

FIG. 1

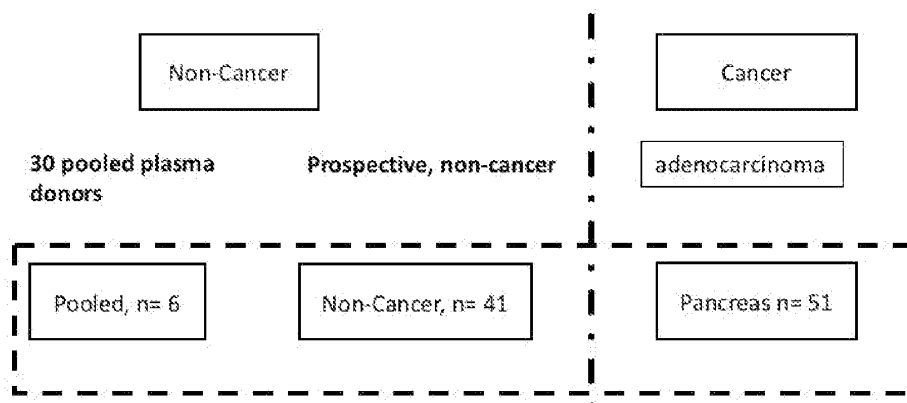


FIG. 2

