	0.04	137	1	dopamine	0.00	1699	potential	phytosphingosine	0.00	3261	0
atiprimod	0.04	138	1	TAK-063	0.00	1700	potential	loxoprofen	0.00	3262	0
SB-2343	0.04	139	1	lodoxamide	0.00	1701	potential	iododexetimide	0.00	3263	0
monensin	0.04	140	1	4-P-PDOT	0.00	1702	potential	eletriptan	0.00	3264	0
lanoconazole	0.04	141	1	didox	0.00	1703	potential	ertugliflozin	0.00	3265	0
dalcetrapib	0.04	142	1	3-carboxy-4-hydroxyphenyl-glycine-(R)	0.00	1704	potential	N6-methyladenosine	0.00	3266	0
arctigenin	0.04	143	1	dehydrocholate	0.00	1705	potential	arecaidine-propargyl-ester	0.00	3267	0
vinblastine	0.04	144	1	LY215490	0.00	1706	potential	AZD1446	0.00	3268	0
3'-fluorobenzyl-spiperone	0.04	145	1	DNQX	0.00	1707	potential	para-toluenesulfonamide	0.00	3269	0
HA14-1	0.04	146	1	sulfamethazine	0.00	1708	potential	L-368899	0.00	3270	0
BNTX	0.04	147	1	benzo[d]thiazole-2(3h)-thione	0.00	1709	potential	xylometazoline	0.00	3271	0
trifluridine	0.04	148	1	cis-urocanic acid	0.00	1710	potential	bekanamycin	0.00	3272	0
SB-939	0.04	149	1	liranaftate	0.00	1711	potential	beta-funaltrexamine	0.00	3273	0
chlorambucil	0.04	150	1	ceftibuten	0.00	1712	potential	firategrast	0.00	3274	0
ICG-001	0.04	151	1	dimemorfan	0.00	1713	potential	EX-527	0.00	3275	0
pyrimethamine	0.04	152	1	moxisylyte	0.00	1714	potential	stetaderm	0.00	3276	0
MPI-0479605	0.04	153	1	chlorpropamide	0.00	1715	potential	methenamine	0.00	3277	0
sarafloxacin	0.04	154	1	beta-glycerophosphoric-acid	0.00	1716	potential	4,4-pentamethylenepiperidine	0.00	3278	0
AT7867	0.04	155	1	pamidronate	0.00	1717	potential	nefazodone	0.00	3279	0
anisomycin	0.04	156	1	PIK-293	0.00	1718	potential	diperodon	0.00	3280	0
SB-205384	0.04	157	1	fluorescein	0.00	1719	potential	dinitolmide	0.00	3281	0
RS-17053	0.04	158	1	leuprolide	0.00	1720	potential	etofenamate	0.00	3282	0
broxaldine	0.04	159	1	aminothiazole	0.00	1721	potential	clopidogrel	0.00	3283	0
AZD3514	0.04	160	1	L-Hydroxyproline	0.00	1722	potential	BW-723C86	0.00	3284	0
nortriptyline	0.04	161	1	avatrombopag	0.00	1723	potential	MK-3697	0.00	3285	0
GSK1904529A	0.04	162	1	DY131	0.00	1724	potential	sevelamer	0.00	3286	0
buparlisib	0.04	163	1	roxithromycin	0.00	1725	potential	enocitabine	0.00	3287	0
voreloxin	0.04	164	1	BMS-806	0.00	1726	potential	FPH1-(BRD-6125)	0.00	3288	0
curcumin	0.04	165	1	enalaprilat	0.00	1727	potential	mebhydroline-1,5-naphtalenedisulfonate	0.00	3289	0
phenylmercuric-acetate	0.04	166	1	CH-170	0.00	1728	potential	umeclidinium	0.00	3290	0

tioguanine	0.04	167	1	TMC647055	0.00	1729	potential	pipemidic-acid	0.00	3291	0
GDC-0068	0.03	168	1	JNJ-40411813	0.00	1730	potential	A922500	0.00	3292	0
uprosertib	0.03	169	1	PIK-294	0.00	1731	potential	proglumide	0.00	3293	0
k-strophanthidin	0.03	170	1	methscopolamine	0.00	1732	potential	EMD-1214063	0.00	3294	0
podophyllotoxin	0.03	171	1	AH11110	0.00	1733	potential	carvedilol	0.00	3295	0
midostaurin	0.03	172	1	7-methylxanthine	0.00	1734	potential	NBI-27914	0.00	3296	0
harringtonine	0.03	173	1	orotic-acid	0.00	1735	potential	broxaterol	0.00	3297	0
octenidine	0.03	174	1	procyanidin-b-2	0.00	1736	potential	SR-2640	0.00	3298	0
genz-644282	0.03	175	1	sorbinil	0.00	1737	potential	kaempferol	0.00	3299	0
BAY-87-2243	0.03	176	1	pemirolast	0.00	1738	potential	apigenin	0.00	3300	0
YM-155	0.03	177	1	bepridil	0.00	1739	potential	enzalutamide	0.00	3301	0
ciclopirox	0.03	178	1	tiaramide	0.00	1740	potential	AZD3463	0.00	3302	0
ZK-93423	0.03	179	1	vilazodone	0.00	1741	potential	halopemide	0.00	3303	0
irinotecan	0.03	180	1	paritaprevir	0.00	1742	potential	rilmenidine	0.00	3304	0
SGI-1027	0.03	181	1	mebeverine	0.00	1743	potential	oxiniacic-acid	0.00	3305	0
BNC105	0.03	182	1	CB-10-277	0.00	1744	potential	carnitine-(D/L)	0.00	3306	0
dovitinib	0.03	183	1	sotalol	0.00	1745	potential	dimercaptosuccinic-acid	0.00	3307	0
palmatine-chloride	0.03	184	1	plerixafor	0.00	1746	potential	eltanolone	0.00	3308	0
U-18666A	0.03	185	1	2-Chloropyrazine	0.00	1747	potential	AZD4547	0.00	3309	0
ledipasvir	0.03	186	1	7-keto-DHEA	0.00	1748	potential	tridihexethyl	0.00	3310	0
4-pyrimidine-carbonitrile	0.03	187	1	vanillylacetone	0.00	1749	potential	MK-6096	0.00	3311	0
paclitaxel	0.03	188	1	telenzepine	0.00	1750	potential	bavisant	0.00	3312	0
adefovir-dipivoxil	0.03	189	1	olprinone	0.00	1751	potential	procyclidine	0.00	3313	0
gossypol	0.03	190	1	nomegestrol-acetate	0.00	1752	potential	LY2811376	0.00	3314	0
pibenzimol	0.03	191	1	estradiol	0.00	1753	potential	FR-122047	0.00	3315	0
ZK811752	0.03	192	1	guanethidine	0.00	1754	potential	milnacipran	0.00	3316	0
radezolid	0.03	193	1	lornoxicam	0.00	1755	potential	trolox	0.00	3317	0
LY2801653	0.03	194	1	satraplatin	0.00	1756	potential	tropesin	0.00	3318	0
talazoparib	0.03	195	1	tilorone	0.00	1757	potential	mexeneone	0.00	3319	0
ingenol-mebutate	0.03	196	1	hydrocortisone-hemisuccinate	0.00	1758	potential	AZD4282	0.00	3320	0
dovitinib	0.03	197	1	eptifibatide	0.00	1759	potential	2-hydroxysaclofen	0.00	3321	0
alvespimycin	0.03	198	1	pregabalin	0.00	1760	potential	edelfosine	0.00	3322	0
thiomersal	0.03	199	1	solamargine	0.00	1761	potential	tagatose	0.00	3323	0
teniposide	0.03	200	1	tebipenem	0.00	1762	potential	gadoteridol	0.00	3324	0
K-858	0.03	201	1	AGI-6780	0.00	1763	potential	AG-490	0.00	3325	0
PR-619	0.03	202	1	ethopabate	0.00	1764	potential	salicin	0.00	3326	0
oxiperomide	0.03	203	1	quinethazone	0.00	1765	potential	LOXO-101	0.00	3327	0
triapine	0.03	204	1	glutathione-monoisopropyl-ester	0.00	1766	potential	4-hydroxy-phenazone	0.00	3328	0
CYT-997	0.03	205	1	tyrphostin-AG-99	0.00	1767	potential	bendamustine	0.00	3329	0
parthenolide-(-)	0.03	206	1	medronic-acid	0.00	1768	potential	kinetin	0.00	3330	0
halofantrine	0.03	207	1	CP-945,598	0.00	1769	potential	febuxostat	0.00	3331	0
Cetyl-pyridinium	0.03	208	1	terlipressin	0.00	1770	potential	SGX523	0.00	3332	0
brefeldin-a	0.03	209	1	bivalirudin	0.00	1771	potential	isopropamide-iodide	0.00	3333	0
TG-101209	0.03	210	1	benzotript	0.00	1772	potential	eflornithine	0.00	3334	0

clomifene	0.03	211	1	stattic	0.00	1773	potential	1-deoxymannojirimycin	0.00	3335	0
TG-101348	0.03	212	1	brivanib	0.00	1774	potential	CP-91149	0.00	3336	0
flubendazole	0.03	213	1	LTA	0.00	1775	potential	carmoxirole	0.00	3337	0
mebendazole	0.03	214	1	gadoterate-meglumine	0.00	1776	potential	PF-04620110	0.00	3338	0
FLI-06	0.03	215	1	STF-62247	0.00	1777	potential	telithromycin	0.00	3339	0
AZD8055	0.03	216	1	hydroxyzine	0.00	1778	potential	penicillin-v-potassium	0.00	3340	0
eltrombopag	0.03	217	1	trichloroethylene	0.00	1779	potential	AMG-517	0.00	3341	0
tazemetostat	0.03	218	1	SKF-86002	0.00	1780	potential	securinine	0.00	3342	0
dinaciclib	0.03	219	1	sutezolid	0.00	1781	potential	cefminox	0.00	3343	0
trichostatin-a	0.03	220	1	phentermine	0.00	1782	potential	diphenylpyraline	0.00	3344	0
BMS-265246	0.03	221	1	isoniazid	0.00	1783	potential	teprenone	0.00	3345	0
cyclosporine	0.03	222	1	denotivir	0.00	1784	potential	M-344	0.00	3346	0
SKI-II	0.03	223	1	SB-683698	0.00	1785	potential	azelnidipine	0.00	3347	0
dolutegravir	0.03	224	1	rotundine	0.00	1786	potential	almotriptan	0.00	3348	0
tivantinib	0.03	225	1	acitazanolast	0.00	1787	potential	lobendazole	0.00	3349	0
crizotinib-(S)	0.03	226	1	creatinine	0.00	1788	potential	A-7	0.00	3350	0
artesunate	0.03	227	1	donepezil	0.00	1789	potential	A-803467	0.00	3351	0
GDC-0349	0.03	228	1	caprylic-acid	0.00	1790	potential	iobenguane	0.00	3352	0
indisulam	0.03	229	1	cilnidipine	0.00	1791	potential	AZD2858	0.00	3353	0
VLX600	0.03	230	1	eslicarbazepine-acetate	0.00	1792	potential	nTZDpa	0.00	3354	0
resiquimod	0.03	231	1	chrysophanic-acid	0.00	1793	potential	CFM-1571	0.00	3355	0
anguidine	0.03	232	1	tobramycin	0.00	1794	potential	iocetamic-acid	0.00	3356	0
CCG-50014	0.03	233	1	tiopronin	0.00	1795	potential	ML167	0.00	3357	0
amuvatinib	0.03	234	1	CAY10505	0.00	1796	potential	TC2559	0.00	3358	0
oxibendazole	0.03	235	1	TBOA-(DL)	0.00	1797	potential	FPA-124	0.00	3359	0
10-deacetylbaccatin	0.03	236	1	tiracizine	0.00	1798	potential	ferulic-acid	0.00	3360	0
oligomycin-a	0.03	237	1	fluvastatin	0.00	1799	potential	L-Cystine	0.00	3361	0
nonoxynol-9	0.03	238	1	propoxycaine	0.00	1800	potential	liothyronine	0.00	3362	0
PIK-75	0.03	239	1	CGP-53353	0.00	1801	potential	melperone	0.00	3363	0
GR-127935	0.03	240	1	dromostanolone-propionate	0.00	1802	potential	adefovir	0.00	3364	0
MK-8745	0.03	241	1	galeterone	0.00	1803	potential	naphazoline	0.00	3365	0
gemcitabine	0.03	242	1	CGP-52411	0.00	1804	potential	manidipine	0.00	3366	0
idarubicin	0.03	243	1	doxazosin	0.00	1805	potential	etizolam	0.00	3367	0
mibampator	0.03	244	1	GSK3787	0.00	1806	potential	BMS-587101	0.00	3368	0
idarubicin	0.03	245	1	alvocidib	0.00	1807	potential	mephentermine	0.00	3369	0
nuclomedone	0.03	246	1	acedapsone	0.00	1808	potential	bucillamine	0.00	3370	0
CUDC-907	0.03	247	1	PF-02545920	0.00	1809	potential	trequinsin	0.00	3371	0
TPCA-1	0.03	248	1	tecalcet	0.00	1810	potential	cytisine	0.00	3372	0
xanomeline	0.03	249	1	EPZ004777	0.00	1811	potential	propiverine	0.00	3373	0
AZD7762	0.03	250	1	metaxalone	0.00	1812	potential	senicapoc	0.00	3374	0
ZM-306416	0.03	251	1	griseofulvin	0.00	1813	potential	phenazopyridine	0.00	3375	0
WAY-170523	0.03	252	1	D-Phenylalanine	0.00	1814	potential	CGP-55845	0.00	3376	0
JQ1-(+)	0.03	253	1	tetradecylthioacetic-acid	0.00	1815	potential	streptomycin	0.00	3377	0
zaldaride	0.03	254	1	lorediplon	0.00	1816	potential	doxylamine	0.00	3378	0

mycophenolic-acid	0.03	255	1	bromfenac	0.00	1817	potential	piclamilast	0.00	3379	0
CD-437	0.03	256	1	carisoprodol	0.00	1818	potential	prazosin	0.00	3380	0
tipifarnib	0.03	257	1	cholic-acid	0.00	1819	potential	sulfameter	0.00	3381	0
epothilone-a	0.03	258	1	estropipate	0.00	1820	potential	anastrozole	0.00	3382	0
palbociclib	0.03	259	1	polythiazide	0.00	1821	potential	piromidic-acid	0.00	3383	0
nocodazole	0.03	260	1	N-acetyl-mannosamine	0.00	1822	potential	enoximone	0.00	3384	0
pralatrexate	0.03	261	1	diminazene-aceturate	0.00	1823	potential	eticlopride	0.00	3385	0
pilsicainide	0.03	262	1	SRC-kinase-inhibitor-I	0.00	1824	potential	lumacaftor	0.00	3386	0
CCT129202	0.03	263	1	PD-153035	0.00	1825	potential	fosamprenavir	0.00	3387	0
OSI-930	0.03	264	1	3-alpha-bis-(4-fluorophenyl)-methoxytropane	0.00	1826	potential	LY303511	0.00	3388	0
bitopertin	0.03	265	1	rifampin	0.00	1827	potential	diadenosine-tetraphosphate	0.00	3389	0
betulinic-acid	0.03	266	1	AS-77	0.00	1828	potential	monostearin	0.00	3390	0
PI-103	0.03	267	1	bezafibrate	0.00	1829	potential	sorbitol	0.00	3391	0
BMS-345541	0.03	268	1	JNJ-38877605	0.00	1830	potential	naringenin	0.00	3392	0
hypoestoxide	0.03	269	1	SC-10	0.00	1831	potential	diazooxonorleucine	0.00	3393	0
dorzolamide	0.03	270	1	penicillamine-(D)	0.00	1832	potential	temocapril	0.00	3394	0
4-(4-fluorobenzoyl)-1-(4-phenylbutyl)-piperidine	0.03	271	1	dexloxiglumide	0.00	1833	potential	emedastine	0.00	3395	0
deslanoside	0.03	272	1	carbinoxamine	0.00	1834	potential	CBS,-N-Cyclohexyl-2-benzothiazolesulfenamide	0.00	3396	0
AZD5363	0.03	273	1	tamibarotene	0.00	1835	potential	pexidartinib	0.00	3397	0
evacetrapib	0.03	274	1	immepip	0.00	1836	potential	methacholine	0.00	3398	0
PF-562271	0.03	275	1	cyanopindolol	0.00	1837	potential	rupatadine	0.00	3399	0
MNS-(3,4-Methylenedioxy-nitrostyrene)	0.03	276	1	2-iminobiotin	0.00	1838	potential	fomocaine	0.00	3400	0
nilotinib	0.03	277	1	arotinolol	0.00	1839	potential	procysteine	0.00	3401	0
ebastine	0.03	278	1	TAK-901	0.00	1840	potential	troxipide	0.00	3402	0
carmofur	0.03	279	1	terutroban	0.00	1841	potential	CK-636	0.00	3403	0
WAY-600	0.03	280	1	SDM25N	0.00	1842	potential	pirenperone	0.00	3404	0
SB-216641	0.03	281	1	tie2-kinase-inhibitor	0.00	1843	potential	tiapride	0.00	3405	0
Oxy-phencyclimine	0.03	282	1	lacitol	0.00	1844	potential	N-acetylcarnosine	0.00	3406	0
ciclesonide	0.03	283	1	citiolone	0.00	1845	potential	nifekalant	0.00	3407	0
abemaciclib	0.03	284	1	BIX-02188	0.00	1846	potential	altanserin	0.00	3408	0
GSK923295	0.03	285	1	isbufylline	0.00	1847	potential	bepotastine	0.00	3409	0
bromosporine	0.03	286	1	ditolylguanidine	0.00	1848	potential	methoxyphenamine	0.00	3410	0
dehydrocholate-acid	0.03	287	1	clevudine	0.00	1849	potential	conivaptan	0.00	3411	0
ketoconazole	0.02	288	1	DMP-543	0.00	1850	potential	indocyanine-green	0.00	3412	0
8-bromo-cGMP	0.02	289	1	KB-R7943	0.00	1851	potential	mianserin	0.00	3413	0
NSC-319726	0.02	290	1	pimethixene	0.00	1852	potential	mosapride	0.00	3414	0
carbachol	0.02	291	1	adapalene	0.00	1853	potential	fruquintinib	0.00	3415	0
topotecan	0.02	292	1	venlafaxine	0.00	1854	potential	UNC0321	0.00	3416	0
sulconazole	0.02	293	1	piroximone	0.00	1855	potential	selenomethionine	0.00	3417	0

sorafenib	0.02	294	1	BU-239	0.00	1856	potential	E7449	0.00	3418	0
E-4031	0.02	295	1	NU-1025	0.00	1857	potential	linagliptin	0.00	3419	0
famotidine	0.02	296	1	SB-742457	0.00	1858	potential	CGM097	0.00	3420	0
xipamide	0.02	297	1	lemborexant	0.00	1859	potential	ethambutol	0.00	3421	0
epacadostat	0.02	298	1	nornicotine	0.00	1860	potential	nadide	0.00	3422	0
asenapine	0.02	299	1	SKF-89976A	0.00	1861	potential	nateglinide	0.00	3423	0
berberine	0.02	300	1	salicylanilide	0.00	1862	potential	naftifine	0.00	3424	0
KD-023	0.02	301	1	bardoxolone-methyl	0.00	1863	potential	quinine	0.00	3425	0
MLN-8054	0.02	302	1	clinafloxacin	0.00	1864	potential	nitrendipine	0.00	3426	0
penfluridol	0.02	303	1	nefopam	0.00	1865	potential	co-102862	0.00	3427	0
tariquidar	0.02	304	1	SU014813	0.00	1866	potential	GSK163090	0.00	3428	0
doxycycline	0.02	305	1	rivastigmine	0.00	1867	potential	mitoflaxone	0.00	3429	0
LGK-974	0.02	306	1	igmesine	0.00	1868	potential	carbendazim	0.00	3430	0
thiamphenicol	0.02	307	1	tuaminoheptane	0.00	1869	potential	UBP-302	0.00	3431	0
Ro-90-7501	0.02	308	1	chlorindione	0.00	1870	potential	tiludronate	0.00	3432	0
clofibrate	0.02	309	1	trifluoperazine	0.00	1871	potential	sulfafurazole	0.00	3433	0
brivaracetam	0.02	310	1	mizolastine	0.00	1872	potential	cefotetan	0.00	3434	0
grapiprant	0.02	311	1	phenacetin	0.00	1873	potential	acarbose	0.00	3435	0
crystal-violet	0.02	312	1	fulvestrant	0.00	1874	potential	tucatinib	0.00	3436	0
PRT062070	0.02	313	1	CP-93129	0.00	1875	potential	ethynodiol-diacetate	0.00	3437	0
OTS167	0.02	314	1	suloctidil	0.00	1876	potential	cefoselis	0.00	3438	0
vindesine	0.02	315	1	bopindolol	0.00	1877	potential	C-1	0.00	3439	0
RS-504393	0.02	316	1	pifithrin-mu	0.00	1878	potential	lerisetron	0.00	3440	0
PTC-209	0.02	317	1	HA-1004	0.00	1879	potential	naphthoquine-phosphate	0.00	3441	0
GSK2656157	0.02	318	1	danoprevir	0.00	1880	potential	SNAP	0.00	3442	0
AMG458	0.02	319	1	DIPT	0.00	1881	potential	guanfacine	0.00	3443	0
Bisindolyl-maleimide-ix	0.02	320	1	GS-39783	0.00	1882	potential	ephedrine	0.00	3444	0
cyproheptadine	0.02	321	1	valethamate	0.00	1883	potential	AMD11070	0.00	3445	0
CMPD-1	0.02	322	1	hexoprenaline	0.00	1884	potential	SEP-227900	0.00	3446	0
ambazone	0.02	323	1	SNX-2112	0.00	1885	potential	S-Isopropylisothiourea	0.00	3447	0
GW-2580	0.02	324	1	ecabet	0.00	1886	potential	ML130	0.00	3448	0
sirolimus	0.02	325	1	L-798,106	0.00	1887	potential	ifenprodil	0.00	3449	0
VER-49009	0.02	326	1	calcipotriol	0.00	1888	potential	triazolam	0.00	3450	0
LDN-57444	0.02	327	1	cobicistat	0.00	1889	potential	acecainide	0.00	3451	0
PH-797804	0.02	328	1	diazepam	0.00	1890	potential	uridine	0.00	3452	0
belinostat	0.02	329	1	pentobarbital	0.00	1891	potential	tiotropium	0.00	3453	0
triptolide	0.02	330	1	chrysin	0.00	1892	potential	alpha-methylhistamine-dihydrobromide-(R)-(-)	0.00	3454	0
NSC-23766	0.02	331	1	paroxypropione	0.00	1893	potential	apocynin	0.00	3455	0
flunisolide	0.02	332	1	bacampicillin	0.00	1894	potential	asunaprevir	0.00	3456	0
EMD-53998	0.02	333	1	AMG-208	0.00	1895	potential	TAME	0.00	3457	0
OTX015	0.02	334	1	elesclomol	0.00	1896	potential	adrenalone	0.00	3458	0
mepacrine	0.02	335	1	clodronic-acid	0.00	1897	potential	tricaprylin	0.00	3459	0
GR-103691	0.02	336	1	BMS-777607	0.00	1898	potential	ARC-239	0.00	3460	0
tanshinone-i	0.02	337	1	NNC-63-0532	0.00	1899	potential	JNJ-42165279	0.00	3461	0

17-hydroxy-progesterone-caproate	0.02	338	1	A-33903	0.00	1900	potential	KT-433	0.00	3462	0
triptorelin	0.02	339	1	raclopride	0.00	1901	potential	ZCL-278	0.00	3463	0
ticagrelor	0.02	340	1	zaleplon	0.00	1902	potential	fosinopril	0.00	3464	0
GSK650394	0.02	341	1	AFN-1252	0.00	1903	potential	prednisolone-sodium-phosphate	0.00	3465	0
LY2606368	0.02	342	1	ST-1859	0.00	1904	potential	peramivir	0.00	3466	0
enrofloxacin	0.02	343	1	BRL-52537	0.00	1905	potential	LCQ908	0.00	3467	0
cabazitaxel	0.02	344	1	pemetrexed	0.00	1906	potential	oxcarbazepine	0.00	3468	0
WZ-3146	0.02	345	1	metergoline	0.00	1907	potential	diroximel-fumarate	0.00	3469	0
obatoclax	0.02	346	1	folic-acid	0.00	1908	potential	netupitant	0.00	3470	0
triamterene	0.02	347	1	bifemelane	0.00	1909	potential	quinine-ethyl-carbonate	0.00	3471	0
pentamidine	0.02	348	1	eprosartan	0.00	1910	potential	LY320135	0.00	3472	0
lomitapide	0.02	349	1	cephalothin	0.00	1911	potential	alfacalcidol	0.00	3473	0
ethynodiol-diacetate	0.02	350	1	amoxicillin	0.00	1912	potential	TG-100713	0.00	3474	0
SGI-1776	0.02	351	1	dexamethasone-sodium-phosphate	0.00	1913	potential	schisandrol-b	0.00	3475	0
embelin	0.02	352	1	propentofylline	0.00	1914	potential	ethyl-vanillin	0.00	3476	0
skepinone-l	0.02	353	1	icatibant-acetate	0.00	1915	potential	WB-4101	0.00	3477	0
sulfabenzamide	0.02	354	1	avagacestat	0.00	1916	potential	taurine	0.00	3478	0
chloropyramine	0.02	355	1	ergocalciferol	0.00	1917	potential	triprolidine	0.00	3479	0
iodophenpropit	0.02	356	1	floxuridine	0.00	1918	potential	CC-930	0.00	3480	0
domiphen	0.02	357	1	clobetasone-butyrate	0.00	1919	potential	remacemide	0.00	3481	0
daunorubicin	0.02	358	1	AZ191	0.00	1920	potential	efatutazone	0.00	3482	0
beclomethasone-dipropionate	0.02	359	1	econazole	0.00	1921	potential	fenofibrate	0.00	3483	0
aurora-a-inhibitor-i	0.02	360	1	torasemide	0.00	1922	potential	indium(iii)-isopropoxide	0.00	3484	0
dienogest	0.02	361	1	lazabemide	0.00	1923	potential	indoramin	0.00	3485	0
alclometasone-dipropionate	0.02	362	1	mepenzolate	0.00	1924	potential	idalopirdine	0.00	3486	0
PF-3845	0.02	363	1	4-acetyl-1,1-dimethylpiperazinium	0.00	1925	potential	amiprilose	0.00	3487	0
SDZ-21009	0.02	364	1	2-thiouracil	0.00	1926	potential	levocabastine	0.00	3488	0
UNC0631	0.02	365	1	ADX-47273	0.00	1927	potential	tafamidis-meglumine	0.00	3489	0
aripiprazole	0.02	366	1	metolazone	0.00	1928	potential	paliperidone	0.00	3490	0
lappaconite	0.02	367	1	salvianolic-acid-B	0.00	1929	potential	NPS-2143	0.00	3491	0
volasertib	0.02	368	1	spironolactone	0.00	1930	potential	SD-208	0.00	3492	0
Y-27632	0.02	369	1	emorfazone	0.00	1931	potential	xibenolol	0.00	3493	0
HMN-214	0.02	370	1	carbetocin	0.00	1932	potential	lucitanib	0.00	3494	0
romidepsin	0.02	371	1	camicinal	0.00	1933	potential	GW-7647	0.00	3495	0
Medroxy-progesterone-acetate	0.02	372	1	gentiopicrin	0.00	1934	potential	viloxazine	0.00	3496	0
mericitabine	0.02	373	1	ATN-161	0.00	1935	potential	edoxaban	0.00	3497	0
MK-1775	0.02	374	1	3-deazaneplanocin-A	0.00	1936	potential	piribedil	0.00	3498	0
NMS-1286937	0.02	375	1	L-Cysteinesulfinic-acid	0.00	1937	potential	zidovudine	0.00	3499	0

benzonatate	0.02	376	1	nicotinyl-alcohol-tartrate	0.00	1938	potential	niridazole	0.00	3500	0
SC-560	0.02	377	1	cloprostenol-(+/-)	0.00	1939	potential	indole-3-carbinol	0.00	3501	0
KD025	0.02	378	1	zafirlukast	0.00	1940	potential	ICI-199441	0.00	3502	0
cimetidine	0.02	379	1	dichlorisone-acetate	0.00	1941	potential	chlorogenic-acid	0.00	3503	0
ASC-J9	0.02	380	1	ZD-2079	0.00	1942	potential	cinchonidine	0.00	3504	0
calcitriol	0.02	381	1	SCMC-Lys	0.00	1943	potential	dalargin	0.00	3505	0
SNAP-94847	0.02	382	1	sodium-danshensu	0.00	1944	potential	PHA-793887	0.00	3506	0
SCH-900776	0.02	383	1	cefcapene-pivoxil	0.00	1945	potential	zaltoprofen	0.00	3507	0
niguldipine-(S)-(+)	0.02	384	1	acebutolol	0.00	1946	potential	cloxacillin	0.00	3508	0
dapivirine	0.02	385	1	isoxicam	0.00	1947	potential	U-54494A	0.00	3509	0
SR-27897	0.02	386	1	Dexchlor-pheniramine	0.00	1948	potential	2-methyl-5-hydroxytryptamine	0.00	3510	0
olaparib	0.02	387	1	benserazide	0.00	1949	potential	luteolin	0.00	3511	0
GSK1292263	0.02	388	1	secoisolariciresinol-diglucoside	0.00	1950	potential	furaltadone	0.00	3512	0
Homo-harringtonine	0.02	389	1	teriflunomide	0.00	1951	potential	CDBA	0.00	3513	0
GSK2110183	0.02	390	1	UNC0638	0.00	1952	potential	tacalcitol	0.00	3514	0
PETCM	0.02	391	1	CZC24832	0.00	1953	potential	timolol	0.00	3515	0
acitretin	0.02	392	1	pridinol	0.00	1954	potential	harmane	0.00	3516	0
I-BET-762	0.02	393	1	STF-118804	0.00	1955	potential	mephenesin	0.00	3517	0
ACY-1215	0.02	394	1	histamine	0.00	1956	potential	dimpylate	0.00	3518	0
KP-1212	0.02	395	1	INH1	0.00	1957	potential	tandospirone	0.00	3519	0
retapamulin	0.02	396	1	Trimetho-benzamide	0.00	1958	potential	gliquidone	0.00	3520	0
UNC0737	0.02	397	1	vortioxetine	0.00	1959	potential	eszopiclone	0.00	3521	0
algestone-acetophenide	0.02	398	1	acetyl-farnesyl-cysteine	0.00	1960	potential	GBR-13069	0.00	3522	0
acesulfame-potassium	0.02	399	1	antazoline	0.00	1961	potential	refametinib	0.00	3523	0
nobiletin	0.02	400	1	talarozole	0.00	1962	potential	alagebrium	0.00	3524	0
ispinesib	0.02	401	1	CGH2466	0.00	1963	potential	L-Arginine	0.00	3525	0
amitriptyline	0.02	402	1	IU1	0.00	1964	potential	phenazopyridine	0.00	3526	0
eprinomectin	0.02	403	1	1400W	0.00	1965	potential	pterostilbene	0.00	3527	0
eperezolid	0.02	404	1	L-glutamic-acid	0.00	1966	potential	isosteviol	0.00	3528	0
meclizine	0.02	405	1	azlocillin	0.00	1967	potential	brequinar	0.00	3529	0
IKK-16	0.02	406	1	zofenopril-calcium	0.00	1968	potential	PPT	0.00	3530	0
metatinib	0.02	407	1	bisacodyl	0.00	1969	potential	pranlukast	0.00	3531	0
fenoldopam	0.02	408	1	bakuchiol	0.00	1970	potential	CGS-21680	0.00	3532	0
SB-228357	0.02	409	1	licarbazepine	0.00	1971	potential	2-octyldodecan-1-ol	0.00	3533	0
ivermectin	0.02	410	1	hesperetin	0.00	1972	potential	ripazepam	0.00	3534	0
tranylcypromine	0.02	411	1	flurbiprofen-(+/-)	0.00	1973	potential	IMREG-1	0.00	3535	0
ibuproxam	0.02	412	1	cilazapril	0.00	1974	potential	dolasetron	0.00	3536	0
Ro-19-4605	0.02	413	1	capsaicin	0.00	1975	potential	sertaconazole	0.00	3537	0
cepharanthine	0.02	414	1	finasteride	0.00	1976	potential	bicuculline-(+)	0.00	3538	0
MK-8245	0.02	415	1	lactulose	0.00	1977	potential	BP-554	0.00	3539	0
MBX-2982	0.02	416	1	A66	0.00	1978	potential	5-fluorouracil	-0.01	3540	0
maltobionic-acid	0.02	417	1	orlistat	0.00	1979	potential	phenacaine	-0.01	3541	0
tasisulam	0.02	418	1	GW-583340	0.00	1980	potential	oxyclozanide	-0.01	3542	0
tacedinaline	0.02	419	1	dapagliflozin	0.00	1981	potential	dimaprit	-0.01	3543	0

ZK-200775	0.02	420	1	tioconazole	0.00	1982	potential	metrizoic-acid	-0.01	3544	0
clofazimine	0.02	421	1	erythromycin	0.00	1983	potential	RN-1747	-0.01	3545	0
SB-590885	0.02	422	1	dosulepin	0.00	1984	potential	cordycepin	-0.01	3546	0
CI-844	0.02	423	1	BRL-54443	0.00	1985	potential	ethamivan	-0.01	3547	0
filanesib	0.02	424	1	L-methionine	0.00	1986	potential	brexpiprazole	-0.01	3548	0
amiloride	0.02	425	1	nedaplatin	0.00	1987	potential	delivert	-0.01	3549	0
CI-966	0.02	426	1	fenofibric-acid	0.00	1988	potential	BS-181	-0.01	3550	0
temazepam	0.02	427	1	maprotiline	0.00	1989	potential	puromycin	-0.01	3551	0
GNF-2	0.02	428	1	S-111	0.00	1990	potential	BIX-02189	-0.01	3552	0
bentazepam	0.02	429	1	topiroxostat	0.00	1991	potential	acemetacin	-0.01	3553	0
OLDA	0.02	430	1	EXO-1	0.00	1992	potential	dimercaprol	-0.01	3554	0
RAF265	0.02	431	1	potassium-canrenoate	0.00	1993	potential	nitrofurazone	-0.01	3555	0
Benzyl-dimethylhexadecyl-ammonium	0.02	432	1	daprodustat	0.00	1994	potential	palifosfamide	-0.01	3556	0
SN-38	0.02	433	1	hymecromone	0.00	1995	potential	nizofenone	-0.01	3557	0
carmustine	0.02	434	1	cinflumide	0.00	1996	potential	masitinib	-0.01	3558	0
pyroxamide	0.02	435	1	cyproterone-acetate	0.00	1997	potential	HA-966-(S)-(-)	-0.01	3559	0
oprozomib	0.02	436	1	mebrofenin	0.00	1998	potential	BIBU-1361	-0.01	3560	0
MK-2206	0.02	437	1	lorazepam	0.00	1999	potential	ilepcimide	-0.01	3561	0
IBC-293	0.02	438	1	EVP-6124	0.00	2000	potential	tolcapone	-0.01	3562	0
tofacitinib	0.02	439	1	bremelanotide	0.00	2001	potential	sparfloxacin	-0.01	3563	0
BIIB021	0.02	440	1	AZD2014	0.00	2002	potential	lisuride	-0.01	3564	0
methotrexate	0.02	441	1	bemegride	0.00	2003	potential	oxazepam	-0.01	3565	0
RKI-1447	0.02	442	1	olsalazine	0.00	2004	potential	benzoxiquine	-0.01	3566	0
fingolimod	0.02	443	1	oxyphenonium	0.00	2005	potential	homoquinolinic-acid	-0.01	3567	0
chlorprothixene	0.02	444	1	lacidipine	0.00	2006	potential	A205804	-0.01	3568	0
AT-9283	0.02	445	1	chlorzoxazone	0.00	2007	potential	MMPX	-0.01	3569	0
flumatinib	0.02	446	1	endo-IWR-1	0.00	2008	potential	imidacloprid	-0.01	3570	0
genistein	0.02	447	1	diloxanide	0.00	2009	potential	lixivaptan	-0.01	3571	0
gastrodin	0.02	448	1	moxaverine	0.00	2010	potential	WAY-200070	-0.01	3572	0
NVP-BHG712	0.02	449	1	naltrindole	0.00	2011	potential	guacetisal	-0.01	3573	0
K-Ras(G12C)-inhibitor-6	0.02	450	1	sucrose-octaacetate	0.00	2012	potential	palmitoylethanolamide	-0.01	3574	0
L-701324	0.02	451	1	PF-04691502	0.00	2013	potential	5-fluoro-3-pyridyl-methanol	-0.01	3575	0
NSC-697923	0.02	452	1	ketoprofen	0.00	2014	potential	PF-4981517	-0.01	3576	0
nexturastat-a	0.02	453	1	moracizine	0.00	2015	potential	gepefrine	-0.01	3577	0
megestrol-acetate	0.02	454	1	tripelennamine	0.00	2016	potential	RS-0481	-0.01	3578	0
ixazomib	0.02	455	1	indobufen	0.00	2017	potential	octreotide	-0.01	3579	0
darifenacin	0.02	456	1	FK-33-824	0.00	2018	potential	rociletinib	-0.01	3580	0
azacitidine	0.02	457	1	frovatriptan	0.00	2019	potential	detomidine	-0.01	3581	0
ONC201	0.02	458	1	setipiprant	0.00	2020	potential	VUF10166	-0.01	3582	0
azaperone	0.02	459	1	Ro-25-6981	0.00	2021	potential	methoxamine	-0.01	3583	0
rabeprazole	0.02	460	1	cytochalasin-b	0.00	2022	potential	butacaine	-0.01	3584	0
boceprevir	0.02	461	1	proscillaridin-a	0.00	2023	potential	atizoram	-0.01	3585	0
trimethoprim	0.02	462	1	aclidinium	0.00	2024	potential	carzenide	-0.01	3586	0
prilocaine	0.02	463	1	EPZ-5676	0.00	2025	potential	BMS-626529	-0.01	3587	0
SB-505124	0.02	464	1	etofibrate	0.00	2026	potential	estriol	-0.01	3588	0

STA-5326	0.02	465	1	siponimod	0.00	2027	potential	monosodium lupinate	-0.01	3589	0
PF-573228	0.02	466	1	milacemide	0.00	2028	potential	luminol	-0.01	3590	0
AZD7545	0.02	467	1	mabuprofen	0.00	2029	potential	norethindrone	-0.01	3591	0
stepronin	0.02	468	1	GW-3965	0.00	2030	potential	isoguvacine	-0.01	3592	0
niraparib	0.02	469	1	rifaximin	0.00	2031	potential	OC000459	-0.01	3593	0
telaprevir	0.02	470	1	L-655,708	0.00	2032	potential	WZ811	-0.01	3594	0
vinflunine	0.02	471	1	pirlindole	0.00	2033	potential	azasetron	-0.01	3595	0
PF-04136309	0.02	472	1	lincomycin	0.00	2034	potential	deoxycorticosterone-acetate	-0.01	3596	0
amorolfine	0.02	473	1	nifenazone	0.00	2035	potential	bucetin	-0.01	3597	0
AMG-9810	0.02	474	1	SKF-96365	0.00	2036	potential	mesoridazine	-0.01	3598	0
PSB-1115	0.02	475	1	pimonidazole	0.00	2037	potential	valaciclovir	-0.01	3599	0
basimglurant	0.02	476	1	scopolamine	0.00	2038	potential	chlorphenesin	-0.01	3600	0
medrysone	0.02	477	1	8-hydroxy-PIPAT	0.00	2039	potential	AM-580	-0.01	3601	0
nelfinavir	0.02	478	1	carbenoxolone	0.00	2040	potential	apafant	-0.01	3602	0
1-phenylbiguanide	0.02	479	1	mefloquine	0.00	2041	potential	NXY-059	-0.01	3603	0
levobunolol	0.02	480	1	PU-H71	0.00	2042	potential	alectinib	-0.01	3604	0
echinomycin	0.02	481	1	diatrizoic-acid	0.00	2043	potential	riodipine	-0.01	3605	0
AZD1480	0.02	482	1	guvacine	0.00	2044	potential	fenbufen	-0.01	3606	0
fluspirilene	0.02	483	1	exalamide	0.00	2045	potential	tomelukast	-0.01	3607	0
Carboxyamido-triazole	0.02	484	1	Hydroxyl-chloroquine	0.00	2046	potential	T-5224	-0.01	3608	0
fluorometholone	0.02	485	1	liothyronine-(isomer)	0.00	2047	potential	cefozopran	-0.01	3609	0
GDC-0980	0.02	486	1	lubiprostone	0.00	2048	potential	L-152804	-0.01	3610	0
tetramethylthiuram-monosulfide	0.02	487	1	SAR131675	0.00	2049	potential	acalabrutinib	-0.01	3611	0
DPPE	0.02	488	1	isosorbide-mononitrate	0.00	2050	potential	AC-55649	-0.01	3612	0
alfacalcidol	0.02	489	1	sofalcone	0.00	2051	potential	fenigam	-0.01	3613	0
pazopanib	0.02	490	1	spiramycin	0.00	2052	potential	omeprazole	-0.01	3614	0
valrubicin	0.02	491	1	ascorbic-acid	0.00	2053	potential	icariin	-0.01	3615	0
loteprednol	0.02	492	1	isovaleramide	0.00	2054	potential	sulindac	-0.01	3616	0
CX-5461	0.02	493	1	quinapril	0.00	2055	potential	1-hexadecanol	-0.01	3617	0
etanidazole	0.02	494	1	ranitidine	0.00	2056	potential	sulfamethoxypyridazine	-0.01	3618	0
cytochlor	0.02	495	1	nicardipine	0.00	2057	potential	acetylsalicylsalicylic-acid	-0.01	3619	0
AY-9944	0.02	496	1	donitriptan	0.00	2058	potential	piperonyl-butoxide	-0.01	3620	0
sildenafil	0.02	497	1	sal003	0.00	2059	potential	probenecid	-0.01	3621	0
methacycline	0.02	498	1	droloxifene	0.00	2060	potential	iohexol	-0.01	3622	0
ribavirin	0.02	499	1	SB-239063	0.00	2061	potential	terconazole	-0.01	3623	0
IOX2	0.02	500	1	estrone	0.00	2062	potential	ezutromid	-0.01	3624	0
CCT128930	0.02	501	1	azosemide	0.00	2063	potential	clindamycin	-0.01	3625	0
tasuldine	0.02	502	1	JTE-907	0.00	2064	potential	acyclovir	-0.01	3626	0
ritonavir	0.02	503	1	propacetamol	0.00	2065	potential	synephrine	-0.01	3627	0
4E1RCat	0.02	504	1	SM-108	0.00	2066	potential	phenolphthalein	-0.01	3628	0
pregnenolone-succinate	0.02	505	1	resorcinol	0.00	2067	potential	12-O-tetradecanoylphorbol-13-acetate	-0.01	3629	0
beta-lapachone	0.02	506	1	hydroxyprogesterone-acetate	0.00	2068	potential	nicaraven	-0.01	3630	0
								sparfloxacin	-0.01	3631	0

dehydrocorydaline	0.02	507	1	piboserod	0.00	2069	potential	amyleine	-0.01	3631	0
thioridazine	0.02	508	1	ramifenazone	0.00	2070	potential	toceranib	-0.01	3632	0
aniracetam	0.02	509	1	tipranavir	0.00	2071	potential	ampicillin	-0.01	3633	0
LY2228820	0.02	510	1	17-alpha-methyltestosterone	0.00	2072	potential	KW-2478	-0.01	3634	0
mocetinostat	0.02	511	1	pilocarpine	0.00	2073	potential	SB-415286	-0.01	3635	0
methylprednisolone-sodium-succinate	0.02	512	1	pentagastrin	0.00	2074	potential	morinidazole	-0.01	3636	0
WIN-64338	0.02	513	1	Ethyl-enediaminetetraacetic-acid	0.00	2075	potential	acetohydroxamic-acid	-0.01	3637	0
SDZ-WAG-994	0.02	514	1	emoxipin	0.00	2076	potential	spermidine	-0.01	3638	0
bevantolol	0.02	515	1	crisaborole	0.00	2077	potential	SR-57227A	-0.01	3639	0
haloperidol	0.02	516	1	tiabendazole	0.00	2078	potential	cyclobenzaprine	-0.01	3640	0
L-701252	0.02	517	1	naratriptan	0.00	2079	potential	DCPIB	-0.01	3641	0
CP-339818	0.02	518	1	rizatriptan	0.00	2080	potential	gamma-linolenic-acid	-0.01	3642	0
deferasirox	0.02	519	1	vanillin	0.00	2081	potential	CP-673451	-0.01	3643	0
rutaecarpine	0.02	520	1	octisalate	0.00	2082	potential	mCPP	-0.01	3644	0
BI-D1870	0.02	521	1	natamycin	0.00	2083	potential	PD-166793	-0.01	3645	0
ginsenoside-rg3	0.02	522	1	CX-4945	0.00	2084	potential	raltegravir	-0.01	3646	0
VE-821	0.02	523	1	danegaptide	0.00	2085	potential	naproxen	-0.01	3647	0
zolantidine	0.02	524	1	motesanib	0.00	2086	potential	barnidipine	-0.01	3648	0
clobetasol-propionate	0.02	525	1	VX-745	0.00	2087	potential	itopride	-0.01	3649	0
NOV-002	0.02	526	1	ioversol	0.00	2088	potential	ABT-239	-0.01	3650	0
LY411575	0.02	527	1	ethinyl-estradiol	0.00	2089	potential	acetanilide	-0.01	3651	0
5'-Chloro-5'-deoxy-ENBA-(+/-)	0.02	528	1	gabexate	0.00	2090	potential	PF-04447943	-0.01	3652	0
aphidicolin	0.02	529	1	pranoprofen	0.00	2091	potential	retinaldehyde	-0.01	3653	0
triclocarban	0.02	530	1	vicriviroc	0.00	2092	potential	didanosine	-0.01	3654	0
XL-147	0.02	531	1	SNC-80	0.00	2093	potential	actinoquinol	-0.01	3655	0
PCI-24781	0.02	532	1	BMS-833923	0.00	2094	potential	F-11440	-0.01	3656	0
mycophenolate-mofetil	0.02	533	1	metyrapone	0.00	2095	potential	piracetam	-0.01	3657	0
NGB-2904	0.02	534	1	montelukast	0.00	2096	potential	roxatidine-acetate	-0.01	3658	0
PI-828	0.02	535	1	LY2452473	0.00	2097	potential	SKF-77434	-0.01	3659	0
clozapine	0.02	536	1	cresol	0.00	2098	potential	flucloxacillin	-0.01	3660	0
fexinidazole	0.02	537	1	colesevalam	0.00	2099	potential	oxelaidin	-0.01	3661	0
NPC-15199	0.02	538	1	lamivudine	0.00	2100	potential	alizapride	-0.01	3662	0
methotrexate	0.02	539	1	oseltamivir-carboxylate	0.00	2101	potential	clobenpropit	-0.01	3663	0
lopinavir	0.02	540	1	benzydamine	0.00	2102	potential	chlorocresol	-0.01	3664	0
ICI-118,551	0.02	541	1	SYM-2081	0.00	2103	potential	esomeprazole	-0.01	3665	0
serdemetan	0.02	542	1	FG-7142	0.00	2104	potential	abiraterone-acetate	-0.01	3666	0
sirolimus	0.02	543	1	tiprenolol	0.00	2105	potential	rifabutin	-0.01	3667	0
CH223191	0.02	544	1	UK-383367	0.00	2106	potential	AMG-487	-0.01	3668	0
buparvaquone	0.02	545	1	GDC-0810	0.00	2107	potential	MK-571	-0.01	3669	0
RGFP966	0.02	546	1	phenacemide	0.00	2108	potential	ritodrine	-0.01	3670	0
esaprazole	0.02	547	1	sodium-tetradecyl-sulfate	0.00	2109	potential	neohesperidin-dihydrochalcone	-0.01	3671	0

costunolide	0.02	548	1	boronophenylalanine	0.00	2110	potential	acedoben	-0.01	3672	0
bromperidol	0.02	549	1	dicloxacillin	0.00	2111	potential	bexarotene	-0.01	3673	0
lapatinib	0.02	550	1	PS178990	0.00	2112	potential	MRS3777	-0.01	3674	0
PKI-179	0.02	551	1	metocurine	0.00	2113	potential	dobutamine	-0.01	3675	0
ABT-737	0.02	552	1	2-amino-benzenesulfonamide	0.00	2114	potential	7-chlorokynurenic-acid	-0.01	3676	0
amisulpride	0.02	553	1	sinomenine	0.00	2115	potential	4-phenolsulfonic-acid	-0.01	3677	0
KI-16425	0.02	554	1	eperisone	0.00	2116	potential	eprazinone	-0.01	3678	0
andrographolide	0.02	555	1	PD-160170	0.00	2117	potential	API-001	-0.01	3679	0
A-366	0.02	556	1	closantel	0.00	2118	0	rosiglitazone	-0.01	3680	0
CRT0044876	0.02	557	1	piceatannol	0.00	2119	0	1-((Z)-3-Chloroallyl)-1,3,5,7-tetraazaadamantan-1-ium	-0.01	3681	0
L-741742	0.02	558	1	capecitabine	0.00	2120	0	carumonam	-0.01	3682	0
P276-00	0.02	559	1	glycitein	0.00	2121	0	IRL-2500	-0.01	3683	0
efloxate	0.02	560	1	tacrolimus	0.00	2122	0	dipeptamin	-0.01	3684	0
YM-155	0.02	561	1	SB-705498	0.00	2123	0	lorcaserin	-0.01	3685	0
T-0901317	0.02	562	1	cabaletta	0.00	2124	0	PD-128907	-0.01	3686	0
propafenone	0.02	563	1	naltrexone	0.00	2125	0	estrone	-0.01	3687	0
merimepodib	0.02	564	1	cefotiam	0.00	2126	0	sasapyrine	-0.01	3688	0
napabucasin	0.02	565	1	travoprost	0.00	2127	0	NVP-ADW742	-0.01	3689	0
SB-431542	0.02	566	1	arecaidine-but-2-ynyl-ester	0.00	2128	0	tolazoline	-0.01	3690	0
allylisothiocyanate	0.02	567	1	6-iodo-nordihydrocapsaicin	0.00	2129	0	cyromazine	-0.01	3691	0
oridonin	0.02	568	1	caffeic-acid-phenethyl-ester	0.00	2130	0	erdafitinib	-0.01	3692	0
azathioprine	0.02	569	1	BQ-123	0.00	2131	0	aceglutamide	-0.01	3693	0
KPT-276	0.02	570	1	flurbiprofen-(S)-(+)	0.00	2132	0	articaine	-0.01	3694	0
limonin	0.02	571	1	trans-4-[8-(3-Fluorophenyl)-1,7-naphthyridin-6-yl]cyclohexanecarboxylic-acid	0.00	2133	0	noscapine	-0.01	3695	0
piperazinedione	0.02	572	1	7-hydroxy-staurosporine	0.00	2134	0	cyacetacide	-0.01	3696	0
GBR-12783	0.02	573	1	moprolol	0.00	2135	0	tetrahydrozoline	-0.01	3697	0
2-fluoro-2-deoxy-D-galactose	0.02	574	1	asymmetrical-dimethylarginine	0.00	2136	0	tirapazamine	-0.01	3698	0
furosemide	0.02	575	1	zuclopenthixol	0.00	2137	0	alpelisib	-0.01	3699	0
diflorasone-diacetate	0.02	576	1	albuterol	0.00	2138	0	glafenine	-0.01	3700	0
LFM-A13	0.02	577	1	naloxegol	0.00	2139	0	rolipram	-0.01	3701	0
idoxuridine	0.02	578	1	amlodipine	0.00	2140	0	carboxypyridine-disulfide	-0.01	3702	0
dexlansoprazole	0.02	579	1	bethanechol	0.00	2141	0	WZ4003	-0.01	3703	0
cabozantinib	0.02	580	1	SKF-38393	0.00	2142	0	CHIR-124	-0.01	3704	0
combretastatin-A-4	0.01	581	1	sertraline	0.00	2143	0	mirabegron	-0.01	3705	0
cidofovir	0.01	582	1	ranolazine	0.00	2144	0	levothyroxine	-0.01	3706	0
praziquantel	0.01	583	1	priralfinamide	0.00	2145	0	butaclamol	-0.01	3707	0

