

**Patient-specific MDS-RS iPSCs define the mis-spliced transcript repertoire and chromatin landscape of *SF3B1*-mutant HSPCs**

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## Supplemental Methods

### Methylcellulose assays

For methylcellulose assays, 5,000 iPSC-HSPCs at day 14 of hematopoietic differentiation were plated in duplicate 35-mm dishes in MethoCult GF+ (H4435, Stem cell technologies). Colonies were scored after 14 days and averaged between the duplicate dishes.

### Competitive growth assays

N-2.12-GFP, a clonal line previously generated from the N-2.12 line after transduction with a lentiviral vector expressing eGFP<sup>1</sup>, was mixed with each test iPSC line 1:1 and hematopoietic differentiation was initiated. Cells were harvested the next day (day 2) and on days 4, 8 and 12 of hematopoietic differentiation and the fraction of GFP<sup>-</sup> cells was measured by flow cytometry. The relative population size of GFP<sup>-</sup> cells at each time point was calculated relative to the fraction of GFP<sup>-</sup> cells on day 2.

### Flow cytometry

The following antibodies were used: CD34-PE (clone 563, BD Pharmingen), CD45-APC (clone HI30, BD Pharmingen). Cell viability was assessed with DAPI (Life Technologies). Cells were assayed on a BD Fortessa and data were analyzed with FlowJo software (Tree Star).

### Magnetic-activated cell sorting

3 *SF3B1*<sup>K700E</sup> and 3 *SF3B1*<sup>WT</sup> iPSC lines from patient 21 (N-21.1, N-21.6, N-21.14, MDS-21.16, MDS-21.29, MDS-21.31), patient 22 (N-22.22, N-22.27, N-22.45, MDS-22.1, MDS-22.43, MDS-22.44) and patient 23 (N-23.5, N-23.13, N-23.28, MDS-23.6, MDS-23.24, MDS-23.38) were subjected to hematopoietic differentiation. Magnetic-activated cell sorting (MACS) with anti-CD45 MACS cell separation microbeads and reagents (Miltenyi Biotec) was performed on an empirically determined day of differentiation culture when nearly 100% of CD45<sup>+</sup> cells are also still CD34<sup>+</sup> (ranging from day 10 to 13, depending on the individual line and differentiation experiment). The sorted cells were utilized for RNA-sequencing and ATAC-sequencing.

### Targeted gene sequencing

Variant calling and annotation, filtering for artifacts and copy number identification was performed as previously described<sup>2,3</sup>.

## **GSEA analysis**

GSEA analysis was performed on the differentially expressed genes between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs using the R-package clusterProfiler<sup>4</sup>. Only gene sets with Benjamini-Hochberg (BH) adjusted p-value < 0.05 were considered.

## **Computation of statistical significance in differential transcript usage**

The statistical significance of the change in transcript usage between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs was assessed in a two stage process using the stageR R-package. The first stage (screening phase) identified the genes with evidence of differential transcript usage (DTU) and the second stage (confirmation phase) identified the transcripts within these genes that participate in the DTU.

## **ATAC sequencing**

50,000 MACS-sorted CD34+/CD45+ cells from each individual iPSC line were processed as follows: nuclei were isolated by lysis with 50 ul of ATAC lysis buffer (10 mM Tris pH 7.4, 10 mM NaCl, 3 mM MgCl<sub>2</sub>, 0.1% NP40, 0.1% Tween-20, and 0.01% Digitonin) and washed with 1 mL of ATAC wash buffer (10 mM Tris pH 7.4, 10 mM NaCl, 3 mM MgCl<sub>2</sub>, 0.1% Tween-20). Cell lysates were spun to obtain nuclear pellets, which were subjected to transposase reaction using the Illumina Nextera DNA Sample Preparation Kit according to the manufacturer's instructions.

## **Peak Calling**

ATAC-seq peaks for each replicate of the cohort were called using MACS2<sup>5</sup> with a low pass whole genome sequencing background sample and the following parameters (--min-length 100 -f BAMPE).

## **Assignment of ATAC-seq peaks to genes and differential accessibility of genes**

Each ATAC-seq peak was assigned to the gene with the closest Transcription Start Site (TSS) using HOMER<sup>6</sup> with the Ensembl GRCh37 gtf annotation file. To determine accessibility changes at the gene level, we considered the regulation of the surrounding peak regions as well as the proximity of each gene to a differentially accessible peak. Specifically, a gene was regarded as differentially accessible if: (1) There was at least 1 differentially accessible peak within 50 kb of its TSS; or (2) The distribution of accessibility log<sub>2</sub>fc of all peaks within 50 kb upstream and downstream of its TSS was significantly shifted (Benjamini-Hochberg [BH] adjusted p-value <

0.05), as compared to the ATAC-seq atlas background distribution by a Kolmogorov-Smirnov (KS) test.

### **Motif enrichment analysis**

Motif enrichment analysis was performed with HOMER using known motifs in the HOMER default database.

### **Correlation of chromatin accessibility to normal hematopoiesis**

To compare the accessibility profiles of our iPSC-HSPCs to normal primary hematopoietic populations, we obtained raw bulk ATAC-seq data of 67 samples (7 HSC, 6 MPP, 3 LMPP, 8 CMP, 7 GMP, 7 MEP, 6 Mono, 8 Ery, 5 CLP, 6 NK, 4 B cell) from a published dataset<sup>7</sup>. These were processed as described above for the iPSC-HSPC data. Pairwise Pearson correlation between iPSC-HSPCs and the normal hematopoietic populations was computed based on a set of differentially accessible peaks between the SF3B1<sup>K700E</sup> and SF3B1<sup>WT</sup> iPSC-HSPCs that overlapped with the ATAC-seq atlas of the Corces et al. samples.

### **Luciferase assay**

A lentiviral vector encoding a firefly luciferase TEAD reporter containing 10 copies of the GT-IIC motif (GTGGAATGT)<sup>8</sup> and a lentiviral vector expressing Renilla luciferase were packaged as described<sup>1</sup>. 300,000 iPSC-HSPCs were transduced on day 12 of hematopoietic differentiation with the two lentiviral vectors and 72 hours later, dual-luciferase reporter assay was performed according to the manufacturer's protocol (Promega, Madison WI, USA), using TD-20e Luminometer (Turner Biosystem, Promega, Madison WI, USA). The ratio of Firefly to Renilla luciferase was calculated.

### **Western blot**

Cells were harvested in EBC lysis buffer (50 mM Tris-HCl at pH 7.5, 150 mM NaCl, 5 mM EDTA, 0.5% NP-40), supplemented with Complete Mini Protease and Phosphatase Inhibitor Cocktails (Roche, Indianapolis, IN, USA). Cells were lysed and 30 µg protein was subjected to SDS-PAGE followed by transfer onto an Immobilon-FL PVDF membrane (Millipore, Billerica, MA, USA) followed by incubation with the indicated antibodies. Detection was carried out with an Odyssey Infrared Imaging System (LI-COR Biosciences, Lincoln, NE, USA) with IR dye-tagged secondary antibodies (LI-COR Biosciences). The following antibodies were utilized: YAP (sc-101199),

TEAD1 (sc-376113), GAPDH (sc-47724) (Santa Cruz, Dallas, TX, USA), p-YAP (13008), pan-TEAD (13295) (Cell Signaling, Danvers, MA, USA).

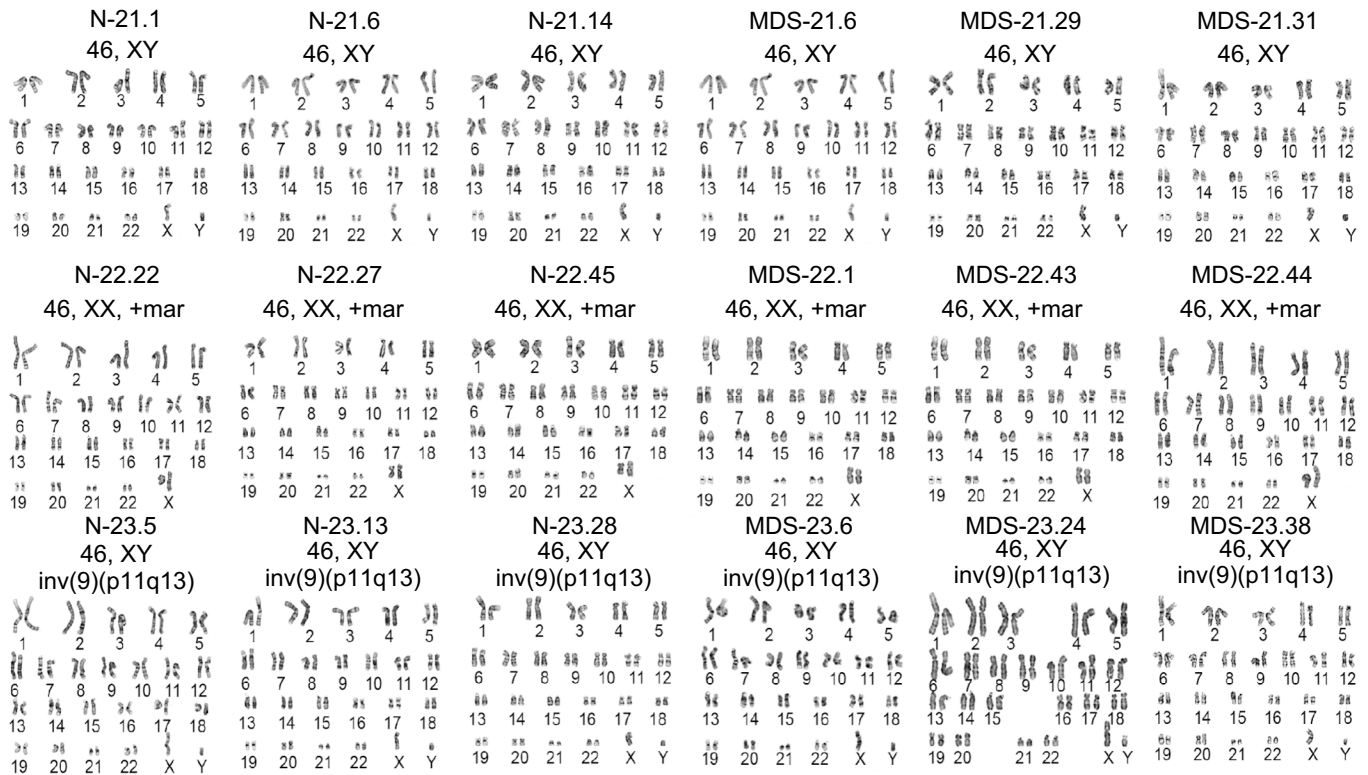
### **Statistical analysis**

Statistical analysis was performed with GraphPad Prism software. Pairwise comparisons between different groups were performed using a two-sided unpaired unequal variance t test.

### **Code availability**

Data preprocessing and analysis was conducted using R 3.5.2 and bash scripting. A github repository containing the code used in the analysis is available at the Papaemmanuil lab github page ([https://github.com/papaemmelab/MDS\\_SF3B1\\_iPSC](https://github.com/papaemmelab/MDS_SF3B1_iPSC)).

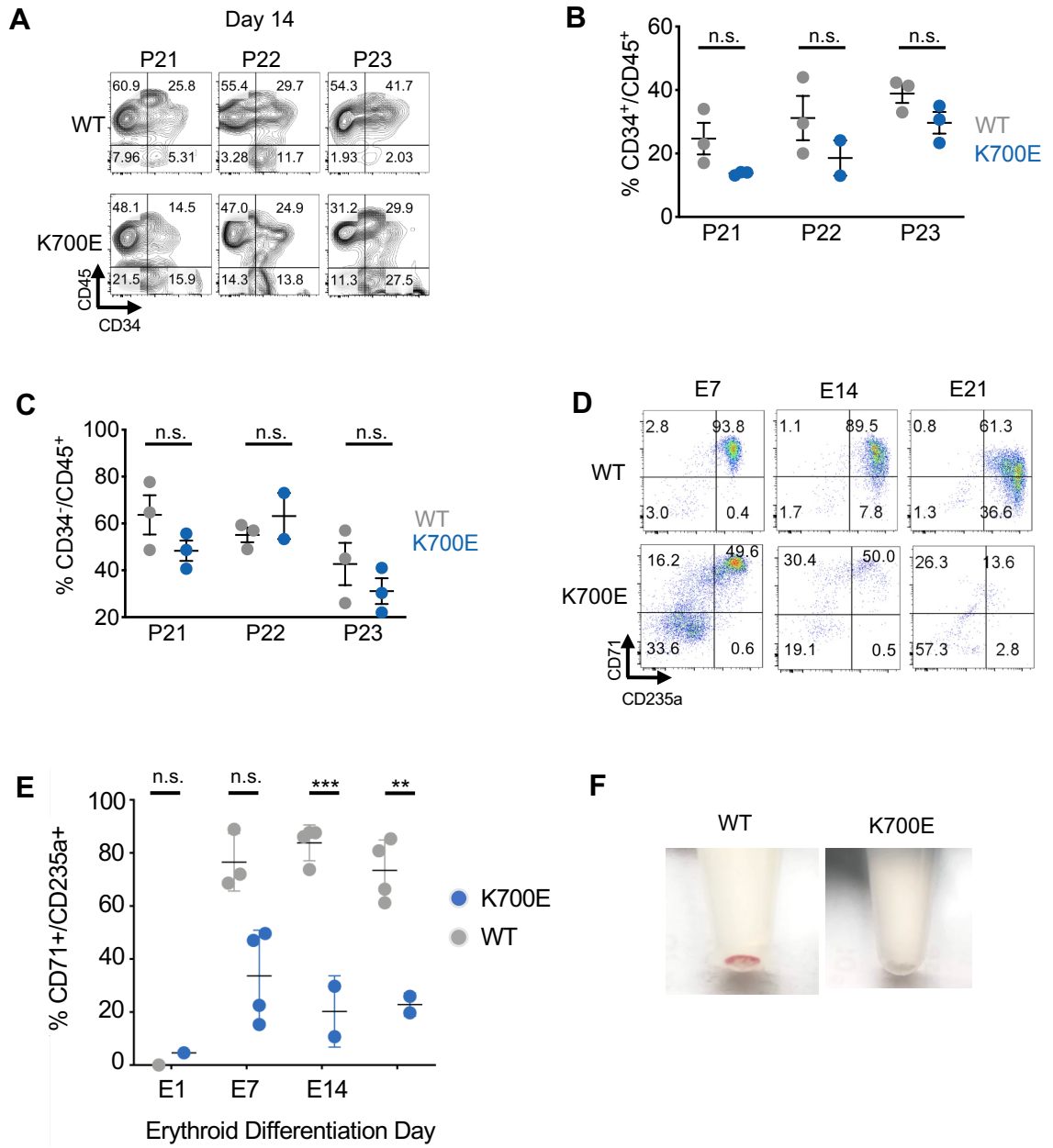
# Supplemental Figure 1



**Supplemental Figure 1. Karyotypes of all patient-derived iPSC lines used in this study.**

Karyotypes of all *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC lines used in this study (see Supplemental Table 1 for details). All iPSC lines (*SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup>) derived from patient 22, as well as the primary patient cells (Supplemental Table 1), harbored a marker chromosome. All the iPSC lines (*SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup>) derived from patient 23, as well as this patient's primary cells (Supplemental Table 1), harbored a pericentric inversion of chromosome 9. Inv(9) occurs in 0.8-2% of the population and is considered a polymorphic chromosomal rearrangement<sup>9,10</sup>. It is not causally linked to MDS.

# Supplemental Figure 2





**Supplemental Figure 2. Hematopoietic differentiation of genetically matched *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSCs.**

**(A)** Representative flow cytometry plots on day 14 of hematopoietic differentiation of *SF3B1*<sup>WT</sup> (P21: N21.6, P22: N-22.22, P23: N-23.13) and *SF3B1*<sup>K700E</sup> (P21: MDS-21.29, P22: MDS-22.44, P23: MDS-23.24) iPSC lines.

**(B)** Fraction of CD34<sup>+</sup>/CD45<sup>+</sup> cells on day 14 of hematopoietic differentiation. Mean and SEM of 1-3 independent differentiation experiments with 2-3 iPSC lines from each group are shown. n.s.: not significant

**(C)** Fraction of CD34<sup>-</sup>/CD45<sup>+</sup> cells on day 14 of hematopoietic differentiation. Mean and SEM of 1-3 independent differentiation experiments with 2-3 iPSC lines from each group are shown. n.s.: not significant

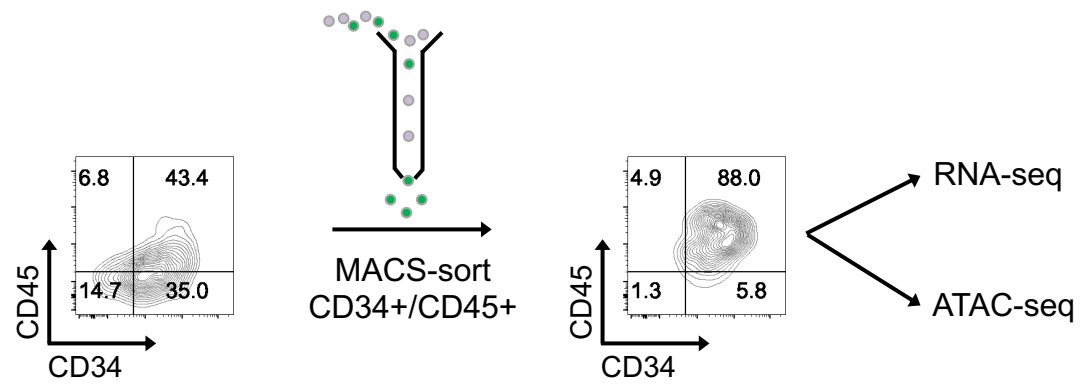
**(D)** Representative flow cytometry plots on days 7, 14 and 21 of erythroid differentiation culture (E7, E14, E21) of a *SF3B1* WT and an *SF3B1*-mutant iPSC line.

**(E)** Fraction of CD71<sup>+</sup>/CD235a<sup>+</sup> cells on days 1, 7, 14 and 21 of erythroid differentiation culture (E1, E7, E14, E21). Mean and SEM of 2-3 independent differentiation experiments with iPSC lines N-21.14 and MDS-21.29 are shown. n.s.: not significant; \*\*: p<0.01; \*\*\*: p<0.005

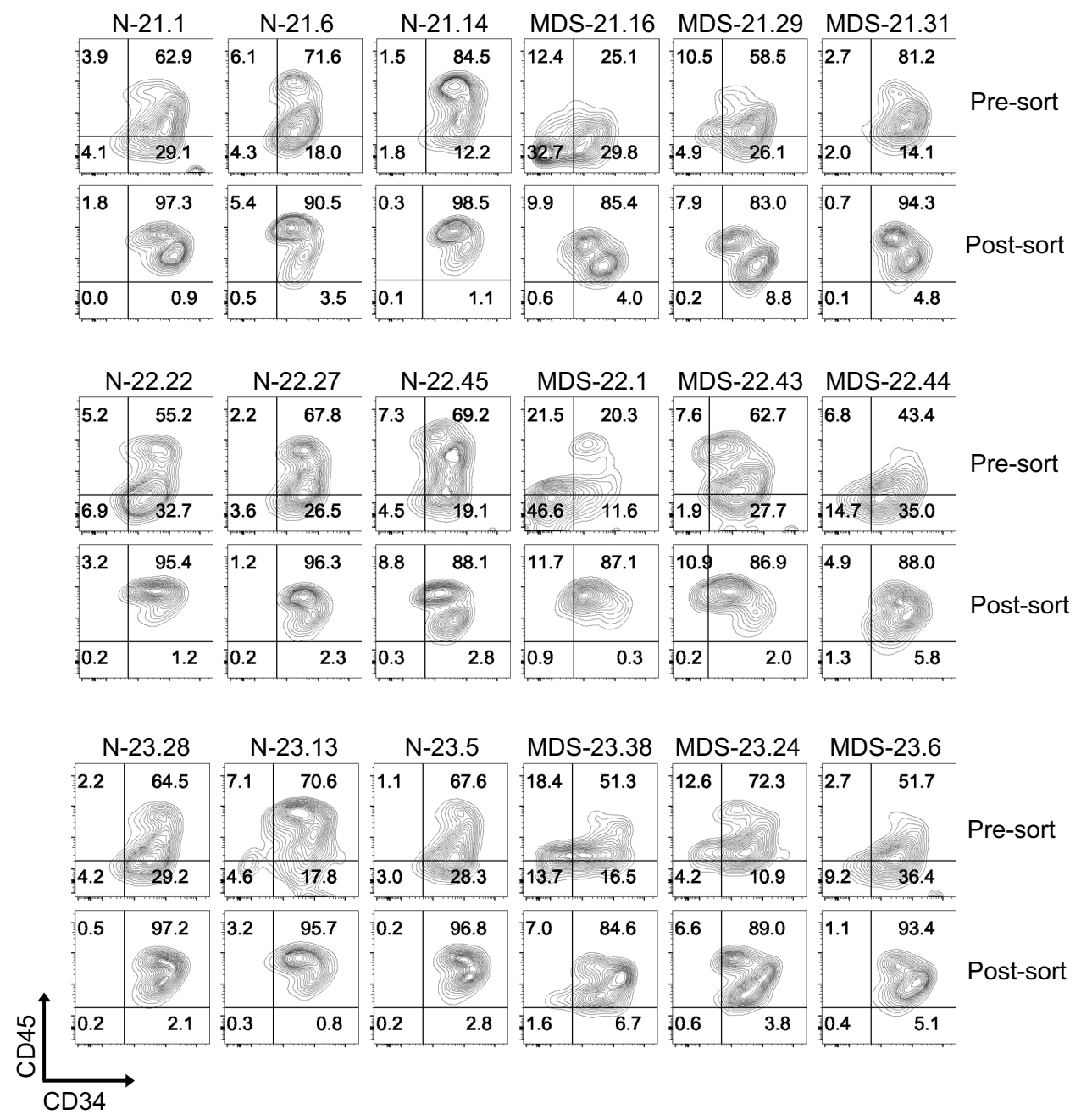
**(F)** Representative cell pellets on day 14 of erythroid differentiation culture showing lack of hemoglobinization of the mutant cells.

# Supplemental Figure 3

**A**



**B**

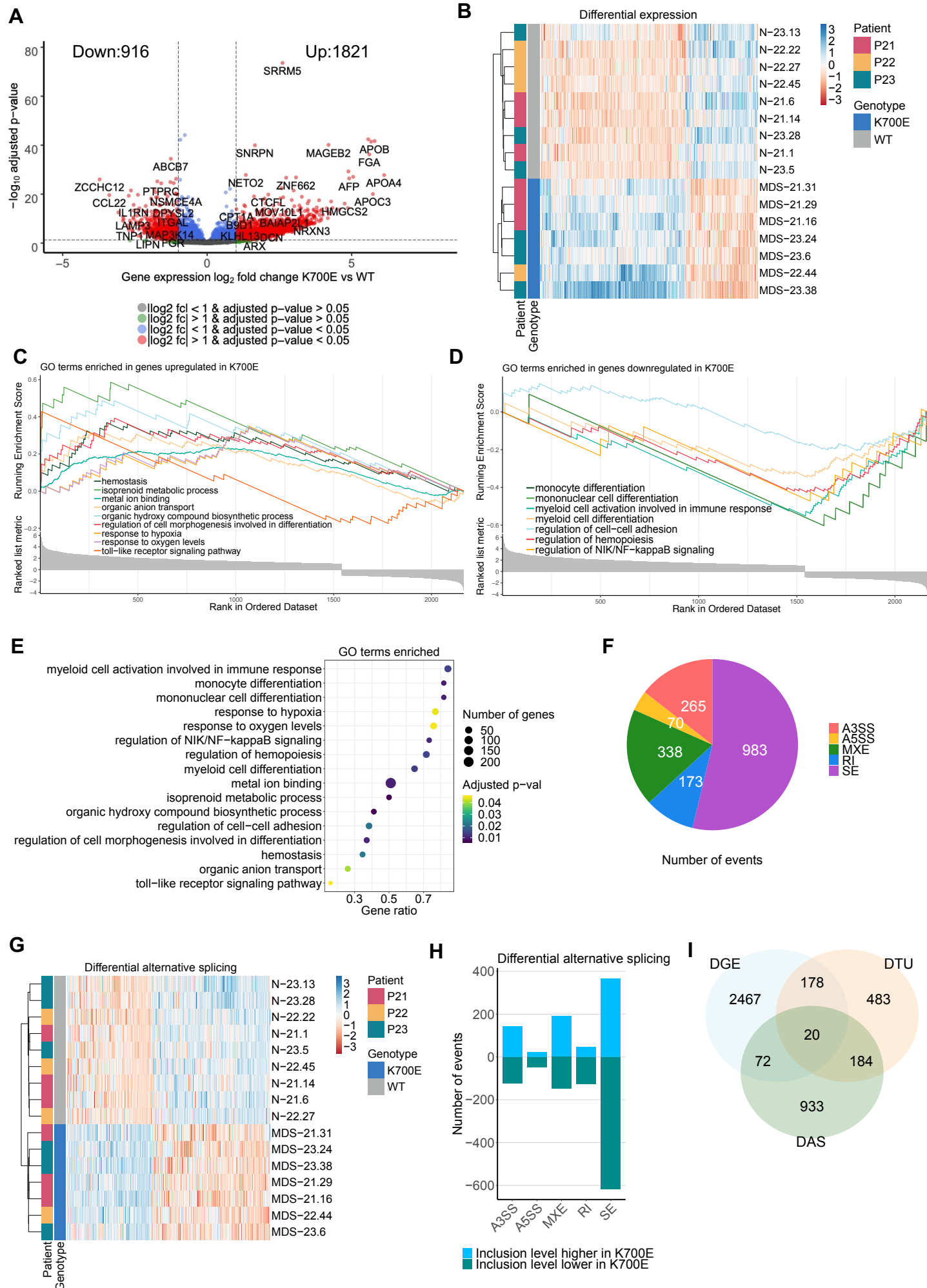


**Supplemental Figure 3. Sorted iPSC-HSPCs used for the RNA-seq and ATAC-seq analyses.**

**(A)** All iPSC lines were differentiated along the hematopoietic lineage and CD34+/CD45+ HSPCs were sorted for RNA-Seq and ATAC-seq analyses.