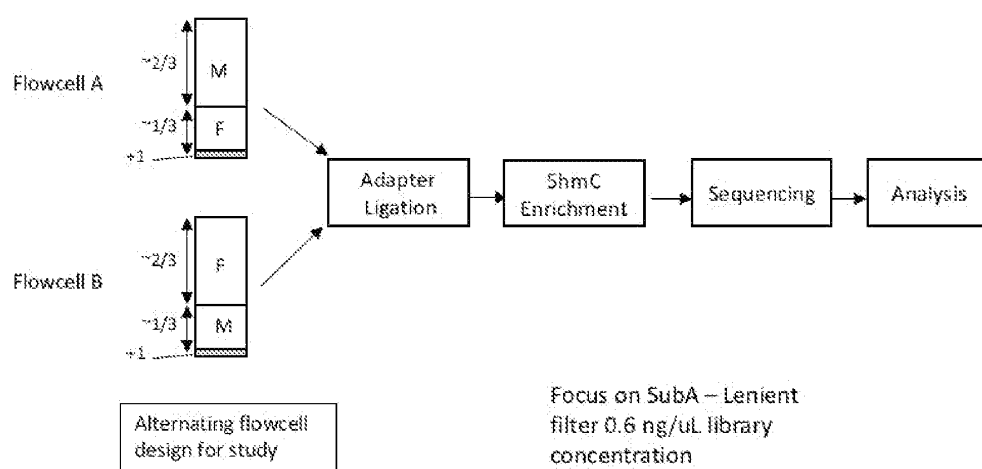


FIG. 3

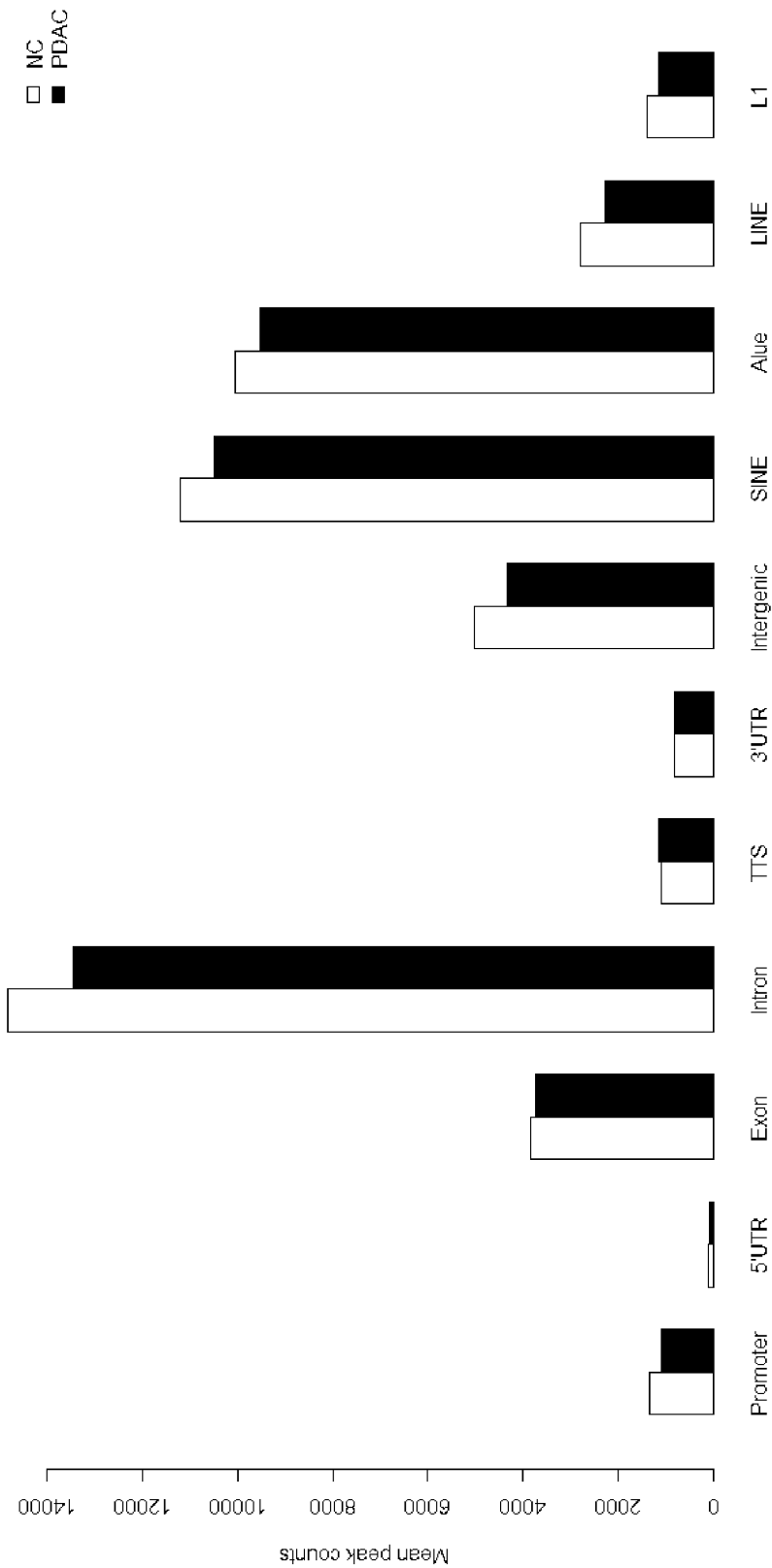


