

Title:

A pilot study of peripheral blood DNA methylation models as predictors of knee osteoarthritis radiographic progression: data from the Osteoarthritis Initiative (OAI).

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Supplementary Information:

Supplementary Figure 1: Model performance by number of CpG sites included during development.

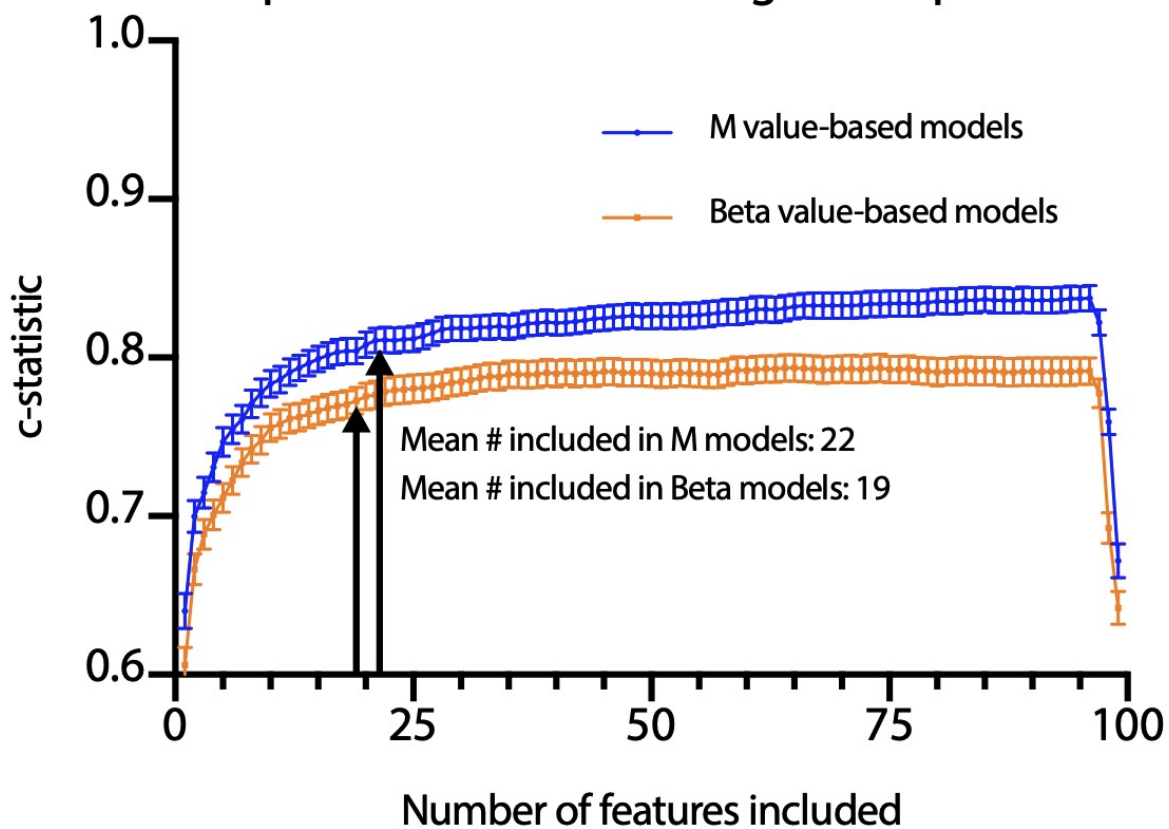
Supplementary Table 1: Extended case and control characteristics

Supplementary Table 2: CpG sites chosen during model development

Supplementary Document 1: Case and control eligibility and selection process

Supplementary Figure 1

Model performance by number of CpG sites included during development



Supplementary Table 1: Extended case and control characteristics

Group	BMI Group	Age Group	BMI	Age	Ethnicity	Sex	Smoker (yes=1, no=0)	NSAID user (yes=1, no=0)	Mean bilateral baseline JSW (mm)	Mean bilateral baseline Western Ontario and McMasters Universities Osteoarthritis Index (WOMAC) pain score (0- 20 scale)	Baseline K/L grade
Control	20.0-29.9	45-49	27.2	46	2: African American	male	0	1	3.74	2	2
Control	30.0+	60-69	30	66	1: Caucasian	female	1	0	4.39	3.5	2
Control	20.0-29.9	70-79	28.3	70	1: Caucasian	female	0	0	4.53	2.5	2
Control	20.0-29.9	60-69	26.8	69	1: Caucasian	female	0	0	4.67	0	2
Control	20.0-29.9	70-79	24.5	70	1: Caucasian	female	1	1	4.37	0	3
Control	20.0-29.9	45-49	25.9	48	1: Caucasian	male	0	0	4.57	2.5	2
Control	30.0+	60-69	33.2	66	1: Caucasian	female	1	0	4.41	0	2
Control	30.0+	60-69	33.4	60	1: Caucasian	female	0	0	3.46	1.5	2
Control	20.0-29.9	50-59	27.4	59	1: Caucasian	male	1	0	5.87	4.5	2
Case	20.0-29.9	60-69	29.5	65	2: African American	female	1	0	2.49	2.5	3
Control	20.0-29.9	50-59	29.7	59	1: Caucasian	female	0	0	4.25	1	3
Case	20.0-29.9	60-69	27.7	66	1: Caucasian	male	1	1	4.03	1.5	2
Control	30.0+	50-59	33.3	58	1: Caucasian	female	1	1	4.94	1	2
Case	30.0+	60-69	36.7	62	2: African American	female	0	0	3.21	8	3
Case	30.0+	50-59	34.2	50	2: African American	male	1	1	3.01	2.5	3
Case	30.0+	45-49	38.7	48	1: Caucasian	female	0	1	5.62	6.5	3
Control	30.0+	45-49	34.5	46	1: Caucasian	female	1	0	4.68	3	2
Case	30.0+	60-69	31.3	64	1: Caucasian	male	1	0	4.12	3	3
Control	30.0+	50-59	37.5	57	1: Caucasian	male	0	0	2.77	0	3
Control	30.0+	50-59	34	50	2: African American	female	1	1	4.17	9	2
Control	30.0+	45-49	30.4	46	1: Caucasian	male	0	0	4.05	0.5	3
Control	20.0-29.9	50-59	29.8	52	1: Caucasian	male	1	0	3.59	3.5	3
Case	20.0-29.9	45-49	27.6	46	1: Caucasian	female	1	0	5.26	3.5	2
Control	20.0-29.9	60-69	26.2	66	1: Caucasian	male	1	0	3.98	1	3
Case	30.0+	45-49	33.8	45	1: Caucasian	male	0	0	3.93	9.5	3
Control	20.0-29.9	50-59	27.4	53	1: Caucasian	male	0	0	3.95	1	2
Control	30.0+	45-49	32.3	48	1: Caucasian	female	0	1	5.45	4	2
Control	20.0-29.9	70-79	25.3	73	1: Caucasian	female	0	0	2.20	4	3
Case	20.0-29.9	50-59	28.2	54	1: Caucasian	male	0	1	4.40	5	3
Control	20.0-29.9	70-79	28.9	78	1: Caucasian	female	1	0	3.10	3	2
Case	30.0+	70-79	30.1	77	1: Caucasian	female	1	0	2.80	3	3
Control	30.0+	70-79	32.6	74	1: Caucasian	female	1	0	2.93	1	3
Case	30.0+	60-69	37.7	66	1: Caucasian	female	0	1	3.23	5.5	2
Control	20.0-29.9	50-59	28	52	1: Caucasian	male	0	1	3.61	1	2
Control	20.0-29.9	50-59	29	51	1: Caucasian	male	0	0	4.48	6.5	2
Case	20.0-29.9	50-59	29.1	52	1: Caucasian	male	1	0	4.03	7	2
Control	20.0-29.9	50-59	27.5	52	1: Caucasian	female	0	0	4.34	3	2
Control	30.0+	50-59	40.6	55	2: African American	male	1	0	3.78	0	3
Case	30.0+	45-49	34.3	48	1: Caucasian	female	0	0	4.09	10	3
Case	30.0+	50-59	31.1	57	2: African American	male	0	0	4.00	6	2
Control	30.0+	60-69	31.9	66	1: Caucasian	male	1	0	5.52	3	2
Control	30.0+	60-69	36.2	66	1: Caucasian	female	1	0	3.34	4	2
Case	20.0-29.9	50-59	28.8	59	1: Caucasian	male	0	1	3.10	3.5	3
Control	30.0+	50-59	30.1	54	1: Caucasian	male	0	0	5.01	4.5	2
Control	20.0-29.9	50-59	29.3	53	1: Caucasian	male	0	0	3.01	1	2
Control	30.0+	50-59	32.4	54	2: African American	male	1	0	5.71	12.5	2
Control	30.0+	50-59	30	51	2: African American	female	0	0	2.85	5.5	2
Case	20.0-29.9	50-59	29.2	59	1: Caucasian	male	1	0	1.87	8.5	3
Case	30.0+	50-59	34.5	53	1: Caucasian	male	0	1	4.23	4	3
Case	30.0+	60-69	32	67	1: Caucasian	male	0	0	4.66	2	2
Control	30.0+	50-59	30	51	1: Caucasian	female	1	0	4.01	0.5	2
Control	30.0+	60-69	30.6	62	1: Caucasian	male	0	0	4.60	1.5	3
Control	20.0-29.9	60-69	29.2	67	1: Caucasian	female	1	0	4.39	2	3
Case	30.0+	50-59	30.1	53	2: African American	female	1	0	5.40	9.5	2
Control	20.0-29.9	60-69	28.8	63	1: Caucasian	female	1	0	2.50	3.5	3
Case	30.0+	45-49	39.6	48	1: Caucasian	male	0	0	3.92	4.5	2
Case	30.0+	60-69	38.7	67	1: Caucasian	male	0	0	2.29	6	3
Case	20.0-29.9	60-69	26.5	66	1: Caucasian	male	1	0	2.70	7.5	3
Case	20.0-29.9	50-59	26.2	50	1: Caucasian	male	0	0	4.56	7.5	2
Control	20.0-29.9	60-69	28.4	63	1: Caucasian	female	0	1	3.92	0	2
Control	20.0-29.9	50-59	25.2	59	1: Caucasian	male	0	0	3.04	5	3
Control	20.0-29.9	70-79	28.8	71	1: Caucasian	male	0	0	2.83	0	3
Control	30.0+	50-59	31.5	51	1: Caucasian	male	1	1	4.78	4.5	2
Case	20.0-29.9	70-79	25.9	74	1: Caucasian	female	0	0	3.62	2	3
Case	20.0-29.9	50-59	26.5	52	1: Caucasian	male	0	0	5.45	4	2
Control	20.0-29.9	50-59	27.1	53	1: Caucasian	male	0	0	5.55	1	2
Control	30.0+	50-59	34.3	54	1: Caucasian	female	1	0	4.01	4	3
Case	20.0-29.9	50-59	22.4	53	1: Caucasian	male	1	1	3.17	2	3

Case	20.0-29.9	70-79	28.2	79 1: Caucasian	female	1	0	3.56	6.5	3
Case	20.0-29.9	60-69	28.8	67 1: Caucasian	male	1	0	6.97	4.5	2
Case	30.0+	60-69	33.3	62 1: Caucasian	female	1	1	4.10	4.5	3
Case	30.0+	50-59	32	54 2: African American	male	1	0	3.81	4	3
Case	20.0-29.9	50-59	29.7	50 1: Caucasian	female	0	0	4.01	3	2
Case	30.0+	60-69	36	62 1: Caucasian	male	1	1	2.01	3.5	3
Control	30.0+	60-69	30.4	65 1: Caucasian	male	0	0	5.27	0.5	2
Case	20.0-29.9	60-69	27.9	60 1: Caucasian	female	1	0	1.59	3	3
Control	20.0-29.9	60-69	28.6	65 1: Caucasian	male	1	0	4.80	8.5	3
Control	20.0-29.9	60-69	29.3	69 2: African American	female	0	1	5.27	5.5	2
Case	20.0-29.9	50-59	28.8	59 1: Caucasian	male	0	0	2.22	4.5	3
Case	20.0-29.9	70-79	26.3	78 1: Caucasian	male	0	0	1.49	5	3
Case	20.0-29.9	60-69	26	66 1: Caucasian	female	0	0	3.99	1	2
Control	30.0+	60-69	34.9	65 1: Caucasian	female	0	1	4.03	1.5	2
Case	30.0+	50-59	31.2	56 1: Caucasian	female	1	1	3.86	4.5	3
Case	20.0-29.9	60-69	27.6	60 1: Caucasian	male	1	0	4.33	4	2
Case	20.0-29.9	60-69	28	64 1: Caucasian	female	0	0	4.39	0.5	2
Case	20.0-29.9	60-69	25.2	69 1: Caucasian	female	0	0	2.78	2.5	3
Case	30.0+	50-59	31.8	53 1: Caucasian	female	1	1	4.02	2.5	2
Case	30.0+	60-69	31.3	67 1: Caucasian	male	1	0	5.16	13	2
Case	30.0+	50-59	37.9	50 1: Caucasian	male	1	0	4.63	2.5	3
Control	20.0-29.9	50-59	25.9	54 1: Caucasian	male	1	0	5.40	1.5	2
Control	30.0+	50-59	35.9	57 1: Caucasian	female	1	0	3.65	6	3
Case	30.0+	60-69	30.3	63 1: Caucasian	female	0	0	3.96	4	2
Case	20.0-29.9	50-59	25.6	58 1: Caucasian	female	0	0	2.65	4.5	3
Case	30.0+	50-59	33.6	59 1: Caucasian	male	1	1	2.99	0	3
Control	20.0-29.9	60-69	28.4	62 1: Caucasian	female	0	0	3.15	1.5	3
Case	20.0-29.9	50-59	29.1	53 1: Caucasian	male	0	0	5.25	1	2
Case	30.0+	50-59	30.1	53 1: Caucasian	female	0	0	5.12	2	2
Case	30.0+	50-59	30.6	53 1: Caucasian	female	0	0	2.95	5.5	3
Control	20.0-29.9	60-69	29	64 1: Caucasian	female	0	0	3.21	3	2
Case	20.0-29.9	45-49	29.5	47 2: African American	male	0	0	6.22	2	2
Case	30.0+	60-69	38.7	66 1: Caucasian	male	1	0	3.12	5	3
Control	30.0+	60-69	44.2	64 2: African American	female	0	0	3.20	12.5	2
Control	30.0+	45-49	41.1	49 1: Caucasian	female	0	0	4.62	11.15	2
Case	30.0+	60-69	30.4	66 1: Caucasian	female	1	0	5.14	2	2
Control	20.0-29.9	70-79	28.3	77 1: Caucasian	female	1	0	2.28	3	3
Case	20.0-29.9	50-59	25.3	58 1: Caucasian	male	0	0	5.38	0	2
Control	20.0-29.9	60-69	29.4	63 1: Caucasian	female	0	0	3.76	5	3
Control	30.0+	50-59	38.3	56 1: Caucasian	female	1	0	5.41	2	2
Control	30.0+	60-69	33.1	69 1: Caucasian	female	0	0	3.66	3.5	3
Case	20.0-29.9	70-79	26.6	70 1: Caucasian	female	0	1	2.69	8	3
Control	20.0-29.9	60-69	27.9	68 1: Caucasian	female	0	0	3.25	10	3
Case	20.0-29.9	70-79	23.9	70 1: Caucasian	female	0	0	3.38	6.5	2
Case	20.0-29.9	70-79	29.1	70 1: Caucasian	female	0	1	3.95	2.5	3
Control	30.0+	60-69	38.2	64 1: Caucasian	female	0	0	3.95	8	3
Case	20.0-29.9	60-69	29.2	69 1: Caucasian	male	1	1	4.44	3	3
Case	30.0+	50-59	35.1	50 1: Caucasian	female	1	1	4.01	0.5	2