**(B)** Flow cytometric assessment of the purity of all MACS-sorted iPSC-HSPC samples used for the RNA-seq and ATAC-seq analyses.

# Supplemental Figure 4



**Supplemental Figure 4. Gene expression, splicing and transcript usage analyses.**

**(A)** Volcano plot of differentially expressed genes between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs.

**(B)** Column-normalized heatmap of gene expression values of the differentially expressed genes between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs, color-coded by *SF3B1* mutation status and patient ID.

**(C,D)** GSEA plots of gene ontology (GO) gene sets enriched in genes upregulated (C) or downregulated (D) in *SF3B1*<sup>K700E</sup> vs *SF3B1*<sup>WT</sup> iPSC-HSPCs.

**(E)** Scatterplot of enriched GO terms.

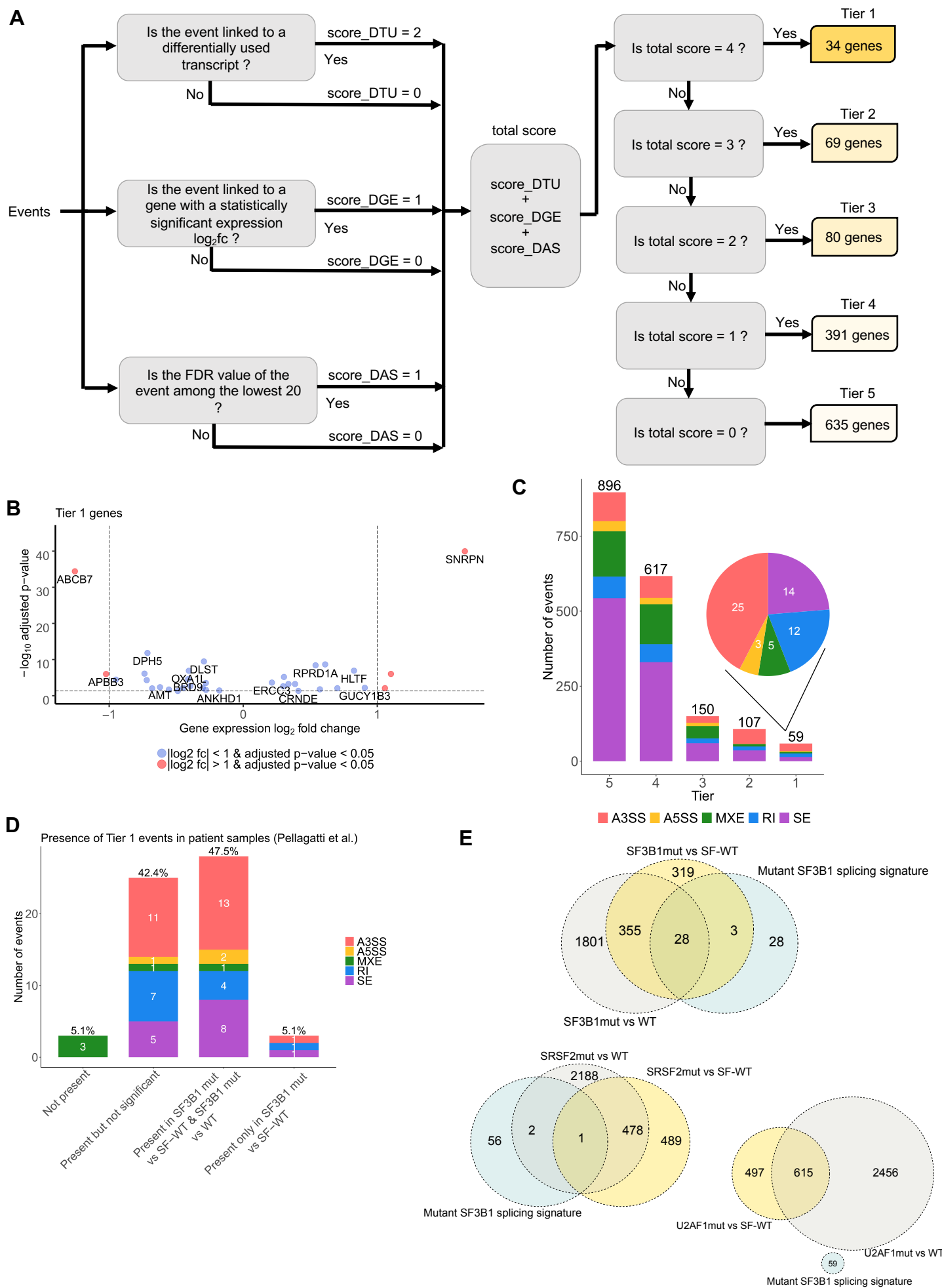
**(F)** Distribution of the differential splicing events between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs by event type.

**(G)** Column-normalized heatmap of inclusion levels of the differentially spliced events between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs, color-coded by *SF3B1* mutation status and patient ID.

**(H)** Differential splicing events between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs.

**(I)** Overlap between differentially expressed genes, genes with differentially used transcripts and genes linked to differential splicing events between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs.

# Supplemental Figure 5



### **Supplemental Figure 5. Integration Framework**

**(A)** Schema used for the categorization of differential splicing events to 5 tier-based classes: tier 1, tier 2, tier 3, tier 4 and tier 5. The classification of each event to one of these classes is based on the following: (1) Presence of at least one differentially used transcript paired to the event (2) Statistically significant expression  $\log_2fc$  of the respective gene (3) Statistical significance of the event (FDR value among the lowest 20 FDR values across all events).

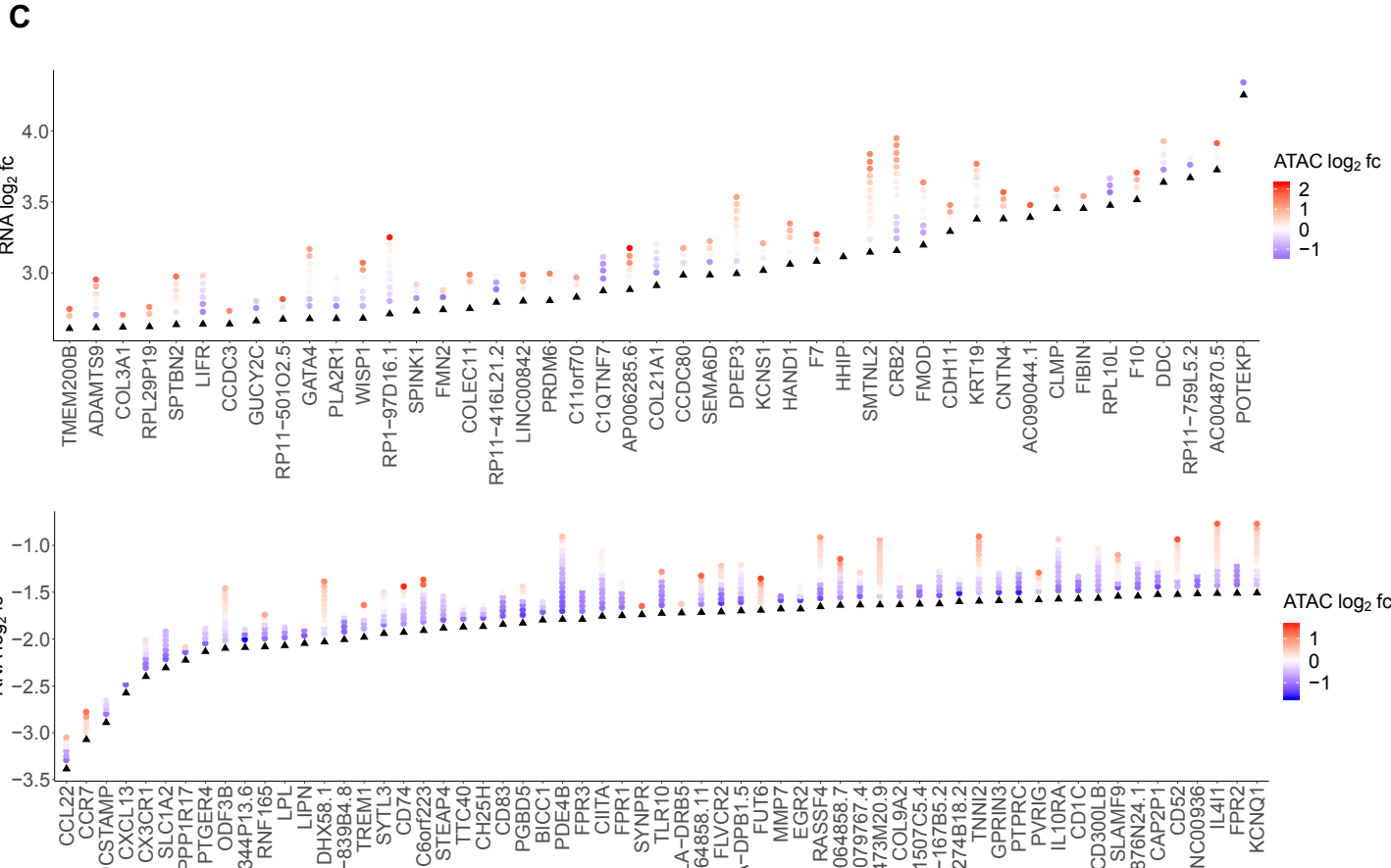
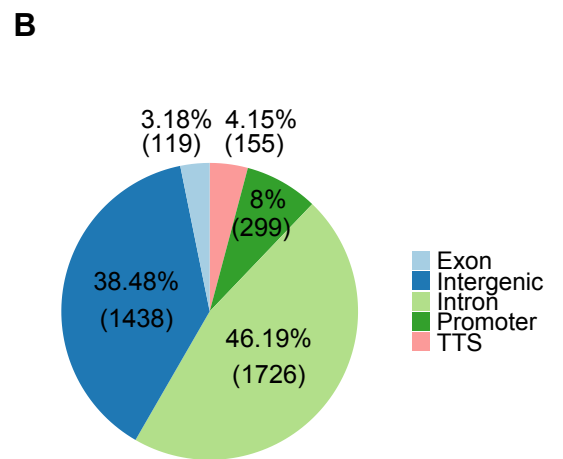
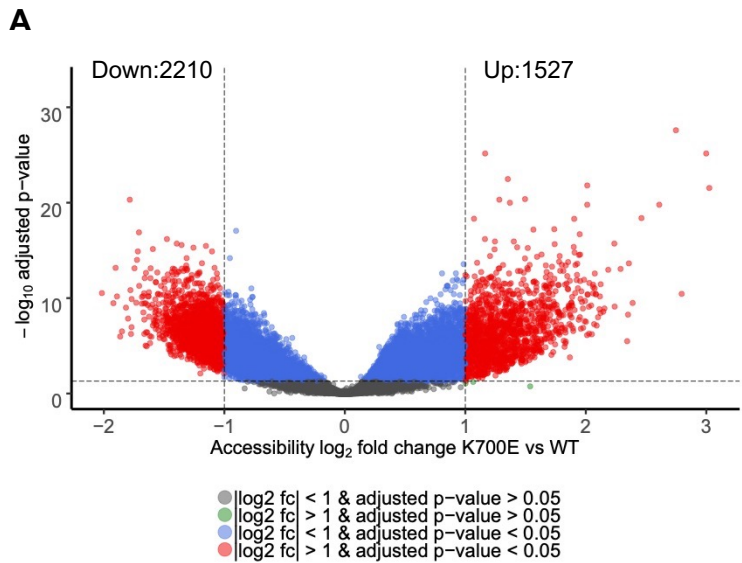
**(B)** Volcano plot of the tier 1 genes.

**(C)** Differential splicing events in each tier-based class color-coded per event type.

**(D)** Intersection of the tier 1 splicing events with the Pellagatti et al. dataset. Not present: tier 1 events not present in any comparison. Present but not significant: tier 1 events that were not statistically significant or/and had an absolute inclusion level difference  $< 0.1$  in both comparisons (SF3B1mut vs SF-WT & SF3B1mut vs WT, i.e. healthy individuals). Present in SF3B1mut vs SF-WT & SF3B1mut vs WT: tier 1 events statistically significant (FDR  $< 0.05$ ) and with an absolute inclusion level difference  $> 0.1$  in both comparisons. Present only in SF3B1mut vs SF-WT: tier 1 events statistically significant (FDR  $< 0.05$ ) and with an absolute inclusion level difference  $> 0.1$  only in the SF3B1mut vs SF-WT MDS patient comparison.

**(E)** Venn diagrams showing overlap of differential splicing events present in the respective comparisons from MDS patients from the Pellagatti et al. dataset and our mutant SF3B1 splicing signature. There is minimal or no overlap between the mutant SF3B1 splicing signature and differential splicing events found in MDS cases with *SRSF2* (lower left) or *U2AF1* (lower right) mutations.

# Supplemental Figure 6





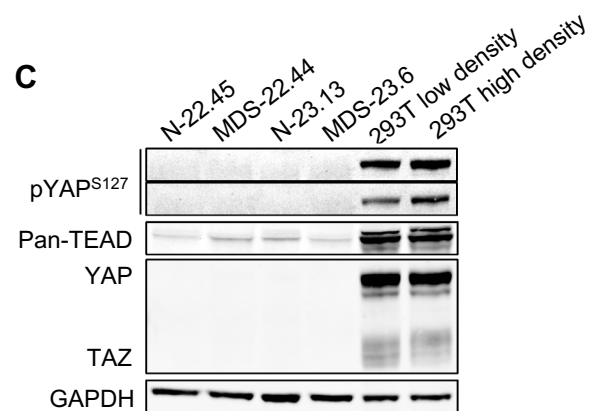
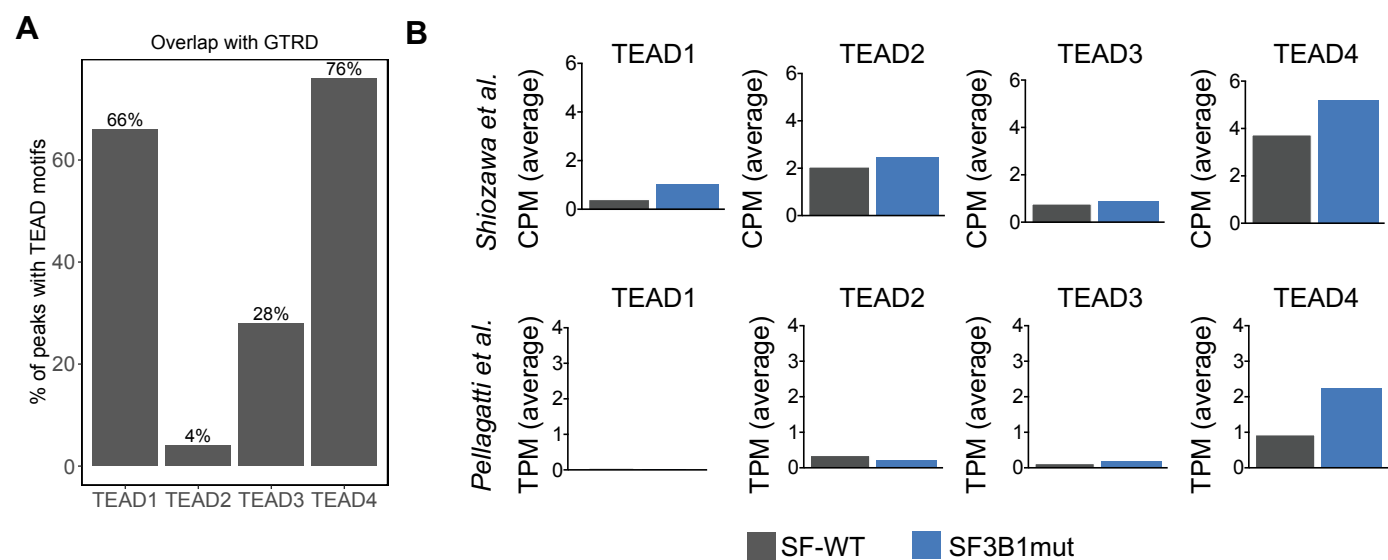
**Supplemental Figure 6. Chromatin accessibility analyses.**

**(A)** Volcano plot showing the differentially accessible peaks between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs

**(B)** Genomic distribution of the differentially accessible peaks between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs. (TTS: transcription termination site)

**(C)** Diamond plot showing the differentially accessible genes with the highest and lowest expression log<sub>2</sub>fc, together with the accessibility log<sub>2</sub>fc of the peaks associated with these respective genes. The black triangle shows the expression log<sub>2</sub>fc of each gene, and the points above correspond to all peaks associated with each gene. The peaks are color-coded based on their accessibility log<sub>2</sub>fc.

# Supplemental Figure 7



**Supplemental Figure 7. TEAD transcriptional activity in *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs.**

**(A)** Percentage of peaks more accessible in *SF3B1*<sup>K700E</sup> compared to *SF3B1*<sup>WT</sup>HSPCs and linked to upregulated genes containing TEAD motifs that overlap with TEAD binding sites from the Gene Transcription Regulation Database (GTRD) across all samples.

**(B)** Expression of TEAD family genes in primary patient samples from Shiozawa et al. (upper panels) and Pellagatti et al. (lower panels). MDS SF3B1-MUT: MDS with isolated *SF3B1* mutation for the Shiozawa et al. dataset; MDS with isolated *SF3B1* K700E mutation for the Pellagatti et al. dataset., MDS SF-WT: MDS with no mutations in *SF3B1*, *SRSF2*, *U2AF1*, *ZRSR2*, *U2AF2*, *PRPF8*, *SF1* genes for the Shiozawa et al. dataset; MDS with no mutations in *SF3B1*, *SRSF2*, *U2AF1*, *ZRSR2* genes for the Pellagatti et al. dataset. CMP: counts per million; TPM: transcripts per million.

**(C)** Phosphorylated YAP, TEAD, total YAP and TAZ expression in HSPCs from the indicated iPSC lines on day 12 of differentiation and in 293T cells as positive control.

**Supplemental Table 1. Clinical, cytogenetic and mutational profile of MDS-RS patients selected for this study.** A pericentric inversion of chromosome 9 found in patient 23 is a polymorphic chromosomal rearrangement not linked to MDS<sup>9,10</sup>. The patients did not harbor additional MDS/AML-driver mutations other than the *SF3B1 K700E*. (They were selected for the study on the basis of isolated *SF3B1 K700E* mutation.)

**Supplemental Table 1**

<b>Patient</b>	<b>Sex</b>	<b>Age</b>	<b>Diagnosis</b>	<b><i>SF3B1</i> K700E VAF</b>	<b>Cytogenetics</b>
P21	Male	74	MDS-RS	0.42	46, XY
P22	Female	65	MDS-RS	0.37	46, XX, +mar
P23	Male	84	MDS-RS	0.37	46, XY, inv(9)(p11q13)

**Supplemental Table 2. All iPSC lines used in this study.**

**Supplemental Table 2**

Patient	iPSC line	Genotype	Phenotypic assays			RNA-Seq	ATAC-Seq
			Phenotypic markers	CFC	Competitive growth		
P21	N-21.1	WT/WT	+	+	+	+	-
P21	N-21.6	WT/WT	+	+	-	+	+
P21	N-21.14	WT/WT	+	+	-	+	+
P21	MDS-21.16	WT/K700E	+	+	+	+	+
P21	MDS-21.29	WT/K700E	+	+	-	+	+
P21	MDS-21.31	WT/K700E	+	+	-	+	+
P22	N-22.22	WT/WT	+	+	-	+	+
P22	N-22.27	WT/WT	+	+	+	+	+
P22	N-22.45	WT/WT	+	+	-	+	+
P22	MDS-22.1	WT/K700E	+	+	-	-	-
P22	MDS-22.43	WT/K700E	-	-	-	-	-
P22	MDS-22.44	WT/K700E	+	+	+	+	+
P23	N-23.5	WT/WT	+	+	+	+	+
P23	N-23.13	WT/WT	+	+	-	+	+
P23	N-23.28	WT/WT	+	+	-	+	+
P23	MDS-23.6	WT/K700E	+	+	+	+	+
P23	MDS-23.24	WT/K700E	+	+	-	+	+
P23	MDS-23.38	WT/K700E	+	+	-	+	+

**Supplemental Table 3. Differential splicing events between *SF3B1*<sup>K700E</sup> and *SF3B1*<sup>WT</sup> iPSC-HSPCs.**



**Supplemental Table 3**

	Event Type	Gene	Chromosome	Strand	Starting position	Ending Position	FDR	Inclusion level difference
1	A3SS	WDR62	19	+	36593638	36593753	0.010373107	0.119
2	A3SS	TMEM214	2	+	27260657	27260760	0	-0.471
3	A3SS	AP5Z1	7	+	4829844	4830222	3.88E-12	-0.308
4	A3SS	ZC3H11A	1	+	203771779	203772144	0	0.13
5	A3SS	OXNAD1	3	+	16312435	16312578	1.66E-12	0.127
6	A3SS	MDM4	1	+	204506557	204506625	1.58E-05	0.102
7	A3SS	PDS5A	4	-	39868480	39868635	0	0.126
8	A3SS	FAM3A	X	-	153736804	153737142	0.000140606	-0.321
9	A3SS	FBXW5	9	-	139837220	139837455	1.86E-07	0.442
10	A3SS	LYPLAL1	1	+	219383856	219383989	0	0.353
11	A3SS	PER3	1	+	7889893	7890221	0.018084666	-0.199
12	A3SS	FAM213B	1	+	2520360	2520479	0.035761572	0.111
13	A3SS	ISG20	15	+	89193465	89195541	0.00010643	0.117
14	A3SS	ERVK3-1	19	+	58823393	58823828	0	-0.123
15	A3SS	PSTPIP1	15	+	77328142	77328276	0	-0.217
16	A3SS	TRIM66	11	-	8642578	8642868	0.009058181	-0.138
17	A3SS	LARP4	12	+	50822699	50822873	0	0.145
18	A3SS	RNF44	5	-	175959004	175959194	2.74E-05	-0.252
19	A3SS	ZNF419	19	+	58001498	58001553	1.68E-06	0.216
20	A3SS	CAPRIN2	12	-	30872012	30873849	0.006798224	-0.224
21	A3SS	SERBP1	1	-	67890570	67890660	0	0.286
22	A3SS	ZNF707	8	+	144770831	144771471	3.84E-07	0.128
23	A3SS	MYRF	11	+	61550969	61551072	3.02E-11	0.356
24	A3SS	ANK1	8	-	41529871	41530047	1.39E-07	0.142
25	A3SS	ANK1	8	-	41529871	41530430	8.17E-09	0.137
26	A3SS	NICN1	3	-	49462381	49462579	8.22E-13	-0.112
27	A3SS	FAM58A	X	-	152853389	152853912	0.011483904	0.101
28	A3SS	NPRL2	3	-	50385189	50385672	0.046932963	-0.109
29	A3SS	PPHLN1	12	+	42839774	42840092	0	0.238

30	A3SS	RABGGTA	14	-	24740318	24740454	0.020028001	-0.117
31	A3SS	ST5	11	-	8724118	8725158	2.71E-05	0.171
32	A3SS	MUC1	1	-	155159205	155159367	1.62E-09	-0.331
33	A3SS	DNAJC10	2	+	183604271	183605115	1.21E-05	-0.196
34	A3SS	TMEM91	19	+	41889465	41889988	1.08E-11	-0.137
35	A3SS	TMEM91	19	+	41889767	41889988	9.30E-11	-0.104
36	A3SS	TMEM91	19	+	41889465	41889988	0.004672798	-0.15
37	A3SS	TMEM91	19	+	41889465	41889988	0	-0.362
38	A3SS	TMEM91	19	+	41889619	41889988	0.001516969	-0.188
39	A3SS	TMEM91	19	+	41889619	41889988	0	-0.38
40	A3SS	TMEM91	19	+	41889767	41889988	0	-0.305
41	A3SS	TMEM91	19	+	41889778	41889988	7.23E-13	-0.286
42	A3SS	CCDC24	1	+	44457824	44458059	0.005285673	0.231
43	A3SS	PLA2G15	16	+	68289608	68289893	0.033199523	0.103
44	A3SS	CAPN10	2	+	241535350	241535938	0.03613243	-0.105
45	A3SS	ZDHHC16	10	+	99215395	99215540	0	0.515
46	A3SS	ZDHHC16	10	+	99215395	99215540	0	0.134
47	A3SS	ANAPC5	12	-	121766118	121766300	6.31E-14	0.102
48	A3SS	UXS1	2	-	106781191	106781255	0	0.337
49	A3SS	TRIM37	17	-	57078958	57079102	0	0.291
50	A3SS	GUCY1B3	4	+	156723364	156723731	0	0.109
51	A3SS	EI24	11	+	125445146	125445304	0	0.137
52	A3SS	ZMIZ2	7	+	44796545	44796748	1.80E-06	0.103
53	A3SS	ZMIZ2	7	+	44796573	44796748	0.008616328	0.343
54	A3SS	D2HGDH	2	+	242683036	242683230	1.99E-05	0.121
55	A3SS	MAN2A2	15	+	91455746	91455894	1.41E-08	0.179
56	A3SS	PPOX	1	+	161137128	161137276	2.01E-11	0.314
57	A3SS	DLST	14	+	75356580	75356655	0	0.389
58	A3SS	PLAGL1	6	-	144281605	144281693	0	-0.168
59	A3SS	PLAGL1	6	-	144281605	144281717	0	-0.125
60	A3SS	PLAGL1	6	-	144285923	144287367	0.000107524	-0.227