FIG. 4

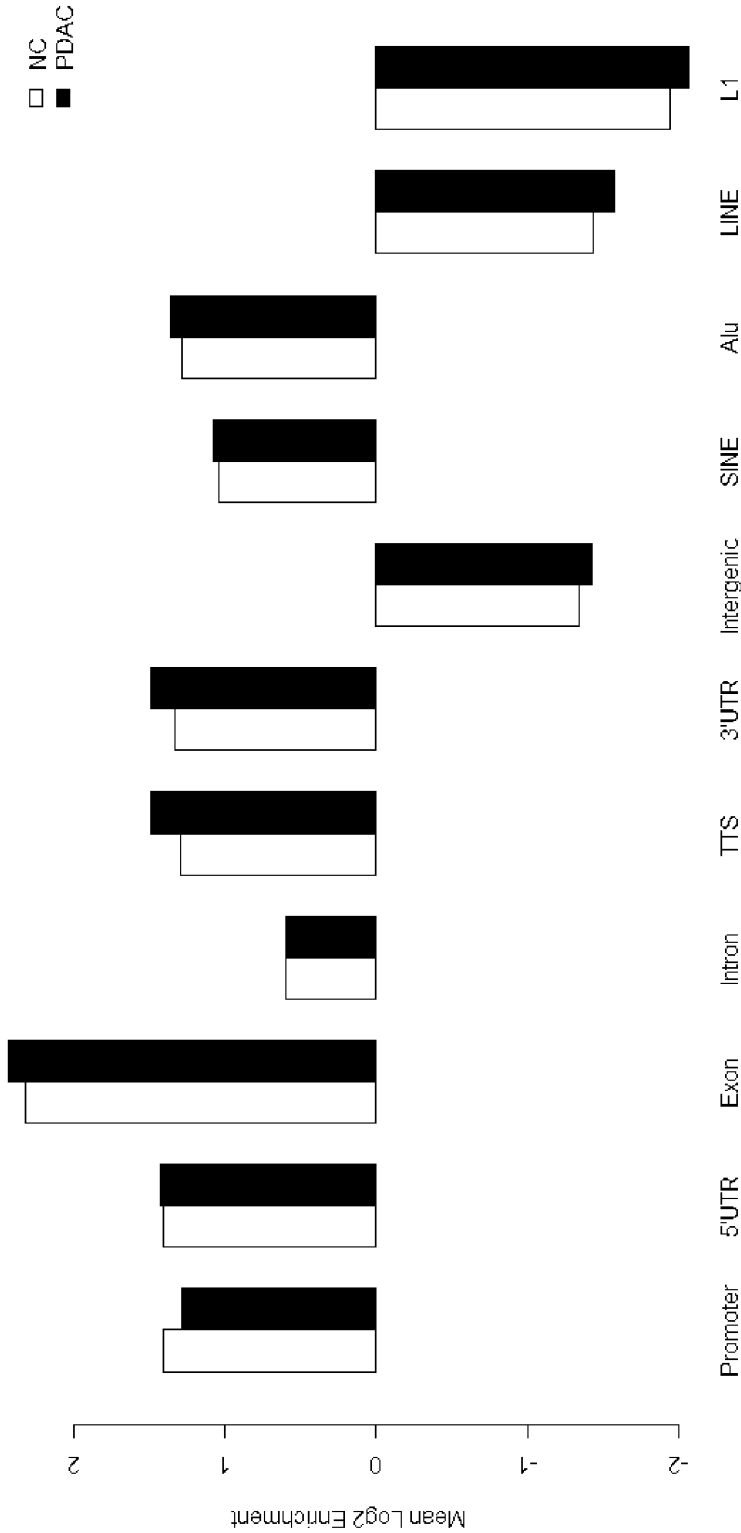


FIG. 5