I-BET151	0.01	584	1	zibotentan	0.00	2146	0	butylscopolamine bromide	-0.01	3708	0
megestrol-acetate	0.01	585	1	delamanid	0.00	2147	0	PHT-427	-0.01	3709	0
iopamidol	0.01	586	1	DPI-201106	0.00	2148	0	quiflapon	-0.01	3710	0
thiostrepton	0.01	587	1	pravastatin	0.00	2149	0	gedunin	-0.01	3711	0
nisoxetine	0.01	588	1	pinitol	0.00	2150	0	diphenidol	-0.01	3712	0
olopatadine	0.01	589	1	3-MPPI	0.00	2151	0	mepiroxol	-0.01	3713	0
progesterone	0.01	590	1	zaprinast	0.00	2152	0	calcifediol	-0.01	3714	0
nitisinone	0.01	591	1	verapamil	0.00	2153	0	novobiocin	-0.01	3715	0
tubocurarine	0.01	592	1	scopolamine-n-oxide	0.00	2154	0	sesamin	-0.01	3716	0
letosteine	0.01	593	1	BYK-204165	0.00	2155	0	Ro-10-5824	-0.01	3717	0
cebranopadol	0.01	594	1	loxistatin-acid	0.00	2156	0	NNC-55-0396	-0.01	3718	0
RG2833	0.01	595	1	oxytocin	0.00	2157	0	celiprolol	-0.01	3719	0
azithromycin	0.01	596	1	propofol	0.00	2158	0	losartan	-0.01	3720	0
taladegib	0.01	597	1	ezatiostat	0.00	2159	0	cortisone-acetate	-0.01	3721	0
TMPH	0.01	598	1	bupivacaine	0.00	2160	0	chuanxiongzine	-0.01	3722	0
mifepristone	0.01	599	1	allopurinol	0.00	2161	0	golgicide-a	-0.01	3723	0
buspirone	0.01	600	1	moguisteine	0.00	2162	0	matrine	-0.01	3724	0
valnemulin	0.01	601	1	coumophos	0.00	2163	0	caffeine	-0.01	3725	0
doxycycline	0.01	602	1	terbutaline	0.00	2164	0	DMAB-anabaseine	-0.01	3726	0
cholecalciferol	0.01	603	1	doxepin	0.00	2165	0	iproniazid	-0.01	3727	0
FK-962	0.01	604	1	JZL-184	0.00	2166	0	BVT-948	-0.01	3728	0
fusidic-acid	0.01	605	1	desogestrel	0.00	2167	0	SCH-28080	-0.01	3729	0
florfenicol	0.01	606	1	N20C	0.00	2168	0	TG-100801	-0.01	3730	0
SCS	0.01	607	1	N-methyl-(-)ephedrine-[1r,2s]	0.00	2169	0	cis-ACPD	-0.01	3731	0
velneperit	0.01	608	1	AR-12	0.00	2170	0	U-0126	-0.01	3732	0
hydrocortisone	0.01	609	1	deracoxib	0.00	2171	0	N-alpha-Methylhistamine-dihydrochloride	-0.01	3733	0
semagacestat	0.01	610	1	Methyllycaco-nitine	0.00	2172	0	INC-280	-0.01	3734	0
desonide	0.01	611	1	HA-966-(R)-(+)	0.00	2173	0	trichloroacetic-acid	-0.01	3735	0
MK-0893	0.01	612	1	L-Theanine	0.00	2174	0	difloxacin	-0.01	3736	0
entacapone	0.01	613	1	tolonidine	0.00	2175	0	aspartame	-0.01	3737	0
venetoclax	0.01	614	1	Ethylnor-epinephrine	0.00	2176	0	ibuprofen	-0.01	3738	0
zalcitabine	0.01	615	1	TMS	0.00	2177	0	ammonium-lactate	-0.01	3739	0
T-0070907	0.01	616	1	PGL5001	0.00	2178	0	TXA127	-0.01	3740	0
compound-401	0.01	617	1	alvimopan	0.00	2179	0	tylosin	-0.01	3741	0
CTS-1027	0.01	618	1	rocuronium	0.00	2180	0	laurocapram	-0.01	3742	0
cephalosporin-c-zn	0.01	619	1	chiniofon	0.00	2181	0	vardenafil	-0.01	3743	0
aminoguanidine	0.01	620	1	fluoxymesterone	0.00	2182	0	lobenzarit	-0.01	3744	0
BMY-7378	0.01	621	1	succinic-acid	0.00	2183	0	isepamicin	-0.01	3745	0
ethaverine	0.01	622	1	cyclandelate	0.00	2184	0	DS2-(806622)	-0.01	3746	0
NBQX	0.01	623	1	TU-2100	0.00	2185	0	perampanel	-0.01	3747	0
hydrocortisone-valerate	0.01	624	1	UNC1999	0.00	2186	0	pidotimod	-0.01	3748	0
AMG458	0.01	625	1	cinanserin	0.00	2187	0	pirenzepine	-0.01	3749	0
NECA	0.01	626	1	diethylstilbestrol	0.00	2188	0	LDN-212854	-0.01	3750	0
danirixin	0.01	627	1	cloranolol	0.00	2189	0	brucine	-0.01	3751	0

dipraglurant	0.01	628	1	ZSTK-474	0.00	2190	0	sulbactam-pivoxil	-0.01	3752	0
AGN-192403	0.01	629	1	acexamic-acid	0.00	2191	0	2-pyridyl-ethylamine	-0.01	3753	0
CS-917	0.01	630	1	Org-12962	0.00	2192	0	darunavir	-0.01	3754	0
LY2140023	0.01	631	1	fiacitabine	0.00	2193	0	phenothrin	-0.01	3755	0
clomipramine	0.01	632	1	levocarnitine	0.00	2194	0	WAY-161503	-0.01	3756	0
NMDA	0.01	633	1	methyldopa	0.00	2195	0	hyoscyamine	-0.01	3757	0
FR-180204	0.01	634	1	cinacalcet	0.00	2196	0	entinostat	-0.01	3758	0
sunitinib	0.01	635	1	climbazole	0.00	2197	0	chlorquinaldol	-0.01	3759	0
R-428	0.01	636	1	tiletamine	0.00	2198	0	pafuramidine	-0.01	3760	0
corticosterone	0.01	637	1	ramatroban	0.00	2199	0	levosimendan	-0.01	3761	0
homatropine	0.01	638	1	ruxolitinib	0.00	2200	0	sulpiride	-0.01	3762	0
arbutin	0.01	639	1	2-iodomelatonin	0.00	2201	0	L-365260	-0.01	3763	0
DBeQ	0.01	640	1	estradiol-acetate	0.00	2202	0	lithium-acetoacetate	-0.01	3764	0
S-14506	0.01	641	1	hemoglobin-modulators-1	0.00	2203	0	letrozole	-0.01	3765	0
itraconazole	0.01	642	1	vildagliptin	0.00	2204	0	UNC0224	-0.01	3766	0
meclocycline-sulfosalicylate	0.01	643	1	linopirdine	0.00	2205	0	3-bromo-7-nitroindazole	-0.01	3767	0
3-carboxy-4-hydroxyphenylglycine-(S)	0.01	644	1	pimobendan	0.00	2206	0	compound-w	-0.01	3768	0
erteberel	0.01	645	1	N-[2-(Piperidinylamino)ethyl]-4-iodobenzamide	0.00	2207	0	veliparib	-0.01	3769	0
dofequidar	0.01	646	1	melatonin	0.00	2208	0	cimaterol	-0.01	3770	0
miglustat	0.01	647	1	protriptyline	0.00	2209	0	dehydroepiandrosterone-sulfate	-0.01	3771	0
everolimus	0.01	648	1	cromakalim	0.00	2210	0	pazufloxacin	-0.01	3772	0
SB-939	0.01	649	1	oleanolic-acid	0.00	2211	0	tasquinimod	-0.01	3773	0
hygromycin-b	0.01	650	1	betaxolol	0.00	2212	0	hordenine	-0.01	3774	0
ziprasidone	0.01	651	1	dioxybenzone	0.00	2213	0	benznidazole	-0.01	3775	0
SKLB1002	0.01	652	1	sodium-picosulfate	0.00	2214	0	gallic-acid	-0.01	3776	0
baicalin	0.01	653	1	afloqualone	0.00	2215	0	azalomycin-b	-0.01	3777	0
CO-101244	0.01	654	1	GW-501516	0.00	2216	0	meclofenamic-acid	-0.01	3778	0
darapladib	0.01	655	1	oxyfedrine	0.00	2217	0	dehydroepiandrosterone	-0.01	3779	0
OG-L002	0.01	656	1	pimozide	0.00	2218	0	varespladib	-0.01	3780	0
danusertib	0.01	657	1	trans-10,cis-12-Conjugated-linoleic-acid	0.00	2219	0	PCI-34051	-0.01	3781	0
ASA-404	0.01	658	1	azimilide	0.00	2220	0	inositol	-0.01	3782	0
tanespimycin	0.01	659	1	mecarbinate	0.00	2221	0	nastorazepide	-0.01	3783	0
mercaptopurine	0.01	660	1	NPC-01	0.00	2222	0	avobenzone	-0.01	3784	0
dexniguldipine	0.01	661	1	cinepazide	0.00	2223	0	mitiglinide	-0.01	3785	0
SB-203186	0.01	662	1	dihydrostreptomycin	0.00	2224	0	S-Sulfo-L-cysteine-sodium-salt	-0.01	3786	0
xaliproden	0.01	663	1	arecoline	0.00	2225	0	cefaclor	-0.01	3787	0
mibefradil	0.01	664	1	sulfacarbamide	0.00	2226	0	VX-765	-0.01	3788	0
elbasvir	0.01	665	1	camptothecin	0.00	2227	0	Ro-04-5595	-0.01	3789	0
SANT-2	0.01	666	1	troxerutin	0.00	2228	0	vernakalant	-0.01	3790	0
flufenamic-acid	0.01	667	1	sodium-butyrate	0.00	2229	0	isofloxythepin	-0.01	3791	0
Hydroxyl-progesterone	0.01	668	1	RSV604	0.00	2230	0	7-methoxytacrine	-0.01	3792	0

pranidipine	0.01	669	1	lisofylline	0.00	2231	0	pirenoxine	-0.01	3793	0
prednisolone-hemisuccinate	0.01	670	1	thiamet-g	0.00	2232	0	olmutinib	-0.01	3794	0
deptropine	0.01	671	1	hydroxyurea	0.00	2233	0	timonacic	-0.01	3795	0
NVP-BSK805	0.01	672	1	lirimilast	0.00	2234	0	fosphenytoin	-0.01	3796	0
avasimibe	0.01	673	1	apraclonidine	0.00	2235	0	2-ethyl-1,3-hexanediol	-0.01	3797	0
apabetalone	0.01	674	1	hemomex-s	0.00	2236	0	tyrphostin-AG-1478	-0.01	3798	0
oxybuprocaine	0.01	675	1	pevonedistat	0.00	2237	0	icaritin	-0.01	3799	0
SR-33805	0.01	676	1	CHF5074	0.00	2238	0	levo-phencynonate	-0.01	3800	0
NTNCB	0.01	677	1	acetohexamide	0.00	2239	0	irosustat	-0.01	3801	0
IPI-145	0.01	678	1	SR-59230A	0.00	2240	0	CPI-613	-0.01	3802	0
pentylenetetrazol	0.01	679	1	khellin	0.00	2241	0	adrenosterone	-0.01	3803	0
enasidenib	0.01	680	1	alcuronium	0.00	2242	0	paricalcitol	-0.01	3804	0
arglabin	0.01	681	1	pyronaridine	0.00	2243	0	tetramisole	-0.01	3805	0
Diethyl-carbamazine	0.01	682	1	yohimbine	0.00	2244	0	spiroxatrine	-0.01	3806	0
SU-11274	0.01	683	1	pyrazolanthrone	0.00	2245	0	dibenzepine	-0.01	3807	0
dacarbazine	0.01	684	1	ZD-7114	0.00	2246	0	eupatilin	-0.01	3808	0
flumethasone	0.01	685	1	SC-19220	0.00	2247	0	levosulpiride	-0.01	3809	0
10058-F4	0.01	686	1	solifenacin-succinate	0.00	2248	0	deferiprone	-0.01	3810	0
doxycycline	0.01	687	1	tramadol	0.00	2249	0	oxethazaine	-0.01	3811	0
gliclazide	0.01	688	1	PF-5274857	0.00	2250	0	bromhexine	-0.01	3812	0
betamethasone	0.01	689	1	LXR-623	0.00	2251	0	levetiracetam	-0.01	3813	0
alexidine	0.01	690	1	zotarolimus	0.00	2252	0	deoxycholic-acid	-0.01	3814	0
floctafenine	0.01	691	1	SN-6	0.00	2253	0	RX-821002	-0.01	3815	0
riluzole	0.01	692	1	LY2784544	0.00	2254	0	sulfacetamide	-0.01	3816	0
BAY-K-8644-(+/-)	0.01	693	1	ceftiofur	0.00	2255	0	methoxyamine	-0.01	3817	0
UB-165	0.01	694	1	strychnine	0.00	2256	0	Y-134	-0.01	3818	0
talmapimod	0.01	695	1	isoxepac	0.00	2257	0	kainic-acid	-0.01	3819	0
etodolac	0.01	696	1	pikamilone	0.00	2258	0	bimatoprost	-0.01	3820	0
AQ-RA741	0.01	697	1	etomidate	0.00	2259	0	metronidazole	-0.01	3821	0
sertindole	0.01	698	1	actarit	0.00	2260	0	QX-222	-0.01	3822	0
oritavancin	0.01	699	1	hydroxypropyl-beta-cyclodextrin	0.00	2261	0	rolziracetam	-0.01	3823	0
isoflurane	0.01	700	1	PD-173074	0.00	2262	0	cladribine	-0.01	3824	0
ocinaplon	0.01	701	1	gaboxadol	0.00	2263	0	clofarabine	-0.01	3825	0
SB-525334	0.01	702	1	piperaquine-phosphate	0.00	2264	0	imiquimod	-0.01	3826	0
amprenavir	0.01	703	1	4-iodo-L-phenylalanine	0.00	2265	0	naringin	-0.01	3827	0
bafetinib	0.01	704	1	2-TEDC	0.00	2266	0	safingol	-0.01	3828	0
thalidomide	0.01	705	1	etosalamide	0.00	2267	0	apixaban	-0.01	3829	0
tenovin-6	0.01	706	1	procainamide	0.00	2268	0	efavirenz	-0.01	3830	0
levodropropizine	0.01	707	1	methylatropine-nitrate	0.00	2269	0	nedocromil	-0.01	3831	0
droxinostat	0.01	708	1	physostigmine	0.00	2270	0	2-deoxyglucose	-0.01	3832	0
xenalipin	0.01	709	1	ivabradine	0.00	2271	0	secnidazole	-0.01	3833	0
butylphthalide	0.01	710	1	tempol	0.00	2272	0	PF-03084014	-0.01	3834	0
marbofloxacin	0.01	711	1	desoximetasone	0.00	2273	0	favipiravir	-0.01	3835	0
DAPT	0.01	712	1	citicoline	0.00	2274	0	I-BZA	-0.01	3836	0

mazindol	0.01	713	1	enprofylline	0.00	2275	0	sitagliptin	-0.01	3837	0
vorapaxar	0.01	714	1	cevimeline	0.00	2276	0	MM77	-0.01	3838	0
benurestat	0.01	715	1	bicuculline-methochloride-(-)	0.00	2277	0	CP-724714	-0.01	3839	0
cirazoline	0.01	716	1	ciproxifan	0.00	2278	0	lofexidine	-0.01	3840	0
BRL-15572	0.01	717	1	SQ-22536	0.00	2279	0	pentetic-acid	-0.01	3841	0
glutamine-(l)	0.01	718	1	betaine	0.00	2280	0	nizatidine	-0.01	3842	0
inosine	0.01	719	1	Ro-15-4513	0.00	2281	0	GSK2816126	-0.01	3843	0
3-alpha-Hydroxy-5-beta-androstan-17-one	0.01	720	1	oxolinic-acid	0.00	2282	0	hyodeoxycholic-acid	-0.01	3844	0
chlormadinone-acetate	0.01	721	1	sulmetozine	0.00	2283	0	diosmetin	-0.01	3845	0
AMG-337	0.01	722	1	vonoprazan	0.00	2284	0	PP242	-0.01	3846	0
daunorubicin	0.01	723	1	sodium-monofluorophosphate	0.00	2285	0	nifursol	-0.01	3847	0
chloramphenicol	0.01	724	1	apratastat	0.00	2286	0	rivaroxaban	-0.01	3848	0
D-4476	0.01	725	1	terodiline	0.00	2287	0	3-AQC	-0.01	3849	0
prolylleucylglycinamide	0.01	726	1	U-0124	0.00	2288	0	AZ-10417808	-0.01	3850	0
EHop-016	0.01	727	1	capecitabine	0.00	2289	0	AEE788	-0.01	3851	0
amodiaquine	0.01	728	1	prinaberel	0.00	2290	0	cinchophen	-0.01	3852	0
remoxipride	0.01	729	1	iniparib	0.00	2291	0	butylated-hydroxyanisole	-0.01	3853	0
drospirenone	0.01	730	1	dimethindene-(S)-(+)	0.00	2292	0	ibandronate	-0.01	3854	0
sulfanitran	0.01	731	1	methsuximide	0.00	2293	0	nomifensine	-0.01	3855	0
WAY-100635	0.01	732	1	bretazenil	0.00	2294	0	XE-991	-0.01	3856	0
pitavastatin	0.01	733	1	AZD2461	0.00	2295	0	ditiocarb-sodium-trihydrate	-0.01	3857	0
Ro-106-9920	0.01	734	1	N-methylquipazine	0.00	2296	0	omecamtiv-mecarbil	-0.01	3858	0
cinoxacin	0.01	735	1	NVP-TAE226	0.00	2297	0	sulfamethizole	-0.01	3859	0
givinostat	0.01	736	1	chlorphensin-carbamate	0.00	2298	0	DMH1	-0.01	3860	0
moroxydine	0.01	737	1	thiothixene	0.00	2299	0	VS-4718	-0.01	3861	0
haloprogin	0.01	738	1	nintedanib	0.00	2300	0	zopolrestat	-0.01	3862	0
telotristat-ethyl	0.01	739	1	riboflavin	0.00	2301	0	5-BDBD	-0.01	3863	0
todralazine	0.01	740	1	lenvatinib	0.00	2302	0	CL-225385	-0.01	3864	0
oleoylethanolamide	0.01	741	1	ethisterone	0.00	2303	0	danofloxacin	-0.01	3865	0
cefixime	0.01	742	1	anamorelin	0.00	2304	0	CHIR-99021	-0.01	3866	0
IB-MECA	0.01	743	1	GSK1838705A	0.00	2305	0	C646	-0.01	3867	0
TG100-115	0.01	744	1	amthamine	0.00	2306	0	imidapril	-0.01	3868	0
AG-14361	0.01	745	1	entrectinib	0.00	2307	0	kynurenic-acid	-0.01	3869	0
VX-702	0.01	746	1	AM-1241	0.00	2308	0	oxprenolol	-0.01	3870	0
tanaproget	0.01	747	1	RS-23597-190	0.00	2309	0	methimazole	-0.01	3871	0
solithromycin	0.01	748	1	talipexole	0.00	2310	0	temoporfin	-0.01	3872	0
rigosertib	0.01	749	1	AS-1949490	0.00	2311	0	laquinimod	-0.01	3873	0
cefepime	0.01	750	1	buflomedil	0.00	2312	0	AZD6765	-0.01	3874	0
pipamperone	0.01	751	1	cis-9,trans-11-Conjugated-linoleic-acid	0.00	2313	0	tiquizium	-0.01	3875	0
grazoprevir	0.01	752	1	MDL-73005EF	0.00	2314	0	pizotifen	-0.01	3876	0
betahistine	0.01	753	1	sulfadiazine	0.00	2315	0	ABT-724	-0.01	3877	0

PNU-74654	0.01	754	1	ethotoin	0.00	2316	0	schisandrin-b	-0.01	3878	0
taxifolin	0.01	755	1	abametapir	0.00	2317	0	GBR-12935	-0.01	3879	0
mifobate	0.01	756	1	fidaxomicin	0.00	2318	0	ulipristal	-0.01	3880	0
mirodenafil	0.01	757	1	ceftriaxone	0.00	2319	0	salvinorin-a	-0.01	3881	0
disulfiram	0.01	758	1	tosufloxacin	0.00	2320	0	zardaverine	-0.01	3882	0
piromidic-acid	0.01	759	1	EMD-66684	0.00	2321	0	CGP-57380	-0.01	3883	0
nefiracetam	0.01	760	1	tofisopam	0.00	2322	0	SC-9	-0.01	3884	0
teniposide	0.01	761	1	nilutamide	0.00	2323	0	tacrine	-0.01	3885	0
darusentan	0.01	762	1	eliprodil	0.00	2324	0	honokiol	-0.01	3886	0
cyclovalone	0.01	763	1	zilpaterol	0.00	2325	0	balicatib	-0.01	3887	0
GDC-0834	0.01	764	1	silibinin	0.00	2326	0	benztropine-mesylate	-0.01	3888	0
dydrogesterone	0.01	765	1	adoprazine	0.00	2327	0	thioctic-acid	-0.01	3889	0
escitalopram	0.01	766	1	LY255283	0.00	2328	0	calcium-gluceptate	-0.01	3890	0
nemorubicin	0.01	767	1	maxacalcitol	0.00	2329	0	nalbuphine	-0.01	3891	0
temsirolimus	0.01	768	1	AGN-194310	0.00	2330	0	mestranol	-0.01	3892	0
cefditoren-pivoxil	0.01	769	1	phenylacetylglutamine	0.00	2331	0	palosuran	-0.01	3893	0
efinaconazole	0.01	770	1	menadione-bisulfite	0.00	2332	0	salicylic-acid	-0.01	3894	0
mitomycin-c	0.01	771	1	tolcapone	0.00	2333	0	5-methylfurmethiodide	-0.01	3895	0
perifosine	0.01	772	1	8-bromo-cAMP	0.00	2334	0	selegiline	-0.01	3896	0
LY2608204	0.01	773	1	PRX-08066	0.00	2335	0	piroxicam	-0.01	3897	0
droxidopa	0.01	774	1	PMPA	0.00	2336	0	CI-976	-0.01	3898	0
chlorthalidone	0.01	775	1	sulfaguanidine	0.00	2337	0	guanidine	-0.01	3899	0
PHA-665752	0.01	776	1	TPPS4	0.00	2338	0	VP-20629	-0.01	3900	0
indatraline	0.01	777	1	telbivudine	0.00	2339	0	rufloxacin	-0.01	3901	0
L-670596	0.01	778	1	LTB4	0.00	2340	0	psoralen	-0.01	3902	0
mozavaptan	0.01	779	1	arsanilic-acid	0.00	2341	0	stavudine	-0.01	3903	0
TAS-103	0.01	780	1	uric-acid	0.00	2342	0	GDC-0879	-0.01	3904	0
PAC-1	0.01	781	1	chenodeoxycholic-acid	0.00	2343	0	5-methylhydantoin-(L)	-0.01	3905	0
brompheniramine	0.01	782	1	disopyramide	0.00	2344	0	cibenzoline	-0.01	3906	0
mestinon	0.01	783	1	SB-242235	0.00	2345	0	sumatriptan	-0.01	3907	0
acetylcholine	0.01	784	1	terbinafine	0.00	2346	0	netilmicin	-0.01	3908	0
mifepristone	0.01	785	1	sulmazole	0.00	2347	0	tioxolone	-0.01	3909	0
ramosetron	0.01	786	1	roxarsone	0.00	2348	0	cediranib	-0.01	3910	0
pruvanserin	0.01	787	1	bazedoxifene	0.00	2349	0	indapamide	-0.01	3911	0
PLX-4720	0.01	788	1	XBD173	0.00	2350	0	diethyltoluamide	-0.01	3912	0
idazoxan	0.01	789	1	molidustat	0.00	2351	0	carteolol	-0.01	3913	0
idelalisib	0.01	790	1	doxofylline	0.00	2352	0	bifendate	-0.01	3914	0
YM-58483	0.01	791	1	reserpine	0.00	2353	0	UNC669	-0.01	3915	0
reboxetine	0.01	792	1	AMN-082	0.00	2354	0	anidulafungin	-0.01	3916	0
dimethyl-fumarate	0.01	793	1	dimesna	0.00	2355	0	evans-blue	-0.01	3917	0
prednisolone-acetate	0.01	794	1	erdosteine	0.00	2356	0	fenoverine	-0.01	3918	0
pimecrolimus	0.01	795	1	streptozotocin	0.00	2357	0	gatifloxacin	-0.01	3919	0
spaglumic-acid	0.01	796	1	clobazam	0.00	2358	0	mesna	-0.01	3920	0
paliperidone	0.01	797	1	raltitrexed	0.00	2359	0	navitoclax	-0.01	3921	0
LB42708	0.01	798	1	formestane	0.00	2360	0	sarpogrelate	-0.01	3922	0

LY2334737	0.01	799	1	3-(4-methylbenzylidene)camphor	0.00	2361	0	AM-281	-0.01	3923	0
VE-822	0.01	800	1	carbenoxolone	0.00	2362	0	N-MPPP	-0.01	3924	0
L-165041	0.01	801	1	VCH-916	0.00	2363	0	benzbromarone	-0.01	3925	0
altretamine	0.01	802	1	sivelestat	0.00	2364	0	candesartan	-0.01	3926	0
orbifloxacin	0.01	803	1	tyrphostin-AG-18	0.00	2365	0	4-chlorophenylguanidine	-0.01	3927	0
mavoglurant	0.01	804	1	methylnaltrexone	0.00	2366	0	adenosine-triphosphate	-0.01	3928	0
altrenogest	0.01	805	1	nicergoline	0.00	2367	0	enilconazole	-0.01	3929	0
fagomine	0.01	806	1	MK-0354	0.00	2368	0	NM107	-0.01	3930	0
2-oxoglutaric-acid	0.01	807	1	fluoxetine	0.00	2369	0	mofezolac	-0.01	3931	0
PRT062607	0.01	808	1	S18986	0.00	2370	0	sulfadoxine	-0.01	3932	0
NNC-05-2090	0.01	809	1	degarelix	0.00	2371	0	GTS21	-0.01	3933	0
diclazuril	0.01	810	1	edoxudine	0.00	2372	0	apalutamide	-0.01	3934	0
lanatoside-c	0.01	811	1	SQ-109	0.00	2373	0	oxonic-acid	-0.01	3935	0
tivozanib	0.01	812	1	primaquine	0.00	2374	0	KRN-633	-0.01	3936	0
erythromycin	0.01	813	1	althiazide	0.00	2375	0	M-14157	-0.01	3937	0
rheochrysidin	0.01	814	1	GGTI-298	0.00	2376	0	usniacin-(+)	-0.01	3938	0
ACDPP	0.01	815	1	rolipram-R(-)	0.00	2377	0	RS-67506	-0.01	3939	0
nifuroxazide	0.01	816	1	swainsonine	0.00	2378	0	colforsin	-0.01	3940	0
AZD1208	0.01	817	1	troleandomycin	0.00	2379	0	PNU-22394	-0.01	3941	0
PF-05212384	0.01	818	1	phenylephrine	0.00	2380	0	pantoprazole	-0.01	3942	0
toloxatone	0.01	819	1	VU0357121	0.00	2381	0	cephapirin	-0.01	3943	0
MGCD-265	0.01	820	1	troglitazone	0.00	2382	0	castanospermine	-0.01	3944	0
kifunensine	0.01	821	1	methocarbamol	0.00	2383	0	pramoxine	-0.01	3945	0
cyclocytidine	0.01	822	1	IOWH032	0.00	2384	0	diphencyprone	-0.01	3946	0
aliskiren-hemifumarate	0.01	823	1	fluocinonide	0.00	2385	0	NPPB	-0.01	3947	0
flavoxate	0.01	824	1	RS-102221	0.00	2386	0	pyridoxamine	-0.01	3948	0
losmapimod	0.01	825	1	pivmecillinam	0.00	2387	0	mitoxantrone	-0.01	3949	0
ergonovine	0.01	826	1	nicotine	0.00	2388	0	clorprenaline	-0.01	3950	0
metrizamide	0.01	827	1	ursodeoxycholyltaurine	0.00	2389	0	targinine	-0.01	3951	0
trimebutine	0.01	828	1	bambuterol	0.00	2390	0	bendazac	-0.01	3952	0
chloramphenicol-palmitate	0.01	829	1	talampanel	0.00	2391	0	Ro-28-1675	-0.01	3953	0
golvatinib	0.01	830	1	anacetrapib	0.00	2392	0	drotaverine	-0.01	3954	0
afalanine	0.01	831	1	hydrastinine	0.00	2393	0	procodazole	-0.01	3955	0
trimethoquinol	0.01	832	1	amylene-hydrate	0.00	2394	0	acetylcysteine	-0.01	3956	0
rotigotine	0.01	833	1	cefoselis	0.00	2395	0	L-745870	-0.01	3957	0
SGC-0946	0.01	834	1	desoxycorticosterone-pivalate	0.00	2396	0	tozadenant	-0.01	3958	0
exifone	0.01	835	1	aminosalicylate	0.00	2397	0	captopril	-0.01	3959	0
C646	0.01	836	1	ETP-46464	0.00	2398	0	secalciferol	-0.01	3960	0
SB-222200	0.01	837	1	mebhydrolin	0.00	2399	0	AZD7762	-0.01	3961	0
SRT1720	0.01	838	1	traxoprodil	0.00	2400	0	CCT018159	-0.01	3962	0
loxapine	0.01	839	1	3,3'-dichlorobenzaldazine	0.00	2401	0	sulfametopyrazine	-0.01	3963	0
misoprostol	0.01	840	1	octinoxate	0.00	2402	0	U-0126	-0.01	3964	0

N6-cyclopentyladenosine	0.01	841	1	nithiamide	0.00	2403	0	eluxadoline	-0.01	3965	0
tecovirimat	0.01	842	1	pleconaril	0.00	2404	0	PSI-6130	-0.01	3966	0
arbidol	0.01	843	1	aminosalicylate	0.00	2405	0	SB-200646	-0.01	3967	0
butamben	0.01	844	1	norelgestromin	0.00	2406	0	ABT-491	-0.01	3968	0
CITCO	0.01	845	1	rimantadine	0.00	2407	0	clarithromycin	-0.01	3969	0
linezolid	0.01	846	1	tetracycline	0.00	2408	0	ospemifene	-0.01	3970	0
brivudine	0.01	847	1	azelastine	0.00	2409	0	5-iodo-A-85380	-0.01	3971	0
piricapiron	0.01	848	1	dihydrotestosterone	0.00	2410	0	CTS21166	-0.01	3972	0
chlorprothixene	0.01	849	1	indoprofen	0.00	2411	0	sulbactam	-0.01	3973	0
rimonabant	0.01	850	1	erythrosine	0.00	2412	0	alogliptin	-0.01	3974	0
GSK-J4	0.01	851	1	sulforaphane	0.00	2413	0	SMI-4a	-0.01	3975	0
balofloxacin	0.01	852	1	adarotene	0.00	2414	0	pirfenidone	-0.01	3976	0
homatropine-methylbromide	0.01	853	1	sulfamonomethoxine	0.00	2415	0	protionamide	-0.01	3977	0
penbutolol	0.01	854	1	dibutyl-phthalate	0.00	2416	0	YO-01027	-0.01	3978	0
afatinib	0.01	855	1	cutamesine	0.00	2417	0	mizoribine	-0.01	3979	0
anecortave-acetate	0.01	856	1	org-26576	0.00	2418	0	adiphenine	-0.01	3980	0
PNU-142633	0.01	857	1	hesperidin	0.00	2419	0	nandrolone	-0.01	3981	0
lofemizole	0.01	858	1	naltriben	0.00	2420	0	ropivacaine	-0.01	3982	0
BIBN4096	0.01	859	1	tinidazole	0.00	2421	0	ID-8	-0.01	3983	0
terfenadine	0.01	860	1	chromanol-293B-(-)-[3R,4S]	0.00	2422	0	phenylbutyrate	-0.01	3984	0
cyclizine	0.01	861	1	NCS-382	0.00	2423	0	WAY-213613	-0.01	3985	0
ticlopidine	0.01	862	1	spiperone	0.00	2424	0	semaxanib	-0.01	3986	0
PD-98059	0.01	863	1	fomepizole	0.00	2425	0	AM-24	-0.01	3987	0
IDO5L	0.01	864	1	lisinopril	0.00	2426	0	frentizole	-0.01	3988	0
warfarin	0.01	865	1	lisinopril	0.00	2427	0	meticrane	-0.01	3989	0
NSI-189	0.01	866	1	betrixaban	0.00	2428	0	clioquinol	-0.01	3990	0
methylergometrine	0.01	867	1	A740003	0.00	2429	0	regadenoson	-0.01	3991	0
iodoquinol	0.01	868	1	exemestane	0.00	2430	0	Ro-08-2750	-0.01	3992	0
morniflumate	0.01	869	1	fidarestat	0.00	2431	0	ganaxolone	-0.01	3993	0
ibrolipim	0.01	870	1	APD668	0.00	2432	0	lafutidine	-0.01	3994	0
CF102	0.01	871	1	cefpiramide	0.00	2433	0	HEMADO	-0.01	3995	0
desmopressin-acetate	0.01	872	1	levomequitazine	0.00	2434	0	cefuroxime	-0.01	3996	0
naringin-dihydrochalcone	0.01	873	1	CV-1808	0.00	2435	0	K02288	-0.01	3997	0
balaglitazone	0.01	874	1	molsidomine	0.00	2436	0	ABT-702	-0.01	3998	0
amfepramone	0.01	875	1	relebactam	0.00	2437	0	ioxilan	-0.01	3999	0
sulbentine	0.01	876	1	dideoxyadenosine	0.00	2438	0	U-50488-(-)	-0.01	4000	0
quinidine	0.01	877	1	bupropion	0.00	2439	0	baricitinib	-0.01	4001	0
ecamsule-triethanolamine	0.01	878	1	morin	0.00	2440	0	tapentadol	-0.01	4002	0
olmesartan-medoxomil	0.01	879	1	sphingosylphosphorylcholine	0.00	2441	0	labetalol	-0.01	4003	0
mebicar	0.01	880	1	zometapine	0.00	2442	0	tropisetron	-0.01	4004	0
ravuconazole	0.01	881	1	testosterone-propionate	0.00	2443	0	nimodipine	-0.01	4005	0
dacomitinib	0.01	882	1	cetirizine	0.00	2444	0	azodicarbonamide	-0.01	4006	0
idoxuridine	0.01	883	1	cintriamide	0.00	2445	0	indoximod	-0.01	4007	0

GW-9508	0.01	884	1	carazolol	0.00	2446	0	terazosin	-0.01	4008	0
NKP-1339	0.01	885	1	tranilast	0.00	2447	0	dofetilide	-0.01	4009	0
tetrindole	0.01	886	1	GSK2190915	0.00	2448	0	synephrine	-0.01	4010	0
CTEP	0.01	887	1	SANT-1	0.00	2449	0	sacubitril	-0.01	4011	0
IWP-L6	0.01	888	1	cridanimod	0.00	2450	0	UNC1215	-0.01	4012	0
WZ-4002	0.01	889	1	DMNB	0.00	2451	0	CGP-12177	-0.01	4013	0
hexaminolevulinate	0.01	890	1	L-Citrulline	0.00	2452	0	rostafuroxine	-0.01	4014	0
darglitazone	0.01	891	1	BW-373U86	0.00	2453	0	pyrithyldione	-0.01	4015	0
ORE1001	0.01	892	1	armodafinil	0.00	2454	0	trioxsalen	-0.01	4016	0
medorinone	0.01	893	1	PYM50028	0.00	2455	0	calcitriol	-0.01	4017	0
OMDM-2	0.01	894	1	tyloxapol	0.00	2456	0	flumequine	-0.01	4018	0
ilomastat	0.01	895	1	biotin	0.00	2457	0	dalfampridine	-0.01	4019	0
GZD824	0.01	896	1	benzthiazide	0.00	2458	0	ajmaline	-0.01	4020	0
tyrphostin-AG-835	0.01	897	1	diacerein	0.00	2459	0	varenicline	-0.01	4021	0
etacrynic-acid	0.01	898	1	MD-920	0.00	2460	0	dasabuvir	-0.01	4022	0
semapimod	0.01	899	1	deoxycorticosterone-acetate	0.00	2461	0	1-naphthyl-PP1	-0.01	4023	0
oridonin	0.01	900	1	cefoperazone	0.00	2462	0	prenylamine	-0.01	4024	0
digitoxigenin	0.01	901	1	ZLN005	0.00	2463	0	homosalate	-0.01	4025	0
cardiogenol-c	0.01	902	1	caroverine	0.00	2464	0	salicyl-alcohol	-0.01	4026	0
deforolimus	0.01	903	1	neratinib	0.00	2465	0	faropenem	-0.01	4027	0
LY2874455	0.01	904	1	sclareolide	0.00	2466	0	benzylpenicillin	-0.01	4028	0
CNX-774	0.01	905	1	vismodegib	0.00	2467	0	ecabapide	-0.01	4029	0
cefpirome	0.01	906	1	filgotinib	0.00	2468	0	imexon	-0.01	4030	0
fluoromethylcholine	0.01	907	1	zomepirac	0.00	2469	0	levobunolol-(+)	-0.01	4031	0
caramiphen	0.01	908	1	otamixaban	0.00	2470	0	quipazine	-0.01	4032	0
zimelidine	0.01	909	potential	mesulergine	0.00	2471	0	L-Quisqualic-acid	-0.01	4033	0
CFM-2	0.01	910	potential	chloroprocaine	0.00	2472	0	BD-1008	-0.01	4034	0
cathepsin-inhibitor-1	0.01	911	potential	abacavir	0.00	2473	0	RS-45041-190	-0.01	4035	0
BIX-01294	0.01	912	potential	linsidomine	0.00	2474	0	MK-0812	-0.01	4036	0
leteprinim	0.01	913	potential	vinpocetine	0.00	2475	0	foscarnet	-0.01	4037	0
diosgenin	0.01	914	potential	arcyriaflavin-a	0.00	2476	0	calcium-levofolinate	-0.01	4038	0
tolperisone	0.01	915	potential	BMS-191011	0.00	2477	0	RS-67333	-0.01	4039	0
NU-7441	0.01	916	potential	nepafenac	0.00	2478	0	CDK1-5-inhibitor	-0.01	4040	0
etonogestrel	0.01	917	potential	ursodiol	0.00	2479	0	chlorazanil	-0.01	4041	0
magnolol	0.01	918	potential	6-benzylaminopurine	0.00	2480	0	EIT-hydrobromide	-0.01	4042	0
vidarabine	0.01	919	potential	SM-21	0.00	2481	0	MM-102	-0.01	4043	0
talc	0.01	920	potential	pirinixic-acid	0.00	2482	0	istaroxime	-0.01	4044	0
piperazine	0.01	921	potential	simvastatin	0.00	2483	0	clenbuterol	-0.01	4045	0
gemcadiol	0.01	922	potential	eplerenone	0.00	2484	0	delapril	-0.01	4046	0
homatropine	0.01	923	potential	sibutramine	0.00	2485	0	norethisterone-enanthate	-0.01	4047	0

SB-203580	0.01	924	potential	2'-MeCCPA	0.00	2486	0	H-89	-0.01	4048	0
dihydroergocristine	0.01	925	potential	N-salicoylaminophenol	0.00	2487	0	ICI-215,001	-0.01	4049	0
rifampin	0.01	926	potential	etazolate	0.00	2488	0	midafotel	-0.01	4050	0
tranilast	0.01	927	potential	enalapril	0.00	2489	0	isoconazole	-0.01	4051	0
ZM-336372	0.01	928	potential	Ro-60-0175	0.00	2490	0	chlorothiazide	-0.01	4052	0
cefditoren-pivoxil	0.01	929	potential	bruceantin	0.00	2491	0	marbofloxacin	-0.01	4053	0
seocalcitol	0.01	930	potential	clorotepine	0.00	2492	0	lestaurtinib	-0.01	4054	0
doramectin	0.01	931	potential	GW-788388	0.00	2493	0	aminomethyltransferase	-0.01	4055	0
ataluren	0.01	932	potential	azatadine	0.00	2494	0	rebamipide	-0.01	4056	0
isobutyramide	0.01	933	potential	pentagastrin	0.00	2495	0	tetrahydrouridine	-0.01	4057	0
domperidone	0.01	934	potential	deoxyepinephrine	0.00	2496	0	WAY-362450	-0.01	4058	0
choline	0.01	935	potential	ipragliflozin-l-proline	0.00	2497	0	chlorpromazine	-0.01	4059	0
mupirocin	0.01	936	potential	nelarabine	0.00	2498	0	meglumine	-0.01	4060	0
besifloxacin	0.01	937	potential	2-BFI	0.00	2499	0	nepicastat	-0.01	4061	0
indirubin-3-monoxime	0.01	938	potential	moexipril	0.00	2500	0	N-acetyl-D-glucosamine	-0.01	4062	0
A61603	0.01	939	potential	3-methyladenine	0.00	2501	0	IEM1754	-0.01	4063	0
2-hydroxyethyl-salicylate	0.01	940	potential	aminopurvalanol-a	0.00	2502	0	obidoxime	-0.01	4064	0
riboflavin	0.01	941	potential	chlorobutanol	0.00	2503	0	timofibrate	-0.01	4065	0
GSK2636771	0.01	942	potential	LY344864	0.00	2504	0	fluconazole	-0.01	4066	0
UNC0642	0.01	943	potential	PF-4708671	0.00	2505	0	TGX-221	-0.01	4067	0
rilpivirine	0.01	944	potential	bufexamac	0.00	2506	0	procaterol	-0.01	4068	0
SYM-2206	0.01	945	potential	cresopirine	0.00	2507	0	TTNPB	-0.01	4069	0
NVP-AEW541	0.01	946	potential	levodopa	0.00	2508	0	FPL-64176	-0.01	4070	0
fluticasone-propionate	0.01	947	potential	pancuronium	0.00	2509	0	salazodine	-0.01	4071	0
JNJ-26481585	0.01	948	potential	diclofensine	0.00	2510	0	niketharnide	-0.01	4072	0
SB-408124	0.01	949	potential	tropanyl-3,5-dimethylbenzoate	0.00	2511	0	norfloxacin	-0.01	4073	0
aprindine	0.01	950	potential	SIB-1553A	0.00	2512	0	erythritol	-0.01	4074	0
trometamol	0.01	951	potential	perindopril	0.00	2513	0	telcagepant	-0.01	4075	0
minoxidil	0.01	952	potential	betazole	0.00	2514	0	sevoflurane	-0.01	4076	0
GP1a	0.01	953	potential	puerarin	0.00	2515	0	octocrylene	-0.01	4077	0
cyt387	0.01	954	potential	nitenpyram	0.00	2516	0	TAK-285	-0.01	4078	0
ursolic-acid	0.01	955	potential	4-IBP	0.00	2517	0	docosanol	-0.01	4079	0
PF-03758309	0.01	956	potential	efaproxiral	0.00	2518	0	tyloxapol	-0.01	4080	0
PA-824	0.01	957	potential	benazepril	0.00	2519	0	atrasentan	-0.01	4081	0

tegobuvir	0.01	958	potential	opipramol	0.00	2520	0	dimetridazole	-0.01	4082	0
2-CMDO	0.01	959	potential	triamcinolone	0.00	2521	0	clomethiazole	-0.01	4083	0
nemonapride	0.01	960	potential	merbarone	0.00	2522	0	amoxicillin	-0.01	4084	0
trospium	0.01	961	potential	bucladesine	0.00	2523	0	carglumic-acid	-0.01	4085	0
oncrasin-1	0.01	962	potential	guaifenesin	0.00	2524	0	ambenonium	-0.01	4086	0
PRT062607	0.01	963	potential	ufenamate	0.00	2525	0	etoricoxib	-0.01	4087	0
zatebradine	0.01	964	potential	debrisoquin	0.00	2526	0	vanitiolide	-0.01	4088	0
desonide	0.01	965	potential	tempol	0.00	2527	0	idasanutlin	-0.01	4089	0
alcaftadine	0.01	966	potential	CNX-2006	0.00	2528	0	luliconazole	-0.01	4090	0
monobenzone	0.01	967	potential	RU-28318	0.00	2529	0	prasterone-acetate	-0.01	4091	0
rimexolone	0.01	968	potential	ceramide	0.00	2530	0	daptomycin	-0.01	4092	0
famprofazone	0.01	969	potential	AJ76-(+)	0.00	2531	0	kakonein	-0.01	4093	0
olanzapine	0.01	970	potential	ATPA	0.00	2532	0	L-732,138	-0.01	4094	0
dextrose	0.01	971	potential	L-733060	0.00	2533	0	AH6809	-0.01	4095	0
piretanide	0.01	972	potential	loxistatin-acid	0.00	2534	0	methoxyflurane	-0.01	4096	0
tofogliflozin	0.01	973	potential	cyclophosphamide	0.00	2535	0	spironolactone	-0.01	4097	0
BMS-649	0.01	974	potential	etafenone	0.00	2536	0	hydroxyurea	-0.01	4098	0
benzoic-acid	0.01	975	potential	ML133	0.00	2537	0	ibrutinib	-0.01	4099	0
theobromine	0.01	976	potential	XAV-939	0.00	2538	0	GR-79236	-0.01	4100	0
FG-2216	0.01	977	potential	BCI-540	0.00	2539	0	SX-011	-0.01	4101	0
phenformin	0.01	978	potential	benzamil	0.00	2540	0	cinaciguat	-0.01	4102	0
GSK461364	0.01	979	potential	tolnaftate	0.00	2541	0	PNU-120596	-0.01	4103	0
L-693403	0.01	980	potential	thiophanate	0.00	2542	0	thiram	-0.01	4104	0
artemisinin	0.01	981	potential	gramine	0.00	2543	0	oxacillin	-0.01	4105	0
KU-55933	0.01	982	potential	dyclonine	0.00	2544	0	myricitrin	-0.01	4106	0
ornidazole	0.01	983	potential	avibactam	0.00	2545	0	aloe-emodin	-0.01	4107	0
tideglusib	0.01	984	potential	phenserine	0.00	2546	0	valganciclovir	-0.01	4108	0
bevirimat-dimeglumine	0.01	985	potential	ZK-93426	0.00	2547	0	quinagolide	-0.01	4109	0
dianhydrogalactitol	0.01	986	potential	inimur	0.00	2548	0	10-DEBC	-0.01	4110	0
imidafenacin	0.01	987	potential	pipotiazine-palmitate	0.00	2549	0	rhein	-0.01	4111	0
decitabine	0.01	988	potential	ulifloxacin	0.00	2550	0	clorgiline	-0.01	4112	0
6,_7-dehydro-17-acetoxy-progesterone	0.01	989	potential	tropicamide	0.00	2551	0	pentostatin	-0.01	4113	0
dehydroacetic-acid	0.01	990	potential	palomid-529	0.00	2552	0	tranexamic-acid	-0.01	4114	0
dizocilpine-(+)	0.01	991	potential	mannitol-D	0.00	2553	0	CEP-37440	-0.01	4115	0

nalfurafine	0.01	992	potential	lidamidine	0.00	2554	0	m-Chlorophenylbiguanide	-0.01	4116	0
GDC-0879	0.01	993	potential	fludarabine-phosphate	0.00	2555	0	beta-amyloid-synthesis-inhibitor	-0.01	4117	0
epicatechin-gallate-(-)	0.01	994	potential	cinoxate	0.00	2556	0	etidronic-acid	-0.01	4118	0
oleuropein	0.01	995	potential	modaline	0.00	2557	0	tedizolid-phosphate	-0.01	4119	0
eprobemide	0.01	996	potential	aminoglutethimide	0.00	2558	0	fenthion	-0.01	4120	0
roscovitine	0.01	997	potential	5-Amino-3-D-ribofuranosylthiazolo[4,5-d]pyrimidin-2,7(3H,6H)-dione	0.00	2559	0	YS-035	-0.01	4121	0
fludrocortisone-acetate	0.01	998	potential	pantethine	0.00	2560	0	3-amino-benzamide	-0.01	4122	0
pacritinib	0.01	999	potential	ibuprofen-(s)	0.00	2561	0	JTC-801	-0.01	4123	0
R-59022	0.01	1000	potential	halobetasol-propionate	0.00	2562	0	sulfanilamide	-0.01	4124	0
E-2012	0.01	1001	potential	SDZ-205-557	0.00	2563	0	aminolevulinic-acid-benzyl-ester	-0.01	4125	0
primidone	0.01	1002	potential	7-hydroxy-DPAT	0.00	2564	0	7-nitroindazole	-0.01	4126	0
rimcazole	0.01	1003	potential	trichlormethiazide	0.00	2565	0	2-chloro-N6-cyclopentyladenosine	-0.01	4127	0
metacetamol	0.01	1004	potential	benperidol	0.00	2566	0	pinocembrin	-0.01	4128	0
RWJ-21757	0.01	1005	potential	TAK-632	0.00	2567	0	FGIN-1-43	-0.01	4129	0
deflazacort	0.01	1006	potential	deserpidine	0.00	2568	0	mefenamic-acid	-0.01	4130	0
AM-630	0.01	1007	potential	SB-269970	0.00	2569	0	GABA-linoleamide	-0.01	4131	0
gallamine-triethiodide	0.01	1008	potential	alrestatin	0.00	2570	0	TRV130	-0.01	4132	0
tubastatin-a	0.01	1009	potential	4-methylhistamine	0.00	2571	0	tirasemtiv	-0.01	4133	0
CC-401	0.01	1010	potential	ciprofibrate	0.00	2572	0	LY2109761	-0.01	4134	0
apricitabine	0.01	1011	potential	L-(+)-Rhamnose-Monohydrate	0.00	2573	0	risperidone	-0.01	4135	0
AZD7687	0.01	1012	potential	tetraethylenepentamine	0.00	2574	0	paroxetine	-0.01	4136	0
plurisin-#1	0.01	1013	potential	indiplon	0.00	2575	0	AMG-837	-0.01	4137	0
lorlatinib	0.01	1014	potential	xylazine	0.00	2576	0	ibutilide	-0.01	4138	0
CT-7758	0.01	1015	potential	fluocinolone-acetonide	0.00	2577	0	valsartan	-0.01	4139	0
gadodiamide	0.01	1016	potential	tempol	0.00	2578	0	isamoltane	-0.01	4140	0
amcinonide	0.01	1017	potential	acipimox	0.00	2579	0	atglistatin	-0.01	4141	0
isoliquiritigenin	0.01	1018	potential	bismuth-oxalate	0.00	2580	0	pralidoxime-chloride	-0.01	4142	0
dabrafenib	0.01	1019	potential	ceritinib	0.00	2581	0	glasdegib	-0.01	4143	0
sitafloxacin	0.01	1020	potential	SLV-320	0.00	2582	0	niacin	-0.01	4144	0
gidazepam	0.01	1021	potential	ostarine	0.00	2583	0	phenytoin	-0.01	4145	0
PQ-401	0.01	1022	potential	AZD1981	0.00	2584	0	heptaminol	-0.01	4146	0
4-PPBP	0.01	1023	potential	fexofenadine	0.00	2585	0	nebracetam	-0.01	4147	0
A-769662	0.01	1024	potential	GSK2330672	0.00	2586	0	sorbic-acid	-0.01	4148	0

ADL5859	0.01	1025	potential	aminopentamide	0.00	2587	0	taprenepag	-0.01	4149	0
mecamylamine	0.01	1026	potential	milrinone	0.00	2588	0	urapidil	-0.01	4150	0
perhexiline	0.01	1027	potential	meptazinol	0.00	2589	0	trimetozine	-0.01	4151	0
1-EBIO	0.01	1028	potential	benzoylpas	0.00	2590	0	moxifloxacin	-0.01	4152	0
daltroban	0.01	1029	potential	T-0156	0.00	2591	0	merbromin	-0.01	4153	0
haloperidol-decanoate	0.01	1030	potential	camostat-mesilate	0.00	2592	0	emodin	-0.01	4154	0
isoquinoline,-6,7-dimethoxy-1-methyl-1,2,3,4-tetrahydro,	0.01	1031	potential	tocainide	0.00	2593	0	chlorproguanil	-0.01	4155	0
niceritrol	0.01	1032	potential	ibudilast	0.00	2594	0	pyrazinoylguanidine	-0.01	4156	0
fenoprofen	0.01	1033	potential	MRS1845	0.00	2595	0	anabasine	-0.01	4157	0
ivermectin	0.01	1034	potential	tiagabine	0.00	2596	0	chicago-sky-blue-6b	-0.01	4158	0
fenobam	0.01	1035	potential	malotilate	0.00	2597	0	nabumetone	-0.01	4159	0
veliflapon	0.01	1036	potential	tasimelteon	0.00	2598	0	mdivi-1	-0.01	4160	0
GS-9620	0.01	1037	potential	befuraline	0.00	2599	0	marimastat	-0.01	4161	0
torin-2	0.01	1038	potential	eglumetad	0.00	2600	0	LY225910	-0.01	4162	0
nevirapine	0.01	1039	potential	SR-95639A	0.00	2601	0	metazosin	-0.01	4163	0
hydrocortisone-acetate	0.01	1040	potential	cefadroxil	0.00	2602	0	ponesimod	-0.01	4164	0
glycerol-monolaurate	0.01	1041	potential	JNJ-16259685	0.00	2603	0	quercetin	-0.01	4165	0
diaveridine	0.01	1042	potential	palovarotene	0.00	2604	0	flecainide	-0.01	4166	0
val	0.01	1043	potential	setiptiline	0.00	2605	0	XL-647	-0.01	4167	0
cyclovirobuxin-d	0.01	1044	potential	L-NIL	0.00	2606	0	AKBA	-0.01	4168	0
CEP-32496	0.01	1045	potential	atenolol-(-)	0.00	2607	0	pozanicline	-0.01	4169	0
chloralose	0.01	1046	potential	3-bromopyruvate	0.00	2608	0	zonisamide	-0.01	4170	0
gamma-aminobutyric-acid	0.01	1047	potential	enzastaurin	0.00	2609	0	cianidanol	-0.01	4171	0
7-aminocephalosporanic-acid	0.01	1048	potential	R-96544	0.00	2610	0	indomethacin	-0.01	4172	0
amibegron	0.01	1049	potential	XL388	0.00	2611	0	piperine	-0.01	4173	0
CH5132799	0.01	1050	potential	VTP-27999	0.00	2612	0	diclofenamide	-0.01	4174	0
leflunomide	0.01	1051	potential	G-15	0.00	2613	0	flopropione	-0.01	4175	0
BML-190	0.01	1052	potential	nifenalol	0.00	2614	0	levomepromazine	-0.01	4176	0
doxapram	0.01	1053	potential	fenspiride	0.00	2615	0	ADD-233089	-0.01	4177	0
amoxapine	0.01	1054	potential	Y-39983	0.00	2616	0	N-methyllidocaine-iodide	-0.01	4178	0
FERb-033	0.01	1055	potential	norfloxacin	0.00	2617	0	pimavanserin	-0.01	4179	0
lubiprostone	0.01	1056	potential	buthionine-sulfoximine	0.00	2618	0	levobunolol-(+/-)	-0.01	4180	0
9-aminoacridine	0.01	1057	potential	salubrinal	0.00	2619	0	GR-144053	-0.01	4181	0