61	A3SS	PLAGL1	6	-	144287294	144287422	0.026080015	-0.11
62	A3SS	PLAGL1	6	-	144287294	144287422	0.007248587	-0.141
63	A3SS	MED24	17	-	38209721	38209910	0	0.15
64	A3SS	ASB8	12	-	48543869	48543953	1.02E-05	-0.171
65	A3SS	LETMD1	12	+	51447560	51447643	0	-0.263
66	A3SS	ECHDC2	1	-	53370705	53372283	0	-0.288
67	A3SS	ECHDC2	1	-	53377394	53377693	3.26E-06	0.171
68	A3SS	MPV17	2	-	27535860	27536021	0.01143894	-0.101
69	A3SS	ARIH1	15	+	72862504	72862648	0	0.119
70	A3SS	ERGIC3	20	+	34144647	34144880	0	-0.626
71	A3SS	ERGIC3	20	+	34144725	34144880	0	0.195
72	A3SS	DNASE1	16	+	3706964	3707112	0.037736166	-0.14
73	A3SS	CDC27	17	-	45229171	45229302	0	0.147
74	A3SS	ARFGAP2	11	-	47195309	47195466	0	0.44
75	A3SS	ARFGAP2	11	-	47195309	47195466	3.04E-07	0.142
76	A3SS	SGSH	17	-	78188413	78188582	0.000126659	0.13
77	A3SS	TCEA2	20	+	62703210	62703294	0	0.343
78	A3SS	SRPK1	6	-	35858671	35858818	0.001446169	0.242
79	A3SS	MVP	16	+	29841794	29841995	0	0.193
80	A3SS	SUGP1	19	-	19414532	19414721	0	-0.112
81	A3SS	SUGP1	19	-	19414532	19414852	0	-0.136
82	A3SS	PTGR2	14	+	74343700	74346879	0.0077179	0.109
83	A3SS	ZNF655	7	+	99159510	99160117	8.35E-07	-0.116
84	A3SS	ZNF655	7	+	99159966	99160117	0.004931123	-0.147
85	A3SS	ZNF655	7	+	99159971	99160117	0.00954366	-0.14
86	A3SS	THOC1	18	-	224083	224200	0	0.26
87	A3SS	ZDHHC13	11	+	19187848	19192115	0.000334678	-0.277
88	A3SS	PAAF1	11	+	73597973	73598144	0.002521082	-0.359
89	A3SS	WDR31	9	-	116093263	116093396	0.002023179	-0.158
90	A3SS	RNF32	7	+	156450821	156450946	0.004827741	-0.129
91	A3SS	KDM1A	1	+	23399766	23399896	0	0.121

92	A3SS	ATG16L2	11	+	72532243	72532786	0.009271323	-0.119
93	A3SS	SNRPN	15	+	25219434	25219603	0	-0.296
94	A3SS	SNRPN	15	+	25219457	25219603	0	-0.145
95	A3SS	EFCAB2	1	+	245250034	245250263	0.004966998	0.108
96	A3SS	SECISBP2	9	+	91940341	91940591	8.26E-10	-0.129
97	A3SS	FAM45A	10	+	120867459	120867676	1.24E-13	0.25
98	A3SS	ATM	11	+	108124557	108124723	0.001619784	-0.136
99	A3SS	GIGYF2	2	+	233625189	233625301	0.000269018	-0.148
100	A3SS	BRD9	5	-	869359	869519	0	0.442
101	A3SS	SLTM	15	-	59209133	59209219	0	0.207
102	A3SS	PHF21A	11	-	46139472	46139696	0.001932331	0.203
103	A3SS	HLTF	3	-	148759276	148759467	0	0.246
104	A3SS	PCED1B-AS1	12	-	47599680	47599928	0.043009026	0.108
105	A3SS	KCP	7	-	128533858	128534108	0.000768995	0.129
106	A3SS	KIAA1033	12	+	105514866	105514982	0	0.28
107	A3SS	SIGLEC10	19	-	51919919	51920060	0.001341086	-0.126
108	A3SS	SIGLEC10	19	-	51919919	51920204	6.02E-13	-0.164
109	A3SS	ANKHD1	5	+	139818045	139818202	0	-0.524
110	A3SS	ANKHD1	5	+	139818078	139818202	0	0.458
111	A3SS	NECAB3	20	-	32258489	32258587	6.18E-05	-0.186
112	A3SS	TMEM218	11	-	124972027	124972247	0	0.531
113	A3SS	TMEM218	11	-	124972027	124972247	0	0.355
114	A3SS	RNF111	15	+	59376300	59376453	5.60E-07	0.139
115	A3SS	ACTR2	2	+	65469105	65469197	5.91E-06	-0.258
116	A3SS	TCF7L2	10	+	114910741	114910882	9.75E-14	0.243
117	A3SS	GTF2IRD1	7	+	73969722	73969824	0.025531804	-0.115
118	A3SS	UROS	10	-	127477851	127478097	0.020028001	-0.11
119	A3SS	SHKBP1	19	+	41084353	41084448	0	0.108
120	A3SS	FAM65C	20	-	49211089	49211334	0	-0.109
121	A3SS	MYO15B	17	+	73587681	73587793	0	0.486
122	A3SS	FLT3LG	19	+	49978930	49979058	0.002720979	0.141

123	A3SS	APPL2	12	-	105601748	105601825	0	0.392
124	A3SS	FAM111A	11	+	58916176	58916426	0.00035309	-0.126
125	A3SS	FAM111A	11	+	58916269	58916426	8.57E-06	-0.2
126	A3SS	XAF1	17	+	6662574	6663037	1.28E-06	-0.153
127	A3SS	COLEC12	18	-	333006	335230	5.19E-07	-0.134
128	A3SS	CEP192	18	+	13057583	13059311	0.006547986	-0.169
129	A3SS	SLC35C2	20	-	44983711	44983918	0.006510199	-0.101
130	A3SS	TNFRSF25	1	-	6522922	6523207	2.50E-05	-0.265
131	A3SS	FOXRED1	11	+	126143210	126143349	0	0.114
132	A3SS	FOXRED1	11	+	126143210	126143349	1.84E-07	0.254
133	A3SS	FHIT	3	-	59735035	59735305	1.81E-07	-0.18
134	A3SS	HSF4	16	+	67201363	67201502	0	0.66
135	A3SS	MGAT4B	5	-	179228553	179228719	0.000437484	0.214
136	A3SS	STAG3L5P-PV	7	+	99947353	99947510	0	0.207
137	A3SS	RPS9	19	+	54710420	54711515	0.016212243	-0.108
138	A3SS	PLEKHG2	19	+	39905631	39905900	0.000290935	0.107
139	A3SS	IMMT	2	-	86398330	86398468	0	0.166
140	A3SS	RPS15	19	+	1439959	1440252	0.000756704	0.264
141	A3SS	STEAP1B	7	-	22532942	22533455	9.13E-08	-0.155
142	A3SS	CIB2	15	-	78401576	78401851	8.57E-06	-0.22
143	A3SS	TRMU	22	+	46746187	46746360	9.33E-05	0.103
144	A3SS	PHF7	3	+	52455663	52456897	4.23E-08	-0.189
145	A3SS	SH3D21	1	+	36786656	36787379	0.037681137	-0.13
146	A3SS	SLFN12	17	-	33757489	33757632	0.003226639	-0.22
147	A3SS	STXBP2	19	+	7705583	7705695	5.84E-11	-0.112
148	A3SS	PRRG2	19	+	50086631	50086974	0.000162299	0.295
149	A3SS	PHF20L1	8	+	133811328	133811418	0.000173316	0.217
150	A3SS	CCDC14	3	-	123674689	123674962	0.000987952	-0.105
151	A3SS	APBB3	5	-	139941171	139941307	0	0.321
152	A3SS	APBB3	5	-	139941171	139941307	0.023104781	0.184
153	A3SS	EMC9	14	-	24608753	24609025	0.047351979	0.153

154	A3SS	KCNC4	1	+	110774842	110776666	0.000361125	0.157
155	A3SS	ABLIM1	10	-	116207638	116207785	0.014681341	0.176
156	A3SS	GPR108	19	-	6730997	6731122	0	-0.214
157	A3SS	C14orf93	14	-	23468262	23468611	2.19E-10	-0.252
158	A3SS	TBC1D7	6	-	13327018	13327195	1.15E-06	0.234
159	A3SS	TBC1D7	6	-	13327018	13327195	0.011956163	0.125
160	A3SS	CD200	3	+	112066404	112066677	0.002574161	0.124
161	A3SS	RTN2	19	-	45998352	45998472	0.020028001	0.17
162	A3SS	VEZT	12	+	95663814	95663964	0	0.334
163	A3SS	PCBP4	3	-	51994541	51994658	0.019835501	-0.111
164	A3SS	RIN1	11	-	66101389	66101695	0.000204675	-0.21
165	A3SS	FGD4	12	+	32760871	32761029	3.56E-14	0.105
166	A3SS	METTL5	2	-	170668966	170669034	0	0.141
167	A3SS	METTL5	2	-	170668966	170669034	5.06E-11	0.255
168	A3SS	TBC1D32	6	-	121638640	121638836	1.90E-07	0.354
169	A3SS	ABCB7	X	-	74291343	74291539	0	0.127
170	A3SS	NSFL1C	20	-	1436358	1436515	5.02E-06	-0.105
171	A3SS	RALGAPB	20	+	37163716	37163850	1.04E-08	0.179
172	A3SS	GORASP1	3	-	39141795	39141994	0	-0.133
173	A3SS	GORASP1	3	-	39141795	39141994	2.87E-14	-0.21
174	A3SS	GORASP1	3	-	39141795	39142368	4.01E-10	-0.234
175	A3SS	FBXO21	12	-	117595677	117595889	1.30E-06	0.177
176	A3SS	RXRB	6	-	33163139	33163243	2.03E-08	0.144
177	A3SS	CACNA2D1	7	-	81626494	81626566	0.000543755	0.377
178	A3SS	CCDC125	5	-	68609811	68609873	0.000836682	0.112
179	A3SS	ACAD11	3	-	132297639	132297900	0.002236499	-0.11
180	A3SS	CHD3	17	+	7797432	7797583	0.00014061	0.129
181	A3SS	SLC25A39	17	-	42399786	42399920	3.46E-11	0.111
182	A3SS	CIAPIN1	16	-	57474683	57474922	0	-0.161
183	A3SS	PIH1D1	19	-	49950594	49950677	0.047157125	-0.181
184	A3SS	SYNE1	6	-	152605112	152605319	0	0.514

185	A3SS	RNF41	12	-	56606779	56606922	1.83E-09	-0.161
186	A3SS	DEPDC5	22	+	32154512	32154619	0	0.143
187	A3SS	MYCBP	1	-	39332551	39332681	0	-0.381
188	A3SS	CHERP	19	-	16641579	16641724	3.81E-05	0.154
189	A3SS	TGFBR1	9	+	101894778	101895021	0	0.261
190	A3SS	TBC1D17	19	+	50391413	50391574	5.35E-05	-0.128
191	A3SS	WDR45	X	-	48934303	48934463	0.023313771	-0.187
192	A3SS	WDR45	X	-	48934303	48934484	0.046975925	-0.173
193	A3SS	PAPD4	5	+	78938654	78938733	4.24E-14	0.14
194	A3SS	HLA-C	6	-	31237269	31237320	0.00018317	0.116
195	A3SS	DVL2	17	-	7130973	7131102	0	-0.404
196	A3SS	LAIR1	19	-	54875901	54876093	0.005626315	0.13
197	A3SS	APOA2	1	-	161192707	161193056	7.35E-15	-0.475
198	A3SS	APOA2	1	-	161192707	161193056	3.73E-13	-0.555
199	A3SS	ZNF410	14	+	74360478	74360635	2.67E-08	0.334
200	A3SS	ZNF410	14	+	74360478	74360635	0	0.296
201	A3SS	CRTC2	1	-	153925046	153925126	0	0.188
202	A3SS	LGALS12	11	+	63276246	63276463	0.000645135	0.142
203	A3SS	ZSWIM8	10	+	75554298	75554397	0	0.194
204	A3SS	ENTPD6	20	+	25205797	25205953	5.86E-06	-0.101
205	A3SS	CNOT7	8	-	17100950	17101131	0.010373107	0.128
206	A3SS	ULK3	15	-	75134620	75134790	0.000151275	-0.195
207	A3SS	CCNL2	1	-	1326145	1328183	6.59E-05	-0.126
208	A3SS	ABCD4	14	-	74759450	74759951	0.007122013	-0.123
209	A3SS	ABCC5	3	-	183703091	183703243	0	-0.441
210	A3SS	GK5	3	-	141896323	141896447	1.02E-08	0.204
211	A3SS	RUFY4	2	+	218954409	218955303	0.025172347	0.144
212	A3SS	SLC25A37	8	+	23425771	23425891	0.000179498	-0.133
213	A3SS	CRNDE	16	-	54954209	54954250	7.33E-06	-0.164
214	A3SS	CRNDE	16	-	54954209	54954322	0	-0.651
215	A3SS	CRNDE	16	-	54954209	54954322	0	-0.372

216	A3SS	RAD9A	11	+	67161161	67161261	3.22E-08	-0.231
217	A3SS	ERCC3	2	-	128046912	128047095	0	0.147
218	A3SS	COASY	17	+	40714313	40714505	0	-0.646
219	A3SS	MOK	14	-	102698871	102699045	0.006583207	-0.175
220	A3SS	ZNF557	19	+	7075665	7075754	9.16E-07	0.205
221	A3SS	STAU2	8	-	74621266	74621412	0	0.315
222	A3SS	ABCC10	6	+	43410707	43411748	0.014145922	0.13
223	A3SS	VPS13D	1	+	12401836	12401942	0.002381982	-0.175
224	A3SS	NR4A2	2	-	157185834	157186700	4.10E-08	0.111
225	A3SS	ZNF561	19	-	9728766	9728855	0	-0.33
226	A3SS	GAS8	16	+	90097583	90097904	0	0.461
227	A3SS	GAS8	16	+	90097597	90097904	2.30E-07	0.29
228	A3SS	CCDC88B	11	+	64109973	64110152	6.16E-08	-0.128
229	A3SS	PTBP2	1	+	97278828	97279003	4.18E-05	-0.307
230	A3SS	TMEM116	12	-	112371689	112374634	0.026080015	-0.123
231	A3SS	FBXO17	19	-	39437111	39437245	0.000311803	0.108
232	A3SS	ITGAL	16	+	30486609	30486721	0.003707971	0.173
233	A3SS	SLC27A1	19	+	17597908	17598144	0.010544667	-0.11
234	A3SS	TMEM234	1	-	32680736	32681396	0.005626315	-0.181
235	A3SS	STRA6	15	-	74488348	74488595	0.032817805	0.124
236	A3SS	GLS2	12	-	56868827	56868967	2.85E-06	-0.267
237	A3SS	HDAC7	12	-	48185653	48186452	0	-0.159
238	A3SS	STAU1	20	-	47740911	47741142	0	0.116
239	A3SS	DBF4B	17	+	42818703	42818820	4.22E-08	0.176
240	A3SS	MIER1	1	+	67394569	67394646	0.002330753	-0.198
241	A3SS	6-Sep	X	-	118759297	118759359	0	0.539
242	A3SS	MIPOL1	14	+	37717003	37717112	0	0.374
243	A3SS	PRICKLE4	6	+	41754177	41755563	0.003238069	0.306
244	A3SS	EHMT1	9	+	140637822	140637980	0	0.274
245	A3SS	CLCC1	1	-	109492930	109493070	7.62E-06	-0.105
246	A3SS	ZNF124	1	-	247322988	247323169	0	0.15



247	A3SS	THBS3	1	-	155171747	155171905	0.006887993	-0.115
248	A3SS	CMTM7	3	+	32493557	32493965	0.007758982	-0.12
249	A3SS	ZCCHC11	1	-	52902426	52902647	0	0.264
250	A3SS	ZCCHC11	1	-	52902426	52902650	0	0.264
251	A3SS	SKIV2L	6	+	31936399	31936573	0	0.226
252	A3SS	CLINT1	5	-	157216370	157216575	3.15E-11	-0.132
253	A3SS	BCAM	19	+	45315419	45315648	0	-0.22
254	A3SS	LINC01160	1	-	112144813	112144955	0.001532855	-0.198
255	A3SS	NASP	1	+	46070588	46070688	0	0.306
256	A3SS	CAMTA2	17	-	4885383	4885470	0	0.234
257	A3SS	CAMTA2	17	-	4885383	4885522	0	-0.306
258	A3SS	CAAP1	9	-	26884807	26884900	3.07E-05	0.259
259	A3SS	DKFZP761J141	19	+	11468294	11468415	8.20E-05	0.133
260	A3SS	CCBL1	9	-	131598275	131598384	0.014440969	0.175
261	A3SS	NCOA7	6	+	126210084	126211127	0.004669665	0.154
262	A3SS	CC2D1B	1	-	52823452	52823588	0.002361577	-0.101
263	A3SS	CIRBP	19	+	1273492	1273714	0	-0.253
264	A3SS	EXOC3L1	16	-	67222922	67223098	0	0.791
265	A3SS	MED6	14	-	71059596	71059726	0	0.294
266	A5SS	FBXL19	16	+	30939787	30939949	0.00436097	-0.112
267	A5SS	INTS8	8	+	95877733	95877928	0.048884241	0.105
268	A5SS	MUTYH	1	-	45803857	45804328	0.003816649	-0.195
269	A5SS	RAD52	12	-	1038929	1039310	0.003147564	-0.154
270	A5SS	HUWE1	X	-	53570801	53570929	6.34E-13	-0.141
271	A5SS	NDUFAF7	2	+	37468720	37468934	0.000138184	-0.129
272	A5SS	FCHO1	19	+	17865400	17865567	5.60E-06	0.137
273	A5SS	PDXK	21	+	45152019	45152528	0.004589206	0.306
274	A5SS	SGOL1	3	-	20215740	20216547	2.55E-06	0.101
275	A5SS	AACS	12	+	125609250	125609570	1.98E-05	-0.115
276	A5SS	ARHGEF5	7	+	144059750	144062916	0.000472067	-0.133
277	A5SS	DHRS13	17	-	27229600	27230089	0.000602601	-0.146

278	A5SS	ALDH3B1	11	+	67782766	67786106	0.001332456	0.159
279	A5SS	CDK20	9	-	90585482	90585812	5.76E-06	0.344
280	A5SS	CARD8	19	-	48735709	48737800	9.80E-09	-0.195
281	A5SS	ACSM1	16	-	20648060	20648773	0.013250915	0.163
282	A5SS	PNISR	6	-	99851704	99852578	7.92E-14	-0.137
283	A5SS	TRMT2B	X	-	100306772	100307105	0.008836584	-0.139
284	A5SS	SNRPN	15	+	25212175	25212387	0	-0.14
285	A5SS	NAA16	13	+	41936166	41937009	2.55E-06	0.111
286	A5SS	TMEM218	11	-	124972532	124972705	5.76E-06	0.169
287	A5SS	TMEM218	11	-	124972532	124972705	4.60E-08	-0.188
288	A5SS	PFDN5	12	+	53690213	53690335	1.97E-06	0.122
289	A5SS	ALDH16A1	19	+	49964875	49965293	0.018745945	-0.201
290	A5SS	OGFOD2	12	+	123462527	123462746	0.016388394	0.137
291	A5SS	KAT6B	10	+	76735156	76736088	0.041920944	-0.127
292	A5SS	ROBO3	11	+	124747414	124747648	0.004095294	0.259
293	A5SS	ROBO3	11	+	124747414	124748027	0.010076781	0.165
294	A5SS	TYROBP	19	-	36399069	36399197	1.56E-08	0.118
295	A5SS	SELENBP1	1	-	151341479	151342245	3.41E-08	-0.133
296	A5SS	TLE1	9	-	84267098	84267203	0.0448024	0.111
297	A5SS	TUBGCP4	15	+	43693913	43695997	0.006472608	-0.138
298	A5SS	CEP170	1	-	243305617	243305765	0.000205696	0.143
299	A5SS	CLEC7A	12	-	10279169	10280444	2.04E-05	-0.122
300	A5SS	RPGRIP1	14	+	21789417	21789561	2.04E-05	0.202
301	A5SS	MRRF	9	+	125047447	125048225	0.01026476	-0.142
302	A5SS	AASS	7	-	121718915	121719766	0.040165927	-0.115
303	A5SS	C11orf54	11	+	93475128	93475260	0.00201362	0.279
304	A5SS	C11orf54	11	+	93475128	93475307	0.002962162	0.138
305	A5SS	RPP30	10	+	92654531	92655240	0.001400267	-0.145
306	A5SS	RMND5B	5	+	177565108	177565397	0.008139711	0.102
307	A5SS	SERHL2	22	+	42967126	42967907	3.06E-05	-0.163
308	A5SS	MTRF1	13	-	41836183	41836467	0.007973177	-0.271

309	A5SS	TLL3	3	+	9874787	9874957	4.03E-05	0.187
310	A5SS	DSN1	20	-	35399275	35399876	2.97E-12	-0.111
311	A5SS	TMEM128	4	-	4249327	4249939	7.58E-08	0.103
312	A5SS	CD44	11	+	35229651	35229756	8.89E-08	-0.273
313	A5SS	CCDC84	11	+	118881930	118882021	0.000197544	-0.156
314	A5SS	CIZ1	9	-	130941267	130941694	2.26E-05	-0.16
315	A5SS	ZNF266	19	-	9529437	9529975	0.027933523	-0.104
316	A5SS	TMEM175	4	+	941903	942403	7.60E-13	-0.104
317	A5SS	PPM1M	3	+	52282168	52282469	0.021584662	-0.127
318	A5SS	PIK3R6	17	-	8741612	8741972	7.89E-05	-0.113
319	A5SS	FAM73B	9	+	131830476	131831254	0.00249039	-0.153
320	A5SS	ABCG1	21	+	43707998	43708183	0.043924114	-0.281
321	A5SS	CTNND1	11	+	57529268	57529591	0.043924114	-0.109
322	A5SS	AGER	6	-	32150315	32150475	0.016864089	-0.334
323	A5SS	SLC25A37	8	+	23423620	23424326	2.83E-06	-0.112
324	A5SS	ITGB1	10	-	33222278	33222511	0.022493232	-0.112
325	A5SS	ZCWPW1	7	-	100016624	100016812	0.000912639	-0.261
326	A5SS	ANKZF1	2	+	220094949	220095127	0.027995325	-0.282
327	A5SS	IDH3G	X	-	153056250	153056306	0.004095294	-0.366
328	A5SS	HDHD2	18	-	44662672	44662820	0.000105121	0.102
329	A5SS	SDR39U1	14	-	24911303	24911466	0.040165927	-0.127
330	A5SS	SDR39U1	14	-	24911314	24911466	0.013234972	-0.139
331	A5SS	CLPTM1L	5	-	1324877	1325931	0	-0.124
332	A5SS	BTAF1	10	+	93718821	93719039	1.05E-06	-0.18
333	A5SS	LYRM5	12	+	25356658	25356766	0.03337428	-0.103
334	A5SS	METTL20	12	+	31812621	31813003	0.032790803	-0.235
335	A5SS	PCNT	21	+	47851442	47852129	0.007626979	-0.125
336	MXE	HLCS	21	-	38318308	38318454	0.018389726	-0.212
337	MXE	AP000347.2	22	-	24047615	24047728	1.23E-05	-0.128
338	MXE	TMEM214	2	+	27260682	27260760	0	0.292
339	MXE	TMEM214	2	+	27261013	27261105	3.84E-12	-0.133

340	MXE	TMEM214	2	+	27261013	27261105	0	0.294
341	MXE	IL9R	X	+	155232570	155232684	1.97E-05	0.169
342	MXE	AP5Z1	7	+	4829844	4830222	7.31E-12	-0.131
343	MXE	ZC3H11A	1	+	203765578	203765729	0.000778599	0.152
344	MXE	DEF8	16	+	90028144	90028272	0.00957429	-0.108
345	MXE	MDM4	1	+	204499811	204499945	7.74E-10	-0.132
346	MXE	MDM4	1	+	204501318	204501374	1.23E-12	0.194
347	MXE	AC093415.2	3	-	37862504	37862591	8.81E-06	-0.124
348	MXE	AC093415.2	3	-	37862504	37862591	0.001632457	-0.194
349	MXE	AC093415.2	3	-	37862504	37862591	1.91E-08	-0.214
350	MXE	FAM3A	X	-	153736619	153736678	0.002015967	0.16
351	MXE	LEKR1	3	+	156570556	156570771	1.52E-05	-0.141
352	MXE	SLIT1	10	-	98764449	98764580	0.043715693	-0.127
353	MXE	CCDC102B	18	+	66564455	66564665	0.002204771	-0.124
354	MXE	FAM208B	10	+	5754785	5754881	0.00065159	0.109
355	MXE	SEC16A	9	-	139358037	139358192	0.016387118	0.161
356	MXE	SMURF2	17	-	62567915	62568074	4.16E-07	-0.122
357	MXE	GRK4	4	+	3024140	3024178	0.00161833	-0.103
358	MXE	NDUFAF7	2	+	37468720	37468780	0.005104819	0.18
359	MXE	SDCCAG8	1	+	243589728	243589860	0.021445969	-0.104
360	MXE	MDH1B	2	-	207613743	207613907	0.032027146	-0.171
361	MXE	PACSIN2	22	-	43289462	43289619	0.007116277	0.147
362	MXE	TPM1	15	+	63353396	63353472	0	-0.101
363	MXE	ADAMTS12	5	-	33751508	33751653	0.006864766	-0.13
364	MXE	TPT1-AS1	13	+	45926031	45926149	1.24E-05	-0.156
365	MXE	ZFYVE27	10	+	99498233	99498431	8.81E-06	0.16
366	MXE	ZFYVE27	10	+	99498233	99498431	4.62E-05	0.141
367	MXE	ZFYVE27	10	+	99504485	99504672	0.000460808	-0.114
368	MXE	ZNF185	X	+	152089250	152089292	0.040353336	-0.111
369	MXE	ZNF185	X	+	152091263	152091353	0.000141127	-0.21
370	MXE	CARF	2	+	203825959	203826149	0.003705333	-0.113