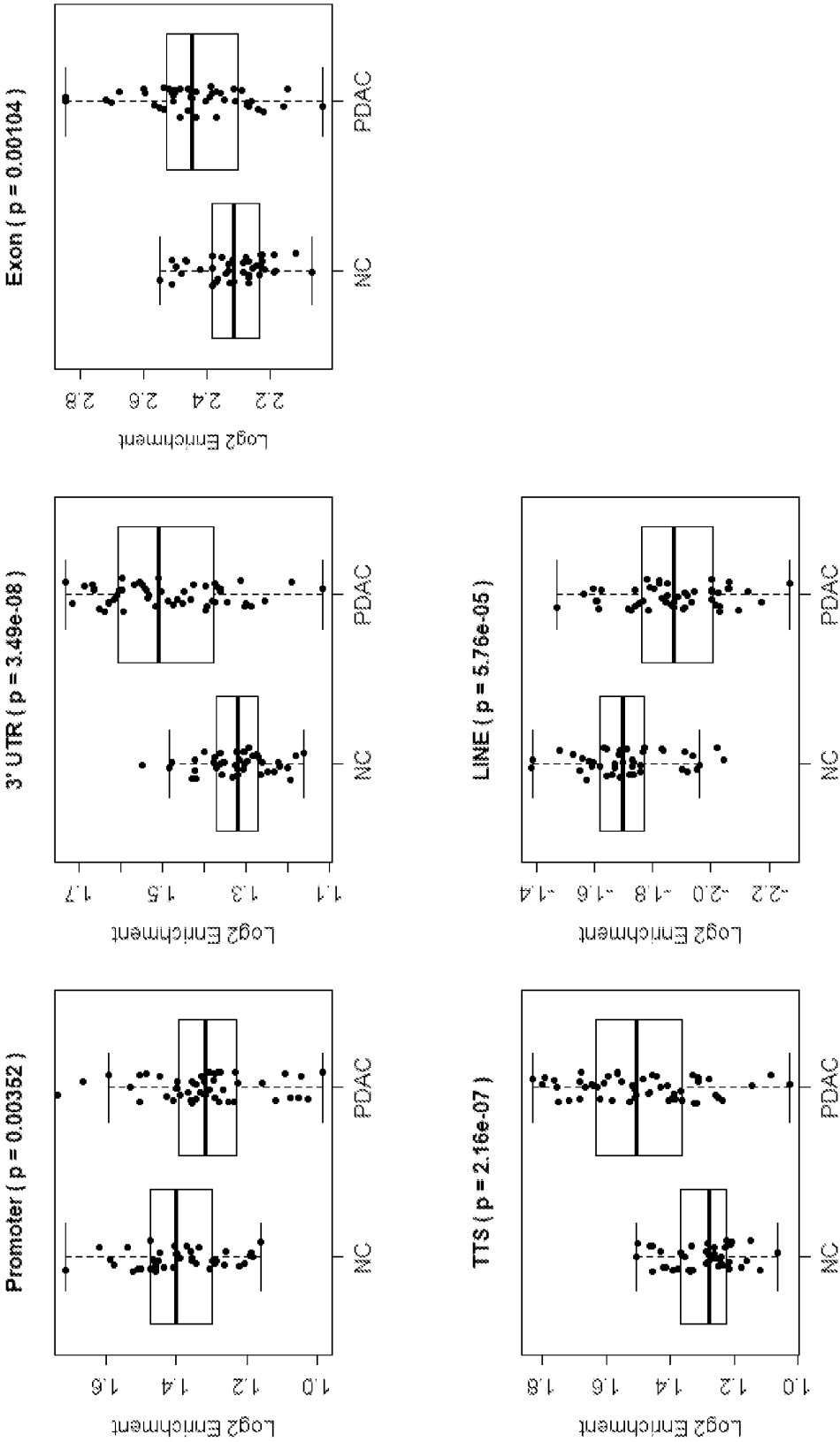


FIG. 6

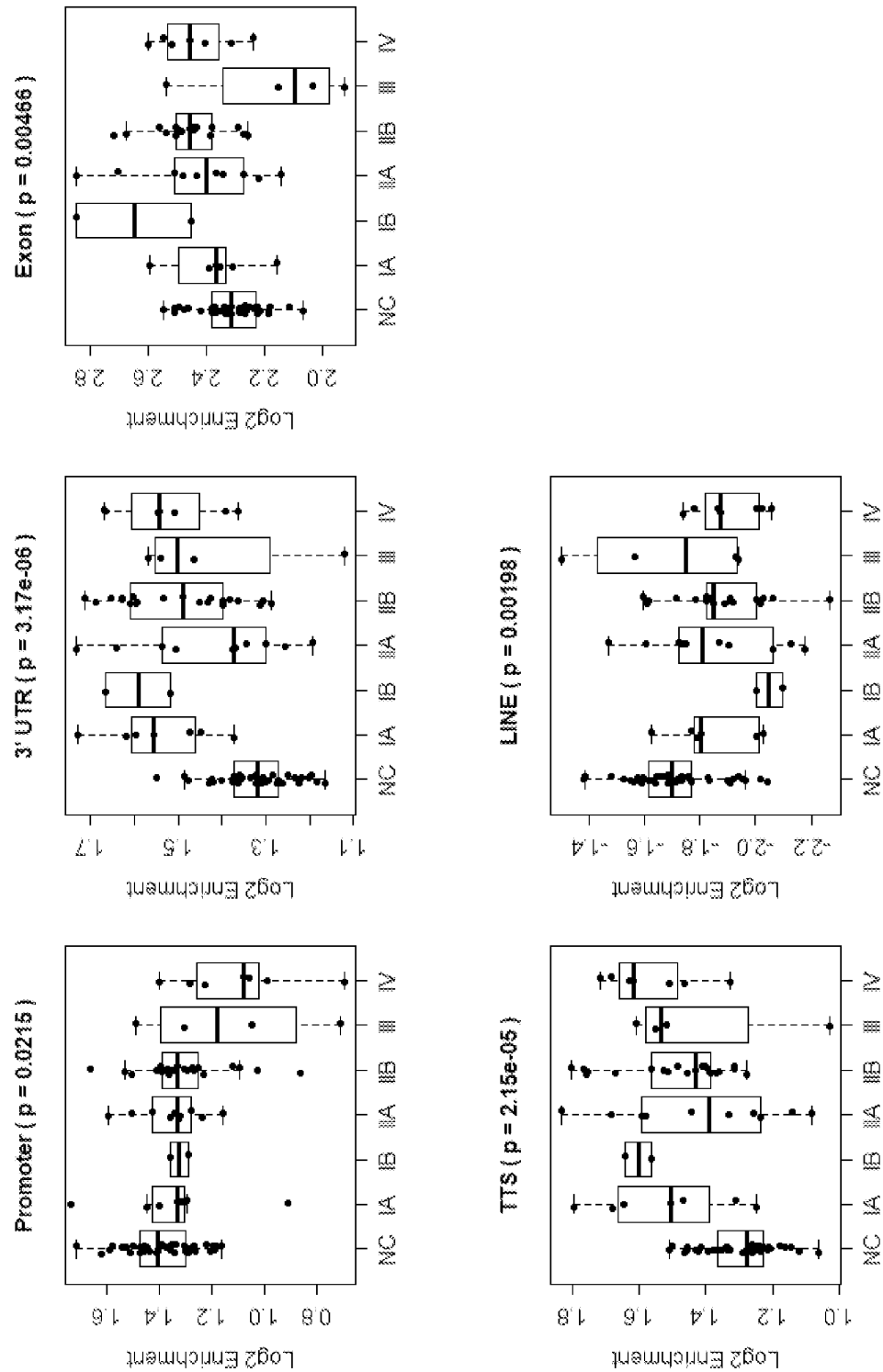