Supplementary Table 2: CpG sites chosen during model development

TargetID	Beta count	M counts	GENOME_ID	CHR	MAPINFO	UCSC_REFGENE_NAME	UCSC_REFGENE_ACCESSION	UCSC_REFGENE_GROUP	UCSC_CPG_RELATION_TO_UCSC_CPG_ISLAND
cg00002464			1	37	8	1.2E+08 NOV	NM_002514	TSS200	chr8:12042Island
cg00027745			2	37	7	1452678			chr7:14524Island
cg00089154	1			37	16	57352732			
cg00105102	2			37	1	1.56E+08 PAQR6;PAQR6	NM_024897;NM_198406	5'UTR;5'UTR	chr1:15621S_Shore
cg00105102		2		37	1	1.56E+08 PAQR6;PAQR6	NM_024897;NM_198406	5'UTR;5'UTR	chr1:15621S_Shore
cg00107890	1			37	15	71492746 THSD4	NM_024817	Body	
cg00125544	1			37	2	2.37E+08 AGAP1;AGAP1	NM_014914;NM_001037131	Body;Body	chr2:23686N_Shore
cg00142933	1			37	2	1.28E+08 LIMS2;LIMS2;LIMS2;LIMS2	NM_001136037;NM_017980;NM_001136037	Body;Body;Body;5'UTR	chr2:12842N_Shore
cg00142933		8		37	2	1.28E+08 LIMS2;LIMS2;LIMS2;LIMS2	NM_001136037;NM_017980;NM_001136037	Body;Body;Body;5'UTR	chr2:12842N_Shore
cg00143249	5			37	7	1.57E+08 MNX1;MNX1	NM_001165255;NM_005515	Body;Body	chr7:15679Island
cg00143249		1		37	7	1.57E+08 MNX1;MNX1	NM_001165255;NM_005515	Body;Body	chr7:15679Island
cg00152637		1		37	6	28104690			chr6:28104N_Shore
cg00180559	1			37	1	2.33E+08 KIAA1804	NM_032435	Body	chr1:23349N_Shore
cg00192026	1			37	4	1.74E+08			
cg00278028	3			37	22	28196834 MN1;MN1	NM_002430;NM_002430	5'UTR;1stExon	chr22:2819Island
cg00290605	1			37	22	32366707			chr22:3236Island
cg00308618		1		37	2	1.53E+08 CACNB4;CACNB4;CACNB4;CACNB4	NM_000726;NM_001145798;NM_001145798	Body;Body;TSS1500;Body	
cg00335286	2			37	18	13916355 MC2R	NM_000529	TSS1500	
cg00336071	1			37	15	63449943 RPS27L	NM_015920	TSS1500	chr15:6344S_Shore
cg00355514	1			37	13	24914782			chr13:2491Island
cg00386663		1		37	16	692659 FAM195A	NM_138418	Body	chr16:6915Island
cg00388154	1			37	15	68498857 CALML4;CALML4	NM_001031733;NM_033429	TSS1500;TSS1500	
cg00401433	1			37	8	1.07E+08 ZFPM2	NM_012082	Body	
cg00409636		1		37	2	75720541 FAM176A;FAM176A	NM_001135032;NM_032181	Body;Body	
cg00466544	1			37	14	57046243 C14orf101	NM_017799	TSS1500	chr14:5704N_Shore
cg00491335		1		37	2	2.25E+08			chr2:22470S_Shelf
cg00496805		1		37	19	57901154 ZNF548	NM_152909	TSS200	chr19:5790Island
cg00497251	1			37	2	2.42E+08 RNPEPL1	NM_018226	5'UTR	chr2:24150S_Shore
cg00510552		2		37	16	4511987 NMRAL1	NM_020677	Body	
cg00551143		1		37	7	28998860 TRIL	NM_014817	TSS1500	chr7:28995S_Shore
cg00562641	1			37	5	68789255 OCLN	NM_002538	5'UTR	chr5:68788Island
cg00572243	1			37	8	28458806			
cg00587472		1		37	2	6952860			
cg00607154	1			37	5	6754116 POLS	NM_006999	Body	chr5:67551N_Shore
cg00618507	1			37	7	1.02E+08 ORAI2;ORAI2	NM_032831;NM_001126340	3'UTR;3'UTR	chr7:10209N_Shore
cg00704844	1			37	6	32821621 PSMB9;TAP1;PSMB9;TAP1	NM_002800;NM_000593;NM_148954	TSS1500;5'UTR;TSS1500	chr6:32820Island
cg00704844		1		37	6	32821621 PSMB9;TAP1;PSMB9;TAP1	NM_002800;NM_000593;NM_148954	TSS1500;5'UTR;TSS1500	chr6:32820Island
cg00708678		1		37	10	91294839 SLC16A12	NM_213606	5'UTR	chr10:9129N_Shore
cg00712762	2			37	1	36351470 EIF2C1	NM_012199	Body	chr1:36348S_Shore
cg00796164		1		37	19	57654968 ZIM3	NM_052882	5'UTR	
cg00819788	1			37	17	7308579 C17orf61	NM_152766	TSS1500	chr17:7307Island
cg00859178	1			37	1	1.62E+08 UHMK1	NM_175866	TSS1500	chr1:16246N_Shore
cg00878038		1		37	7	1.51E+08 WDR86	NM_198285	TSS1500	chr7:15110Island
cg00886571	1			37	14	1.05E+08			chr14:1052Island
cg00891611	1			37	1	1.08E+08			
cg00943060		1		37	7	65211784			chr7:65215N_Shelf
cg00989986		1		37	8	49746558			chr8:49747N_Shore
cg01022859	1			37	17	60767314 MRC2	NM_006039	Body	
cg01029669	1			37	19	46999840 PNMA2	NM_020709	TSS1500	chr19:4699S_Shore

cg01062913	1	37	1	1.49E+08			
cg01090026	2	37	6	39692382	KIF6	NM_145027	Body chr6:39692N_Shore
cg01110552	1	37	10	1.04E+08	MGEA5;MGEA5	NM_001142434;NM_012215	TSS1500;TSS1500 chr10:1035S_Shore
cg01120851	1	37	1	6657644	KLHL21	NM_014851	Body chr1:66591N_Shore
cg01125463	1	37	6	42946178	PEX6	NM_000287	1stExon chr6:42946N_Shore
cg01138671	1	37	6	32130686	PPT2;PPT2	NM_005155;NM_138717	Body;Body chr6:32134N_Shelf
cg01144965	1	37	8	1811760	ARHGEF10	NM_014629	Body
cg01166564	1	37	2	26987492	C2orf18	NM_017877	Body chr2:26987Island
cg01198033	1	37	7	1.55E+08	CNPY1	NM_001103176	5'UTR chr7:15530Island
cg01232267	1	37	3	47398209			chr3:47397Island
cg01263999	1	37	13	1.08E+08	FAM155A	NM_001080396	Body
cg01309395	1	37	6	33091795	HLA-DPB2	NR_001435	Body
cg01316857	2	37	19	48685724			chr19:4868Island
cg01333080	1	37	3	1.84E+08	ECE2;ECE2;ECE2;ECE2	NM_001100120;NM_001037324;NM_C	Body;Body;Body;Body chr3:18399S_Shore
cg01338043	1	37	7	1E+08	AGFG2	NM_006076	TSS1500 chr7:10013N_Shore
cg01392841	1	37	19	47016869			chr19:4701Island
cg01427750	1	37	12	1.32E+08	GPR133	NM_198827	Body chr12:1315Island
cg01514015	1	37	1	2.36E+08	GPR137B	NM_003272	Body
cg01515114	1	37	4	4139730			
cg01543583	1	37	14	59947673	C14orf149	NM_144581	Body chr14:5995N_Shelf
cg01548562	1	37	9	71836408	TJP2;TJP2;TJP2;TJP2;TJP2	NM_001170414;NM_001170630;NM_C	Body;Body;Body;Body; chr9:71835Island
cg01565438	2	37	17	33776554	SLFN13	NM_144682	TSS1500 chr17:3377Island
cg01591416	1	37	8	30601572	UBXN8	NM_005671	TSS200
cg01620570	1	37	17	15165908	PMP22;PMP22	NM_153321;NM_000304	TSS200;5'UTR chr17:1516Island
cg01709473	1	37	6	12010960			chr6:12012N_Shore
cg01709473	1	37	6	12010960			chr6:12012N_Shore
cg01721429	1	37	16	47007486	DNAJA2;DNAJA2	NM_005880;NM_005880	5'UTR;1stExon chr16:4700Island
cg01771479	1	37	8	1.44E+08			
cg01867419	1	37	6	30421515			chr6:30418S_Shore
cg01872216	1	37	14	54430382			chr14:5443Island
cg01900413	1	37	11	1.28E+08	ETS1	NM_001143820	Body chr11:1284Island
cg01962086	1	37	3	1.96E+08	TNK2	NM_005781	TSS1500 chr3:19563S_Shore
cg02055540	1	37	5	1.66E+08			
cg02071447	1	37	5	1.51E+08	GLRA1;GLRA1	NM_000171;NM_001146040	TSS200;TSS200 chr5:15130Island
cg02148547	1	37	14	21457502	METT11D1;METT11D1	NM_001029991;NM_022734	TSS1500;TSS1500 chr14:2145N_Shore
cg02192318	1	37	16	89500212	ANKRD11	NM_013275	5'UTR chr16:8950Island
cg02205746	1	37	16	2732724	KCTD5	NM_018992	1stExon chr16:2732Island
cg02215141	2	37	4	1.33E+08			chr4:13266N_Shore
cg02215141	6	37	4	1.33E+08			chr4:13266N_Shore
cg02216246	2	37	11	1.29E+08	FLI1;FLI1	NM_002017;NM_001167681	Body;5'UTR chr11:1285Island
cg02216246	1	37	11	1.29E+08	FLI1;FLI1	NM_002017;NM_001167681	Body;5'UTR chr11:1285Island
cg02241363	2	37	17	78450357	NPTX1;NPTX1	NM_002522;NM_002522	5'UTR;1stExon chr17:7844Island
cg02268171	2	37	13	24477610			chr13:2447Island
cg02275394	1	37	13	80917432			chr13:8091S_Shore
cg02275622	1	37	2	2.08E+08			
cg02286547	2	37	11	75920278			chr11:7591Island
cg02301193	1	37	1	90267201			
cg02301193	1	37	1	90267201			
cg02309335	1	37	6	30227294	HLA-L	NR_027822	TSS200 chr6:30227N_Shore
cg02339418	1	37	12	1.24E+08	C12orf65;C12orf65	NM_152269;NM_001143905	TSS200;TSS1500 chr12:1237Island

cg02358630	1	37	10	71993457	PPA1	NM_021129	TSS1500	chr10:7199	Island	
cg02368096	2	37	7	98248993	NPTX2	NM_002523	Body	chr7:98248	S_Shore	
cg02398007	2	37	12	67616546						
cg02398007		1	37	12	67616546					
cg02444810		1	37	17	27055702	NEK8	NM_178170	TSS200	chr17:2705	Island
cg02448190	2	37	1	1.56E+08	RAB25	NM_020387	TSS1500			
cg02448190		1	37	1	1.56E+08	RAB25	NM_020387	TSS1500		
cg02491138		1	37	20	51589616	TSHZ2;TSHZ2	NM_173485;NM_173485	1stExon;5'UTR	chr20:5158	N_Shore
cg02503646	1	37	3	52444059	PHF7;PHF7;BAP1	NM_173341;NM_016483;NM_004656	TSS1500;TSS1500;TSS2	chr3:52443	Island	
cg02504716		1	37	11	1.24E+08					
cg02529035		1	37	2	2.2E+08	ACCN4;ACCN4	NM_182847;NM_018674	TSS1500;TSS1500	chr2:22037	Island
cg02554361		1	37	16	11001757	CIITA	NM_000246	Body	chr16:1100	Island
cg02558537		1	37	11	1.07E+08	CWF19L2	NM_152434	TSS200	chr11:1073	Island
cg02574502	1	37	19	54486058	CACNG8	NM_031895	Body	chr19:5448	Island	
cg02625590	1	37	19	41880276	TMEM91	NM_001098825	5'UTR	chr19:4188	N_Shelf	
cg02633148		1	37	4	46391476	GABRA2;GABRA2	NM_001114175;NM_000807	TSS200;5'UTR	chr4:46391	N_Shore
cg02653364	1	37	16	58283706	CCDC113;CCDC113	NM_001142302;NM_014157	TSS200;TSS200	chr16:5828	Island	
cg02704217		1	37	17	12568507	MYOCD;MYOCD	NM_153604;NM_001146312	TSS1500;TSS1500	chr17:1256	N_Shore
cg02721947	1	37	5	39719620				chr5:39721	N_Shore	
cg02734521		1	37	6	1.08E+08					
cg02804100	1	37	19	720993	PALM;PALM	NM_002579;NM_001040134	Body;Body	chr19:7190	S_Shore	
cg02811702	1	37	13	24901961				chr13:2490	N_Shore	
cg02846648		1	37	12	1.29E+08	GLT1D1	NM_144669	Body		
cg02862362		1	37	6	1.32E+08	ARG1	NM_000045	Body		
cg02894027	1	37	2	17375162						
cg02904235		1	37	14	91527369	RPS6KA5;RPS6KA5	NM_182398;NM_004755	TSS1500;TSS1500	chr14:9152	Island
cg02947232		1	37	20	42937544	FITM2	NM_001080472	Body	chr20:4293	N_Shore
cg02962630	5	37	15	41222776	DLL4	NM_019074	Body	chr15:4121	Island	
cg02962630		4	37	15	41222776	DLL4	NM_019074	Body	chr15:4121	Island
cg02991338	1	37	14	29236017	FOXG1	NM_005249	TSS1500	chr14:2923	N_Shore	
cg03003722	2	37	6	38035488	ZFAND3	NM_021943	Body			
cg03004273		1	37	18	7568265	PTPRM;PTPRM	NM_002845;NM_001105244	Body;Body	chr18:7566	Island
cg03054162	1	37	2	70485230	PCYOX1;PCYOX1	NM_016297;NM_016297	1stExon;5'UTR	chr2:70485	N_Shore	
cg03069383		1	37	2	18741691	RDH14	NM_020905	1stExon	chr2:18741	Island
cg03069736		1	37	17	72542117	CD300C;CD300C	NM_006678;NM_006678	1stExon;5'UTR		
cg03088705		1	37	10	1.12E+08	XPNPEP1;XPNPEP1;XPNPEP1	NR_030724;NM_001167604;NM_0203	Body;3'UTR;3'UTR		
cg03103023		1	37	1	25088406	CLIC4	NM_013943	Body		
cg03119288		1	37	19	10829265	DNM2;DNM2;DNM2;DNM2	NM_004945;NM_001005361;NM_001	Body;Body;Body;Body	chr19:1082	Island
cg03124231	1	37	4	1.74E+08	HMGB2;HMGB2;HMGB2;HMGB2	NM_001130689;NM_002129;NM_0011	TSS1500;1stExon;TSS2	chr4:17425	Island	
cg03212634	4	37	19	54292238						
cg03212634		9	37	19	54292238					
cg03243450	1	37	5	1800782	NDUFS6;MRPL36	NM_004553;NM_032479	TSS1500;TSS1500	chr5:17994	Island	
cg03243450		5	37	5	1800782	NDUFS6;MRPL36	NM_004553;NM_032479	TSS1500;TSS1500	chr5:17994	Island
cg03249986	1	37	11	66383717	RBM14	NM_006328	TSS1500	chr11:6638	Island	
cg03290040	1	37	22	24110355	CHCHD10	NM_213720	TSS1500	chr22:2411	Island	
cg03290752	1	37	3	1.77E+08	TBL1XR1	NM_024665	TSS200	chr3:17691	N_Shore	
cg03318904	1	37	22	39801522	MAP3K7IP1;MAP3K7IP1	NM_006116;NM_153497	Body;Body			
cg03331282	1	37	1	36056567	TFAP2E	NM_178548	Body			
cg03382797	1	37	9	1.36E+08	C9orf98;C9orf9	NM_152572;NM_018956	TSS1500;5'UTR	chr9:13575	S_Shore	
cg03396103	1	37	12	1.17E+08				chr12:1169	Island	