371	MXE	ENDOV	17	+	78391580	78391745	0.015973459	-0.241
372	MXE	ANXA2	15	-	60682411	60682516	0.007803772	0.117
373	MXE	ST7L	1	-	113093222	113093315	2.03E-06	-0.108
374	MXE	ECT2	3	+	172473272	172473365	0	0.143
375	MXE	ECT2	3	+	172474772	172474955	7.21E-09	0.122
376	MXE	FANK1	10	+	127685988	127686054	0.000318319	-0.263
377	MXE	PGAP2	11	+	3832479	3832654	0.002489145	-0.101
378	MXE	PAPPA	9	+	119094611	119094747	0.018641159	0.3
379	MXE	PILRB	7	+	99936395	99936512	0	0.115
380	MXE	PILRB	7	+	99947421	99947510	0	-0.115
381	MXE	KLRF1	12	+	9985898	9986048	0.000426859	0.228
382	MXE	DNAJC10	2	+	183597225	183597269	0.004815858	0.202
383	MXE	ADAM32	8	+	39027434	39027516	0.00223166	0.329
384	MXE	ZNF107	7	+	64129414	64129556	0.029883719	-0.188
385	MXE	HSD17B6	12	+	57157001	57157198	0.043019167	-0.145
386	MXE	CCDC62	12	+	123270265	123270367	0.00015153	0.333
387	MXE	GS1-259H13.10	7	+	99197830	99197908	0.01512958	-0.148
388	MXE	ZDHHC16	10	+	99215395	99215540	0	0.16
389	MXE	RP11-248J23.6	10	+	97712079	97712182	0.038591305	-0.126
390	MXE	ST3GAL6-AS1	3	-	98434219	98434365	0.040735727	0.258
391	MXE	RP11-333E1.1	17	+	5113044	5113190	0.000249265	-0.183
392	MXE	RP11-333E1.1	17	+	5118441	5118588	0.003677848	0.152
393	MXE	TRIM37	17	-	57089688	57089807	6.70E-08	0.112
394	MXE	TRIM37	17	-	57089688	57089807	5.51E-09	0.129
395	MXE	TRIM37	17	-	57138392	57138469	0.000157837	-0.104
396	MXE	P2RX5	17	-	3591919	3592053	0.046391409	-0.202
397	MXE	RPL34-AS1	4	-	109519693	109519851	0.004788718	0.182
398	MXE	CDKL3	5	-	133644264	133644418	0.029149915	-0.145
399	MXE	CDKL3	5	-	133647982	133648071	0.039811299	-0.116
400	MXE	PPOX	1	+	161137128	161137276	0.00019335	0.21
401	MXE	PPOX	1	+	161137128	161137276	5.04E-10	0.164

402	MXE	PPOX	1	+	161137128	161137276	7.56E-10	0.159
403	MXE	PPOX	1	+	161137128	161137276	2.25E-10	0.122
404	MXE	PPOX	1	+	161137128	161137276	4.20E-08	0.131
405	MXE	DLST	14	+	75349293	75349327	0	-0.497
406	MXE	DLST	14	+	75352288	75352337	0	0.11
407	MXE	DLST	14	+	75352288	75352337	0	-0.172
408	MXE	DLST	14	+	75356580	75356655	0	0.322
409	MXE	DLST	14	+	75356599	75356655	2.81E-10	-0.148
410	MXE	FBXL13	7	-	102462829	102462887	0.01613661	-0.131
411	MXE	MFF	2	+	228211941	228212100	6.18E-08	-0.108
412	MXE	ALB	4	+	74283247	74283386	0.002596912	0.251
413	MXE	CARD8	19	-	48735709	48737800	1.69E-05	0.129
414	MXE	CARD8	19	-	48744218	48744320	0.000319465	-0.132
415	MXE	SIPA1L1	14	+	71867510	71867635	0.012016752	-0.173
416	MXE	SEC24D	4	-	119679566	119679782	0.044077979	0.415
417	MXE	RP11-274B21.1	7	+	128218017	128218087	0	0.688
418	MXE	RP11-274B21.1	7	+	128218017	128218087	0	0.296
419	MXE	LETMD1	12	+	51445874	51445990	7.50E-06	0.122
420	MXE	LETMD1	12	+	51445874	51445990	2.83E-06	0.128
421	MXE	LETMD1	12	+	51445874	51445990	0.000178052	-0.122
422	MXE	LETMD1	12	+	51447560	51447643	1.42E-05	-0.102
423	MXE	FAM49B	8	-	130891842	130892035	0.038455694	0.138
424	MXE	MPV17	2	-	27535360	27535456	0.013367821	-0.146
425	MXE	MPV17	2	-	27535546	27535639	0.022344573	-0.114
426	MXE	FAM13A	4	-	89726161	89726203	0.023602375	0.231
427	MXE	POLM	7	-	44113729	44114129	0.003426806	0.118
428	MXE	CCDC17	1	-	46087309	46087407	3.43E-05	-0.333
429	MXE	ZFPM2	8	+	106807983	106808125	0.007103356	0.24
430	MXE	BTBD19	1	+	45276225	45276279	0.000665397	-0.161
431	MXE	ELMOD3	2	+	85582198	85582293	0.001201314	-0.149
432	MXE	LRRFIP1	2	+	238628165	238628210	0.024647053	-0.138

433	MXE	LRRFIP1	2	+	238636518	238636578	0.013171173	-0.119
434	MXE	GUSBP11	22	-	24036305	24037704	0	0.118
435	MXE	GUSBP11	22	-	24036305	24037704	6.21E-13	0.108
436	MXE	GUSBP11	22	-	24037359	24037704	1.28E-09	0.276
437	MXE	GUSBP11	22	-	24037359	24037704	5.20E-05	0.149
438	MXE	GUSBP11	22	-	24042912	24043032	0	-0.228
439	MXE	GUSBP11	22	-	24047615	24047728	0.000258152	0.123
440	MXE	PEA15	1	+	160176922	160177027	0.018483252	0.151
441	MXE	INPP5A	10	+	134463921	134464009	0.006924781	-0.211
442	MXE	DCTN2	12	-	57932035	57932130	0.028721802	0.219
443	MXE	DCTN2	12	-	57932035	57932130	0.011074151	0.199
444	MXE	DFNB31	9	-	117188490	117188693	3.43E-05	-0.322
445	MXE	KB-1507C5.4	8	+	104004477	104004635	1.33E-06	0.353
446	MXE	THOC1	18	-	223439	223505	0	0.259
447	MXE	THOC1	18	-	224923	224994	7.48E-08	0.106
448	MXE	C1RL-AS1	12	+	7267725	7267815	0.013235161	0.109
449	MXE	TARBP2	12	+	53897496	53897592	0.042109089	0.205
450	MXE	FAM78A	9	-	134138864	134138986	0.000397972	0.209
451	MXE	CROCCP3	1	-	16812920	16813156	0.001323403	-0.187
452	MXE	RP11-156P1.3	17	-	45110643	45110747	0.007834004	0.15
453	MXE	NEMF	14	-	50301080	50301167	0.001234686	0.129
454	MXE	SYTL1	1	+	27677284	27677443	0.003797193	0.14
455	MXE	SYTL1	1	+	27677284	27677443	0.000196392	0.126
456	MXE	SNRPN	15	+	25207260	25207356	1.95E-08	-0.108
457	MXE	SNRPN	15	+	25212175	25212299	0	0.192
458	MXE	SNRPN	15	+	25212175	25212299	0	0.283
459	MXE	SNRPN	15	+	25212175	25212299	0	0.275
460	MXE	SNRPN	15	+	25212175	25212299	0	0.262
461	MXE	SNRPN	15	+	25212175	25212299	0	0.302
462	MXE	SNRPN	15	+	25212175	25212299	0	0.318
463	MXE	SNRPN	15	+	25212175	25212387	0	0.153

464	MXE	SNRPN	15	+	25213078	25213229	0	0.207
465	MXE	SNRPN	15	+	25213078	25213229	0	0.128
466	MXE	SNRPN	15	+	25219533	25219603	0	0.151
467	MXE	ZFX	X	+	24193505	24193560	0.016058214	0.199
468	MXE	ATG9A	2	-	220093155	220093207	0.003483595	-0.164
469	MXE	LDLRAD4	18	+	13438242	13438383	0.001035103	0.134
470	MXE	LDLRAD4	18	+	13438242	13438383	4.86E-05	0.153
471	MXE	LDLRAD4	18	+	13438242	13438383	0.001256238	0.134
472	MXE	LDLRAD4	18	+	13438242	13438383	5.87E-05	0.152
473	MXE	LDLRAD4	18	+	13438242	13438383	0.008801278	0.128
474	MXE	TRIM16	17	-	15546034	15546130	0.000168606	0.102
475	MXE	TRIM16	17	-	15554404	15555260	3.92E-08	-0.26
476	MXE	TRIM16	17	-	15562115	15562190	0.040687873	-0.159
477	MXE	BRD9	5	-	868721	869234	1.98E-11	0.146
478	MXE	BRD9	5	-	868721	869234	0	0.193
479	MXE	BRD9	5	-	869359	869509	0	-0.197
480	MXE	BRD9	5	-	869359	869509	0	-0.156
481	MXE	BRD9	5	-	869359	869509	0	-0.155
482	MXE	BRD9	5	-	870587	870690	1.79E-06	0.109
483	MXE	BBS9	7	+	33397466	33397607	0.036769417	0.127
484	MXE	OSER1	20	-	42835924	42835959	0.0002299	0.126
485	MXE	PRPF4B	6	+	4062446	4062533	0.001418919	0.133
486	MXE	PRPF4B	6	+	4062446	4062533	0.000629148	0.111
487	MXE	PCNX	14	+	71476350	71476441	0.003763161	-0.168
488	MXE	NAA16	13	+	41947772	41947916	9.13E-08	-0.175
489	MXE	NAA16	13	+	41947903	41948016	0	0.298
490	MXE	SERPINA1	14	-	94854896	94855000	2.77E-10	-0.228
491	MXE	MAPK10	4	-	87010358	87010430	0.000259244	-0.324
492	MXE	MAPK10	4	-	87010358	87010430	0.030922296	-0.117
493	MXE	RIN2	20	+	19915742	19915843	0	0.138
494	MXE	FAM65C	20	-	49211905	49212041	0.000443168	-0.119



495	MXE	MYO15B	17	+	73587681	73587793	1.02E-07	0.176
496	MXE	MYO15B	17	+	73587696	73587793	0	-0.289
497	MXE	XAF1	17	+	6662574	6663037	2.04E-08	-0.169
498	MXE	ALDH16A1	19	+	49964875	49965057	0.048636673	0.142
499	MXE	SYCP2L	6	+	10907774	10907917	0.000584721	-0.107
500	MXE	PAX8	2	-	113984731	113984833	0.000108227	-0.285
501	MXE	SEMA4D	9	-	92020265	92020614	0.003802406	0.115
502	MXE	SEMA4D	9	-	92020265	92020614	0.000292673	0.103
503	MXE	NDUFB8	10	-	102269072	102269268	5.47E-05	-0.14
504	MXE	NDUFB8	10	-	102275852	102275976	0.001502953	-0.249
505	MXE	NDUFB8	10	-	102275852	102275976	0.001674279	-0.166
506	MXE	FHIT	3	-	59737946	59738047	8.90E-08	-0.184
507	MXE	LST1	6	+	31555417	31555510	0.018483204	-0.157
508	MXE	LRRC69	8	+	92145337	92145533	0.037289886	-0.243
509	MXE	MAP3K7	6	-	91271340	91271386	0	0.25
510	MXE	SORBS1	10	-	97106162	97106209	0.000447377	-0.191
511	MXE	NNMT	11	+	114133569	114133656	0.002844931	0.161
512	MXE	MASP1	3	-	186980330	186980508	0	0.207
513	MXE	PHF7	3	+	52456237	52456354	5.86E-07	-0.347
514	MXE	PHF7	3	+	52456237	52456354	0.008412648	-0.104
515	MXE	ENGASE	17	+	77079101	77079205	0.041061622	0.12
516	MXE	PRR5	22	+	45127614	45127701	0.029362686	0.137
517	MXE	DDO	6	-	110725976	110726153	0.008959582	-0.335
518	MXE	GSN	9	+	124043747	124043840	0	-0.121
519	MXE	GSN	9	+	124043747	124043840	0	-0.117
520	MXE	GSN	9	+	124044152	124044231	0	-0.13
521	MXE	GSN	9	+	124044152	124044231	0	-0.169
522	MXE	GSN	9	+	124044716	124044828	0	-0.304
523	MXE	GSN	9	+	124044716	124044828	0	-0.365
524	MXE	GSN	9	+	124044716	124044828	0.000215978	-0.223
525	MXE	GSN	9	+	124045596	124045670	0	-0.214

526	MXE	ITPK1	14	-	93460224	93460342	0.007618167	-0.106
527	MXE	EGFL7	9	+	139559143	139559237	0.000192326	0.145
528	MXE	RP11-130F10.1	4	+	178372628	178372744	0.002163283	-0.111
529	MXE	CEP170	1	-	243305668	243305765	2.53E-05	0.108
530	MXE	SFXN4	10	-	120919239	120919265	5.13E-05	0.12
531	MXE	BCAS3	17	+	58765380	58765556	0.012215739	-0.178
532	MXE	METAP1	4	+	99957104	99957162	0.026262509	-0.142
533	MXE	MS4A4A	11	+	60064669	60064798	1.46E-05	-0.191
534	MXE	ADCY10P1	6	+	41092223	41092559	0.004582288	0.13
535	MXE	SNHG14	15	+	25332613	25332746	0.001494782	0.125
536	MXE	SLC9A5	16	+	67293722	67293849	0.021879456	0.317
537	MXE	EDARADD	1	+	236590691	236590750	3.61E-05	0.276
538	MXE	HSPBP1	19	-	55777253	55777350	1.11E-05	0.117
539	MXE	VEZT	12	+	95617955	95618012	0.016796741	0.158
540	MXE	BCL2L12	19	+	50170278	50170418	0	0.156
541	MXE	OGFOD3	17	-	80369330	80369406	0.001141423	-0.317
542	MXE	OGFOD3	17	-	80369330	80369406	0.001558758	-0.307
543	MXE	OGFOD3	17	-	80369330	80369406	0.001081894	-0.341
544	MXE	IFT122	3	+	129207099	129207240	0.003713438	0.108
545	MXE	STAG3	7	+	99783822	99783919	0.02082438	0.126
546	MXE	LAMB1	7	-	107599693	107599925	0.01800766	0.105
547	MXE	DPH5	1	-	101460665	101460705	4.88E-12	-0.145
548	MXE	DPH5	1	-	101460665	101460705	0.000721062	-0.208
549	MXE	DPH5	1	-	101460665	101460705	0.000645597	0.154
550	MXE	DPH5	1	-	101460665	101460705	0.015558702	0.111
551	MXE	DPH5	1	-	101460665	101460705	0.000317718	0.147
552	MXE	DPH5	1	-	101460665	101460705	2.89E-07	0.134
553	MXE	DPH5	1	-	101460665	101460705	0	0.15
554	MXE	DPH5	1	-	101460665	101460705	0	0.343
555	MXE	DPH5	1	-	101467022	101467100	0	0.159
556	MXE	DPH5	1	-	101467022	101467143	0.001242142	0.148

557	MXE	DPH5	1	-	101467022	101467143	1.12E-08	0.193
558	MXE	DPH5	1	-	101467022	101467143	0.005363532	0.136
559	MXE	DPH5	1	-	101467022	101467143	1.67E-07	0.182
560	MXE	DPH5	1	-	101467022	101467143	0	0.15
561	MXE	DPH5	1	-	101487196	101487321	6.38E-09	-0.155
562	MXE	DPH5	1	-	101487196	101487321	0	-0.142
563	MXE	RUNX1	21	-	36259139	36259393	0.003347698	0.136
564	MXE	RUNX1	21	-	36259139	36259393	0.003729912	0.108
565	MXE	AFF3	2	-	100368682	100368763	2.23E-06	-0.148
566	MXE	CD47	3	-	107769424	107769449	1.00E-06	-0.162
567	MXE	TMEM120B	12	+	122211326	122211419	0.038455694	0.108
568	MXE	GCC2	2	+	109102966	109103104	2.17E-07	-0.122
569	MXE	GGCX	2	-	85783304	85783383	0.001731066	-0.104
570	MXE	GGCX	2	-	85783304	85783383	0.000947075	-0.113
571	MXE	ELOVL5	6	-	53152659	53152740	0.022078162	-0.188
572	MXE	BIN1	2	-	127808729	127808819	1.29E-05	0.163
573	MXE	RABGAP1L	1	+	174846529	174846743	4.47E-06	0.168
574	MXE	RABGAP1L	1	+	174846529	174846743	0.000384672	0.136
575	MXE	RP4-717I23.3	1	-	93802933	93803069	2.04E-08	0.101
576	MXE	MTRF1	13	-	41835826	41835961	8.98E-06	0.119
577	MXE	SLC26A6	3	-	48668656	48668739	0.010951737	0.125
578	MXE	CA9	9	+	35677786	35677853	3.48E-05	-0.131
579	MXE	NUMA1	11	-	71760464	71760585	0.00371415	0.104
580	MXE	LRRC37A2	17	+	44597577	44597649	0.000774123	0.122
581	MXE	UQCC1	20	-	33902490	33902568	0	0.27
582	MXE	UQCC1	20	-	33934966	33935075	0	0.179
583	MXE	COL4A6	X	-	107408599	107408716	0.006662725	-0.123
584	MXE	RP4-639F20.1	1	+	95397427	95397541	0.003841531	0.14
585	MXE	PADI4	1	+	17681027	17681182	0.009134163	0.107
586	MXE	ANKRD54	22	-	38229690	38229762	0.039886753	0.101
587	MXE	DSN1	20	-	35396371	35396445	0.045581672	-0.171

588	MXE	DSN1	20	-	35396371	35396445	0.048593466	-0.162
589	MXE	MDM2	12	+	69208382	69208469	2.74E-07	0.257
590	MXE	MDM2	12	+	69208382	69208469	0.025269543	0.243
591	MXE	POLN	4	-	2158514	2158580	0.021211181	-0.211
592	MXE	CTD-2583A14.9	19	-	58423427	58423554	0.000785225	0.361
593	MXE	RNF34	12	+	121840544	121840610	0	-0.134
594	MXE	CD44	11	+	35219667	35219793	0.000729071	0.138
595	MXE	CD44	11	+	35219667	35219793	2.03E-06	0.159
596	MXE	CD44	11	+	35219667	35219793	3.53E-13	0.103
597	MXE	CD44	11	+	35222628	35222742	0.02541289	0.161
598	MXE	CD44	11	+	35222628	35222742	0.004371253	0.205
599	MXE	CD44	11	+	35223217	35223334	0.046547547	0.154
600	MXE	UNC5B	10	+	73048714	73048747	0.000205638	0.154
601	MXE	CNOT2	12	+	70688016	70688074	0.016604917	0.149
602	MXE	CNOT2	12	+	70688016	70688074	0.028957149	0.139
603	MXE	ANKRD55	5	-	55412441	55412609	4.75E-06	0.234
604	MXE	FAM184A	6	-	119281933	119282028	0.043678096	-0.128
605	MXE	NFYC	1	+	41188879	41188946	0.023602375	0.153
606	MXE	SS18	18	-	23648457	23648521	0.000542132	0.237
607	MXE	SS18	18	-	23658039	23658124	0.014445552	0.254
608	MXE	SS18	18	-	23658974	23659089	0.042115985	-0.116
609	MXE	APBB2	4	-	41102655	41102767	0.016085768	-0.171
610	MXE	PPIL3	2	-	201750420	201750495	0.005862305	-0.122
611	MXE	GSTZ1	14	+	77791212	77791264	0.036716786	-0.114
612	MXE	POU2F1	1	+	167272710	167272811	2.05E-06	-0.171
613	MXE	TMEM180	10	+	104228043	104228089	0.019317042	-0.264
614	MXE	DCUN1D4	4	+	52757925	52758017	0.009746334	-0.152
615	MXE	B3GALNT1	3	-	160807731	160807850	0.002850233	-0.16
616	MXE	HSD17B7P2	10	+	38654837	38654939	5.31E-08	0.111
617	MXE	SEPSECS	4	-	25157658	25157817	2.18E-06	-0.104
618	MXE	TBC1D5	3	-	17549965	17550097	0.011064522	-0.123

619	MXE	ZNF10	12	+	133715784	133715835	0.00685189	0.132
620	MXE	GRN	17	+	42422898	42422973	0.03277836	0.195
621	MXE	RP11-222A11.1	10	+	67332692	67332814	0.013516713	-0.107
622	MXE	CROCC	1	+	17275293	17275421	0.007834621	-0.148
623	MXE	FAM195A	16	+	692119	692249	0.04994383	0.122
624	MXE	AC004158.2	16	-	72589163	72589225	4.68E-06	0.37
625	MXE	AC004158.2	16	-	72589163	72589225	0.000114232	0.12
626	MXE	SEMA3F	3	+	50212528	50212621	0.002588581	0.117
627	MXE	SREBF2	22	+	42295240	42295557	5.44E-05	0.21
628	MXE	GPATCH4	1	-	156568018	156568111	0.02205309	-0.14
629	MXE	ADAM15	1	+	155034051	155034122	4.48E-08	0.107
630	MXE	MOK	14	-	102732159	102732249	0.002772691	0.346
631	MXE	MOK	14	-	102732159	102732249	0.000871149	0.259
632	MXE	MEIS2	15	-	37187351	37187441	0.005825423	0.103
633	MXE	LIN9	1	-	226485419	226485514	0.013235161	-0.106
634	MXE	SLC25A35	17	-	8193171	8193302	0.029479994	-0.108
635	MXE	TMEM63C	14	+	77679788	77679851	3.02E-06	-0.284
636	MXE	PLEKHA4	19	-	49360678	49360753	0.041591676	-0.195
637	MXE	OGT	X	+	70767756	70767873	0.009177897	0.13
638	MXE	OGT	X	+	70767756	70767873	0.001868679	0.139
639	MXE	NINL	20	-	25477298	25477439	0.018136899	-0.203
640	MXE	ZNF561	19	-	9724696	9724779	0	0.2
641	MXE	TMEM116	12	-	112403398	112403563	0.027215607	0.228
642	MXE	RP11-420A23.1	14	+	129224116	129224190	0.000145664	-0.191
643	MXE	CIITA	16	+	11016263	11016347	0.013410441	-0.145
644	MXE	ALPK2	18	-	56196322	56196470	0.043438859	-0.128
645	MXE	ALPK2	18	-	56202065	56205456	5.75E-07	0.132
646	MXE	MDM1	12	-	68715126	68715226	4.52E-10	-0.122
647	MXE	MDM1	12	-	68715126	68715226	1.72E-10	0.104
648	MXE	HHAT	1	+	210686496	210686532	0.001239705	0.125
649	MXE	ZNF721	4	-	429558	429668	0.015077048	0.164

650	MXE	CREM	10	+	35468061	35468204	3.61E-08	0.108
651	MXE	CREM	10	+	35477127	35477316	0.040971069	0.144
652	MXE	AGBL3	7	+	134674000	134674061	0.009942607	-0.173
653	MXE	EPG5	18	-	43460039	43460188	0.037530068	0.106
654	MXE	LMO2	11	-	33886147	33886363	0	0.12
655	MXE	LMO2	11	-	33890891	33891132	2.18E-05	0.184
656	MXE	TAF1D	11	-	93464315	93464382	1.01E-06	-0.107
657	MXE	TAF1D	11	-	93464315	93464382	0.001234686	-0.128
658	MXE	GLUD1	10	-	88851327	88851380	0.017601676	0.143
659	MXE	OSBPL9	1	+	52221991	52222030	6.27E-12	-0.139
660	MXE	ZNF562	19	-	9770054	9770143	6.06E-07	-0.198
661	MXE	SLC25A13	7	-	95906507	95906650	0.017595318	-0.108
662	MXE	SEPT7P2	7	-	45763951	45765314	0.003430332	0.138
663	MXE	TANGO2	22	+	20040882	20041074	0.001234686	0.151
664	MXE	TANGO2	22	+	20040959	20041074	0.006346048	0.102
665	MXE	NASP	1	+	46060365	46060445	1.35E-11	-0.125
666	MXE	TPP2	13	+	103298643	103298740	0	-0.125
667	MXE	CAMTA2	17	-	4884972	4885037	0	0.133
668	MXE	CAMTA2	17	-	4884972	4885126	0	0.128
669	MXE	WDR27	6	-	170068077	170068281	0.013723386	0.108
670	MXE	SUN1	7	+	888054	888252	0.000386374	0.112
671	MXE	SUN1	7	+	889156	889240	5.02E-05	0.456
672	MXE	TPM2	9	-	35684728	35684804	3.12E-05	0.176
673	MXE	TSPAN14	10	+	82248972	82249070	1.24E-07	-0.154
674	RI	AC084018.1	12	-	122233172	122234148	2.10E-05	-0.184
675	RI	EP400NL	12	+	132588541	132589849	0.029680612	-0.235
676	RI	TECR	19	+	14674469	14674715	0.007952907	0.211
677	RI	FBXL6	8	-	145579959	145580373	0.018908039	-0.109
678	RI	FBXL6	8	-	145580649	145581162	6.70E-13	-0.149
679	RI	AP5Z1	7	+	4829462	4830222	1.41E-10	-0.293
680	RI	DZIP3	3	+	108366789	108367809	6.91E-12	0.235

681	RI	PCYT1A	3	-	195974237	195975194	6.30E-08	-0.254
682	RI	OXA1L	14	+	23239401	23239834	0	0.199
683	RI	CCDC78	16	-	772921	773936	0.021331035	0.302
684	RI	QTRT1	19	+	10822836	10823304	1.55E-13	-0.111
685	RI	TRIM69	15	+	45048565	45051052	0.006493659	0.331
686	RI	HERC2P9	15	+	28881632	28882253	4.07E-10	0.401
687	RI	HERC2P9	15	+	28886067	28886458	9.93E-05	0.209
688	RI	HERC2P9	15	+	28900418	28900837	1.78E-07	0.278
689	RI	PLCB2	15	-	40583465	40584125	0.000143242	-0.153
690	RI	MYH7B	20	+	33589750	33590240	0.002694136	0.146
691	RI	VARS2	6	+	30881981	30882814	3.23E-05	0.222
692	RI	NME3	16	-	1820881	1821411	0.000648263	-0.143
693	RI	B4GALT3	1	-	161146223	161146896	0.001751587	-0.185
694	RI	C1R	12	-	7244047	7245037	2.56E-11	-0.168
695	RI	TRIM66	11	-	8645905	8646775	0.003598308	-0.122
696	RI	MAP3K14-AS1	17	+	43344479	43344857	0.045524331	-0.208
697	RI	HAX1	1	+	154245811	154246437	0	-0.375
698	RI	RASAL3	19	-	15568102	15569237	0.000129519	-0.113
699	RI	ARSA	22	-	51065018	51065834	0.006511394	-0.115
700	RI	C19orf66	19	+	10201925	10202306	0.002247704	-0.264
701	RI	CALB1	8	-	91072856	91075381	1.39E-10	-0.484
702	RI	NICN1	3	-	49462381	49462871	0	-0.152
703	RI	HLA-DMA	6	-	32917387	32918580	8.86E-07	-0.12
704	RI	ADM	11	+	10327226	10327645	7.06E-07	-0.233
705	RI	FANK1	10	+	127697790	127698161	0.001820186	0.283
706	RI	NT5C3B	17	-	39991839	39992209	1.09E-05	-0.275
707	RI	DDX52	17	-	35979812	35981322	8.46E-06	-0.287
708	RI	EDC4	16	+	67915570	67916012	0.002226428	-0.121
709	RI	ADAM32	8	+	39022548	39027516	4.52E-07	-0.39
710	RI	WDR73	15	-	85189203	85189579	0.005696765	0.115
711	RI	TRMT6	20	-	5921698	5922682	0.007103751	0.101