FIG. 7

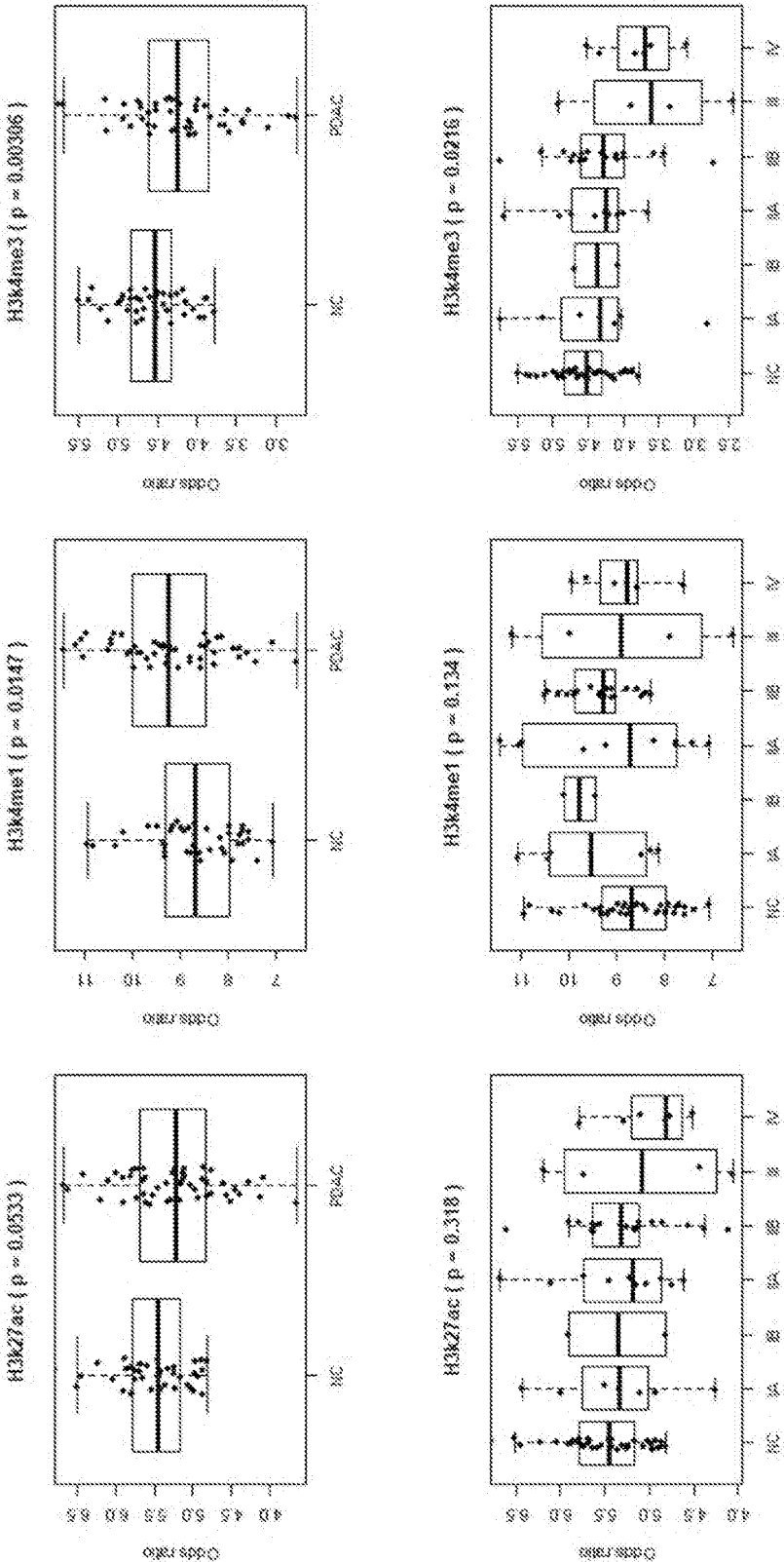


FIG. 8A