cg03396325	1	37	15	87876345			
cg03414134	2	37	3	1.87E+08 BCL6	NM_001706	5'UTR	chr3:18746Island
cg03440588	3	37	1	47900320 FOXD2;MGC12982	NM_004474;NR_026878	TSS1500;TSS200	chr1:47899Island
cg03440588		37	1	47900320 FOXD2;MGC12982	NM_004474;NR_026878	TSS1500;TSS200	chr1:47899Island
cg03448396	1	37	3	38495949 LOC100128640;ACVR2B	NR_028389;NM_001106	Body;Body	chr3:38495Island
cg03539051		37	19	56418660 NLRP13	NM_176810	Body	
cg03558399	2	37	3	67022555			
cg03558805		37	7	73184883 CLDN3	NM_001306	TSS1500	chr7:73183Island
cg03586240	1	37	7	1966361 MAD1L1;MAD1L1;MAD1L1	NM_003550;NM_001013837;NM_001013837	Body;Body;Body	chr7:19676N_Shore
cg03593908	1	37	13	60842299			
cg03597540		37	1	1.5E+08 HIST2H2BE;HIST2H2AC;HIST2H2BE	NM_003528;NM_003517;NM_003528	1stExon;TSS1500;3'UTR	chr1:14985N_Shore
cg03623968		37	3	1.29E+08 RAB7A	NM_004637	Body	
cg03632289	1	37	11	71301062			
cg03657549		37	7	1.28E+08 METTL2B;METTL2B	NM_018396;NM_018396	5'UTR;1stExon	chr7:12811Island
cg03672997		37	10	7859623 TAF3	NM_031923	TSS1500	chr10:7860N_Shore
cg03677929	1	37	12	7342174 PEX5;PEX5;PEX5;PEX5;PEX5	NM_000319;NM_001131023;NM_001131023	TSS1500;TSS200;TSS200	chr12:7342Island
cg03677929		37	12	7342174 PEX5;PEX5;PEX5;PEX5;PEX5	NM_000319;NM_001131023;NM_001131023	TSS1500;TSS200;TSS200	chr12:7342Island
cg03687650	7	37	11	3144685 OSBPL5;OSBPL5;OSBPL5	NM_020896;NM_001144063;NM_145606	Body;Body;Body	chr11:3141S_Shelf
cg03687650		37	11	3144685 OSBPL5;OSBPL5;OSBPL5	NM_020896;NM_001144063;NM_145606	Body;Body;Body	chr11:3141S_Shelf
cg03703325		37	3	50606864 HEMK1	NM_016173	TSS200	chr3:50606Island
cg03733229	2	37	21	46824701 COL18A1	NM_130445	TSS1500	chr21:4682Island
cg03799405	2	37	4	1595726			chr4:15952S_Shore
cg03822003		37	16	30569878 ZNF764	NM_033410	TSS1500	chr16:3056Island
cg03870777	10	37	12	53342755 KRT18;KRT18	NM_000224;NM_199187	TSS200;5'UTR	chr12:5334N_Shore
cg03870777		37	12	53342755 KRT18;KRT18	NM_000224;NM_199187	TSS200;5'UTR	chr12:5334N_Shore
cg03916104		37	1	6314748 GPR153	NM_207370	Body	chr1:63137S_Shore
cg03928690	1	37	2	1.98E+08 MOBKL3;MOBKL3;MOBKL3	NM_199482;NM_001100819;NM_015506	5'UTR;Body;Body	chr2:19838Island
cg03937591	1	37	4	899553 GAK	NM_005255	Body	chr4:89977N_Shore
cg04016326		37	12	14132940 GRIN2B;GRIN2B	NM_000834;NM_000834	1stExon;5'UTR	chr12:1413N_Shore
cg04035728	1	37	8	27323467 CHRNA2	NM_000742	Body	chr8:27320S_Shelf
cg04072156	1	37	3	1.49E+08 CPB1	NM_001871	TSS1500	
cg04083921	2	37	5	1.31E+08 RAPGEF6;RAPGEF6;RAPGEF6;RAPGEF6;RAPGEF6	NM_001164388;NM_001164386;NM_001164386	Body;Body;Body;Body;Body;Body	
cg04101351		37	12	20522672 PDE3A	NM_000921	1stExon	chr12:2052Island
cg04113418	1	37	19	49646093 PPFIA3	NM_003660	Body	chr19:4964Island
cg04120546	1	37	8	1.26E+08 MTSS1	NM_014751	TSS200	chr8:12573Island
cg04166812	1	37	14	61122051			chr14:6112N_Shore
cg04171803	1	37	2	2.34E+08 GIGYF2;GIGYF2;GIGYF2;GIGYF2	NM_015575;NM_001103148;NM_001103148	TSS200;TSS200;TSS200	chr2:23356N_Shore
cg04186622	1	37	1	1.49E+08			chr1:14855Island
cg04199621	1	37	6	30955712 MUC21	NM_001010909	Body	
cg04215672	1	37	4	4108791			chr4:41087Island
cg04223160		37	14	23755398 HOMEZ	NM_020834	TSS200	chr14:2375Island
cg04254690		37	4	25031951 LGI2	NM_018176	Body	chr4:25032N_Shore
cg04262428	2	37	11	70673256 SHANK2	NM_012309	Body	chr11:7067S_Shore
cg04285141	2	37	16	57872427			
cg04285141		37	16	57872427			
cg04293489		37	6	49917881 DEF8133	NM_001166478	TSS1500	
cg04357082	1	37	16	980022 LMF1	NM_022773	Body	chr16:9797Island
cg04357082		37	16	980022 LMF1	NM_022773	Body	chr16:9797Island
cg04360049	1	37	1	1.58E+08 CD1D	NM_001766	5'UTR	chr1:15815Island
cg04381865	1	37	16	15219673			chr16:1522N_Shore

cg04406981		1	37	19	48453315	SNAR-C3	NR_024221	TSS1500	
cg04427003		4	37	5	63257499	HTR1A	NM_000524	1stExon	chr5:63256Island
cg04441477		4	37	16	24267399	CACNG3;CACNG3	NM_006539;NM_006539	1stExon;5'UTR	chr16:2426Island
cg04493430		1	37	16	1030388	SOX8	NM_014587	TSS1500	chr16:1029Island
cg04498153	1		37	7	1.58E+08	PTPRN2;PTPRN2;PTPRN2	NM_002847;NM_130842;NM_130843	Body;Body;Body	chr7:15769N_Shore
cg04498153		3	37	7	1.58E+08	PTPRN2;PTPRN2;PTPRN2	NM_002847;NM_130842;NM_130843	Body;Body;Body	chr7:15769N_Shore
cg04529860		2	37	19	39900650				chr19:3990Island
cg04544058		1	37	3	13609195	FBLN2;FBLN2;FBLN2	NM_001165035;NM_001004019;NM_001004019	TSS1500;5'UTR;5'UTR	chr3:13611N_Shelf
cg04574459		1	37	21	47010768				chr21:4700Island
cg04691540		1	37	1	1.79E+08	ABL2;ABL2;ABL2;ABL2;ABL2	NM_001136001;NM_001168238;NM_001168238	1stExon;1stExon;1stExon	chr1:17919Island
cg04706600	2		37	5	1.79E+08	ADAMTS2;ADAMTS2	NM_021599;NM_014244	Body;Body	
cg04706600		4	37	5	1.79E+08	ADAMTS2;ADAMTS2	NM_021599;NM_014244	Body;Body	
cg04723723		1	37	1	67966270				
cg04729004		1	37	7	1.29E+08	KCP;KCP	NM_001135914;NM_199349	TSS200;TSS200	chr7:12855S_Shore
cg04737185		1	37	11	1445041	BRSK2	NM_003957	Body	
cg04786330		1	37	12	27091356	C12orf11;FGFR1OP2;FGFR1OP2	NM_018164;NM_015633;NM_015633	TSS200;5'UTR;1stExon	chr12:2709Island
cg04819714	1		37	11	1.01E+08	FLJ32810;TMEM133	NM_152432;NM_032021	3'UTR;TSS1500	
cg04821026	1		37	21	15068553				chr21:1506N_Shore
cg04837170	1		37	16	1494876	CCDC154	NM_001143980	TSS1500	chr16:1495N_Shore
cg04884908		2	37	2	72374840	CYP26B1	NM_019885	1stExon	chr2:72371Island
cg04891086	1		37	12	5018513	KCNA1	NM_000217	TSS1500	chr12:5018N_Shore
cg04899500	1		37	19	48965791	KCNJ14;KCNJ14	NM_170720;NM_013348	Body;Body	chr19:4896Island
cg05025392	1		37	17	14738114				
cg05070971	2		37	21	43239518	PRDM15;PRDM15	NM_022115;NM_001040424	Body;Body	chr21:4324N_Shore
cg05070971		1	37	21	43239518	PRDM15;PRDM15	NM_022115;NM_001040424	Body;Body	chr21:4324N_Shore
cg05088794	1		37	18	33081137				chr18:3307S_Shelf
cg05101846	1		37	17	72580962	C17orf77;CD300LD	NM_152460;NM_001115152	TSS200;Body	
cg05157470	1		37	6	28937310				
cg05229450	1		37	6	1.69E+08				
cg05240017	2		37	5	40756081	TTC33	NM_012382	TSS200	chr5:40755Island
cg05240017		1	37	5	40756081	TTC33	NM_012382	TSS200	chr5:40755Island
cg05242257	1		37	16	2588092	PDPK1;PDPK1;PDPK1;PDPK1	NM_031268;NM_002613;NM_031268	5'UTR;1stExon;1stExon	chr16:2588Island
cg05304037	1		37	19	50094202	PRR12;PRRG2	NM_020719;NM_000951	TSS1500;3'UTR	chr19:5009Island
cg05377387	1		37	16	84328658	WFDC1	NM_021197	1stExon	chr16:8432Island
cg05388057	1		37	1	78226545	USP33;USP33;USP33	NM_015017;NM_201626;NM_201624	TSS1500;TSS1500;TSS1500	chr1:78224S_Shore
cg05436007	1		37	6	1.47E+08				
cg05436007		1	37	6	1.47E+08				
cg05553502		1	37	5	92924091	NR2F1	NM_005654	Body	chr5:92923Island
cg05587853	7		37	3	1.36E+08	MSL2;MSL2	NM_001145417;NM_018133	TSS1500;TSS200	chr3:13591Island
cg05592114	1		37	12	7244104	C1R	NM_001733	Body	
cg05597349	1		37	10	1.03E+08	TLX1NB	NM_001085398	5'UTR	chr10:1028Island
cg05634255		1	37	4	1.39E+08				
cg05668926	1		37	7	39609343	C7orf36	NM_020192	Body	chr7:39605S_Shelf
cg05743054	2		37	3	1.58E+08	MLF1;MLF1;MLF1	NM_001130156;NM_022443;NM_001130156	TSS200;TSS200;TSS200	chr3:15828Island
cg05757007		1	37	6	1.01E+08	ASCC3	NM_006828	Body	
cg05835009		1	37	4	710272	PCGF3	NM_006315	5'UTR	chr4:71392N_Shelf
cg05851240	1		37	18	72201663	CNDP1	NM_032649	TSS200	
cg05852760		1	37	7	23508224	IGF2BP3	NM_006547	Body	chr7:23508Island
cg05854114	1		37	12	77719408				chr12:7771Island
cg05907237		1	37	10	1.27E+08	CTBP2;CTBP2;CTBP2	NM_001083914;NM_001083914;NM_001083914	1stExon;5'UTR;TSS1500	chr10:1268Island

cg05931119	1	37	6	1.69E+08				
cg05936555	2	37	6	30539508 ABCF1;ABCF1	NM_001090;NM_001025091	Body;Body	chr6:305385_Shore	
cg05952475	1	37	6	1.64E+08 PACRG;PACRG;PACRG	NM_152410;NM_001080378;NM_001080378	Body;Body;Body		
cg05963872	1	37	7	63652631			chr7:63652Island	
cg06016354	3	37	6	32163966 GPSM3;NOTCH4	NM_022107;NM_004557	TSS1500;Body	chr6:32163Island	
cg06039161	1	37	11	70672835 SHANK2	NM_012309	Body	chr11:7067Island	
cg06079468	1	37	10	81839181 LOC219347;LOC219347;LOC219347;C10orf57;LOC219347	NR_027430;NR_027431;NR_027428;NR_027429	TSS1500;TSS1500;TSS1500	chr10:81835_Shore	
cg06081199	1	37	7	1.17E+08 CFTR;CFTR	NM_000492;NM_000492	1stExon;5'UTR		
cg06087019	1	37	3	27770182			chr3:27771N_Shore	
cg06090383	1	37	4	1.74E+08 SAP30	NM_003864	1stExon	chr4:17429Island	
cg06098215	2	37	10	51575702 NCOA4;NCOA4;NCOA4;NCOA4;NCOA4	NM_005437;NM_001145263;NM_00115'UTR;5'UTR;Body;TSS1	chr10:51575_Shelf		
cg06153883	1	37	7	1.37E+08 CHRM2;CHRM2;CHRM2;CHRM2;CHRM2;CHRM2	NM_001006631;NM_000739;NM_001006631	5'UTR;5'UTR;5'UTR;5'UTR;5'UTR;5'UTR;5'UTR;5'UTR	chr8:14353Island	
cg06166932	1	37	8	1.44E+08				
cg06180519	2	37	10	32800689 CCDC7;CCDC7	NM_145023;NM_001026383	Body;Body		
cg06180519	3	37	10	32800689 CCDC7;CCDC7	NM_145023;NM_001026383	Body;Body		
cg06212297	1	37	16	48079666				
cg06254801	2	37	9	79379216 PCA3;PRUNE2	NR_015342;NM_015225	TSS200;Body		
cg06319785	1	37	2	75437207				
cg06326713	1	37	17	20745278			chr17:2074N_Shore	
cg06329022	5	37	17	26926511 SPAG5	NM_006461	TSS1500	chr17:2692Island	
cg06354519	1	37	1	27939417 FGR;FGR;FGR	NM_005248;NM_001042729;NM_001042729	3'UTR;3'UTR;3'UTR	chr1:27941N_Shelf	
cg06409741	11	37	13	1.15E+08 RASA3	NM_007368	Body	chr13:1147Island	
cg06409741	11	37	13	1.15E+08 RASA3	NM_007368	Body	chr13:1147Island	
cg06444730	1	37	1	84544284 PRKACB;PRKACB	NM_002731;NM_207578	Body;Body	chr1:84543S_Shore	
cg06452419	1	37	17	55938940			chr17:5593N_Shore	
cg06456389	2	37	10	99052468 ARHGAP19	NM_032900	TSS200	chr10:9905Island	
cg06466917	1	37	5	17216259 LOC285696;BASP1	NR_027253;NM_006317	Body;TSS1500	chr5:17216N_Shore	
cg06483559	1	37	11	1.24E+08 OR6X1	NM_001005188	1stExon		
cg06502456	2	37	15	25304609 SNORD116-4	NR_003319	TSS200		
cg06502456	1	37	15	25304609 SNORD116-4	NR_003319	TSS200		
cg06515771	1	37	6	26614168			chr6:26614Island	
cg06521472	1	37	16	88990232 CBFA2T3;CBFA2T3	NM_175931;NM_005187	5'UTR;Body	chr16:8899N_Shelf	
cg06525193	1	37	2	2.38E+08				
cg06525491	5	37	11	71353991			chr11:7135S_Shelf	
cg06528306	1	37	8	53852661 NPBWR1	NM_005285	1stExon	chr8:53851Island	
cg06546406	2	37	1	39269756			chr1:39269Island	
cg06577604	1	37	3	1.84E+08 EPHB3	NM_004443	TSS200	chr3:18427Island	
cg06594186	1	37	7	12971260				
cg06638787	1	37	6	5997243			chr6:59970Island	
cg06677013	1	37	6	84570388 CYB5R4	NM_016230	Body	chr6:84569S_Shore	
cg06681324	2	37	2	1.65E+08				
cg06681324	1	37	2	1.65E+08				
cg06731021	1	37	6	1.16E+08 COL10A1;NT5DC1	NM_000493;NM_152729	Body;Body		
cg06766273	2	37	11	62521983 ZBTB3	NM_024784	TSS1500	chr11:6252S_Shore	
cg06796869	1	37	1	2.28E+08 OBSCN;OBSCN	NM_052843;NM_001098623	Body;Body	chr1:22847N_Shelf	
cg06800849	1	37	16	89180587 ACSF3;ACSF3;ACSF3	NM_174917;NR_023316;NM_0011272	Body;Body;Body		
cg06816239	2	37	1	1.7E+08 SELL;SELL	NM_000655;NR_029467	Body;TSS1500		
cg06894723	1	37	13	1.1E+08				
cg06900229	1	37	17	48556928 RSAD1	NM_018346	Body	chr17:4855S_Shore	
cg06902609	2	37	7	985719 ADAP1	NM_006869	Body	chr7:98561Island	