712	RI	IZUMO4	19	+	2098434	2098803	0.017336908	-0.199
713	RI	TMEM91	19	+	41888676	41889988	0	-0.338
714	RI	CCDC24	1	+	44457518	44458059	0.001362052	0.309
715	RI	AMT	3	-	49454210	49455151	0	-0.283
716	RI	PPIE	1	+	40207566	40208969	0.001150187	0.206
717	RI	PGAP3	17	-	37829766	37830307	0.006511394	-0.101
718	RI	BRF1	14	-	105685487	105686467	3.84E-05	-0.236
719	RI	MAN2A2	15	+	91455272	91455894	1.09E-09	-0.129
720	RI	PPOX	1	+	161136889	161137276	0	-0.512
721	RI	TTC12	11	+	113186672	113187037	1.02E-06	-0.274
722	RI	CDK20	9	-	90584108	90585812	0.045395443	0.125
723	RI	MIR3654	11	-	62340055	62342380	0.04795471	-0.114
724	RI	IQSEC2	X	-	53295510	53296246	1.78E-07	0.139
725	RI	6-Mar	5	+	10400895	10402251	2.61E-07	-0.118
726	RI	RABGGTB	1	+	76255636	76255959	1.27E-10	0.105
727	RI	RASGRP4	19	-	38910499	38910902	7.84E-11	-0.109
728	RI	ECHDC2	1	-	53370705	53372283	0.004346019	-0.181
729	RI	DYNC1LI1	3	-	32571775	32574589	0.009336491	0.117
730	RI	DDX26B	X	+	134703261	134706958	0.000719075	-0.15
731	RI	NPAS2	2	+	101598692	101604738	0.00085883	-0.101
732	RI	GNB3	12	+	6950421	6950788	0.000228359	-0.157
733	RI	CPNE1	20	-	34220084	34220307	1.02E-05	-0.145
734	RI	GADD45B	19	+	2476353	2476628	1.08E-06	0.119
735	RI	ZNF311	6	-	28967263	28967824	0.000405757	-0.372
736	RI	CFH	1	+	196709748	196711181	7.62E-13	0.147
737	RI	RP11-1407O15	17	-	36361696	36365176	4.92E-07	-0.238
738	RI	ABTB1	3	+	127396307	127396686	2.04E-12	-0.135
739	RI	PSME2	14	-	24614918	24615449	0	-0.262
740	RI	SYTL1	1	+	27675888	27676256	0.001607671	-0.125
741	RI	CDK18	1	+	205492274	205492753	1.06E-07	-0.171
742	RI	C9orf89	9	+	95872849	95874571	0.019891129	-0.113



743	RI	ZNF160	19	-	53594665	53594973	0.015290608	-0.197
744	RI	IRF9	14	+	24633271	24634164	3.02E-08	-0.145
745	RI	MFAP4	17	-	19288411	19288767	0.007046082	-0.353
746	RI	HPN	19	+	35532625	35533426	1.14E-07	-0.24
747	RI	TMEM218	11	-	124972027	124972705	0	-0.444
748	RI	TMEM218	11	-	124972027	124972705	0.001618249	0.122
749	RI	TMEM218	11	-	124972027	124972705	0	-0.312
750	RI	MYO15A	17	+	18062588	18063331	0.014570588	-0.437
751	RI	CCDC57	17	-	80151631	80152015	0.010531239	0.139
752	RI	SGSM3	22	+	40804936	40805376	0.001474432	-0.111
753	RI	ZNF598	16	-	2052521	2053729	0.003119083	-0.322
754	RI	RBM25	14	+	73566374	73570186	0.035916195	-0.112
755	RI	CDK5RAP3	17	+	46050884	46051397	0.008143804	0.119
756	RI	CDK5RAP3	17	+	46051765	46052703	0	-0.127
757	RI	DUS1L	17	-	80019084	80019597	1.36E-06	0.124
758	RI	MXRA8	1	-	1289572	1289889	0.000533941	-0.257
759	RI	TCIRG1	11	+	67810412	67810964	1.62E-13	-0.273
760	RI	SYNM	15	+	99669571	99675770	0.000121875	-0.104
761	RI	RPRD1A	18	-	33605560	33607038	0	-0.822
762	RI	TNFRSF25	1	-	6522922	6523187	3.80E-06	-0.518
763	RI	EFHC1	6	+	52317485	52319085	3.11E-05	-0.205
764	RI	STEAP2	7	+	89861650	89866945	5.53E-06	-0.243
765	RI	MFSD10	4	-	2934326	2934936	7.21E-13	-0.115
766	RI	TMEM107	17	-	8079074	8079344	3.37E-05	-0.25
767	RI	TJAP1	6	+	43470325	43471246	4.51E-05	0.237
768	RI	CD46	1	+	207940357	207943707	0.00377896	-0.171
769	RI	USP34	2	-	61463160	61463524	0.000107012	-0.106
770	RI	PSMB9	6	+	32823914	32825911	3.20E-05	0.321
771	RI	PIDD	11	-	800761	801120	0.013152225	-0.101
772	RI	PRRG2	19	+	50086463	50086974	4.13E-05	0.298
773	RI	APBB3	5	-	139941171	139941434	0	-0.655

774	RI	APBB3	5	-	139941171	139941812	0	-0.278
775	RI	MINK1	17	+	4792941	4794030	0.004565796	-0.163
776	RI	NKTR	3	+	42661155	42663008	0.006203421	-0.157
777	RI	RPS7	2	+	3622914	3623274	0	-0.197
778	RI	YPEL4	11	-	57413769	57414267	0.004681061	0.158
779	RI	HSH2D	19	+	16263361	16264018	3.51E-07	0.148
780	RI	NELFE	6	-	31922331	31922873	1.37E-05	0.131
781	RI	CDCA3	12	-	6958486	6959022	6.29E-08	0.213
782	RI	STAG3	7	+	99786075	99786639	4.01E-06	-0.28
783	RI	C11orf49	11	+	47182677	47183798	4.76E-06	-0.299
784	RI	ATXN2L	16	+	28847253	28848558	3.26E-10	-0.117
785	RI	JMJD7-PLA2G4	15	+	42126937	42127421	5.30E-06	-0.159
786	RI	GORASP1	3	-	39141795	39142368	3.64E-11	-0.209
787	RI	AMBRA1	11	-	46563494	46564948	6.17E-06	0.147
788	RI	HAGHL	16	+	778793	779715	1.13E-05	-0.188
789	RI	HAGHL	16	+	779008	779715	0.005881555	-0.155
790	RI	NR2C1	12	-	95451506	95452265	0.000968845	-0.107
791	RI	PRDM5	4	-	121737607	121738079	4.93E-07	-0.227
792	RI	NLRC5	16	+	57061983	57062297	0.00150416	0.214
793	RI	MAPK12	22	-	50694043	50694628	0.0014364	-0.123
794	RI	TMEM175	4	+	941903	942403	0.023901385	-0.186
795	RI	LSR	19	+	35757581	35757870	0.007975998	-0.241
796	RI	LSR	19	+	35757581	35757870	0.010513023	-0.231
797	RI	P2RX6	22	+	21380708	21382296	0.008387582	-0.2
798	RI	SHMT2	12	+	57625993	57626358	0.000357563	-0.155
799	RI	ZSWIM8	10	+	75553904	75554397	1.22E-09	-0.109
800	RI	IFFO1	12	-	6657230	6657711	0.001426857	-0.119
801	RI	PCNXL2	1	-	233119881	233122286	0.012677069	0.175
802	RI	ULK3	15	-	75134620	75135017	1.08E-06	-0.186
803	RI	ULK3	15	-	75134620	75135017	8.15E-05	-0.183
804	RI	AP1G2	14	-	24031170	24031624	0	-0.13

805	RI	P2RX7	12	+	121614949	121615249	5.63E-09	-0.152
806	RI	PTBP1	19	+	804291	804702	4.51E-05	0.127
807	RI	CFB	6	+	31915721	31916289	0.000304835	-0.254
808	RI	ICAM3	19	-	10445741	10446652	0.003784879	0.134
809	RI	ICAM3	19	-	10449357	10449921	0.006392817	0.153
810	RI	SLCO1A2	12	-	21446878	21448726	0.003682099	-0.256
811	RI	PHLDB1	11	+	118514789	118515409	0.00575517	-0.118
812	RI	ORMDL1	2	-	190647147	190647849	5.60E-07	-0.132
813	RI	PTGES2	9	-	130884640	130885413	0.00027565	-0.122
814	RI	ERCC3	2	-	128046912	128047400	0	-0.329
815	RI	GPATCH4	1	-	156565872	156566270	0.023159579	-0.119
816	RI	COASY	17	+	40714168	40714505	0	-0.553
817	RI	PPP4R1L	20	-	56820838	56822562	0.012770081	-0.112
818	RI	MOK	14	-	102698871	102700126	0.001858603	-0.136
819	RI	DNHD1	11	+	6518814	6520191	0.0014364	0.151
820	RI	DNHD1	11	+	6577912	6579923	0.008904523	0.21
821	RI	DNHD1	11	+	6591238	6591626	0.032702201	0.254
822	RI	FANCI	15	+	89824995	89826481	0	-0.128
823	RI	MAP3K12	12	-	53880730	53881212	0.001843451	-0.269
824	RI	HCG18	6	-	30258782	30262741	0	-0.153
825	RI	IRF5	7	+	128587076	128587589	0.022034164	-0.112
826	RI	SNX32	11	+	65617390	65617742	1.97E-07	0.339
827	RI	ACCS	11	+	44099394	44100334	0.000142449	-0.124
828	RI	CIITA	16	+	11000355	11003044	0.000312306	0.259
829	RI	RFNG	17	-	80007552	80007882	1.01E-13	-0.171
830	RI	RFNG	17	-	80007552	80008431	6.54E-06	-0.189
831	RI	LEPREL2	12	+	6942755	6943213	3.24E-08	0.328
832	RI	SLC27A1	19	+	17597371	17598144	0.000922966	-0.114
833	RI	TMEM234	1	-	32680736	32681396	0.000206301	-0.267
834	RI	AHSA2	2	+	61412636	61413632	1.18E-09	-0.182
835	RI	A1BG-AS1	19	+	58865079	58866549	0.015072202	0.111

836	RI	ACP5	19	-	11688407	11689009	1.09E-06	0.225
837	RI	MX1	21	+	42793764	42794022	0.00576184	-0.262
838	RI	NID2	14	-	52472454	52473378	0	-0.109
839	RI	PPM1F	22	-	22279248	22280035	0.001618249	-0.229
840	RI	RSRC2	12	-	123003385	123005975	8.86E-06	-0.118
841	RI	SKIV2L	6	+	31928817	31929452	0.01367309	-0.111
842	RI	AFTPH	2	+	64806619	64808407	7.37E-05	-0.185
843	RI	CC2D1B	1	-	52823452	52824133	0.007291657	-0.108
844	RI	ZC3H14	14	+	89034201	89034497	0.000936542	-0.107
845	RI	CUTA	6	-	33384873	33385087	0.009754026	-0.14
846	RI	C7orf63	7	+	89929180	89934134	0.002030697	0.408
847	SE	MADD	11	+	47314093	47314147	0.016582748	-0.164
848	SE	RAPH1	2	-	204341798	204341879	0.002436989	-0.164
849	SE	AC084018.1	12	-	122240536	122240712	8.58E-09	-0.108
850	SE	SLC2A11	22	+	24209921	24210086	0	0.226
851	SE	SLC2A11	22	+	24224645	24224833	0.023549614	-0.142
852	SE	SLC2A11	22	+	24224681	24224833	0.013355821	-0.153
853	SE	WDR62	19	+	36562457	36562618	1.13E-13	-0.179
854	SE	HLCS	21	-	38318308	38318454	0.001375266	-0.248
855	SE	ISCU	12	+	108957835	108957931	1.13E-13	-0.114
856	SE	ISCU	12	+	108961695	108961792	0.001328551	-0.179
857	SE	TEX15	8	-	30732452	30732618	9.30E-09	-0.234
858	SE	FBXL6	8	-	145581116	145581162	0.000798604	0.118
859	SE	C19orf82	19	+	9737459	9737536	0.043240992	-0.105
860	SE	YTHDF3	8	+	64087895	64087975	0.044079415	0.115
861	SE	RBM26-AS1	13	+	79991969	79992051	0.000836394	0.131
862	SE	RALGAPA1	14	-	36017713	36017744	5.50E-09	-0.228
863	SE	TMEM214	2	+	27260657	27260760	0	0.192
864	SE	TMEM214	2	+	27260682	27260760	0	0.457
865	SE	TMEM214	2	+	27260682	27260760	0.01354739	0.178
866	SE	IL9R	X	+	155233341	155233520	0.02325258	-0.229

867	SE	MUTYH	1	-	45804178	45804328	0.003192757	0.287
868	SE	RAD52	12	-	1045972	1046048	0.001616415	-0.191
869	SE	CCT6B	17	-	33285578	33285713	0.002511621	0.145
870	SE	ZNF44	19	-	12404046	12404190	0.026074493	-0.187
871	SE	PDLIM2	8	+	22446810	22446887	1.49E-08	0.222
872	SE	POMT1	9	+	134385289	134385449	0.000468219	-0.16
873	SE	MDM4	1	+	204506557	204506625	0	-0.247
874	SE	MDM4	1	+	204506586	204506625	0	-0.331
875	SE	DST	6	-	56333779	56333797	0.000105517	-0.259
876	SE	RFX8	2	-	102018897	102019214	0.046397396	-0.137
877	SE	AC093415.2	3	-	37892914	37892983	1.22E-12	0.302
878	SE	DCAF16	4	-	17806729	17806848	0	-0.28
879	SE	RNF24	20	-	3954978	3955047	0.004105231	0.132
880	SE	TMCC1	3	-	129585852	129585941	0.049399625	-0.114
881	SE	ATP2A1	16	+	28903635	28903980	0.021773292	-0.115
882	SE	PMS2P3	7	-	75141632	75141747	0.006138127	0.101
883	SE	IFT88	13	+	21163949	21164006	8.76E-09	-0.182
884	SE	PLCB4	20	+	9076933	9076989	0.002934849	0.242
885	SE	SPP1	4	+	88898813	88899002	0.02590134	0.119
886	SE	SPP1	4	+	88898813	88899011	0.023535886	0.12
887	SE	FAM208B	10	+	5754356	5754502	0.035550696	-0.167
888	SE	FAM208B	10	+	5759621	5759713	1.04E-05	-0.116
889	SE	CLK1	2	-	201724847	201724938	0.016667092	0.12
890	SE	UBE2V1	20	-	48713019	48713071	0.001249118	0.168
891	SE	PARD3	10	-	34661425	34661464	4.02E-06	0.125
892	SE	DNAJC5	20	+	62562461	62562535	5.10E-05	0.102
893	SE	MKRN1	7	-	140173574	140173627	0.008076192	-0.114
894	SE	NDUFAF7	2	+	37469777	37469836	0.001790794	-0.204
895	SE	IQCJ-SCHIP1	3	+	159606608	159606732	0.03091184	0.117
896	SE	INMT-FAM188B	7	+	30891831	30891895	3.06E-07	-0.116
897	SE	PFKFB4	3	-	48585964	48586092	0.016332062	-0.237

898	SE	NAV1	1	+	201617761	201618553	0.002399389	0.132
899	SE	KB-1572G7.3	22	-	23974974	23975097	0.004833676	0.155
900	SE	TPM1	15	+	63353396	63353472	0	-0.167
901	SE	RPP14	3	+	58296016	58296133	0.000376841	0.135
902	SE	ASIC4	2	+	220396479	220396624	5.22E-05	0.211
903	SE	TPT1-AS1	13	+	45964848	45965037	0.017929692	-0.105
904	SE	TPT1-AS1	13	+	45964892	45965037	0.006123363	-0.126
905	SE	NHP2L1	22	-	42078359	42078591	0.027630371	0.111
906	SE	LRP8	1	-	53746258	53746387	0.01795609	0.113
907	SE	ZNF445	3	-	44492805	44492974	0.002692291	-0.166
908	SE	NFATC2IP	16	+	28967298	28967379	0.017253033	-0.108
909	SE	LINC01021	5	+	27476175	27476265	0	0.466
910	SE	LINC01021	5	+	27476175	27476265	6.24E-07	0.395
911	SE	PDCD2L	19	+	34895553	34895720	4.33E-07	-0.473
912	SE	PIEZO2	18	-	10682100	10682289	0.017874166	-0.12
913	SE	PIEZO2	18	-	10762919	10763096	0.000147537	-0.106
914	SE	KATNAL2	18	+	44572761	44572898	6.52E-09	0.262
915	SE	EXOSC9	4	+	122737298	122737349	0.035508886	-0.136
916	SE	GPX2	14	-	65408034	65408239	0.002235512	-0.427
917	SE	TMEM126A	11	+	85361355	85361385	0.02760949	-0.223
918	SE	ZNF195	11	-	3382972	3383119	3.54E-06	-0.134
919	SE	TP53TG1	7	-	86974358	86974549	0.002748372	0.13
920	SE	NUP214	9	+	134064439	134064518	0.001891679	0.173
921	SE	NUP214	9	+	134067594	134067679	6.36E-08	-0.111
922	SE	NUP214	9	+	134070619	134070681	4.06E-08	-0.119
923	SE	PALM	19	+	740351	740483	0.03034689	-0.22
924	SE	IQCH	15	+	67636400	67636529	0.000482819	0.264
925	SE	GMPR2	14	+	24703312	24703447	0.020086262	-0.138
926	SE	KEL	7	-	142658446	142658588	0	-0.151
927	SE	NEDD4L	18	+	56008909	56009029	0.000692217	-0.17
928	SE	CBWD2	2	+	114228609	114228666	0.000496374	-0.145

929	SE	IST1	16	+	71957993	71958184	0.001712628	-0.133
930	SE	ZNF185	X	+	152091263	152091353	2.34E-05	-0.185
931	SE	ENDOV	17	+	78391580	78391745	0.002275451	-0.271
932	SE	ENDOV	17	+	78391610	78391745	0.02135709	-0.162
933	SE	EVI5L	19	+	7921977	7922010	0.001307055	0.102
934	SE	CSPP1	8	+	68004037	68004118	0.001685298	-0.128
935	SE	ACIN1	14	-	23559190	23559310	1.01E-08	0.18
936	SE	C1orf54	1	+	150252053	150252152	1.43E-05	0.254
937	SE	ALG11	13	+	52593048	52593279	5.32E-07	0.139
938	SE	ALG11	13	+	52598141	52599073	4.82E-08	0.108
939	SE	ZNF707	8	+	144770163	144770237	2.89E-08	-0.17
940	SE	ZNF707	8	+	144773242	144773369	0.003970656	-0.108
941	SE	ZNF707	8	+	144773242	144773402	0.003367686	-0.109
942	SE	ZNF707	8	+	144774170	144774277	0.007006979	-0.134
943	SE	TEAD1	11	+	12696955	12697108	3.41E-06	-0.12
944	SE	STRADA	17	-	61803997	61804055	0.002708403	-0.111
945	SE	UGGT1	2	+	128913965	128913989	4.72E-07	-0.188
946	SE	IL10RA	11	+	117857321	117857528	2.90E-05	-0.112
947	SE	IL10RA	11	+	117857398	117857528	0.000305288	-0.118
948	SE	ANK1	8	-	41530033	41530430	1.03E-06	0.161
949	SE	SH3YL1	2	-	224863	224920	0.000253759	-0.165
950	SE	CARS2	13	-	111296411	111296529	3.03E-09	-0.106
951	SE	PLD4	14	+	105394009	105394203	0.00298916	0.108
952	SE	PLD4	14	+	105394015	105394203	0.008192213	0.186
953	SE	UPK3A	22	+	45683052	45683332	4.27E-05	0.102
954	SE	MICAL2	11	+	12270730	12270793	0.002922251	-0.102
955	SE	MICAL2	11	+	12277189	12277297	0.000218891	-0.282
956	SE	ECT2	3	+	172473272	172473365	0	0.509
957	SE	PGAP2	11	+	3844842	3844970	0.007914803	0.207
958	SE	BCAT2	19	-	49311012	49311493	0.003160737	0.191
959	SE	FGFR1	8	-	38287199	38287466	0.001922198	0.243

960	SE	PKD1	2	+	173427468	173427528	0.034506495	-0.179
961	SE	FAM166B	9	-	35563162	35563386	1.69E-07	-0.241
962	SE	CCDC18	1	+	93735903	93736371	0.023840858	0.111
963	SE	EPB41L3	18	-	5400967	5401042	0.030636018	0.282
964	SE	ZNRD1-AS1	6	-	30024867	30025494	0.03902823	0.108
965	SE	MTAP	9	+	21808805	21808999	0.010370474	-0.137
966	SE	GNAI2	3	+	50289051	50289175	0.045850703	-0.104
967	SE	INPP1	2	+	191213613	191213757	0.008260295	0.15
968	SE	DNAJC10	2	+	183604271	183604436	0.000171314	-0.147
969	SE	ADAM32	8	+	39068662	39068843	0.000417943	-0.287
970	SE	ZNF107	7	+	64129414	64129556	3.61E-06	-0.322
971	SE	RHBDD1	2	+	227704124	227704343	0.028348787	0.137
972	SE	PRR5L	11	+	36402069	36402138	0.001563007	-0.284
973	SE	CYP1B1-AS1	2	+	38358061	38358332	0.001354654	-0.291
974	SE	TOMM20	1	-	235282653	235282721	0.008344582	-0.171
975	SE	ZYG11A	1	+	53322669	53323421	0.000583147	-0.101
976	SE	KCNAB2	1	+	6101890	6101932	0.000118515	0.103
977	SE	SEMA3G	3	-	52474392	52474537	6.24E-07	0.214
978	SE	DHRS13	17	-	27229600	27229719	0.001913038	-0.134
979	SE	ZDHHC16	10	+	99213555	99213603	0.000555218	-0.126
980	SE	ZDHHC16	10	+	99213555	99213603	4.08E-06	-0.122
981	SE	ST3GAL6-AS1	3	-	98434493	98434621	5.20E-06	0.351
982	SE	BHLHB9	X	+	102002744	102002839	0.009192774	-0.189
983	SE	TMEM161B-AS	5	+	87577858	87577923	0.026839473	0.121
984	SE	TMEM161B-AS	5	+	87578573	87578683	0.000125905	-0.12
985	SE	P2RX5	17	-	3594249	3594321	0.006627192	0.223
986	SE	ARL5A	2	-	152666891	152667075	0.000948464	-0.247
987	SE	EPB41L1	20	+	34797409	34797820	3.50E-11	0.467
988	SE	CES4A	16	+	67040293	67040422	0.02392852	-0.169
989	SE	CES4A	16	+	67040293	67040422	2.73E-05	-0.263
990	SE	CES4A	16	+	67040647	67040720	0.02309855	-0.221



991	SE	STAT2	12	-	56742707	56742843	0.018298344	-0.124
992	SE	TNPO3	7	-	128681610	128681771	0.017790731	-0.166
993	SE	CDKL3	5	-	133644264	133644418	0.008072914	0.202
994	SE	CDKL3	5	-	133647982	133648071	1.19E-06	-0.377
995	SE	CDKL3	5	-	133655048	133655188	2.03E-08	-0.198
996	SE	STAG2	X	+	123224703	123224814	0	0.122
997	SE	C10orf128	10	-	50373249	50373328	0.039005647	-0.283
998	SE	ZMIZ2	7	+	44799749	44799827	2.25E-05	-0.219
999	SE	TTI1	20	-	36647406	36647546	0.000290186	-0.244
1000	SE	RP11-468E2.4	14	+	24633822	24634164	2.95E-09	0.117
1001	SE	DZANK1	20	-	18433258	18433326	1.42E-06	-0.257
1002	SE	CYB5R3	22	-	43042646	43042707	0.022957867	0.103
1003	SE	PTCHD3P1	10	+	29747202	29747449	0.031240838	-0.146
1004	SE	HP1BP3	1	-	21106842	21107033	2.65E-05	-0.108
1005	SE	RAD17	5	+	68667280	68667384	0.000307499	0.105
1006	SE	ZNF37A	10	+	38383858	38384152	0.000545716	-0.189
1007	SE	ARFGEF2	20	+	47557735	47557766	0.008634594	0.12
1008	SE	JUP	17	-	39929069	39929178	0.049389603	0.139
1009	SE	DLST	14	+	75349293	75349327	0	-0.324
1010	SE	DLST	14	+	75349293	75349327	0	-0.403
1011	SE	DLST	14	+	75352288	75352337	0	-0.114
1012	SE	PTGES3L-AAR	17	-	41131566	41131790	0.000136794	-0.125
1013	SE	FLNB	3	+	58117653	58117746	1.14E-09	-0.201
1014	SE	FLNB	3	+	58127584	58127623	0.000152037	0.152
1015	SE	FLNB	3	+	58127584	58127656	0.003990325	0.163
1016	SE	COMMD4	15	+	75632042	75632219	0	-0.104
1017	SE	UBA3	3	-	69120685	69120768	0.04026989	0.227
1018	SE	IQSEC2	X	-	53308745	53308841	2.19E-06	0.214
1019	SE	SEC63	6	-	108277168	108277310	0.004498111	-0.231
1020	SE	ANKMY1	2	-	241468453	241468926	0.002455109	0.148
1021	SE	YARS	1	-	33263192	33263239	0.008641968	0.22