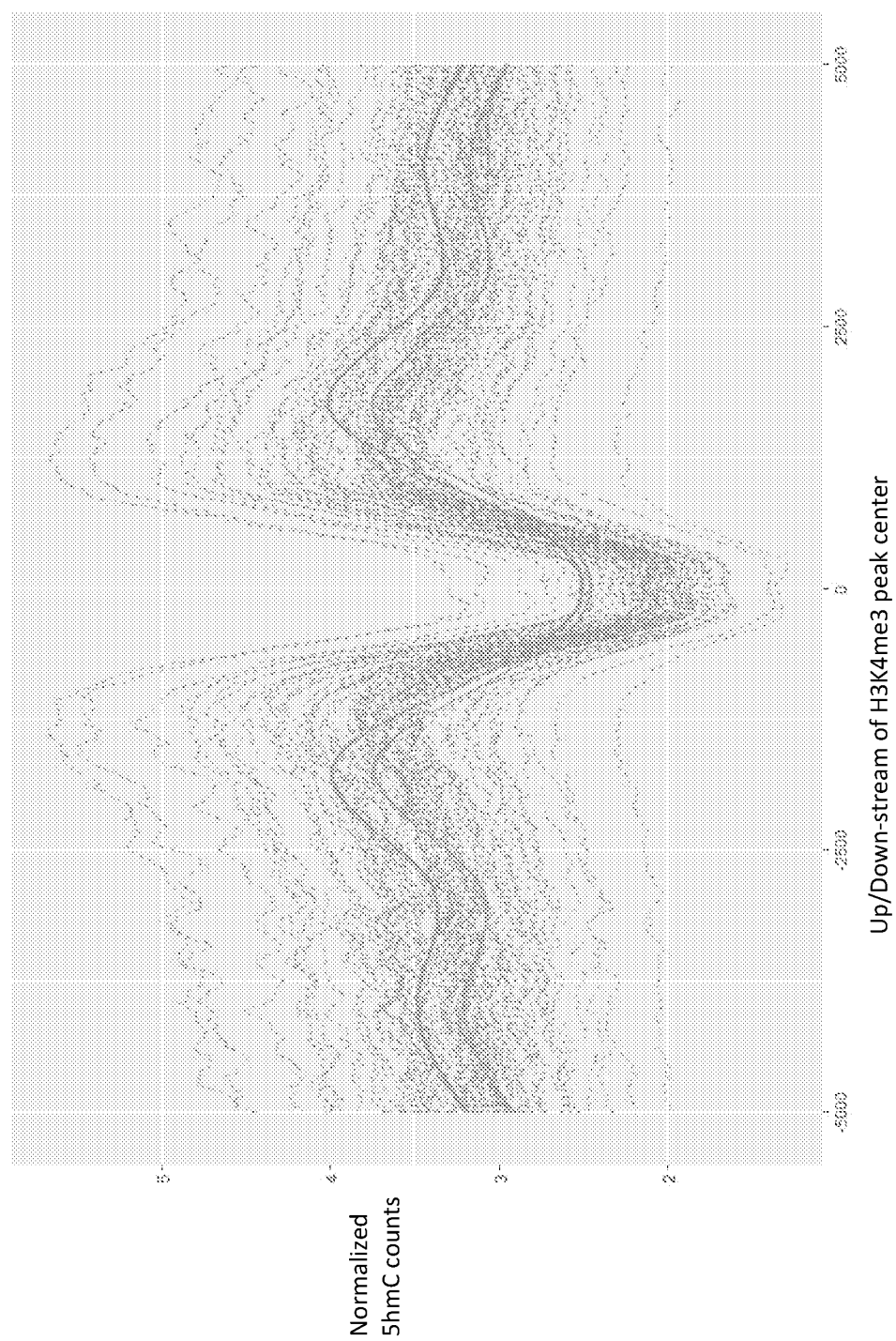
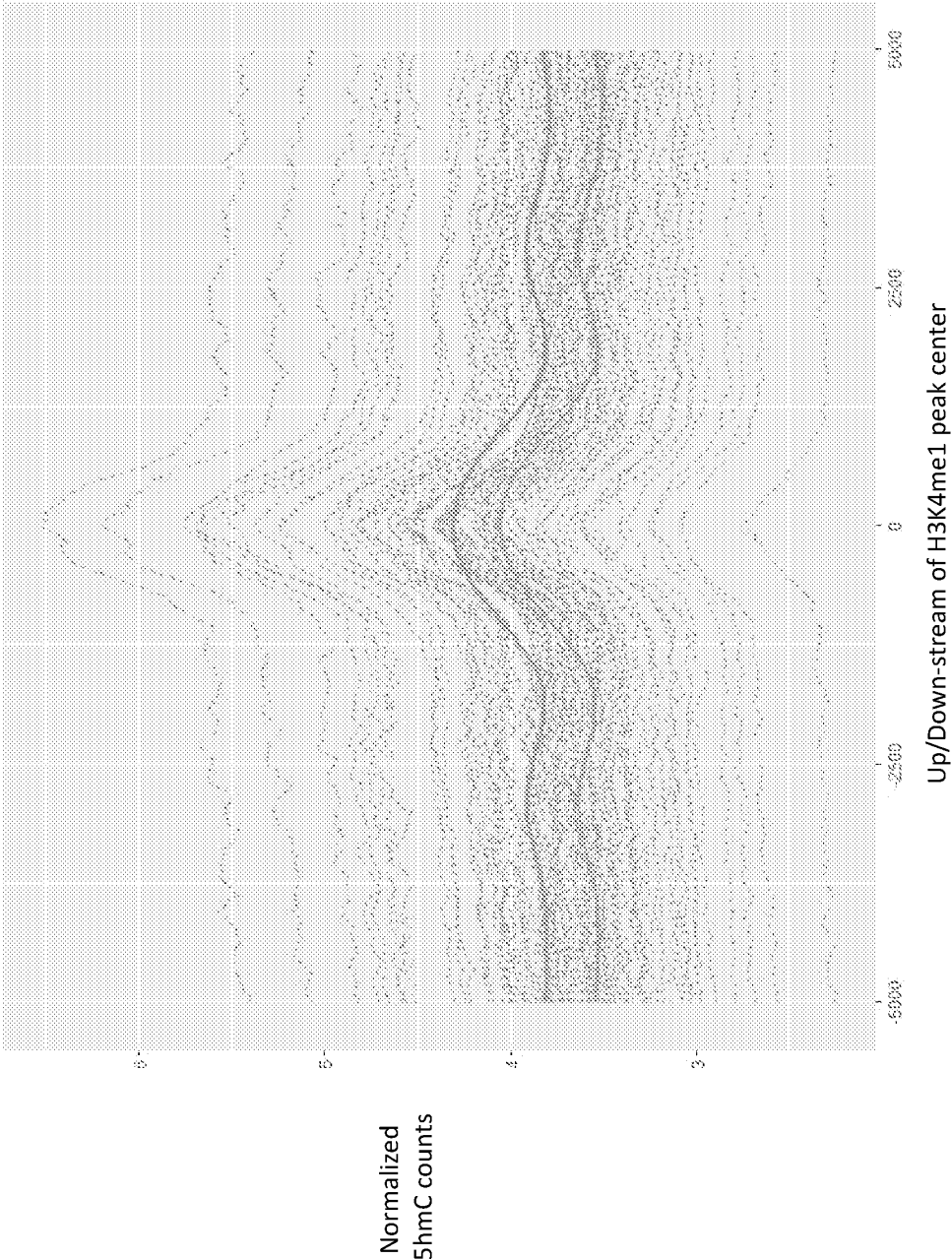