cg06916315	1	37	5	1.74E+08			chr5:17417Island
cg06996175	1	37	19	2546877	GNG7	NM_052847	5'UTR chr19:2546Island
cg07054668	1	37	3	52811637	ITIH1;ITIH1	NM_002215;NM_001166434	1stExon;TSS1500
cg07061145	1	37	15	78556178	DNAJA4;DNAJA4	NM_018602;NM_001130182	TSS1500;TSS1500 chr15:7855N_Shore chr3:51638N_Shelf
cg07089698	1	37	3	5161802			
cg07102406	1	37	16	2294639	DCI	NM_001919	Body
cg07102406	1	37	16	2294639	DCI	NM_001919	Body
cg07115206	1	37	16	6425686	A2BP1;A2BP1	NM_001142333;NM_018723	5'UTR;5'UTR
cg07119830	1	37	10	1.04E+08	TRIM8	NM_030912	Body
cg07139514	1	37	2	10665727			chr2:10666N_Shore
cg07145255	1	37	5	59995354	DEPDC1B;DEPDC1B	NM_018369;NM_001145208	Body;Body chr5:59995N_Shore
cg07163173	1	37	2	67624373	ETAA1	NM_019002	TSS200 chr2:67624Island
cg07165115	1	37	2	82756475			
cg07165756	1	37	11	66311422	ZDHHC24	NM_207340	Body chr11:6631N_Shore
cg07170752	1	37	1	2.25E+08	DNAH14	NM_001373	Body
cg07184658	2	37	9	96722329			chr9:96720Island
cg07190543	1	37	7	82611154	ICA1;ICA1;ICA1	NM_004968;NM_001136020;NM_0223	Body;Body;Body
cg07216337	1	37	8	75233610	JPH1	NM_020647	TSS200 chr8:75232Island
cg07258847	2	37	6	66708570			
cg07258847	6	37	6	66708570			
cg07266964	1	37	2	1.36E+08			
cg07276861	1	37	4	76862355	NAAA;NAAA	NM_014435;NM_001042402	TSS200;TSS200 chr4:76861Island
cg07288557	3	37	12	47226301			chr12:4722S_Shore
cg07304175	1	37	3	1.81E+08	SOX2OT	NR_004053	Body chr3:18141S_Shore
cg07321237	1	37	7	82754608	PCL0;PCL0	NM_014510;NM_033026	Body;Body
cg07331204	1	37	6	74998385			
cg07367469	1	37	5	1.16E+08			
cg07379140	5	37	1	95538546	ALG14	NM_144988	TSS200 chr1:95538Island
cg07379140	1	37	1	95538546	ALG14	NM_144988	TSS200 chr1:95538Island
cg07476643	1	37	10	1.03E+08			chr10:1027N_Shore
cg07483064	1	37	1	8938751	ENO1;ENO1	NM_001428;NM_001428	1stExon;5'UTR chr1:89380Island
cg07487925	1	37	17	25620950	WSB1;WSB1	NM_015626;NM_134265	TSS200;TSS200 chr17:2562N_Shore
cg07493834	1	37	2	22114272			
cg07499372	1	37	19	57631232	USP29	NM_020903	TSS1500 chr19:5763S_Shore
cg07517948	1	37	15	67801494			
cg07549590	1	37	16	15018862			chr16:1501Island
cg07554478	1	37	3	1.13E+08	ATP6V1A	NM_001690	5'UTR
cg07562918	2	37	9	21994435	CDKN2A;CDKN2BAS	NM_058195;NR_003529	1stExon;TSS1500 chr9:21994Island
cg07576142	1	37	13	93879769	GPC6	NM_005708	1stExon chr13:9387Island
cg07581226	2	37	2	2939627			
cg07588141	1	37	3	1.06E+08	CBLB	NM_170662	TSS1500 chr3:10558Island
cg07596845	1	37	6	82957841	IBTK	NM_015525	TSS1500 chr6:82957Island
cg07602984	1	37	1	36790927	FAM176B	NM_018166	TSS1500 chr1:36786S_Shore
cg07605410	1	37	1	16828163			chr1:16825S_Shore
cg07633317	1	37	16	49732623	ZNF423	NM_015069	Body chr16:4973Island
cg07695475	1	37	15	1.02E+08	OR4F15	NM_001001674	1stExon
cg07741793	1	37	17	26989030	SDF2;SUPT6H	NM_006923;NM_003170	TSS200;TSS1500 chr17:2698Island
cg07743117	2	37	5	77146278			chr5:77146N_Shore
cg07749943	1	37	4	3468188	DOK7;DOK7	NM_173660;NM_001164673	Body;Body chr4:34647S_Shelf
cg07772660	1	37	1	17085863	MST1P9	NR_002729	Body chr1:17085Island

cg07772660		9	37	1	17085863	MST1P9	NR_002729	Body	chr1:17085Island
cg07781162	1		37	17	74533951	CYGB	NM_134268	TSS200	chr17:7453Island
cg07812819	1		37	7	89975908	GTPBP10;GTPBP10	NM_001042717;NM_033107	TSS200;TSS200	chr7:89975Island
cg07813249	1		37	4	46392253	GABRA2;GABRA2	NM_000807;NM_001114175	TSS200;TSS1500	chr4:46391Island
cg07813747		1	37	16	21514953	LOC100271836	NR_027155	TSS1500	chr16:2151S_Shore
cg07817024		1	37	1	1.2E+08				chr1:11953N_Shore
cg07835814	1		37	20	32077669	CBFA2T2	NM_001032999	TSS1500	chr20:3207Island
cg07864467	1		37	10	1.34E+08				
cg07883117	1		37	7	1.01E+08	EMID2	NM_133457	TSS1500	chr7:10100N_Shore
cg07908805		2	37	19	427022	SHC2	NM_012435	Body	chr19:4267Island
cg07919744	1		37	15	52873609	KIAA1370	NM_019600	3'UTR	
cg07962315	1	1	37	9	77704473	OSTF1;C9orf95;C9orf95;C9orf95	NM_012383;NR_023352;NM_00112761	Body;TSS1500;TSS1500	chr9:77702S_Shore
cg07966388	1		37	15	93363564				
cg08028004	1		37	2	1.09E+08	RANBP2;RANBP2	NM_006267;NM_006267	1stExon;5'UTR	chr2:10933Island
cg08035555	1		37	19	3558417	C19orf28;C19orf28;C19orf28	NM_021731;NM_001042680;NM_1745	TSS1500;TSS1500;TSS1500	chr19:3556S_Shore
cg08076266	1		37	2	1.2E+08	TMEM37	NM_183240	Body	chr2:12019Island
cg08237220	1		37	3	1.56E+08				
cg08242475		1	37	7	1327791				chr7:13285N_Shore
cg08269037		1	37	1	11751616	MAD2L2;C1orf187;MAD2L2	NM_001127325;NM_198545;NM_00115	UTR;TSS200;1stExon	chr1:11750Island
cg08318726	1		37	12	1.15E+08	TBX5;TBX5;TBX5	NM_181486;NM_000192;NM_080717	TSS1500;5'UTR;5'UTR	chr12:1148N_Shore
cg08356503	1		37	16	88105836	BANP;BANP	NM_017869;NM_079837	Body;Body	chr16:8810Island
cg08376824	1		37	20	5987738	CRLS1;CRLS1	NM_019095;NM_001127458	Body;TSS200	chr20:5986S_Shore
cg08447792	1		37	4	1.11E+08	CCDC109B	NM_017918	Body	
cg08453096		1	37	2	44065893	ABCG5;ABCG8;ABCG5	NM_022436;NM_022437;NM_022436	5'UTR;TSS1500;1stExon	
cg08476757	1		37	3	1.08E+08	IFT57	NM_018010	Body	chr3:10794Island
cg08514765	2		37	16	58058888	MMP15	NM_002428	TSS1500	chr16:5805Island
cg08521684	1		37	3	1.95E+08	MUC4;MUC4;MUC4	NM_018406;NM_138297;NM_004532	Body;Body;Body	chr3:19548Island
cg08561442	1		37	16	49891857				chr16:4988Island
cg08592761		1	37	15	71146185	LARP6;LARP6	NM_197958;NM_018357	Body;Body	chr15:7114Island
cg08623277	1		37	2	2.06E+08	PARD3B;PARD3B;PARD3B	NM_152526;NM_057177;NM_205863	Body;Body;Body	
cg08643994		1	37	4	1.42E+08				
cg08658621	1		37	10	1.34E+08	DPYSL4	NM_006426	TSS1500	chr10:1339Island
cg08671647	1		37	4	30724564	PCDH7;PCDH7;PCDH7	NM_032456;NM_032457;NM_002589	1stExon;Body;1stExon	chr4:30721Island
cg08671647		2	37	4	30724564	PCDH7;PCDH7;PCDH7	NM_032456;NM_032457;NM_002589	1stExon;Body;1stExon	chr4:30721Island
cg08727867	1		37	21	15588349	RBM11	NM_144770	TSS200	chr21:1558N_Shore
cg08728848	6		37	17	30437958				
cg08728848		3	37	17	30437958				
cg08751971	1		37	7	1.29E+08	IRF5;IRF5;IRF5;IRF5;IRF5;IRF5	NM_032643;NM_001098629;NM_001098629	Body;Body;Body;Body;Body;Body;Body	
cg08753297	2		37	6	56716612	DST;DST;DST;DST	NM_001144771;NM_001144770;NM_001144770	TSS200;5'UTR;1stExon;Body	
cg08782158	4		37	2	927755				
cg08813539		1	37	10	29011452				chr10:2901Island
cg08852245	1		37	4	1.75E+08				chr4:17513S_Shelf
cg08864035		3	37	1	1.14E+08	HIPK1;HIPK1	NM_198268;NM_152696	TSS1500;TSS1500	chr1:11447N_Shore
cg08866633	1		37	13	1.14E+08	LAMP1	NM_005561	Body	
cg08891883	1		37	4	8347266				chr4:83474N_Shore
cg08905496	3		37	1	1.65E+08	RXRG;RXRG;RXRG;RXRG	NM_001009598;NM_006917;NM_006917	5'UTR;5'UTR;1stExon;1stExon	
cg08943292	1		37	4	40337370	CHRNA9	NM_017581	TSS200	
cg08983429	1		37	16	3577455	CLUAP1;CLUAP1	NM_015041;NM_024793	Body;Body	
cg08992729		1	37	6	32809425	PSMB8;PSMB8	NM_004159;NM_148919	Body;Body	chr6:32811N_Shelf
cg09032973	1		37	5	1.4E+08	PCDHA1;PCDHA1;PCDHA1	NM_031410;NM_031411;NM_018900	1stExon;1stExon;1stExon	chr5:14016Island

cg09119967	1	37	20	9494838	C20orf103	NM_012261	TSS1500	chr20:9495N_Shore
cg09214993	1	37	15	64673618	KIAA0101;KIAA0101;KIAA0101;KIAA0101	NM_001029989;NM_014736;NM_001029989	1stExon;1stExon;5'UTR;5'UTR	
cg09222892	1	37	1	25734099	RHCE;RHCE;RHCE;RHCE	NM_138616;NM_138617;NM_138618	Body;Body;Body;Body	
cg09272909	1	37	9	71736999	TJP2	NM_001170414	5'UTR	chr9:71736Island
cg09292409	2	37	16	15461083				
cg09334915	1	37	1	2.39E+08				
cg09343402	1	37	19	24216269				
cg09365557	1	37	17	59477564	TBX2	NM_005994	1stExon	chr17:5947Island
cg09413529	1	37	12	1.15E+08	TBX3;TBX3	NM_005996;NM_016569	Body;Body	chr12:1151Island
cg09418673	3	37	11	76372128	LRRC32;LRRC32	NM_001128922;NM_005512	Body;Body	
cg09418673	4	37	11	76372128	LRRC32;LRRC32	NM_001128922;NM_005512	Body;Body	
cg09463211	1	37	15	99093248				chr15:9909S_Shore
cg09499421	1	37	16	31020735	STX1B	NM_052874	Body	
cg09507411	1	37	5	82395650	XRCC4;XRCC4;XRCC4	NM_022550;NM_003401;NM_022406	5'UTR;5'UTR;5'UTR	
cg09600829	2	37	9	96216052	FAM120A;FAM120AOS	NM_014612;NM_198841	Body;TSS200	chr9:96213S_Shore
cg09653641	1	37	7	92455499	CDK6;CDK6	NM_001259;NM_001145306	Body;Body	
cg09672383	2	37	2	25390540	POMC;POMC	NM_000939;NM_001035256	5'UTR;5'UTR	chr2:25391N_Shore
cg09672383	1	37	2	25390540	POMC;POMC	NM_000939;NM_001035256	5'UTR;5'UTR	chr2:25391N_Shore
cg09717927	1	37	13	1.13E+08				chr13:1126N_Shore
cg09788029	3	37	12	1.03E+08				
cg09814034	1	37	20	44876346	CDH22	NM_021248	Body	chr20:4487S_Shore
cg09822136	1	37	5	14144123	TRIO	NM_007118	Body	chr5:14143Island
cg09952395	1	37	11	63258712	HRASLS5;HRASLS5;HRASLS5	NM_001146728;NM_001146729;NM_001146729	TSS200;TSS200;TSS200	chr11:6325Island
cg10006235	2	37	11	49226370	FOLH1;FOLH1	NM_004476;NM_001014986	Body;Body	chr11:4922N_Shelf
cg10045446	1	37	7	32530734	LSM5;LSM5;LSM5;LSM5	NM_001139499;NM_012322;NR_0244	5'UTR;TSS1500;TSS150	chr7:32529S_Shore
cg10045446	2	37	7	32530734	LSM5;LSM5;LSM5;LSM5	NM_001139499;NM_012322;NR_0244	5'UTR;TSS1500;TSS150	chr7:32529S_Shore
cg10077985	1	37	10	833127				
cg10091458	3	37	9	1.17E+08	KIF12	NM_138424	Body	chr9:11686N_Shore
cg10128416	1	37	1	75198403	TYW3;CRYZ;CRYZ;TYW3;TYW3;CRYZ;CRYZ	NM_001162916;NM_001130042;NM_001162916	TSS1500;5'UTR;5'UTR;TSS1500;TSS1500;5'UTR;5'UTR	
cg10159215	1	37	1	99470560	LPPR5;LPPR5	NM_001010861;NM_001037317	TSS200;TSS200	chr1:99469Island
cg10174031	1	37	16	31408898	ITGAD	NM_005353	Body	
cg10202874	1	37	16	32165225	HERC2P4	NR_002827	TSS1500	
cg10206440	4	37	1	16353594	CLCNKA;CLCNKA	NM_001042704;NM_004070	Body;Body	
cg10206440	1	37	1	16353594	CLCNKA;CLCNKA	NM_001042704;NM_004070	Body;Body	
cg10211414	1	37	1	8875053	RERE;RERE	NM_012102;NM_001042681	5'UTR;5'UTR	chr1:88770N_Shore
cg10211414	1	37	1	8875053	RERE;RERE	NM_012102;NM_001042681	5'UTR;5'UTR	chr1:88770N_Shore
cg10261325	1	37	10	29874759	SVIL;SVIL	NM_021738;NM_003174	5'UTR;5'UTR	
cg10261325	1	37	10	29874759	SVIL;SVIL	NM_021738;NM_003174	5'UTR;5'UTR	
cg10306485	7	37	13	1.15E+08	RASA3	NM_007368	Body	chr13:1148S_Shelf
cg10306485	3	37	13	1.15E+08	RASA3	NM_007368	Body	chr13:1148S_Shelf
cg10368533	1	37	12	22778127	ETNK1;ETNK1	NM_001039481;NM_018638	1stExon;1stExon	chr12:2277Island
cg10368935	1	37	10	18240316	SLC39A12;SLC39A12	NM_001145195;NM_152725	TSS1500;TSS1500	
cg10405239	1	37	17	26733360	SLC46A1	NM_080669	TSS200	chr17:2673Island
cg10423227	1	37	2	64752200	AFTPH;AFTPH;AFTPH	NM_203437;NM_001002243;NM_0176	5'UTR;5'UTR;5'UTR	chr2:64751S_Shore
cg10490795	1	37	5	1.5E+08	SYNPO	NM_007286	Body	chr5:15003N_Shore
cg10514235	1	37	4	15003844				chr4:15003Island
cg10579818	1	37	19	34117242	CHST8;CHST8	NM_001127895;NM_001127896	5'UTR;5'UTR	chr19:3411S_Shelf
cg10596590	1	37	6	51814836	PKHD1;PKHD1	NM_138694;NM_170724	Body;Body	
cg10601972	1	37	3	12851576	CAND2;CAND2	NM_001162499;NM_012298	Body;Body	chr3:12851Island
cg10607939	1	37	7	1.12E+08	IFRD1;IFRD1	NM_001550;NM_001007245	Body;Body	chr7:11209Island