1022	SE	MFF	2	+	228211941	228212100	1.84E-05	-0.123
1023	SE	MFF	2	+	228217229	228217289	8.26E-08	0.102
1024	SE	LTN1	21	-	30336898	30337088	0.037420477	0.17
1025	SE	SHF	15	-	45464344	45464516	0.014841096	0.139
1026	SE	DPEP2	16	-	68026412	68026539	9.22E-06	0.511
1027	SE	DPEP2	16	-	68026412	68026539	9.20E-12	0.456
1028	SE	PLAGL1	6	-	144306271	144306311	1.56E-06	0.125
1029	SE	PLAGL1	6	-	144306271	144306333	7.87E-05	0.297
1030	SE	SBF2-AS1	11	+	9801922	9802122	0.023352599	-0.179
1031	SE	CRLS1	20	+	6004025	6004068	0.016687436	-0.215
1032	SE	SFXN2	10	+	104476370	104476468	0.026803918	-0.167
1033	SE	S100A13	1	-	153602925	153603132	0.049090238	-0.148
1034	SE	SH3BP1	22	+	38051278	38051322	0.00482765	-0.235
1035	SE	URI1	19	+	30462099	30462134	2.59E-06	0.118
1036	SE	CARD8	19	-	48735709	48735750	7.39E-09	-0.144
1037	SE	CARD8	19	-	48735709	48736046	1.98E-07	-0.194
1038	SE	CARD8	19	-	48752779	48752890	0.00010519	-0.141
1039	SE	FAF2	5	+	175880318	175880703	0.00949075	-0.196
1040	SE	FAM104A	17	-	71208816	71208879	0.031537238	0.125
1041	SE	PRC1	15	-	91512308	91512350	2.63E-07	-0.134
1042	SE	PRC1	15	-	91512308	91512350	0.000265228	-0.112
1043	SE	PRC1	15	-	91512308	91512350	1.42E-06	-0.169
1044	SE	PRC1	15	-	91512308	91512350	0.020295017	-0.132
1045	SE	MATR3	5	+	138619219	138619290	0.018137499	0.28
1046	SE	AC007551.3	7	-	35795342	35795427	0.037055937	0.19
1047	SE	SIPA1L1	14	+	71867510	71867635	0.008374275	-0.313
1048	SE	SIPA1L1	14	+	71884846	71884913	0.005620631	-0.118
1049	SE	CTD-2313N18.5	11	-	71527955	71528142	0.004502606	-0.417
1050	SE	RP11-274B21.1	17	+	128218017	128218087	0	0.713
1051	SE	SLC16A2	X	+	73749047	73749276	6.48E-07	-0.176
1052	SE	YAF2	12	-	42629415	42629557	0.024124937	0.142

1053	SE	LETMD1	12	+	51445874	51445990	0.000380109	0.104
1054	SE	LETMD1	12	+	51445874	51446029	0.000136995	0.121
1055	SE	LETMD1	12	+	51447560	51447643	4.53E-10	-0.128
1056	SE	GNLY	2	+	85921875	85922119	0.000841077	0.252
1057	SE	GNLY	2	+	85922038	85922119	0.000634504	0.263
1058	SE	IL1RN	2	+	113879024	113879195	0.001362038	0.11
1059	SE	MUM1	19	+	1366303	1366380	0.007364062	-0.167
1060	SE	RP11-216L13.1	9	+	139703706	139703881	8.55E-05	0.152
1061	SE	ECHDC2	1	-	53372190	53372283	0.011839215	-0.105
1062	SE	ANAPC10	4	-	146018839	146018912	0.03887324	0.111
1063	SE	GPATCH2L	14	+	76644550	76644665	0.015008057	-0.221
1064	SE	TNC	9	-	117808688	117808961	0.000994389	-0.172
1065	SE	TNC	9	-	117819431	117819704	9.67E-07	-0.181
1066	SE	CNIH2	11	+	66048887	66049045	7.83E-06	-0.347
1067	SE	FAM13A	4	-	89726161	89726203	1.83E-08	-0.244
1068	SE	ANKRD18B	9	+	33540075	33540210	0.01715104	0.286
1069	SE	RP11-977G19.1	12	-	56704741	56704838	0.013686086	0.283
1070	SE	DOK1	2	+	74783020	74783205	0.02308429	-0.116
1071	SE	LCP1	13	-	46768158	46768240	7.84E-07	-0.319
1072	SE	CUTC	10	+	101510125	101510153	1.57E-08	-0.116
1073	SE	PPP1R13B	14	-	104204030	104204197	0.000693625	0.108
1074	SE	L3MBTL1	20	+	42159437	42159529	0.004686623	-0.13
1075	SE	RAPGEF2	4	+	160164925	160164943	1.17E-06	-0.119
1076	SE	RAPGEF2	4	+	160265187	160265211	0.008816679	0.132
1077	SE	BTBD19	1	+	45275884	45275921	0.002482301	-0.177
1078	SE	ELMOD3	2	+	85582198	85582293	3.16E-06	-0.162
1079	SE	RP4-800G7.2	7	+	148986638	148986817	0.001404725	-0.186
1080	SE	ADARB1	21	+	46540708	46540874	0.021593508	0.215
1081	SE	MPI	15	+	75189351	75189560	2.00E-09	-0.107
1082	SE	SH3BP5L	1	-	249114601	249115111	1.35E-05	0.152
1083	SE	UNC5CL	6	-	41000622	41000885	0.01799028	0.201

1084	SE	RP1-197B17.3	12	+	48113382	48113482	3.42E-05	-0.14
1085	SE	IL6R	1	+	154417522	154417570	0.038003506	0.137
1086	SE	ZNF142	2	-	219516423	219516545	9.82E-05	-0.212
1087	SE	ZNF142	2	-	219516423	219517023	0.000111884	-0.216
1088	SE	ZNF142	2	-	219523423	219523524	0.003837106	-0.237
1089	SE	ZNF142	2	-	219523423	219523524	1.56E-06	-0.232
1090	SE	ZNF142	2	-	219523423	219523599	2.26E-07	-0.197
1091	SE	ARFGAP2	11	-	47195309	47195391	0.000521382	-0.183
1092	SE	ARFGAP2	11	-	47195309	47195466	1.50E-06	0.217
1093	SE	NAF1	4	-	164079376	164079479	0.003406295	-0.159
1094	SE	LRRFIP1	2	+	238667371	238667464	0.001906635	0.249
1095	SE	GAS5	1	-	173833812	173833842	1.94E-06	0.102
1096	SE	DUS2	16	+	68059283	68059397	0.014197894	0.115
1097	SE	AC074286.1	2	-	178152212	178152562	0.000582703	0.103
1098	SE	CPNE1	20	-	34246851	34246936	0.038682162	0.113
1099	SE	GUSBP11	22	-	24032422	24032543	5.87E-05	-0.129
1100	SE	GUSBP11	22	-	24042912	24043032	2.08E-11	0.265
1101	SE	GUSBP11	22	-	24042912	24043032	0	0.488
1102	SE	TMEM126B	11	+	85342188	85342360	0.000234722	-0.101
1103	SE	COL2A1	12	-	48393701	48393908	1.81E-10	0.175
1104	SE	CACNA2D4	12	-	1919708	1919753	0.003640826	-0.137
1105	SE	KB-1507C5.4	8	+	104004477	104004635	1.68E-07	0.294
1106	SE	CAMLG	5	+	134079676	134079742	3.72E-10	0.108
1107	SE	CHFR	12	-	133446204	133446420	0.045835568	-0.114
1108	SE	MACF1	1	+	39844132	39844195	0.003302957	0.116
1109	SE	RNFT1	17	-	58037428	58037529	2.09E-06	-0.193
1110	SE	RNFT1	17	-	58039900	58039977	4.96E-09	-0.181
1111	SE	COPS7A	12	+	6834813	6834923	5.15E-06	0.218
1112	SE	ZNF655	7	+	99159510	99159596	3.65E-06	-0.127
1113	SE	ZNF655	7	+	99159510	99159596	0.001260472	-0.148
1114	SE	ZNF655	7	+	99159510	99159596	2.80E-07	-0.206

1115	SE	ZNF655	7	+	99159510	99159596	7.39E-07	-0.184
1116	SE	ZNF655	7	+	99159971	99160117	2.09E-06	-0.149
1117	SE	RBM6	3	+	50012755	50012825	0.000119376	-0.109
1118	SE	TERF1	8	+	73942570	73942630	0.017863791	0.108
1119	SE	C9orf3	9	+	97844856	97845001	0.026516254	-0.213
1120	SE	CBWD1	9	-	151130	151175	0.001580859	-0.13
1121	SE	CBWD1	9	-	151304	151427	3.72E-08	-0.132
1122	SE	FAM78A	9	-	134139970	134140014	0.001236758	0.163
1123	SE	INTS9	8	-	28719556	28719729	0.006626413	0.114
1124	SE	FNBP1	9	-	132686122	132686275	1.04E-10	0.128
1125	SE	GRHL1	2	+	10102583	10102660	0.000327475	0.418
1126	SE	RTFDC1	20	+	55045655	55045807	0.007388813	-0.209
1127	SE	RTFDC1	20	+	55045655	55045997	0.000553279	-0.24
1128	SE	SEC31B	10	-	102256891	102257037	3.56E-05	-0.147
1129	SE	SEC31B	10	-	102276630	102276717	0.023957693	-0.203
1130	SE	NBPF11	1	-	146055344	146055447	0.031947386	-0.189
1131	SE	RPRD2	1	+	150414356	150414434	8.45E-06	-0.123
1132	SE	EVC	4	+	5825343	5825547	0.003653559	0.141
1133	SE	RNH1	11	-	504823	504996	0.000180246	0.173
1134	SE	RNH1	11	-	504823	504996	0.02196374	0.102
1135	SE	RP11-10A14.4	8	+	9012475	9012586	0.000118515	-0.211
1136	SE	RP11-10A14.4	8	+	9012475	9012659	0.000240895	-0.29
1137	SE	GPR126	6	+	142704896	142704980	0.003640418	-0.309
1138	SE	ACPL2	3	+	140981084	140981182	0.014254113	-0.402
1139	SE	PLD3	19	+	40871459	40871492	0.042830288	-0.169
1140	SE	PLD3	19	+	40871459	40871492	4.29E-07	-0.203
1141	SE	PLD3	19	+	40871459	40871837	0	-0.118
1142	SE	PLD3	19	+	40871568	40871837	3.27E-13	-0.155
1143	SE	PLD3	19	+	40871624	40871837	0	-0.142
1144	SE	OCRL	X	+	128718320	128718344	7.44E-05	-0.104
1145	SE	MYNN	3	+	169491818	169491885	1.96E-05	0.105

1146	SE	MYNN	3	+	169501517	169501646	0.000702055	-0.176
1147	SE	TRMT2B	X	-	100296305	100296360	0.046880414	-0.116
1148	SE	TRMT2B	X	-	100306239	100306355	0.000130217	-0.348
1149	SE	TRMT2B	X	-	100306239	100306355	0.001607057	0.124
1150	SE	VWDE	7	-	12414635	12414853	0.000969233	0.157
1151	SE	PLSCR4	3	-	145918821	145918864	0.021645193	-0.211
1152	SE	CALM2	2	-	47399552	47399598	2.19E-05	0.172
1153	SE	CALM2	2	-	47399552	47399598	0.027540729	0.136
1154	SE	RP11-156P1.3	17	-	45131483	45131579	0.021088797	0.133
1155	SE	APOPT1	14	+	104029551	104029716	0.007666489	-0.289
1156	SE	ZNF548	19	+	57902089	57902213	0.001959817	-0.165
1157	SE	ZNF548	19	+	57902089	57902213	7.08E-05	-0.109
1158	SE	ZNF548	19	+	57904168	57904316	0.000676099	-0.161
1159	SE	ZDHHC19	3	-	195925659	195925745	0.040332226	-0.14
1160	SE	TMEM241	18	-	20945597	20945632	0.004930426	-0.239
1161	SE	TMEM241	18	-	20950179	20950225	0.003338591	-0.195
1162	SE	TMEM241	18	-	20951385	20951434	1.55E-05	-0.235
1163	SE	TMEM241	18	-	21010594	21010641	0.00340458	-0.108
1164	SE	CCDC91	12	+	28351875	28351989	0.037370365	0.352
1165	SE	AC137932.6	16	+	89390173	89390328	0.002229847	-0.2
1166	SE	POLL	10	-	103344634	103344676	0.036593179	-0.177
1167	SE	POLL	10	-	103344634	103344676	0.012235947	-0.106
1168	SE	PAPD7	5	+	6743824	6743953	1.05E-09	-0.109
1169	SE	ICA1	7	-	8267267	8267481	0	0.121
1170	SE	SNRPN	15	+	25212175	25212299	0	0.283
1171	SE	SNRPN	15	+	25212175	25212299	0	0.427
1172	SE	SNRPN	15	+	25212175	25212387	0	0.155
1173	SE	SNRPN	15	+	25212175	25212387	0	0.434
1174	SE	ULK4	3	-	41978786	41978832	0.017709709	-0.12
1175	SE	ABLIM3	5	+	148622053	148622101	0.002337557	0.11
1176	SE	GPR180	13	+	95271403	95271584	0.000147498	-0.161

1177	SE	SCHIP1	3	+	159603995	159606732	0.049090238	0.263
1178	SE	ZFX	X	+	24169807	24169917	0.028250887	-0.102
1179	SE	ARHGEF6	X	-	135760094	135760115	0	-0.179
1180	SE	RCOR3	1	+	211485696	211485829	0.000311241	-0.131
1181	SE	ZNF530	19	+	58117053	58119195	0.000994389	0.108
1182	SE	RP4-665J23.1	1	-	91297486	91297753	1.99E-06	-0.336
1183	SE	PTPRJ	11	+	48171541	48171550	0	-0.224
1184	SE	NSL1	1	-	212939530	212939615	0.001350771	0.134
1185	SE	PIWIL4	11	+	94337149	94337222	1.37E-05	0.234
1186	SE	PIWIL4	11	+	94341350	94341852	0.007771067	-0.151
1187	SE	PLEKHA6	1	-	204197210	204197356	0.001144325	-0.147
1188	SE	PDE8A	15	+	85619092	85619149	0.034065955	0.101
1189	SE	LDLRAD4	18	+	13484035	13484118	0.015069952	0.216
1190	SE	MRPS28	8	-	80940929	80941031	0.04359678	-0.149
1191	SE	MRPS28	8	-	80940929	80941031	0.001809796	-0.34
1192	SE	MRPS28	8	-	80940929	80941031	0.000109205	-0.12
1193	SE	TRIM16	17	-	15554404	15555260	9.98E-07	0.268
1194	SE	ALG8	11	-	77824931	77825035	0.005212399	-0.136
1195	SE	ALG8	11	-	77848287	77848691	0.039055898	0.135
1196	SE	SAMD9L	7	-	92776195	92776459	0.032155479	-0.232
1197	SE	CTDP1	18	+	77496354	77496521	0.025528377	-0.113
1198	SE	GGA1	22	+	38009125	38009198	0.001163009	0.148
1199	SE	FLVCR1	1	+	213061232	213061343	5.99E-08	-0.223
1200	SE	ZNF774	15	+	90898582	90898648	0.001296447	-0.177
1201	SE	PIKFYVE	2	+	209138744	209138777	0.005658178	0.116
1202	SE	FAM45A	10	+	120864275	120864534	0.000581747	-0.128
1203	SE	RP11-250B2.3	6	+	81163826	81163944	0.004630814	0.172
1204	SE	ITGA6	2	+	173366499	173366629	7.17E-09	-0.18
1205	SE	BRD9	5	-	868721	869234	2.95E-10	-0.26
1206	SE	BRD9	5	-	869359	869509	0	0.244
1207	SE	BRD9	5	-	869359	869509	0.004472895	0.105

1208	SE	BRD9	5	-	869359	869519	0	0.359
1209	SE	PHF21A	11	-	45967626	45967649	0.001198231	0.258
1210	SE	RP11-134O21	8	-	2579023	2579126	0.044663848	-0.118
1211	SE	STAG1	3	-	136310286	136310391	0.013602932	-0.111
1212	SE	RP11-295G20	1	-	231660171	231660293	0.002139849	-0.239
1213	SE	ZSCAN32	16	-	3440422	3440517	0.027471103	-0.142
1214	SE	MCTP1	5	-	94253600	94253678	0.001267747	0.152
1215	SE	MFSD12	19	-	3542773	3542975	0.002258251	0.146
1216	SE	PRPF4B	6	+	4062790	4062867	1.37E-05	-0.113
1217	SE	PRPF4B	6	+	4062790	4062994	0.000194368	-0.105
1218	SE	CA5B	X	+	15763753	15763833	0.000937513	-0.452
1219	SE	KDM8	16	+	27226196	27226329	0.025942225	-0.173
1220	SE	PCED1B-AS1	12	-	47600293	47600368	0.000448842	-0.194
1221	SE	PCED1B-AS1	12	-	47600293	47600371	0.000215894	-0.179
1222	SE	PCED1B-AS1	12	-	47603063	47603241	0.000721948	-0.193
1223	SE	PCED1B-AS1	12	-	47604422	47604540	0.010809222	-0.29
1224	SE	PCED1B-AS1	12	-	47604422	47604544	5.15E-05	-0.188
1225	SE	NAA16	13	+	41936866	41937009	7.40E-06	0.161
1226	SE	CD320	19	-	8369914	8370689	0.001580859	-0.131
1227	SE	MMP24-AS1	20	-	33863958	33864117	0.014868231	0.353
1228	SE	TMEM218	11	-	124972027	124972213	1.66E-05	-0.285
1229	SE	TMEM218	11	-	124972027	124972213	0.036249792	-0.15
1230	SE	TMEM218	11	-	124972027	124972247	0.026516254	-0.151
1231	SE	TMEM218	11	-	124980539	124980642	0.000105352	-0.354
1232	SE	GALNT10	5	+	153597588	153597709	0.00026735	0.116
1233	SE	PFDN5	12	+	53689622	53689725	0	-0.105
1234	SE	PFDN5	12	+	53690027	53690059	0	-0.125
1235	SE	PFDN5	12	+	53690213	53690335	8.25E-05	-0.209
1236	SE	BTBD10	11	-	13466570	13466728	2.27E-06	0.116
1237	SE	RREB1	6	+	7240670	7240835	0.002222981	0.118
1238	SE	IFI27L1	14	+	94563837	94564024	0.013590203	-0.169



1239	SE	IFI27L1	14	+	94563840	94564024	0.003806298	-0.154
1240	SE	TTC13	1	-	231079551	231079644	0.002484399	0.126
1241	SE	TTC13	1	-	231081134	231081200	0.013082511	-0.159
1242	SE	CEBPZ-AS1	2	+	37425636	37425815	0.031748298	0.154
1243	SE	LAS1L	X	-	64744443	64744494	0.000123031	-0.139
1244	SE	ANKAR	2	+	190575774	190575879	0.005373427	-0.383
1245	SE	ANKAR	2	+	190602408	190602567	0.000594086	-0.149
1246	SE	MLLT10	10	+	21860903	21860955	0.042502101	-0.197
1247	SE	NUCB2	11	+	17308180	17308260	0.031409657	0.164
1248	SE	PRSS36	16	-	31151999	31152078	0.01032122	-0.154
1249	SE	SGSM3	22	+	40797596	40797679	6.27E-06	-0.112
1250	SE	TLL5	14	+	76224173	76224212	0.00210004	-0.116
1251	SE	SLC9B2	4	-	103949903	103950040	0.001503183	-0.153
1252	SE	CLASP1	2	-	122160166	122160239	0.003589636	-0.238
1253	SE	ELAVL4	1	+	50663100	50663139	5.19E-07	0.32
1254	SE	TCEB1	8	-	74881794	74881908	0.000340363	0.147
1255	SE	GPBP1L1	1	-	46151247	46151292	9.11E-05	-0.143
1256	SE	CTD-2583A14.1	19	+	58331861	58331917	5.32E-05	-0.131
1257	SE	RBM4B	11	-	66433742	66433964	3.42E-09	-0.161
1258	SE	AKAP11	13	+	42887182	42887266	3.27E-13	-0.15
1259	SE	DDHD1	14	-	53518561	53518645	2.17E-07	-0.2
1260	SE	OGG1	3	+	9800917	9800970	0.003326289	-0.262
1261	SE	RPSAP58	19	+	23991520	23991616	0.000141017	0.131
1262	SE	AC092295.7	19	+	37085057	37085201	0.019884768	-0.117
1263	SE	SPATA20	17	+	48625025	48625315	0.001922198	0.125
1264	SE	PISD	22	-	32023988	32024196	0.001182643	-0.223
1265	SE	SEC31A	4	-	83752089	83752128	0.001804084	-0.143
1266	SE	ABI1	10	-	27047990	27048164	2.19E-10	-0.186
1267	SE	ABI1	10	-	27047990	27048167	6.33E-12	-0.172
1268	SE	VPS72	1	-	151145974	151146091	0.025684543	0.126
1269	SE	ITPA	20	+	3193964	3194072	0.01732585	-0.119

1270	SE	ITIH4	3	-	52848224	52848379	0.011754707	0.162
1271	SE	RP11-367G6.3	6	-	25015985	25016063	7.83E-06	-0.178
1272	SE	SUGP2	19	-	19102148	19102362	3.73E-07	-0.202
1273	SE	XAF1	17	+	6662574	6662838	7.28E-05	-0.105
1274	SE	XAF1	17	+	6665204	6665356	3.01E-09	-0.141
1275	SE	SPNS3	17	+	4351449	4351598	0.016193882	0.124
1276	SE	DIAPH1	5	-	140967790	140967817	8.92E-10	-0.101
1277	SE	DHX30	3	+	47860725	47860754	0.015319276	-0.159
1278	SE	ZNF226	19	+	44670857	44671035	0.008217318	0.183
1279	SE	MDGA2	14	-	47342635	47342794	0.010746276	0.105
1280	SE	MXRA8	1	-	1290829	1291132	3.73E-05	-0.149
1281	SE	LRIF1	1	-	111493909	111495437	6.73E-09	0.186
1282	SE	SLC16A11	17	-	6945314	6946082	4.46E-06	0.175
1283	SE	SLC16A6P1	17	+	62949794	62950611	0.003013545	0.102
1284	SE	SYCP2L	6	+	10903107	10903196	1.94E-05	-0.127
1285	SE	SYCP2L	6	+	10907774	10907917	0.000275215	-0.101
1286	SE	WIBG	12	-	56308059	56308150	0.000366336	-0.152
1287	SE	CAPS2	12	-	75716753	75716867	0.00075857	-0.341
1288	SE	CAPS2	12	-	75784101	75784161	0.039569646	-0.295
1289	SE	LMF1	16	-	981641	981793	0.011701159	-0.207
1290	SE	BCAS4	20	+	49457073	49457467	0.03707021	-0.219
1291	SE	CALML4	15	-	68491878	68492019	0.02162864	-0.131
1292	SE	TFIP11	22	-	26907084	26907161	0.000497412	0.115
1293	SE	RPRD1A	18	-	33620769	33620828	0.002083624	0.101
1294	SE	SLC37A3	7	-	140045668	140045770	0.014666778	-0.101
1295	SE	LRRC6	8	-	133627283	133627343	0.000943286	0.123
1296	SE	ZBED3-AS1	5	+	76394479	76394572	3.45E-06	0.382
1297	SE	ZBED3-AS1	5	+	76394479	76394572	0.003195652	-0.218
1298	SE	HDAC2	6	-	114283530	114283558	2.89E-08	-0.372
1299	SE	FOXRED1	11	+	126144825	126144916	8.92E-05	0.126
1300	SE	NDUFB8	10	-	102283733	102283896	0.001637188	0.164

1301	SE	RP1-130H16.18	22	-	30682251	30682365	0.012545835	0.114
1302	SE	SLC6A9	1	-	44476397	44476554	0.027257513	-0.119
1303	SE	SLC6A9	1	-	44476480	44476554	0.001425711	-0.189
1304	SE	FAM228B	2	+	24384375	24384483	3.11E-05	0.226
1305	SE	FAM228B	2	+	24384375	24384483	1.67E-05	-0.171
1306	SE	RP11-53O19.1	5	-	44785150	44785283	0.009244453	-0.14
1307	SE	ROBO3	11	+	124747832	124748027	0.019795123	0.187
1308	SE	PHLPP2	16	-	71718378	71718504	0.005241829	-0.121
1309	SE	TMEM107	17	-	8079276	8079344	0.044989235	-0.122
1310	SE	FHIT	3	-	61151247	61151501	1.63E-05	0.299
1311	SE	ARMCX4	X	+	100779190	100779419	0.003709681	-0.212
1312	SE	HSF4	16	+	67201205	67201305	0.039823301	0.273
1313	SE	AP2A2	11	+	1000431	1000598	0.001749422	-0.119
1314	SE	TSGA10	2	-	99770753	99770890	0.001468118	-0.302
1315	SE	SENP6	6	+	76350399	76350420	0.004733488	-0.115
1316	SE	SENP6	6	+	76350402	76350420	0.012589644	-0.103
1317	SE	FZD3	8	+	28357449	28357495	0.004498111	-0.157
1318	SE	RPS9	19	+	54710420	54710592	1.12E-06	-0.124
1319	SE	DCSTAMP	8	+	105352514	105352668	7.26E-06	0.132
1320	SE	SLC6A6	3	+	14519973	14520076	0.010099193	-0.17
1321	SE	LST1	6	+	31555417	31555510	0.029941206	-0.139
1322	SE	LST1	6	+	31555417	31555510	5.18E-05	-0.193
1323	SE	LST1	6	+	31555720	31555743	0.036205017	0.123
1324	SE	TNFSF12	17	+	7456903	7457142	0.031218757	-0.14
1325	SE	RAPGEF1	9	-	134480317	134480575	0.033756956	0.22
1326	SE	SULT1A2	16	-	28604572	28604667	0.018649959	0.106
1327	SE	PTPLA	10	-	17645558	17645647	0.036503044	-0.207
1328	SE	TLR10	4	-	38780591	38780672	2.30E-06	0.484
1329	SE	TSC22D4	7	-	100061585	100061652	0.000729144	-0.132
1330	SE	SORBS1	10	-	97110965	97111133	2.44E-05	-0.268
1331	SE	SORBS1	10	-	97110972	97111133	0.000218963	-0.259