FIG. 8B



Normalized
5hmC counts

Up/Down-stream of H3K4me1 peak center

FIG. 9

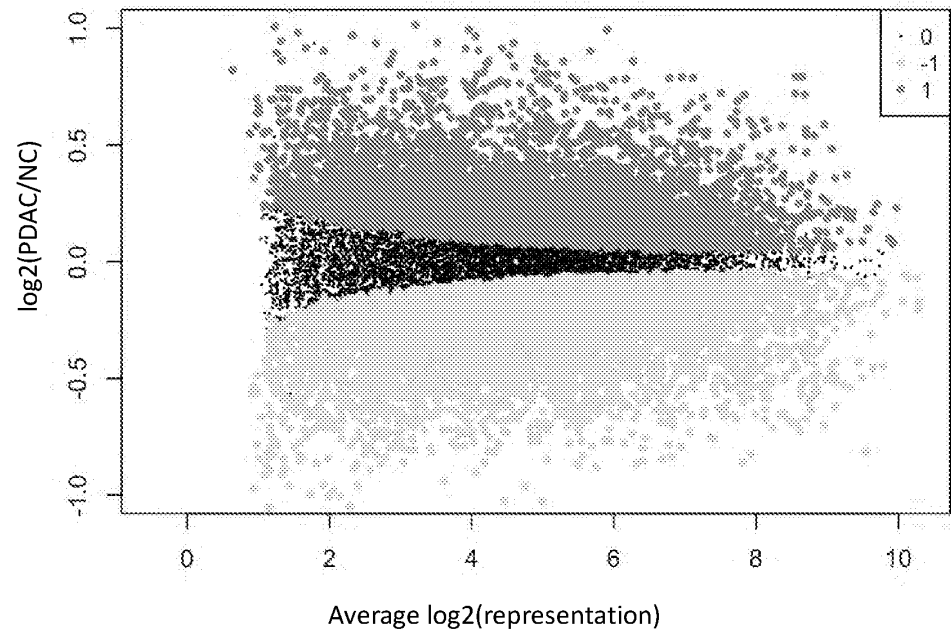


FIG. 10