CPI-1189	0.01	1058	potential	vincamine	0.00	2620	0	phenindione	-0.01	4182	0
pipenzolate	0.01	1059	potential	epoprostenol	0.00	2621	0	allantoin	-0.01	4183	0
phensuximide	0.01	1060	potential	guanaben-acetate	0.00	2622	0	proxodolol	-0.01	4184	0
fadrozole	0.01	1061	potential	ZK-164015	0.00	2623	0	oxaprozin	-0.01	4185	0
atomoxetine	0.01	1062	potential	alverine	0.00	2624	0	loxoprofen	-0.01	4186	0
BU226	0.01	1063	potential	fenoterol	0.00	2625	0	YM-976	-0.01	4187	0
3-CPMT	0.01	1064	potential	enisamium-iodide	0.00	2626	0	JNJ-17203212	-0.01	4188	0
RS-56812	0.01	1065	potential	O-1918	0.00	2627	0	talnetant	-0.01	4189	0
org-27569	0.01	1066	potential	ramipril	0.00	2628	0	telmesteine	-0.01	4190	0
tiratricol	0.01	1067	potential	1-acetyl-4-methylpiperazine	0.00	2629	0	acetyl-l-leucine	-0.01	4191	0
isopropyl-palmitate	0.01	1068	potential	clopidol	0.00	2630	0	LY2886721	-0.01	4192	0
D-Serine	0.01	1069	potential	benzoquinonium-dibromide	0.00	2631	0	CGP-13501	-0.01	4193	0
bithionol	0.01	1070	potential	GSK-3-inhibitor-IX	0.00	2632	0	U-0521	-0.01	4194	0
ezetimibe	0.01	1071	potential	levalbuterol	0.00	2633	0	norethindrone-acetate	-0.01	4195	0
EO-1428	0.01	1072	potential	PD-102807	0.00	2634	0	trimetazidine	-0.01	4196	0
desloratadine	0.01	1073	potential	BF2.649	0.00	2635	0	agmatine	-0.01	4197	0
maropitant	0.01	1074	potential	MK-2295	0.00	2636	0	NNC-711	-0.01	4198	0
silodosin	0.01	1075	potential	pheniramine	0.00	2637	0	eplerenone	-0.01	4199	0
isradipine	0.01	1076	potential	ML347	0.00	2638	0	ioxaglic-acid	-0.01	4200	0
miltefosine	0.01	1077	potential	SRT2104	0.00	2639	0	naltrexone	-0.01	4201	0
U-50488-(-)	0.01	1078	potential	ilomastat	0.00	2640	0	rucaparib	-0.01	4202	0
ezetimibe	0.01	1079	potential	metaproterenol	0.00	2641	0	azelaic-acid	-0.01	4203	0
alpha-methylhistamine-dihydrobromide-(S)-(+)	0.01	1080	potential	AEG3482	0.00	2642	0	landiolol	-0.01	4204	0
narlaprevir	0.01	1081	potential	tianeptine	0.00	2643	0	theophylline	-0.01	4205	0
ibuprofen-piconol	0.01	1082	potential	vinburnine	0.00	2644	0	aminohydroxybutyric-acid	-0.01	4206	0
ambroxol	0.01	1083	potential	AC-264613	0.00	2645	0	posaconazole	-0.01	4207	0
dienestrol	0.01	1084	potential	DMeOB	0.00	2646	0	mefexamide	-0.01	4208	0
NSC-4644	0.01	1085	potential	bergapten	0.00	2647	0	atovaquone	-0.01	4209	0
bosutinib	0.01	1086	potential	o-3M3FBS	0.00	2648	0	ML-9	-0.01	4210	0
ercalcitriol	0.01	1087	potential	somatostatin	0.00	2649	0	methylthiouracil	-0.01	4211	0
cycloheximide	0.01	1088	potential	miglitol	0.00	2650	0	KY02111	-0.01	4212	0
monoctanoin	0.01	1089	potential	DMP-777	0.00	2651	0	lovastatin	-0.01	4213	0
testosterone	0.01	1090	potential	thiodiglycol	0.00	2652	0	dazmegrel	-0.01	4214	0
MK-5108	0.01	1091	potential	4-methylgenistein	0.00	2653	0	saquinavir	-0.01	4215	0

MTPG	0.01	1092	potential	tenatoprazole	0.00	2654	0	ebselen	-0.01	4216	0
methoxsalen	0.01	1093	potential	halofuginone	0.00	2655	0	vesamicol	-0.01	4217	0
purmorphamine	0.01	1094	potential	carfilzomib	0.00	2656	0	ciglitazone	-0.01	4218	0
duloxetine	0.01	1095	potential	torcitabine	0.00	2657	0	nutlin-3	-0.01	4219	0
hydroxytacrine-maleate-(r,s)	0.01	1096	potential	hematoxylin	0.00	2658	0	tiotidine	-0.01	4220	0
pumosetrag	0.01	1097	potential	cefetamet	0.00	2659	0	monastrol	-0.01	4221	0
dichlorisone-acetate	0.01	1098	potential	oxymetazoline	0.00	2660	0	VX-222	-0.01	4222	0
orbifloxacin	0.01	1099	potential	SSR128129E	0.00	2661	0	adaprev	-0.01	4223	0
methacycline	0.01	1100	potential	promazine	0.00	2662	0	lithium-citrate	-0.01	4224	0
trans-4-Hydroxycrotonic-acid	0.01	1101	potential	exherin	0.00	2663	0	vildagliptin	-0.01	4225	0
testosterone-undecanoate	0.01	1102	potential	CGP-37849	0.00	2664	0	org-9768	-0.01	4226	0
cotinine	0.01	1103	potential	fosfomycin	0.00	2665	0	ASP3026	-0.01	4227	0
AMG-319	0.01	1104	potential	lacosamide	0.00	2666	0	scopine	-0.01	4228	0
bismuth(iii)-trifluoromethanesulfonate	0.01	1105	potential	AZD6482	0.00	2667	0	oxaloacetate	-0.01	4229	0
epinastine	0.01	1106	potential	hydrocortisone-butyrate	0.00	2668	0	SB-334867	-0.01	4230	0
imetit	0.01	1107	potential	dimethisoquin	0.00	2669	0	colfosceril-palmitate	-0.01	4231	0
lonafarnib	0.01	1108	potential	denatonium-benzoate	0.00	2670	0	FH1	-0.01	4232	0
suramin	0.01	1109	potential	PK-11195	0.00	2671	0	zolmitriptan	-0.01	4233	0
mepyramine	0.01	1110	potential	pasiniazid	0.00	2672	0	r(-)-apomorphine	-0.01	4234	0
hexamethonium	0.01	1111	potential	atenolol-(+/-)	0.00	2673	0	perzinfotel	-0.01	4235	0
enflurane	0.01	1112	potential	blebbistatin-(+/-)	0.00	2674	0	VU0361737	-0.01	4236	0
rasagiline	0.01	1113	potential	mesalazine	0.00	2675	0	thioperamide	-0.01	4237	0
BD-1063	0.01	1114	potential	isopropyl-myristate	0.00	2676	0	neostigmine	-0.01	4238	0
anpirtoline	0.01	1115	potential	resveratrol	0.00	2677	0	AM-251	-0.01	4239	0
R-1479	0.01	1116	potential	ipratropium	0.00	2678	0	ethacridine-lactate-monohydrate	-0.01	4240	0
20-hydroxyecdysone	0.01	1117	potential	telatinib	0.00	2679	0	daclatasvir	-0.01	4241	0
decoquinate	0.01	1118	potential	ACPC	0.00	2680	0	FR-139317	-0.01	4242	0
glimepiride	0.01	1119	potential	gonadorelin	0.00	2681	0	SB-216763	-0.01	4243	0
nitarsone	0.01	1120	potential	potassium-p-aminobenzoate	0.00	2682	0	guanaben-acetate	-0.01	4244	0
ritodrine	0.01	1121	potential	sophocarpine	0.00	2683	0	argatroban	-0.01	4245	0
NVP-BEZ235	0.01	1122	potential	edrophonium	0.00	2684	0	dextroamphetamine	-0.01	4246	0
metitepine	0.01	1123	potential	MDL-11939	0.00	2685	0	iodipamide	-0.01	4247	0
doxercalciferol	0.01	1124	potential	oxfendazole	0.00	2686	0	epinephrine	-0.01	4248	0
dronedarone	0.01	1125	potential	SKF-83566	0.00	2687	0	tolfenamic-acid	-0.01	4249	0

metaproterenol	0.01	1126	potential	lufenuron	0.00	2688	0	neohesperidin	-0.01	4250	0
tilmicosin	0.01	1127	potential	phenylbenzimidazole-sulfonic-acid	0.00	2689	0	cortisone-acetate	-0.01	4251	0
BAX-channel-blocker	0.01	1128	potential	propranolol	0.00	2690	0	tagatose	-0.01	4252	0
simeprevir	0.01	1129	potential	GR-113808	0.00	2691	0	cisapride	-0.01	4253	0
etravirine	0.01	1130	potential	ML161	0.00	2692	0	myricetin	-0.01	4254	0
JTE-607	0.01	1131	potential	anagrelide	0.00	2693	0	dihydromyricetin	-0.01	4255	0
prochlorperazine	0.01	1132	potential	palmitoylcarnitine	0.00	2694	0	fursultiamine	-0.01	4256	0
abiraterone-acetate	0.01	1133	potential	allopurinol	0.00	2695	0	RS-100329	-0.01	4257	0
foropafant	0.01	1134	potential	ganciclovir	0.00	2696	0	letermovir	-0.01	4258	0
estramustine	0.01	1135	potential	tryptophan	0.00	2697	0	bisoprolol	-0.01	4259	0
tulobuterol	0.01	1136	potential	alfadolone-acetate	0.00	2698	0	fostamatinib	-0.01	4260	0
PF-05190457	0.01	1137	potential	2,4-dinitrophenol	0.00	2699	0	cyanocobalamin	-0.01	4261	0
demecarium	0.01	1138	potential	adatanserin	0.00	2700	0	tramiprosate	-0.01	4262	0
KI-8751	0.01	1139	potential	gabapentin	0.00	2701	0	alarelin	-0.01	4263	0
NE-100	0.01	1140	potential	PSI-7976	0.00	2702	0	zileuton	-0.01	4264	0
asiatic-acid	0.01	1141	potential	DUP-697	0.00	2703	0	methiopril	-0.01	4265	0
moxidectin	0.01	1142	potential	meprylcaine	0.00	2704	0	picolinic-acid	-0.01	4266	0
tonabersat	0.01	1143	potential	mephenytoin	0.00	2705	0	A-674563	-0.01	4267	0
AMG319	0.01	1144	potential	alosetron	0.00	2706	0	azilsartan-medoxomil	-0.01	4268	0
ethenzamide	0.01	1145	potential	prulifloxacin	0.00	2707	0	cariporide	-0.01	4269	0
hycanthone	0.01	1146	potential	4,5,6,7-tetrabromobenzotriazole	0.00	2708	0	hydralazine	-0.01	4270	0
pasireotide	0.01	1147	potential	PF-06463922	0.00	2709	0	androstenone	-0.01	4271	0
sufentanil	0.01	1148	potential	pipecuronium	0.00	2710	0	omeprazole-magnesium	-0.01	4272	0
selamectin	0.01	1149	potential	difenpiramide	0.00	2711	0	xylose	-0.01	4273	0
PHA-848125	0.01	1150	potential	practolol	0.00	2712	0	nalmefene	-0.01	4274	0
CGP-71683	0.01	1151	potential	vemurafenib	0.00	2713	0	prasugrel	-0.01	4275	0
BAY-K-8644-(s)-(-)	0.01	1152	potential	ribociclib	0.00	2714	0	PCA-4248	-0.01	4276	0
mometasone-furoate	0.01	1153	potential	brinzolamide	0.00	2715	0	oleanolic-acid	-0.01	4277	0
PX-12	0.01	1154	potential	VU0364770	0.00	2716	0	forodesine	-0.01	4278	0
vitamin-b12	0.01	1155	potential	isodibut	0.00	2717	0	bipenamol	-0.01	4279	0
EPZ-5676	0.01	1156	potential	ofloxacin	0.00	2718	0	fludroxycortide	-0.01	4280	0
cisplatin	0.01	1157	potential	cyamemazine	0.00	2719	0	lomefloxacin	-0.01	4281	0
halcinonide	0.01	1158	potential	firocoxib	0.00	2720	0	peretinoin	-0.01	4282	0
bupranolol	0.01	1159	potential	bifonazole	0.00	2721	0	clofibric-acid	-0.01	4283	0

NVP-DPP728	0.01	1160	potential	methapyrilene	0.00	2722	0	cefdinir	-0.01	4284	0
minocycline	0.01	1161	potential	3-indolebutyric-acid	0.00	2723	0	captamine	-0.01	4285	0
nor-Binaltorphimine-dihydrochloride	0.01	1162	potential	SEW-2871	0.00	2724	0	MDL-72832	-0.01	4286	0
SB-202190	0.01	1163	potential	GW-842166	0.00	2725	0	cariprazine	-0.01	4287	0
biperiden	0.01	1164	potential	beclamide	0.00	2726	0	albendazole-oxide	-0.01	4288	0
GS-9973	0.01	1165	potential	L-NAME	0.00	2727	0	sucralose	-0.01	4289	0
limaprost-alfadex	0.01	1166	potential	EBPC	0.00	2728	0	copanlisib	-0.01	4290	0
GKT137831	0.01	1167	potential	K-MAP	0.00	2729	0	phenelzine	-0.01	4291	0
ketanserin	0.01	1168	potential	triclosan	0.00	2730	0	cilostazol	-0.01	4292	0
thioproperazine	0.01	1169	potential	CGP-7930	0.00	2731	0	acetophenazine	-0.01	4293	0
CB-03-01	0.01	1170	potential	eltoprazine	0.00	2732	0	pronethalol	-0.01	4294	0
aceclofenac	0.01	1171	potential	dexfenfluramine	0.00	2733	0	ipidacrine	-0.01	4295	0
RS-39604	0.01	1172	potential	WYE-125132	0.00	2734	0	nalidixic-acid	-0.01	4296	0
sulfaphenazole	0.01	1173	potential	NA	0.00	2735	0	se-methylselenocysteine	-0.01	4297	0
clonazepam	0.01	1174	potential	apremilast	0.00	2736	0	desvenlafaxine	-0.01	4298	0
BTS-54505	0.01	1175	potential	NAN-190	0.00	2737	0	fenaclon	-0.01	4299	0
dioscin	0.01	1176	potential	fenclonine-(+/-)	0.00	2738	0	indirubin	-0.01	4300	0
sodium-glucoheptonate	0.01	1177	potential	valdecoxib	0.00	2739	0	doconexent-ethyl-ester	-0.01	4301	0
papaverine	0.01	1178	potential	fasudil	0.00	2740	0	dexfosfoserine	-0.01	4302	0
toremifene	0.01	1179	potential	miconazole	0.00	2741	0	norepinephrine	-0.01	4303	0
dizocilpine-(-)	0.01	1180	potential	hydrastine-(1r,-9s)	0.00	2742	0	clocortolone-pivalate	-0.01	4304	0
pidolic-acid	0.01	1181	potential	sulfinpyrazone	0.00	2743	0	ki16198	-0.01	4305	0
mequinol	0.01	1182	potential	methazolamide	0.00	2744	0	cyclamic-acid	-0.01	4306	0
preclamol	0.01	1183	potential	go-6983	0.00	2745	0	ginkgolide-a	-0.01	4307	0
zanamivir	0.01	1184	potential	NSC-632839	0.00	2746	0	fendiline	-0.01	4308	0
tizanidine	0.01	1185	potential	opicapone	0.00	2747	0	candesartan-cilextil	-0.01	4309	0
PIK-93	0.01	1186	potential	leucylleucine-methyl-ester	0.00	2748	0	cis-urocanic-acid	-0.01	4310	0
hydroflumethiazide	0.01	1187	potential	INCB-003284	0.00	2749	0	glipizide	-0.01	4311	0
anisodamine	0.01	1188	potential	midodrine	0.00	2750	0	batimastat	-0.01	4312	0
WP1130	0.01	1189	potential	aptiganel	0.00	2751	0	LY2603618	-0.01	4313	0
sulpiride	0.01	1190	potential	neo-gilurytmal	0.00	2752	0	mevalonic-d,-l-acid-lactone	-0.01	4314	0
BW-180C	0.01	1191	potential	aceclidine	0.00	2753	0	nitromide	-0.01	4315	0
butoconazole	0.01	1192	potential	oltipraz	0.00	2754	0	tropisetron	-0.01	4316	0
fimasartan	0.01	1193	potential	alfuzosin	0.00	2755	0	gavestinel	-0.01	4317	0

bromopride	0.01	1194	potential	itacitinib	0.00	2756	0	HC-030031	-0.01	4318	0
9-aminoacridine	0.01	1195	potential	dirithromycin	0.00	2757	0	cinnarazine	-0.01	4319	0
penciclovir	0.01	1196	potential	tenidap	0.00	2758	0	estradiol-cypionate	-0.01	4320	0
vigabatrin	0.01	1197	potential	GR125487	0.00	2759	0	hexestrol	-0.01	4321	0
amprolium	0.01	1198	potential	troventol	0.00	2760	0	clonidine	-0.01	4322	0
pranlukast	0.01	1199	potential	3-deazaneplanocin-A	0.00	2761	0	AZD5069	-0.01	4323	0
sulfaguanidine	0.01	1200	potential	phthalylsulfacetamide	0.00	2762	0	anisotropine	-0.01	4324	0
N-benzylnaltrindole	0.01	1201	potential	ruxolitinib-(S)	0.00	2763	0	TIC10	-0.01	4325	0
trihexyphenidyl	0.01	1202	potential	nolatrexed	0.00	2764	0	5-hydroxymethyl-tolterodine	-0.01	4326	0
RS-102895	0.01	1203	potential	pentacosanoic-acid	0.00	2765	0	rolipram-S(+)	-0.01	4327	0
MK-2461	0.01	1204	potential	uridine	0.00	2766	0	saclofen	-0.01	4328	0
TCS-359	0.01	1205	potential	D-delta-Tocopherol	0.00	2767	0	8-hydroxy-DPAT	-0.01	4329	0
delanzomib	0.01	1206	potential	norethindrone	0.00	2768	0	nafcillin	-0.01	4330	0
elafibranor	0.01	1207	potential	talniflumate	0.00	2769	0	VU0364439	-0.01	4331	0
procaine	0.01	1208	potential	faropenem-medoxomil	0.00	2770	0	loratadine	-0.01	4332	0
clidinium	0.01	1209	potential	bumetanide	0.00	2771	0	tetrahydropapaverine	-0.01	4333	0
adiporon	0.01	1210	potential	pinacidil	0.00	2772	0	NU-7026	-0.01	4334	0
ractopamine	0.01	1211	potential	MK-0773	0.00	2773	0	Ro-20-1724	-0.01	4335	0
BTZ043-racemate	0.01	1212	potential	isaxonine	0.00	2774	0	triciribine	-0.01	4336	0
pyridoxine	0.01	1213	potential	R406	0.00	2775	0	MNITMT	-0.01	4337	0
fdcyd	0.01	1214	potential	TG-02	0.00	2776	0	pelanserin	-0.01	4338	0
phenolsulfonphthalein	0.01	1215	potential	4-aminohippuric-acid	0.00	2777	0	proguanil	-0.01	4339	0
chlorcyclizine	0.01	1216	potential	iguratimod	0.00	2778	0	bendroflumethiazide	-0.01	4340	0
josamycin	0.01	1217	potential	phlorizin	0.00	2779	0	beta-CCB	-0.01	4341	0
homochlorcyclizine	0.01	1218	potential	propantheline	0.00	2780	0	triciribine	-0.01	4342	0
clemizole	0.01	1219	potential	desoxypeganine	0.00	2781	0	tryptanthrin	-0.01	4343	0
AMPA-(RS)	0.01	1220	potential	talinolol	0.00	2782	0	creatinol-phosphate	-0.01	4344	0
mequinol	0.01	1221	potential	AVL-292	0.00	2783	0	adenine	-0.01	4345	0
cortodoxone	0.01	1222	potential	finafloxacin	0.00	2784	0	agomelatine	-0.01	4346	0
oltipraz	0.01	1223	potential	titanocene-dichloride	0.00	2785	0	cytisine	-0.01	4347	0
ICI-185,282	0.01	1224	potential	ripasudil	0.00	2786	0	sotagliflozin	-0.01	4348	0
xilobam	0.01	1225	potential	alpha-linolenic-acid	0.00	2787	0	oxiconazole	-0.01	4349	0
fluphenazine	0.01	1226	potential	cyclopentolate	0.00	2788	0	crenolanib	-0.01	4350	0
methicillin	0.01	1227	potential	mirtazapine	0.00	2789	0	corosolic-acid	-0.01	4351	0

LY2090314	0.01	1228	potential	vasopressin	0.00	2790	0	lamotrigine	-0.01	4352	0
cinalukast	0.01	1229	potential	ARRY-334543	0.00	2791	0	SPP301	-0.01	4353	0
chloroquine	0.01	1230	potential	zolpidem	0.00	2792	0	1s,2r-phenylpropanolamine	-0.01	4354	0
copper-histidine	0.01	1231	potential	estramustine-phosphate	0.00	2793	0	zotepine	-0.01	4355	0
crizotinib-(S)	0.01	1232	potential	garenoxacin	0.00	2794	0	GSK256066	-0.01	4356	0
meprobamate	0.01	1233	potential	tremorine	0.00	2795	0	AST-1306	-0.01	4357	0
TGR-1202	0.01	1234	potential	ICI-162846	0.00	2796	0	PSB-06126	-0.01	4358	0
AZD1283	0.01	1235	potential	maribavir	0.00	2797	0	troxerutin	-0.01	4359	0
CID-5458317	0.01	1236	potential	fexaramine	0.00	2798	0	choline-alfoscerate	-0.01	4360	0
metixene	0.01	1237	potential	imiloxan	0.00	2799	0	metoxibutropate	-0.01	4361	0
SID-7969543	0.01	1238	potential	peficitinib	0.00	2800	0	menbutone	-0.01	4362	0
presatovir	0.01	1239	potential	suvorexant	0.00	2801	0	ZD-7288	-0.01	4363	0
4-mu-8C	0.01	1240	potential	RS-79948	0.00	2802	0	nifurtimox	-0.01	4364	0
drofenine	0.01	1241	potential	bicyclol	0.00	2803	0	clofoctol	-0.01	4365	0
VGX-1027	0.01	1242	potential	pirodavir	0.00	2804	0	ethyl-paraben	-0.01	4366	0
NMS-E973	0.01	1243	potential	equilin	0.00	2805	0	RG108	-0.01	4367	0
nanchangmycin	0.01	1244	potential	ephedrine-(racemic)	0.00	2806	0	BGT226	-0.01	4368	0
abafungin	0.01	1245	potential	epothilone-b	0.00	2807	0	safinamide	-0.01	4369	0
prednisolone-tebutate	0.01	1246	potential	diclofenac	0.00	2808	0	dutasteride	-0.01	4370	0
1,3-dipropyl-8-phenylxanthine	0.01	1247	potential	sodium-salicylate	0.00	2809	0	cloperastine	-0.01	4371	0
SK&F-10047-(+)	0.01	1248	potential	etofylline	0.00	2810	0	mevastatin	-0.01	4372	0
defactinib	0.01	1249	potential	canertinib	0.00	2811	0	pyritinol	-0.01	4373	0
crotamiton	0.01	1250	potential	prednisone	0.00	2812	0	nilvadipine	-0.01	4374	0
ganciclovir	0.01	1251	potential	avanafil	0.00	2813	0	CGP-54626	-0.01	4375	0
INCB-024360	0.01	1252	potential	linalool	0.00	2814	0	caffeic-acid	-0.01	4376	0
navarixin	0.01	1253	potential	trientine	0.00	2815	0	chlorotrianisene	-0.01	4377	0
otenzepad	0.01	1254	potential	emetine	0.00	2816	0	retigabine	-0.01	4378	0
TG-003	0.01	1255	potential	meluadrine	0.00	2817	0	nesbuvir	-0.01	4379	0
saxagliptin	0.01	1256	potential	E-64	0.00	2818	0	ambrisentan	-0.01	4380	0
clindamycin-palmitate	0.01	1257	potential	AC-7954-(+/-)	0.00	2819	0	azomycin-(2-nitroimidazole)	-0.01	4381	0
terguride	0.01	1258	potential	oseltamivir-phosphate	0.00	2820	0	aztreonam	-0.01	4382	0
desipramine	0.01	1259	potential	amifampridine	0.00	2821	0	fudosteine	-0.01	4383	0
colforsin-daproate	0.01	1260	potential	TG-100572	0.00	2822	0	PP-1	-0.01	4384	0
5-carboxamidotryptamine	0.01	1261	potential	lupanine	0.00	2823	0	fenticonazole	-0.01	4385	0

dextran	0.01	1262	potential	aklomide	0.00	2824	0	bismuth-potassium	-0.01	4386	0
dixanthogen	0.01	1263	potential	CL-218872	0.00	2825	0	PI3K-IN-2	-0.01	4387	0
sodium-oxybate	0.01	1264	potential	gestrinone	0.00	2826	0	FPL-62064	-0.01	4388	0
lidoflazine	0.01	1265	potential	esculin	0.00	2827	0	picolamine	-0.01	4389	0
enciprazine	0.01	1266	potential	gefitinib	0.00	2828	0	androsterone	-0.01	4390	0
AM-404	0.01	1267	potential	mepazine	0.00	2829	0	trapidil	-0.01	4391	0
sodium-stibogluconate	0.01	1268	potential	fanetizole	0.00	2830	0	ICI-63197	-0.01	4392	0
UNC0646	0.01	1269	potential	5-aminolevulinic-acid	0.00	2831	0	TC1	-0.01	4393	0
BMS-707035	0.01	1270	potential	iloperidone	0.00	2832	0	SRPIN340	-0.01	4394	0
butalbital	0.01	1271	potential	HQK-1001	0.00	2833	0	WZ8040	-0.01	4395	0
metenkephalin	0.01	1272	potential	phenylbutazone	0.00	2834	0	isobutamben	-0.01	4396	0
alaproclate	0.01	1273	potential	picrotoxinin	0.00	2835	0	cytarabine	-0.01	4397	0
aminocaproic-acid	0.01	1274	potential	tolbutamide	0.00	2836	0	OAC1	-0.01	4398	0
nicotinamide	0.01	1275	potential	geniposidic-acid	0.00	2837	0	tolterodine	-0.01	4399	0
CS-110266	0.01	1276	potential	atropine	0.00	2838	0	diosmin	-0.01	4400	0
RS-127445	0.01	1277	potential	citalopram	0.00	2839	0	LY2365109	-0.01	4401	0
betamethasone-acetate	0.01	1278	potential	flutrimazole	0.00	2840	0	resibufogenin	-0.01	4402	0
flunarizine	0.01	1279	potential	RS-16566	0.00	2841	0	hydroxyfasudil	-0.01	4403	0
selinexor	0.01	1280	potential	relcovaptan	0.00	2842	0	clotiapine	-0.01	4404	0
chloroxoquinoline	0.01	1281	potential	levofloxacin	0.00	2843	0	dihydroergotamine	-0.01	4405	0
vesnarinone	0.01	1282	potential	baicalein	0.00	2844	0	promethazine	-0.01	4406	0
leucovorin	0.01	1283	potential	GW-9662	0.00	2845	0	butenafine	-0.01	4407	0
dazoxiben	0.01	1284	potential	cyclopiazonic-acid	0.00	2846	0	vandetanib	-0.01	4408	0
vatalanib	0.01	1285	potential	bilobalide	0.00	2847	0	fleroxacin	-0.01	4409	0
VU0155069	0.01	1286	potential	perchlozone	0.00	2848	0	Y-27152	-0.01	4410	0
lidocaine	0.01	1287	potential	elvitegravir	0.00	2849	0	ICI-89406	-0.01	4411	0
ropinirole	0.01	1288	potential	dexamethasone	0.00	2850	0	fesoterodine	-0.01	4412	0
pyridoxal	0.01	1289	potential	hexylresorcinol	0.00	2851	0	guanosine	-0.01	4413	0
arofylline	0.01	1290	potential	picartamide	0.00	2852	0	OSI-420	-0.01	4414	0
estradiol-benzoate	0.01	1291	potential	dropropizine	0.00	2853	0	dilazep	-0.01	4415	0
spaglumic-acid	0.01	1292	potential	astemizole	0.00	2854	0	coumarin	-0.01	4416	0
gadobutrol	0.01	1293	potential	sumanirole	0.00	2855	0	icosapent	-0.01	4417	0
reparixin	0.01	1294	potential	nafamostat	0.00	2856	0	indacaterol	-0.01	4418	0
N6022	0.01	1295	potential	tamoxifen	0.00	2857	0	4-iodo-6-phenylpyrimidine	-0.01	4419	0
bemesetron	0.01	1296	potential	xanthone	0.00	2858	0	ku-0063794	-0.01	4420	0

aloxistatin	0.01	1297	potential	lomerizine	0.00	2859	0	ceftiofur	-0.01	4421	0
aloperine	0.01	1298	potential	hydrocortisone-phosphate	0.00	2860	0	L-655240	-0.01	4422	0
carsalam	0.01	1299	potential	maraviroc	0.00	2861	0	pritelivir	-0.01	4423	0
butylated-hydroxytoluene	0.01	1300	potential	RG4733	0.00	2862	0	1-azakenpaullone	-0.01	4424	0
10-hydroxycamptothecin	0.01	1301	potential	brimonidine	0.00	2863	0	oglemilast	-0.01	4425	0
empagliflozin	0.01	1302	potential	BMY-14802	0.00	2864	0	QX-314	-0.01	4426	0
thiocolchicoside	0.01	1303	potential	diphemanil	0.00	2865	0	C-751	-0.01	4427	0
gabazine	0.01	1304	potential	sofosbuvir	0.00	2866	0	PF-04937319	-0.01	4428	0
methscopolamine	0.01	1305	potential	cefmenoxime	0.00	2867	0	3-deazaadenosine	-0.01	4429	0
sipatrigine	0.01	1306	potential	telmisartan	0.00	2868	0	16,16-dimethylprostaglandin-e2	-0.01	4430	0
tangeritin	0.01	1307	potential	pilaralisib	0.00	2869	0	chlormezanone	-0.01	4431	0
GP2a	0.01	1308	potential	alimemazine	0.00	2870	0	levodropropizine	-0.01	4432	0
L-Aspartic-Acid	0.01	1309	potential	ethacizin	0.00	2871	0	rutin	-0.01	4433	0
butofilolol	0.01	1310	potential	tazobactam	0.00	2872	0	icotinib	-0.01	4434	0
alibendol	0.01	1311	potential	oxypurinol	0.00	2873	0	geniposide	-0.01	4435	0
SAR-245409	0.01	1312	potential	tazarotene	0.00	2874	0	azacyclonol	-0.01	4436	0
tromaril	0.01	1313	potential	ginsenoside-rd	0.00	2875	0	carboplatin	-0.01	4437	0
molindone	0.01	1314	potential	phenylbutazone	0.00	2876	0	selumetinib	-0.01	4438	0
cyclosporin-a	0.01	1315	potential	loperamide	0.00	2877	0	osthol	-0.01	4439	0
amperozide	0.01	1316	potential	Z160	0.00	2878	0	inositol-hexanicotinate	-0.01	4440	0
etilevodopa	0.01	1317	potential	acifran	0.00	2879	0	orteronel	-0.01	4441	0
tiaprofenic-acid	0.01	1318	potential	moclobemide	0.00	2880	0	pentoxifylline	-0.01	4442	0
taurocholate	0.01	1319	potential	hydroquinidine	0.00	2881	0	RTA-408	-0.01	4443	0
L-ergothioneine	0.01	1320	potential	mexiletine	0.00	2882	0	temozolomide	-0.01	4444	0
taranabant	0.01	1321	potential	dexpanthenol	0.00	2883	0	baicalin	-0.01	4445	0
iopanic-acid	0.01	1322	potential	cafestol	0.00	2884	0	purvalanol-a	-0.01	4446	0
PSB-36	0.01	1323	potential	ifosfamide	0.00	2885	0	trelagliptin	-0.01	4447	0
fluorometholone-acetate	0.01	1324	potential	PD-128907	0.00	2886	0	trandolapril	-0.01	4448	0
parthenolide-(alternate-stereo)	0.01	1325	potential	trans-2-Undecenoic-acid	0.00	2887	0	perfluamine	-0.01	4449	0
GDC-0941	0.01	1326	potential	BL-5583	0.00	2888	0	phosphatidylcholine	-0.01	4450	0
NSC-9965	0.01	1327	potential	LY294002	0.00	2889	0	danazol	-0.01	4451	0
GR-159897	0.01	1328	potential	remimazolam	0.00	2890	0	doxifluridine	-0.01	4452	0
pindolol	0.01	1329	potential	cefoselis	0.00	2891	0	tetrandrine	-0.01	4453	0
eugenol	0.01	1330	potential	ramelteon	0.00	2892	0	tezacaftor	-0.01	4454	0

pardoprunox	0.01	1331	potential	RHC-80267	0.00	2893	0	propranolol-(S)	-0.01	4455	0
2-hydroxyflutamide	0.01	1332	potential	amygdalin	0.00	2894	0	iodoantipyrine	-0.01	4456	0
SNX-5422	0.01	1333	potential	ammonium-glycyrrhizinate	0.00	2895	0	dantrolene	-0.01	4457	0
clonixin-lysinate	0.01	1334	potential	GTP-14564	0.00	2896	0	lersivirine	-0.01	4458	0
malic-acid	0.01	1335	potential	SB-221284	0.00	2897	0	tadalafil	-0.01	4459	0
cinepazet	0.01	1336	potential	stanozolol	0.00	2898	0	bromocriptine	-0.01	4460	0
S-methylcysteine	0.01	1337	potential	teriflunomide	0.00	2899	0	cilomilast	-0.01	4461	0
LX1031	0.01	1338	potential	tirofiban	0.00	2900	0	etebenecid	-0.01	4462	0
meloxicam	0.01	1339	potential	phloroglucin	0.00	2901	0	norgestrel	-0.01	4463	0
digitoxin	0.01	1340	potential	PNU-282987	0.00	2902	0	tracazolate	-0.01	4464	0
ellagic-acid	0.01	1341	potential	carprofen	0.00	2903	0	rufinamide	-0.01	4465	0
azeliragon	0.01	1342	potential	picrotin	0.00	2904	0	daphnetin	-0.01	4466	0
wnt-c59	0.01	1343	potential	sulfathiazole	0.00	2905	0	INCB-3284	-0.01	4467	0
oxacillin	0.01	1344	potential	valproic-acid	0.00	2906	0	metoclopramide	-0.01	4468	0
fluroxene	0.01	1345	potential	zacopride	0.00	2907	0	2-cyanopyrimidine	-0.01	4469	0
naloxone-benzoylhydrazone	0.01	1346	potential	stemregenin-1	0.00	2908	0	XL888	-0.01	4470	0
sulisobenzone	0.01	1347	potential	fipronil	0.00	2909	0	elacridar	-0.01	4471	0
5-HMF	0.01	1348	potential	CNQX	0.00	2910	0	LY456236	-0.01	4472	0
licochalcone-a	0.01	1349	potential	isavuconazole	0.00	2911	0	ST-91	-0.01	4473	0
AG-1024	0.01	1350	potential	bornyl-acetate	0.00	2912	0	probucol	-0.02	4474	0
tenofovir-disoproxil	0.01	1351	potential	furazolidone	0.00	2913	0	zolimidine	-0.02	4475	0
butein	0.01	1352	potential	UCL-2077	0.00	2914	0	parecoxib	-0.02	4476	0
MLN2480	0.01	1353	potential	BAN-ORL-24	0.00	2915	0	diacetamate	-0.02	4477	0
bilastine	0.01	1354	potential	ABT-639	0.00	2916	0	NVP-AUY922	-0.02	4478	0
ifenprodil	0.01	1355	potential	diltiazem	0.00	2917	0	Y-26763	-0.02	4479	0
ZM-323881	0.01	1356	potential	raloxifene	0.00	2918	0	simvastatin	-0.02	4480	0
olmesartan	0.01	1357	potential	osimertinib	0.00	2919	0	bedaquiline	-0.02	4481	0
bindarit	0.01	1358	potential	dabigatran-etexilate	0.00	2920	0	chromocarb	-0.02	4482	0
ameltolide	0.01	1359	potential	felbinac	0.00	2921	0	FK-866	-0.02	4483	0
KU14R	0.01	1360	potential	clebopride	0.00	2922	0	parachlorophenol	-0.02	4484	0
enoxolone	0.01	1361	potential	piperacetazine	0.00	2923	0	ixazomib-citrate	-0.02	4485	0
medetomidine	0.01	1362	potential	dapiprazole	0.00	2924	0	neridronic-acid	-0.02	4486	0
asiatic-acid	0.01	1363	potential	glyburide	0.00	2925	0	2,6-dimethylpiperidine	-0.02	4487	0
succinylsulfathiazole	0.01	1364	potential	gimeracil	0.00	2926	0	I-BZA2	-0.02	4488	0

flutamide	0.01	1365	potential	budipine	0.00	2927	0	RI-1	-0.02	4489	0
entecavir	0.01	1366	potential	buclizine	0.00	2928	0	ixabepilone	-0.02	4490	0
acamprosate	0.01	1367	potential	AMPA-(S)	0.00	2929	0	roquinimex	-0.02	4491	0
phthalylsulfathiazole	0.01	1368	potential	valrocemide	0.00	2930	0	colistin-b-sulfate	-0.02	4492	0
isoflupredone-acetate	0.01	1369	potential	droperidol	0.00	2931	0	U-104	-0.02	4493	0
paeonol	0.01	1370	potential	lisadimate	0.00	2932	0	RN-1734	-0.02	4494	0
amidopyrine	0.01	1371	potential	S26948	0.00	2933	0	flumazenil	-0.02	4495	0
BAY-85-8050	0.01	1372	potential	tyrphostin-AG-879	0.00	2934	0	SCH-58261	-0.02	4496	0
4-HQN	0.01	1373	potential	tafenoquine	0.00	2935	0	levonorgestrel	-0.02	4497	0
fmoc-l-leucine	0.01	1374	potential	taltirelin	0.00	2936	0	RITA	-0.02	4498	0
piperacillin	0.01	1375	potential	benfotiamine	0.00	2937	0	topiramate	-0.02	4499	0
digoxigenin	0.01	1376	potential	granisetron	0.00	2938	0	masoprocol	-0.02	4500	0
oxatomide	0.01	1377	potential	alprenolol	0.00	2939	0	SB-218795	-0.02	4501	0
phenprobamate	0.01	1378	potential	decamethonium	0.00	2940	0	AS-604850	-0.02	4502	0
paraxanthine	0.01	1379	potential	acepromazine	0.00	2941	0	urethane	-0.02	4503	0
dantron	0.01	1380	potential	sulfamethoxazole	0.00	2942	0	JNJ-10191584	-0.02	4504	0
ZM-241385	0.01	1381	potential	epalrestat	0.00	2943	0	omeprazole-sulfide	-0.02	4505	0
OSI-027	0.01	1382	potential	metirosine	0.00	2944	0	orantinib	-0.02	4506	0
genipin	0.01	1383	potential	butyl-paraben	0.00	2945	0	linifanib	-0.02	4507	0
SB-271046	0.01	1384	potential	zosuquidar	0.00	2946	0	1,5-dicaffeoylquinic-acid	-0.02	4508	0
PRE-084	0.01	1385	potential	ibutamoren	0.00	2947	0	ivacaftor	-0.02	4509	0
gallopamil	0.01	1386	potential	flurothyl	0.00	2948	0	7-nitroindazole	-0.02	4510	0
rosoxacin	0.01	1387	potential	perphenazine	0.00	2949	0	m-THP	-0.02	4511	0
levallorphan	0.01	1388	potential	roflumilast	0.00	2950	0	dicoumarol	-0.02	4512	0
amiodarone	0.01	1389	potential	secnidazole	0.00	2951	0	BMS-986020	-0.02	4513	0
imipramine	0.01	1390	potential	verinurad	0.00	2952	0	dipyridamole	-0.02	4514	0
flibanserin	0.01	1391	potential	SDZ-220-581	0.00	2953	0	PJ-34	-0.02	4515	0
bropirimine	0.01	1392	potential	UPF-1069	0.00	2954	0	dichlorvos	-0.02	4516	0
perospirone	0.01	1393	potential	CG-400549	0.00	2955	0	mezlocillin	-0.02	4517	0
carbazochrome	0.01	1394	potential	endo-IWR-1	0.00	2956	0	ethimizol	-0.02	4518	0
PG-9	0.01	1395	potential	ETC-1002	0.00	2957	0	peruvoside	-0.02	4519	0
melengestrol-acetate	0.01	1396	potential	misonidazole	0.00	2958	0	carbetapentane	-0.02	4520	0
diazoxide	0.01	1397	potential	suxibuzone	0.00	2959	0	BAM7	-0.02	4521	0
cyproheptadine	0.01	1398	potential	clofedanol	0.00	2960	0	ponatinib	-0.02	4522	0
nicotine	0.01	1399	potential	JNJ-1661010	0.00	2961	0	sangivamycin	-0.02	4523	0

proxymetacaine	0.01	1400	potential	afobazole	0.00	2962	0	ronidazole	-0.02	4524	0
GSK2126458	0.01	1401	potential	amitifadine	0.00	2963	0	repaglinide	-0.02	4525	0
YM022	0.01	1402	potential	CGS-20625	0.00	2964	0	fluvoxamine	-0.02	4526	0
ibutilide	0.01	1403	potential	GR46611	0.00	2965	0	acetyl-11-keto-beta-boswellic-acid	-0.02	4527	0
SCH-23390	0.01	1404	potential	carebastine	0.00	2966	0	2,3-DCPE	-0.02	4528	0
amikacin	0.01	1405	potential	broxyquinoline	0.00	2967	0	tesaglitazar	-0.02	4529	0
ardeparin	0.01	1406	potential	ketotifen	0.00	2968	0	fleroxacin	-0.02	4530	0
estradiol-valerate	0.01	1407	potential	ganglioside-gm1	0.00	2969	0	P5091	-0.02	4531	0
DFB	0.01	1408	potential	methylphenidate	0.00	2970	0	AV-412	-0.02	4532	0
pentolinium	0.01	1409	potential	epirizole	0.00	2971	0	clopamide	-0.02	4533	0
azilsartan	0.01	1410	potential	aceneuramic-acid	0.00	2972	0	alizarin	-0.02	4534	0
piperidolate	0.01	1411	potential	etamsylate	0.00	2973	0	inosine	-0.02	4535	0
novobiocin	0.01	1412	potential	muscimol	0.00	2974	0	bis(maltolato)oxovanadium(IV)	-0.02	4536	0
eliglustat	0.01	1413	potential	CD-1530	0.00	2975	0	necrostatin-1	-0.02	4537	0
tolimidone	0.01	1414	potential	MY-5445	0.00	2976	0	DVD-111	-0.02	4538	0
vancomycin	0.01	1415	potential	PF-03049423	0.00	2977	0	ornithine	-0.02	4539	0
bephenium-hydroxynaphthoate	0.01	1416	potential	KU-60019	0.00	2978	0	alendronate	-0.02	4540	0
IEM1460	0.01	1417	potential	equol	0.00	2979	0	PSB-11	-0.02	4541	0
RU-58841	0.01	1418	potential	fluocinolone-acetonide	0.00	2980	0	glycopyrrolate	-0.02	4542	0
lumiracoxib	0.01	1419	potential	tipiracil	0.00	2981	0	dibenzothiophene	-0.02	4543	0
epitiostanol	0.01	1420	potential	protirelin	0.00	2982	0	chlorindanol	-0.02	4544	0
shikimic-acid	0.01	1421	potential	melevodopa	0.00	2983	0	thiamine	-0.02	4545	0
SCP-1	0.01	1422	potential	etoposide-phosphate	0.00	2984	0	BRD4770	-0.02	4546	0
dicycloverine	0.01	1423	potential	amantadine	0.00	2985	0	ZAPA	-0.02	4547	0
diflunisal	0.01	1424	potential	8-M-PDOT	0.00	2986	0	ouabain	-0.02	4548	0
dichlorophen	0.01	1425	potential	SB-206553	0.00	2987	0	hexylcaine	-0.02	4549	0
trigonelline	0.01	1426	potential	adrafinil	0.00	2988	0	meglitinide	-0.02	4550	0
felbamate	0.01	1427	potential	hypoxanthine	0.00	2989	0	clinofibrate	-0.02	4551	0
amineptine	0.01	1428	potential	loreclezole	0.00	2990	0	SD-169	-0.02	4552	0
geniposide	0.01	1429	potential	atipamezole	0.00	2991	0	voxtalisib	-0.02	4553	0
racecadotril	0.01	1430	potential	naftopidil	0.00	2992	0	creatine	-0.02	4554	0
flucytosine	0.01	1431	potential	enoxacin	0.00	2993	0	lithocholic-acid	-0.02	4555	0
uracil	0.01	1432	potential	naloxone	0.00	2994	0	PNU-37883	-0.02	4556	0
proxyfan	0.01	1433	potential	eprodisate	0.00	2995	0	CCMI	-0.02	4557	0

spermine	0.01	1434	potential	bergenin	0.00	2996	0	rosuvastatin	-0.02	4558	0
amlexanox	0.01	1435	potential	GR-135531	0.00	2997	0	AMG-232	-0.02	4559	0
bentiromide	0.01	1436	potential	rofecoxib	0.00	2998	0	epiandrosterone	-0.02	4560	0
GSK429286A	0.01	1437	potential	TWS-119	0.00	2999	0	sodium-gualenate	-0.02	4561	0
CX-516	0.01	1438	potential	nicorandil	0.00	3000	0	dasatinib	-0.02	4562	0
zaltidine	0.01	1439	potential	bicalutamide	0.00	3001	0	amrinone	-0.02	4563	0
N-acetylglycyl-D-glutamic-acid	0.01	1440	potential	YM-201636	0.00	3002	0	dacinostat	-0.02	4564	0
emtricitabine	0.01	1441	potential	hydroxyamphetamine	0.00	3003	0	IDRA-21	-0.02	4565	0
CPP	0.01	1442	potential	ZM-226600	0.00	3004	0	hypericin	-0.02	4566	0
betamethasone-valerate	0.01	1443	potential	propranolol-(R)	0.00	3005	0	saracatinib	-0.02	4567	0
plovamer-acetate	0.01	1444	potential	LY3023414	0.00	3006	0	PP-121	-0.02	4568	0
benidipine	0.01	1445	potential	rosmarinic-acid	0.00	3007	0	fludarabine	-0.02	4569	0
triclabendazole	0.01	1446	potential	quinestrol	0.00	3008	0	phenazone	-0.02	4570	0
TCS2002	0.01	1447	potential	serotonin	0.00	3009	0	chloroxine	-0.02	4571	0
suritozole	0.01	1448	potential	carbamazepine	0.00	3010	0	centpropazine	-0.02	4572	0
SB-218078	0.01	1449	potential	benzocaine	0.00	3011	0	SIB-1757	-0.02	4573	0
lonidamine	0.01	1450	potential	radafaxine	0.00	3012	0	sulfasalazine	-0.02	4574	0
thiethylperazine	0.01	1451	potential	ethoxzolamide	0.00	3013	0	MPEP	-0.02	4575	0
hyperin	0.01	1452	potential	anethole-trithione	0.00	3014	0	fosfomycin	-0.02	4576	0
torcetrapib	0.01	1453	potential	chlortetracycline	0.00	3015	0	GW-1929	-0.02	4577	0
beclomethasone	0.01	1454	potential	ftorafur	0.00	3016	0	siguazodan	-0.02	4578	0
andarine	0.01	1455	potential	LB-100	0.00	3017	0	oleamide	-0.02	4579	0
falecalcitriol	0.01	1456	potential	abiraterone	0.00	3018	0	perillyl-alcohol	-0.02	4580	0
pralidoxime	0.01	1457	potential	nafcillin	0.00	3019	0	AZD5438	-0.02	4581	0
medroxyprogesterone	0.01	1458	potential	pyrantel	0.00	3020	0	DCEBIO	-0.02	4582	0
amflutizole	0.01	1459	potential	BD-1047	0.00	3021	0	EGF816	-0.02	4583	0
aprepitant	0.01	1460	potential	cilengitide	0.00	3022	0	5,7-dichlorokynurenic-acid	-0.02	4584	0
vercirnon	0.01	1461	potential	LE-135	0.00	3023	0	AZD8931	-0.02	4585	0
ondansetron	0.01	1462	potential	goserelin-acetate	0.00	3024	0	ethosuximide	-0.02	4586	0
TMC-353121	0.01	1463	potential	paracetamol	0.00	3025	0	brigatinib	-0.02	4587	0
guanadrel	0.01	1464	potential	GW-405833	0.00	3026	0	hesperadin	-0.02	4588	0
formononetin	0.01	1465	potential	clorsulon	0.00	3027	0	AT13387	-0.02	4589	0
oxybenzone	0.01	1466	potential	GW-0742	0.00	3028	0	teneligliptin	-0.02	4590	0
repsox	0.01	1467	potential	alprostadil	0.00	3029	0	naftidrofuryl	-0.02	4591	0

caspofungin-acetate	0.01	1468	potential	etilefrine	0.00	3030	0	fentiazac	-0.02	4592	0
AZ-628	0.01	1469	potential	pargyline	0.00	3031	0	docetaxel	-0.02	4593	0
AP1903	0.01	1470	potential	tamsulosin	0.00	3032	0	pelitinib	-0.02	4594	0
GW-4064	0.01	1471	potential	U-99194	0.00	3033	0	bunazosin	-0.02	4595	0
trepibutone	0.01	1472	potential	phenprocoumon	0.00	3034	0	torin-1	-0.02	4596	0
apoptosis-activator-II	0.01	1473	potential	fudosteine	0.00	3035	0	genipin	-0.02	4597	0
tyrphostin-AG-494	0.01	1474	potential	tolvaptan	0.00	3036	0	LY364947	-0.02	4598	0
metharbital	0.01	1475	potential	methylprednisolone	0.00	3037	0	telotristat	-0.02	4599	0
spiradoline	0.01	1476	potential	sulfapyridine	0.00	3038	0	pomalidomide	-0.02	4600	0
laropiprant	0.01	1477	potential	sulfachlorpyridazine	0.00	3039	0	equol	-0.02	4601	0
NSC-405020	0.01	1478	potential	astragaloside-a	0.00	3040	0	EMD-386088	-0.02	4602	0
lansoprazole	0.01	1479	potential	chlorpyrifos	0.00	3041	0	editol	-0.02	4603	0
BADGE	0.01	1480	potential	taselisib	0.00	3042	0	ritanserin	-0.02	4604	0
cleviprex	0.01	1481	potential	PHTPP	0.00	3043	0	gilteritinib	-0.02	4605	0
cilostamide	0.01	1482	potential	meclofenoxate	0.00	3044	0	chromanol-(+/-)	-0.02	4606	0
nialamide	0.01	1483	potential	LGX818	0.00	3045	0	AV-608	-0.02	4607	0
TAK-715	0.01	1484	potential	piperine	0.00	3046	0	LY2157299	-0.02	4608	0
CGK-733	0.01	1485	potential	balsalazide	0.00	3047	0	PD-123319	-0.02	4609	0
fenretinide	0.01	1486	potential	JDTic	0.00	3048	0	CGS-15943	-0.02	4610	0
istradefylline	0.01	1487	potential	quinpirol-(-)	0.00	3049	0	brilliant-green	-0.02	4611	0
benproperine	0.01	1488	potential	etofylline-clofibrate	0.00	3050	0	latrepirdine	-0.02	4612	0
blonanserin	0.01	1489	potential	dinoprost	0.00	3051	0	bosentan	-0.02	4613	0
almorexant	0.01	1490	potential	doramapimod	0.00	3052	0	NU6027	-0.02	4614	0
O6-Benzylguanine	0.01	1491	potential	gabapentin-enacarbil	0.00	3053	0	estradiol	-0.02	4615	0
ozolinone	0.01	1492	potential	DPCPX	0.00	3054	0	erlotinib	-0.02	4616	0
SB-366791	0.01	1493	potential	betaxolol	0.00	3055	0	GDC-0152	-0.02	4617	0
selexipag	0.01	1494	potential	brimonidine	0.00	3056	0	D-7193	-0.02	4618	0
acenocoumarol	0.01	1495	potential	hydroxytoluic-acid	0.00	3057	0	tecastemizole	-0.02	4619	0
blebbistatin-(-)	0.01	1496	potential	WYE-354	0.00	3058	0	R306465	-0.02	4620	0
fosfosal	0.01	1497	potential	piketoprofen	0.00	3059	0	ozagrel	-0.02	4621	0
ranirestat	0.01	1498	potential	evatanepag	0.00	3060	0	MRS-1220	-0.02	4622	0
carbimazole	0.01	1499	potential	gemfibrozil	0.00	3061	0	PD-318088	-0.02	4623	0
tenofovir	0.01	1500	potential	amtolmetin-guacil	0.00	3062	0	AP26113	-0.02	4624	0
AZD9668	0.01	1501	potential	fipexide	0.00	3063	0	PD-198306	-0.02	4625	0
tolamolol	0.01	1502	potential	BIX-02188	0.00	3064	0	CHIR-98014	-0.02	4626	0

trifluprom azine	0.01	1503	potential	methylprednisolone-aceponate	0.00	3065	0	efonidipine monoethanolate	-0.02	4627	0
N-acetyl-tyrosine	0.01	1504	potential	ABT-202	0.00	3066	0	geniposidic-acid	-0.02	4628	0
sodium-gluconate	0.01	1505	potential	ipriflavone	0.00	3067	0	ER-27319	-0.02	4629	0
L-168049	0.01	1506	potential	trazodone	0.00	3068	0	exatecan-mesylate	-0.02	4630	0
sitaxentan	0.01	1507	potential	OCO-1112	0.00	3069	0	MEK162	-0.02	4631	0
meparfylon	0.01	1508	potential	sodium-tanshinone-ii-a-sulfonate	0.00	3070	0	kenpaullone	-0.02	4632	0
omarigliptin	0.01	1509	potential	drospirenone	0.00	3071	0	diarylpropionitrile	-0.02	4633	0
tyrphostin-AG-1296	0.01	1510	potential	sulbutiamine	0.00	3072	0	sodium-tetradecyl-sulfate	-0.02	4634	0
galantamine	0.01	1511	potential	phenyl-aminosalicylate	0.00	3073	0	batimastat	-0.02	4635	0
ICI-192605	0.01	1512	potential	JNJ-37822681	0.00	3074	0	oxymatrine	-0.02	4636	0
AGI-5198	0.01	1513	potential	acrivastine	0.00	3075	0	forskolin	-0.02	4637	0
mafenide	0.01	1514	potential	dextromethorphan	0.00	3076	0	CCT137690	-0.02	4638	0
siramesine	0.01	1515	potential	CFTRinh-172	0.00	3077	0	BVD-523	-0.03	4639	0
diphenhydramine	0.01	1516	potential	PHCCC	0.00	3078	0	alvespimycin	-0.03	4640	0
nibentan	0.01	1517	potential	phenylpiracetam	0.00	3079	0	WP1066	-0.03	4641	0
mercaptosuccinic-acid	0.01	1518	potential	PF-3274167	0.00	3080	0	pantothenic-acid	-0.03	4642	0
prednisolone-acetate	0.01	1519	potential	deferoxamine-mesylate	0.00	3081	0	PP-2	-0.03	4643	0
SAR407899	0.01	1520	potential	ftorafur	0.00	3082	0	DRF053-(R)	-0.03	4644	0
otilonium	0.01	1521	potential	flumecinol	0.00	3083	0	erythromycin-ethylsuccinate	-0.03	4645	0
VT-464	0.01	1522	potential	flumethasone-pivalate	0.00	3084	0	beta-naphthol	-0.03	4646	0
CPCCOEt	0.01	1523	potential	DU-728	0.00	3085	0	PHA-767491	-0.03	4647	0
BU-224	0.01	1524	potential	chlorphenamine	0.00	3086	0	noretynodrel	-0.03	4648	0
acefylline	0.01	1525	potential	trilostane	0.00	3087	0	riociguat	-0.03	4649	0
SDZ-NKT-343	0.01	1526	potential	halothane	0.00	3088	0	levocetirizine	-0.03	4650	0
GSK-0660	0.01	1527	potential	BRL-50481	0.00	3089	0	cromoglicic-acid	-0.03	4651	0
sobetirome	0.01	1528	potential	MF-101	0.00	3090	0	salidroside	-0.03	4652	0
gly-gln	0.01	1529	potential	tarafenacin	0.00	3091	0	birinapant	-0.03	4653	0
acadesine	0.00	1530	potential	formoterol	0.00	3092	0	atorvastatin	-0.03	4654	0
olomoucine	0.00	1531	potential	chenodeoxycholic-acid	0.00	3093	0	GW-441756	-0.03	4655	0
FK-888	0.00	1532	potential	levamisole	0.00	3094	0	acivicin	-0.03	4656	0
dabigatran	0.00	1533	potential	fosaprepitant-dimeglumine	0.00	3095	0	PD-168393	-0.03	4657	0
cyclopenthiazide	0.00	1534	potential	cinchocaine	0.00	3096	0	LCL-161	-0.03	4658	0
tolazamide	0.00	1535	potential	capreomycin	0.00	3097	0	R547	-0.03	4659	0
propylthiouracil	0.00	1536	potential	1,12-Besm	0.00	3098	0	rutin	-0.03	4660	0

proxyphylline	0.00	1537	potential	dipivefrine	0.00	3099	0	NVP-BVU972	-0.03	4661	0
toltrazuril	0.00	1538	potential	2-PMDQ	0.00	3100	0	P22077	-0.03	4662	0
betulinic-acid	0.00	1539	potential	SB-328437	0.00	3101	0	doxorubicin	-0.03	4663	0
indinavir	0.00	1540	potential	niflumic-acid	0.00	3102	0	phentolamine	-0.03	4664	0
norcyclobenzaprine	0.00	1541	potential	pramiracetam	0.00	3103	0	trametinib	-0.03	4665	0
voglibose	0.00	1542	potential	isoxsuprine	0.00	3104	0	latanoprost	-0.03	4666	0
nafadotride	0.00	1543	potential	olvanil	0.00	3105	0	R406	-0.03	4667	0
trap-101	0.00	1544	potential	lercanidipine	0.00	3106	0	tosedostat	-0.03	4668	0
pioglitazone	0.00	1545	potential	busulfan	0.00	3107	0	PHA-665752	-0.04	4669	0
flupentixol	0.00	1546	potential	cetrorelix	0.00	3108	0	CR8-(R)	-0.04	4670	0
metamizole	0.00	1547	potential	examorelin	0.00	3109	0	BMS-690514	-0.04	4671	0
Ro-9187	0.00	1548	potential	cipemastat	0.00	3110	0	delanzomib	-0.04	4672	0
sparteine-sulfate	0.00	1549	potential	piconol	0.00	3111	0	FG-4592	-0.04	4673	0
WHI-P154	0.00	1550	potential	betamipron	0.00	3112	0	poziotinib	-0.04	4674	0
proadifen	0.00	1551	potential	oxotremorine-m	0.00	3113	0	epirubicin	-0.04	4675	0
prednisolone	0.00	1552	potential	FPL-55712	0.00	3114	0	BMS-387032	-0.05	4676	0
phenothiazine	0.00	1553	potential	clotrimazole	0.00	3115	0	cobimetinib	-0.05	4677	0
alacepril	0.00	1554	potential	cabergoline	0.00	3116	0	AS-703026	-0.05	4678	0
desoxycortone	0.00	1555	potential	CGP-37157	0.00	3117	0	Ro-4987655	-0.05	4679	0
clemastine	0.00	1556	potential	fananserin	0.00	3118	0	AT-7519	-0.05	4680	0
oxandrolone	0.00	1557	potential	pinaverium	0.00	3119	0	mevastatin	-0.05	4681	0
flumethasone	0.00	1558	potential	balapiravir	0.00	3120	0	MG-132	-0.06	4682	0
YM-511	0.00	1559	potential	1-(1,2-Diphenylethyl)piperidine-(+/-)	0.00	3121	0	TAK-733	-0.06	4683	0
testolactone	0.00	1560	potential	prucalopride	0.00	3122	0	PD-0325901	-0.07	4684	0
BIBR-1532	0.00	1561	potential	macitentan	0.00	3123	0	AZD8330	-0.07	4685	0
lurasidone	0.00	1562	potential	ONX-0914	0.00	3124	0	ganetespib	-0.07	4686	0