cg10609068	4		37	12	45609265 ANO6;ANO6;PLEKHA9;ANO6	NM_001142680;NM_001142679;NM_C	TSS1500;TSS1500;5'UT	chr12:4560N_Shore
cg10609068		1	37	12	45609265 ANO6;ANO6;PLEKHA9;ANO6	NM_001142680;NM_001142679;NM_C	TSS1500;TSS1500;5'UT	chr12:4560N_Shore
cg10674754	4		37	4	8456019 C4orf23	NM_152544	TSS200	
cg10674754		3	37	4	8456019 C4orf23	NM_152544	TSS200	
cg10688514	1		37	10	48354852 ZNF488	NM_153034	TSS1500	chr10:4835Island
cg10703619	1		37	7	1.55E+08			
cg10711996	1		37	10	32635917 EPC1;EPC1	NM_025209;NM_025209	5'UTR;1stExon	chr10:3263Island
cg10722444		1	37	13	1.13E+08			chr13:1126Island
cg10776643	1		37	14	71527576 PCNX	NM_014982	Body	
cg10842913	1		37	12	1.26E+08			
cg10843276	1		37	4	726697 PCGF3	NM_006315	5'UTR	chr4:72433S_Shore
cg10895973		1	37	17	14212636 HS3ST3B1	NM_006041	Body	chr17:1421Island
cg10902101	1		37	22	48899955 FAM19A5	NM_001082967	Body	chr22:4889S_Shelf
cg10909154		1	37	16	2723619			chr16:2722Island
cg10932815	1		37	12	68294240			
cg10966582	1		37	1	17085860 MST1P9	NR_002729	Body	chr1:17085Island
cg10966582		5	37	1	17085860 MST1P9	NR_002729	Body	chr1:17085Island
cg10988062	1		37	7	64023434 ZNF680;ZNF680;ZNF680;ZNF680	NM_001130022;NM_178558;NM_178558	1stExon;5'UTR;1stExon;5'UTR	
cg11005250	3		37	12	1.08E+08			chr12:1082Island
cg11084629		1	37	1	55230770 PARS2	NM_152268	TSS1500	chr1:55229S_Shore
cg11104313	1		37	3	1.12E+08 TAGLN3;TAGLN3;TAGLN3	NM_013259;NM_001008272;NM_001008272	TSS200;TSS200;TSS1500	
cg11159141		1	37	3	11529333 ATG7;ATG7;ATG7	NM_001136031;NM_001144912;NM_001144912	Body;Body;Body	chr3:11529N_Shore
cg11199172	1		37	17	46707338			chr17:4671N_Shelf
cg11203397	1		37	13	46870454			
cg11222065	1		37	6	33240468 VPS52;RPS18	NM_022553;NM_022551	TSS1500;Body	chr6:33239S_Shore
cg11273848		1	37	10	1.31E+08			chr10:1305N_Shore
cg11303425	1		37	12	6798826 ZNF384;ZNF384;ZNF384;ZNF384;ZNF384;ZNF384;ZNF384	NM_001039916;NM_001039920;NM_C	TSS1500;TSS200;TSS200	chr12:6798Island
cg11322849	1		37	11	2182783 INS;INS-IGF2;INS-IGF2	NM_000207;NR_003512;NM_0010423	TSS1500;TSS1500;TSS1500	
cg11336643	1		37	12	1.24E+08 CCDC92	NM_025140	5'UTR	
cg11350208		1	37	2	1.33E+08			
cg11386711	1		37	3	1.87E+08 ST6GAL1;ST6GAL1	NM_173216;NM_173217	5'UTR;5'UTR	chr3:18664S_Shelf
cg11461030	1		37	1	46932239			chr1:46932Island
cg11461302	1		37	22	38507451 BAIAP2L2	NM_025045	TSS1500	
cg11498652	2		37	5	40834691 RPL37	NM_000997	Body	chr5:40835N_Shore
cg11542394	2		37	15	1.01E+08 ALDH1A3	NM_000693	TSS1500	chr15:1014N_Shore
cg11551464		3	37	8	49595738			
cg11553116	1		37	6	2871823			chr6:28756N_Shelf
cg11575929	1		37	6	28414894			
cg11677722		1	37	19	39881393 MED29;PAF1	NM_017592;NM_019088	TSS1500;Body	chr19:3988Island
cg11723795	1		37	14	91975931 SMEK1	NM_032560	Body	chr14:9197Island
cg11746846	3		37	18	3067337 MYOM1;MYOM1	NM_019856;NM_003803	Body;Body	chr18:3067Island
cg11746846		1	37	18	3067337 MYOM1;MYOM1	NM_019856;NM_003803	Body;Body	chr18:3067Island
cg11750736	1		37	17	10634140 TMEM220	NM_001004313	TSS1500	chr17:1063S_Shore
cg11781564	1		37	5	73016764 RGNEF	NM_001080479	Body	
cg11801727		1	37	1	2.29E+08			chr1:22865Island
cg11832722	1		37	18	28623060 DSC3;DSC3	NM_001941;NM_024423	TSS1500;TSS1500	chr18:2862Island
cg11865413	15		37	10	72969054			chr10:7297N_Shelf
cg11865413		9	37	10	72969054			chr10:7297N_Shelf
cg11958128	1		37	12	3226445 TSPAN9;TSPAN9	NM_001168320;NM_006675	5'UTR;5'UTR	
cg12000587	1		37	17	30186630 C17orf79	NM_018405	TSS1500	chr17:3018S_Shore

cg13462158	3		37	1	55522104	PCSK9	NM_174936	Body	
cg13473576		1	37	7	97601586	MGC72080	NR_002822	Body	chr7:97601Island
cg13488605	2		37	19	38908709	RASGRP4;RASGRP4;RASGRP4;RASGRP4;RASGR	NM_001146205;NM_001146207;NM_C	Body;Body;Body;Body;	chr19:38908Island
cg13523386	1		37	4	71457838	AMBN	NM_016519	TSS200	
cg13560904		1	37	1	1.5E+08	OTUD7B	NM_020205	TSS200	chr1:14998Island
cg13565382	1		37	10	63628787				
cg13565382		4	37	10	63628787				
cg13568258		1	37	19	48823427	CCDC114	NM_144577	TSS200	chr19:4882N_Shore
cg13605988	1		37	15	45421612	DUOX1;DUOX1;DUOXA1	NM_175940;NM_017434;NM_144565	TSS1500;TSS1500;5'UT	chr15:4542Island
cg13612295		1	37	18	72124791	FAM69C	NM_001044369	TSS1500	chr18:7212S_Shore
cg13614440	2		37	17	76471012	DNAH17	NM_173628	Body	chr17:7647N_Shore
cg13648344	1		37	9	36328161				
cg13663218		1	37	12	72666976	LOC283392;TRHDE;LOC283392	NR_026837;NM_013381;NR_026836	Body;1stExon;Body	chr12:7266Island
cg13667739	1		37	14	1.06E+08	CRIP2	NM_001312	Body	chr14:1059Island
cg13667739		1	37	14	1.06E+08	CRIP2	NM_001312	Body	chr14:1059Island
cg13684188		1	37	9	1.35E+08	TTF1	NM_007344	TSS200	chr9:13528Island
cg13686622		1	37	13	41634589	WBP4	NM_007187	TSS1500	chr13:4163Island
cg13857186		1	37	9	1.16E+08	C9orf43;POLE3;C9orf43;POLE3	NM_152786;NR_027261;NM_152786;↑	5'UTR;TSS1500;1stExor	chr9:11617S_Shore
cg13861904		1	37	9	1.39E+08	NOTCH1	NM_017617	Body	chr9:13942N_Shore
cg13892902		1	37	15	43478040	CCNDBP1;CCNDBP1;CCNDBP1;CCNDBP1	NM_037370;NM_012142;NR_027513;↑	TSS200;Body;Body;Bod	chr15:4347S_Shore
cg13896879	1		37	1	1.51E+08	ARNT;ARNT;ARNT	NM_178427;NM_001668;NM_178426	Body;Body;Body	
cg13918350	1		37	7	1153507	C7orf50;C7orf50;C7orf50	NM_001134395;NM_032350;NM_0011	Body;Body;Body	chr7:11553N_Shore
cg13918350		1	37	7	1153507	C7orf50;C7orf50;C7orf50	NM_001134395;NM_032350;NM_0011	Body;Body;Body	chr7:11553N_Shore
cg13944505		1	37	1	1.87E+08				
cg13995006	1		37	8	1.19E+08	MED30	NM_080651	TSS200	chr8:11853N_Shore
cg13999514		1	37	7	1.06E+08	FLJ36031	NM_175884	TSS1500	chr7:1063CS_Shore
cg14022105	2		37	11	78288793				chr11:7828S_Shelf
cg14022105		3	37	11	78288793				chr11:7828S_Shelf
cg14048880		1	37	9	1.39E+08				chr9:13906Island
cg14056644	1		37	4	1.12E+08	PITX2;PITX2	NM_153427;NM_153426	TSS1500;TSS1500	chr4:11156N_Shore
cg14097440		1	37	14	74251018	C14orf43	NM_001043318	5'UTR	chr14:7425N_Shelf
cg14109799	2		37	14	31495427	AP4S1;STRN3;STRN3;STRN3;STRN3;AP4S1	NM_007077;NM_014574;NM_014574;	5'UTR;1stExon;5'UTR;1	chr14:3149Island
cg14157578		1	37	9	1.11E+08				
cg14185808		1	37	2	1.06E+08	MRPS9	NM_182640	TSS1500	chr2:10565N_Shore
cg14200609		1	37	12	94853950	CCDC41;CCDC41;LOC144486	NM_016122;NM_001042399;NR_0270	TSS200;TSS200;Body	chr12:9485Island
cg14237674	1		37	17	43239170	HEXIM2	NM_144608	5'UTR	chr17:4323Island
cg14249856		1	37	7	77167329	PTPN12;PTPN12;PTPN12	NM_001131009;NM_001131008;NM_C	TSS200;TSS200;Body	chr7:77166Island
cg14279842	2		37	14	50159788	KLHDC1	NM_172193	TSS200	chr14:5015Island
cg14280905		5	37	9	1.36E+08	ADAMTSL2;ADAMTSL2	NM_014694;NM_001145320	Body;Body	chr9:13642N_Shore
cg14294250		3	37	17	1957154	HIC1	NM_006497	TSS1500	chr17:1952Island
cg14314896	1		37	19	430690	SHC2	NM_012435	Body	chr19:4292S_Shore
cg14330460		4	37	6	1.69E+08				
cg14330460		7	37	6	1.69E+08				
cg14351127	1		37	9	1.03E+08	INVS;INVS	NM_014425;NM_183245	Body;Body	
cg14361033		1	37	9	1.25E+08	LHX6;LHX6	NM_199160;NM_014368	Body;Body	chr9:12498N_Shore
cg14397696		1	37	13	1.06E+08				
cg14414764	1		37	8	67741966	SGK3;SGK3;SGK3	NM_170709;NM_001033578;NM_0132	Body;Body;Body	
cg14447152	1		37	9	1.4E+08	COBRA1	NM_015456	Body	chr9:14014S_Shelf
cg14447152		2	37	9	1.4E+08	COBRA1	NM_015456	Body	chr9:14014S_Shelf
cg14455170	1		37	13	42002398				

cg14466759	1		37	7	1.02E+08	CUX1;CUX1;CUX1	NM_181500;NM_181552;NM_001913	Body;Body;Body	
cg14466759		1	37	7	1.02E+08	CUX1;CUX1;CUX1	NM_181500;NM_181552;NM_001913	Body;Body;Body	
cg14467066	1		37	17	79419739	BAHCC1	NM_001080519	Body	chr17:7942N_Shore
cg14482093		1	37	8	22461488	KIAA1967;C8orf58;KIAA1967	NM_021174;NM_001013842;NM_1992	TSS1500;3'UTR;TSS1500	chr8:22462N_Shore
cg14540650	1		37	9	6683274				chr9:66808S_Shore
cg14543412	1		37	6	26224100	HIST1H3E	NM_003532	TSS1500	chr6:26225N_Shore
cg14555127		3	37	7	35841578	SEPT7;SEPT7	NM_001011553;NM_001788	Body;Body	chr7:3584C_Island
cg14616423	7		37	9	16315271				
cg14616423		1	37	9	16315271				
cg14639163	1		37	2	2.2E+08	WNT6	NM_006522	Body	chr2:21973Island
cg14657159		2	37	12	56211136	ORMDL2;SARNP;SARNP;SARNP	NM_014182;NR_026723;NR_026722;N	TSS1500;Body;Body;Bo	chr12:5621N_Shore
cg14710040	4		37	19	3985464	EEF2	NM_001961	TSS200	chr19:3984Island
cg14737877		1	37	8	664783	ERICH1	NM_207332	Body	chr8:66399Island
cg14780600	1		37	2	2.4E+08	HDAC4	NM_006037	5'UTR	
cg14795305		2	37	7	1.51E+08	SMARCD3;SMARCD3	NM_001003802;NM_003078	TSS1500;TSS1500	chr7:15097Island
cg14834675		1	37	12	70083105	BEST3;BEST3	NM_032735;NM_152439	Body;TSS200	
cg14857851	1		37	3	15115139	ZFYVE20	NM_022340	3'UTR	chr3:15116N_Shore
cg14858469		1	37	15	96874050	NR2F2;NR2F2	NM_021005;NM_001145155	TSS200;Body	chr15:9687Island
cg14866032	1		37	15	98195808				chr15:9819N_Shore
cg14870156		1	37	6	33048540	HLA-DPB1	NM_002121	Body	chr6:33048Island
cg14871601	1		37	7	64030039				chr7:64029Island
cg14877741		1	37	9	1.26E+08	RABGAP1	NM_012197	TSS200	chr9:1257C_Island
cg14938587	1		37	7	1.56E+08				
cg14965968		1	37	3	44803235	KIF15;KIF15;KIAA1143	NM_020242;NM_020242;NM_020696	1stExon;5'UTR;TSS200	chr3:44802Island
cg15002362	1		37	6	1.3E+08	LAMA2;LAMA2	NM_001079823;NM_000426	Body;Body	
cg15002362		1	37	6	1.3E+08	LAMA2;LAMA2	NM_001079823;NM_000426	Body;Body	
cg15002580	1		37	8	98636815				chr8:98636Island
cg15025054		2	37	1	2.13E+08	TATDN3;NSL1;TATDN3;NSL1;TATDN3;TATDN3;	NM_001146171;NM_015471;NM_001C	TSS1500;1stExon;TSS1500	chr1:21296Island
cg15109571	2		37	10	1.04E+08	SUFU	NM_016169	1stExon	chr10:1042Island
cg15119076		1	37	19	19976606	ZNF253	NM_021047	TSS200	
cg15140902	1		37	6	21667815	FLJ22536	NR_015410	Body	chr6:21665S_Shore
cg15196058	1		37	4	1.31E+08				
cg15228928	2		37	13	1.13E+08				chr13:1127Island
cg15330255		1	37	10	1.03E+08	FBXW4	NM_022039	TSS1500	chr10:1034S_Shore
cg15333277	2		37	8	41733931	ANK1	NM_001142446	Body	chr8:41733S_Shore
cg15347484	2		37	2	79515194				
cg15490897		1	37	1	55038020	ACOT11;ACOT11	NM_015547;NM_147161	Body;Body	
cg15518950	1		37	5	72415770	TMEM171;TMEM171	NM_001161342;NM_173490	TSS1500;TSS1500	chr5:72415Island
cg15554438	1		37	11	92931280	SLC36A4	NM_152313	TSS200	chr11:9293Island
cg15590056		1	37	7	1.5E+08				
cg15595333	1		37	11	1.18E+08				
cg15602420	1		37	1	20205059				chr1:20208N_Shelf
cg15651394		1	37	2	36584981	CRIM1	NM_016441	Body	chr2:36584Island
cg15681626	1		37	11	64739253				chr11:6473Island
cg15685834		1	37	1	18970180	PAX7;PAX7;PAX7	NM_013945;NM_002584;NM_0011352	Body;Body;Body	chr1:18969Island
cg15705470	1		37	5	87972265	LOC645323;LOC645323	NR_024383;NR_015436	Body;Body	chr5:87973N_Shore
cg15709065		1	37	3	1.34E+08	AMOTL2	NM_016201	5'UTR	chr3:13409N_Shore
cg15714041	1		37	9	32384344	ACO1	NM_002197	TSS1500	chr9:32384N_Shore
cg15745910		1	37	13	1.13E+08				
cg15750986	1		37	7	98249103	NPTX2	NM_002523	Body	chr7:98245S_Shore