1332	SE	NNMT	11	+	114167149	114167432	0.000115201	-0.185
1333	SE	ARPC4	3	+	9845219	9845391	0.001753253	-0.134
1334	SE	MASP1	3	-	187003612	187003865	0.000328811	-0.125
1335	SE	CIB2	15	-	78412909	78413003	0.001817102	-0.246
1336	SE	FAM81B	5	+	94782265	94782401	0.000198103	-0.101
1337	SE	PHF7	3	+	52456237	52456354	1.74E-07	-0.337
1338	SE	PHF7	3	+	52456237	52456354	0.014111396	-0.111
1339	SE	2-Sep	2	+	242256913	242257014	0.000829094	0.107
1340	SE	2-Sep	2	+	242256913	242257014	0.04941368	-0.176
1341	SE	2-Sep	2	+	242263823	242264077	0.010880245	-0.17
1342	SE	CATSPER2	15	-	43941924	43942077	0.001677046	0.113
1343	SE	BACH1-IT1	21	+	30733351	30733564	3.38E-07	-0.246
1344	SE	SAP30L	5	+	153832015	153832055	3.56E-06	-0.215
1345	SE	SAP30L	5	+	153832015	153832059	4.10E-06	-0.123
1346	SE	COPZ2	17	-	46105041	46105155	2.78E-10	-0.364
1347	SE	SPAG4	20	+	34205441	34205762	2.98E-05	0.196
1348	SE	SPAG4	20	+	34206371	34206642	9.67E-07	0.328
1349	SE	PARP3	3	+	51976945	51977062	4.68E-08	0.351
1350	SE	TYROBP	19	-	36398631	36398664	0	-0.149
1351	SE	HACL1	3	-	15628031	15628109	2.66E-05	0.337
1352	SE	PCBD2	5	+	134296275	134296388	5.20E-05	-0.228
1353	SE	SELENBP1	1	-	151341479	151341665	2.04E-07	-0.104
1354	SE	PRCD	17	+	74539884	74540452	3.68E-06	0.208
1355	SE	PRCD	17	+	74541611	74543454	1.15E-06	-0.367
1356	SE	PRCD	17	+	74541977	74542213	0.005522759	-0.501
1357	SE	LINC00664	19	+	21671112	21671258	0.001503183	-0.124
1358	SE	LINC00664	19	+	21671112	21671258	0.049970121	-0.109
1359	SE	PHF20L1	8	+	133811328	133811418	0	0.185
1360	SE	PHF20L1	8	+	133811340	133811418	0	0.15
1361	SE	KB-1572G7.2	22	-	24029017	24029182	1.44E-07	0.164
1362	SE	LRRC27	10	+	134179802	134180181	0.036476856	-0.129

1363	SE	CCDC14	3	-	123674892	123674962	2.00E-11	-0.322
1364	SE	CCDC14	3	-	123674892	123674962	0.000226383	-0.277
1365	SE	GSN	9	+	124044716	124044828	0	-0.336
1366	SE	GSN	9	+	124045596	124045670	0	-0.176
1367	SE	GSN	9	+	124062333	124062404	1.14E-12	0.391
1368	SE	GSN	9	+	124062333	124062404	0	0.172
1369	SE	GSN	9	+	124062333	124062404	0	0.33
1370	SE	GSN	9	+	124062333	124062404	0	0.306
1371	SE	GSN	9	+	124062333	124062404	0	0.366
1372	SE	GSN	9	+	124062333	124062404	3.51E-10	0.127
1373	SE	GSN	9	+	124062342	124062404	2.10E-12	0.392
1374	SE	GSN	9	+	124062342	124062404	0	0.107
1375	SE	CTBP2	10	-	126776759	126776888	3.27E-13	0.112
1376	SE	CTBP2	10	-	126811225	126811437	0.006600654	-0.212
1377	SE	TMEM135	11	+	86782564	86782657	0.025303209	-0.195
1378	SE	AC005154.6	7	-	30590933	30591095	0.021856885	-0.124
1379	SE	AC005154.6	7	-	30591715	30591795	0.030750864	-0.145
1380	SE	TIE1	1	+	43773466	43773595	6.33E-11	-0.118
1381	SE	TUBGCP4	15	+	43695880	43696040	0.000587531	-0.128
1382	SE	SEC22C	3	-	42605256	42605372	2.47E-12	-0.133
1383	SE	SEC22C	3	-	42605256	42605472	0	-0.181
1384	SE	MROH7-TTC4	1	+	55174686	55174749	0.001962389	-0.188
1385	SE	RP11-130F10.1	4	+	178372628	178372744	0.005772496	-0.148
1386	SE	RP11-130F10.1	4	+	178514625	178514700	0.026933985	0.328
1387	SE	RP11-130F10.1	4	+	178517614	178517685	1.37E-05	-0.29
1388	SE	FAM122C	X	+	133981912	133982001	0.002760736	-0.212
1389	SE	SFXN4	10	-	120920566	120920593	0.002926176	-0.117
1390	SE	MS4A4A	11	+	60070031	60070190	7.79E-05	-0.173
1391	SE	KCNC4	1	+	110774842	110775219	0.006119413	0.178
1392	SE	BBIP1	10	-	112667437	112667594	2.68E-07	-0.126
1393	SE	BBIP1	10	-	112677878	112677971	1.06E-09	-0.114

1394	SE	EDEM2	20	-	33804550	33804674	0.000104126	-0.207
1395	SE	PIGB	15	+	55616977	55617032	0.004350477	-0.162
1396	SE	TMPO	12	+	98938007	98938127	0	-0.105
1397	SE	TMPO	12	+	98938728	98938839	0	-0.111
1398	SE	RP11-407N17.3	14	+	39790131	39790260	1.30E-09	-0.15
1399	SE	ANKRD36	2	+	97830133	97830206	0.013539872	-0.228
1400	SE	ITGB2-AS1	21	+	46347539	46347582	6.84E-07	0.135
1401	SE	CDC42SE1	1	-	151029126	151029262	0.000537326	-0.145
1402	SE	CDC42SE1	1	-	151029131	151029262	0.000460799	-0.145
1403	SE	ZNF415	19	-	53618462	53618560	0.012580708	-0.155
1404	SE	DNAJC8	1	-	28526663	28526743	0.013663013	-0.392
1405	SE	RPL26	17	-	8285315	8285408	0.00046662	0.289
1406	SE	ZNF429	19	+	21688786	21688882	0.015813637	0.218
1407	SE	RP11-324I22.4	10	-	35624855	35624978	6.06E-06	0.359
1408	SE	C14orf93	14	-	23470167	23470246	0.002578454	0.281
1409	SE	C14orf93	14	-	23474273	23474339	0.000728588	-0.234
1410	SE	TM7SF3	12	-	27136425	27136529	7.11E-05	-0.262
1411	SE	AP1S2	X	-	15851566	15851647	0.000127443	-0.191
1412	SE	MICAL3	22	-	18305712	18305826	0.000211638	-0.207
1413	SE	ZNF140	12	+	133657858	133657915	0.013631626	-0.108
1414	SE	HKR1	19	+	37837324	37837394	0.006492428	-0.132
1415	SE	ATP11C	X	-	138813809	138813914	0.001135356	-0.131
1416	SE	MLLT3	9	-	20380204	20380325	0.016755568	-0.126
1417	SE	MRPL33	2	+	27997290	27997397	3.54E-12	-0.106
1418	SE	MRPL33	2	+	28005438	28005561	0.002708403	-0.31
1419	SE	FOXRED2	22	-	36900144	36900414	1.76E-06	-0.15
1420	SE	YPEL4	11	-	57414945	57415159	3.78E-05	0.219
1421	SE	ATP8A1	4	-	42596305	42596379	1.98E-07	-0.231
1422	SE	GABRE	X	-	151127435	151127621	2.37E-07	-0.129
1423	SE	APP	21	-	27369674	27369731	0.000462879	0.124
1424	SE	PRR4	12	-	11035150	11035297	0.001445591	0.148

1425	SE	RP4-539M6.19	22	+	30811747	30811854	0.031506936	0.162
1426	SE	STXBP5-AS1	6	-	147440552	147440613	0.020799846	-0.166
1427	SE	RTN2	19	-	45992603	45992811	0	-0.157
1428	SE	VEZT	12	+	95635939	95636090	0.016225907	-0.31
1429	SE	VEZT	12	+	95652020	95652058	0.002692291	-0.107
1430	SE	CEACAM1	19	-	43023099	43023387	3.98E-07	-0.197
1431	SE	FAM227B	15	-	49912330	49912387	0.000107704	0.108
1432	SE	AC093388.3	2	+	191400606	191400713	0.008335988	0.101
1433	SE	DPY19L1P1	7	-	32630490	32630616	2.16E-06	-0.157
1434	SE	DPY19L1P1	7	-	32632795	32632918	3.14E-06	-0.18
1435	SE	BCL2L12	19	+	50170275	50170418	0	0.101
1436	SE	BCL2L12	19	+	50170278	50170418	0	0.148
1437	SE	C8orf44	8	+	67592627	67592693	0.021856885	-0.12
1438	SE	ATF2	2	-	175939727	175939815	0.004105231	-0.195
1439	SE	UBP1	3	-	33450181	33450289	0.015425356	-0.111
1440	SE	IFT122	3	+	129210983	129211037	1.60E-11	-0.162
1441	SE	AMPD2	1	+	110163535	110163888	0.005225941	0.122
1442	SE	AMPD2	1	+	110164806	110164975	0.005204981	-0.183
1443	SE	TRMT11	6	+	126327987	126328100	0.001332847	-0.133
1444	SE	C11orf54	11	+	93475128	93475260	0.000954376	-0.126
1445	SE	RP11-334C17.5	17	-	78178297	78178395	0.02567582	-0.172
1446	SE	RP11-334C17.5	17	-	78178297	78178416	0.020906244	-0.119
1447	SE	ZNF236	18	+	74667940	74668138	0.040667264	-0.136
1448	SE	CAST	5	+	96062497	96062563	0	0.117
1449	SE	DPH5	1	-	101458192	101458296	0	-0.131
1450	SE	DPH5	1	-	101479265	101479374	0	-0.103
1451	SE	DPH5	1	-	101488490	101488885	0.010414267	-0.215
1452	SE	DPH5	1	-	101490864	101491022	0	-0.143
1453	SE	HMMR	5	+	162894709	162894754	0.008130363	-0.103
1454	SE	TBC1D32	6	-	121451014	121451070	0.010896228	-0.182
1455	SE	HNRNPA2B1	7	-	26230612	26230748	0	-0.245

1456	SE	LINC00954	2	+	20070162	20070307	0.029343944	-0.166
1457	SE	ABCB7	X	-	74334588	74334666	0.00534633	0.115
1458	SE	ABCB7	X	-	74334588	74334669	0.004831068	0.116
1459	SE	CRYZ	1	-	75172786	75172888	0.001213321	-0.111
1460	SE	LRRC7	1	+	70509636	70509777	5.46E-08	-0.227
1461	SE	PHKA2	X	-	18917290	18917344	1.59E-09	-0.211
1462	SE	PHKA2	X	-	18918787	18918817	0.018692425	-0.126
1463	SE	TMEM14C	6	+	10724788	10724866	4.37E-12	0.139
1464	SE	TMEM14C	6	+	10724788	10724866	0	0.331
1465	SE	MAP3K15	X	-	19432377	19432450	0.003032384	-0.127
1466	SE	ATP7B	13	-	52534283	52534458	0.000307499	-0.14
1467	SE	GLIPR2	9	+	36146108	36146212	0.006627192	-0.134
1468	SE	ARL15	5	-	53603717	53603776	0.002423799	0.221
1469	SE	FBP1	9	-	97401422	97401616	0.010347693	-0.203
1470	SE	PDPR	16	+	70165204	70165322	0.004034357	0.118
1471	SE	GORASP1	3	-	39142237	39142368	1.72E-06	-0.167
1472	SE	CCDC163P	1	-	45962975	45963055	0.000637278	-0.179
1473	SE	DDX59	1	-	200623568	200623678	0.000270906	0.33
1474	SE	DDX59	1	-	200623568	200623710	0.000156316	0.307
1475	SE	LONRF3	X	+	118120887	118121043	0.01799028	-0.173
1476	SE	CD47	3	-	107774366	107774413	0.033747312	-0.115
1477	SE	CD47	3	-	107778298	107778391	5.54E-06	-0.323
1478	SE	CENPBD1P1	19	+	59097521	59097723	0.000157711	0.12
1479	SE	CENPBD1P1	19	+	59102864	59102991	0.009486958	0.502
1480	SE	AP3M2	8	+	42011995	42012054	0.000447552	-0.117
1481	SE	PRMT2	21	+	48081711	48081848	0.005533211	-0.17
1482	SE	PCNXL4	14	+	60574303	60575045	0.001232591	-0.123
1483	SE	ALAS2	X	-	55050189	55050300	0.021909292	0.131
1484	SE	RRBP1	20	-	17660643	17660720	0.049090238	0.11
1485	SE	SEMA4B	15	+	90744689	90744967	0.035848454	0.187
1486	SE	ARL1	12	-	101796919	101797033	0.000752303	-0.407



1487	SE	NDUFA3	19	+	54608903	54609010	0.021773292	-0.173
1488	SE	MXRA7	17	-	74679928	74680009	0	0.112
1489	SE	ISOC2	19	-	55967002	55967212	0.001280858	-0.156
1490	SE	ISOC2	19	-	55967002	55967212	0.037950781	-0.121
1491	SE	CPT1B	22	-	51012236	51012350	0.017088886	-0.115
1492	SE	RAD1	5	-	34913574	34913683	6.53E-07	-0.113
1493	SE	BIN1	2	-	127815048	127815177	0.008130363	0.188
1494	SE	BIN1	2	-	127815048	127815177	4.14E-08	0.275
1495	SE	PPIA	7	+	44838990	44839079	0.00866695	0.187
1496	SE	RABGAP1L	1	+	174846529	174846743	3.73E-05	0.209
1497	SE	MRPS6	21	+	35475133	35475207	0.045823298	0.169
1498	SE	RP4-717123.3	1	-	93790191	93790286	0.007586789	0.136
1499	SE	TVP23C-CDRT4	17	-	15343524	15343599	0.026097047	-0.211
1500	SE	TVP23C-CDRT4	17	-	15406411	15406546	0.009258806	-0.115
1501	SE	DNAJC4	11	+	63999981	64000086	0.012092442	-0.122
1502	SE	MTRF1	13	-	41835826	41835961	2.82E-06	-0.112
1503	SE	LY6G6C	6	-	31688729	31688840	0.028668389	-0.304
1504	SE	ANKS3	16	-	4776659	4776777	0.015606677	-0.195
1505	SE	ANKS3	16	-	4776659	4776781	0.00784673	-0.16
1506	SE	ANKS3	16	-	4776979	4777178	0.003186824	-0.212
1507	SE	EMR2	19	-	14877789	14877921	0.015019193	0.13
1508	SE	SYNE1	6	-	152466621	152466690	0.021593508	-0.18
1509	SE	C2orf76	2	-	120097734	120097937	6.78E-06	0.311
1510	SE	MAP7D2	X	-	20068941	20069064	0.008015371	-0.225
1511	SE	CCDC150	2	+	197584897	197584958	0.017481118	0.139
1512	SE	ATG4B	2	+	242592721	242592784	0	-0.11
1513	SE	NUMA1	11	-	71723446	71723488	0.022455593	-0.213
1514	SE	PROS1	3	-	93647545	93647641	0	0.38
1515	SE	C4orf36	4	-	87811200	87811311	9.17E-07	-0.32
1516	SE	FAHD2B	2	-	97757599	97757725	0.048284853	-0.114
1517	SE	FAM200B	4	+	15686472	15686582	3.04E-11	0.23

1518	SE	FAM200B	4	+	15686472	15686582	2.34E-05	0.12
1519	SE	FAM200B	4	+	15686508	15686582	6.53E-08	0.197
1520	SE	RP11-267N12.3	1	-	163278333	163278421	0.003406295	-0.155
1521	SE	ZNF334	20	-	45140720	45140779	3.38E-07	0.151
1522	SE	FDFT1	8	+	11660599	11660734	0.034600299	-0.132
1523	SE	SS18L1	20	+	60729336	60729521	0.012157555	-0.111
1524	SE	UQCC1	20	-	33934503	33934550	0.002604958	-0.308
1525	SE	ERVK13-1	16	-	2719411	2719562	0.00046662	-0.299
1526	SE	SLC30A6	2	+	32402545	32402665	0.008985877	-0.115
1527	SE	SLC30A6	2	+	32431954	32432002	0.040495149	0.233
1528	SE	SULF2	20	-	46288142	46288196	5.02E-11	-0.114
1529	SE	RP11-321F6.1	15	+	66956699	66956790	3.55E-08	-0.168
1530	SE	RANBP17	5	+	170343468	170343588	0.003463172	-0.146
1531	SE	RANBP17	5	+	170343468	170343588	0.0002715	-0.143
1532	SE	CAMK2G	10	-	75585078	75585105	0.02196374	-0.116
1533	SE	TBC1D17	19	+	50382579	50382761	0	-0.129
1534	SE	PRDM5	4	-	121675707	121675793	0.004328496	0.189
1535	SE	TTLL3	3	+	9859328	9859443	0.036138827	-0.133
1536	SE	TTLL3	3	+	9859328	9860604	7.83E-06	-0.117
1537	SE	TTLL3	3	+	9860238	9860604	2.81E-05	-0.142
1538	SE	TTLL3	3	+	9860238	9860604	0.012250566	-0.112
1539	SE	TTLL3	3	+	9860505	9860604	0.013876451	-0.191
1540	SE	HHLA2	3	+	108047116	108047194	1.58E-05	0.105
1541	SE	ZNF417	19	-	58426932	58427033	0.005690376	0.219
1542	SE	DSN1	20	-	35399275	35399380	5.50E-09	-0.17
1543	SE	DCUN1D2	13	-	114138154	114138511	0.001201782	-0.11
1544	SE	MPZL1	1	+	167745300	167745403	0.000142937	0.206
1545	SE	TRA2A	7	-	23570799	23570889	4.42E-06	0.109
1546	SE	CUL7	6	-	43015684	43015727	0.000291575	-0.16
1547	SE	COA1	7	-	43690210	43690311	2.06E-05	-0.107
1548	SE	COA1	7	-	43690210	43690311	0.045033161	-0.106

1549	SE	MDM2	12	+	69208382	69208469	0.017184962	0.118
1550	SE	MIR4435-1HG	2	-	112108184	112108338	0.00085289	0.134
1551	SE	EIF3H	8	-	117746515	117746563	7.04E-06	0.187
1552	SE	TIAL1	10	-	121339982	121340050	0.003329446	-0.171
1553	SE	TIAL1	10	-	121339982	121340358	0.024380543	-0.158
1554	SE	RAD51AP1	12	+	4654947	4654998	0	0.134
1555	SE	RAD51AP1	12	+	4654947	4654998	0.041529924	0.169
1556	SE	RAD51AP1	12	+	4654947	4654998	4.33E-06	0.186
1557	SE	NEDD1	12	+	97301381	97301634	0.001233812	-0.13
1558	SE	NUP50	22	+	45567689	45567918	0.048475432	-0.121
1559	SE	GAK	4	-	853149	853281	0.030890975	-0.105
1560	SE	RNF34	12	+	121842651	121842916	0	0.188
1561	SE	SLC16A4	1	-	110925455	110925588	1.18E-05	-0.184
1562	SE	PLA2G6	22	-	38524275	38524437	0.023946673	-0.112
1563	SE	CCDC180	9	+	100090301	100090428	0.012407649	0.137
1564	SE	N6AMT2	13	-	21311861	21311944	0.009531434	0.105
1565	SE	CANT1	17	-	76996181	76996352	1.15E-05	0.204
1566	SE	FRAS1	4	+	79387361	79387589	0.000193987	-0.239
1567	SE	ZNF225	19	+	44633194	44633251	9.81E-09	0.107
1568	SE	CD44	11	+	35219667	35219793	0.009117821	0.155
1569	SE	CD44	11	+	35223217	35223334	0.00026074	0.235
1570	SE	CD44	11	+	35229651	35229753	0.023840858	-0.128
1571	SE	CD44	11	+	35229651	35229753	0.007849466	-0.148
1572	SE	CD44	11	+	35229651	35229753	4.64E-05	-0.147
1573	SE	CD44	11	+	35229651	35229756	0.011200231	-0.262
1574	SE	CD44	11	+	35229651	35229756	5.86E-05	-0.159
1575	SE	CD44	11	+	35232792	35232996	1.68E-11	-0.113
1576	SE	DONSON	21	-	34954470	34954552	5.79E-09	-0.114
1577	SE	DONSON	21	-	34955793	34955972	1.64E-08	-0.127
1578	SE	KIF21A	12	-	39724043	39724064	9.73E-12	0.286
1579	SE	CNOT2	12	+	70691538	70691659	0.028166937	-0.192

1580	SE	FAM184A	6	-	119295592	119295739	1.73E-07	-0.146
1581	SE	HDLBP	2	-	242208615	242208710	0.046757941	-0.111
1582	SE	HDLBP	2	-	242208620	242208710	0.019954951	-0.261
1583	SE	GABARAPL1	12	+	10366434	10366573	0.000251124	0.168
1584	SE	GABARAPL1	12	+	10366672	10366786	5.31E-05	0.182
1585	SE	AD000671.6	19	-	36236025	36236113	0.010517713	-0.123
1586	SE	SNRPA1	15	-	101833497	101833598	2.02E-07	-0.382
1587	SE	RPS6KC1	1	+	213403839	213403887	0.001796101	-0.134
1588	SE	QTRTD1	3	+	113775845	113775953	4.79E-05	0.127
1589	SE	MORN3	12	-	122090980	122091165	0.020266077	0.213
1590	SE	PPM1M	3	+	52280989	52281244	0.002704461	-0.159
1591	SE	APBB2	4	-	40937093	40937156	2.20E-11	0.148
1592	SE	DYSF	2	+	71776479	71776521	0.010158887	-0.118
1593	SE	SLC38A6	14	+	61519066	61519703	0.00436679	-0.196
1594	SE	MFSD6	2	+	191369721	191369847	0.000380646	-0.241
1595	SE	ACCSL	11	+	44074211	44074309	0.011839215	-0.223
1596	SE	NAP1L1	12	-	76467982	76468019	0.008005889	-0.102
1597	SE	AC092835.2	2	+	95877940	95878030	0.048309147	-0.113
1598	SE	HGD	3	-	120363165	120363290	6.89E-07	0.128
1599	SE	TESPA1	12	-	55377777	55377950	7.47E-08	0.224
1600	SE	PPIL3	2	-	201747064	201747105	2.35E-08	-0.169
1601	SE	PPIL3	2	-	201747064	201747158	1.27E-11	-0.13
1602	SE	ZNF682	19	-	20125983	20126075	0.001375266	-0.202
1603	SE	IDNK	9	+	86242921	86243126	0.014775767	0.25
1604	SE	IDNK	9	+	86243095	86243126	0.000427396	0.205
1605	SE	FGFR1OP	6	+	167426995	167427055	4.20E-09	-0.161
1606	SE	SAR1A	10	-	71922445	71922515	0.000710252	-0.121
1607	SE	RBBP7	X	-	16870673	16870751	0.026264014	-0.163
1608	SE	TMEM191A	22	+	21057117	21057181	0.036222143	-0.136
1609	SE	LRP5	11	+	68213040	68213154	2.15E-06	0.138
1610	SE	GTF2H2C	5	+	68863553	68863604	5.15E-09	-0.234

1611	SE	PFN4	2	-	24345288	24345417	0.000104319	0.25
1612	SE	APLP1	19	+	36368983	36369010	0.026604478	-0.17
1613	SE	APLP1	19	+	36368986	36369010	0.004421498	-0.121
1614	SE	C4orf21	4	-	113550914	113551171	0.000105619	-0.447
1615	SE	DENND5B	12	-	31652539	31652605	0.026066513	-0.199
1616	SE	CDR2	16	-	22433481	22433535	0.000821115	-0.245
1617	SE	ATP2A3	17	-	3831274	3831332	1.52E-07	-0.186
1618	SE	MBP	18	-	74809206	74809430	0.00053998	-0.195
1619	SE	RP11-640M9.2	1	+	144617149	144617252	0.035365	-0.102
1620	SE	ULK3	15	-	75134875	75135015	3.87E-10	0.138
1621	SE	CD276	15	+	73989936	73990043	0.023922467	-0.138
1622	SE	DCUN1D4	4	+	52753288	52753410	1.37E-06	-0.113
1623	SE	COL6A3	2	-	238287278	238287878	0.000379235	0.138
1624	SE	CCNL2	1	-	1328058	1328183	8.90E-07	-0.159
1625	SE	CCNL2	1	-	1328169	1328183	2.65E-05	-0.116
1626	SE	TNIP2	4	-	2746423	2746672	4.38E-05	-0.118
1627	SE	ABCC5	3	-	183703091	183703243	2.65E-07	0.11
1628	SE	EPB41L2	6	-	131201283	131201346	0.000783218	0.153
1629	SE	TMEM44	3	-	194337498	194337620	0.029718517	-0.195
1630	SE	GK5	3	-	141905035	141905109	0.001426812	-0.205
1631	SE	TMEM50B	21	-	34809189	34809299	0.018248265	-0.109
1632	SE	RP11-342M1.3	1	-	43310181	43310281	4.51E-06	-0.15
1633	SE	TRPV3	17	-	3424266	3424333	4.36E-06	-0.178
1634	SE	TRPV3	17	-	3427491	3427657	3.90E-06	-0.307
1635	SE	TRPV3	17	-	3430147	3430221	1.72E-05	-0.147
1636	SE	RGS10	10	-	121274894	121274967	1.71E-10	0.192
1637	SE	GCKR	2	+	27722008	27722075	0.0182231	-0.271
1638	SE	SUMF2	7	+	56141806	56141911	0	-0.166
1639	SE	SUMF2	7	+	56146614	56146732	0.001125848	-0.228
1640	SE	RBPJ	4	+	26364067	26364250	0.000154248	-0.105
1641	SE	STAG3L2	7	-	74299833	74299941	0.010239796	-0.157