Table 5A: GDSC-based Drug target classes with sensitivity in SCN, SRBCT or Blood cancer types

drug target		SCN - SCLC vs LUAD lung cancer		SRBCT vs OTHER		Blood vs OTHER		SCN & Blood avg.	SRBCT & Blood avg.	SCN & SRBCT avg	Sensitivity in SCN, SRBCT or Blood
target	freq	signlogp	rank	signlogp	rank	signlogp	rank	Avg. rank	Avg. rank	Avg. rank	
HDAC1	9	2.31	1	0.65	7	1.16	2	1.5	4.5	4	1
ROCK2	3	1.22	2	0.32	12	0.48	14	8	13	7	1
AURKA	4	1.15	3	0.53	10	0.07	21	12	15.5	6.5	1
CDK7	5	0.86	4	-0.15	29	0.98	3	3.5	16	16.5	1
AURKB	5	0.82	5	0.31	13	0.13	19	12	16	9	1
MET	5	0.71	6	0.43	11	0.31	16	11	13.5	8.5	1
BTK	4	0.66	7	0.82	4	0.67	8	7.5	6	5.5	1
ALK	7	0.64	8	0.70	6	0.71	7	7.5	6.5	7	1
JAK2	3	0.63	9	0.99	3	0.97	4	6.5	3.5	6	1
CDK2	4	0.56	10	-0.33	34	0.50	12	11	23	22	1
FLT3	8	0.56	11	0.54	9	1.50	1	6	5	10	1
AURKC	3	0.40	12	0.05	17	-0.05	24	18	20.5	14.5	1
VEGFR2	3	0.39	13	0.01	22	0.49	13	13	17.5	17.5	1
OTHERS	4	0.30	14	0.02	21	0.32	15	14.5	18	17.5	1
PDGFRA	4	0.29	15	-0.07	27	0.09	20	17.5	23.5	21	1
KIT	12	0.29	16	0.05	18	-0.45	35	25.5	26.5	17	1
FGFR1	3	0.26	17	-0.06	25	0.59	10	13.5	17.5	21	1
BMX	3	0.22	18	-0.38	35	0.00	22	20	28.5	26.5	1
CSF1R	4	0.20	19	-0.42	37	-0.31	32	25.5	34.5	28	1
PDK1	4	0.18	21	0.70	5	0.66	9	15	7	13	1
BRD4	3	0.16	22	0.12	16	0.85	5	13.5	10.5	19	1
MTORC2	4	0.09	25	-0.07	26	0.51	11	18	18.5	25.5	1
CDK9	5	0.08	26	-0.15	29	0.82	6	16	17.5	27.5	1
PARP1	4	-0.15	34	1.51	1	-0.14	27	30.5	14	17.5	1
PARP2	4	-0.15	34	1.51	1	-0.14	27	30.5	14	17.5	1
IGF1R	4	-0.53	41	0.62	8	-1.53	46	43.5	27	24.5	1
VEGFR	9	0.20	20	0.17	14	-0.53	38	29	26	17	0
BCL-XL	3	0.10	23	0.03	19	-0.05	25	24	22	21	0
BCL2	3	0.10	23	0.03	19	-0.05	25	24	22	21	0
AKT3	4	0.07	27	-0.38	36	-0.24	31	29	33.5	31.5	0
PDGFR	11	0.01	28	-0.03	23	-0.83	43	35.5	33	25.5	0
IR	4	0.01	29	0.16	15	-0.40	34	31.5	24.5	22	0

AKT1	5	-0.01	30	-0.48	38	-0.23	29	29.5	33.5	34	0
AKT2	5	-0.01	30	-0.48	38	-0.23	29	29.5	33.5	34	0
CDK4	3	-0.06	32	-0.04	24	-0.03	23	27.5	23.5	28	0
MTORC1	5	-0.06	33	-0.14	28	0.16	18	25.5	23	30.5	0
PI3K	11	-0.18	36	-0.27	32	0.19	17	26.5	24.5	34	0
LCK	3	-0.31	37	-0.97	43	-0.74	41	39	42	40	0
BRAF	6	-0.37	38	-2.84	49	-1.89	48	43	48.5	43.5	0
ERBB2	5	-0.45	39	-1.22	45	-1.22	45	42	45	42	0
RET	6	-0.53	40	-0.32	33	-0.48	36	38	34.5	36.5	0
MICROTUBULE STABILISER	3	-0.60	42	-1.47	46	-2.57	49	45.5	47.5	44	0
MTOR	8	-0.94	43	-1.20	44	-0.49	37	40	40.5	43.5	0
JNK2	3	-0.97	44	-0.58	40	-0.80	42	43	41	42	0
PKC	4	-1.14	45	-2.19	48	-0.39	33	39	40.5	46.5	0
ABL	7	-1.19	46	-0.65	41	-1.01	44	45	42.5	43.5	0
HSP90	5	-1.60	47	-0.26	31	-0.54	39	43	35	39	0
SRC	6	-1.76	48	-1.94	47	-0.63	40	44	43.5	47.5	0
EGFR	10	-3.14	49	-0.89	42	-1.82	47	48	44.5	45.5	0
MEK1	6	-8.59	50	-5.68	50	-6.38	50	50	50	50	0
MEK2	6	-8.59	50	-5.68	50	-6.38	50	50	50	50	0

Table 5B: PRISM-based Drug target classes with sensitivity in SCN, SRBCT or Blood cancer types

drug targets		SCN - SCLC vs LUAD lung cancer					drug targets		SCN - SCLC vs LUAD lung cancer				
target	freq	pval	ES	signlogp (pos = more sensitive in SCLC)	rank	Sensitivity in SCN	target	freq	pval	ES	signlogp (pos = more sensitive in SCLC)	rank	Sensitivity in SCN
TUBB	26	5.51E-14	0.78	13.26	1	1	CA14	19	0.99	0.10	0.00	148	0
AURKA	23	3.71E-11	0.73	10.43	2	1	KCNJ10	10	1.00	-0.13	0.00	149	0
HDAC1	29	1.41E-08	0.57	7.85	3	1	CACNB3	9	0.98	-0.15	-0.01	150	0
HDAC3	20	9.60E-08	0.65	7.02	4	1	CACNB4	9	0.98	-0.15	-0.01	151	0
AURKB	22	4.83E-07	0.59	6.32	5	1	GRIA3	13	0.98	-0.13	-0.01	152	0
HDAC6	17	6.59E-06	0.61	5.18	6	1	GRIA4	13	0.98	-0.13	-0.01	153	0
BRD4	9	5.32E-05	0.77	4.27	7	1	SCN1A	25	0.97	-0.10	-0.01	154	0
IMPDH1	9	8.28E-05	0.75	4.08	8	1	SCN10A	35	0.95	-0.09	-0.02	155	0
HDAC5	10	1.16E-04	0.70	3.94	9	1	GRIA2	22	0.95	-0.11	-0.02	156	0
HDAC8	14	1.41E-04	0.59	3.85	10	1	CHRNA3	13	0.94	-0.15	-0.03	157	0

AURKC	10	2.67E-04	0.67	3.57	11	1	CACNB1	12	0.93	-0.16	-0.03	158	0
BCL2	16	4.35E-04	0.51	3.36	12	1	SCN3A	21	0.91	-0.12	-0.04	159	0
HDAC9	13	4.59E-04	0.57	3.34	13	1	CA7	12	0.91	-0.16	-0.04	160	0
HDAC4	11	4.66E-04	0.62	3.33	14	1	RPS6KB1	11	0.90	-0.17	-0.04	161	0
NR3C1	66	4.74E-04	0.25	3.32	15	1	HRH2	23	0.90	-0.12	-0.05	162	0
TUBB1	10	7.65E-04	0.63	3.12	16	1	SCN5A	43	0.89	-0.09	-0.05	163	0
HDAC2	18	8.25E-04	0.47	3.08	17	1	PRKCA	19	0.87	-0.14	-0.06	164	0
TOP2A	34	8.63E-04	0.34	3.06	18	1	CYP2C9	11	0.87	-0.18	-0.06	165	0
MTOR	38	1.51E-03	0.31	2.82	19	1	GRIN2D	23	0.87	-0.12	-0.06	166	0
MET	26	2.17E-03	0.36	2.66	20	1	SCN9A	21	0.86	-0.13	-0.07	167	0
TOP1	13	3.67E-03	0.49	2.44	21	1	ADORA1	36	0.85	-0.10	-0.07	168	0
HDAC10	9	5.10E-03	0.58	2.29	22	1	HTR3A	50	0.85	-0.09	-0.07	169	0
CHRM5	48	5.20E-03	0.25	2.28	23	1	ADORA3	26	0.84	-0.12	-0.08	170	0
AKT2	9	5.32E-03	0.57	2.27	24	1	CACNA1I	15	0.84	-0.16	-0.08	171	0
PGR	38	7.02E-03	0.27	2.15	25	1	ADRA1B	69	0.83	-0.08	-0.08	172	0
PIK3CD	25	1.57E-02	0.31	1.81	26	1	VDR	17	0.82	-0.15	-0.09	173	0
PIK3CG	31	2.77E-02	0.26	1.56	27	1	GRM1	9	0.80	-0.21	-0.09	174	0
CHRM1	108	3.63E-02	0.14	1.44	28	1	HSD11B1	12	0.80	-0.19	-0.09	175	0
HRH1	111	4.52E-02	0.13	1.34	29	1	SCN2A	19	0.79	-0.15	-0.10	176	0
BRAF	14	4.79E-02	0.37	1.32	30	1	GSK3B	29	0.79	-0.12	-0.10	177	0
PIK3CA	29	4.81E-02	0.25	1.32	31	1	CA6	13	0.79	-0.18	-0.10	178	0
DRD4	55	4.83E-02	0.19	1.32	32	1	GRIN2A	32	0.77	-0.12	-0.12	179	0
CHRM2	84	5.53E-02	0.15	1.26	33	1	KCNJ8	11	0.75	-0.20	-0.12	180	0
FLT4	22	6.02E-02	0.28	1.22	34	1	GRIK2	10	0.75	-0.21	-0.12	181	0
FLT3	27	6.13E-02	0.25	1.21	35	1	CACNB2	15	0.74	-0.18	-0.13	182	0
IKBKB	13	6.55E-02	0.36	1.18	36	1	OPRM1	35	0.74	-0.12	-0.13	183	0
KIT	26	7.66E-02	0.25	1.12	37	1	GLRA1	18	0.74	-0.16	-0.13	184	0
SMO	11	7.92E-02	0.38	1.10	38	1	NOS2	19	0.74	-0.16	-0.13	185	0
ATP1A1	16	8.04E-02	0.32	1.09	39	1	ADRA1A	115	0.74	-0.06	-0.13	186	0
RAF1	11	8.63E-02	0.38	1.06	40	1	HTR4	21	0.73	-0.15	-0.13	187	0
JAK2	22	8.74E-02	0.27	1.06	41	1	TACR1	9	0.73	-0.23	-0.14	188	0
KDR	52	8.76E-02	0.17	1.06	42	1	SCN11A	18	0.73	-0.16	-0.14	189	0

EHMT2	11	1.05E-01	0.37	0.98	43	potential	SCN7A	18	0.73	-0.16	-0.14	190	0
DRD3	73	1.12E-01	0.14	0.95	44	potential	SCN8A	18	0.73	-0.16	-0.14	191	0
CHRNA2	22	1.19E-01	0.25	0.92	45	potential	CHRNB2	12	0.72	-0.20	-0.14	192	0
CSF1R	13	1.25E-01	0.33	0.90	46	potential	TNF	20	0.71	-0.16	-0.15	193	0
DRD5	38	1.26E-01	0.19	0.90	47	potential	CACNA1S	17	0.70	-0.17	-0.15	194	0
JAK3	13	1.26E-01	0.33	0.90	48	potential	CNR2	12	0.70	-0.20	-0.15	195	0
SYK	11	1.34E-01	0.35	0.87	49	potential	PPARG	35	0.70	-0.12	-0.15	196	0
SLC6A4	52	1.46E-01	0.16	0.84	50	potential	CACNG1	11	0.70	-0.21	-0.15	197	0
CYP2D6	13	1.46E-01	0.32	0.84	51	potential	CACNA1H	18	0.67	-0.17	-0.17	198	0
AKT1	23	1.47E-01	0.24	0.83	52	potential	CACNA2D2	10	0.67	-0.23	-0.18	199	0
HTR1E	32	1.53E-01	0.20	0.81	53	potential	MAOB	30	0.67	-0.13	-0.18	200	0
SLC12A1	12	1.57E-01	0.33	0.81	54	potential	ESR1	54	0.66	-0.10	-0.18	201	0
DHFR	11	1.57E-01	0.34	0.80	55	potential	CA4	24	0.66	-0.15	-0.18	202	0
CDK2	23	1.63E-01	0.23	0.79	56	potential	ALOX5	28	0.65	-0.14	-0.19	203	0
JAK1	12	1.72E-01	0.32	0.76	57	potential	CACNA1D	18	0.65	-0.17	-0.19	204	0
HTR6	51	1.81E-01	0.15	0.74	58	potential	ADORA2B	24	0.64	-0.15	-0.20	205	0
MAPK14	32	1.98E-01	0.19	0.70	59	potential	MAOA	31	0.64	-0.13	-0.20	206	0
DRD1	65	2.06E-01	0.13	0.69	60	potential	SLC18A2	9	0.63	-0.25	-0.20	207	0
HTR2C	90	2.14E-01	0.11	0.67	61	potential	GRIN3B	11	0.62	-0.23	-0.20	208	0
MAPK8	13	2.22E-01	0.29	0.65	62	potential	KCNQ2	9	0.62	-0.25	-0.21	209	0
PIK3CB	22	2.28E-01	0.22	0.64	63	potential	PRKACA	11	0.62	-0.23	-0.21	210	0
PRKDC	9	2.31E-01	0.35	0.64	64	potential	GRIN1	42	0.62	-0.12	-0.21	211	0
CHRM4	64	2.32E-01	0.13	0.63	65	potential	TRPV1	20	0.61	-0.17	-0.22	212	0
HTR1B	55	2.40E-01	0.14	0.62	66	potential	ADRB1	67	0.60	-0.09	-0.22	213	0
HTR2A	129	2.41E-01	0.09	0.62	67	potential	GABRA6	37	0.60	-0.13	-0.22	214	0
CHEK1	19	2.47E-01	0.24	0.61	68	potential	ACHE	34	0.60	-0.13	-0.23	215	0
DRD2	126	2.47E-01	0.09	0.61	69	potential	OPRD1	31	0.59	-0.14	-0.23	216	0
PLA2G1B	14	2.57E-01	0.27	0.59	70	potential	CYSLTR1	9	0.58	-0.26	-0.24	217	0
MAPK11	16	2.60E-01	0.25	0.58	71	potential	PTGER1	10	0.57	-0.25	-0.25	218	0
TYMS	18	2.72E-01	0.24	0.56	72	potential	SLC6A3	40	0.55	-0.13	-0.26	219	0
FLT1	24	2.80E-01	0.20	0.55	73	potential	CA12	28	0.55	-0.15	-0.26	220	0
AR	56	2.86E-01	0.13	0.54	74	potential	CHRNA7	23	0.52	-0.17	-0.29	221	0

GABRG2	36	2.87E-01	0.16	0.54	75	potential	TSPO	12	0.51	-0.24	-0.29	222	0
HTR1D	54	2.92E-01	0.13	0.53	76	potential	GRIK1	10	0.49	-0.26	-0.31	223	0
MMP8	10	2.94E-01	0.31	0.53	77	potential	KCNJ11	17	0.48	-0.20	-0.32	224	0
CYP3A4	48	3.10E-01	0.14	0.51	78	potential	CA9	18	0.48	-0.20	-0.32	225	0
BCHE	16	3.15E-01	0.24	0.50	79	potential	AHR	9	0.47	-0.28	-0.33	226	0
FGFR1	20	3.40E-01	0.21	0.47	80	potential	ADRA1D	59	0.47	-0.11	-0.33	227	0
GABRB1	28	3.52E-01	0.18	0.45	81	potential	CA2	36	0.46	-0.14	-0.34	228	0
GRM5	18	3.85E-01	0.21	0.41	82	potential	ATP4A	10	0.45	-0.27	-0.34	229	0
CHRM3	88	3.86E-01	0.10	0.41	83	potential	GRIA1	24	0.44	-0.18	-0.35	230	0
HTR7	52	3.86E-01	0.13	0.41	84	potential	GABBR1	16	0.44	-0.22	-0.36	231	0
CHRNA4	22	3.97E-01	0.19	0.40	85	potential	GABRA1	60	0.43	-0.11	-0.37	232	0
HTR1A	116	4.01E-01	0.08	0.40	86	potential	ABCC8	14	0.42	-0.23	-0.37	233	0
XDH	9	4.38E-01	0.29	0.36	87	potential	TGFBR1	10	0.40	-0.28	-0.39	234	0
AVPR1A	10	4.48E-01	0.27	0.35	88	potential	CACNA1C	30	0.40	-0.16	-0.40	235	0
GABRD	27	4.63E-01	0.16	0.33	89	potential	CCKBR	9	0.40	-0.30	-0.40	236	0
IGF1R	12	4.70E-01	0.24	0.33	90	potential	RRM1	11	0.40	-0.27	-0.40	237	0
SLC6A2	51	4.84E-01	0.12	0.32	91	potential	HTR3B	18	0.39	-0.21	-0.41	238	0
TRPC5	9	5.00E-01	0.28	0.30	92	potential	GABRA4	36	0.38	-0.15	-0.42	239	0
KCNN4	16	5.01E-01	0.21	0.30	93	potential	KCNMA1	13	0.37	-0.25	-0.43	240	0
NR1I2	21	5.05E-01	0.18	0.30	94	potential	SCN4A	26	0.36	-0.18	-0.44	241	0
GABRB3	31	5.15E-01	0.15	0.29	95	potential	ALK	15	0.36	-0.24	-0.44	242	0
CNR1	16	5.25E-01	0.20	0.28	96	potential	OPRK1	39	0.34	-0.15	-0.47	243	0
NTRK1	12	5.28E-01	0.23	0.28	97	potential	ADRB2	78	0.33	-0.11	-0.48	244	0
SERPINA6	12	5.42E-01	0.23	0.27	98	potential	PPARA	18	0.33	-0.22	-0.48	245	0
SIGMAR1	23	5.43E-01	0.17	0.27	99	potential	PTGDR2	9	0.32	-0.32	-0.50	246	0
ROCK1	16	5.68E-01	0.20	0.25	100	potential	GRIN3A	18	0.31	-0.23	-0.51	247	0
FAAH	9	5.69E-01	0.26	0.25	101	potential	GLRA2	10	0.31	-0.31	-0.51	248	0
GABRE	26	5.93E-01	0.15	0.23	102	potential	CA1	39	0.28	-0.16	-0.55	249	0
GABRG1	26	5.93E-01	0.15	0.23	103	potential	RET	16	0.28	-0.25	-0.56	250	0
GABRG3	26	5.93E-01	0.15	0.23	104	potential	NOS1	9	0.28	-0.33	-0.56	251	0
GABRP	26	5.93E-01	0.15	0.23	105	potential	AGTR1	16	0.25	-0.26	-0.60	252	0
GABRQ	26	5.93E-01	0.15	0.23	106	potential	LCK	18	0.25	-0.24	-0.61	253	0

PDGFRB	26	5.97E-01	0.15	0.22	107	potential	ADRA2B	65	0.22	-0.13	-0.65	254	0
GABRB2	33	5.98E-01	0.13	0.22	108	potential	CACNA2D1	17	0.21	-0.26	-0.68	255	0
CYP3A5	13	6.00E-01	0.21	0.22	109	potential	ABL1	17	0.20	-0.26	-0.69	256	0
MAPK1	41	6.01E-01	0.12	0.22	110	potential	AKR1B1	12	0.20	-0.31	-0.70	257	0
MMP13	9	6.09E-01	0.25	0.22	111	potential	EDNRA	11	0.19	-0.33	-0.71	258	0
AVPR2	10	6.22E-01	0.24	0.21	112	potential	MTNR1A	9	0.19	-0.36	-0.73	259	0
CYP2C19	13	6.29E-01	0.21	0.20	113	potential	MTNR1B	9	0.19	-0.36	-0.73	260	0
DNMT1	9	6.41E-01	0.25	0.19	114	potential	ADRA2C	64	0.18	-0.14	-0.75	261	0
GABRA5	44	6.51E-01	0.11	0.19	115	potential	DPP4	12	0.17	-0.32	-0.76	262	0
CYP1A2	12	6.54E-01	0.21	0.18	116	potential	NOS3	15	0.17	-0.29	-0.77	263	0
MAPK12	11	7.36E-01	0.21	0.13	117	potential	PDE1A	9	0.17	-0.37	-0.78	264	0
CDK4	13	7.44E-01	0.19	0.13	118	0	RRM2	9	0.17	-0.37	-0.78	265	0
GABRA3	45	7.50E-01	0.10	0.12	119	0	ADORA2A	31	0.17	-0.20	-0.78	266	0
GRIN2B	39	7.57E-01	0.11	0.12	120	0	PDGFRA	22	0.14	-0.25	-0.86	267	0
CYP2B6	9	7.62E-01	0.22	0.12	121	0	PDE5A	20	0.14	-0.26	-0.87	268	0
HTR5A	19	7.65E-01	0.15	0.12	122	0	CDK5	13	0.13	-0.32	-0.88	269	0
TYR	12	7.69E-01	0.19	0.11	123	0	GLRB	16	0.13	-0.29	-0.89	270	0
CYP19A1	19	7.81E-01	0.15	0.11	124	0	ACE	23	0.13	-0.25	-0.90	271	0
NR3C2	23	7.82E-01	0.14	0.11	125	0	ERBB2	27	0.12	-0.23	-0.91	272	0
GABRA2	44	7.94E-01	0.10	0.10	126	0	PDE3A	20	0.10	-0.27	-1.00	273	0
SLC12A3	14	8.29E-01	0.17	0.08	127	0	ADRA2A	83	0.06	-0.15	-1.19	274	0
HRH3	16	8.31E-01	0.16	0.08	128	0	ESR2	34	0.06	-0.23	-1.23	275	0
KCNH2	39	8.51E-01	0.10	0.07	129	0	CACNA1B	13	0.05	-0.38	-1.29	276	0
GNRHR	9	8.63E-01	0.20	0.06	130	0	PTPN1	11	0.05	-0.41	-1.32	277	0
GRIN2C	22	8.75E-01	0.13	0.06	131	0	CFTR	14	0.05	-0.37	-1.33	278	0
SGK1	9	8.78E-01	0.20	0.06	132	0	MMP2	12	0.05	-0.40	-1.34	279	0
HTR2B	66	8.79E-01	0.07	0.06	133	0	HMGCR	12	0.04	-0.40	-1.36	280	0
PPARD	9	8.87E-01	0.19	0.05	134	0	PDE4B	22	0.03	-0.31	-1.50	281	0
CACNA1F	13	9.06E-01	0.16	0.04	135	0	KCNQ1	11	0.03	-0.44	-1.55	282	0
FGFR3	12	9.19E-01	0.16	0.04	136	0	HSP90AA1	15	0.02	-0.38	-1.61	283	0
CALM1	17	9.19E-01	0.13	0.04	137	0	PTGS1	80	0.02	-0.17	-1.71	284	0
PARP1	16	9.27E-01	0.14	0.03	138	0	CDK1	22	0.02	-0.33	-1.72	285	0

KCNA5	11	9.33E-01	0.16	0.03	139	0	PNP	9	0.01	-0.53	-1.87	286	0
CES1	10	9.46E-01	0.17	0.02	140	0	MAP2K2	9	0.01	-0.53	-1.89	287	0
CYP17A1	9	9.55E-01	0.17	0.02	141	0	PDE4C	15	0.01	-0.44	-2.17	288	0
HTR1F	26	9.63E-01	0.10	0.02	142	0	SRC	17	0.01	-0.41	-2.20	289	0
MMP9	12	9.73E-01	0.14	0.01	143	0	PDE4A	24	0.00	-0.36	-2.42	290	0
CACNA1G	17	9.81E-01	0.11	0.01	144	0	PDE4D	19	0.00	-0.41	-2.44	291	0
ADRB3	34	9.82E-01	0.08	0.01	145	0	EGFR	54	0.00	-0.25	-2.53	292	0
FGFR2	13	9.84E-01	0.13	0.01	146	0	PTGS2	90	0.00	-0.19	-2.55	293	0
HRH4	21	9.89E-01	0.10	0.00	147	0	MAP2K1	18	0.00	-0.45	-2.83	294	0

XI. Examples

[00149] The following examples are included to demonstrate preferred embodiments of the invention. It should be appreciated by those of skill in the art that the techniques disclosed in the examples which follow represent techniques discovered by the inventor to function well in the practice of the invention, and thus can be considered to constitute preferred modes for its practice. However, those of skill in the art should, in light of the present disclosure, appreciate that many changes can be made in the specific embodiments which are disclosed and still obtain a like or similar result without departing from the spirit and scope of the invention.

Example 1- Pan-cancer convergence to a small cell neuroendocrine phenotype that shares susceptibilities with hematological malignancies

[00150] Small cell neuroendocrine (SCN) cancers are an aggressive cancer subtype. In prostate and lung adenocarcinoma, transdifferentiation towards a SCN phenotype is a resistance route in response to targeted therapies. Here, the inventors identified pan-tissue convergence to a SCN state characterized by shared genome-wide patterns of expression, methylation, and copy number alteration. The inventors find that the SCN molecular phenotype is more widespread across various epithelial cancers than previously realized, with these additional cases associated with poor prognosis. More broadly, non-SCN metastases have higher expression of SCN-associated transcription factors than non-SCN primary tumors. Experimental drug sensitivity and gene dependency screens demonstrate that these convergent SCN cancers have shared vulnerabilities. These common vulnerabilities are found across unannotated SCN-like epithelial cases, pediatric small round blue cell tumors, and unexpectedly in hematological malignancies. The SCN convergent phenotype and common sensitivity profiles with hematological cancers can guide treatment options beyond the limitations of tissue-specific targeted therapies.

[00151] Small cell neuroendocrine (SCN) cancers are a histologically similar and highly aggressive cancer subtype that appears across tissue types. No effective treatment modalities are available. Non-SCN epithelial cancers have been shown to transdifferentiate to SCN cancers in response to targeted

therapy. This has important consequences in that SCN cancers, once considered rare, may become increasingly common with the emergence of resistance cases from targeted therapies. Here the invenotrs define molecular signatures for SCN cancers, and the inventors find that SCN cancers share similar drug and RNAi vulnerabilities with blood cancers. The inventors' results guide the detection of SCN-like cases in the clinic, and support the exploration of treatments for SCN cancers that mimic treatments for blood cancers.

A. Introduction

[00152] Neuroendocrine cells are found in numerous tissues, but the cell of origin of SCNCs across tissues is unclear. Small cell lung cancer (SCLC) can arise de novo, possibly from a cell of neuroendocrine origin, as seen in mouse models or in transformation experiments performed in distinct lung cell types (Park et al., 2011; Sutherland et al., 2011). A second proposed mechanism for SCLC origin is through transdifferentiation from another non-neuroendocrine cell lineage, which has been observed in patient tumors, and studied in mouse in vivo experiments (Niederst et al., 2015; Yang et al., 2018). Across multiple tissues types, adenocarcinomas have been observed to escape targeted therapy through evolution to a histologically similar SCN phenotype, highlighting the need to characterize and develop therapies for this aggressive cancer outcome. There are currently no effective therapies for SCNCs. SCNC is considered a systemic disease and typically leads to early metastases. Etoposide or platinum-based chemotherapies are the primary first-line treatment modalities (Klimstra et al., 2015; Nadal et al., 2014). These treatments are only transiently effective, and 5-year survival rates for SCN lung and prostate cancers are less than 20% (Alanee et al., 2015). Here the inventors sought to provide a molecular and functional underpinning for the observed pathology-based similarities between SCN cancers arising in multiple tissue types. In an unsupervised fashion, the data led to an unanticipated signature and vulnerability similarity between SCN cancers and hematopoietic malignancies.

B. Results

1. Small cell neuroendocrine cancers across tissues converge on a common molecular phenotype

[00153] With the advent of global -omic profiling of SCN cancers (Beltran et al., 2016; George et al., 2015; Robertson et al., 2018), the inventors aimed to comprehensively define and explore the molecular similarities of SCN tumors across various tissues. An unsupervised principal component analysis (PCA) performed on RNA-seq datasets of tumor biopsies of lung adenocarcinoma (LUAD), castration-resistant prostate adenocarcinoma (CRPC-adeno), small cell lung cancer (SCLC), and castration-resistant neuroendocrine prostate cancer (NEPC), along with both normal lung and prostate tissues, revealed a strongly convergent expression signature (Fig. 1A), as previously reported in comparisons of normal tissue and SCN tumors (Park et al., 2018). The inventors further find that as tumor cell states progress along a transdifferentiation trajectory from adenocarcinoma to SCNC

(arrows), the tumors become increasingly independent of tissue of origin, and converge to a shared set of features reflecting a common SCN state.

[00154] Four samples of bladder cancer (BLCA) in the TCGA, recently reclassified as having small cell neuroendocrine features (Robertson et al., 2018), also converge with the lung and prostate SCN cases when included in the PCA analysis (Fig. 1B), with the PCA recapitulating a developmental landscape for the three tissues. Hierarchical clustering of the samples supported that SCNCs of these three epithelial tissues were more similar to each other than to their non-SCNC counterparts (Fig. 8A). The genes that most strongly contribute to the SCN signature in the pan-tissue analysis are enriched for known small cell neuroendocrine-associated genes such as CHGA and INSM1, and genes related to neural transcriptional programs such as ASCL1, NEUROD1, SEZ6, INA, and NKX2-2 (Fig. 1C). It is important to note that any one cancer incidence may contain only a subset of these markers (Fig. 8B) and hence be missed by traditional classification schemes based on only a few markers (Oberg et al., 2015). In sum, unsupervised analyses revealed that SCN cancers of different tissues are more similar to each other than are adenocarcinomas of different tissues.

[00155] To further investigate the function of genes differentially expressed along the normal to SCNC convergent trajectory, the inventors applied enrichment analysis to the ranked list of genes. Enriched in the SCN state were gene sets related to neuron development and neuronal function, as well as splicing and cell cycle, while the de-enriched gene sets included those related to adhesion, and to immune response and inflammation (hereafter referred to as immune gene sets) (Fig. 1D-E). To determine the contribution of proliferation genes on convergence, the inventors removed proliferation and proliferation-associated genes, and found that the convergence of SCNCs across tissues was maintained (Fig. 8C). Enrichment analysis on ranked genes from the proliferation gene-removed PCA confirmed the loss of enrichment of cell cycle gene sets, and the maintenance of enrichment of neuronal gene sets (Fig. 8D).

2. A common transcription factor network is reflected in small cell neuroendocrine cancer profiles across tissues

[00156] The inventors built a data-guided transcription network across lung, prostate, and bladder SCN and non-SCN tumor datasets using ARACNe to uncover the transcription factor network defining SCNCs. The inventors employed the Virtual Inference of Protein-activity by Enriched Regulon (VIPER) algorithm to infer protein activity from gene expression data. This analysis revealed a remarkable similarity in data-driven inferred transcription factor activity across lung, prostate, and bladder SCNCs (Fig. 1F). The transcription factors identified included multiple factors central to neural development and brain patterning, such as LHX2, HES6, PROX1, PAX6, MYT1, and NKX2-2 (data not shown). These genes highlight the influence of neuronal gene programs and transcription factors in multiple tissues in the development of a SCNC identity.

[00157] Gene expression-based PCA defined on lung adeno and lung SCN cell lines faithfully predicted SCN cases of lung tumors (Fig. 8E), but not other transitions such as melanoma dedifferentiation (Tsoi et al., 2018) (Fig. 8F), supporting cell lines as an informative model for the interrogation of the SCN and non-SCN dichotomy. Neuronal gene sets were enriched in SCN tumors compared to their tissue-respective adenocarcinomas, while immune gene sets were de-enriched. Interestingly, the same immune gene sets were de-enriched in small cell lung cancer cell lines, which do not contain an immune cell subpopulation as tumor biopsies do, indicating that the reduction of canonical immune and inflammation mediators in the SCN state is in part cancer cell-intrinsic (Fig. 8G).

3. The shared small cell neuroendocrine gene expression signature has an epigenomic basis

[00158] As epigenetic mechanisms regulate gene expression and differentiation, the inventors investigated changes in DNA methylation patterns that accompany the SCN transition. Signature overlap analysis using rank-rank hypergeometric overlap (RRHO) on PLSR loadings-based signatures created individually from either lung or bladder cancers showed that the methylation signatures were highly similar (Fig. 2A) (Plaisier et al., 2010). To characterize the methylation sites distinguishing SCNCs from their adenocarcinoma counterparts, the inventors plotted methylation sites by their rank in the PLSR loadings (prostate was not included here due to much fewer sites measured by the corresponding microarray platform). This analysis revealed that sites within open-sea regions (typically distant from the transcriptional start site (TSS)), rather than CG island regions (TSS proximal), are important in contribution to the SCN to non-SCN distinction (1-sided KS-test p value $< 2.2 \times 10\text{-}16$) (Fig. 2B). Distinct from the canonical role of DNA methylation in regulating transcription at gene promoters, these distal methylation changes that delineate the epigenetic differences between SCN and non-SCN cancers are consistent with enhancer-based regulation of gene expression programs (Sur and Taipale, 2016).

[00159] The inventors next investigated whether the methylation sites distinguishing lung SCN from non-SCN tumors could separate the same groupings in bladder cancer, or vice versa. When the inventors projected lung cancer samples to a PLSR methylation signature based on the bladder non-SCN – SCN dichotomy, they observed that these sites on average distinguished SCLC from LUAD (Fig. 2C). In the reverse direction, when BLCA samples were projected onto a PLSR-based framework trained on the lung tumor biopsies, not all the BLCA SCN samples were completely distinct from the BLCA non-SCN samples, but on average had methylation patterns more similar to lung SCLC, highlighting the concordance of non-SCN versus SCN methylation profiles across tissues (Fig. 2C). To gain insight into the genes being regulated by methylation changes in SCNCs across multiple tissues, the inventors co-analyzed the subset of sites measured in all datasets (lung, bladder, and prostate). Projection of gene-summarized methylation values of lung tumor samples onto a PLSR analysis of lung cell lines

confirmed concordance of methylation patterns between tumors and cell lines (Fig. 9A). Pairwise RRHO analyses supported the methylation-based concordance of SCN tumors from all three tissues (Fig. 9B). Gene-based summarization of methylation sites revealed that the top differentially enriched gene sets that appeared across lung, prostate, and bladder tissues were strongly related to neuronal development (Fig. 2D). Taken together, the methylation analysis supports that the pan-tissue convergent similarity in SCNCs is functionally maintained across their methylomes.

4. Selection for small cell neuroendocrine-associated DNA copy number alteration signatures across tissue types

[00160] Recurrent genomic scars in cancer are reflective of current and past selective forces that confer fitness advantages through copy number changes in distinct genomic regions (Graham et al., 2017). PCA of DNA copy number patterns in lung cell lines in the Cancer Cell Line Encyclopedia (CCLE) showed clear differences in the copy number amplification and deletion patterns between SCN and non-SCN lines along the second principal component (Fig. 10A), with the first principal component describing the overall degree of aneuploidy of each tumor sample (Fig. 10B). The inventors projected patient tumor samples onto this PCA framework and found that the CNA patterns in the SCN lung cancer (SCLC) cell lines were reflected in both SCLC (Fig. 10C) and NEPC (Fig. 10D) patient tumors. To determine consistently amplified or deleted regions in SCN cases of the two tissue types, the inventors performed PLSR on lung and prostate samples together (Fig. 10E-F) or independently (Fig. 10G), regressing on a binary phenotype of SCN or non-SCN. In the independent PLSR analyses results, the inventors examined the genomic loci loadings for consistencies (Fig. 10G). This consistency analysis demonstrated that SCNCs shared particular amplifications and deletions, such as 1p amplification and 3p deletion. As a positive control, the inventors noted that RB1 was included in the consistent deletion region on chromosome 13. Overall, the shared CNA patterns support that common selective forces act on small cell variants in both lung and prostate cancers. Furthermore, these specific CNA changes are seen in both de novo (lung) and treatment-induced transdifferentiation (prostate) cases of SCN cancers, supporting that the selective pressure of different tumor development pathways can similarly shape the copy number landscape of SCNCs.

5. A pan-cancer predictor of small cell neuroendocrine cancers reveals unannotated SCN cases

[00161] Clinical classification of SCNCs relies on histology and pathology defined by a few sets of morphological and molecular features. To uncover cases missed by these traditional approaches the inventors applied global omics profile-based scoring in previously analyzed datasets of purported non-SCN tumors (data not shown). Namely, the inventors used the gene expression-defined PCA SCN convergence framework, which provides a weighting for each gene (Fig. 1A), to predict SCN phenotypes across approximately 7000 primary TCGA tumors from 21 different epithelial tumor types (Fig. 3A). Boxplots of the first component in the prediction model reveal a low frequency of primary

tumor cases that contain a SCN component (~1%). Known SCN cases previously annotated in bladder as well as non-SCN primitive neuroectodermal tumors (PNET) of the pancreas were predicted using the inventors' classifier (red boxes Fig. 3A). Except for the low grade pancreatic PNETs, these samples were high grade tumors (data not shown), consistent with reports in the literature for the grades of pathology-defined SCN samples (Oronsky et al., 2017; Watson et al., 2018). Of note, there were many high-grade samples that are not SCN-like. Thus, SCN high-grade tumors may need to be treated differently in the clinic compared to other (non-SCN) high-grade tumors.

[00162] As SCN cases are often highly aggressive, the inventors compared the transcriptome-based predicted SCN (referred to as SCN-like) to non-SCN cases, controlling for tumor type, and found a significant decrease in patient overall survival in the SCN-like cases (excluding the indolent primitive neuroectodermal tumor cases found in pancreatic adenocarcinoma) (Fig. 3B). Association of the SCN phenotype with poorer overall survival was robust to changes in the SCN-score threshold used (data not shown), supporting that the SCN phenotype exists along a spectrum. This is confirmed, in both individual and pan-cancer survival analysis based on the continuous SCN score, in the majority of epithelial cancers (Fig. 3C). The traditional classification is that 30% of a tumor needs to be neuroendocrine for a cancer to be called neuroendocrine histologically, creating a dichotomous classification (Oronsky et al., 2017). The inventors' model places each cancer sample along a small cell neuroendocrine spectrum, and supports that cancers with higher levels of SCN features have increasingly poorer outcomes, even those with SCN features in the range that they are not overtly annotated as SCN by pathology analysis.

[00163] The inventors next investigated the histological features of the tumors most strongly predicted to be SCN-like based on the gene expression-derived SCN signature score. Notably, a number of TCGA cases received SCN scores greater than 3 standard deviations above the mean, although almost all were not diagnosed as neuroendocrine carcinoma based on the original pathology reports. To confirm the computational prediction, the inventors chose high signature-score outlier samples based on proliferation-removed SCN score across multiple tissue types (CESC, COADREAD, ESCA, HNSC, LUAD, LUSC, PRAD, STAD, THCA) and a pathologist analyzed the corresponding hematoxylin and eosin (H&E)-stained histology slides. Fourteen of 16 cases were confirmed by the pathology analysis to have SCN or neuroendocrine features. Cases with no SCN region identified may be explained by tumors with focal SCN, and pathology calls being performed on tissue not adjacent to the tissue used for sequencing (Table S5; web resource online at systems.crump.ucla.edu/scn/pathology_images.html).

[00164] Because SCN breast cancers are considered rare, with a reported incidence of 0.1% (Wang et al., 2014), the inventors further investigated whether the predicted SCN-like BRCA cases in the TCGA indeed contained SCN features, which would suggest an under-diagnosis of breast cancer cases with SCN features. In this analysis, the inventors ranked samples by their proliferation-removed SCN score. A pathologist thoroughly examined a select number of H&E stained slides of TCGA breast tumor

cases covering a full range of SCN scores (Fig. 3D-G; Fig. 11A-H; Table S5; web resource: https://systems.crump.ucla.edu/scn/pathology_images.html). The SCN score was statistically predictive of samples with pathology-based SCN features (p value = 9.1 × 10-7; Kolmogorov-Smirnov enrichment test) (Fig. 3H). Thus, the pan-tissue pathology analysis validated the transcriptome-based SCN signature score as a predictor of tumors with SCN morphology features.

[00165] In the pathology analysis, high SCN signature-score BRCA samples were typically called either SCN-positive, or more often as having mixed histology (cells with SCN features mixed with a non-SCN breast tumor subtype, most frequently invasive ductal carcinoma). Three of 4 breast cancer subtypes (Basal, Luminal B, Luminal A) displayed regions with SCN pathology, usually in cases with accompanying genetic dysregulation of TP53 and RB1, suggesting a subset of cases for which closer pathologic interrogation will be beneficial to uncover the often focal regions of SCN morphology (Fig. 11I, Table S5). The SCN score-high BRCA samples did not uniformly express the traditional SCN markers of CHGA, SYP, and NCAM1 (Fig. 3I, Table S5). This finding reinforces the appreciation that heterogeneity in expression precludes the use of only a small set of markers in the clinical identification of aggressive SCN signature-positive tumor cases and their accompanying poorer prognosis.

[00166] The negative regulator of neural gene expression REST/NRSF functions as a transcriptional repressor. Loss of REST transcriptional suppression activity has been linked to promoting the SCN phenotype in NEPC (Zhang et al., 2015). In SCLC, REST induction by Notch in part drives inhibition of neuroendocrine differentiation in a subset of tumor cells, thus helping enforce tumor heterogeneity (Lim et al., 2017). The inventors' analysis supports that REST activity regulates the SCN phenotype in a pan-cancer manner (Fig. 11J-L). Namely, the expression of REST repressional target genes is positively correlated to SCN score across many epithelial and other tumor types, consistent with loss of REST-mediated suppression with increasing SCN score (Fig. 11K, p value = 5.4 × 10-13, one-way t-test). Overall the SCN score and pathology analyses above validate that tumors with SCN-like features can be missed by standard pathology examination, and thus may be present more commonly than currently appreciated in cancer types in which SCNCs are considered rare, such as in breast cancer.

6. Mutations associated with the pan-tissue small cell neuroendocrine phenotype

[00167] Mutations in tumor suppressor genes TP53 and RB1 are known to be highly associated with lung and prostate SCNCs (Beltran et al., 2016; George et al., 2015), and TP53 and RB1 loss have been shown to contribute to the formation of SCN-like histology and the transdifferentiation of adenocarcinomas to NEPC in vivo (Ku et al., 2017). By interrogating the spectrum of primary samples, the inventors sought to identify additional mutations associated with SCNCs in a pan-tissue context. The inventors applied a logistic regression model to fit mutation data in the TCGA dataset to SCN score, controlling for cancer type. The inventors first investigated the known cases of SCNC in lung and prostate tissues, which confirmed substantial and statistically significant TP53 and RB1 mutations as

well as significant association with mutation of FOXA1, whose wild-type expression inhibits transition to NEPC (Kim et al., 2017) (Fig. 12A). In non-SCN epithelial cancers the inventors found that TP53 and RB1 mutations are associated with higher SCN score (Fig. 12B). Additionally the inventors uncovered SCN-associated mutations in NRAS (neuroblastoma-RAS) (Fig. 12B) and genes such as OBSCN and BCLAF1 that have been previously associated with tissue specific SCNCs (Cho et al., 2016; Rudin et al., 2012). In contrast, KRAS mutations were enriched in cases on the non-SCN side of the spectrum. Even in cancer types that are already highly neuronal such as glioblastoma (GBM), TP53 mutations were still associated with higher SCN score (Fig. 12C). This result aligns with published findings that the proneural subtype of GBM has a higher preponderance of TP53 and IDH1 mutations, while the mesenchymal subtype is enriched for NF1 mutations (Verhaak et al., 2010). Taken together, these results point to mutations beyond TP53 and RB1 that are common to SCN cancers across tissue types, and supports their mutational contribution to the development of SCN phenotypes.

7. Metastatic non-SCN tumors express the SCN signature profile more strongly than primary non-SCN tumors

[00168] Given that SCNCs can arise from epithelial tissues, the inventors investigated the extent of the SCN signature in metastatic adenocarcinomas in comparison to primary adenocarcinomas. For lung, prostate, and bladder tissues, the inventors found that the expression profiles of metastatic adenocarcinoma samples were on average more similar to SCNCs than were their respective primary adenocarcinomas (Fig. 4A). Metastatic adenocarcinoma samples typically do not express canonical SCN markers, but express increasing levels of other SCN-associated genes and key transcription factors (Fig. 4B). To investigate this finding at a pan-tissue scale, the inventors analyzed a published dataset of metastases across many different tissues, which included both adenocarcinoma and SCNC metastases (Robinson et al., 2017). To determine the SCN signature score of metastatic adenocarcinoma and SCNC samples from all tissues in this metastasis dataset, they were projected onto the SCN framework of Fig. 1A (Fig. 13A). Plotting the expression levels of the top 50 genes of the SCN signature in prostate cancers visually demonstrated the increased similarity of prostate metastatic adenocarcinomas to prostate SCN cancers (Fig. 13B). The inventors then annotated metastatic samples by their site of origin and scored normal, primary, metastatic, and SCNCs by their position on the SCN spectrum (Fig. 4C). This analysis revealed that metastatic non-SCN samples tended to have SCN-score distributions significantly shifted upwards on the SCN spectrum in relation to their respective primary non-SCN samples, in multiple different tissues.

[00169] Because the SCN score contains both neuronal and proliferation components (Fig. 1E), the inventors sought to deconvolute these components and define the contribution of each in the primary, metastatic, and SCN samples. The inventors found that while a proliferation signal is a contributing component, metastatic cases have a significant increase in the expression of the SCN program even when the proliferation component is removed (Fig. 13C). Additionally, in the pancreas, this signature

deconvolution separates low grade PNET cases (red box Fig. 13C) from SCN cases, and these cancers are documented to be distinct (Yachida et al., 2012). PNET cases have neuroendocrine features but are indolent and hence have a low "proliferation score". When the inventors analyzed additional low grade pancreatic PNETs, as well as neuroendocrine tumors of the rectum and small intestine (Alvarez et al., 2018), they both fell in the same pattern of having low proliferation but high neuroendocrine features (Fig. 13D). Taken together, these primary tumor versus metastasis results support that metastatic adenocarcinomas derive elements of their aggressive phenotypes from both a proliferation program and from a program associated with the neuronal programs of SCNCs.

8. Hematopoietic cancers share expression profiles and drug sensitivities with SCN cancers.

The inventors next leveraged the concordance of SCN tumors and cell lines (Figs 8-10) and the availability of drug screen and other data types across cancer cell lines, to gain insight into potential therapeutic vulnerabilities of SCNCs. The inventors scored all CCLE cell lines based on their SCN-gene expression score (based on projection of all lines onto the PLSR space defined by lung adeno and SCN cell lines) (Fig. 5A). Consistent with the tumor findings, i) known SCN cell lines had higher SCN scores than most epithelial lines, and ii) the epithelial cases included a few cell lines that were not annotated as small cell but nonetheless had a strong SCN score that was well into the tail of the distribution of scores for that tumor type (red box in Fig. 5A). Unexpectedly, hematopoietic cancer cell lines had higher SCN expression signatures in comparison to the non-blood epithelial cancers (Fig. 5A), which was likewise observed when the same analysis was performed on tumor data (Fig. 14A).

The inventors next analyzed protein expression signatures using reverse-phase protein array measurements across cell lines from various tissues (Li et al., 2017). The inventors performed PCA on the lung adeno and SCN lines, and found them to be well segregated by this unsupervised protein expression profile-based approach (Fig. 5B). The inventors then projected all other cancer types onto this protein-defined framework. Strikingly, the inventors saw that blood cancers as a group had protein profiles highly similar to lung SCN cancers (Fig. 5B), further supporting the unanticipated similarity in profiles of SCNCs and cancers of the hematopoietic system. The proteins more highly expressed in SCN cancers included the anti-apoptotic factor BCL2, while proteins higher in non-SCN cancers included EGFR, Caspase8, E-Cadherin, and RB (data not shown). To visualize these results in a gene-oriented framework, the inventors used the top differentially expressed proteins between lung adeno and SCN lines to create a clustering-based heatmap of both lung and blood cancer cell lines (Fig. 14B). This framework again found that blood cancer lines clustered with lung SCN lines, with similar

increased expression of proteins such as BCL2, and regulators of cell cycle such as ATM, CHK1, and E2F1, which are candidate therapeutic targets in SCLC (Doerr et al., 2017).

[00170] Remarkably, the similarity between SCN cancers and blood cancers was seen again when applying PCA analysis to large-scale drug sensitivity data. Here the inventors used a published drug screen of 255 small molecules and common chemotherapeutic agents across a wide panel of cancer cell lines from multiple tissue types (Iorio et al., 2016). Analogous to the protein and gene expression-based analysis, PCA was performed on the matrix of drug sensitivity IC50 values across lung adeno and lung SCN cell lines using all drugs in the screen. This unsupervised approach revealed a unique sensitivity/resistance profile for lung SCN cases compared to lung adenocarcinoma (Fig. 5C). The inventors then projected all other cell lines onto this PCA space. Parallel to the protein-based analysis, blood cancers projected into lung SCN drug sensitivity space, while other epithelial tissue cancer types projected into the lung adeno space (Fig. 5C). Hierarchical clustering based on the drugs with top differential sensitivity between lung adeno and SCN lines also supported the drug sensitivity similarities between lung SCN and blood cancers (Fig. 5D). Compared to lung adeno lines, lung SCN lines were more sensitive to drugs that inhibit histone deacetylation such as Vorinostat (Fig. 5E). Lung SCN lines were more resistant to drugs which target EGFR or components of ERK/MAPK signaling pathways, such as Trametinib and Selumatinib (AZD6244) (Fig. 5E). Taken together, these findings support that cancers of the hematopoietic system have similarities to SCN cancers that range from expression profiles to drug sensitivity-based phenotype profiles.