cg15760840	1		37	7	27225222 HOXA11AS;HOXA11	NR_002795;NM_005523	Body;TSS1500	chr7:27225Island
cg15810744		1	37	11	67211300 CORO1B;CORO1B	NM_001018070;NM_020441	TSS200;TSS1500	
cg15812873		1	37	16	28635015 SULT1A1	NM_177536	TSS200	chr16:2863Island
cg15840462		1	37	1	969744 AGRN	NM_198576	Body	chr1:96796Island
cg15846886	1		37	17	79790116 FAM195B;FAM195B	NM_207368;NM_001093767	5'UTR;5'UTR	chr17:7979N_Shore
cg15877233	1		37	7	40611688 C7orf10	NM_024728	Body	
cg15892650		1	37	5	1.51E+08 ANXA6;ANXA6	NM_001155;NM_004033	Body;Body	
cg15913680		3	37	11	72353343 PDE2A;PDE2A;PDE2A;PDE2A	NM_001143839;NR_026572;NM_0011	1stExon;Body;Body;Bo	chr11:7235Island
cg15917344	1		37	7	89975873 GTPBP10;GTPBP10	NM_001042717;NM_033107	TSS200;TSS200	chr7:89975Island
cg15959921	1		37	4	8702279			
cg15974085	1		37	18	71815641 C18orf55;FBXO15;FBXO15	NM_014177;NM_152676;NM_001142	TSS200;TSS1500;TSS15	chr18:7181Island
cg15974085		15	37	18	71815641 C18orf55;FBXO15;FBXO15	NM_014177;NM_152676;NM_001142	TSS200;TSS1500;TSS15	chr18:7181Island
cg15994467	1		37	12	52401523 GRASP	NM_181711	Body	chr12:5240Island
cg16000637		1	37	7	1274142 UNCX	NM_001080461	Body	chr7:12691Island
cg16001460	3		37	6	57181802 PRIM2	NM_000947	TSS1500	
cg16001460		8	37	6	57181802 PRIM2	NM_000947	TSS1500	
cg16009381	2		37	5	1.73E+08 BOD1;BOD1;BOD1;BOD1	NM_138369;NM_138369;NM_001159	5'UTR;1stExon;5'UTR;1	chr5:17304Island
cg16009381		1	37	5	1.73E+08 BOD1;BOD1;BOD1;BOD1	NM_138369;NM_138369;NM_001159	5'UTR;1stExon;5'UTR;1	chr5:17304Island
cg16013630		2	37	1	1406606 ATAD3B	NM_031921	TSS1500	chr1:14068N_Shore
cg16026088	1		37	9	1.33E+08 TOR1B	NM_014506	TSS200	chr9:13256N_Shore
cg16060163		3	37	17	80454814			chr17:8045Island
cg16084014		1	37	7	1.15E+08 MDFIC;MDFIC	NM_199072;NM_001166345	Body;Body	
cg16091269	1		37	3	1.97E+08			chr3:19718N_Shore
cg16091269		1	37	3	1.97E+08			chr3:19718N_Shore
cg16101346		1	37	1	1.87E+08 PTGS2	NM_000963	TSS1500	chr1:18664S_Shore
cg16101636	1		37	6	29711438 LOC285830;LOC285830	NR_026972;NR_026973	Body;Body	
cg16101636		1	37	6	29711438 LOC285830;LOC285830	NR_026972;NR_026973	Body;Body	
cg16121685		5	37	1	1.62E+08 UHMK1	NM_175866	TSS200	chr1:16246Island
cg16143319		1	37	2	32230813 MEMO1;MEMO1	NM_015955;NM_001137602	Body;Body	chr2:32234N_Shelf
cg16208269		1	37	3	45665937 LIMD1	NM_014240	Body	
cg16226310	1		37	5	843633 ZDHHC11	NM_024786	Body	chr5:84345Island
cg16226310		1	37	5	843633 ZDHHC11	NM_024786	Body	chr5:84345Island
cg16233210	1		37	3	1.72E+08 FNDC3B;FNDC3B	NM_022763;NM_001135095	5'UTR;5'UTR	
cg16234298		1	37	22	17091297 psiTPTE22	NR_001591	Body	chr22:1709S_Shore
cg16271221	1		37	3	1.89E+08			
cg16315155		1	37	19	55249794 KIR2DL3;KIR2DL3	NM_015868;NM_014511	TSS200;TSS200	
cg16348316	1		37	2	1.28E+08 PROC	NM_000312	Body	chr2:12818Island
cg16349612	1		37	7	50849723 GRB10	NM_001001555	5'UTR	chr7:50849N_Shore
cg16355305		1	37	12	65220152			chr12:6521S_Shore
cg16404784	1		37	14	38087605			chr14:3809N_Shelf
cg16410115	2		37	1	24240000 CNR2	NM_001841	TSS200	
cg16410115		1	37	1	24240000 CNR2	NM_001841	TSS200	
cg16459519	1		37	10	46970584 SYT15;SYT15;SYT15;SYT15	NM_031912;NM_181519;NM_031912;	1stExon;5'UTR;5'UTR;1	chr10:4696Island
cg16481280	1		37	6	32120955 PPT2;PRRT1;PPT2	NM_005155;NM_030651;NM_138717	TSS1500;TSS1500;TSS1	chr6:32121N_Shore
cg16506566	1		37	5	10420680	43530 NM_005885	Body	
cg16517838		1	37	14	1.06E+08			chr14:1061S_Shore
cg16542426		1	37	15	23205622 WHAMML1	NR_003521	Body	chr15:2320N_Shelf
cg16573957		1	37	8	21970273			chr8:21966S_Shelf
cg16619071	1		37	19	52408324 ZNF649	NM_023074	TSS200	
cg16626809	1		37	21	46825856 COL18A1	NM_130445	Body	chr21:4682Island

cg16668042	1		37	5	1.32E+08	HSPA4	NM_002154	Body	chr5:13238	Island
cg16668042		1	37	5	1.32E+08	HSPA4	NM_002154	Body	chr5:13238	Island
cg16681830		1	37	20	62586920	UCKL1AS;UCKL1	NR_027287;NM_017859	Body;Body	chr20:6258	Island
cg16707641		1	37	2	1.75E+08	WIPF1;WIPF1	NM_003387;NM_001077269	Body;Body		
cg16730825	1		37	11	928439	AP2A2	NM_012305	Body	chr11:9251	S_Shelf
cg16788797		1	37	8	75132833					
cg16790849	5		37	6	31829511	NEU1	NM_000434	Body	chr6:31830	N_Shore
cg16790849		3	37	6	31829511	NEU1	NM_000434	Body	chr6:31830	N_Shore
cg16837441	1		37	20	43935222	MATN4;MATN4;MATN4;RBPJL	NM_003833;NM_030592;NM_030590;	5'UTR;5'UTR;5'UTR;TSS	chr20:4393	Island
cg16872520		1	37	11	72929124	P2RY2;P2RY2;P2RY2	NM_176071;NM_176072;NM_002564	TSS1500;TSS1500;TSS1	chr11:7292	Island
cg17001464	1		37	7	1.31E+08	FLJ43663;FLJ43663	NR_015431;NR_024153	Body;Body		
cg17010112		1	37	4	77227123	STBD1	NM_003943	TSS1500	chr4:7722	N_Shore
cg17038667	1		37	11	69632883	FGF3	NM_005247	Body	chr11:6963	Island
cg17049418		1	37	6	3722453					
cg17278466		2	37	17	76798203	USP36	NM_025090	Body	chr17:7679	Island
cg17310773	4		37	22	41215357	SLC25A17;SLC25A17	NM_006358;NM_006358	1stExon;5'UTR	chr22:4121	Island
cg17310773		1	37	22	41215357	SLC25A17;SLC25A17	NM_006358;NM_006358	1stExon;5'UTR	chr22:4121	Island
cg17319849		1	37	1	1.55E+08	GBA;GBA;GBA;GBA	NM_001005749;NM_001005750;NM_001005751;NM_001005752	TSS200;TSS200;TSS200;TSS200		
cg17330305	1		37	17	56834361	PPM1E	NM_014906	Body	chr17:5683	S_Shore
cg17330305		2	37	17	56834361	PPM1E	NM_014906	Body	chr17:5683	S_Shore
cg17351882	1		37	17	4692162	GLTPD2	NM_001014985	TSS200	chr17:4692	N_Shore
cg17392018	1		37	7	1.35E+08	CALD1;CALD1;CALD1;CALD1;CALD1	NM_033139;NM_033157;NM_033140;	Body;Body;Body;Body;Body		
cg17393572		1	37	5	1.76E+08	HK3	NM_002115	TSS200		
cg17419597		1	37	1	1.56E+08	BGLAP	NM_199173	TSS1500	chr1:1562	N_Shelf
cg17514665	1		37	17	1657533	SERPINF2;SERPINF2;SERPINF2	NM_000934;NM_001165921;NM_001165922	Body;Body;Body	chr17:1657	Island
cg17599471	1		37	1	25174745				chr1:2517	Island
cg17656474		1	37	12	176424	IQSEC3	NM_001170738	1stExon	chr12:1756	S_Shore
cg17690515		2	37	19	1360278	MUM1;MUM1	NR_024247;NM_032853	Body;Body	chr19:1360	Island
cg17745251	11		37	10	21806139	C10orf140	NM_207371	Body	chr10:2180	Island
cg17745251		7	37	10	21806139	C10orf140	NM_207371	Body	chr10:2180	Island
cg17747332	1		37	19	11071239	SMARCA4;SMARCA4;SMARCA4	NM_003072;NM_001128849;NM_001128850	TSS1500;TSS1500;TSS1	chr19:1107	Island
cg17749356		1	37	2	1.19E+08	CCDC93	NM_019044	Body		
cg17775382	1		37	5	1584233	SDHAP3	NR_003263	Body		
cg17782025	1		37	3	23958698	NKIRAS1;RPL15	NM_020345;NM_002948	TSS200;5'UTR	chr3:2395	Island
cg17794241	1		37	15	74658653	CYP11A1;CYP11A1	NM_000781;NM_001099773	Body;TSS200	chr15:7465	S_Shore
cg17815035		1	37	18	54790380				chr18:5478	S_Shore
cg17877237	2		37	13	32497491	EEF1DP3	NR_027062	Body		
cg17892069	2		37	7	70061616	AUTS2;AUTS2	NM_015570;NM_001127231	Body;Body	chr7:7006	S_Shore
cg17892069		3	37	7	70061616	AUTS2;AUTS2	NM_015570;NM_001127231	Body;Body	chr7:7006	S_Shore
cg17897445		1	37	8	7537473				chr8:7537	N_Shore
cg17918201	1		37	10	27150106	ABI1;ABI1;ABI1;ABI1	NM_005470;NM_001012752;NM_001012753;NM_001012754	TSS200;TSS200;TSS200	chr10:2714	Island
cg17956079	10		37	11	73358572	PLEKHB1;PLEKHB1;PLEKHB1;PLEKHB1;PLEKHB1	NM_001130035;NM_001130036;NM_001130037	TSS200;TSS1500;TSS200;Body;Body		
cg17956079		4	37	11	73358572	PLEKHB1;PLEKHB1;PLEKHB1;PLEKHB1;PLEKHB1	NM_001130035;NM_001130036;NM_001130037	TSS200;TSS1500;TSS200;Body;Body		
cg17987505		1	37	5	1.79E+08	SQSTM1;SQSTM1	NM_001142298;NM_001142299	5'UTR;5'UTR	chr5:1792	N_Shore
cg18007959	1		37	5	1.54E+08				chr5:1538	S_Shore
cg18056133	1		37	11	60609408	CCDC86	NM_024098	TSS200	chr11:6060	Island
cg18099523		1	37	6	1.46E+08	SHPRH;SHPRH	NM_173082;NM_001042683	TSS1500;TSS1500	chr6:1462	Island
cg18111500	3		37	14	61655727					
cg18111500		10	37	14	61655727					
cg18193219		1	37	3	53164697	RFT1	NM_052859	TSS1500	chr3:5316	Island