1642	SE	PACRGL	4	+	20703380	20703507	0.00351369	0.495
1643	SE	PACRGL	4	+	20703763	20703844	2.11E-06	0.158
1644	SE	PACRGL	4	+	20703763	20703844	0.007675015	0.17
1645	SE	PACRGL	4	+	20709425	20709493	0.000130374	-0.173
1646	SE	PACRGL	4	+	20711305	20711396	0.017859214	-0.119
1647	SE	PACRGL	4	+	20714410	20714545	0.000101096	-0.123
1648	SE	RSBN1L-AS1	7	-	77290514	77290650	0.04430006	-0.179
1649	SE	RPS15A	16	-	18797561	18797658	9.94E-06	0.124
1650	SE	CERS4	19	+	8279249	8279365	0.000164168	-0.144
1651	SE	MEGF6	1	-	3440687	3440810	0.003125984	0.15
1652	SE	TTC7A	2	+	47144322	47144416	0.000598999	-0.114
1653	SE	ZNF138	7	+	64275953	64276031	0.000691805	-0.139
1654	SE	ZNF138	7	+	64275953	64276031	0.007311842	-0.19
1655	SE	ZNF287	17	-	16471356	16471431	0.045707813	-0.107
1656	SE	ZCWPW1	7	-	100014688	100014806	0.014857929	-0.184
1657	SE	CLDN12	7	+	90095723	90095827	0.000393558	-0.119
1658	SE	SREBF2	22	+	42274662	42274762	8.54E-09	-0.127
1659	SE	SREBF2	22	+	42296023	42296126	0.011782998	-0.225
1660	SE	IDE	10	-	94314637	94314674	8.17E-05	0.199
1661	SE	ATP5L	11	+	118276371	118276424	0.027940211	0.12
1662	SE	RCCD1	15	+	91499029	91499113	4.33E-05	0.203
1663	SE	RCCD1	15	+	91499841	91500733	0.036712103	-0.143
1664	SE	NTRK1	1	+	156843424	156843751	0.00484259	-0.125
1665	SE	PPP3CB	10	-	75239607	75239726	0	0.204
1666	SE	UBA2	19	+	34920997	34921091	0.010345661	-0.158
1667	SE	ROGDI	16	-	4851050	4851322	0.036390552	0.107
1668	SE	HERC2P3	15	-	20688655	20688770	2.50E-05	0.151
1669	SE	HLA-DPA1	6	-	33041247	33041549	5.10E-05	-0.109
1670	SE	NME6	3	-	48337608	48337726	0.003729503	-0.243
1671	SE	FDPS	1	+	155279543	155279756	3.01E-12	-0.153
1672	SE	FDPS	1	+	155279579	155279756	5.17E-12	-0.167

1673	SE	SVOPL	7	-	138305790	138305880	0.027540729	-0.164
1674	SE	COASY	17	+	40714373	40714505	0	0.313
1675	SE	AMMECR1L	2	-	128628387	128628502	3.72E-06	-0.171
1676	SE	AMMECR1L	2	-	128628822	128628933	3.72E-07	-0.217
1677	SE	MOK	14	-	102744942	102745031	0.001099818	0.374
1678	SE	MEIS2	15	-	37390167	37390400	0.002919475	-0.176
1679	SE	CD33	19	+	51729564	51729612	4.13E-08	-0.114
1680	SE	CD33	19	+	51738411	51738508	0.015859282	-0.246
1681	SE	TSNARE1	8	-	143395744	143395801	0.001147341	0.132
1682	SE	AGAP3	7	+	150835229	150835400	0.019825863	0.163
1683	SE	TBC1D23	3	+	100030676	100030721	0.001428512	-0.147
1684	SE	FAM110B	8	+	59110389	59110716	0.000677512	0.195
1685	SE	GMDS-AS1	6	+	2269931	2270033	4.41E-05	-0.197
1686	SE	NSRP1	17	+	28483557	28483680	1.33E-06	0.223
1687	SE	SNCAIP	5	+	121788619	121788690	0.009192774	-0.299
1688	SE	TMEM39A	3	-	119154601	119154782	0.010697585	-0.217
1689	SE	TMEM39A	3	-	119171293	119171377	0.00686826	-0.21
1690	SE	STAU2	8	-	74621266	74621412	0	0.148
1691	SE	NME4	16	+	448207	448385	3.87E-05	0.158
1692	SE	SPATA13	13	+	24852751	24852959	0.000526316	-0.124
1693	SE	hsa-mir-6080	17	-	62746711	62746841	5.88E-05	0.108
1694	SE	TAGLN	11	+	117070348	117070545	7.04E-10	-0.204
1695	SE	USP19	3	-	49154899	49155003	5.97E-05	0.24
1696	SE	C1QTNF6	22	-	37591420	37591498	0.005053961	-0.235
1697	SE	C1QTNF6	22	-	37591420	37591552	0.002450137	-0.159
1698	SE	PCSK6	15	-	101871855	101871894	0.001195249	-0.125
1699	SE	PCSK6	15	-	101905203	101905249	0.003654317	-0.107
1700	SE	SMARCA1	X	-	128627016	128627052	1.58E-10	0.266
1701	SE	CCDC66	3	+	56594889	56595040	0.037070997	-0.255
1702	SE	SDR39U1	14	-	24911303	24911466	0.019438812	-0.196
1703	SE	SDR39U1	14	-	24911314	24911466	0.028166937	-0.234

1704	SE	LRRC37B	17	+	30347715	30347822	0.009056812	-0.116
1705	SE	ASCC2	22	-	30230430	30230539	0.012250091	0.175
1706	SE	ASCC2	22	-	30230477	30230539	0.022849749	0.235
1707	SE	GAS8	16	+	90102040	90102095	0.007589921	-0.19
1708	SE	CD97	19	+	14507153	14507285	0.023067096	-0.107
1709	SE	TMEM9	1	-	201115867	201115997	0.001015038	-0.313
1710	SE	BZRAP1	17	-	56402894	56403074	0.037024282	-0.324
1711	SE	RP11-143J12.2	18	-	9132220	9132396	0.005993221	-0.184
1712	SE	RP11-143J12.2	18	-	9132220	9132407	0.007734195	-0.189
1713	SE	ZBTB8OS	1	-	33097427	33097480	0.037175814	-0.329
1714	SE	SMUG1	12	-	54581602	54581689	0.004463738	-0.306
1715	SE	SLC24A1	15	+	65944007	65944097	0.023501428	0.114
1716	SE	NDUFB2	7	+	140400669	140400759	0.010554248	0.419
1717	SE	TCTN1	12	+	111082771	111082948	0.040495149	-0.173
1718	SE	AC007246.3	2	+	39815588	39815707	0.003381538	-0.326
1719	SE	NPM2	8	+	21891619	21891786	0.020453631	-0.113
1720	SE	TEAD2	19	-	49859215	49859227	1.09E-07	0.158
1721	SE	SPIN1	9	+	91030521	91030614	1.48E-06	-0.174
1722	SE	SPIN1	9	+	91031558	91031681	1.99E-06	-0.228
1723	SE	A1BG-AS1	19	+	58864686	58864840	0.01799028	-0.219
1724	SE	A1BG-AS1	19	+	58864744	58864840	0.014711436	-0.186
1725	SE	ALG13	X	+	110932314	110932425	0.03237303	0.129
1726	SE	SNHG17	20	-	37050738	37050888	0.024684496	-0.119
1727	SE	HDAC7	12	-	48186320	48186452	8.89E-10	-0.155
1728	SE	NR4A1	12	+	52446257	52446429	0.004100612	0.34
1729	SE	NR4A1	12	+	52446279	52446429	0.036570125	0.306
1730	SE	BAG6	6	-	31612083	31612191	3.54E-12	0.228
1731	SE	TMEM248	7	+	66387135	66387233	6.34E-08	0.11
1732	SE	P4HTM	3	+	49043209	49043300	0.012545835	0.224
1733	SE	6-Sep	X	-	118752675	118752749	0.000216224	0.101
1734	SE	MDM1	12	-	68710360	68710390	2.73E-10	-0.253



1735	SE	PPRC1	10	+	103904776	103904847	2.39E-05	0.118
1736	SE	RP11-51112.2	1	-	47851919	47852028	8.25E-05	-0.188
1737	SE	ASAP2	2	+	9531190	9531325	0.001359438	0.195
1738	SE	TFDP1	13	+	114291934	114292211	0.000149101	-0.119
1739	SE	LPCAT1	5	-	1521461	1521595	0.002355172	0.213
1740	SE	ZNF721	4	-	429558	429668	2.77E-08	-0.176
1741	SE	ZNF721	4	-	438131	438221	0.000137794	-0.137
1742	SE	RALGAPA2	20	-	20377338	20377378	2.97E-07	-0.125
1743	SE	CREM	10	+	35490378	35490414	0.04888827	-0.173
1744	SE	AGBL3	7	+	134674000	134674061	0.008458316	-0.118
1745	SE	AGBL3	7	+	134674000	134674061	2.73E-06	-0.229
1746	SE	AGBL3	7	+	134678243	134678429	0.001988404	-0.13
1747	SE	AGBL3	7	+	134678243	134678429	0.007666489	-0.209
1748	SE	RIF1	2	+	152359547	152359699	0.011836658	-0.26
1749	SE	SNAP25	20	+	10279915	10280060	0.021964617	-0.273
1750	SE	STAG3L5P	7	+	99943487	99943591	0.039805101	-0.162
1751	SE	MFSD2B	2	+	24240155	24240234	0.00070797	0.109
1752	SE	MECP2	X	-	153322391	153322705	7.08E-05	-0.224
1753	SE	AK2	1	-	33477048	33477311	0.000189058	-0.187
1754	SE	DZIP1L	3	-	137802954	137803095	0.000284852	-0.183
1755	SE	ABHD2	15	+	89633513	89633603	0.010237834	0.138
1756	SE	ABHD2	15	+	89647412	89647501	0.000120515	0.15
1757	SE	C14orf159	14	+	91611564	91611657	1.11E-08	0.12
1758	SE	C14orf159	14	+	91611564	91611657	0.003828361	0.121
1759	SE	C14orf159	14	+	91611564	91611657	0.028341203	0.171
1760	SE	C14orf159	14	+	91614124	91614202	0.003302957	0.146
1761	SE	NT5M	17	+	17207677	17207791	0.04515089	0.135
1762	SE	ZSCAN9	6	+	28198113	28198266	0.026082911	-0.138
1763	SE	NR2C2	3	+	15001042	15001148	0.025842484	-0.116
1764	SE	NR2C2	3	+	15001042	15001148	0.00099524	0.104
1765	SE	SAMHD1	20	-	35563743	35563806	5.26E-05	0.137

1766	SE	TAF1D	11	-	93465409	93465457	0.00037116	0.323
1767	SE	METTLL25	12	+	82763227	82763339	0.044560669	0.224
1768	SE	CBWD5	9	-	70463030	70463075	0.007057975	-0.309
1769	SE	BDH1	3	-	197281432	197281584	0.006862552	0.216
1770	SE	NDUFC1	4	-	140218538	140218597	0.001325096	-0.467
1771	SE	NDUFC1	4	-	140218538	140218597	0.023009336	-0.101
1772	SE	FYB	5	-	39212779	39213119	1.81E-08	0.149
1773	SE	TANC2	17	+	61490040	61490070	7.59E-05	0.111
1774	SE	TM2D1	1	-	62152463	62152593	0	0.11
1775	SE	TM2D1	1	-	62189959	62190097	0.000587531	-0.245
1776	SE	TM2D1	1	-	62189959	62190097	0.037745825	-0.255
1777	SE	APLP2	11	+	129993506	129993674	0	-0.204
1778	SE	EVL	14	+	100540839	100540952	2.33E-06	-0.492
1779	SE	ANKRD23	2	-	97506523	97506649	1.81E-06	0.216
1780	SE	ANKRD23	2	-	97506563	97506649	3.00E-07	0.297
1781	SE	ACSL4	X	-	108939372	108939425	0.043867096	-0.256
1782	SE	SRPK2	7	-	104766228	104766321	0	0.122
1783	SE	SRPK2	7	-	104766694	104766787	4.87E-09	-0.126
1784	SE	OSBPL9	1	+	52221991	52222030	0	-0.123
1785	SE	THTPA	14	+	24025951	24026243	1.31E-05	0.22
1786	SE	THTPA	14	+	24025951	24026248	8.48E-06	0.222
1787	SE	THTPA	14	+	24025951	24026513	5.47E-06	0.186
1788	SE	TMEM201	1	+	9670563	9670863	0.004199774	-0.178
1789	SE	TROVE2	1	+	193029003	193029352	0.001814393	0.222
1790	SE	BTD	3	+	15643643	15643817	0.005658178	0.135
1791	SE	ZNF691	1	+	43315235	43315413	0.011066491	-0.16
1792	SE	C1orf61	1	-	156387703	156387826	0.000457721	-0.204
1793	SE	IRF3	19	-	50167843	50167930	0.017885526	0.221
1794	SE	MKL2	16	+	14242523	14242586	0.040764103	0.359
1795	SE	AP1B1	22	-	29725700	29725709	0	0.171
1796	SE	SLC2A9	4	-	9998404	9998565	0.012729546	-0.147

1797	SE	KMT2E	7	+	104678831	104678972	0.004542926	0.205
1798	SE	KMT2E	7	+	104679599	104679716	0.005212278	-0.151
1799	SE	C1orf35	1	-	228290599	228290750	0.00211413	-0.125
1800	SE	TANGO2	22	+	20040882	20041074	0.008112741	0.121
1801	SE	NASP	1	+	46066056	46066129	1.22E-07	0.197
1802	SE	LRR1	14	+	50074117	50074839	4.75E-05	0.11
1803	SE	WDR27	6	-	170043792	170043882	0.000472414	0.3
1804	SE	WDR27	6	-	170068077	170068281	0.010239796	-0.239
1805	SE	SUN1	7	+	889559	889670	0.002528331	0.143
1806	SE	SUN1	7	+	889559	889670	5.45E-05	-0.181
1807	SE	SUN1	7	+	891020	891119	6.17E-06	-0.107
1808	SE	KIAA0226L	13	-	46952024	46952140	0.000739363	0.198
1809	SE	C8orf44-SGK3	8	+	67602939	67602995	0.041720704	-0.313
1810	SE	OCEL1	19	+	17339611	17339724	0.035048757	0.109
1811	SE	HARS2	5	+	140071379	140071602	0.014197894	-0.129
1812	SE	KCTD17	22	+	37456862	37456962	0.002036479	-0.168
1813	SE	KCTD17	22	+	37457143	37457215	0.000910952	-0.13
1814	SE	KCTD17	22	+	37457578	37457669	0.002825514	-0.172
1815	SE	CNTRL	9	+	123933685	123933826	0	0.152
1816	SE	DNM1L	12	+	32891197	32891230	4.04E-05	-0.147
1817	SE	ANGPT2	8	-	6389852	6390008	3.89E-08	-0.199
1818	SE	MGAT5B	17	+	74900333	74900504	0.001074717	-0.127
1819	SE	PHYKPL	5	-	177651448	177651565	0.018735402	-0.151
1820	SE	CIRBP	19	+	1273599	1273714	0.00250226	0.106
1821	SE	CEP63	3	+	134276983	134277189	0.048241384	0.113
1822	SE	CDK16	X	+	47081659	47081741	1.19E-05	0.2
1823	SE	CDK16	X	+	47081659	47081779	1.68E-10	0.332
1824	SE	CDK16	X	+	47081659	47081779	4.61E-08	0.218
1825	SE	CDK16	X	+	47081671	47081741	6.52E-09	0.309
1826	SE	TOP3B	22	-	22325351	22325433	0.013686489	-0.121
1827	SE	ANGEL2	1	-	213184549	213184800	0.000164168	-0.136

1828	SE	ZNF532	18	+	56621465	56621566	1.32E-08	0.205
1829	SE	EXOC3L1	16	-	67223533	67223586	0.006638755	0.172

**Supplemental Table 4. Tier-based classification of events and qualitative levels of evidence.**

**Supplemental Table 4**

Tier	Qualitative levels of evidence
1	DTU $\cap$ top ranked in splicing $\cap$ gene shows statistically significant expression change
2	DTU $\cap$ top ranked in splicing or DTU $\cap$ gene shows statistically significant expression change
3	DTU or top ranked in splicing $\cap$ gene shows statistically significant expression change
4	top ranked in splicing or gene shows statistically significant expression change
5	any other differential splicing event

**Supplemental Table 5. Mutant SF3B1 splicing signature.**

**Supplemental Table 5**

	Event Type	Gene	Chromosome	Strand	Starting position	Ending Position	FDR	Inclusion level difference	Label	In_Pellagatti_et_al.	Biotype of upregulated transcript	Biotype of downregulated transcript	Expression	Expression_log2fc
1	A3SS	ABCB7	X	-	74291343	74291539	0	0.127	ABCB7	present but not significant	processed transcript	no downregulated transcript	down stat significant	>1
2	A3SS	ANKHD1	5	+	139818045	139818202	0	-0.524	ANKHD1	present but not significant	protein coding	protein coding	down stat significant	<1
3	A3SS	ANKHD1	5	+	139818078	139818202	0	0.458	ANKHD1-1	present but not significant	protein coding	no downregulated transcript	down stat significant	<1
4	A3SS	APBB3	5	-	139941171	139941307	0	0.321	APBB3-2	present but not significant	protein coding	no downregulated transcript	down stat significant	>1
5	A3SS	ARIH1	15	+	72862504	72862648	0	0.119	ARIH1	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	retained intron	no downregulated transcript	down stat significant	<1
6	A3SS	BRD9	5	-	869359	869519	0	0.442	BRD9	present but not significant	nonsense mediated decay	no downregulated transcript	down stat significant	<1
7	A3SS	CRNDE	16	-	54954209	54954322	0	-0.651	CRNDE	present but not significant	lincRNA	lincRNA	up stat significant	<1
8	A3SS	CRNDE	16	-	54954209	54954322	0	-0.372	CRNDE-1	present but not significant	lincRNA	lincRNA	up stat significant	<1
9	A3SS	DLST	14	+	75356580	75356655	0	0.389	DLST	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	nonsense mediated decay	no downregulated transcript	down stat significant	<1
10	A3SS	ERCC3	2	-	128046912	128047095	0	0.147	ERCC3-1	present only in SF3B1 mut vs SF-WT	protein coding	no downregulated transcript	up stat significant	<1
11	A3SS	FOXRED1	11	+	126143210	126143349	0	0.114	FOXRED1	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	retained intron	no downregulated transcript	down stat significant	<1
12	A3SS	GAS8	16	+	90097583	90097904	0	0.461	GAS8	present but not significant	nonsense mediated decay	no downregulated transcript	down stat significant	<1
13	A3SS	GUCY1B3	4	+	156723364	156723731	0	0.109	GUCY1B3	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	no upregulated transcript	protein coding	up stat significant	<1
14	A3SS	HLTF	3	-	148759276	148759467	0	0.246	HLTF	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	up stat significant	<1
15	A3SS	KIAA1033	12	+	105514866	105514982	0	0.28	KIAA1033	present but not significant	nonsense mediated decay	protein coding	down stat significant	<1
16	A3SS	METTL5	2	-	170668966	170669034	0	0.141	METTL5	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	protein coding	up stat significant	<1
17	A3SS	PSTPIP1	15	+	77328142	77328276	0	-0.217	PSTPIP1	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	protein coding	down stat significant	<1
18	A3SS	SHKBP1	19	+	41084353	41084448	0	0.108	SHKBP1	present but not significant	nonsense mediated decay	no downregulated transcript	down stat significant	<1
19	A3SS	SNRPN	15	+	25219434	25219603	0	-0.296	SNRPN-5	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	protein coding	up stat significant	>1
20	A3SS	SNRPN	15	+	25219457	25219603	0	-0.145	SNRPN	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	protein coding	up stat significant	>1
21	A3SS	STAU2	8	-	74621266	74621412	0	0.315	STAU2	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	processed transcript	no downregulated transcript	up stat significant	<1
22	A3SS	TMEM214	2	+	27260657	27260760	0	-0.471	TMEM214	present but not significant	protein coding	no downregulated transcript	up stat significant	<1
23	A3SS	TMEM218	11	-	124972027	124972247	0	0.531	TMEM218	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	down stat significant	<1
24	A3SS	TMEM218	11	-	124972027	124972247	0	0.355	TMEM218-1	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	down stat significant	<1
25	A3SS	ZNF410	14	+	74360478	74360635	0	0.296	ZNF410	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	up stat significant	<1
26	A5SS	DSN1	20	-	35399275	35399876	2.97E-12	-0.111	DSN1	present but not significant	protein coding	no downregulated transcript	up stat significant	<1
27	A5SS	SNRPN	15	+	25212175	25212387	0	-0.14	SNRPN-2	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	up stat significant	>1
28	A5SS	TMEM218	11	-	124972532	124972705	4.60E-08	-0.188	TMEM218-2	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	down stat significant	<1
29	MXE	BRD9	5	-	868721	869234	0	0.193	BRD9-4	not present	nonsense mediated decay	no downregulated transcript	down stat significant	<1
30	MXE	BRD9	5	-	869359	869509	0	-0.197	BRD9-2	not present	no upregulated transcript	protein coding	down stat significant	<1
31	MXE	SNRPN	15	+	25212175	25212299	0	0.192	SNRPN-3	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	protein coding	up stat significant	>1
32	MXE	SNRPN	15	+	25212175	25212387	0	0.153	SNRPN-4	not present	protein coding	protein coding	up stat significant	>1
33	MXE	TPM1	15	+	63353396	63353472	0	-0.101	TPM1	present but not significant	protein coding	no downregulated transcript	up stat significant	>1
34	RI	AMT	3	-	49454210	49455151	0	-0.283	AMT	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	down stat significant	<1
35	RI	AP5Z1	7	+	4829462	4830222	1.41E-10	-0.293	AP5Z1	present but not significant	no upregulated transcript	retained intron	down stat significant	<1
36	RI	APBB3	5	-	139941171	139941434	0	-0.655	APBB3	present but not significant	protein coding	no downregulated transcript	down stat significant	>1
37	RI	APBB3	5	-	139941171	139941812	0	-0.278	APBB3-1	present but not significant	protein coding	no downregulated transcript	down stat significant	>1
38	RI	ERCC3	2	-	128046912	128047400	0	-0.329	ERCC3	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	up stat significant	<1
39	RI	HERC2P9	15	+	28881632	28882253	4.07E-10	0.401	HERC2P9	present but not significant	retained intron	no downregulated transcript	up stat significant	<1
40	RI	MFSD10	4	-	2934326	2934936	7.21E-13	-0.115	MFSD10	present but not significant	protein coding	no downregulated transcript	down stat significant	<1
41	RI	OXA1L	14	+	23239401	23239834	0	0.199	OXA1L	present only in SF3B1 mut vs SF-WT	retained intron	protein coding	down stat significant	<1



42	RI	RFNG	17	-	80007552	80007882	1.01E-13	-0.171	RFNG	present but not significant	no upregulated transcript	retained intron	down stat significant	<1
43	RI	RPRD1A	18	-	33605560	33607038	0	-0.822	RPRD1A	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	protein coding	up stat significant	<1
44	RI	TMEM218	11	-	124972027	124972705	0	-0.444	TMEM218-3	present but not significant	protein coding	no downregulated transcript	down stat significant	<1
45	RI	TMEM218	11	-	124972027	124972705	0	-0.312	TMEM218-4	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	down stat significant	<1
46	SE	AC093415.2	3	-	37892914	37892983	1.22E-12	0.302	AC093415.2	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	antisense	no downregulated transcript	up stat significant	>1
47	SE	BRD9	5	-	869359	869509	0	0.244	BRD9-3	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	no upregulated transcript	protein coding	down stat significant	<1
48	SE	BRD9	5	-	869359	869519	0	0.359	BRD9-1	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	nonsense mediated decay	protein coding	down stat significant	<1
49	SE	DLST	14	+	75349293	75349327	0	-0.324	DLST-1	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	nonsense mediated decay	no downregulated transcript	down stat significant	<1
50	SE	DLST	14	+	75352288	75352337	0	-0.114	DLST-2	present but not significant	nonsense mediated decay	no downregulated transcript	down stat significant	<1
51	SE	DPH5	1	-	101458192	101458296	0	-0.131	DPH5	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	processed transcript	protein coding	down stat significant	<1
52	SE	DPH5	1	-	101490864	101491022	0	-0.143	DPH5-1	present but not significant	no upregulated transcript	protein coding	down stat significant	<1
53	SE	PROS1	3	-	93647545	93647641	0	0.38	PROS1	present but not significant	protein coding	no downregulated transcript	up stat significant	<1
54	SE	SNRPN	15	+	25212175	25212299	0	0.283	SNRPN-1	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	protein coding	up stat significant	>1
55	SE	SNRPN	15	+	25212175	25212387	0	0.155	SNRPN-6	present only in SF3B1 mut vs SF-WT	protein coding	protein coding	up stat significant	>1
56	SE	STAU2	8	-	74621266	74621412	0	0.148	STAU2-1	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	processed transcript	no downregulated transcript	up stat significant	<1
57	SE	TMEM214	2	+	27260682	27260760	0	0.457	TMEM214-2	present in SF3B1 mut vs SF-WT & SF3B1 mut vs WT	protein coding	no downregulated transcript	up stat significant	<1
58	SE	TPM1	15	+	63353396	63353472	0	-0.167	TPM1-1	present but not significant	protein coding	no downregulated transcript	up stat significant	>1
59	SE	TYROBP	19	-	36398631	36398664	0	-0.149	TYROBP	present but not significant	protein coding	no downregulated transcript	down stat significant	<1

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