9. Small-round-blue cell tumors share drug sensitivities with lung SCN and blood cancers

[00171] In addition to blood cancers, the inventors' gene signature analysis revealed that small-round-blue cell tumor (SRBCT) cell lines, such as neuroblastoma, medulloblastoma, Ewing's sarcoma, and rhabdomyosarcoma, have high SCN gene expression signature scores (Fig. 5A). These similarities between SRBCTs and SCNCs are also observed in protein profile (Fig. 15A) and drug sensitivity profile analysis (Fig. 15B).

[00172] Particularly interesting were drugs with high differential sensitivity in both lung SCN versus adeno, and blood versus non-blood cell line comparisons, supporting that the drug acts through a shared SCN-blood mechanism. The top drugs with such a pan-SCN-blood sensitivity profile included FK866, and THZ-2-102-1 (Fig. 15C). FK866 is one of several NAMPT inhibitors shown to have indications for efficacy in both SCLC and neuronal cancers (Cole et al., 2017; Watson et al., 2009). THZ-2-102-1, a CDK7 inhibitor, targets components of transcriptional regulation and has been shown to be highly effective in MYCN-amplified neuroblastoma (Chipumuro et al., 2014). For many individual drugs, blood cancers of multiple types, SCLCs, and SRBCTs displayed increased sensitivity compared to other epithelial cancer types. Of note, blood cancers and the majority of, but not all, SCN cancers grow in suspension in vitro. However, their common drug sensitivities are not primarily a result of this growth

condition. PCA using all drugs in the database indicated that SCLC suspension and SCLC adherent lines are intermingled in their overall drug sensitivity profiles, and are both distinct from LUAD (Fig. 15D). The parallel drug sensitivities of lung SCN and blood cancers (R = 0.68) was maintained when the analysis was restricted to the 31% of SCLC lines in the drug sensitivity database that grow adherent in culture (R =0.69; n=20 adherent, n=6 semi-adherent, n=38 suspension) (Fig. 15D). Furthermore, SRBCTs largely grow adherent in culture (n=50 adherent, n=6 semi-adherent, n=6 suspension). Taken together, these results support that the commonalities in drug sensitivities among these three groups are not solely due to suspension culture characteristics (Fig. 15C-D).

10. An expression-based SCN classifier is predictive of sensitivity to SCN targeting drugs in non-SCN epithelial cancers across tissues

[00173] In their expression analysis, the inventors found epithelial tumors that had high SCN scores despite not being reported as small cell carcinoma by initial pathology analysis (boxes Fig. 3A). The inventors' cancer cell line analysis revealed analogous cases. More specifically, while epithelial cancer cell lines generally had mean SCN scores lower than blood cancers or SRBCTs, a small subset of epithelial cancer lines had high expression of SCN gene programs well into the positive tail of the distribution (red box in Fig. 5A).

[00174] The inventors found that SCN-like cell lines based on expression generally matched SCN-like cell lines based on drug sensitivity profiles (Fig. 15E). The correlation between SCN expression score and sensitivity to SCN-targeting drugs was significant in multiple epithelial tissue types including lung squamous, endometrium, pancreas, and colorectal cancer cell lines. The same trend was seen in 5 of 6 additional epithelial tissue types that did not reach individual significance, and overall the 10 non-lung epithelial tissue types together had a Liptak-Stouffer combined p value of $1.4 \times 10\text{-}5$. In addition, tissues with a greater mean SCN-expression signature, such as endometrium, breast, and large cell lung cancers, also had drug sensitivity profiles that were closer to that of small cell lung cancer (Fig. 15F).

[00175] These drug sensitivity findings support that the predictions based on SCN expression signatures have functional consequences. Thus, not only do cancers of the hematopoietic system and pediatric SRBCTs have similar drug sensitivities to adult SCNCs, but as epithelial cancers from various tissues develop SCN gene expression programs, they become increasingly susceptible to a similar panel of SCN-targeting drugs. These results point to an underappreciated nuance: in addition to distinct cancer types like SRBCTs, blood cancers, or the mixed small cell and non-small cell histology seen in patient biopsies, the cell line data indicates that the small cell phenotype exists along an expression signature-defined spectrum that has influence on the therapeutic vulnerabilities in individual cancers. As such, screening for and targeting the SCN phenotype in individual patient cases could have clinical benefit.

[00176] In summary, interrogation and co-analysis of three cell line datasets (gene expression, protein expression profiling, and drug sensitivity data) pointed to three classes of cancer types (blood cancers, SRBCTs, and epithelial SCN-like cancers) with SCNC-like molecular profiles. These

concordant molecular profiles had functional consequences and revealed specific shared drug vulnerabilities.

11. Validation of shared SCN and blood susceptibilities based on gene dependencies

[00177] In that drug susceptibility profiles implicated shared phenotypes between SCN and blood cancers, the inventors next sought to validate these findings using an independent empirical dataset. Towards this end, the inventors analyzed a genome-scale RNA-interference (RNAi; shRNA-based) functional screen across a large panel of cell lines from various tissues (Tsherniak et al., 2017). The inventors first trained a prediction model on the gene dependency data between lung adeno and SCN cell lines (Fig. 6A). A PLSR-based susceptibility prediction approach had 92% cross-validation accuracy for predicting the identity of lung cell lines that have concordant annotation and gene expression signatures (data not shown). Applying the prediction model to the remaining cell types showed that blood and SRBCT lines share gene depletion-defined susceptibilities with the lung SCN lines (Fig. 6B). In reverse, using a blood versus non-blood RNAi sensitivity framework as the predictor confirmed that SCNCs and SRBCT's have more blood-like sensitivities (Fig. 16A-B). Thus, the RNAi dependency framework validates the inventors' drug-based findings that SCNCs, hematopoietic cancers, and SRBCTs have shared susceptibilities.

[00178] Investigating the biological pathways that had shared knockdown susceptibility in SCN and blood cancer cell lines, revealed that both cancer types were enriched in sensitivity to disruption of immune pathways and lipid and sterol metabolism (Fig. 6C-D, Fig. 16C). Notably, this susceptibility enrichment was not exclusively tied to elevated (nor depressed) gene expression. In fact, SCN cell lines have lower expression of immune pathway genes but remain sensitive to their disruption. In contrast, SCN and blood cancer cell lines share increased expression of cell cycle pathway genes, but both had decreased sensitivity to the knockdown of these genes (Fig. 6E). Although SCNCs had high expression of neural genes (Fig. 1), and a few distinct neural gene sets did show genetic sensitivity to knockdown (Fig. 6F upper panel), there was no substantial enrichment of susceptibility to knockdown of neural genes – supporting that many components of the upregulated neuronal gene programs promote phenotypes distinct from the regulation of cell survival (Fig. 6F). These expression versus sensitivity results highlight that cells are not particularly dependent on genes with elevated expression. For example, blood and SCN cancers shared an expression-based proliferation profile, but gene dependency data did not support proliferation as the most direct determinant of shared blood and SCN vulnerabilities (Fig. 6E). Furthermore, even the knockdown of genes with reduced expression can have functional consequences.

[00179] While the inventors' transcriptome, proteome, drug sensitivity, and gene susceptibility analyses above uncovered many similarities between SCNCs and blood cancers (Fig. 16C-D), naturally

there are also many differences, especially at the gene expression level with blood cancers expressing more immune-annotated genes, and SCNCs expressing more neuro-annotated genes (Fig. 16E).

[00180] The inventors further investigated specific knockdown sensitivities of genes encoding protein targets currently of interest in clinical trials for various cancer types. The inventors focused on CDKs and CDK antagonists, which had strong differential sensitivities in the lung adeno versus small cell, and blood versus non-blood comparisons. CCND1 and CDK4 knockdown were more effective in lung adeno compared to either SCLC or blood cancers, while knockdown of CDKN2C, a CDK4 inhibitor, was more effective in SCLC and blood cancers (Fig. 6G). The CCND1-CDK4 complex has been shown inhibit phospho-RB to promote cell cycle progression, and loss of RB function is a hallmark in the development of the SCN phenotype (Fig. 10G & Fig. 12A-B). These results predict that CDK4i-treated epithelial cancers could use de-differentiation to an SCN phenotype as a resistance mechanism. This finding is consistent with RB loss as a resistance mechanism to CDK4 antagonism observed in preclinical models of liver cancer and glioblastoma, and in patients with metastatic breast cancer (Bollard et al., 2017; Condorelli et al., 2018). Notably, CDK7 knockdown was more effective in SCLC and blood cancers, paralleling the drug sensitivity finding for THZ-2-102-1, a CDK7 inhibitor (Fig. 6G, Fig. 15C). Thus, CDK7 sensitivity provides a specific example of a previously documented sensitivity in both SCNCs and blood cancers (Cayrol et al., 2017; Christensen et al., 2014), that is a part of the wider panel of shared sensitivities revealed by the inventors' pan-cancer and functional screen analysis.

12. Concordant gene expression-based drug sensitivity profiles in SCN and blood tumors

[00181] The inventors next investigated if the gene expression profiles associated with drug susceptibilities are present in primary tumors. Using an elastic net regression framework, the inventors built a predictor of drug sensitivities based on the lung adeno (LUAD) and lung SCN (SCLC) cell line gene expression profiles. The inventors applied this cell line-trained predictor to the expression profiles of tumors. In general, drugs that were differentially potent in adeno versus SCN lung cancer cell lines, were likewise predicted to be differentially potent in adeno versus SCN lung tumors (average $|R| = 0.43$) (Fig. 7A-B). This result included a drug that targets BCL2 (ABT.263), a gene which is often overexpressed in SCLC as a resistance mechanism to etoposide treatment (van Meerbeeck et al., 2011); and the PLK inhibitor NPK76.II.72.1 (Fig. 7C, red dots Fig. 7A). To determine the global sensitivity status of individual tumors, elastic net-predicted tumor sensitivities were projected onto the PCA drug sensitivities of lung adeno and SCN cancer cell lines (as shown in Fig. 5C). The inventors found that epithelial tumors with (previously unannotated) SCN features (based on gene expression profiles, Fig. 3A), typically had drug sensitivity profiles more similar to annotated SCLC tumors than to LUAD tumors (Fig. 7D). 10 of 11 tumor types had a significant association of expression-based predicted SCN status to predicted SCN-like sensitivity (KS test-based; Fig. 7D). These results support that the expression profiles associated with drug sensitivities in vitro are reflective of the in vivo tumor setting.

[00182] The inventors then expanded this analysis to include hematopoietic tumors. As in the cell line empirical-sensitivity data case, blood tumors shared predicted-drug sensitivity profiles with SCN tumors. These shared profiles included drugs that target BCL2 (e.g., ABT.263) which are already approved in chronic lymphoblastic leukemia (CLL), carry breakthrough designation for acute myelogenous leukemia (AML), and are in various stages of therapy development for other hematological malignancies (Seymour et al., 2018) (Fig. 7E-F). Thus, the inventors observe a previously unappreciated similarity between SCNCs and blood cancers that spans gene and protein expression, and drug sensitivity and gene vulnerability profiles. Importantly, the sensitivity profiles demonstrate predicted concordance in tumor data, raising the potential for developing SCN-targeted therapeutics from the established knowledge base for clinical treatment of hematopoietic malignancies.

C. Discussion

[00183] In this work, by defining the molecular signatures shared between SCN cancers from different tissue types, the inventors identified molecular networks, key transcription factors, and gene mutations that drive a convergent SCN phenotype. The strength of these shared profiles allowed the inventors to define a molecular classifier that scores a spectrum of intermediate and outlying SCN-like cancers in patient biopsies not currently identified by histology or limited biomarker sets alone. Survival analysis supports the aggressiveness of these SCN-like epithelial cancers (Fig. 3B) (Chen et al., 2018). The implications of identifying this molecular spectrum of SCN cancers is apparent in functional data on drug response and gene dependency, which further supports the value of identifying SCN-like cases in clinical assessment. The inventors found three categories of tumors to generally share expression and sensitivity features with pathology-defined SCN cases: (i) SCN-like epithelial cancers, (ii) pediatric small round blue cell tumors (SRBCTs), and (iii) hematopoietic malignancies.

[00184] The inventors' molecular profiling-based SCN scoring identified cases with SCN or neuroendocrine features across numerous purportedly non-SCN primary tumors. These cases may not have been reported in the original pathology reports due to the fact that their SCN component is typically focal, and the conventional thinking that SCN is rare in breast and other epithelial tumors. Epithelial tumor types, such as breast cancer, in which SCN tumors rarely occur but have poor prognosis (Inno et al., 2016), present statistical challenges in advancing care through clinical trials, and thus cross-tissue learning supported by shared molecular profiles will likely be required. In sum, the inventors' findings of shared molecular profiles, and shared drug and genetic sensitivities support and guide efforts to predict rare SCNC cases and develop therapies that will target SCNCs from multiple tissue sites of origin.

[00185] The cell of origin for SCN cancers is not universally defined. SCN cancers have been alternatively reported to arise from primary normal neuroendocrine cell precursors in some cases, and transdifferentiation from adenocarcinoma in others (Watson et al., 2015). The cell of origin may vary depending on factors such as whether the SCN cancers arise de novo or as a resistance mechanism to

therapeutics (Feng et al., 2017; Rickman et al., 2017). In either case, the transdifferentiation-linked path to an SCN cancer converges, and thus leads to molecular profiles and phenotypes increasingly independent of the tissue of origin. This model of convergence is supported by the inventors' demonstration that normal prostate and lung cells can be reprogrammed into prostate and lung SCNCs, respectively, using a common set of small cell cancer-associated genetic perturbations (Park et al., 2018). Despite using distinct cell types as the starting material, the resulting tumor models had highly similar molecular profiles, furthermore matching the overlapping profiles of patient prostate and lung SCNCs. Combination therapies that both treat non-SCN cancers and prevent escape towards SCN cancers may help curtail the incidence of the disease. The pan-tissue scope of shared SCN susceptibilities supports the potential for pan-cancer therapy development to impact a large number of otherwise aggressive, metastatic, and treatment-resistant cancers.

D. Methods

1. Data Acquisition and Processing

[00186] Gene expression data was obtained from TCGA (available online at //xenabrowser.net/hub/), (George et al., 2015)(SCLC data), (Beltran et al., 2016) (CRPC/NEPC data). (Robinson et al., 2017) (MET500 data), and all lung lines in the Cancer Cell Line Encyclopedia (CCLE) (Barretina et al., 2012). To minimize batch effects, the inventors uniformly processed the raw FASTQs through a single analysis pipeline (TOIL) (Vivian et al., 2017). CCLE lung cell lines were processed through TOIL when comparing to TCGA samples which were also processed through TOIL. CCLE data on all cell lines was obtained in a format pre-processed through Salmon (Patro et al., 2017) (https://ocg.cancer.gov/ctd2-data-project/translational-genomics-research-institute-quantified-cancer-cell-line-encyclopedia), and all analyses done on CCLE cell lines only were performed using this data from this processing pipeline (Fig. 5A). The CLCGP lung cancer microarray gene expression dataset used to build the ARACNe network was downloaded from www.uni-koeln.de/med-fak/clcgp. Upper quartile normalized expression values were transformed to ⟦log⟧_2 (x+1).

[00187] Methylation data was obtained from TCGA, (Iorio et al., 2016) (GSE68379), Beltran et al. (dbGaP phs000909.v1.p1), and (Mohammad et al., 2015) (GSE66298). The 450K array data (from TCGA, Iorio et al., and Mohammed et al.) was obtained in processed form. Beltran et al. reduced representation bisulfite sequencing (RRBS) data was obtained in FASTQ format, and aligned to hg38 using bwameth (Pedersen et al., 2014). Methylation metrics were called using MethylDackel, which groups cytosines into one of three sequence contexts: CpG, CHG, or CHH. Only cytosines in CpG context were used for downstream analysis.

[00188] Cell line annotation was performed by harmonizing the annotation of the CCLE, GDSC, Demeter, and Ceres datasets. Cell line annotations were cross checked with ATCC (https://www.atcc.org/), Cellosaurus (https://web.expasy.org/cellosaurus/), and DSMZ (https://www.dsmz.de/) when possible. When discrepancies arose between these 3 online sources and

the primary annotation, the inventors defaulted to the online sources, which have stringent analysis pipelines. Lines with problematic annotation as defined by Cellosaurus were left out of the analyses. Cell line culture growth characteristics (e.g. adherent vs suspension) were obtained from the Dependency Map database (available online at //depmap.org/portal/) and (Iorio et al., 2016).

2. Quantification and Statistical Analysis

a. PCA/PLSR

[00189] Log2 transformed upper quartile normalized expression of coding genes was used to perform unsupervised principal component analysis (PCA). This method uncovers latent components which are a linear combinations of the features that most strongly vary across the datasets. PCA was performed centered and unscaled using the prcomp function in R. Varimax rotation of the PCA or PLSR loadings was performed on 2 components, without Kaiser normalization, using the R varimax package. Projections onto varimax-rotated PCA/PLSR frameworks were done by multiplication of the original projected sample scores by the varimax rotation matrix. When applicable (e.g. Fig. 1A) TCGA cancers (LUAD, PRAD, and BLCA) were randomly down sampled to more closely match the number of samples in data sets from George et al. and Beltran et al.

b. Small Cell Neuroendocrine (SCN) and Proliferation Scores

i. Tumors

[00190] For RNAseq data using patient tumors, "SCN score" is the PC1 score after projection onto the Fig1A varimax PCA framework. Because of the nature of PCA, this score is determined as a linear combination of weights that includes every coding gene, and hence is not strictly dependent on solely one subset of genes. After projection onto this framework, the score was either z-scored in each individual tumor type as in Fig. 3A (to highlight outlier samples), or left un-zscored to place cancers on a common scale as in Fig. 4A, 4C, and S7A. Samples greater than 3 standard deviations from the mean in the z-scored analysis were deemed "SCN-like" (e.g. Fig. 3A, Fig. 3B).

[00191] As SCN cancers are highly proliferative and display neuroendocrine features the inventors sought to de-convolve these two influences on SCN score. To that end the inventors created a "SCN minus proliferation score". A list of proliferation genes was generated from the union of three lists of proliferation genes published by Benporath et al, Cyclebase (https://cyclebase.org/), and KEGG cell cycle genes. PCA was performed using only these proliferation genes, and the absolute value of each gene's Pearson correlation to PC1 was calculated. A ROC curve was created using two classes with the pROC package to choose a threshold cutoff (Youden's J statistic) for genes highly correlated with proliferation. Correlated genes above threshold and all annotated proliferation genes from the original list were removed. PCA and GSEA-squared analysis (see below) was then redone. "SCN minus proliferation score" is thus the PC1 score after sample projection onto the varimax PCA of the samples used in Fig1A with this new gene list. A "Proliferation Only Score" was also created using the union

of genes in the three lists and those removed using the ROC curve method. These proliferation-related genes were used to create another varimax PCA of the samples in Fig1A. Proliferation Score is the varimax PC1 score after projection onto this framework. The proliferation-removed score was used in the analysis of the breast cancer slides to highlight samples that had a high probability of having neuroendocrine features. This method additionally has utility in distinguishing between SCN samples which have both neuroendocrine and proliferative features, from the indolent primitive neuroectodermal tumors which have neuroendocrine features but lack a proliferative signature. The proliferation-removed score was used in Fig. 3I, 11I, S6C-D. For Fig. 3I and 11J, the proliferation-removed score was z-scored, since only BRCA tumors were involved in these panels. For Fig. 13D, both the x and y-axes were left un-z-scored to place all samples on a common scale.

ii. Cell Lines:

[00192] For cell lines, RNA and RNAi sensitivity based SCN scores were calculated by projection onto the varimax PLSR framework of the SCLC/LUAD dichotomy. For both these data types, SCN Score is the "component 1" score after projection onto this framework. Samples with annotation not concordant with their expression-based predictions, from a linear-discriminant Leave-one-out Cross Validation analysis using the first three components of an expression PCA, were removed in the RNAi susceptibility-based PLSR. For protein data, the "SCN score" is the PC1 score of a sample upon projection onto the protein data-based framework of the SCLC/LUAD dichotomy (e.g. Fig. 5B). For drug sensitivity, as the distinction between non-SCN (LUAD) and SCN cases (SCLC) is on PC2 , the drug sensitivity "SCN score" is the PC2 score of a sample after projection onto that framework (e.g. Fig. 5C).

iii. Transcription Factor Analysis

[00193] ARACNe (Lachmann et al., 2016b) network connections were created using all genes, and then the network nodes were restricted to 1675 transcription factors (TFs) by combining all TF gene sets in the GO gene ontology. One network was built for each of lung (CLCGP et al., 2013), prostate (Beltran et al., 2016), and bladder (TCGA), using a balanced set of samples from the SCN and adenocarcinoma groups when possible, with default settings. VIPER analysis (Alvarez et al., 2016) was performed using the msviper function from R package viper, with a minimum network size of 10. The combined p-value across the three tissues was calculated using Stouffer's method by converting two-way p-values from msviper into one-way p-values using the two2one and sumz functions from the metap package in R.

iv. GSEA-squared

[00194] Gene Set Enrichment Analysis (Subramanian et al., 2005) was done on pre-ranked lists of genes using the MSigDB C5 gene sets and Kolmogorov-Smirnov (KS)-based statistics. In order to identify categories of genesets that could be enriched or de-enriched, all individual words in the genesets

were collected and their frequencies were tabulated. Words with frequencies <5 or >500 were excluded. All genesets were then ranked by their NES value. Using genesets containing each particular word, all the individual words were then ranked by their KS test p-value using ks.test.2 at (https://github.com/franapoli/signed-ks-test). Top words with small p-values were considered categories of interest, such as 'immune' or 'neuron'. A manual curation of other top words related to the categories, and inspection of gene sets containing these words, was done to group related gene sets. The keywords used for each category are listed below:

Category	Keywords
Neuro	NEURO, SYNAP, VOLTAGE, AXON, CEREBRAL, CORTEX
Cell cycle	CELL_CYCLE, MITOTIC, DNA_REPLICATION, CHROMOSOME_SEGREGATION, SPINDLE, CELL_DIVISION
Splicing	SPLICING, SPLICESOME, SPLICESOMAL
Immune	INFLAM, IMMUNE, IMMUNITY, INTERLUEKIN, LEUKOCYTE
Adhesion	ADHESION, ADHERENS

[00195] All gene sets were then ranked by their Normalized Enrichment Score (NES), and KS tests were performed to assess the distribution of gene set categories using ks.test.2. This second application of KS test-based enrichment analysis led to the coining of 'GSEA-squared,' enrichment analysis first on genes, and then on geneset categories. For multiple-hypothesis testing of KS tests of enrichment in Figures 6C-F, each category's one-way p-values were corrected using the Benjamani-Hochberg method placing them within the full list of keywords.

vi. REST Analysis

[00196] REST/NRSF is transcriptional repressor and restricts neural gene expression. The inventors used an aggregate measure of REST activity by calculating a "REST Score" for each sample from RNAseq data. "REST Score" for individual samples was determined using the gene set NRSF_01 from MSIGDB (http://software.broadinstitute.org/gsea/msigdb/geneset_page.jsp?geneSetName=NRSF_01) which contains genes that have a 3' UTR motif that matches annotation for the REST transcription factor. In this model a higher "REST Score" corresponds to de-repression of REST target genes, and hence conditions that support more neural gene expression, For each sample, a "single sample gene set enrichment score" (ssGSEA) was determined using the V$NRSF_01 gene set. REST gene expression and "Rest Score" were correlated to "SCN Score" in individual cancer types using the Pearson's correlation (Barbie et al., 2009).

vii. Rank Rank Hypergeometric Overlap (RRHO)

[00197] Rank Rank Hypergeometric Overlap was performed using the online tool and the R package RRHO, with step size 100 for expression data and methylation gene-based data, and 2000 for methylation probe-based data (Plaisier et al., 2010).

viii. Methylation analysis

[00198] Methylation levels were expressed as β-values, indicating the overall proportion of methylation at each particular site [methylated / (methylated+umethylated)]. PCAs were performed centered and unscaled on the entire data matrix. The IlluminaHumanMethylation450k.db package was used to provide annotation information on the location of the probe in relation to regulatory elements. Tissue-agnostic enhancer locations were provided by the IlluminaHumanMethylation450k.db package (Tim Triche, Jr., 2017), which informatically determines enhancer probes using ENCODE data. For the site-based analysis, PLSR was run individually on lung and bladder tissues, regressing against the phenotype of SCN or non-SCN. Non-SCN samples for lung and bladder were down-sampled to more closely match the number of SCN samples. To test for the importance of OpenSea sites in contributing to the SCN versus non-SCN distinction, the absolute value of the loadings was ranked, and1-sided KS test was performed against a background of all sites. To incorporate prostate methylation reduced-representation bisulfite sequencing (RRBS) data with the lung and bladder 450K array data, the number of sites was reduced to sites represented across both platforms. Sites were then further collapsed to genes by matching probes to genes using IlluminaHumanMethylation450k annotation. Probes that matched to multiple genes based on the Illumina annotation were removed. Averaged methylation values for each gene were then ranked by PLSR loadings on each tissue type. These loadings from the three tissue types were averaged and GSEA was performed on this ranked list. The gene-based summarization of methylation data was also performed on the lung cell lines and PLSR was performed. The equivalent methylation data format from tumors was projected to the cell line framework.

ix. CNA analysis

[00199] TCGA SNP6.0 Affymetrix derived seg files were downloaded from the GDC repository. Cell line seg files were created using RAWCOPY from the .cel files with default settings (Mayrhofer et al., 2016). Seg files were inputted into GISTIC2.0 to obtain both thresholded calls and continuous log2 CNA values mapped to genes. PCA was performed uncentered and unscaled on the continuous log2 CNA data. IGV was used for visualization. To obtain concordant CNA regions across lung and prostate small cell samples, PLSR was performed on lung and prostate tissues separately, with 1 and 0 representing SCN and non-SCN samples, respectively. For lung, a random sample of LUAD samples and all SCLC samples were used. For prostate, the samples were subset to include only one sample from each patient. One region containing highly focal CNAs on Chromosome 1 were removed by inspection of prostate PCA loadings, because they vastly dominated the top components' loadings of the PCA analysis and were likely technical artifacts. Relative amplification or deletion regions that were consistent across lung and prostate tissues were retained (defined strictly by commonly positive or commonly negative CNA PLSR loadings values). The loadings for consistent regions were averaged; non-consistent regions were set to 0.

[00200] Integrated CNA (iCNA) score (Graham et al., 2017) for each sample was defined as:

$$iCNA = \frac{\sum_{segments} |segment\ end - segment\ start| \times |segment\ mean|}{\#base\ pairs\ in\ sample}$$

c. Pathology analysis

[00201] To evaluate the molecular profile (gene expression)-based SCN predictions, a pathologist evaluated the available TCGA slide images located at http://cancer.digitalslidearchive.net/. Typically, each TCGA case has sections from formalin-fixed paraffin-embedded (FFPE) tissue and from frozen tissue. To avoid artifacts associated with frozen sections, only FFPE sections were used for histology classification. For the pan-cancer histology analysis, 16 samples with high SCN signature score from multiple tissue types were analyzed by a pathologist. Representative images of neuroendocrine and non-neuroendocrine regions were obtained by taking screen shots. From the breast cancer (BRCA) cohort, 38 samples were selected to include 1) the majority of SCN high cases, 2) a random sampling of tumors with middling SCN scores, 3) tumors with low SCN score, and 4) samples with high expression levels of at least one of four traditional SCN markers, CHGA, SYP, NCAM1, and TTF1. Each digital slide was divided into 4 roughly equal quadrants to ensure that the slide was examined evenly across different regions. In each quadrant, 20 non-contiguous areas were examined at low, medium and high powers to determine the histologic features of the tumor. Representative images were obtained at the highest magnification (400X) by taking screen shots. Cases were classified as mixed tumors when two different histologic types (most commonly, invasive ductal carcinoma and small cell neuroendocrine carcinoma) co-existed. For a case to be classified as a mixed tumor, the minor component (usually, small cell neuroendocrine carcinoma) needed to occupy a substantial area of the tumor. Specifically, the inventors required that the tumor cells of the minor histology should coalesce in a region that is equal to or larger than 2 high power fields. To determine if pathology based-SCN positive cases were enriched in samples with high SCN score, samples were rank ordered by SCN score and a Kolmogorov-Smirnov enrichment test was performed on pathology-based SCN status (Table S5). Pathology website with all detailed images is located online at //systems.crump.ucla.edu/scn/.

d. Survival analysis

[00202] For the pan-cancer analysis, Cox regressions were performed based on SCN-like/non-SCN status, controlling for cancer type using the coxph function in R. Survival on a continuous scale was performed based on the SCN score (PC1 score) determined by projection onto the Fig1A plot, controlling for cancer type using the coxph function in R. Wald-test p-values were reported.

e. Mutation analysis

[00203] Mutations were assembled from the MutsigCV2 calls for each tumor type from firebrowse.org. The gene list used was the union of recurrent mutations (mutsigcv2 q-value < 0.1) from all cancers in the TCGA. To determine the association of mutations with the neuroendocrine phenotype a generalized linear model (GLM) was used. In the analysis of cancers with known SCN cases (Fig.

12A) a logistic regression was conditioned on the SCN score and the tissue type on the combined data from "prostate" (consisting of NEPC, CRPC, PRAD) and "lung" (SCLC, LUAD). For the pan-epithelial cancer analysis (Fig. 12B) the logistic regression was conditioned on SCN score and cancer type. In the individual cancer cases (Fig. 12C) a Wilcoxon rank sum test on neuroendocrine score of mutant vs non-mutant was used. Multiple hypothesis correction was performed with the Benjamani-Hochberg method.

f. RPPA analysis

[00204] RPPA data was obtained from (Li et al., 2017). As this data has missing values, imputation was performed using probabilistic PCA, using the ppca and completeObs functions in the pcaMethods package (Stacklies et al., 2007). LUAD and SCLC cell lines were processed together in one batch without other cell lines so as not to intermix test and training sets. Missing value imputation for all other cell lines were performed together in one batch. Prior to each imputation the inventors removed all proteins with greater than 25% missing values in that batch. Samples were projected onto the PCA of the imputed values SCLC and LUAD (Fig. 5B).

g. Drug sensitivity analysis

[00205] Drug sensitivity data (log IC50 values) was obtained from GDSC (Iorio et al., 2016). For LUAD and SCLC cell lines, differential sensitivity to each drug was calculated using the Student's t-test. These drugs were then ranked by the t-test statistic. Annotation on drug target and target pathway was obtained from the pharmacogenomics screen published by Iorio et al. From the annotation on drug targets, a list of genes or biological targets was obtained. For each target, a KS test was performed (bootstrap n = 1000) on the t-test ranked list of drugs that contained that target in its annotation, resulting in a list of targets significantly enriched or de-enriched for small cell cancer sensitivity. Missing values in the drug sensitivity data were imputed using the weighted average of k-nearest neighbors (n = 3). For SCLC and LUAD samples that were used as training data, k-Nearest Neighbors (kNN) imputation was performed on the lung samples alone. kNN imputation was then then performed on all other cell lines together, excluding the SCLC and LUAD samples. PCA was performed on the imputed data. The inventors then projected the drug data for all lines onto the PCA defined on lung SCLC and LUAD, including cancer of hematological and neuroectodermal origin. Projected points (all lines excluding lung SCLC and LUAD) in the drug sensitivity plot were annotated by their expression projection values. These values were binned along the x-axis and mean expression projection values were summarized in the corresponding waterfall plot (eg. Fig. 5B, Fig. 5C). Combined p-values were obtained by the weighted-Stouffer test with the one way null hypothesis that the Pearson correlation is less than zero; using the lower tail of the t-distribution for values outputted by cor.test in R (lung small cell not included). The square root of individual group sample sizes were used as weights to stabilize the variance of the mean in this calculation (Zaykin, 2011).

h. Gene Dependency

[00206] shRNA data was taken from the Achilles Project (Tsherniak et al., 2017). Demeter gene dependency scores were used. A lower Demeter score indicates sensitivity to downregulation of that gene. PLSR was performed on 1) LUAD and SCLC lines, and 2) blood and non-blood lines (all cell lines except SRBCT, LUAD, or SCLC lines). Varimax rotation was performed on 2 components. Other cell lines were projected onto the lung or blood PLSR frameworks using the varimax-rotated loadings. Student's t-test was performed on lung adeno versus lung SCN lines, and blood versus non-blood lines, producing two gene lists, each ranked by p-value representing differential RNAi sensitivity in the two above comparisons. RRHO was performed on these two ranked lists of genes, and on their corresponding GSEA-analyzed genesets ranked by NES score. For each gene, the sum of the lung adeno versus SCN rank and blood versus non-blood rank for each gene was calculated, and the list was co-ranked using this sum. Enrichment analysis (GSEA) was performed on the co-ranked list of genes using the MSigDB C2: KEGG, C2: Reactome, and C5: all GO gene sets. GSEA-squared (see above) was performed by ranking individual words by their signed KS test p-value using ks.test.2. The keywords used for each category are listed below:

Category	**Keywords**
Telomere	TELOMERE
Immune	INFLAM, IMMUNE, IMMUNITY, INTERLUEKIN, LEUKOCYTE
Cell cycle	CELL_CYCLE, MITOTIC, DNA_REPLICATION, CHROMOSOME_SEGREGATION, SPINDLE, CELL_DIVISION
Lipids	COA, LIPID, STEROL
Neuro	NEURO, SYNAP, VOLTAGE, AXON, CEREBRAL, CORTEX

i. Tumor drug sensitivity prediction

[00207] Tumor drug sensitivity prediction were performed using elastic nets with the caret package in R, using cell line RNAseq and IC50 drug sensitivity data. For each drug two distinct models were created. 1) Using the 1000 most variable genes at the RNA level to predict drug sensitivity in the SCLC and LUAD cell lines (used in Fig. 7A-D), and 2) using 1000 of the most variable genes across all cell lines (used in Fig. 7E-F). This resulted in a total of 510 models (255 drugs each). Using the predicted values, tumors were projected onto the PCA of real drug sensitivity values shown in Fig. 6C. The relative sensitivity scores are the PC2 values from this projection.

E. Tables

Table S5-A - Pan-Tissue Cancers Pathology Calls

					TP53			RB1		
Sample	**"SCN minus proliferation" score (PC1; x-axis)**	**Cancer Type**	**Pathology Call**	**Evidence of SCN-associated TP53 or RB1 genomic alterations**	**mut**	**CNA**	**summary**	**mut**	**CNA**	**summary**
TCGA-A6-5656	6.852	COADREAD	Moderately differentiated adenocarcinoma with extensive neuroendocrine differentiation	Yes	mut	-1	LOF	0	1	
TCGA-XQ-A8TA	4.875	PRAD	Mixed prostate adenocarcinoma and small cell neuroendocrine carcinoma	Yes	nonmut	-1	LOF	0	-1	LOF
TCGA-86-8358	4.809	LUAD	Mixed poorly differentiated lung adenocarcinoma and small cell neuroendocrine carcinoma	Yes	NA	-1	LOF	NA	-1	LOF
TCGA-BR-A4CR	4.503	STAD	Mixed gastric adenocarcinoma and small cell neuroendocrine carcinoma	Yes	mut	0	LOF	1	1	LOF
TCGA-HU-A4GD	4.325	STAD	Moderately differentiated gastric adenocarcinoma with focal neuroendocrine differentiation	Yes	nonmut	-1	LOF	1	1	LOF
TCGA-HD-A634	4.323	HNSC	Mixed poorly differentiated head and neck squamous carcinoma and small cell neuroendocrine carcinoma	No	nonmut	0		0	0	
TCGA-37-4129	4.108	LUSC	Neuroendocrine tumor of the lung (atypical carcinoid tumor)	Yes	NA	0		NA	-1	LOF
TCGA-55-8620	4.023	LUAD	Mixed poorly differentiated lung adenocarcinoma and small cell neuroendocrine carcinoma	Yes	NA	-2	LOF	NA	-2	LOF
TCGA-VS-A9UP	3.965	CESC	Mixed poorly differentiated uterine cervical squamous carcinoma and small cell neuroendocrine carcinoma	Yes	nonmut	-1	LOF	0	-2	LOF
TCGA-VS-A9UL	3.899	CESC	Mixed poorly differentiated uterine cervical squamous carcinoma and small cell neuroendocrine carcinoma	Yes	nonmut	1		0	-1	LOF
TCGA-D6-A6EP	3.826	HNSC	Mixed poorly differentiated head and neck squamous carcinoma and small cell neuroendocrine carcinoma	Yes	mut	2	LOF	0	-1	LOF
TCGA-LN-A9FO	3.802	ESCA	Mixed esophageal squamous carcinoma and small cell neuroendocrine carcinoma	Yes	nonmut	0		1	-1	LOF
TCGA-2H-A9GG	3.477	ESCA	NI *	Yes	nonmut	NA		1	NA	LOF

TCGA-FE-A239	3.442	THCA	NI *	Yes	NA	0		NA	-1	LOF
TCGA-EL-A4K6	3.365	THCA	Papillary thyroid carcinoma with focal area of neuroendocrine differentiation	No	nonmut	1		0	0	
TCGA-56-7223	3.253	LUSC	Mixed poorly differentiated lung squamous carcinoma and small cell neuroendocrine carcinoma	Yes	NA	-1	LOF	NA	1	

* NI= no small cell neuroendocrine carcinoma region identified.

Note NI cases may be explained by tumors with focal SCN, and pathology calls being performed on tissue (paraffin) not adjacent to tissue used for sequencing (frozen).

Key: For CNA: -2=deep deletion,-1=deletion,0=unaltered,1=amplified,2=strong amplification; For mutation: mut=mutated,nonmut=not mutated, NA=not available; LOF: potential loss of function = mutation or CNA loss

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Table S5-B – BRCA Pathology Call Statistics

					SCN marker gene expression levels							
					normalized counts				z-scores			
BRCA Sample	**"SCN minus proliferation" score (PC1; x-axis)**	**PAM 50**	**Pathology Call**	**SCN histology features**	**CGHA**	**SYP**	**NCAM1**	**TTF1**	**CGHA**	**SYP**	**NCAM1**	**TTF1**
TCGA-AC-A2QH	7.3	Basal	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		2.0	4.6	13.2	10.3	0.0	-1.2	3.9	2.3
TCGA-A7-A13D	7.0	Basal	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		5.4	7.1	9.9	10.5	1.2	0.3	2.1	2.9
TCGA-A1-A0SK	6.0	Basal	Mixed large cell neuroendocrine carcinoma and small cell neuroendocrine carcinoma		10.5	10.9	13.0	9.9	3.1	2.7	3.8	1.4
TCGA-D8-A13Y	5.2	LumB	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		17.0	11.0	8.2	9.4	5.5	2.8	1.1	0.3
TCGA-BH-A0HL	4.0	LumA	Small cell neuroendocrine carcinoma		14.9	12.0	4.8	9.2	4.7	3.4	-0.8	-0.2
TCGA-E9-A245	3.8	LumA	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		14.8	13.1	6.2	10.4	4.7	4.1	0.0	2.6
TCGA-C8-A27A	3.7	LumB	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		16.9	11.4	9.1	10.4	5.4	3.0	1.6	2.5

TCGA-A7-A0DC	3.7	LumA	Mixed intracystic papillary carcinoma and small cell neuroendocrine carcinoma		3.9	7.9	5.2	9.5	0.7	0.8	-0.6	0.5
TCGA-A7-A26I	3.6	Basal	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		3.8	7.4	9.0	9.4	0.6	0.6	1.5	0.4
TCGA-A7-A26E	3.5	LumA	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		0.0	5.3	6.2	9.8	-0.8	-0.7	-0.1	1.2
TCGA-B6-A1KC	3.2	LumB	Small cell neuroendocrine carcinoma		15.3	12.3	5.8	8.9	4.9	3.6	-0.2	-0.8
TCGA-E2-A15S	3.0	LumB	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		3.8	8.7	4.2	9.3	0.6	1.4	-1.2	0.1
TCGA-AC-A3OD	2.7	LumA	Invasive ductal carcinoma	Negative	3.2	6.9	7.7	10.6	0.4	0.2	0.8	3.0
TCGA-AR-A2LR	2.5	Basal	Small cell neuroendocrine carcinoma		3.8	4.9	10.5	9.5	0.6	-1.0	2.4	0.5
TCGA-EW-A1OX	2.3	LumB	Invasive ductal carcinoma	Negative	3.3	9.1	2.3	8.9	0.5	1.6	-2.2	-0.8
TCGA-D8-A1XD	2.1	LumA	Invasive ductal carcinoma	Negative	0.0	6.3	7.4	8.4	-0.8	-0.2	0.6	-2.0
TCGA-A7-A3RF	2.0	LumA	Invasive ductal carcinoma with abundant mucin (mucinous carcinoma)	Negative	17.6	13.4	6.4	8.9	5.7	4.2	0.1	-0.9
TCGA-A7-A3J0	1.9	LumA	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma		21.3	12.7	12.0	10.0	7.1	3.8	3.2	1.6
TCGA-E2-A14T	1.4	LumA	Invasive ductal carcinoma	Negative	16.0	13.2	5.3	9.5	5.1	4.1	-0.6	0.6
TCGA-A8-A07C	1.1	Basal	Invasive ductal carcinoma	Negative	0.0	4.9	8.1	11.1	-0.8	-1.0	1.1	4.2
TCGA-GM-A2DA	0.2	LumA	Invasive ductal carcinoma	Negative	1.4	6.0	6.9	8.9	-0.3	-0.3	0.4	-0.9
TCGA-AO-A1KR	0.1	Basal	Invasive ductal carcinoma	Negative	0.0	5.6	5.5	9.0	-0.8	-0.6	-0.4	-0.7
TCGA-3C-AALK	-0.1	LumA	Invasive ductal carcinoma	Negative	2.4	6.1	13.0	9.2	0.1	-0.3	3.8	-0.2
TCGA-E2-A1IK	-0.3	LumA	Invasive ductal carcinoma with abundant mucin (mucinous carcinoma)	Negative	12.8	12.2	10.5	8.7	3.9	3.5	2.4	-1.3
TCGA-A2-A0CL	-0.7	Normal	Invasive ductal carcinoma	Negative	14.1	7.2	6.9	9.1	4.4	0.4	0.4	-0.5
TCGA-LD-A9QF	-1.9	Normal	Invasive ductal carcinoma	Negative	2.5	6.5	6.1	9.0	0.2	0.0	-0.1	-0.6
TCGA-C8-A26X	-1.9	Her2	Invasive ductal carcinoma	Negative	0.0	5.3	6.0	8.7	-0.8	-0.7	-0.1	-1.3
TCGA-D8-A1JK	-1.9	Basal	Invasive ductal carcinoma	Negative	0.0	5.4	5.0	9.3	-0.8	-0.7	-0.7	0.1

TCGA-BH-A0B6	-1.9	LumA	Invasive ductal carcinoma	Negative	2.6	6.1	6.9	8.4	0.2	-0.3	0.4	-2.0
TCGA-OL-A66P	-2.0	Her2	Invasive ductal carcinoma	Negative	3.5	6.3	6.2	8.7	0.5	-0.1	0.0	-1.4
TCGA-AR-A2LH	-2.0	Normal	Invasive ductal carcinoma	Negative	3.2	5.2	8.0	9.3	0.4	-0.8	1.0	0.1
TCGA-AC-A2QJ	-2.0	Basal	Invasive ductal carcinoma	Negative	6.0	6.8	5.4	7.9	1.4	0.2	-0.5	-3.2
TCGA-A8-A08H	-2.1	Normal	Invasive ductal carcinoma	Negative	5.4	6.0	6.9	9.1	1.2	-0.4	0.4	-0.5
TCGA-E9-A1ND	-2.1	Basal	Invasive ductal carcinoma	Negative	1.4	5.1	5.3	9.4	-0.3	-0.9	-0.5	0.3
TCGA-OL-A5RY	-2.2	Normal	Invasive ductal carcinoma	Negative	2.8	4.9	6.4	9.4	0.3	-1.0	0.1	0.2
TCGA-AR-A5QQ	-2.4	Basal	Invasive ductal carcinoma	Negative	3.0	4.5	9.8	9.3	0.3	-1.3	2.0	0.0
TCGA-EW-A1PB	-2.4	Basal	Invasive ductal carcinoma	Negative	1.9	6.2	5.9	8.7	-0.1	-0.2	-0.2	-1.3
TCGA-AO-A03U	-2.7	Normal	Invasive ductal carcinoma	Negative	0.0	5.1	9.7	9.3	-0.8	-0.9	2.0	0.1
			Kolmogorov Smirnov enrichment p-value =	**9 X 10^-7**								

Table S5-C – BRCA Mutation Analysis

				TP53 pathway				**RB1 gene**			
Sample	**Pathology Call**	**SCN Score Prolif Removed**	**Sub type**	**TP53 mutation**	**TP53 CNA**	**MDM1/2 CNA**	**MDM4 CNA**	**RB1 mutation**	**RB1 CNA**	**TP53 Pathway Summary**	**RB1 Summary**
TCGA.AC.A2QH.01	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma	7.300	Basal	mut	1	0	0	nonmut	-1	TP53 mut	RB1 loss
TCGA.A7.A13D.01	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma	7.001	Basal	mut	1	-1	1	nonmut	-1	TP53 mut, MDM4 amp	RB1 loss
TCGA.A1.A0SK.01	Mixed large cell neuroendocrine carcinoma and small cell neuroendocrine carcinoma	6.039	Basal	mut	-1	0	-1	nonmut	-2	TP53 mut, TP53 loss	RB1 deep deletion
TCGA.D8.A13Y.01	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma	5.202	LumB	nonmut	-1	1	0	nonmut	-1	TP53 loss, MDM1/2 amp	RB1 loss
TCGA.E9.A245.01	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma	3.846	LumA	nonmut	0	0	1	nonmut	0	MDM4 amp	

TCGA.C8.A27A.01	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma	3.737	Lum B	mut	-1	-1	0	nonmut	0	TP53 mut, TP53 loss	
TCGA.A7.A0DC.01	Mixed intracystic papillary carcinoma and small cell neuroendocrine carcinoma	3.685	Lum A	nonmut	1	1	-1	nonmut	-1	MDM1/2 amp	RB1 loss
TCGA.A7.A26I.01	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma	3.628	Basa l	mut	-1	-1	1	nonmut	-1	TP53 mut, TP53 loss, MDM4 amp	RB1 loss
TCGA.A7.A26E.01	Mixed invasive ductal carcinoma and small cell neuroendocrine carcinoma	3.507	Lum A	nonmut	-1	0	1	nonmut	-1	TP53 loss, MDM4 amp	RB1 loss
TCGA.B6.A1KC.01	Small cell neuroendocrine carcinoma	3.196	Lum B	nonmut	1	1	1	nonmut	-1	MDM1/2 amp, MDM4 amp	RB1 loss

Key: For CNA: -2=deep deletion,-1=deletion,0=unaltered,1=amplified,2=strong amplification; For mutation: mut=mutated,nonmut=not mutated.

Example 2: Methods for diagnosing the SCN phenotype

A. Results

[00208] The inventors generated an algorithm to predict tumors and cell lines with SCN features based on the gene expression profiles of SCN tumors. As input gene sets the inventors used the top and bottom of the lists of SCN signature created from the PCA loadings of FIG. 1A. Training of a logistic regression model with LASSO (LRL) on the top and bottom 100 genes from the loadings was predictive of SCN cases in the original data (FIG. 17A), and of SCN cell lines in the CCLE lung test set (FIG. 17B), and resulted in a model of 47 genes (FIG. 17C). An additional predictive model was built starting with the top 500 and bottom 500 genes and resulted in a model of 41 genes (FIG. 18A-C). This data highlights that different sets of final genes for the top N lists can be similarly informative. This result demonstrates the ability for the inventors' signatures to be of diagnostic use in the clinic to predict cases of SCN cancer, which suffer from poor overall survival (FIG. 3B).

B. Methods

[00209] **Prediction of samples with SCN features using a logistic regression model with LASSO (LRL).** Logistic Regression with LASSO (LRL) was used to select subsets of genes from list of top N /bottom N genes (e.g., N=100, 500) from the ranked loadings of the SCN PCA framework in FIG. 1A to determine a compact signature predictive of samples with an SCN phenotype. Samples included in the model were LUAD, SCLC, NEPC, CRPC, and the pan-cancer SCN positive cases confirmed by pathology (BRCA, CESC, COADREAD, ESCA, HNSC, LUAD, LUSC, PRAD, STAD, THCA; Table S5). The LASSO method allows the selection of a subset of genes from these gene lists, to create a compact signature useful for assay development. LRL was used to assign a probability (on a scale from 0 to 1) to each sample belonging to the Small Cell Neuroendocrine (SCN, 1) or non-Small Cell Neuroendocrine (non-SCN, 0). Cases above 0.5 were assigned to the SCN class, while those below to the Non-SCN class. Algorithm implementation was performed using R with the glmnet package.

* * *

[00210] All of the methods disclosed and claimed herein can be made and executed without undue experimentation in light of the present disclosure. While the compositions and methods of this invention have been described in terms of preferred embodiments, it will be apparent to those of skill in the art that variations may be applied to the methods and in the steps or in the sequence of steps of the method described herein without departing from the concept, spirit and scope of the invention. More specifically, it will be apparent that certain agents which are both chemically and physiologically related may be substituted for the agents described herein while the same or similar results would be achieved. All such similar substitutes and modifications apparent to those skilled in the art are deemed to be within the spirit, scope and concept of the invention as defined by the appended claims.

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[00211] The following references, to the extent that they provide exemplary procedural or other details supplementary to those set forth herein, are specifically incorporated herein by reference.

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CLAIMS

What is claimed is:

1. A method comprising measuring the level of expression of one or more biomarkers from Tables 1-3 in a biological sample from a cancer patient.

2. The method of claim 1, wherein the patient has an epithelial or hematological cancer.

3. The method of claims 1 or 2, wherein the method comprises measuring the level of expression of at least five biomarkers from Tables 1-3.

4. The method of claim 3, wherein at least 2 of the measured biomarkers has an absolute value of the signature weight of greater than 0.025.

5. The method of claim 3, wherein the method comprises measuring the level of expression of at least 10 biomarkers from Tables 1-3 and wherein at least 5 of the measured biomarkers has an absolute value of the signature weight of greater than 0.025.

6. The method of claim 5, wherein the method comprises measuring the level of expression of at least 10 biomarkers from Tables 1-3 and wherein at least 5 of the measured biomarkers has an absolute value of the signature weight of greater than 0.03.

7. The method of any one of claims 4-6, wherein at least 20, 30, 40, or 50 biomarkers are measured.

8. The method of any one of claims 1-6, wherein the expression level of the measured biomarkers are determined to be not significantly different as compared to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a small cell neuroendocrine cancer or small-round-blue cell tumor.

9. The method of any one of claims 1-8, wherein the one or more biomarkers has an absolute value of the signature weight of greater than 0.025.

10. The method of any one of claims 1-9, wherein 1, 2, 3, 4, 5, 6, 7, or 8 biomarkers from Tables 1-3 are excluded from being measured for expression levels in the biological sample from the cancer patient.

11. The method of any one of claims 1-10, further comprising comparing the level of expression to the level of expression of the biomarker(s) in a control sample.

12. The method of claim 11, wherein the control sample is a biological sample from a patient having a small cell neuroendocrine cancer or small-round-blue cell tumor.

13. The method of any one of claims 1-10, further comprising comparing the level of expression to a control level of expression of the biomarker(s).

14. The method of claim 13, wherein the control level of expression represents the level of expression of the biomarker in a small cell neuroendocrine cancer or small-round-blue cell tumor.

15. The method of any one of claims 1-14, wherein the biological sample was a tissue sample, a blood sample, a biopsy sample, a saliva sample, or a tumor sample.

16. The method of any one of claims 1-15, wherein the biological sample comprises tumor tissue.

17. The method of any one of claims 1-16, wherein the biological sample comprises metastatic tumor tissue or is from the lymph nodes.

18. The method of any one of claims 1-17, wherein the subject has been treated for a cancer.

19. The method of claim 18, wherein the treatment comprises a targeted therapy.

20. The method of any one of claims 1-19, further comprising evaluating tumor size and/or lymph node status.

21. The method of one any of claims 1-20, further comprising calculating a risk score for the patient.

22. The method of claim 21, wherein the risk score indicates a risk of decreased overall survival, metastasis, and/or recurrence.

23. The method of any one of claims 1-22, further comprising treating the patient for a small cell neuroendocrine cancer or small-round-blue cell tumor (SRBCT).

24. The method of claim 23, wherein the treatment comprises ABT-263, NSC-207895, NPK76-II-72-1, XMD13-2, MP470, BX-912, GW-2580, GSK1070916, WZ3105, GSK690693, OSI-027, FK866, I-BET-762, GSK429286A, UNC0638, PHA-793887, QL-X-138, Vorinostat, Tubastatin A, CX-5461, or combinations thereof.

25. The method of claim 23, wherein the treatment comprises vorinostat, VU0238429, CUDC-101, BX-912, oxaliplatin, alisertib, salinomycin, BMS-754807, KX2-391, D-64131, oxyquinoline, axitinib, barasertib, BI-78D3, M-344, evodiamine, UNBS-5162, vinorelbine, albendazole, BI-2536, or combinations thereof.

26. The method of claim 23, wherein the treatment comprises a drug listed in Table 4A, 4B, or combinations thereof.

27. A method for treating small cell neuroendocrine (SCN) cancer or small-round-blue cell tumor (SRBCT) in a patient comprising administering a cancer treatment to the patient, wherein the cancer treatment is a treatment selected from Table 4A, 4B, or combinations of treatments from Table 4A and/or 4B.

28. The method of claim 27, wherein the patient has been determined to have a SCN or SRBCT cancer based on the level of expression of one or more biomarkers from tables 1-3 in a biological sample from the patient.

29. A method for treating SCN or SRBCT cancer in a patient comprising administering a cancer treatment to a patient determined to have a SCN or SRBCT cancer, wherein the patient was determined to have a SCN or SRBCT by measuring the expression level of one or more biomarkers from tables 1-3 in a biological sample from the patient.

30. The method of any one of claims 27-29, wherein the patient has an epithelial or hematological cancer.

31. The method of any one of claims 28-30, wherein the method comprises measuring the level of expression of at least five biomarkers from Tables 1-3.