cg18207011	1	37	14	68861095	RAD51L1;RAD51L1;RAD51L1	NM_133509;NM_002877;NM_133510	Body;Body;Body	
cg18217175	2	37	1	18967020	PAX7;PAX7;PAX7	NM_013945;NM_002584;NM_0011352	Body;Body;Body	chr1:18967N_Shore
cg18217175	1	37	1	18967020	PAX7;PAX7;PAX7	NM_013945;NM_002584;NM_0011352	Body;Body;Body	chr1:18967N_Shore
cg18220799	1	37	18	44099340	LOXHD1;LOXHD1;LOXHD1	NM_001145473;NM_144612;NM_0011	TSS1500;Body;Body	
cg18239858	1	37	7	1.02E+08	CUX1;CUX1;CUX1	NM_181500;NM_181552;NM_001913	Body;Body;Body	
cg18325160	1	37	3	1.93E+08	OPA1;OPA1;OPA1;OPA1;OPA1;OPA1;OP	NM_130836;NM_130831;NM_130837;	5'UTR;5'UTR;5'UTR;1stl	chr3:19331Island
cg18337963	1	37	11	46383209	DGKZ;DGKZ;DGKZ;DGKZ;DGKZ	NM_001105540;NM_201533;NM_00111	1stExon;Body;5'UTR;Body;Body	
cg18391209	1	37	1	2.24E+08	CAPN8	NM_001143962	Body	chr1:22374S_Shelf
cg18415822	1	37	7	1.56E+08				chr7:15585S_Shore
cg18452149	1	37	3	1.08E+08	KIAA1524;DZIP3;KIAA1524	NM_020890;NM_014648;NM_020890	5'UTR;TSS200;1stExon	chr3:10830Island
cg18460938	1	37	15	86842630	AGBL1	NM_152336	Body	
cg18496140	1	37	11	44286375	ALX4	NM_021926	3'UTR	
cg18501555	1	37	4	1.12E+08	PITX2;PITX2	NM_153427;NM_153426	5'UTR;5'UTR	chr4:11155Island
cg18561676	2	37	1	1.49E+08				chr1:14885Island
cg18561676	4	37	1	1.49E+08				chr1:14885Island
cg18580296	1	37	7	15726411	MEOX2	NM_005924	TSS200	
cg18580296	2	37	7	15726411	MEOX2	NM_005924	TSS200	
cg18633379	1	37	18	59855274	PIGN;PIGN;KIAA1468	NM_012327;NM_176787;NM_020854	TSS1500;TSS1500;Body	chr18:5985S_Shore
cg18633561	1	37	7	1.22E+08	FEZF1;FEZF1	NM_001160264;NM_001024613	Body;Body	chr7:12194N_Shore
cg18676488	1	37	5	70848105	BDP1	NM_018429	Body	
cg18676488	2	37	5	70848105	BDP1	NM_018429	Body	
cg18686165	1	37	3	57200492	IL17RD	NM_017563	TSS1500	chr3:57198S_Shore
cg18700813	3	37	14	1.03E+08	RAGE	NM_014226	Body	
cg18710412	1	37	5	90654191				
cg18724069	1	37	5	39721760				chr5:39721Island
cg18762036	1	37	2	1.08E+08				
cg18779296	1	37	4	41878119				chr4:41880N_Shelf
cg18855674	1	37	8	72469553				chr8:72468Island
cg18862888	4	37	10	31346162				
cg18902057	1	37	16	88636444	ZC3H18	NM_144604	TSS1500	chr16:8863Island
cg18927185	1	37	6	33091634	HLA-DPB2	NR_001435	Body	
cg18954388	1	37	11	20621495	SLC6A5	NM_004211	Body	chr11:2062N_Shore
cg19037304	2	37	7	19812760	TMEM196	NM_152774	TSS1500	chr7:19812Island
cg19132477	1	37	3	8484313				
cg19132477	1	37	3	8484313				
cg19154754	1	37	11	48977527				
cg19157696	1	37	11	27384984	CCDC34;CCDC34	NM_080654;NM_030771	TSS200;TSS200	chr11:2738S_Shore
cg19190016	1	37	17	81025684				chr17:8102S_Shore
cg19207486	1	37	19	22323107				chr19:2232S_Shelf
cg19227053	1	37	20	60116795	CDH4	NM_001794	Body	chr20:6011N_Shelf
cg19265948	2	37	12	23229286				
cg19265948	1	37	12	23229286				
cg19327615	1	37	20	19955436	RIN2	NM_018993	Body	chr20:1995N_Shore
cg19327615	1	37	20	19955436	RIN2	NM_018993	Body	chr20:1995N_Shore
cg19380675	1	37	22	32808489	C22orf28	NM_014306	TSS1500	chr22:3280S_Shore
cg19409687	1	37	11	65682960				chr11:6568N_Shelf
cg19441646	1	37	14	1.03E+08	RAGE	NM_014226	3'UTR	chr14:1026Island
cg19448318	2	37	6	30698784	FLOT1	NM_005803	Body	
cg19469087	1	37	7	98556941	TRRAP	NM_003496	Body	chr7:98552S_Shelf
cg19480274	1	37	20	37098327				chr20:3710N_Shelf

cg19484381	1	37	6	28890673	TRIM27	NM_006510	Body	chr6:28890	N_Shore
cg19488906	1	37	6	1.62E+08	AGPAT4	NM_020133	5'UTR		
cg19513744	2	37	3	56836209	ARHGEF3;ARHGEF3	NM_001128615;NM_019555	Body;TSS1500	chr3:56835	Island
cg19514542	1	37	10	1.26E+08	CPMX2	NM_198148	Body	chr10:1256	N_Shelf
cg19559392	7	37	2	39103372	MORN2;DHX57	NM_001145450;NM_198963	5'UTR;TSS1500	chr2:391025	_Shore
cg19562312	1	37	10	44069847	ZNF239;ZNF239;ZNF239	NM_001099284;NM_001099282;NM_C	5'UTR;5'UTR;5'UTR	chr10:4406	Island
cg19625088	1	37	5	87976156	LOC645323	NR_015436	Body	chr5:87976	Island
cg19627869	1	37	12	56391069	SUOX;SUOX;SUOX;SUOX;SUOX	NM_001032386;NM_001032387;NM_C	5'UTR;1stExon;1stExon;5'UTR;5'UTR;1stExon		
cg19693446	1	37	14	1.02E+08					
cg19749898	1	37	11	1712765	HCCA2	NM_053005	Body	chr11:1715	N_Shelf
cg19777001	1	37	14	1.03E+08	RCOR1	NM_015156	Body		
cg19837938	1	37	5	23507458	PRDM9	NM_020227	TSS1500		
cg19837938	2	37	5	23507458	PRDM9	NM_020227	TSS1500		
cg19852211	1	37	5	1.4E+08	PCDHA2;PCDHA1;PCDHA1;PCDHA4;PCDHA3;PC	NM_018905;NM_031411;NM_018900;	Body;Body;Body;1stEx	chr5:14018	Island
cg19852211	1	37	5	1.4E+08	PCDHA2;PCDHA1;PCDHA1;PCDHA4;PCDHA3;PC	NM_018905;NM_031411;NM_018900;	Body;Body;Body;1stEx	chr5:14018	Island
cg19855573	2	37	1	1.52E+08	FLG	NM_002016	TSS200		
cg19865375	1	37	7	86629801	KIAA1324L;KIAA1324L	NM_001142749;NR_030672	Body;Body		
cg19875976	1	37	9	1.14E+08	KIAA0368	NM_001080398	Body	chr9:11424	Island
cg19875976	1	37	9	1.14E+08	KIAA0368	NM_001080398	Body	chr9:11424	Island
cg19991948	1	37	10	1.21E+08	TIAL1;TIAL1	NM_001033925;NM_003252	3'UTR;3'UTR		
cg19998654	1	37	2	37458983	CEBPZ;C2orf56;C2orf56	NM_005760;NM_144736;NM_0010836	TSS1500;Body;Body	chr2:37458	Island
cg20059151	1	37	1	95286311	SLC44A3;SLC44A3	NM_152369;NM_001114106	5'UTR;Body	chr1:95285	Island
cg20069765	1	37	6	33036464	HLA-DPA1	NM_033554	Body		
cg20081364	1	37	20	13202225	ISM1	NM_080826	TSS200	chr20:1320	Island
cg20155875	1	37	17	66452567	WIPI1	NM_017983	Body	chr17:6645	N_Shore
cg20162076	3	37	6	6588089	LY86;LOC285780	NM_004271;NR_026970	TSS1500;Body		
cg20162076	5	37	6	6588089	LY86;LOC285780	NM_004271;NR_026970	TSS1500;Body		
cg20172795	1	37	6	1.27E+08	RSPO3	NM_032784	Body	chr6:12744	N_Shore
cg20183094	4	37	7	1.22E+08				chr7:12195	Island
cg20200361	6	37	2	43775888	THADA;THADA	NM_022065;NM_001083953	Body;Body		
cg20268522	2	37	11	1.13E+08	NCAM1;NCAM1;NCAM1;NCAM1;NCAM1;NCAM1	NM_001076682;NM_001076682;NM_0	1stExon;5'UTR;5'UTR;1	chr11:1128	N_Shore
cg20274430	1	37	22	41075992	MCHR1	NM_005297	Body		
cg20294319	1	37	13	47253842	LRCH1;LRCH1;LRCH1	NM_015116;NM_001164213;NM_0011	Body;Body;Body		
cg20319405	1	37	11	10830230	EIF4G2;EIF4G2	NM_001418;NM_001042559	5'UTR;5'UTR	chr11:1082	Island
cg20327784	1	37	17	73703307	SAP30BP	NM_013260	3'UTR		
cg20327784	1	37	17	73703307	SAP30BP	NM_013260	3'UTR		
cg20458353	2	37	7	21260293					
cg20500836	1	37	17	78818645	RPTOR;RPTOR	NM_001163034;NM_020761	Body;Body	chr17:7881	Island
cg20532937	1	37	10	13748985	FRMD4A	NM_018027	Body		
cg20555922	1	37	20	33880266	FAM83C	NM_178468	TSS200	chr20:33875	_Shore
cg20587808	1	37	3	1.84E+08				chr3:18432	Island
cg20593868	1	37	20	62588672	UCKL1;ZNF512B	NM_017859;NM_020713	TSS1500;3'UTR	chr20:62585	_Shore
cg20593868	1	37	20	62588672	UCKL1;ZNF512B	NM_017859;NM_020713	TSS1500;3'UTR	chr20:62585	_Shore
cg20684251	3	37	19	51840554	VSIG10L	NM_001163922	Body	chr19:5184	N_Shore
cg20684251	1	37	19	51840554	VSIG10L	NM_001163922	Body	chr19:5184	N_Shore
cg20707630	1	37	15	25018449				chr15:2501	Island
cg20743744	1	37	4	1243849	C4orf42;CTBP1;CTBP1	NM_052861;NM_001328;NM_0010126	TSS1500;TSS1500;TSS1	chr4:12414	Island
cg20888142	1	37	3	12045662	SYN2;SYN2	NM_003178;NM_133625	TSS200;TSS200	chr3:12045	Island
cg20914725	1	37	2	74776831	LOXL3	NM_032603	Body	chr2:74776	Island
cg21000072	1	37	1	3567408	WDR8	NM_017818	TSS1500	chr1:35664	Island

cg22510362	1	37	16	87251839			chr16:8725Island
cg22630628	1	37	10	73337125	CDH23;CDH23	NM_052836;NM_022124	Body;Body
cg22657457	1	37	5	75469969	SV2C	NM_014979	Body chr5:75469Island
cg22730967	1	37	1	2.03E+08	ADORA1;ADORA1	NM_001048230;NM_000674	5'UTR;5'UTR chr1:20309Island
cg22730967	1	37	1	2.03E+08	ADORA1;ADORA1	NM_001048230;NM_000674	5'UTR;5'UTR chr1:20309Island
cg22791936	1	37	6	1.37E+08	SLC35D3;SLC35D3	NM_001008783;NM_001008783	1stExon;5'UTR chr6:13724Island
cg22819135	1	37	5	41920822	C5orf51	NM_175921	3'UTR
cg22821289	1	37	11	1.16E+08			
cg22827060	1	37	13	30424359	UBL3;UBL3	NM_007106;NM_007106	1stExon;5'UTR chr13:3042Island
cg22836434	1	37	11	86014570	C11orf73;C11orf73;C11orf73;C11orf73	NM_016401;NR_024597;NR_024596;N	Body;Body;Body;Body
cg22856949	1	37	10	1.27E+08	C10orf137	NM_015608	TSS200 chr10:1274Island
cg22877380	1	37	2	1.32E+08	ARHGFE4;ARHGFE4	NM_032995;NM_015320	3'UTR;3'UTR
cg22963777	1	37	20	34115350	C20orf173;C20orf173	NM_001145350;NR_026933	3'UTR;Body
cg23013894	1	37	5	5025912			
cg23067355	1	37	6	1.25E+08			chr6:12542S_Shelf
cg23078194	1	37	6	27661566			
cg23146197	1	37	12	66271002	HMGA2;HMGA2	NM_003484;NM_003483	Body;Body
cg23191118	1	37	8	1.46E+08	SCRT1	NM_031309	TSS1500 chr8:14555Island
cg23210118	1	37	10	95653378	TMEM20;TMEM20	NM_153226;NM_001134658	TSS1500;TSS1500 chr10:9565N_Shore
cg23226134	5	37	1	11866389	CLCN6;CLCN6;CLCN6;CLCN6;MTHFR	NM_001286;NM_021737;NM_021735;	1stExon;1stExon;1stExon chr1:11865Island
cg23232056	1	37	1	1.21E+08			
cg23239690	3	37	10	1.32E+08	MGMT	NM_002412	Body
cg23239690	1	37	10	1.32E+08	MGMT	NM_002412	Body
cg23275972	1	37	7	1.57E+08			
cg23283362	1	37	1	45263371			chr1:45265N_Shelf
cg23285761	2	37	8	38089462	DDHD2;DDHD2;DDHD2	NM_015214;NM_001164234;NM_00115'UTR;5'UTR;TSS200	chr8:38088Island
cg23350744	1	37	5	1.22E+08			chr5:12242N_Shelf
cg23369529	1	37	1	68149989	GADD45A	NM_001924	TSS1500 chr1:68150N_Shore
cg23442853	1	37	3	1.22E+08	PARP15;PARP15	NM_001113523;NM_001113523	5'UTR;1stExon chr3:12229N_Shore
cg23465289	1	37	5	54909384			
cg23509665	2	37	7	1.58E+08	PTPRN2;PTPRN2;PTPRN2	NM_002847;NM_130842;NM_130843	Body;Body;Body
cg23517116	1	37	8	65499841			chr8:65499Island
cg23574427	1	37	4	1.23E+08	BBS7;CCNA2	NM_176824;NM_001237	3'UTR;TSS1500 chr4:12274S_Shore
cg23645639	1	37	19	21203403	ZNF430	NM_025189	TSS200
cg23660155	1	37	1	22915626	EPHA8;EPHA8	NM_001006943;NM_020526	Body;Body
cg23692620	1	37	19	19971862			chr19:1997Island
cg23730260	1	37	11	8290409			chr11:8289S_Shore
cg23777173	2	37	12	1.33E+08	GALNT9	NM_001122636	Body chr12:1326S_Shore
cg23802518	1	37	10	80827482	ZMIZ1;LOC283050;LOC283050;LOC283050	NM_020338;NR_024431;NR_024429;N	TSS1500;TSS1500;TSS1500 chr10:8082Island
cg23813156	1	37	20	47935243			chr20:4793Island
cg23837438	1	37	10	1.35E+08			chr10:1351Island
cg23951961	1	37	4	42154912	BEND4;BEND4	NM_207406;NM_001159547	TSS200;TSS200 chr4:42152Island
cg23970785	1	37	16	11036526	DEXI	NM_014015	TSS1500 chr16:1103Island
cg24030735	1	37	17	10533089	MYH3	NM_002470	Body
cg24099067	1	37	6	26758750			
cg24177983	1	37	11	2398403	CD81	NM_004356	TSS200 chr11:2398Island
cg24216966	1	37	6	31540121	LTA;LTA;LTA	NM_000595;NM_001159740;NM_0005'UTR;5'UTR	
cg24243790	1	37	4	9760736			
cg24285811	1	37	9	1.39E+08			chr9:13914Island
cg24300033	1	37	2	2.42E+08			chr2:24164N_Shore