32. The method of any one of claims 28-31, wherein the expression level of the measured biomarkers were determined to be not significantly different than a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a SCN or SRBCT cancer.

33. The method of any one of claims 28-32, wherein the one or more biomarkers has an absolute value of the signature weight of greater than 0.025.

34. The method of any one of claims 28-33, wherein 1, 2, 3, 4, 5, 6, 7, or 8 biomarkers from Tables 1-3 are excluded from being measured for expression levels in the biological sample from the cancer patient.

35. The method of any one of claims 27-34, wherein the biological sample from the patient comprises a tissue sample, a blood sample, a biopsy sample, a saliva sample, or a tumor sample.

36. The method of any one of claims 27-35, wherein the biological sample comprises tumor tissue.

37. The method of any one of claims 27-36, wherein the biological sample comprises metastatic tumor tissue or is from the lymph nodes.

38. The method of any one of claims 27-37, wherein the subject has been treated for a cancer.

39. The method of claim 38, wherein the treatment comprises a targeted therapy.

40. The method of any one of claims 27-39, wherein the treatment comprises ABT-263, NSC-207895, NPK76-II-72-1, XMD13-2, MP470, BX-912, GW-2580, GSK1070916, WZ3105, GSK690693, OSI-027, FK866, I-BET-762, GSK429286A, UNC0638, PHA-793887, QL-X-138, Vorinostat, Tubastatin A, CX-5461, or combinations thereof.

41. The method of any one of claims 27-39, wherein the treatment comprises vorinostat, VU0238429, CUDC-101, BX-912, oxaliplatin, alisertib, salinomycin, BMS-754807, KX2-391, D-64131, oxyquinoline, axitinib, barasertib, BI-78D3, M-344, evodiamine, UNBS-5162, vinorelbine, albendazole, BI-2536, or combinations thereof.

42. The method of any one of claims 27-39, wherein the treatment comprises a drug listed in Table 4A, 4B, or combinations thereof.

43. A method for prognosing a cancer patient or for diagnosing a SCN or SRBCT cancer, comprising:

measuring the expression level of one or more biomarkers from Tables 1-3 in a biological sample from the patient;

comparing the expression level of the at least one biomarker to a control level of expression, wherein the control level of expression comprises the level of expression of the biomarkers in a SCN or SRBCT cancer; and

diagnosing the patient as having a SCN or SRBCT cancer when the level of expression of the measured biomarker is not substantially different from the control level of expression.

44. The method of claim 43, wherein the patient has an epithelial or hematological cancer.

45. The method of claims 43 or 44, wherein the method comprises measuring the level of expression of at least five biomarkers from Tables 1-3.

46. The method of any one of claims 43-45, wherein 1, 2, 3, 4, 5, 6, 7, or 8 biomarkers from Tables 1-3 are excluded from being measured for expression levels in the biological sample from the cancer patient.

47. The method of any one of claims 43-46, wherein the one or more biomarkers has an absolute value of the signature weight of greater than 0.025.

48. The method of any one of claims 43-47, further comprising comparing the level of expression to the level of expression of the biomarker(s) in a control sample.

49. The method of any one of claims 43-48, wherein the biological sample was a tissue sample, a blood sample, a biopsy sample, a saliva sample, or a tumor sample.

50. The method of any one of claims 43-49, wherein the biological sample comprises tumor tissue.

51. The method of any one of claims 43-50, wherein the biological sample comprises metastatic tumor tissue or is from the lymph nodes.

52. The method of any one of claims 43-51, wherein the subject has been treated for a cancer.

53. The method of claim 52, wherein the treatment comprises a targeted therapy.

54. The method of any one of claims 43-53, further comprising evaluating tumor size and/or lymph node status.

55. The method of one any of claims 43-54, further comprising calculating a risk score for the patient.

56. The method of claim 55, wherein the risk score indicates a risk of decreased overall survival, metastasis, and/or recurrence.

57. The method of any one of claims 43-56, further comprising treating the patient for a small cell neuroendocrine cancer.

58. The method of claim 57, wherein the treatment comprises ABT-263, NSC-207895, NPK76-II-72-1, XMD13-2, MP470, BX-912, GW-2580, GSK1070916, WZ3105, GSK690693, OSI-027, FK866, I-BET-762, GSK429286A, UNC0638, PHA-793887, QL-X-138, Vorinostat, Tubastatin A, CX-5461, or combinations thereof.

59. The method of claim 57, wherein the treatment comprises vorinostat, VU0238429, CUDC-101, BX-912, oxaliplatin, alisertib, salinomycin, BMS-754807, KX2-391, D-64131, oxyquinoline, axitinib, barasertib, BI-78D3, M-344, evodiamine, UNBS-5162, vinorelbine, albendazole, BI-2536, or combinations thereof.

60. The method of claim 57, wherein the treatment comprises a drug listed in Table 4A, 4B, or combinations thereof.

61. A method for treating small cell neuroendocrine cancer in a patient comprising administering a cancer treatment to a patient determined to have a small cell neuroendocrine cancer, wherein the patient was determined to have a small cell neuroendocrine cancer by measuring the expression level of at least ten biomarkers from tables 1-3 in a biological sample from the patient; wherein the biomarker has an absolute value of the signature weight of greater than 0.025; and wherein the treatment comprises ABT-263, NSC-207895, NPK76-II-72-1, XMD13-2, MP470, BX-912, GW-2580, GSK1070916, WZ3105, GSK690693, OSI-027, FK866, I-BET-762, GSK429286A, UNC0638, PHA-793887, QL-X-138, Vorinostat, Tubastatin A, CX-5461, or combinations thereof.

62. A method for treating small cell neuroendocrine cancer in a patient comprising administering a cancer treatment to a patient determined to have a small cell neuroendocrine cancer, wherein the patient was determined to have a small cell neuroendocrine cancer by measuring the expression level of at least ten biomarkers from tables 1-3 in a biological sample from the patient; wherein the biomarker has an absolute value of the signature weight of greater than 0.025; and wherein the treatment comprises vorinostat, VU0238429, CUDC-101, BX-912, oxaliplatin, alisertib, salinomycin, BMS-754807, KX2-391, D-64131, oxyquinoline,

axitinib, barasertib, BI-78D3, M-344, evodiamine, UNBS-5162, vinorelbine, albendazole, BI-2536, or combinations thereof.

63. The method of claim 61 or 62, wherein at least one biomarker has an absolute value of the signature weight of greater than 0.04.

64. The method of claim 63, wherein at least 2 biomarkers have an absolute value of the signature weight of greater than 0.03.

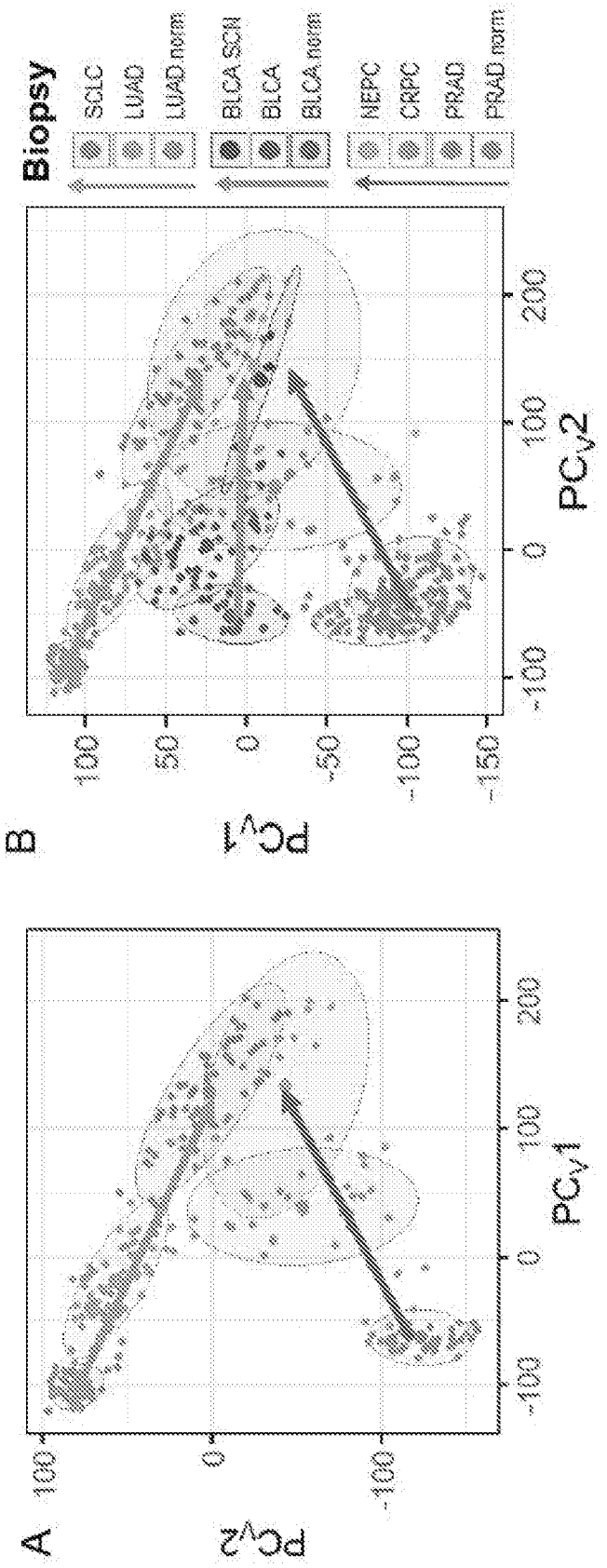
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FIG. 1A-B

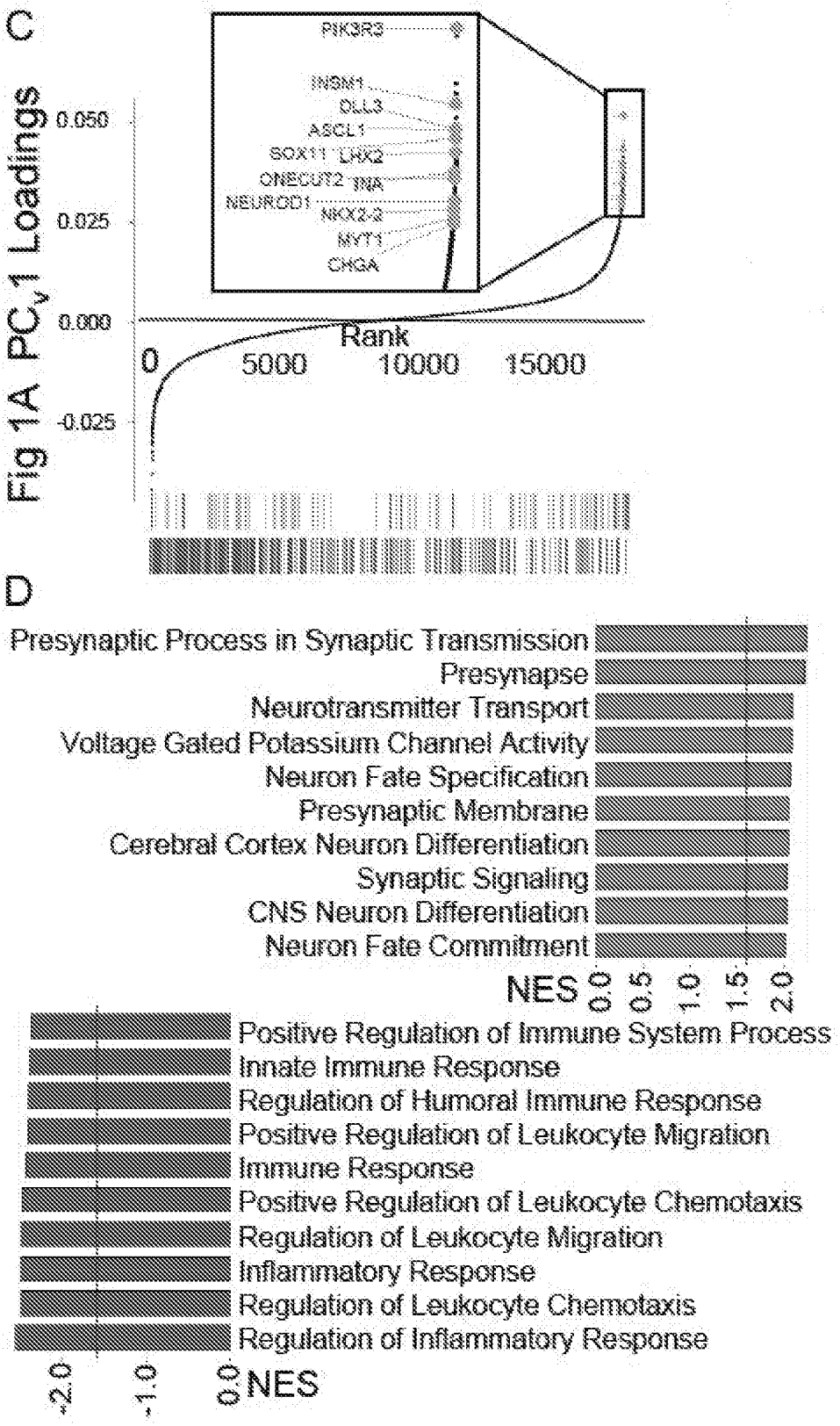
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Fig 1A PCv1 Loadings
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PIK3R3
INSM1
DLL3
ASCL1
SOX11
LHX2
ONECUT2
INA
NEUROD1
NKX2-2
MYT1
CHGA
Rank
0
5000
10000
15000
D
Presynaptic Process in Synaptic Transmission
Presynapse
Neurotransmitter Transport
Voltage Gated Potassium Channel Activity
Neuron Fate Specification
Presynaptic Membrane
Cerebral Cortex Neuron Differentiation
Synaptic Signaling
CNS Neuron Differentiation
Neuron Fate Commitment
NES
0.0
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1.0
1.5
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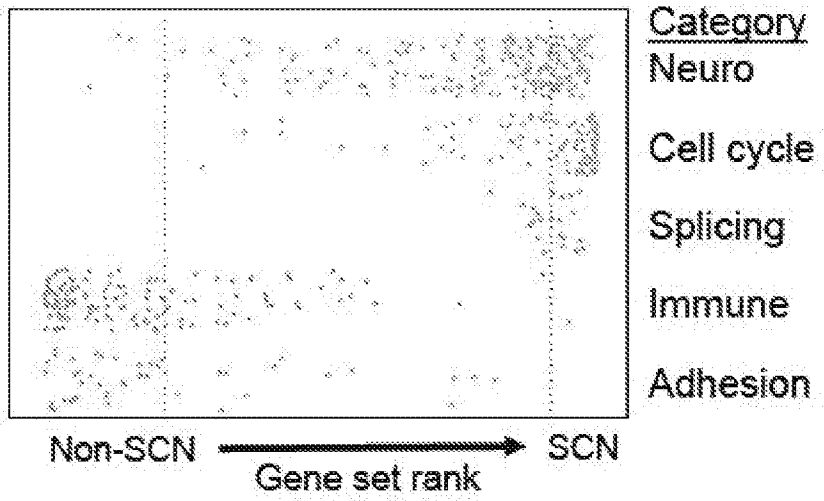
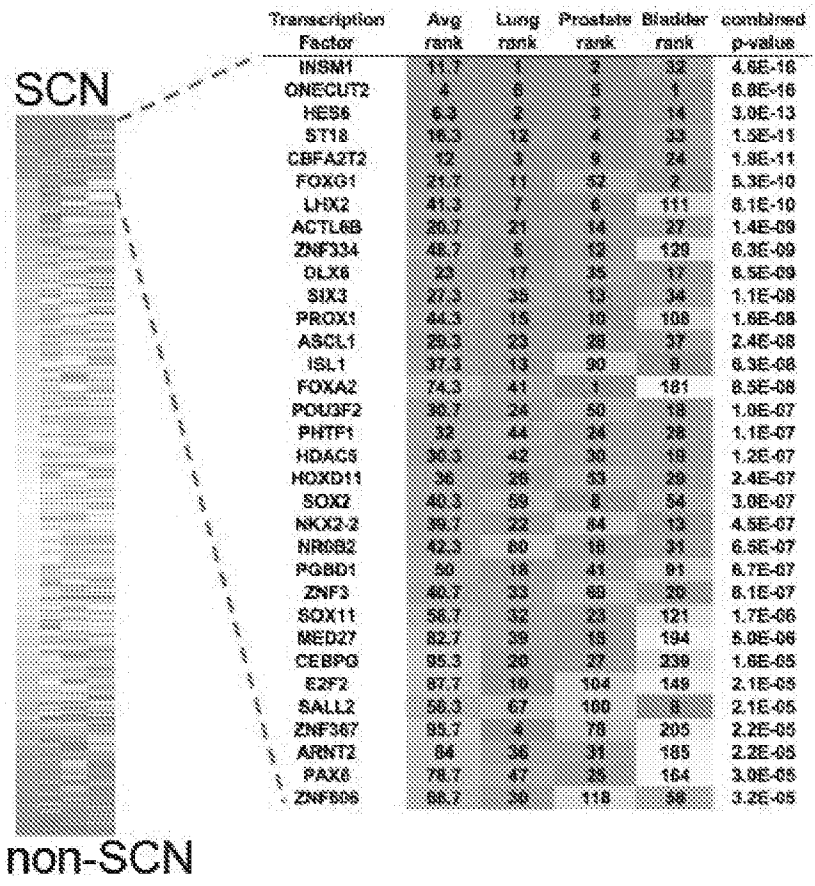
Positive Regulation of Immune System Process
Innate Immune Response
Regulation of Humoral Immune Response
Positive Regulation of Leukocyte Migration
Immune Response
Positive Regulation of Leukocyte Chemotaxis
Regulation of Leukocyte Migration
Inflammatory Response
Regulation of Leukocyte Chemotaxis
Regulation of Inflammatory Response
-2.0
-1.0
0.0
NES

FIG. 1C-D

E



F



Transcription Factor	Avg rank	Lung rank	Prostate rank	Bladder rank	combined p-value
INSM1	11.3	1	3	33	4.6E-16
ONECUT2	4	5	5	1	6.8E-16
HES6	6.3	2	3	14	3.0E-13
ST18	16.3	13	4	32	1.5E-11
CBFA2T2	12	3	6	24	1.8E-11
FOXG1	21.7	11	52	2	5.3E-10
LHX2	41.3	7	6	111	5.1E-10
ACTL6B	20.7	21	14	27	1.4E-09
ZNF334	46.7	5	12	129	6.3E-09
DLX6	23	17	35	17	6.5E-09
SIX3	27.3	35	13	34	1.1E-08
PROX1	44.3	15	33	108	1.6E-08
ASCL1	25.3	23	26	27	2.4E-08
ISL1	47.3	12	30	9	6.3E-08
FOXA2	74.3	41	1	181	8.5E-08
POU3F2	32.7	24	50	19	1.0E-07
PHTF1	32	44	24	28	1.1E-07
HDAC5	36.3	42	30	16	1.2E-07
HOXD11	36	25	53	29	2.4E-07
SOX2	40.3	59	5	54	3.8E-07
NKX2-2	39.7	22	64	13	4.5E-07
NR6B2	42.3	60	16	51	6.3E-07
PGBD1	50	19	41	91	6.7E-07
ZNF3	40.7	53	63	20	8.1E-07
SOX11	58.7	32	23	121	1.7E-06
MED27	62.7	39	19	194	5.0E-06
CEBPG	65.3	26	27	339	1.6E-05
E2F2	87.7	10	104	149	2.1E-05
SALL2	58.3	67	100	8	2.1E-05
ZNF367	65.7	4	78	205	2.2E-05
ARNT2	84	36	31	185	2.2E-05
PAX6	78.7	47	25	164	3.0E-05
ZNF506	68.7	30	118	58	3.2E-05

FIG. 1E-F

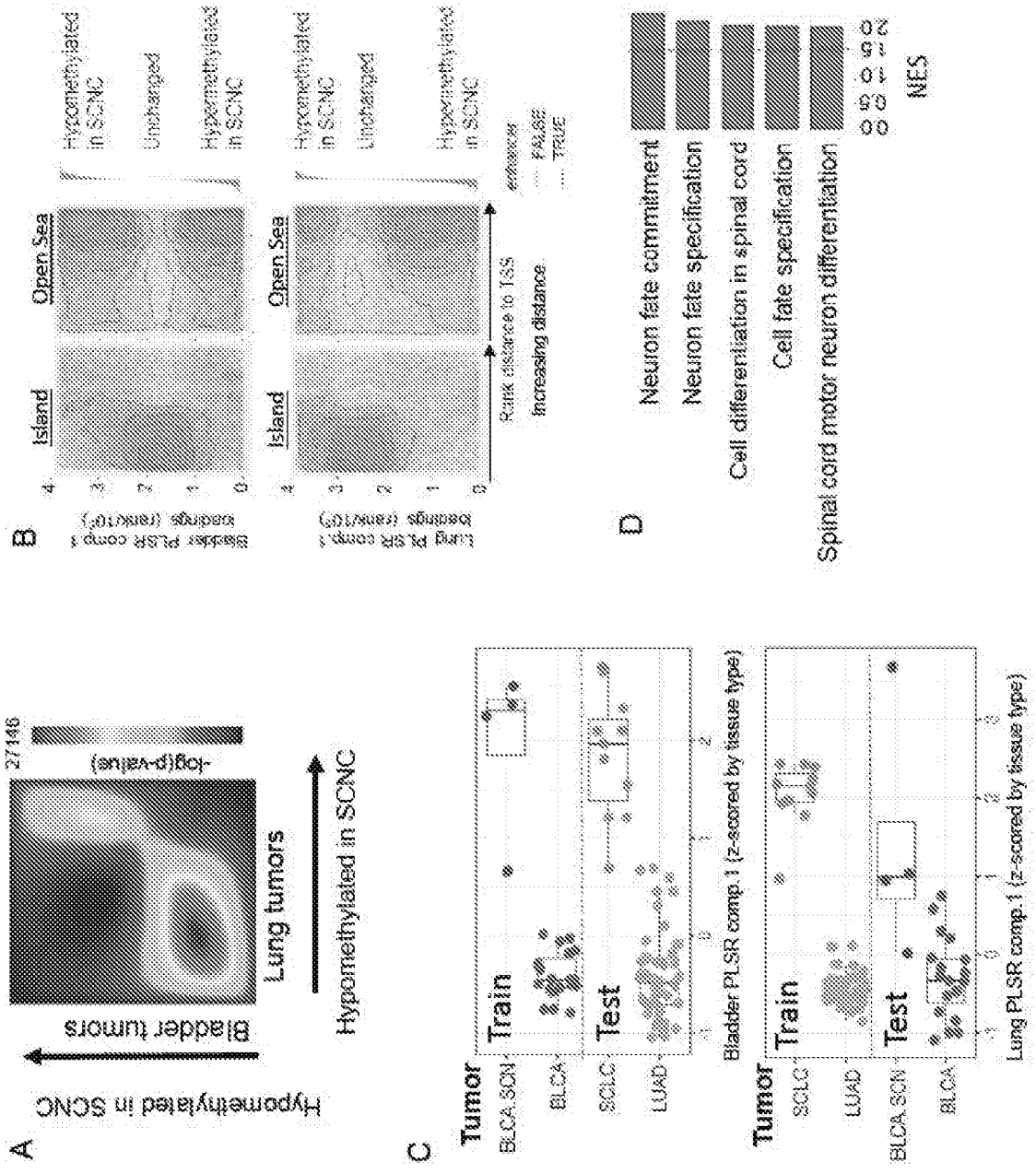

A
Hypomethylated in SCNC
bladder tumors
Lung tumors
Hypomethylated in SCNC
27146
-log(p-value)
B
Island
Open Sea
Hypomethylated in SCNC
Unchanged
Hypermethylated in SCNC
Rank distance to TSS
Increasing distance
enhancer
FALSE
TRUE
C
Tumor
BLCA,SCN
BLCA
SCLC
LUAD
Train
Test
Bladder PLSR comp.1 (z-scored by tissue type)
Lung PLSR comp.1 (z-scored by tissue type)
D
Neuron fate commitment
Neuron fate specification
Cell differentiation in spinal cord
Cell fate specification
Spinal cord motor neuron differentiation
NES

FIG. 2A-D

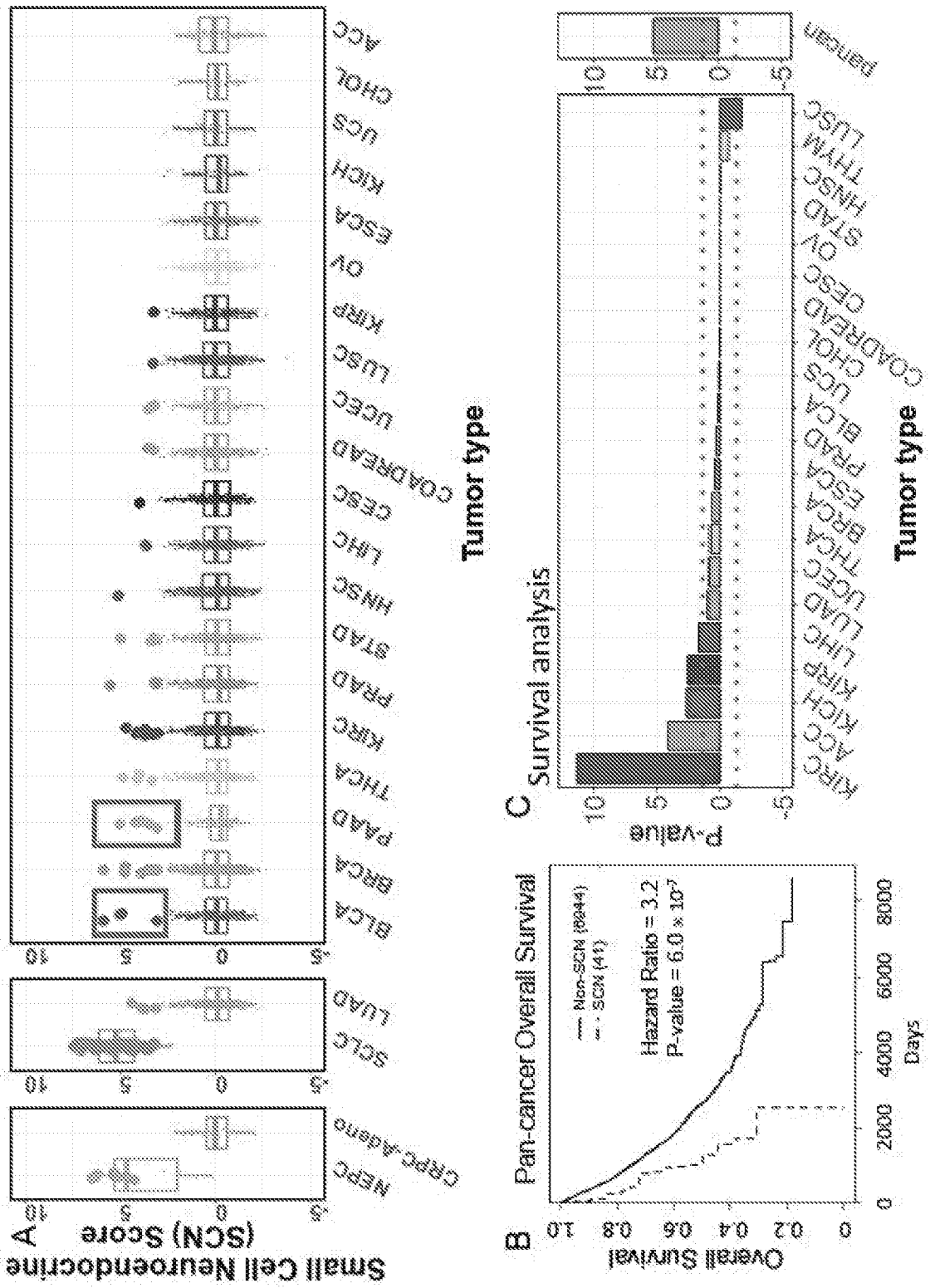

A
Small cell Neuroendocrine (SCN) Score
NEPC
CRPC-Adeno
SCLC
LUAD
BLCA
BRCA
PAAD
THCA
KIRC
PRAD
STAD
HNSC
LIHC
CESC
COADREAD
UCEC
LUSC
KIRP
OV
ESCA
KICH
UCS
CHOL
ACC
Tumor type
B
Pan-cancer Overall Survival
Non-SCN (9844)
SCN (41)
Hazard Ratio = 3.2
P-value = 6.0 × 10⁻⁷
Overall Survival
Days
C
Survival analysis
P-value
KIRC
ACC
KICH
KIRP
LIHC
LUAD
UCEC
THCA
BRCA
ESCA
PRAD
BLCA
UCS
CHOL
COADREAD
CESC
OV
STAD
HNSC
THYM
LUSC
pancan
Tumor type

FIG. 3A-C

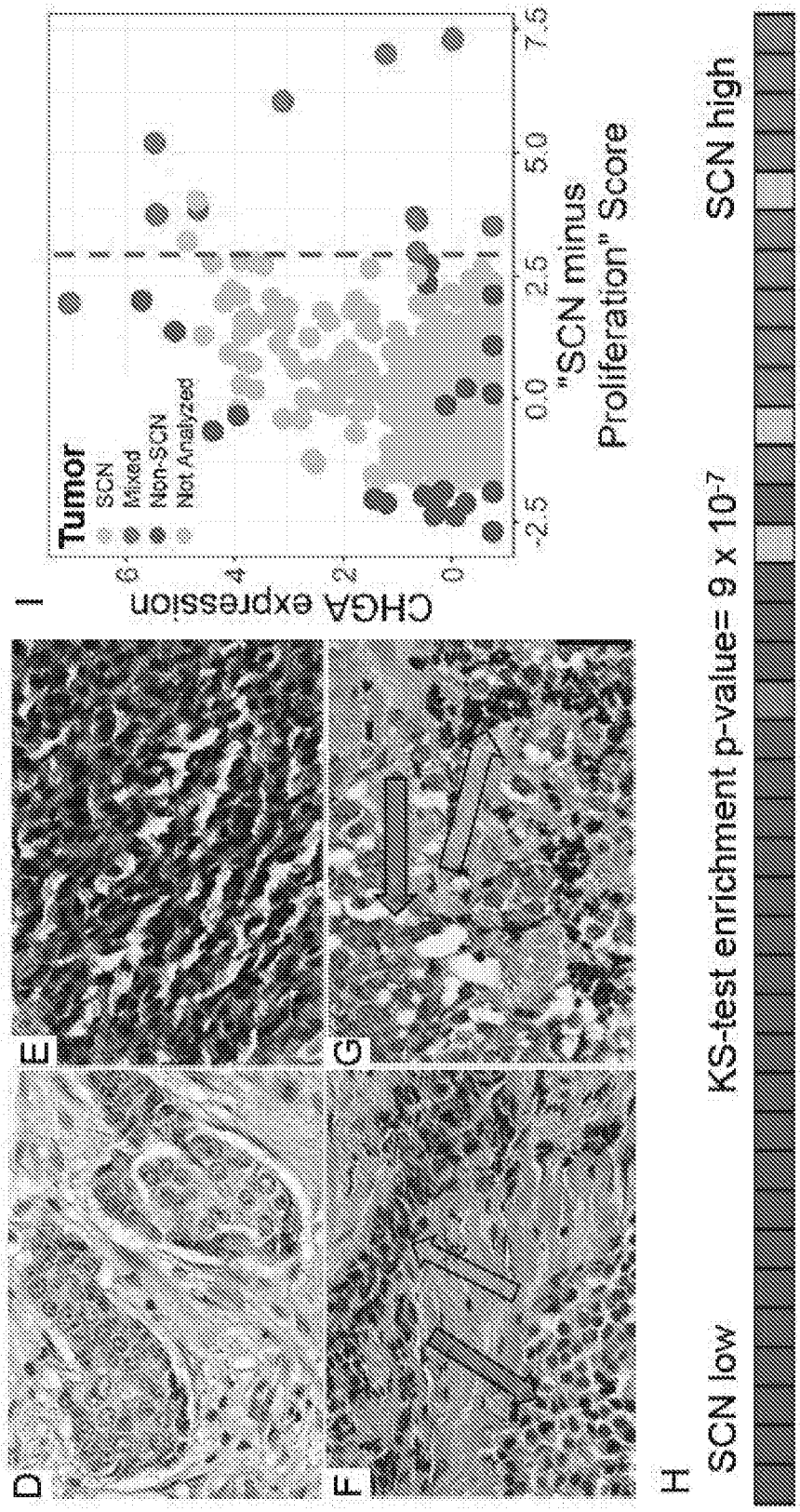

D
E
F
G
H
SCN low
KS-test enrichment p-value= 9 x 10-7
SCN high
I
CHGA expression
Tumor
SCN
Mixed
Non-SCN
Not Analyzed
"SCN minus Proliferation" Score

FIG. 3D-I

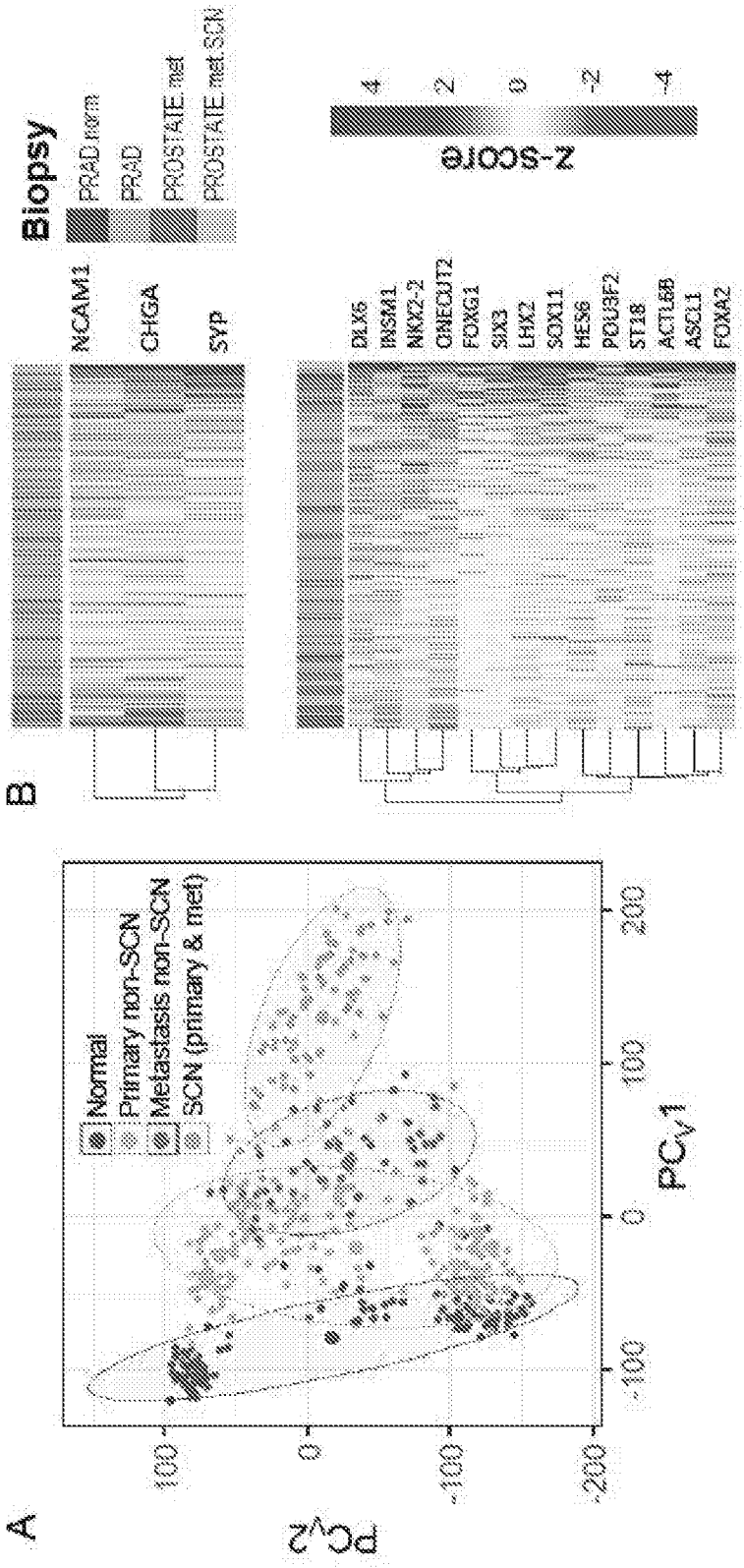

A
Normal
Primary non-SCN
Metastasis non-SCN
SCN (primary & met)
PC_V2
PC_V1
100
0
-100
-200
-100
0
100
200
B
Biopsy
PRAD.norm
PRAD
PROSTATE.met
PROSTATE.met.SCN
NCAM1
CHGA
SYP
DLX5
INSM1
NKX2-2
ONECUT2
FOXG1
SIX3
LHX2
SOX11
HES6
POU3F2
ST18
ACTL6B
ASCL1
FOXA2
Z-score
4
2
0
-2
-4

FIG. 4A-B

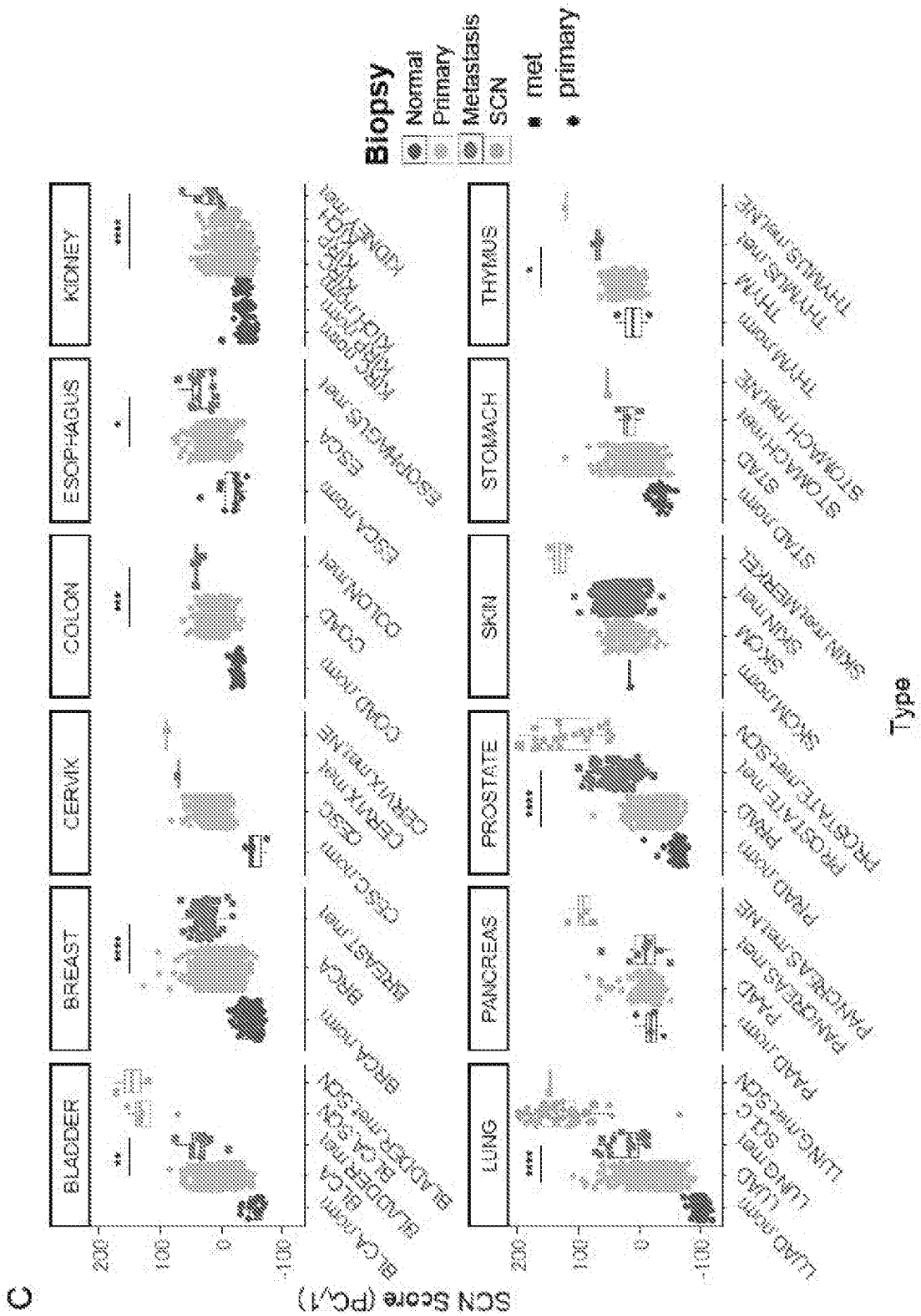

C
SCN Score (PC1)
200
100
0
-100
BLADDER
BREAST
CERVIX
COLON
ESOPHAGUS
KIDNEY
LUNG
PANCREAS
PROSTATE
SKIN
STOMACH
THYMUS
Biopsy
Normal
Primary
Metastasis
SCN
met
primary
Type

FIG. 4C

3

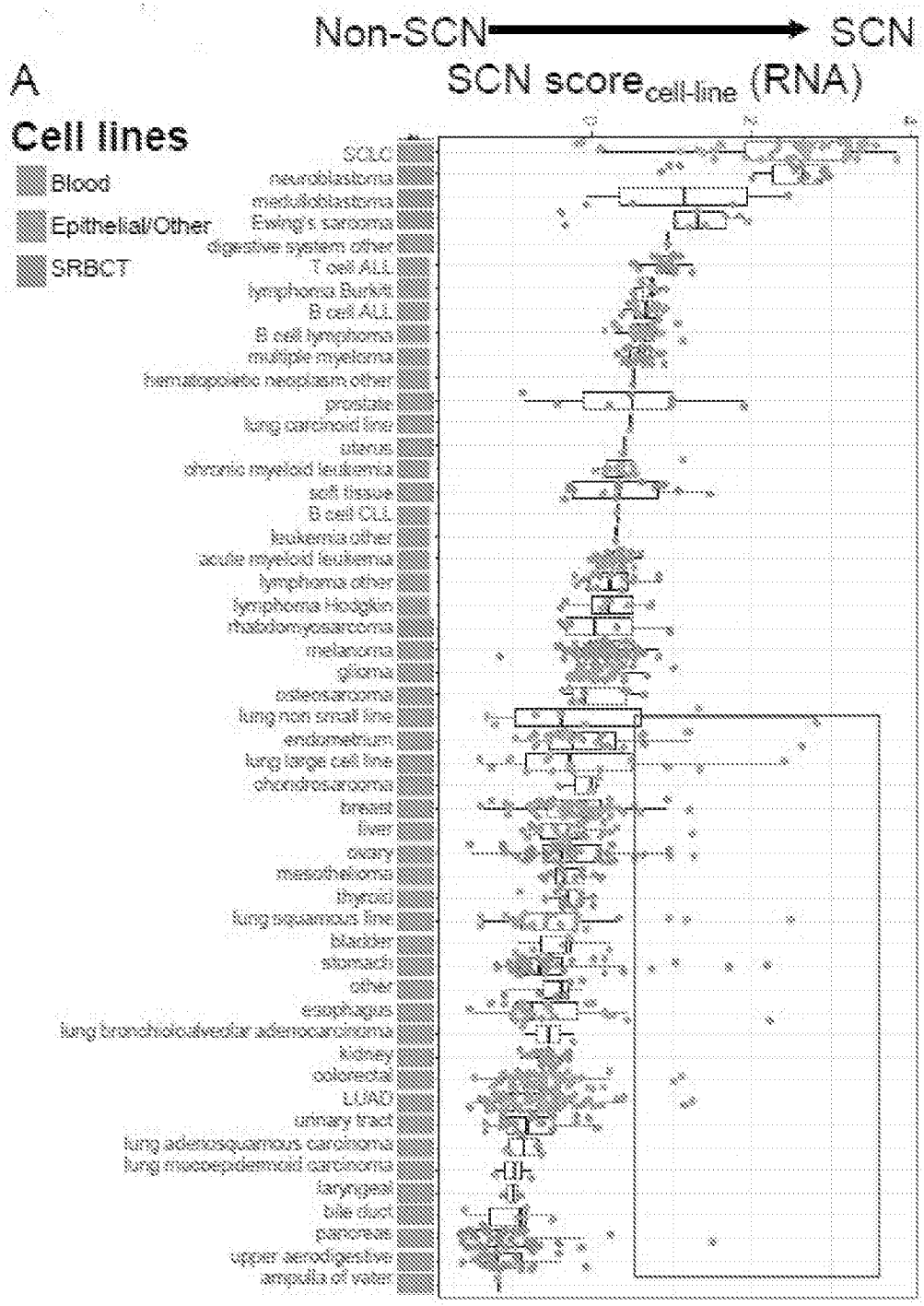

A
Non-SCN
SCN
SCN score cell-line (RNA)
Cell lines
Blood
Epithelial/Other
SRBCT
SCLC
neuroblastoma
medulloblastoma
Ewing's sarcoma
digestive system other
T cell ALL
lymphoma Burkitt
B cell ALL
B cell lymphoma
multiple myeloma
hematopoietic neoplasm other
prostate
lung carcinoid line
uterus
chronic myeloid leukemia
soft tissue
B cell CLL
leukemia other
acute myeloid leukemia
lymphoma other
lymphoma Hodgkin
rhabdomyosarcoma
melanoma
glioma
osteosarcoma
lung non small line
endometrium
lung large cell line
chondrosarcoma
breast
liver
ovary
mesothelioma
thyroid
lung squamous line
bladder
stomach
other
esophagus
lung bronchioalveolar adenocarcinoma
kidney
colorectal
LUAD
urinary tract
lung adenosquamous carcinoma
lung mucoepidermoid carcinoma
laryngeal
bile duct
pancreas
upper aerodigestive
ampulla of vater

FIG. 5A

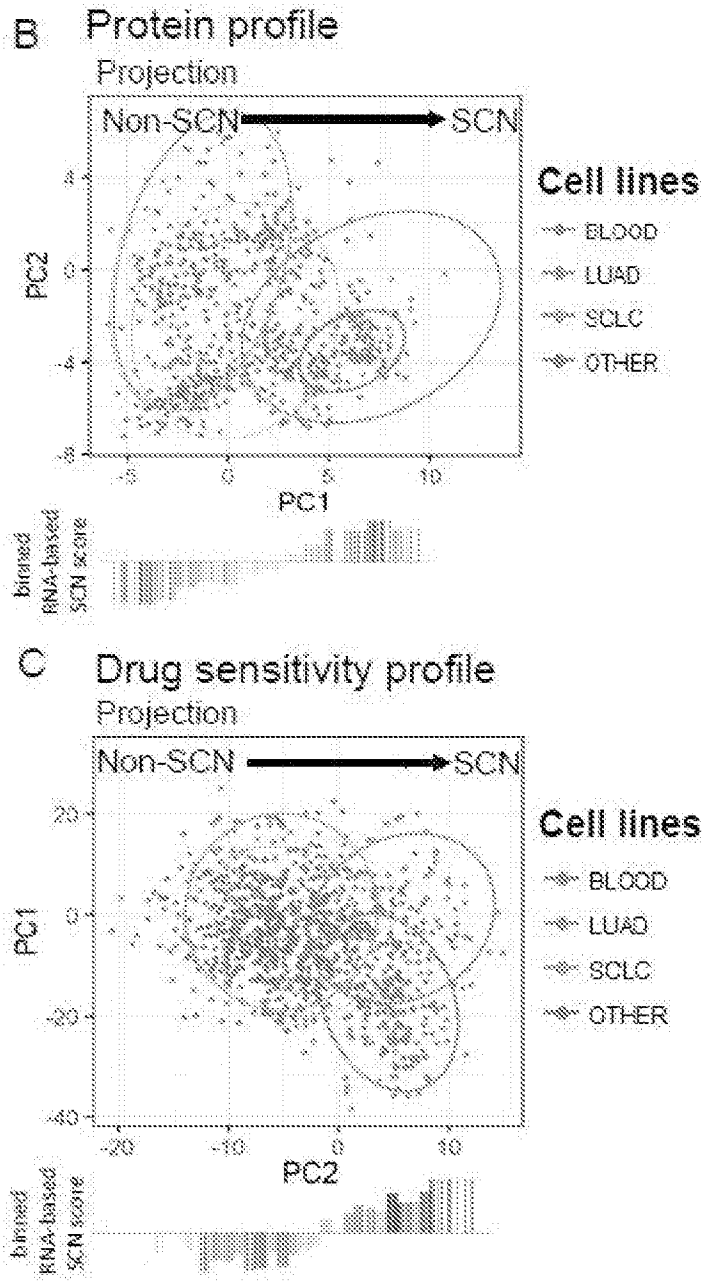

B
Protein profile
Projection
Non-SCN
SCN
Cell lines
BLOOD
LUAD
SCLC
OTHER
PC2
PC1
binned RNA-based SCN score
C
Drug sensitivity profile
Projection
Non-SCN
SCN
Cell lines
BLOOD
LUAD
SCLC
OTHER
PC1
PC2
binned RNA-based SCN score

FIG. 5B-C

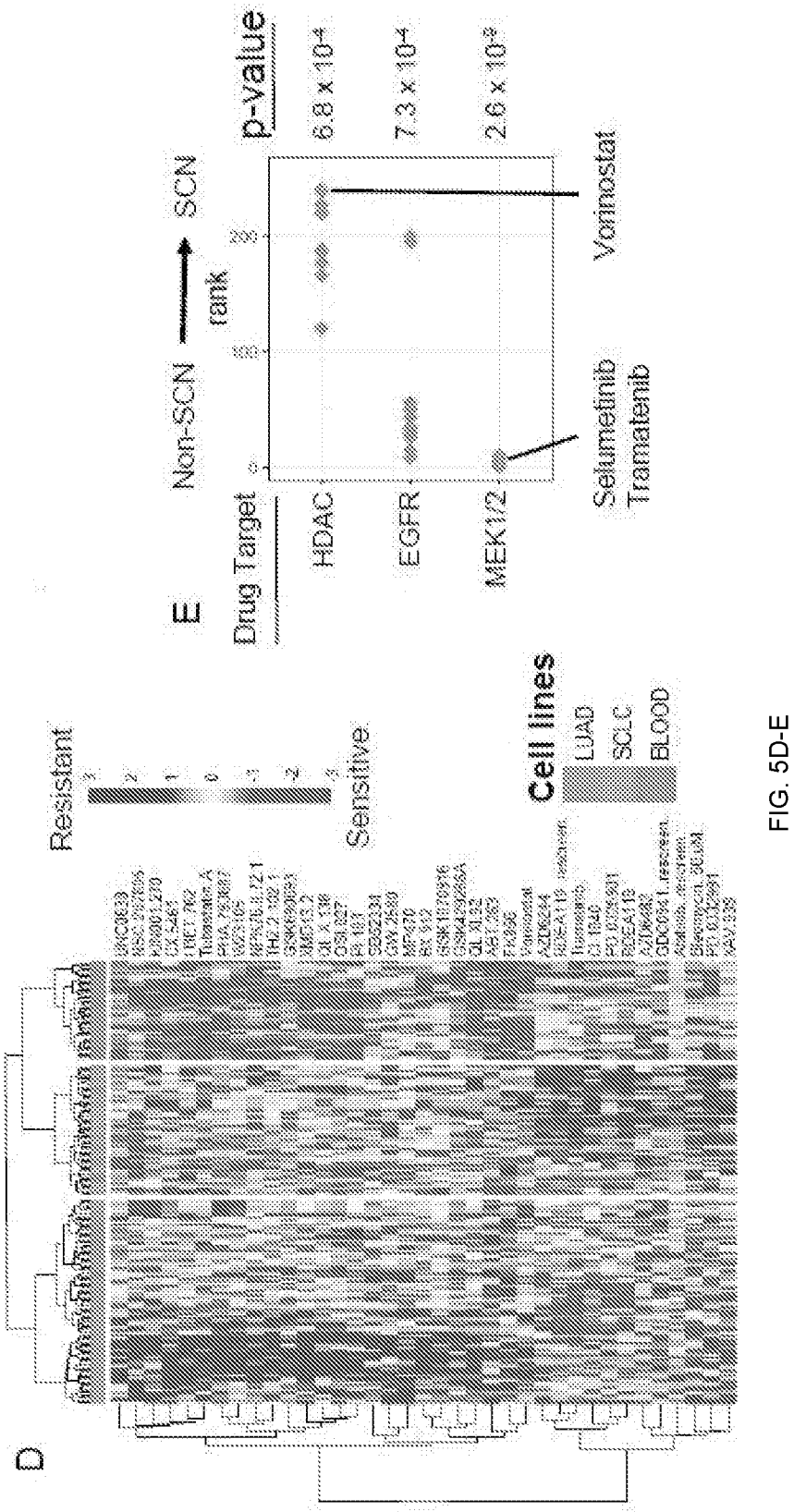

D
Resistant
Sensitive
Cell lines
LUAD
SCLC
BLOOD
E
Non-SCN
rank
SCN
Drug Target
p-value
HDAC
EGFR
MEK1/2
6.8 x 10⁻⁴
7.3 x 10⁻⁴
2.6 x 10⁻³
Selumetinib
Tramatenib
Vorinostat

FIG. 5D-E

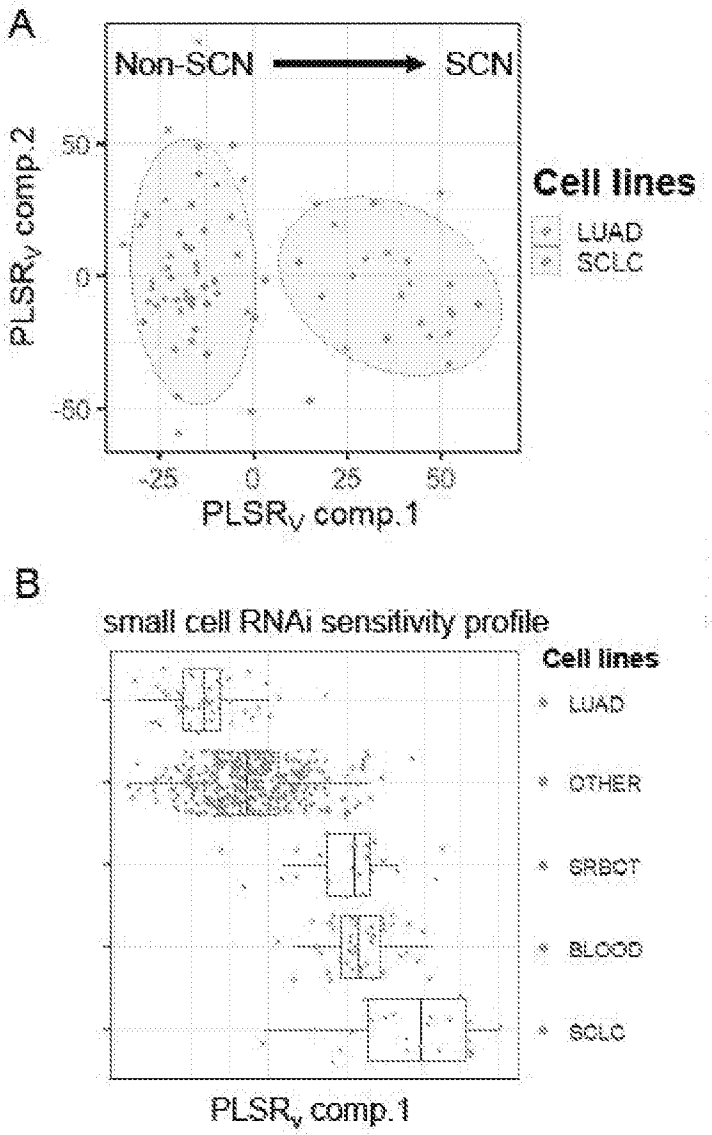

A
Non-SCN
SCN
PLSR$_y$ comp.2
50
0
-50
-25
0
25
50
PLSR$_y$ comp.1
Cell lines
LUAD
SCLC
B
small cell RNAi sensitivity profile
Cell lines
LUAD
OTHER
GRBCT
BLOOD
SCLC
PLSR$_y$ comp.1

FIG. 6A-B

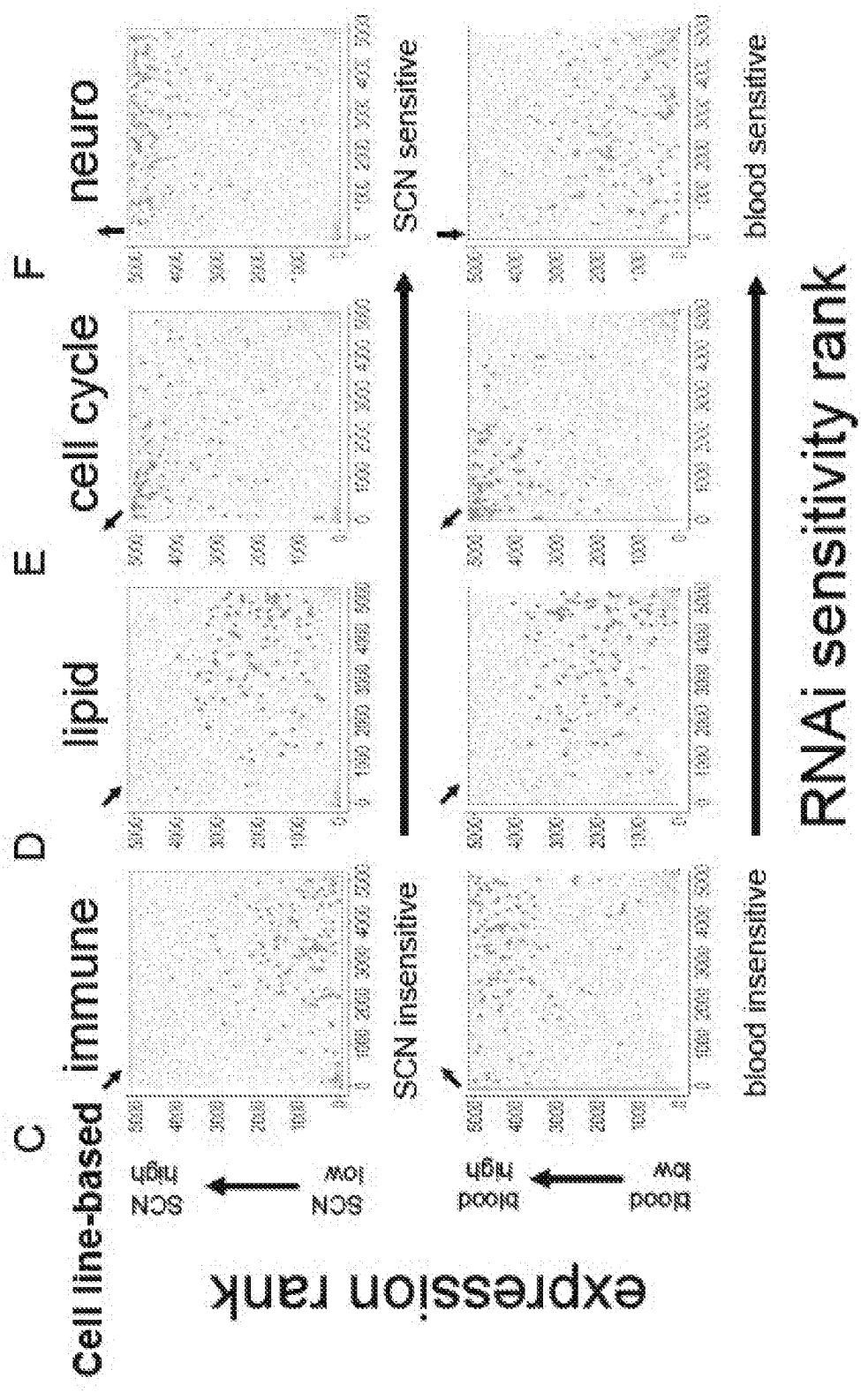

C
D
E
F
Cell line-based
immune
lipid
cell cycle
neuro
expression rank
SCN high
SCN low
blood high
blood low
SCN insensitive
SCN sensitive
blood insensitive
blood sensitive
RNAi sensitivity rank

FIG. 6C-F

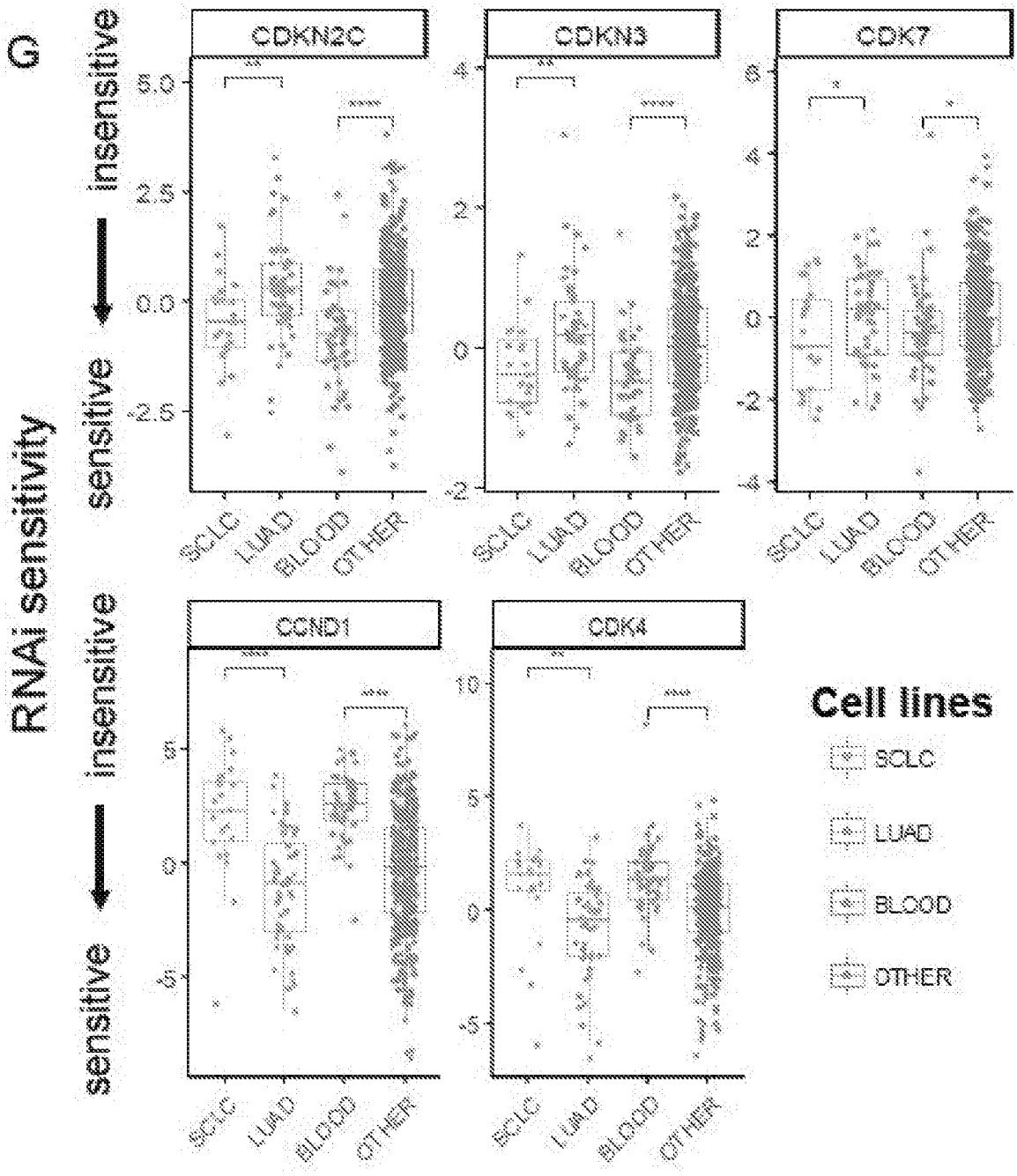

G
RNAi sensitivity
insensitive
sensitive
CDKN2C
CDKN3
CDK7
CCND1
CDK4
SCLC
LUAD
BLOOD
OTHER
Cell lines

FIG. 6G

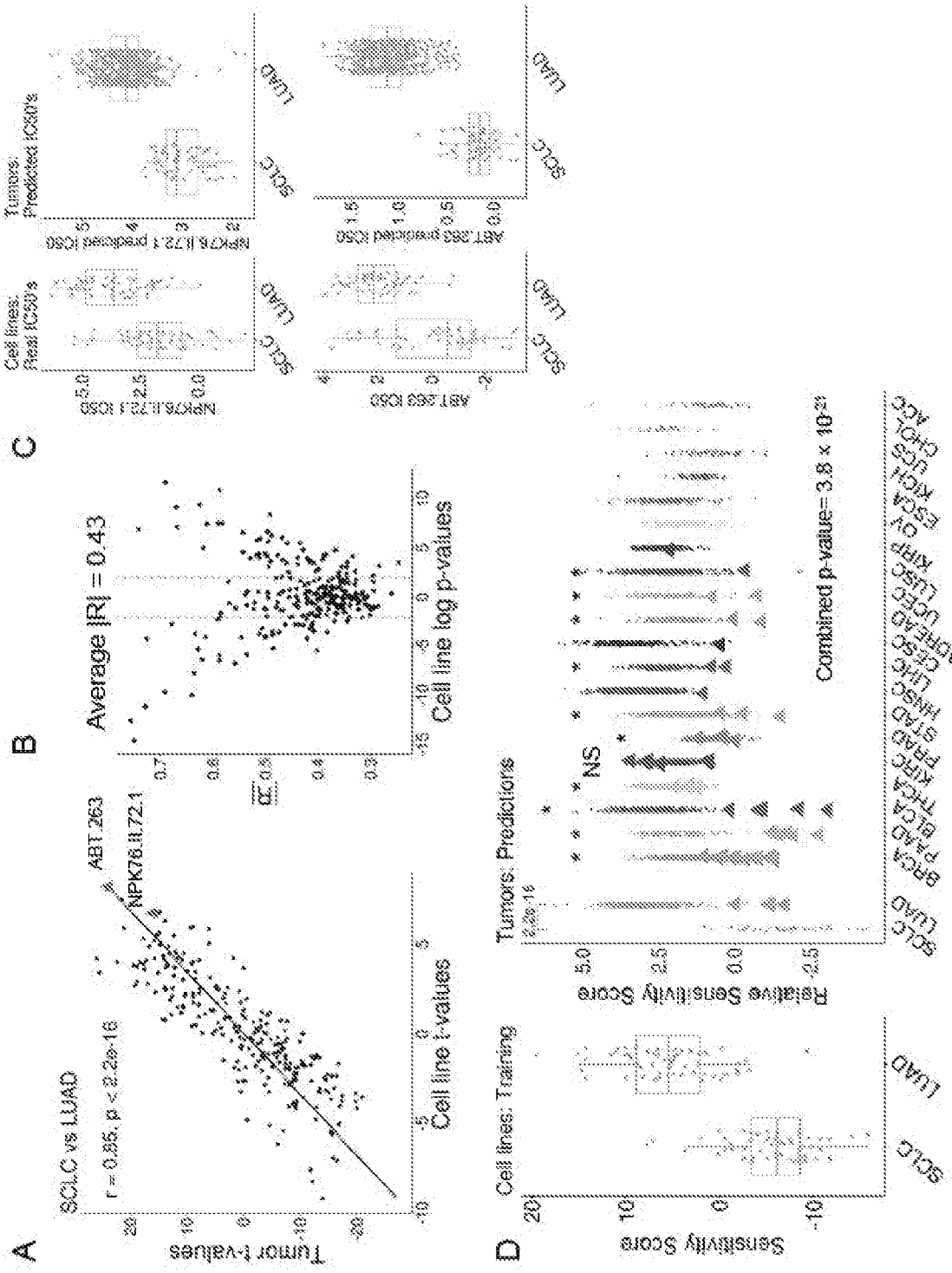

A
SCLC vs LUAD
r = 0.85, p < 2.2e-16
ABT.263
NPK76.II.72.1
Tumor t-values
Cell line t-values
B
Average |R| = 0.43
Cell line log p-values
C
Cell lines: Real IC50's
Tumors: Predicted IC50's
NPK76.II.72.1 IC50
NPK76.II.72.1 predicted IC50
ABT.263 IC50
ABT.263 predicted IC50
SCLC
LUAD
D
Cell lines: Training
Sensitivity Score
Tumors: Predictions
Relative Sensitivity Score
NS
Combined p-value= 3.8 × 10-21
SCLC
LUAD
BRCA
PAAD
BLCA
THCA
KIRC
PRAD
STAD
HNSC
LIHC
CESC
COADREAD
UCEC
LUSC
KIRP
OV
ESCA
KICH
UCS
CHOL
ACC

FIG. 7A-D

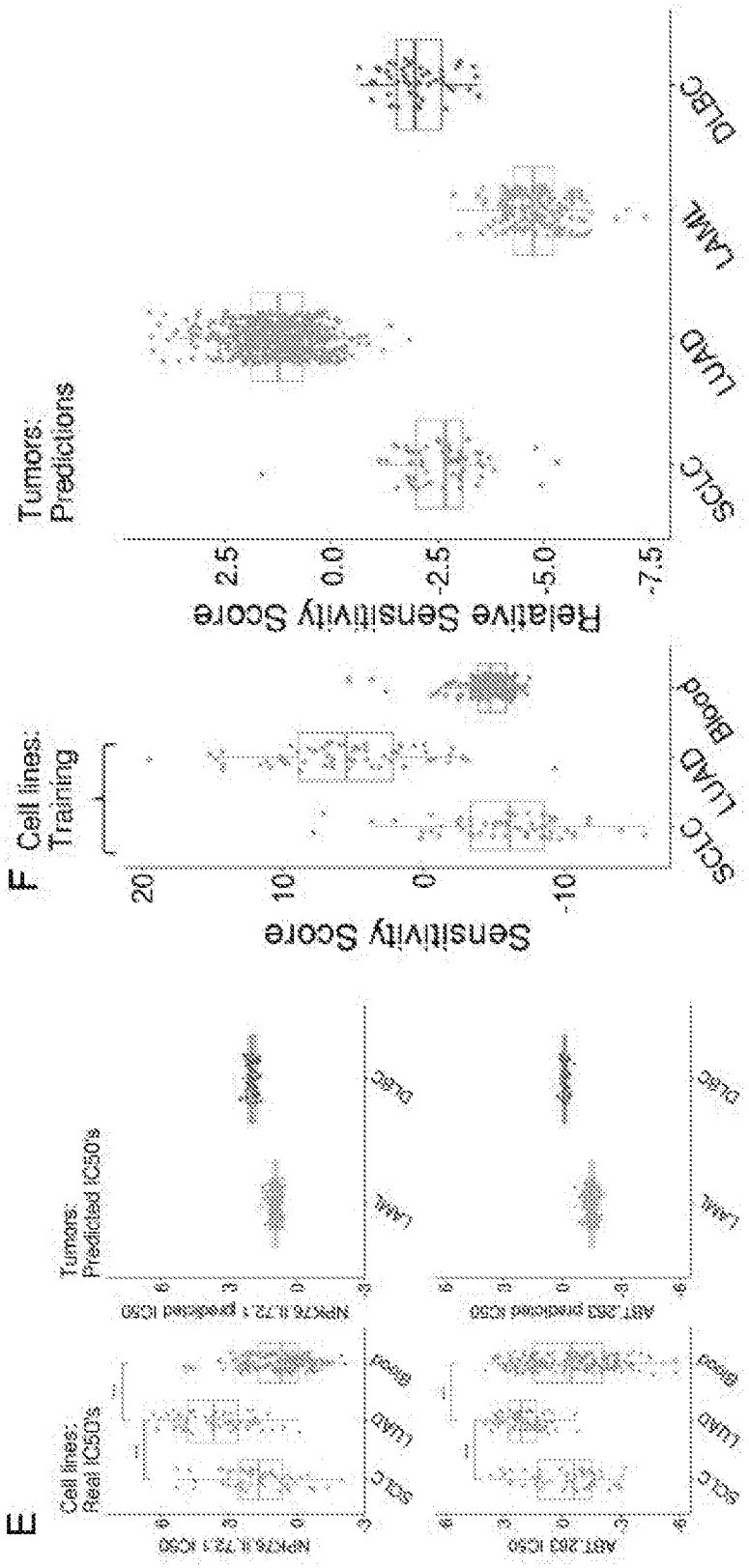

E
Cell lines:
Real IC50's
Tumors:
Predicted IC50's
F
Cell lines:
Training
Sensitivity Score
Tumors:
Predictions
Relative Sensitivity Score
SCLC
LUAD
Blood
LAML
DLBC

FIG. 7E-F

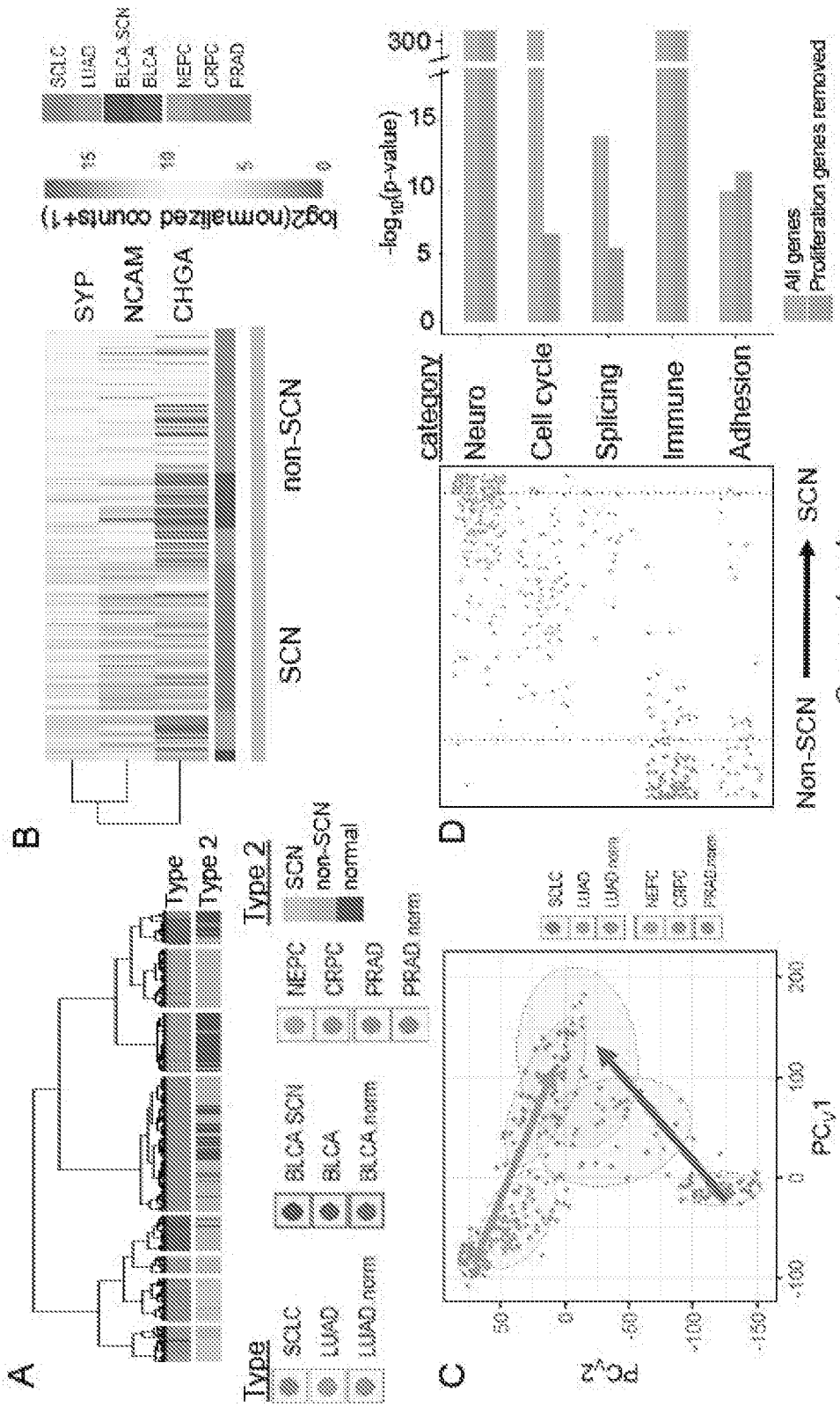

A
Type
Type 2
SCLC
LUAD
LUAD norm
BLCA SCN
BLCA
BLCA norm
Type 2
SCN
non-SCN
normal
NEPC
CRPC
PRAD
PRAD norm
B
SYP
NCAM
CHGA
log2(normalized counts+1)
SCN
non-SCN
SCLC
LUAD
BLCA_SCN
BLCA
NEPC
CRPC
PRAD
C
PC2
PC1
D
-log10(p-value)
category
Neuro
Cell cycle
Splicing
Immune
Adhesion
All genes
Proliferation genes removed
Non-SCN
SCN
Gene set rank

FIG. 8A-D

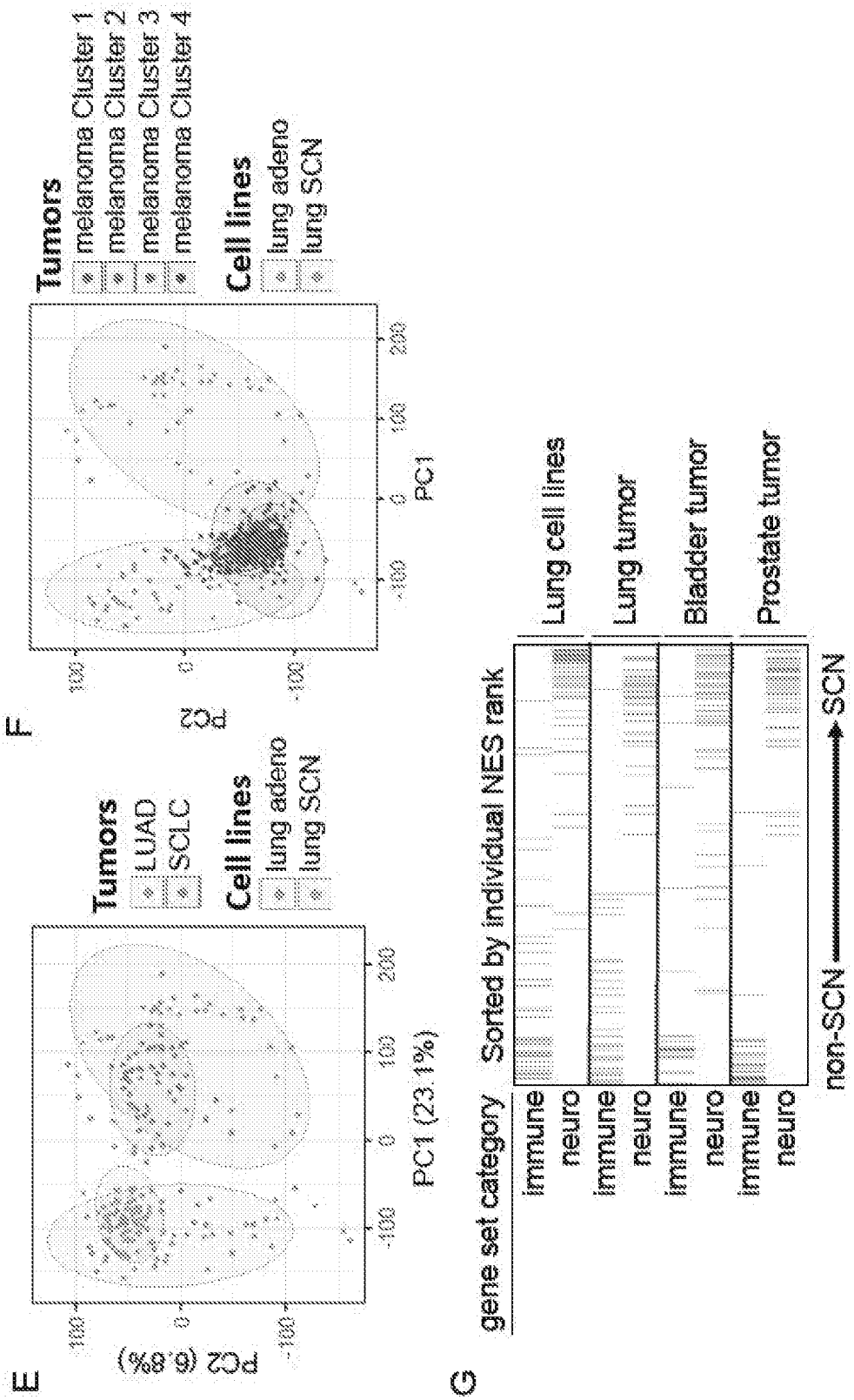

E
PC2 (6.8%)
PC1 (23.1%)
Tumors
LUAD
SCLC
Cell lines
lung adeno
lung SCN
F
PC2
PC1
Tumors
melanoma Cluster 1
melanoma Cluster 2
melanoma Cluster 3
melanoma Cluster 4
Cell lines
lung adeno
lung SCN
G
gene set category
Sorted by individual NES rank
immune
neuro
Lung cell lines
Lung tumor
Bladder tumor
Prostate tumor
non-SCN
SCN

FIG. 8E-G

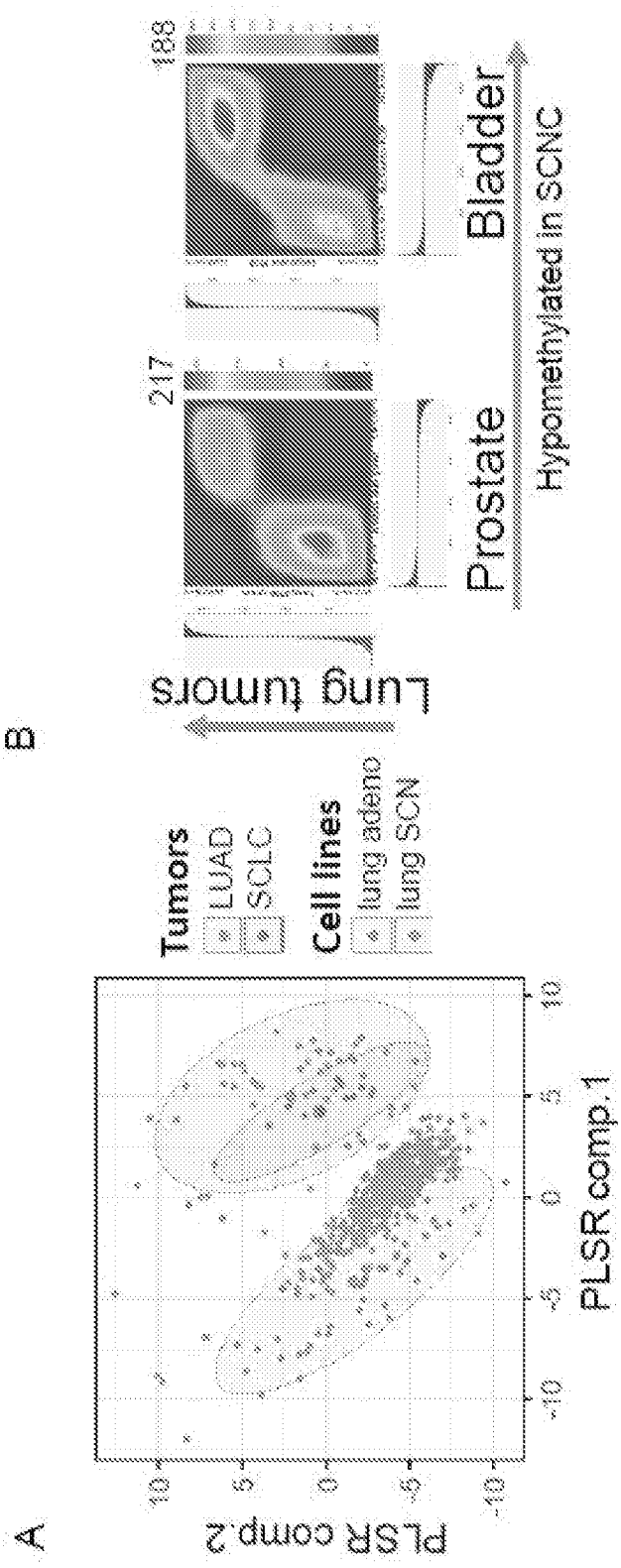

A
PLSR comp.2
10
5
0
-5
-10
PLSR comp.1
-10
-5
0
5
10
Tumors
LUAD
SCLC
Cell lines
lung adeno
lung SCN
B
Lung tumors
217
188
Prostate
Bladder
Hypomethylated in SCNC

FIG. 9A-B

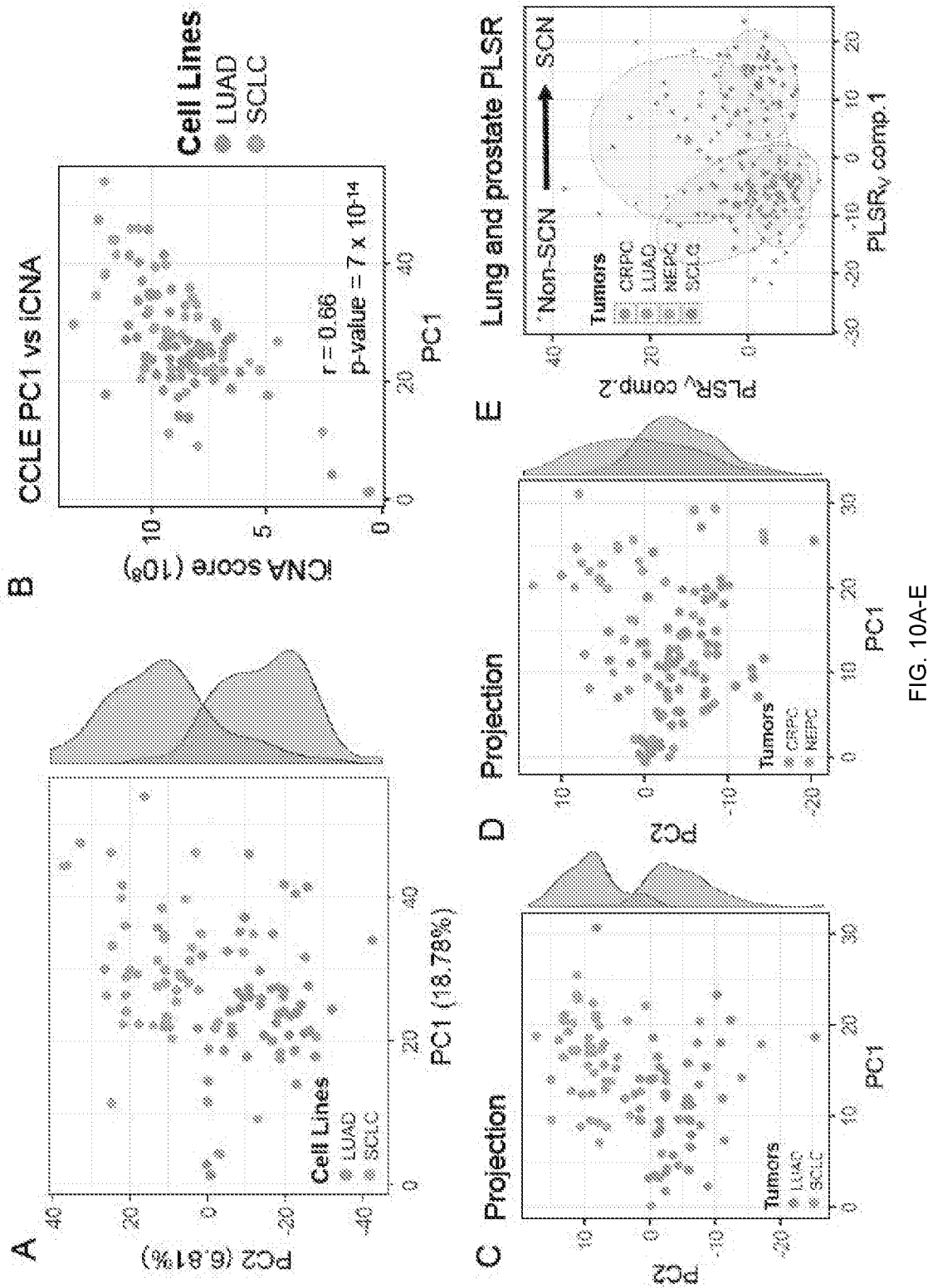

A
PC2 (6.81%)
PC1 (18.78%)
Cell Lines
LUAD
SCLC
B
CCLE PC1 vs iCNA
iCNA score (10^8)
PC1
r = 0.86
p-value = 7 x 10^-14
Cell Lines
LUAD
SCLC
C
Projection
PC2
PC1
Tumors
LUAD
SCLC
D
Projection
PC2
PC1
Tumors
CRPC
NEPC
E
Lung and prostate PLSR
Non-SCN
SCN
PLSR_v comp.2
PLSR_v comp.1
Tumors
CRPC
LUAD
NEPC
SCLC

FIG. 10A-E

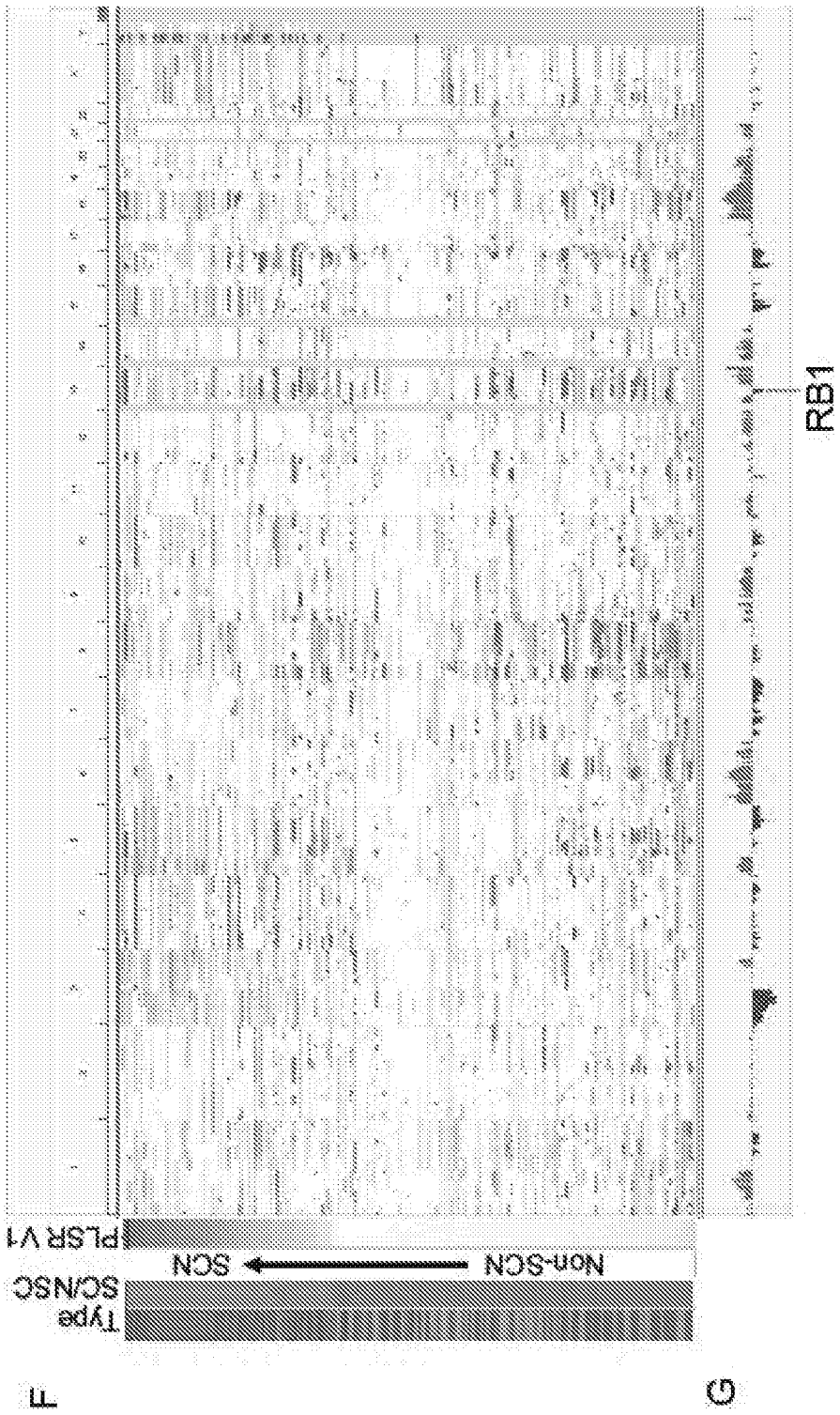


FIG. 10F-G

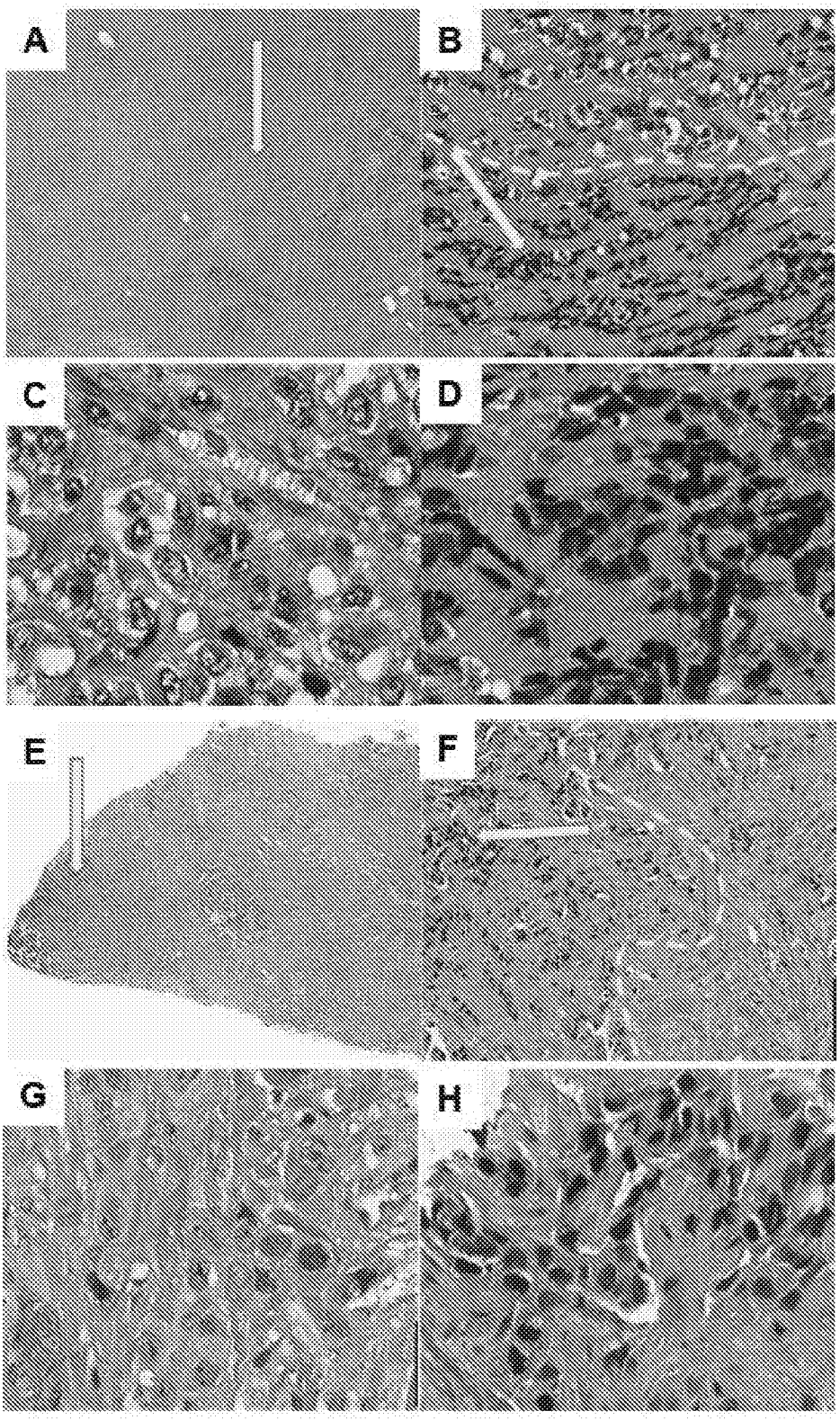


FIG. 11A-H

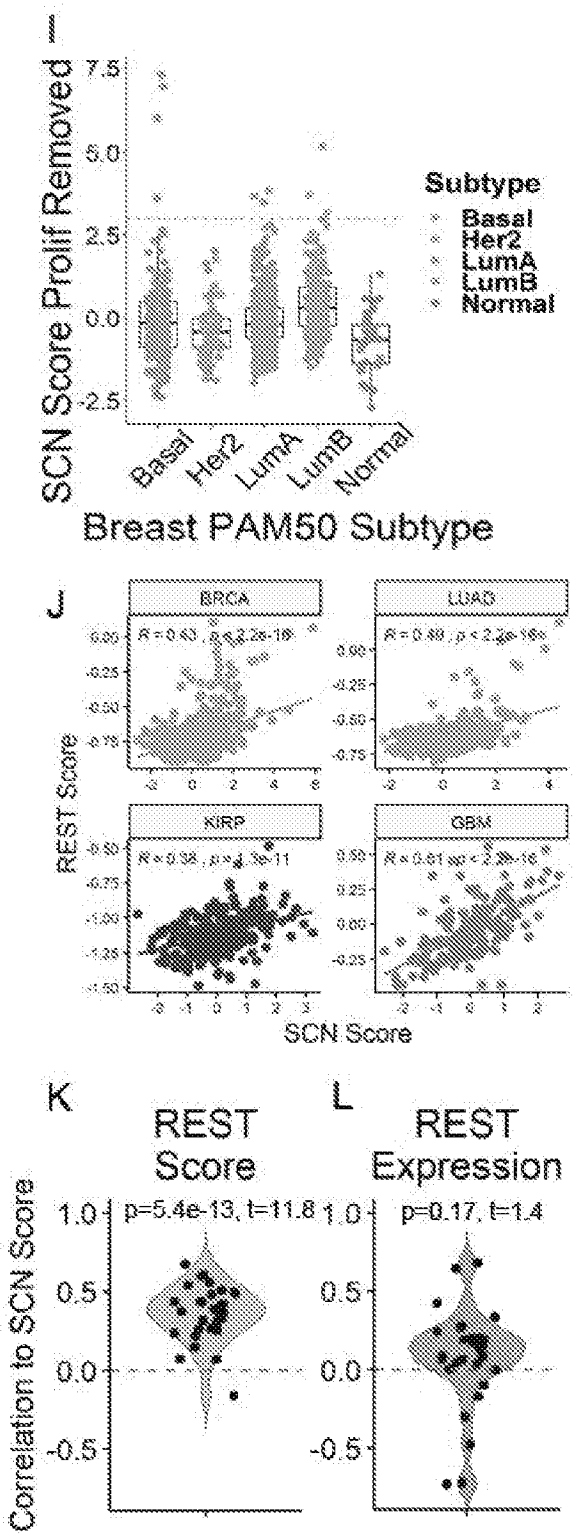

I
SCN Score Prolif Removed
7.5
5.0
2.5
0.0
-2.5
Basal
Her2
LumA
LumB
Normal
Subtype
Basal
Her2
LumA
LumB
Normal
Breast PAM50 Subtype
J
BRCA
LUAD
KIRP
GBM
REST Score
SCN Score
K
REST Score
p=5.4e-13, t=11.8
L
REST Expression
p=0.17, t=1.4
Correlation to SCN Score
1.0
0.5
0.0
-0.5

FIG. 11I-L

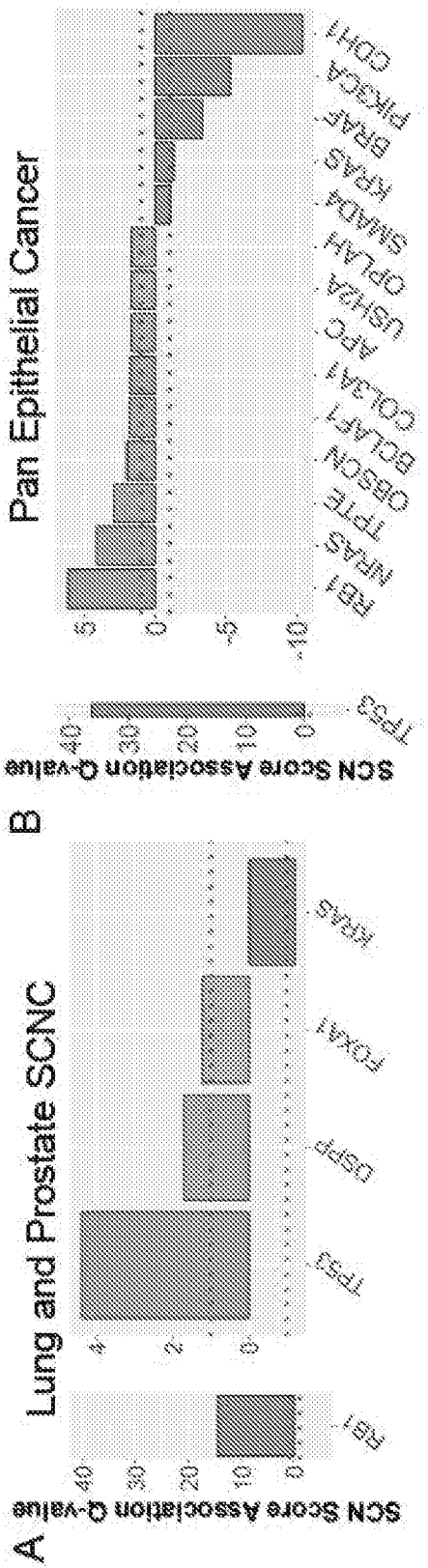

A
Lung and Prostate SCNC
SCN Score Association Q-value
RB1
TP53
DSPP
FOXA1
KRAS
B
Pan Epithelial Cancer
SCN Score Association Q-value
TP53
RB1
NRAS
TPTE
OBSCN
BCLAF1
COL3A1
APC
USH2A
OPLAH
SMAD4
KRAS
BRAF
PIK3CA
CDH1

FIG. 12A-B

C
SCN Score Association P-value
ACC
BLCA
BRCA
CESC
CHOL
DLBC
ESCA
GBM
HNSC
KICH
KIRC
KIRP
LAML
LGG
LIHC
LUAD
LUSC
OV
PCPG
PRAD
SARC
SKCM
STAD
TGCT
THCA
THYM
UCS
Gene

FIG. 12C

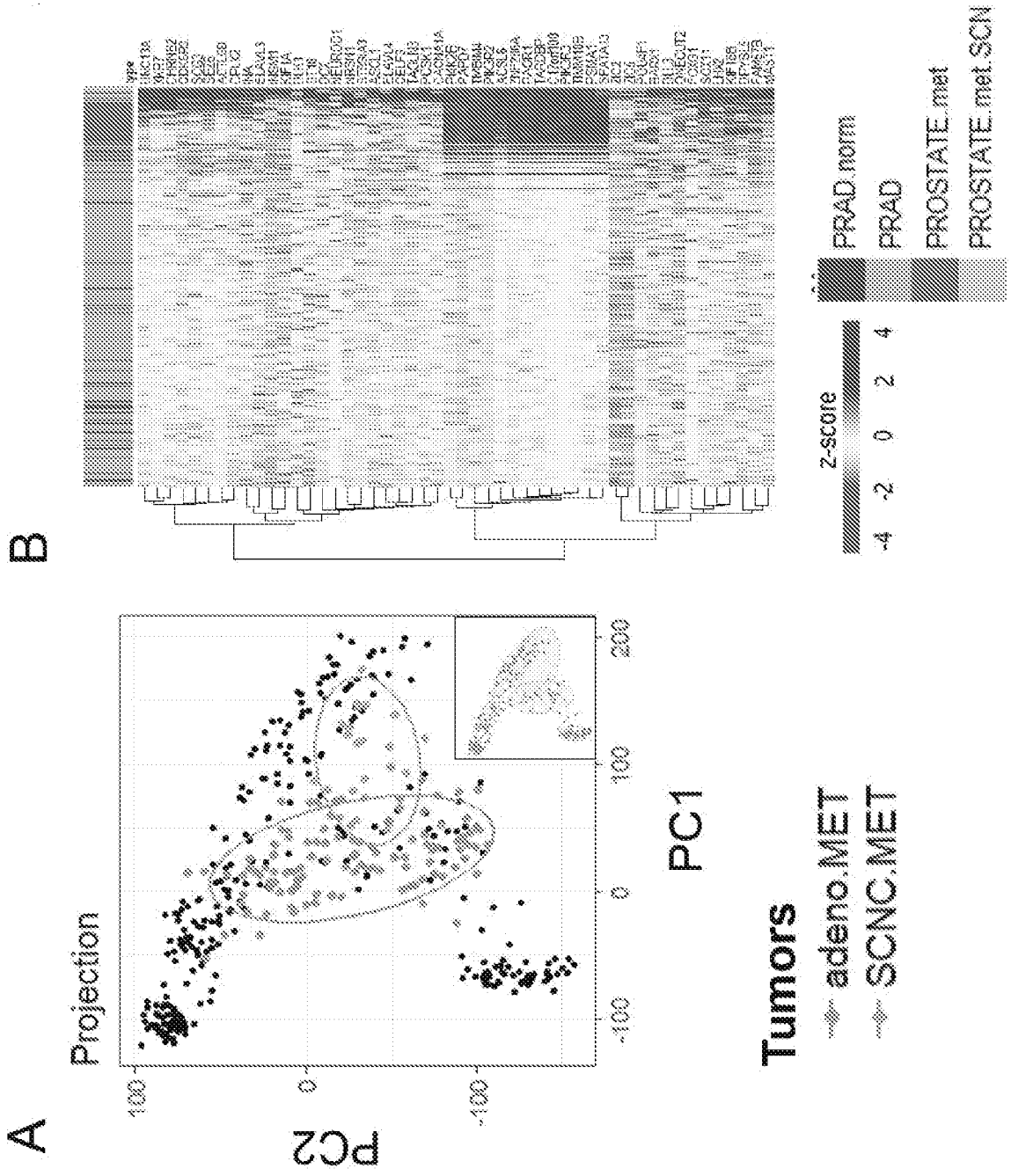

A
Projection
PC2
PC1
100
0
-100
200
100
0
-100
Tumors
adeno.MET
SCNC.MET
B
type
z-score
-4
-2
0
2
4
PRAD.norm
PRAD
PROSTATE.met
PROSTATE.met.SCN

FIG. 13A-B

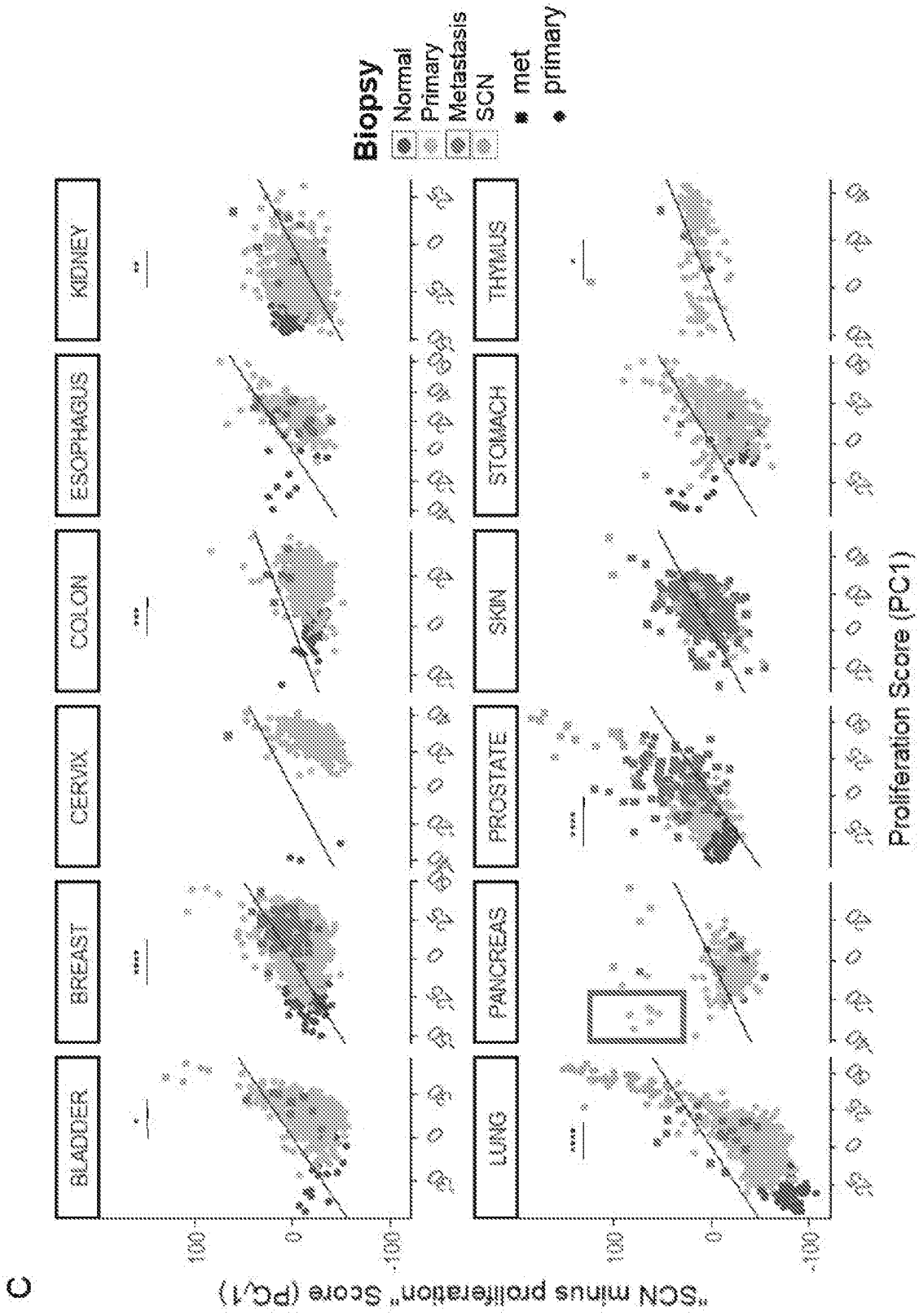

C
"SCN minus proliferation" Score (PC1)
Proliferation Score (PC1)
BLADDER
BREAST
CERVIX
COLON
ESOPHAGUS
KIDNEY
LUNG
PANCREAS
PROSTATE
SKIN
STOMACH
THYMUS
Biopsy
Normal
Primary
Metastasis
SCN
met
primary