cg24330818		1	37	13	33002388 N4BP2L1;N4BP2L1	NM_052818;NM_001079691	TSS200;TSS200	chr13:3300S_Shore
cg24364491	2		37	6	32806906 TAP2;TAP2	NM_018833;NM_000544	TSS1500;TSS1500	chr6:32806S_Shore
cg24408706		2	37	11	363484			
cg24453123	1		37	15	35374148			
cg24453123		1	37	15	35374148			
cg24533904		1	37	1	1.84E+08 C1orf21	NM_030806	Body	
cg24541871		1	37	2	55845713 SMEK2;SMEK2	NM_001122964;NM_020463	TSS1500;TSS1500	chr2:55844S_Shore
cg24547359		1	37	1	53975500 GLIS1	NM_147193	Body	
cg24550933	1		37	1	1.12E+08 LOC441897	NR_029429	TSS200	
cg24563317	1		37	8	48872822 MCM4;MCM4;PRKDC;PRKDC	NM_005914;NM_182746;NM_006904;	TSS1500;TSS1500;TSS2	chr8:48872Island
cg24594224		1	37	6	33136015 COL11A2;COL11A2;COL11A2	NM_080679;NM_080681;NM_080680	Body;Body;Body	
cg24629356		1	37	1	35122551			
cg24706188		1	37	8	55088456			
cg24710435		1	37	10	14543847			
cg24734300	1		37	7	35677335 HERPUD2	NM_022373	Body	
cg24766104	1		37	19	16309072 AP1M1;AP1M1	NM_032493;NM_001130524	Body;Body	chr19:1630Island
cg24766104		2	37	19	16309072 AP1M1;AP1M1	NM_032493;NM_001130524	Body;Body	chr19:1630Island
cg24779831	1		37	2	2799370			
cg24794433	1		37	9	1.24E+08 DAB2IP	NM_032552	Body	chr9:12446Island
cg24811352		1	37	5	1.41E+08 PCDHB6	NM_018939	TSS1500	chr5:14053N_Shore
cg24839562	1		37	6	31673423 LY6G6F	NM_001003693	TSS1500	chr6:31670S_Shelf
cg24856050		1	37	19	3192433 NCLN	NM_020170	Body	chr19:3192Island
cg24864663	1		37	15	43532243 TGM5;TGM5	NM_201631;NM_004245	Body;Body	
cg24891539	3		37	8	55370407 SOX17	NM_022454	TSS200	chr8:55370Island
cg24891539		1	37	8	55370407 SOX17	NM_022454	TSS200	chr8:55370Island
cg24917945	1		37	10	1.21E+08 C10orf46	NM_153810	TSS200	chr10:1205Island
cg24968786		1	37	11	66360800 CCDC87;CCS	NM_018219;NM_005125	TSS1500;Body	chr11:6636Island
cg25013910		1	37	2	1478219 TPO;TPO;TPO;TPO	NM_175719;NM_000547;NM_175721;	Body;Body;Body;Body	chr2:14807N_Shelf
cg25025455	1		37	3	1.34E+08 CEP63;CEP63;ANAPC13;CEP63;CEP63;ANAPC13	NM_001042383;NM_001042400;NR_0	5'UTR;5'UTR;TSS200;5'	chr3:13420Island
cg25092989	1		37	8	10932494 XKR6	NM_173683	Body	chr8:10928S_Shelf
cg25100962		2	37	12	31782808			
cg25124476	1		37	7	1.5E+08 TMEM176B;TMEM176B;TMEM176A;TMEM176B	NM_001101312;NM_001101314;NM_C	TSS200;TSS200;TSS200	chr7:15049Island
cg25149069		2	37	1	2.33E+08 KIAA1804	NM_032435	1stExon	chr1:23346Island
cg25154733		2	37	13	28965632 FLT1;FLT1;FLT1	NM_001159920;NM_001160030;NM_C	Body;Body;Body	
cg25161386		1	37	17	27621177 NUFIP2	NM_020772	TSS200	chr17:2762Island
cg25181381	1		37	11	1.34E+08			
cg25193384	1		37	7	39837692			chr7:39833S_Shelf
cg25194328		1	37	5	54472477			chr5:54468S_Shelf
cg25206705		2	37	17	1082774 ABR;ABR	NM_021962;NM_001159746	Body;5'UTR	chr17:1082Island
cg25236028		1	37	17	767334 NXN	NM_022463	Body	
cg25246158		1	37	19	1940184 CSNK1G2	NM_001319	TSS1500	chr19:1940N_Shore
cg25252926		1	37	21	43235862 PRDM15;PRDM15	NM_022115;NM_001040424	Body;Body	chr21:4323N_Shore
cg25328184		1	37	5	1.1E+08 TSLP	NM_033035	TSS1500	chr5:11040N_Shelf
cg25328184		1	37	5	1.1E+08 TSLP	NM_033035	TSS1500	chr5:11040N_Shelf
cg25334660		1	37	8	42270520			chr8:42268S_Shore
cg25356214	2		37	12	51611871 POU6F1	NR_026893	TSS1500	chr12:5161S_Shore
cg25367905		1	37	5	1.77E+08 RGS14	NM_006480	Body	chr5:17678S_Shore
cg25370231		1	37	10	13391182 SEPHS1	NM_012247	TSS1500	
cg25402787		1	37	15	53084679			chr15:5308N_Shore
cg25409448		2	37	19	49558849 CGB7;CGB7	NM_033142;NM_033142	5'UTR;1stExon	chr19:4955N_Shore

cg25417551	1	37	17	35767582	TADA2A;TADA2A;ACACA;TADA2A;ACACA;TAD	NM_001488;NM_133439;NM_198834;	1stExon;1stExon;TSS15	chr17:3576S_Shore
cg25427880	1	37	10	1.02E+08				chr10:1023Island
cg25456593	1	37	11	70672858	SHANK2	NM_012309	Body	chr11:7067Island
cg25502179	1	37	3	46875342	PRSS42	NM_182702	Body	chr3:46874Island
cg25545088	1	37	6	43398446	ABCC10	NM_033450	TSS1500	chr6:43395S_Shelf
cg25550629	1	37	12	53546895				
cg25714381	1	37	7	76751893	CCDC146	NM_020879	TSS200	chr7:76750S_Shore
cg25734864	2	37	13	1.14E+08	PROZ	NM_003891	1stExon	
cg25756867	1	37	3	1.8E+08				
cg25758828	1	37	2	1.14E+08	PAX8;PAX8;PAX8;PAX8;PAX8;LOC440839	NM_013953;NM_003466;NM_013952;	3'UTR;Body;3'UTR;Body;3'UTR;Body	
cg25778535	1	37	11	8190572	RIC3;RIC3;RIC3;RIC3	NM_001135109;NM_024557;NM_0011	1stExon;5'UTR;5'UTR;1	chr11:8190Island
cg25803630	2	37	8	29885309				chr8:29884Island
cg25820279	1	37	2	1.77E+08				chr2:17700S_Shore
cg25824218	1	37	12	25104798				chr12:2510S_Shelf
cg25824218	1	37	12	25104798				chr12:2510S_Shelf
cg25859012	1	37	2	2.2E+08	BCS1L;ZNF142;BCS1L	NM_004328;NM_001105537;NM_0011	TSS200;TSS200;TSS200	chr2:21952Island
cg25884094	1	37	8	17785204	PCM1	NM_006197	5'UTR	chr8:17780S_Shelf
cg25894839	1	37	1	1.62E+08	FCRLB	NM_001002901	Body	chr1:16169Island
cg25943588	1	37	11	14993913	CALCA;CALCA;CALCA	NM_001033952;NM_001033953;NM_	TSS200;TSS200;TSS200	chr11:1499N_Shore
cg26003814	3	37	1	16444599				
cg26053864	1	37	15	35087635	ACTC1	NM_005159	5'UTR	
cg26074111	1	37	6	24776063	GMNN	NM_015895	5'UTR	chr6:24775S_Shore
cg26084511	1	37	7	20818226				chr7:20817Island
cg26091183	3	37	17	78387382	LOC100294362	NR_029376	Body	chr17:7838N_Shore
cg26091183	2	37	17	78387382	LOC100294362	NR_029376	Body	chr17:7838N_Shore
cg26105278	1	37	1	3624054	TP73;TP73;TP73;TP73	NM_001126240;NM_005427;NM_0011	Body;Body;Body;Body	chr1:36233S_Shore
cg26114595	1	37	17	28395749	EFCAB5;EFCAB5;EFCAB5	NR_026738;NM_198529;NM_0011450	Body;Body;Body	
cg26129303	1	37	8	1.42E+08				
cg26148236	1	37	2	2.33E+08	EFHD1;EFHD1	NM_025202;NR_027663	TSS1500;Body	chr2:23349Island
cg26149738	1	37	19	34287125	KCTD15;KCTD15;KCTD15	NM_001129994;NM_024076;NM_0011	TSS1500;TSS1500;TSS1	chr19:3428Island
cg26163463	1	37	5	1.4E+08	EIF4EBP3;ANKHD1-EIF4EBP3	NM_003732;NM_020690	TSS1500;Body	chr5:13992N_Shore
cg26203055	2	37	18	19284713	ABHD3;ABHD3	NM_138340;NM_138340	1stExon;5'UTR	chr18:1928Island
cg26266950	2	37	7	19160621				chr7:19156S_Shelf
cg26384229	9	37	12	38710491	ALG10B	NM_001013620	TSS200	chr12:3871Island
cg26384229	14	37	12	38710491	ALG10B	NM_001013620	TSS200	chr12:3871Island
cg26490274	1	37	16	4385435	GLIS2	NM_032575	Body	
cg26524638	1	37	11	2481449	KCNQ1;KCNQ1	NM_181798;NM_000218	TSS1500;Body	
cg26541533	1	37	6	1.64E+08				chr6:16425Island
cg26573704	2	37	5	33892223	ADAMTS12	NM_030955	TSS200	chr5:33892Island
cg26575535	1	37	16	65157839				chr16:6515S_Shore
cg26586710	1	37	10	1.34E+08	PWWP2B;PWWP2B	NM_001098637;NM_138499	Body;Body	chr10:1342N_Shore
cg26588943	2	37	4	1.73E+08	GALNTL6;GALNTL6	NM_001034845;NM_001034845	1stExon;5'UTR	chr4:17273Island
cg26616283	1	37	7	11871535	THSD7A	NM_015204	1stExon	
cg26616283	1	37	7	11871535	THSD7A	NM_015204	1stExon	
cg26634911	2	37	4	47916863	NFXL1	NM_152995	TSS1500	chr4:47915Island
cg26651514	1	37	13	33864734				
cg26654519	1	37	8	1.43E+08	FLJ43860	NM_207414	TSS200	
cg26712605	1	37	6	37745367				
cg26759552	2	37	7	1.4E+08	LOC100134229;JHDM1D	NR_024451;NM_030647	Body;TSS1500	chr7:13987Island
cg26777456	1	37	12	54454250	FLJ12825	NR_026655	Body	chr12:5445Island

cg26835440	2		37	8	55037773			
cg26919149	2		37	6	1.69E+08			chr6:1685C_Island
cg26933136		1	37	1	28661842 MED18;MED18	NM_001127350;NM_017638	3'UTR;3'UTR	
cg26946235	2		37	10	1.35E+08			chr10:1348N_Shore
cg26994413	1		37	12	1.31E+08 RIMBP2	NM_015347	Body	chr12:1309S_Shore
cg27037109		1	37	19	12512034 ZNF799	NM_001080821	TSS200	chr19:1251_Island
cg27042491		2	37	10	77191686			chr10:7719S_Shore
cg27062060		1	37	17	79258687 SLC38A10;SLC38A10	NM_001037984;NM_138570	Body;Body	chr17:7925N_Shore
cg27072218	1		37	13	1.07E+08			
cg27101157	1		37	17	62340122 TEX2	NM_018469	5'UTR	chr17:6233_Island
cg27140170		1	37	2	2.31E+08 SP100;SP100	NM_001080391;NM_003113	TSS1500;TSS1500	
cg27181253		2	37	1	1.13E+08 WNT2B;WNT2B;WNT2B	NM_004185;NM_024494;NM_024494	Body;1stExon;5'UTR	chr1:11305_Island
cg27207308		1	37	20	47935683			chr20:4793_Island
cg27313674		1	37	20	6035120 LRRN4	NM_152611	TSS1500	chr20:6032S_Shore
cg27323009		1	37	5	1.1E+08 TSLP;TSLP	NM_138551;NM_033035	TSS200;Body	chr5:1104C_Island
cg27343123	1		37	2	62423136 B3GNT2	NM_006577	TSS200	chr2:62422_Island
cg27391127	1		37	10	1.04E+08 TRIM8	NM_030912	Body	chr10:1044N_Shore
cg27426287		1	37	10	30025782 SVIL	NM_003174	TSS1500	chr10:3002_Island
cg27445005	1		37	18	76190006			chr18:7618_Island
cg27445005		2	37	18	76190006			chr18:7618_Island
cg27553486	1		37	7	930964 C7orf20	NM_015949	Body	chr7:93091_Island
cg27633010	1		37	10	1.35E+08 TUBGCP2	NM_006659	Body	chr10:135C_N_Shore
cg27633010		3	37	10	1.35E+08 TUBGCP2	NM_006659	Body	chr10:135C_N_Shore
cg27640020	1		37	19	19002253 GDF1;LASS1;LASS1	NM_001492;NM_198207;NM_021267	5'UTR;Body;Body	chr19:190C_N_Shelf
ch.16.1667936F		1	36	16	73947777			
ch.2.3048096R	1		36	2	1.48E+08			

Supplementary Document 1: Case and control eligibility and Selection Process

1. Subject Inclusion:

1.1. A subject with one or two knees with symptomatic OA that are eligible to be a Fast Progressor and/or a Non Progressor**.

An eligible knee is defined as:

- 1.1a. Mild-moderate symptomatic OA at baseline: in the same knee, KLG 2-3 and frequent pain (pain on most days of a month in past year) at baseline.
- 1.1b. Medial compartment JSW ≥ 1.5 mm (V00MCMJSW ≥ 1.5) at baseline since at <1.5 mm knee is already close to endstage and further fast progression is less unlikely to be preventable at that point; in addition JSW measurement is less reliable when knee approaches bone on bone.
- 1.1c. JSN in medial compartment at baseline is equal to or worse than JSN in lateral compartment
- 1.1d. JSW data at BL, 24m and 48m timepoints. (Exception: Fast Progressor knees can be missing JSW due to a TKR at 36 or 48m.)
- 1.1e. Adequate radiographic positioning at BL, 24 and 48m timepoints defined as VxxTPCFDS < 7.0 mm and change in VxxTPCFDS < 2 mm in magnitude BL to 24m or BL to 48m.

1.2. Subjects with only one eligible knee at baseline**:

- 1.2a. The contralateral knee KLG is less than or equal to the eligible knee at baseline. (E.g. Subjects with a KLG 2 symptomatic eligible knee can have a KLG 0-2 symptomatic or nonsymptomatic. If the eligible knee is KLG 3, then the contralateral knee can be a KLG 0-3 symptomatic or nonsymptomatic knee. The contralateral knee must have a baseline medial JSW of ≥ 1.5 mm.

2. Subject Exclusion

2.1 TKR in either knee at BL, 12m or 24m.

2.2 RA diagnosis at any visit thru 72m (RAVISIT is 0,1,2,5,6 or 8). What about subjects with self-reported psoriatic arthritis, AS, or reactive arthritis? How many are there?

2.3 Oral Glucocorticoid use reported at ≥ 2 visits from BL to 72m. How many are there?

3. Classify eligible knees of eligible subjects as Fast Progressor or Non-Progressor Index knees

3.1 Fast Progressor Index knees: JSW loss of more than 0.7mm between BL and 24m and remains narrowed more than 0.7mm at 48m or has a TKR by 48m.

3.2 Non-Progressor Index knees: JSW loss less than 0.5mm between BL and 24m and remains narrowed less than 0.5mm at 48m. Knee does not have TKR at 36m or 48m and does not have lateral JSN progression through 48m.

4. Fast Progressor Subjects

A Fast Progressor subject has one or two Fast Progressor Index knees.

For those with one Fast Progressor Index knee the contralateral knee can be:

- 4.1 A Non Progressor Index knee with a KLG \leq to the KLG of the progressor knee;
- 4.2 An ineligible knee (e.g. KLG 0-1, KLG 2-3 nonsymptomatic and KLG \leq to the KLG of Progressor knee) that meets Fast Progressor JSW criteria;
- 4.3 An ineligible knee that does not meet Fast Progressor criteria and KLG \leq to the KLG of Progressor knee; or
- 4.4 An ineligible knee that does not meet conditions 1.1b to 1.1e and KLG \leq to the KLG of Progressor knee.

5. Non Progressor Subjects

A Non Progressor Subject has one or two Non Progressor Index knees.

If a subject has only one Non Progressor Index knee:

5.1. The contralateral knee cannot be a Fast Progressor Index knee;

5.2. If the contralateral knee is not an eligible knee, then the contralateral knee must a) have $KLG \leq$ to the KLG of Progressor knee, b) allow assessment for Fast Progression (meet conditions 1.1b. to 1.1e.) and c) have JSW loss less than 0.5mm between BL and 24m and remain narrowed less than 0.5mm at 48m, d) does not have lateral JSN progression by 48m and e) does not have TKR at 36m or 48m.