FIG. 13C

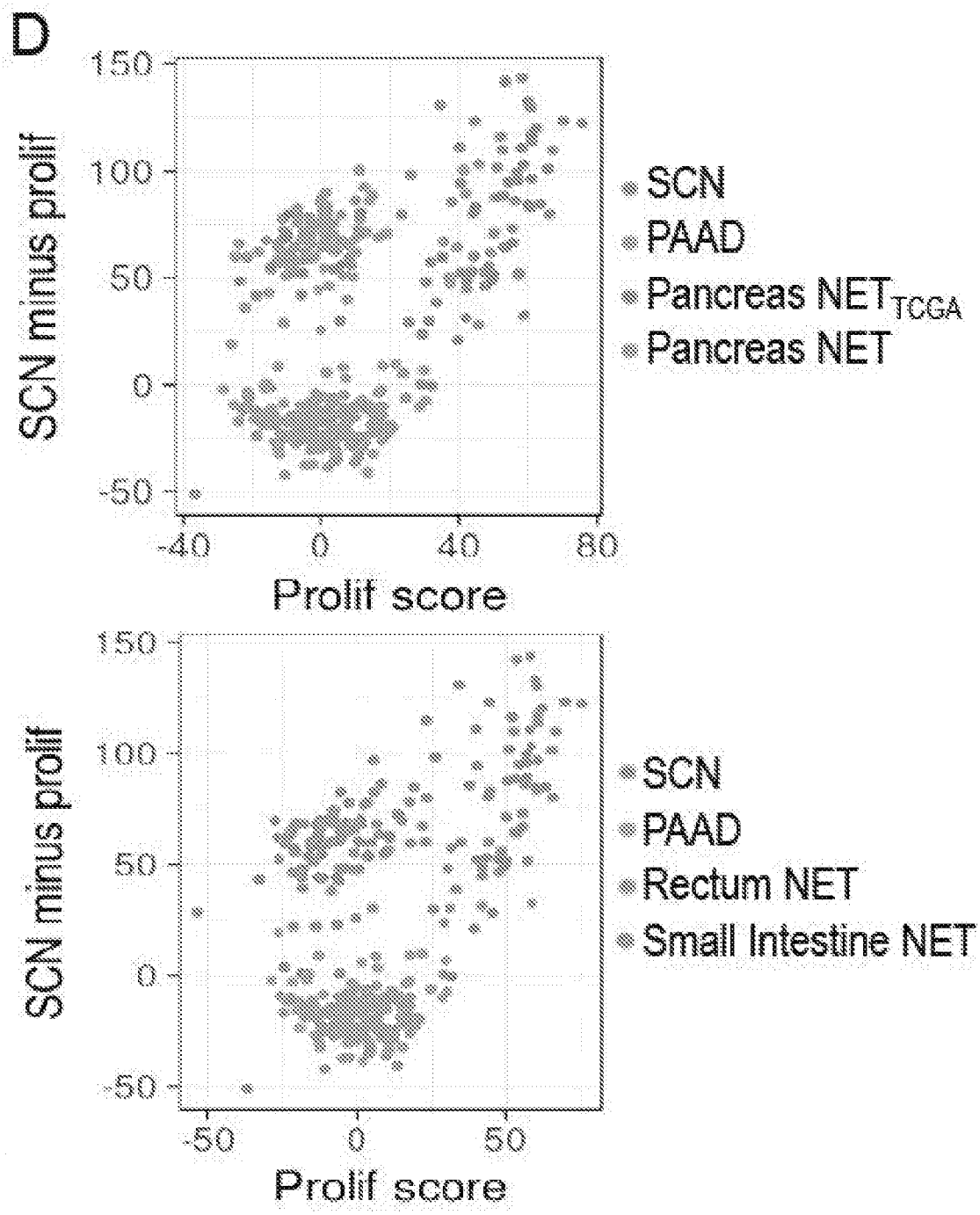

D
SCN minus prolif
150
100
50
0
-50
-40
0
40
80
Prolif score
SCN
PAAD
Pancreas NET$_{TCGA}$
Pancreas NET
SCN minus prolif
150
100
50
0
-50
-50
0
50
Prolif score
SCN
PAAD
Rectum NET
Small Intestine NET

FIG. 13D

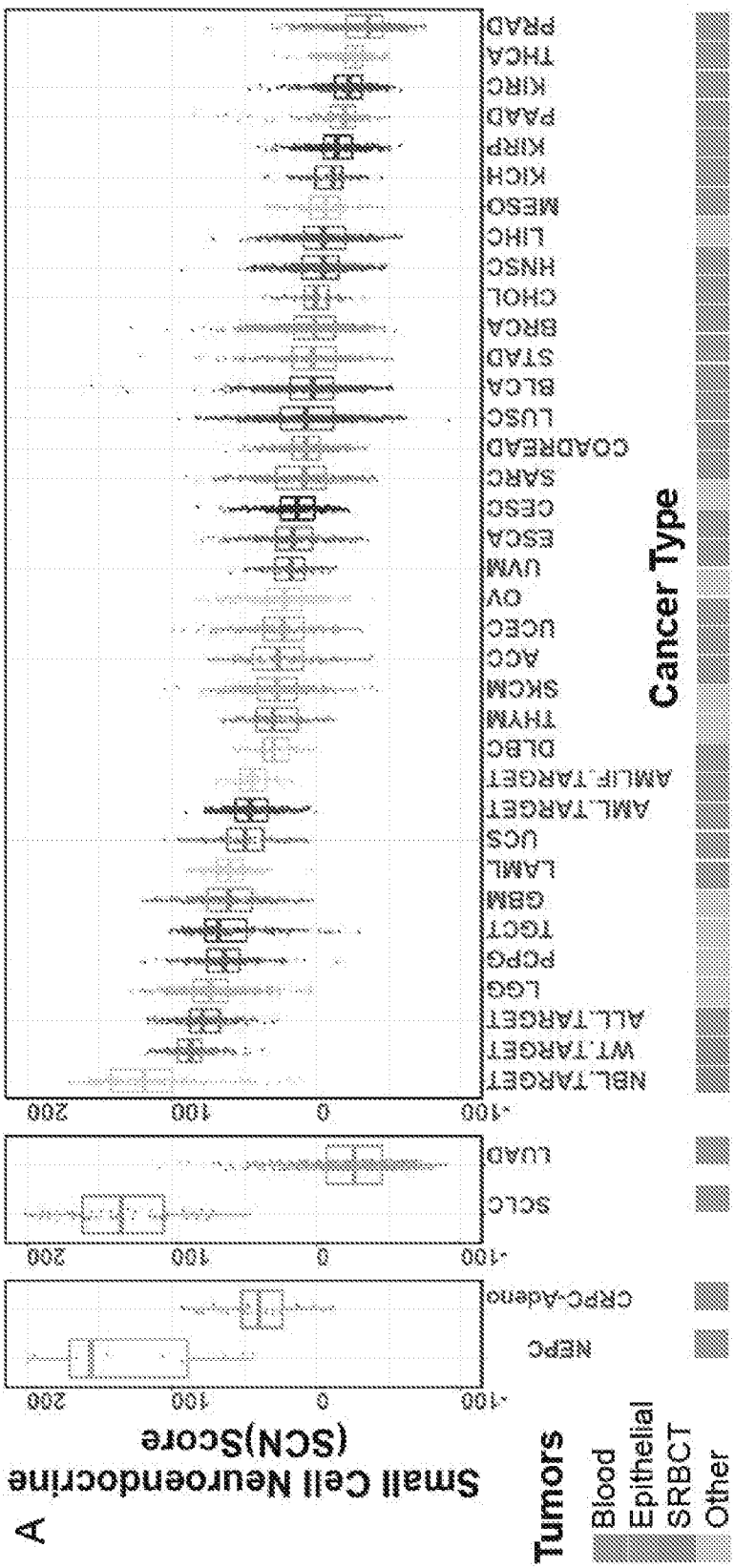

A
Small Cell Neuroendocrine (SCN)Score
Tumors
Blood
Epithelial
SRBCT
Other
NEPC
CRPC-Adeno
SCLC
LUAD
NBL_TARGET
WT_TARGET
ALL_TARGET
LGG
PCPG
TGCT
GBM
LAML
UCS
AML_TARGET
AMLF_TARGET
DLBC
THYM
SKCM
ACC
UCEC
OV
UVM
ESCA
CESC
SARC
COADREAD
LUSC
BLCA
STAD
BRCA
CHOL
HNSC
LIHC
MESO
KICH
KIRP
PAAD
KIRC
THCA
PRAD
Cancer Type
-100
0
100
200

FIG. 14A

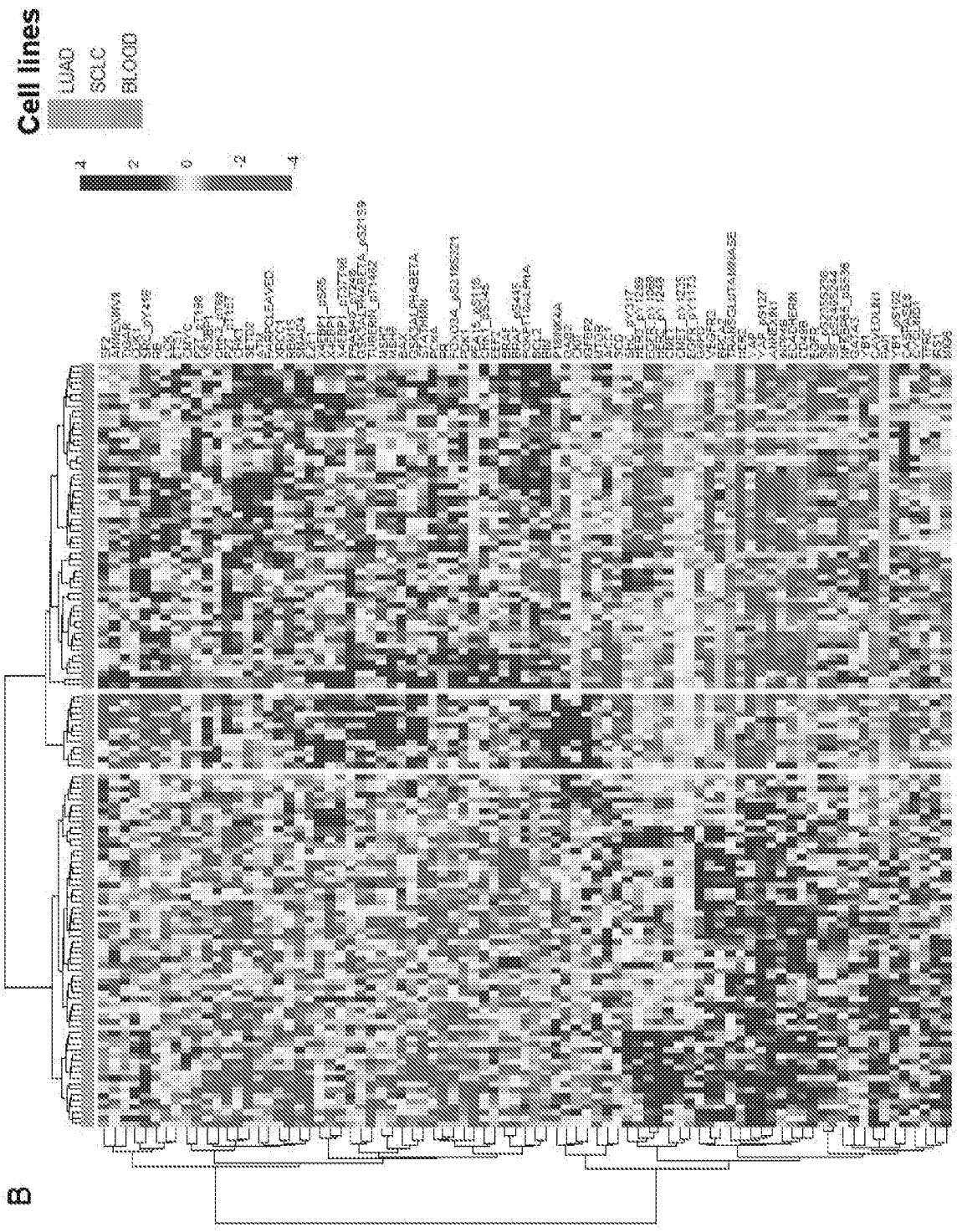


FIG. 14B

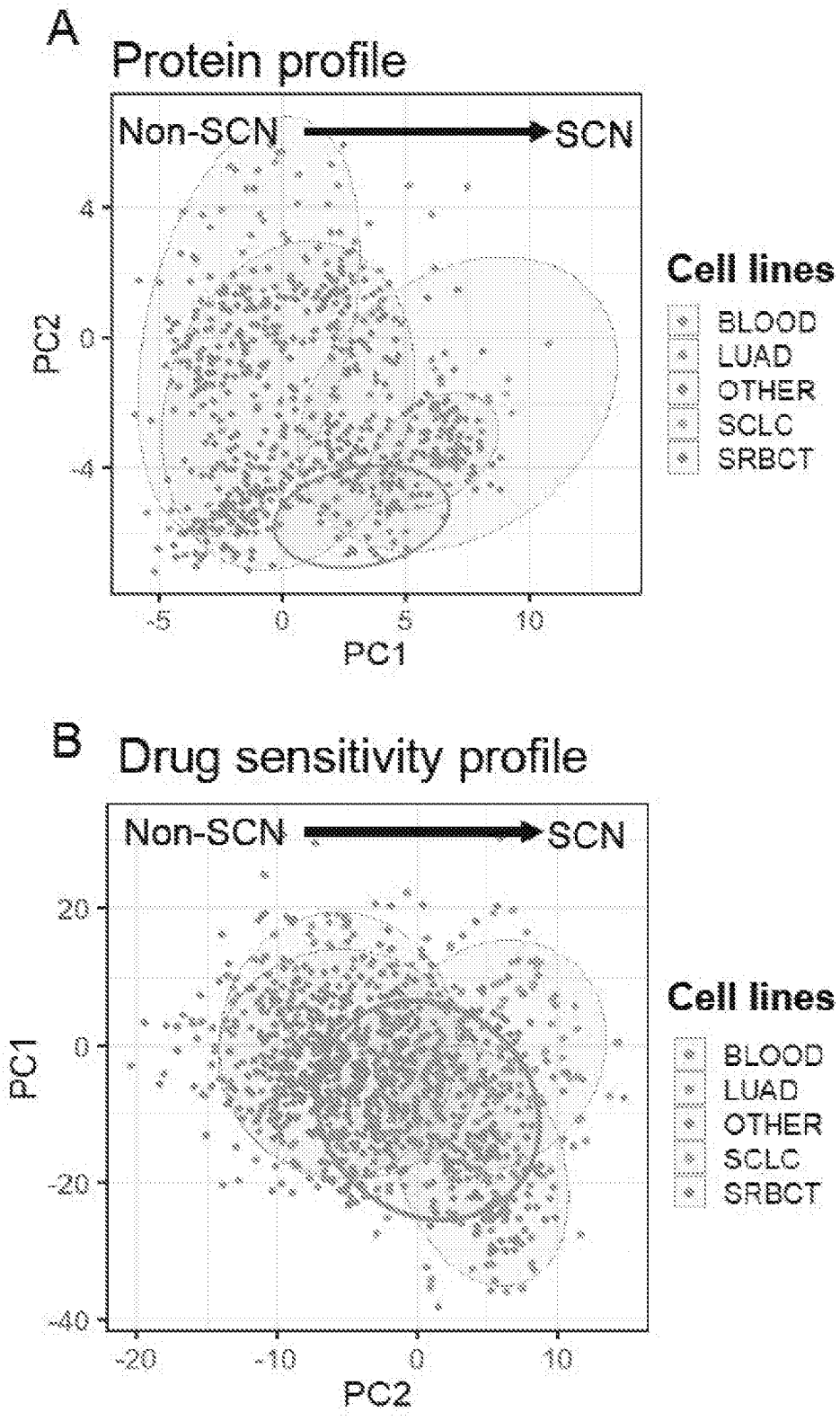

A
Protein profile
Non-SCN
SCN
PC2
PC1
Cell lines
BLOOD
LUAD
OTHER
SCLC
SRBCT
B
Drug sensitivity profile
Non-SCN
SCN
PC1
PC2
Cell lines
BLOOD
LUAD
OTHER
SCLC
SRBCT

FIG. 15A-B

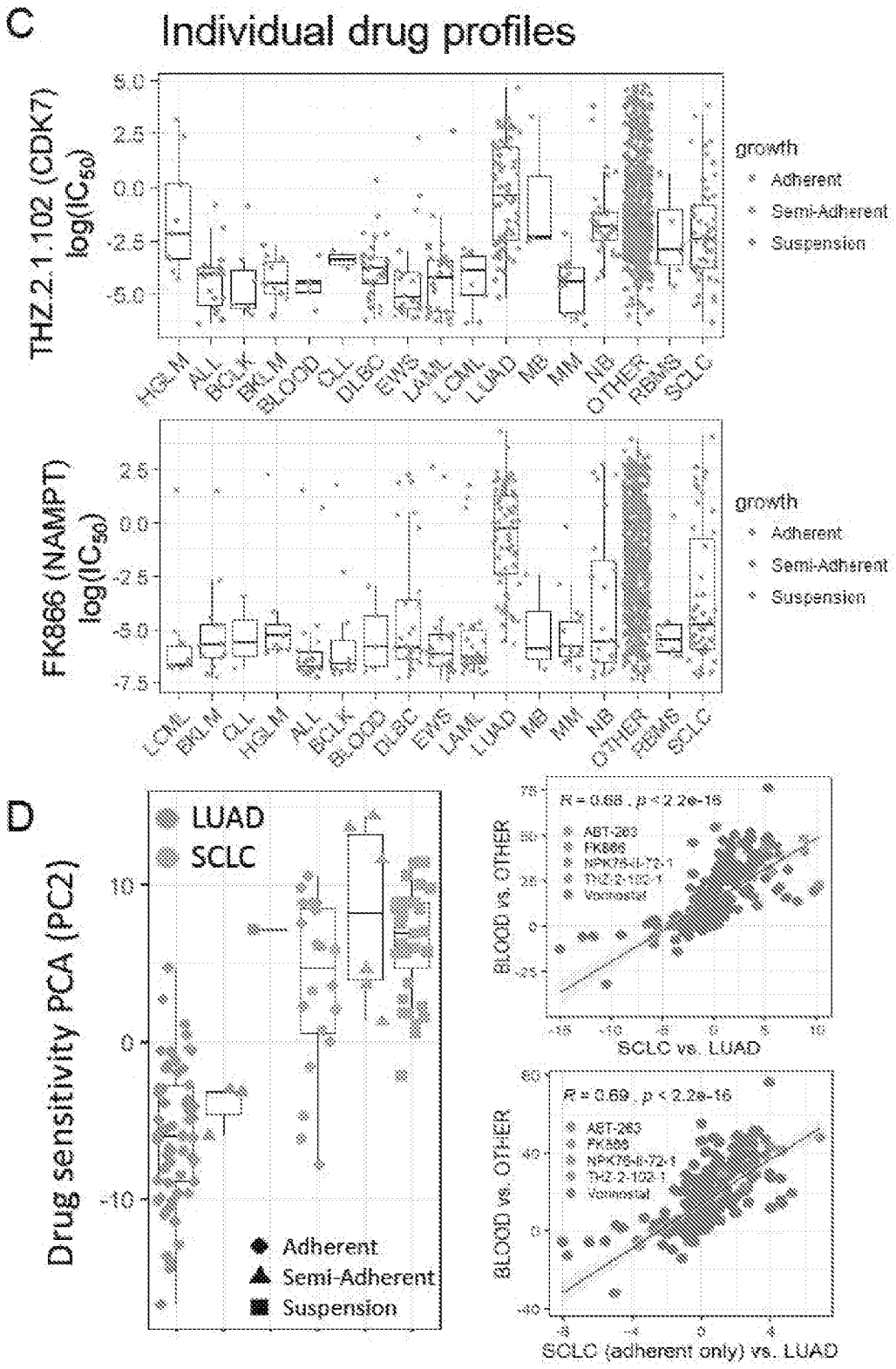

C
Individual drug profiles
THZ.2.1.102 (CDK7)
log(IC50)
growth
Adherent
Semi-Adherent
Suspension
HGLM
ALL
BCLK
BKLM
BLOOD
CLL
DLBC
EWS
LAML
LCML
LUAD
MB
MM
NB
OTHER
RBMS
SCLC
FK866 (NAMPT)
log(IC50)
LCML
BKLM
CLL
HGLM
ALL
BCLK
BLOOD
DLBC
EWS
LAML
LUAD
MB
MM
NB
OTHER
RBMS
SCLC
D
Drug sensitivity PCA (PC2)
LUAD
SCLC
Adherent
Semi-Adherent
Suspension
R = 0.68 , p < 2.2e-16
ABT-263
FK866
NPK76-II-72-1
THZ.2.102.1
Vorinostat
BLOOD vs. OTHER
SCLC vs. LUAD
R = 0.69 , p < 2.2e-16
SCLC (adherent only) vs. LUAD

FIG. 15C-D

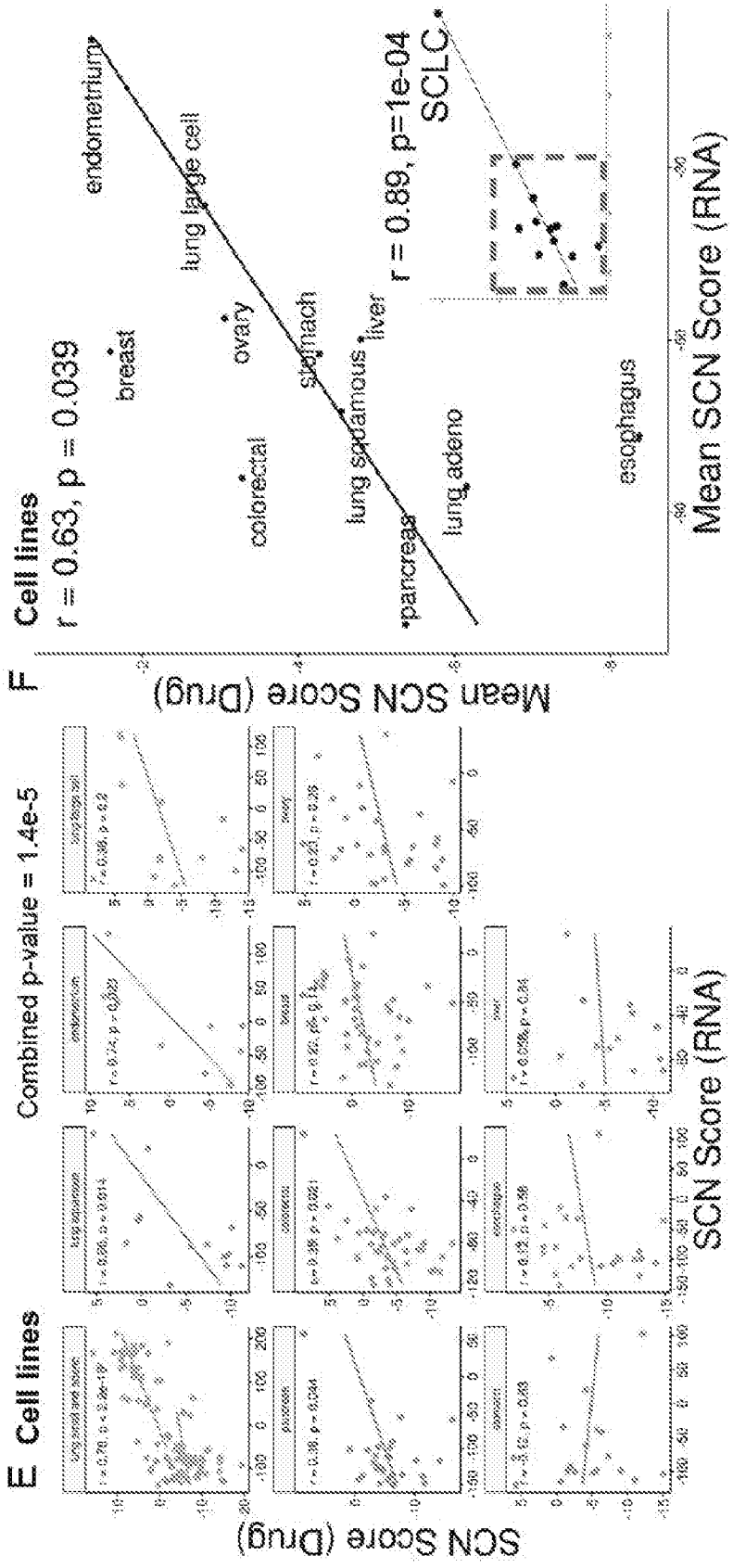

E
Cell lines
Combined p-value = 1.4e-5
SCN Score (Drug)
SCN Score (RNA)
F
Cell lines
r = 0.63, p = 0.039
Mean SCN Score (Drug)
endometrium
breast
lung large cell
ovary
colorectal
stomach
lung squamous
liver
r = 0.89, p=1e-04
SCLC
pancreas
lung adeno
esophagus
Mean SCN Score (RNA)

FIG. 15E-F

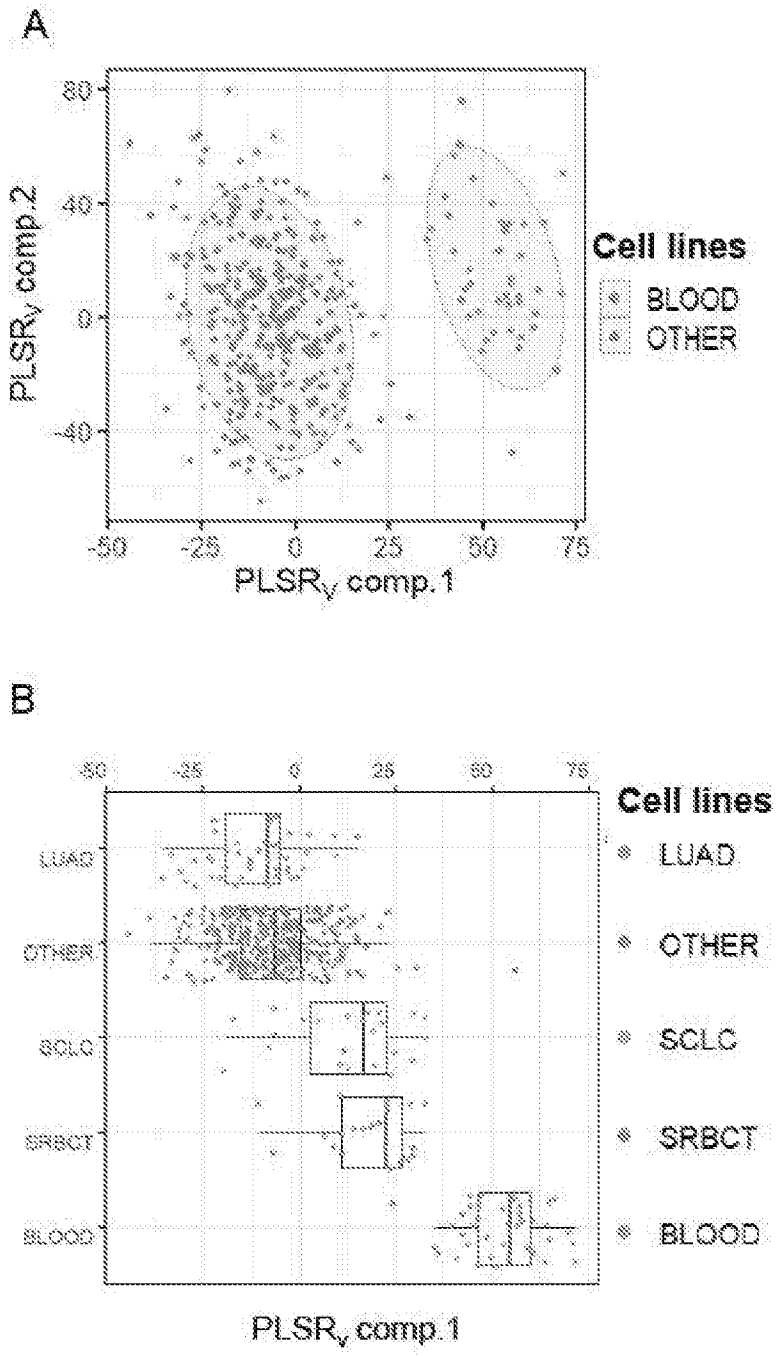

A
80
40
0
-40
PLSR$_V$ comp.2
-50
-25
0
25
50
75
PLSR$_V$ comp.1
Cell lines
BLOOD
OTHER
B
LUAD
OTHER
SCLC
SRBCT
BLOOD
PLSR$_V$ comp.1
Cell lines
LUAD
OTHER
SCLC
SRBCT
BLOOD

FIG. 16A-B

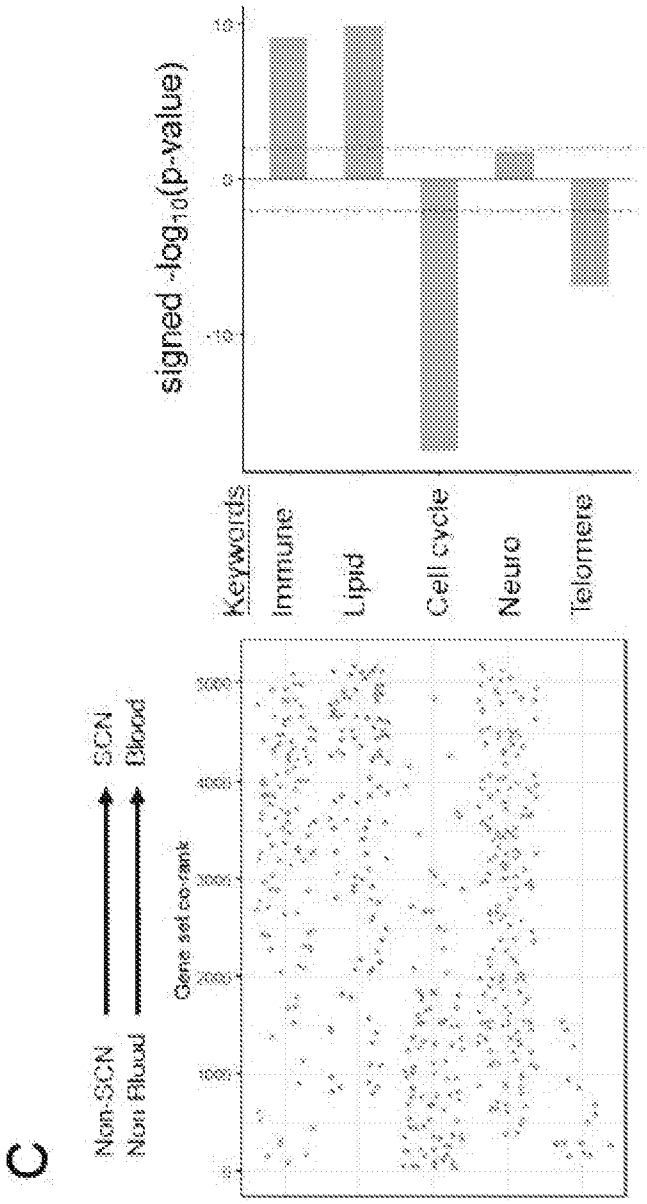

C
Non-SCN
Non-Blood
SCN
Blood
Gene set co-rank
Keywords
Immune
Lipid
Cell cycle
Neuro
Telomere
signed -log10(p-value)

FIG. 16C

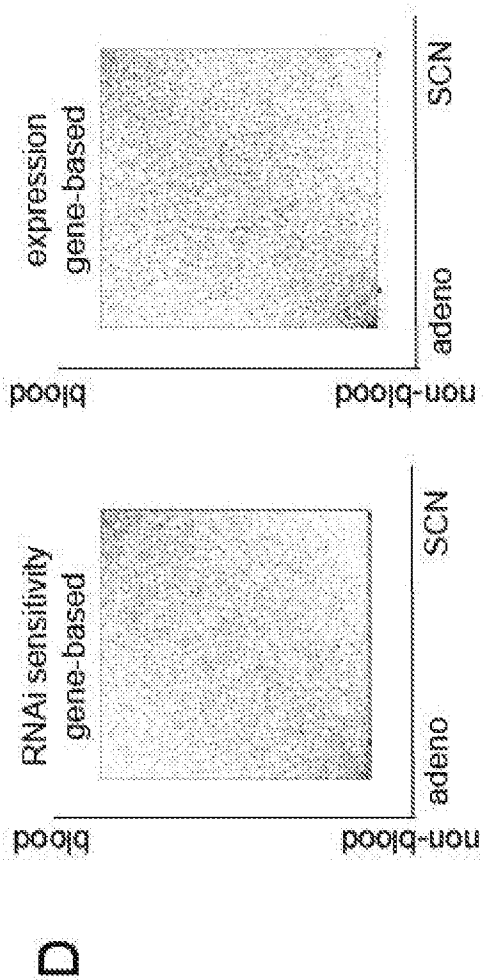

D
RNAi sensitivity
gene-based
blood
non-blood
adeno
SCN
expression
gene-based
blood
non-blood
adeno
SCN

FIG. 16D

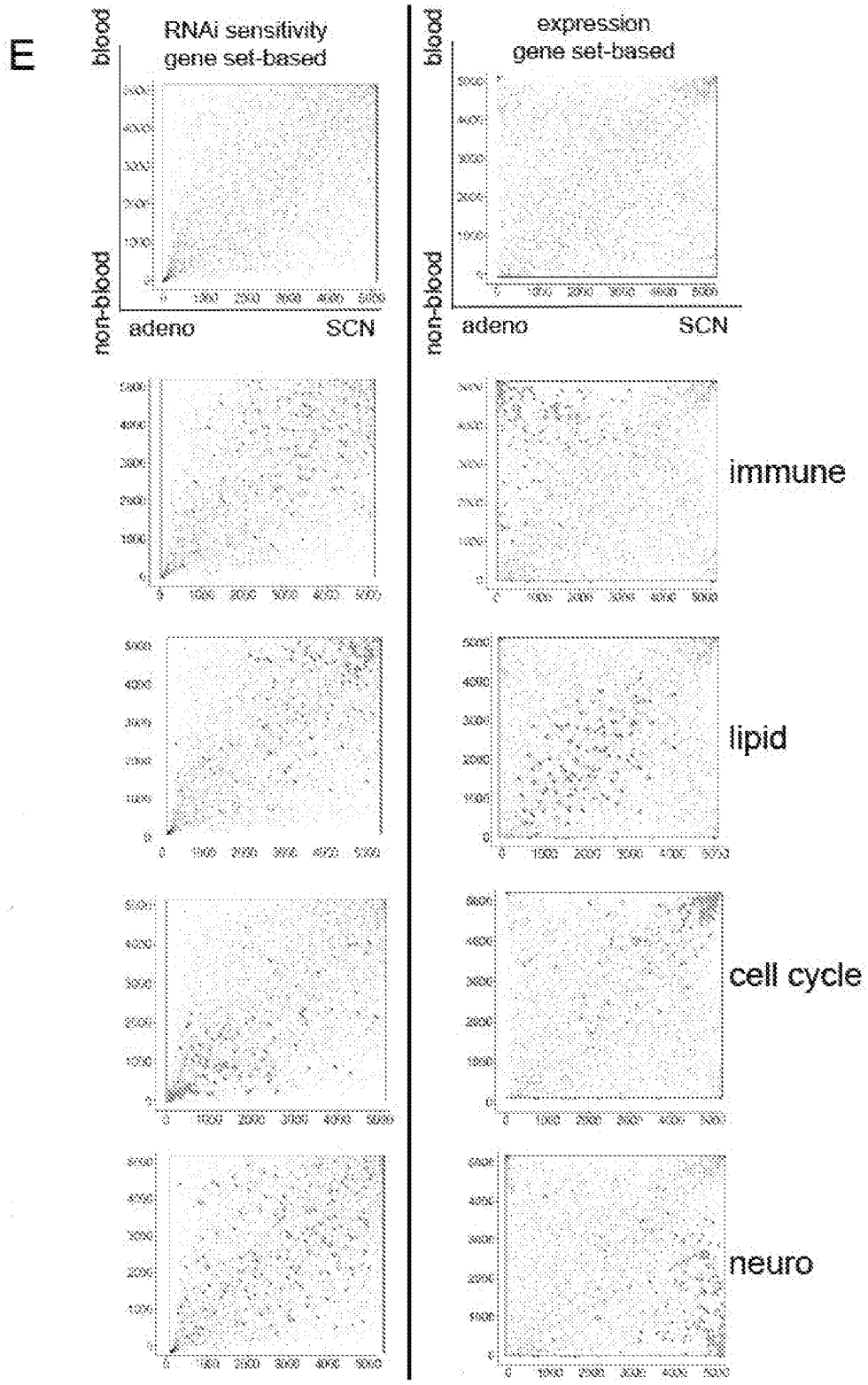

E
RNAi sensitivity
gene set-based
expression
gene set-based
blood
non-blood
adeno
SCN
immune
lipid
cell cycle
neuro

FIG. 16E

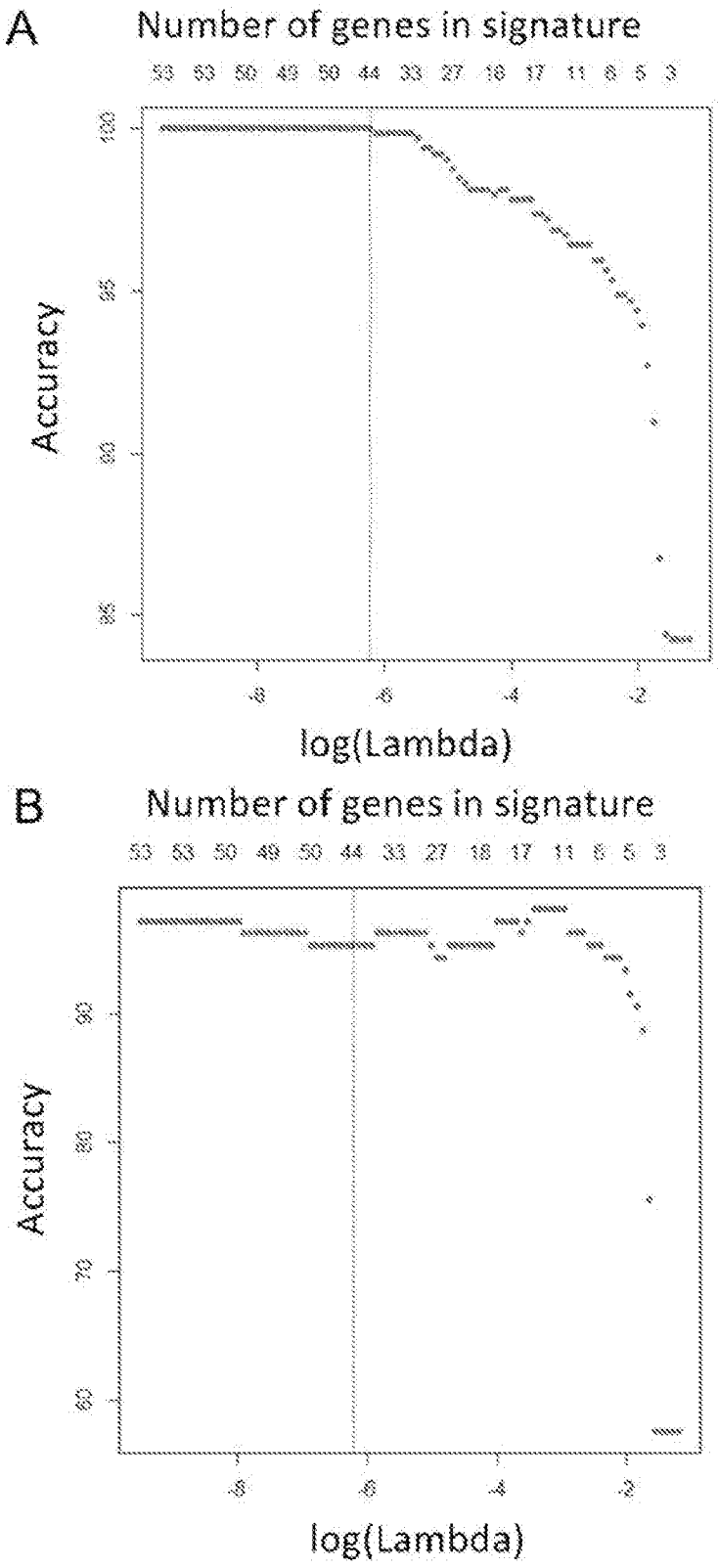

A
Number of genes in signature
53 53 50 49 50 44 33 27 18 17 11 8 5 3
Accuracy
100
95
90
85
-8
-6
-4
-2
log(Lambda)
B
Number of genes in signature
53 53 50 49 50 44 33 27 18 17 11 8 5 3
Accuracy
90
80
70
60
-8
-6
-4
-2
log(Lambda)

FIG. 17A-B

Gene	Model coefficient (output)	PCA Fig 1A loadings.rank (input)
(Intercept)	-2.102054734	norank
DPYSL5	0.162077597	3
INSM1	0.004293123	6
PSMA1	-0.214137596	9
PAPD7	-8.41193E-11	12
ZIC2	-0.052104375	23
RAB3B	-0.033234317	24
ONECUT2	0.110105646	28
NRSN1	0.074579629	30
CELF3	0.074426168	34
DCX	0.329594257	35
CACNA1A	0.153894472	37
LHX2	0.194830074	39
SOX11	0.003401216	45
FAM57B	0.138756242	46
NKX2-2	-0.018832083	48
KCNC1	0.01919532	49
HEPACAM2	0.078860303	51
SEZ6L	0.014161674	60
CAMK2B	0.064720073	62
ZBTB8B	0.105624594	71
RALYL	0.033323023	74
ST8SIA5	0.007418994	78
NRXN1	4.28703E-11	83
HRH3	-0.011254451	84
TCERG1L	0.058510127	90
GRM4	0.065622367	92
SRRM4	2.29821E-11	94
RIMBP2	0.082460752	99
TMPRSS2	-0.014797883	18590
HNF1B	-0.277051843	18591
FCN3	0.085187715	18592
LAMB3	-0.003180957	18596
ALOX15B	-0.160929806	18601
C8B	0.010970768	18605
SLC6A4	0.145880026	18608
AQP3	-0.035185709	18612
SLC22A31	-0.058764774	18614
FGG	-0.12890867	18615
GDF10	-0.022585783	18619
WNT7A	-0.152515818	18620
S100A14	0.09100148	18621
ICAM4	-0.043635394	18622
CST6	0.094204937	18626
NOTCH2NL	-0.285222963	18638
CXCL17	-0.031148134	18644
SLC6A14	-0.024725433	18651
PGC	-0.145353541	18680

FIG. 17C

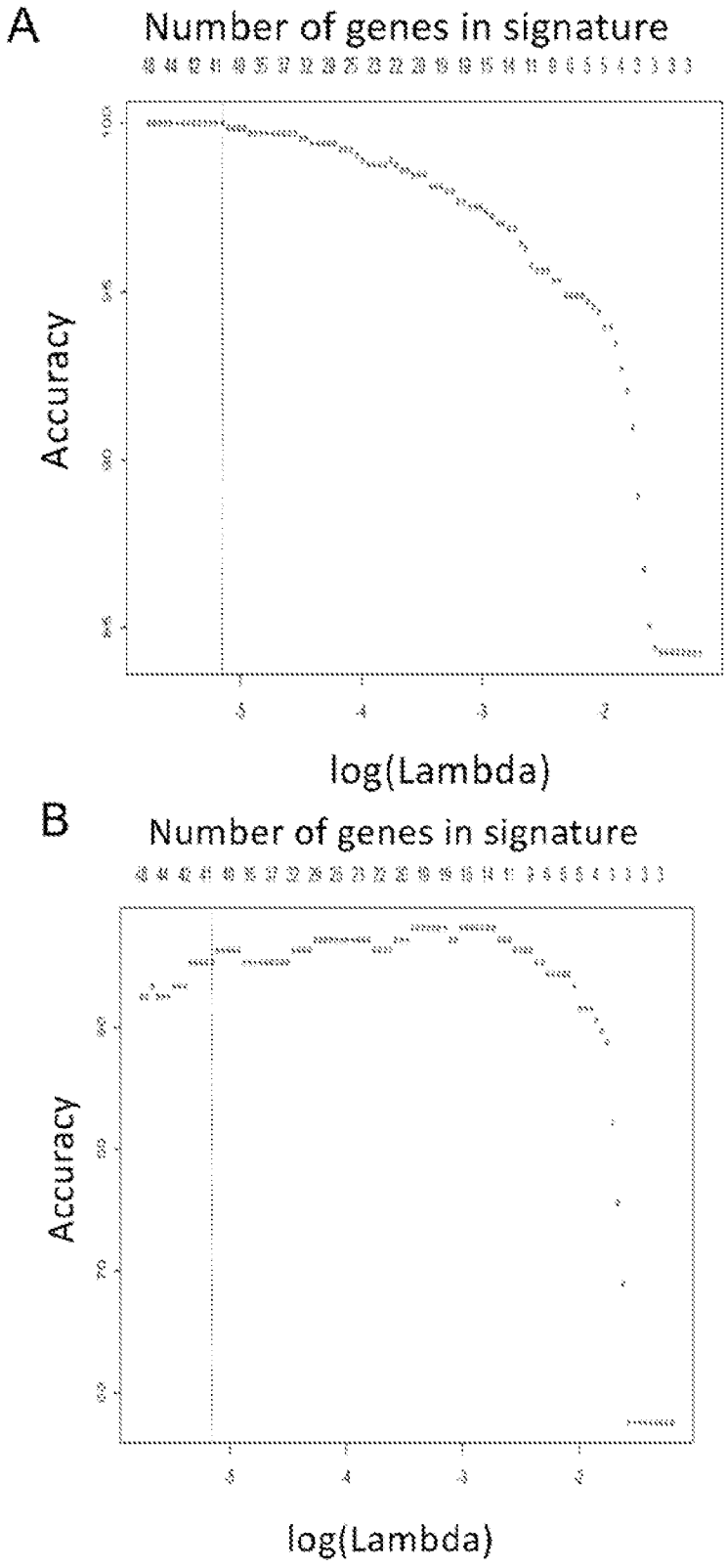

A
Number of genes in signature
Accuracy
log(Lambda)
B
Number of genes in signature
Accuracy
log(Lambda)

FIG. 18A-B

Gene	Model coefficient (output)	Fig 1A PCA loadings.rank (input)
(Intercept)	-2.20064792	norank
DCX	0.152100666	35
LHX2	0.005529027	39
FAM57B	0.116028272	46
KCNC1	0.117527009	49
CAMK2B	0.039780869	62
GRM4	0.006525597	92
AMER3	0.09012575	101
KCNB2	0.055916201	131
PEX5L	0.072828633	139
ELOVL2	0.217781413	151
AMER2	0.04133924	240
STMN2	0.013434016	247
ATOH7	0.014541281	260
FAM163B	0.019111496	282
INHBE	0.042657481	301
SLIT1	0.003079131	339
CDH2	0.026353296	354
PROX1	0.010195565	368
GHRH	0.05985943	385
NCAN	0.037292352	388
HPCA	0.000424113	391
OTP	0.038711172	413
BRINP2	0.123238073	415
ZNF711	0.137096713	421
SPC25	0.093445481	435
TFAP2B	0.085150871	467
MGAT5B	0.024163982	472
CREB3L1	-0.134420045	18187
LDLRAD1	-0.000149566	18275
ADRB2	-0.28424873	18334
RBP4	0.03805121	18335
ADGRF1	-0.037371502	18389
LRG1	-0.087729718	18411
FGA	-0.04417172	18448
IL7R	-0.067488334	18500
GSTA1	-0.034089898	18531
ANXA3	-0.054443306	18553
STEAP4	-0.098539167	18558
HNF1B	-0.08503505	18591
ALOX15B	-0.051931919	18601
WNT7A	-0.022335084	18620

FIG. 18C

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 20/34954

A. CLASSIFICATION OF SUBJECT MATTER

IPC - A61P 35/00, A61P 35/02, A61P 35/04, A61K 45/06, A61K 48/00 (2020.01)

CPC - A61K 31/713, C12N 15/1137, C12Q 1/6886, G01N 33/57407, C12N 2320/31, G01N 2800/52, C12Q 2600/156, C12Q 2600/106

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)
See Search History document

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ------- Y	US 2016/0320395 A1 (ELECTROPHORETICS LIMITED et al.) 3 November 2016 (03.11.2016) Abstract; para [0003]; para [0005]; para [0010]; para [0019]; para [0131]; p59, Table 8	1-2 ---------- 43-44
X --------- Y	US 2014/0134159 A1 (ONCOMED PHARMACEUTICALS, INC.) 15 May 2014 (15.05.2014) Abstract; para [0040]; para [0055]; para [0078]; para [0080]	27, 30/27 ---------- 28-29, 30/(28-29), 43-44
Y	US 2014/0378529 A1 (BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM et al.) 25 December 2014 (25.12.2014) Abstract; para [0028]; para [0039]; para [0080]	28-29, 30/(28-29), 43-44

☐ 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
"D" document cited by the applicant in the international application
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"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
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
27 September 2020	09 OCT 2020
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer Lee Young Telephone No. PCT Helpdesk: 571-272-4300

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 20/34954

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 7-26, 31-42, 46-60
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
----Please see continuation in first extra sheet ----------

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-2, 27-30, 43-44, limited to measuring TARDBP biomarker expression

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/US 20/34954

Continuation of Box No. III. Observations where unity of invention is lacking.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I+, Claims 1-6, 27-30, 43-45, 61-64, directed to a method for diagnosing, treating or prognosing small cell neuroendocrine (SCN) cancer or small-round-blue cell tumor (SRBCT) in a patient by measuring the level of expression of one or more biomarkers in a biological sample from a cancer patient. The method will be searched to the extent that the method encompasses diagnosing, treating or prognosing SCN by measuring the level of expression of one biomarker wherein the biomarker is TARDBP (note, this is the first claimed biomarker from Table 1). It is believed that claims 1-2, 27-30, 43-44 encompass this first named invention, and thus these claims will be searched without fee to the extent that the method for diagnosing, treating or prognosing SCN comprises measuring the level of expression of TARDBP biomarker gene. Additional method(s) comprising measuring additional biomarker(s) will be searched upon the payment of additional fees. Applicants must specify the claims that encompass any additionally elected method(s). Applicants must further indicate, if applicable, the claims which encompass the first named invention, if different than what was indicated above for this group. Failure to clearly identify how any paid additional invention fees are to be applied to the "+" group(s) will result in only the first claimed invention to be searched. An exemplary election would be a method comprising diagnosing, treating or prognosing SCN by measuring the level of expression of PIK3R3 (this is in addition to TARDBP of the first named invention) (claims 1-2, 27-30, 43-44).

The inventions listed as Group I+ do not relate to a single special technical feature under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Special technical features
Group I+ has the special technical feature of a method for diagnosing, treating or prognosing SCN or SRBCT by measuring the level of expression of one or more biomarkers.

Common technical features
The inventions of Group I+ share the common technical feature of:
measuring the expression level of one or more biomarkers in a biological sample from the patient;
However, these shared technical features are previously disclosed by US 2013/0078642 A1 to Addis et al., (hereinafter 'Addis').

Addis teaches measuring the expression level of one or more biomarkers in a biological sample from the patient for diagnosing neuroendocrine lung cancer and its treatment (Abstract - 'The present invention regards a method for providing a diagnosis for small cell lung carcinoma and for typical carcinoid tumor by using a panel of protein biomarkers which are differentially expressed and a method for screening compounds.'; Claim 1 - 'A method for providing a diagnosis for small cell lung carcinoma (SCLC) comprising the steps of: a. Contacting a biological sample with reagents ... b. Determining whether the protein biomarkers are differentially expressed in the sample.'; Claim 6 - 'The method according to claim 1, wherein said differential expression is determined by a method selected from a group consisting of:
a. Detecting mRNA which encodes for the protein biomarker;'; para [0086] - 'Among ubiquitous proteins (globins, for instance), and well-known neuroendocrine markers (such as CgA), an interesting group of proteins was found, comprising superoxide dismutase, protein Cut A, peroxiredoxin-5, and protein S100-A8, which were more significantly expressed in TCs; on the other hand, hnRNP A1, splicing factor arginine/serine-rich 9, and stathmin were overexpressed with high statistical significance in SCLCs.'; Claim 12 - 'A method of in vitro screening for a compound for treating small cell lung cancer').

As the technical features were known in the art at the time of the invention, they cannot be considered special technical features that would otherwise unify the groups.

Therefore, Group I+ inventions lack unity under PCT Rule 13 because they do not share the same or corresponding special technical feature.

NOTE, continuation of number 4 above: claims 7-26, 31-42, 46-60 are held unsearchable because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).