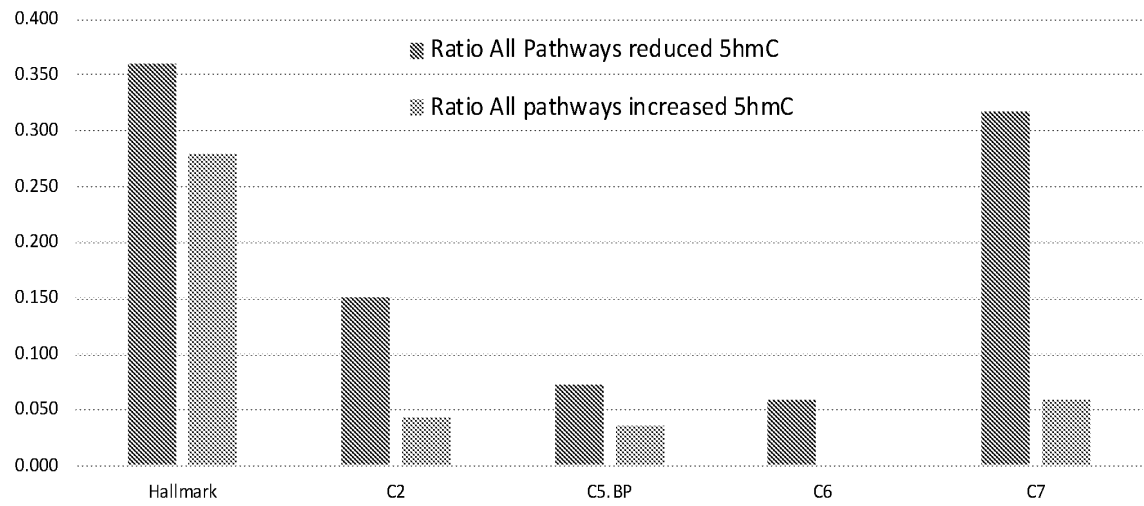


FIG. 11

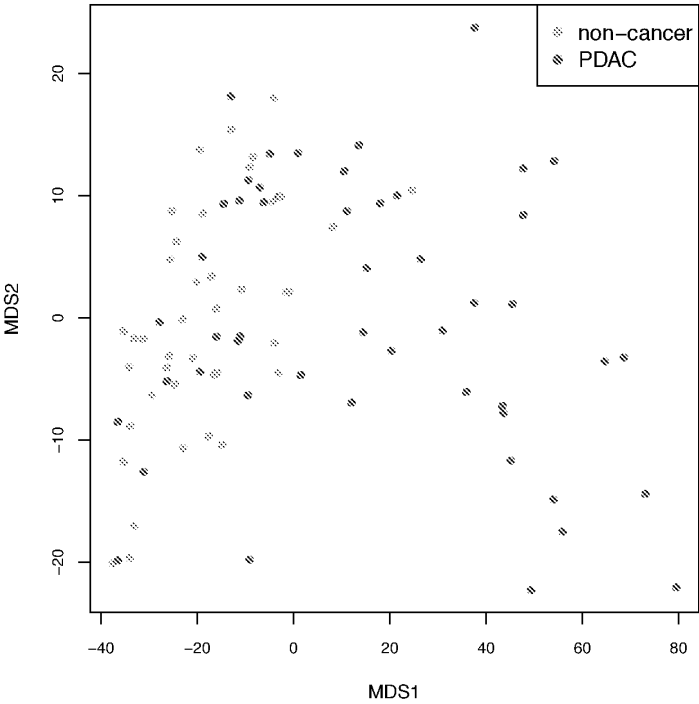


FIG. 12

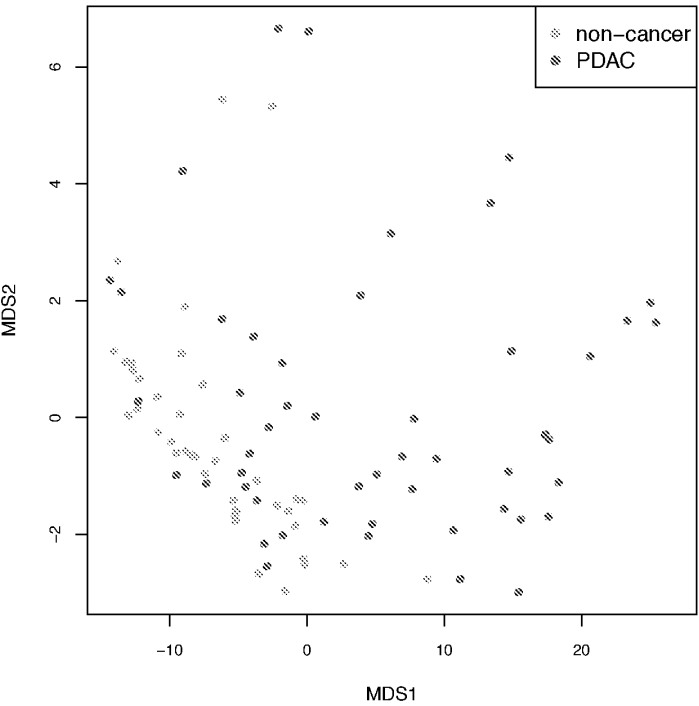


FIG. 13

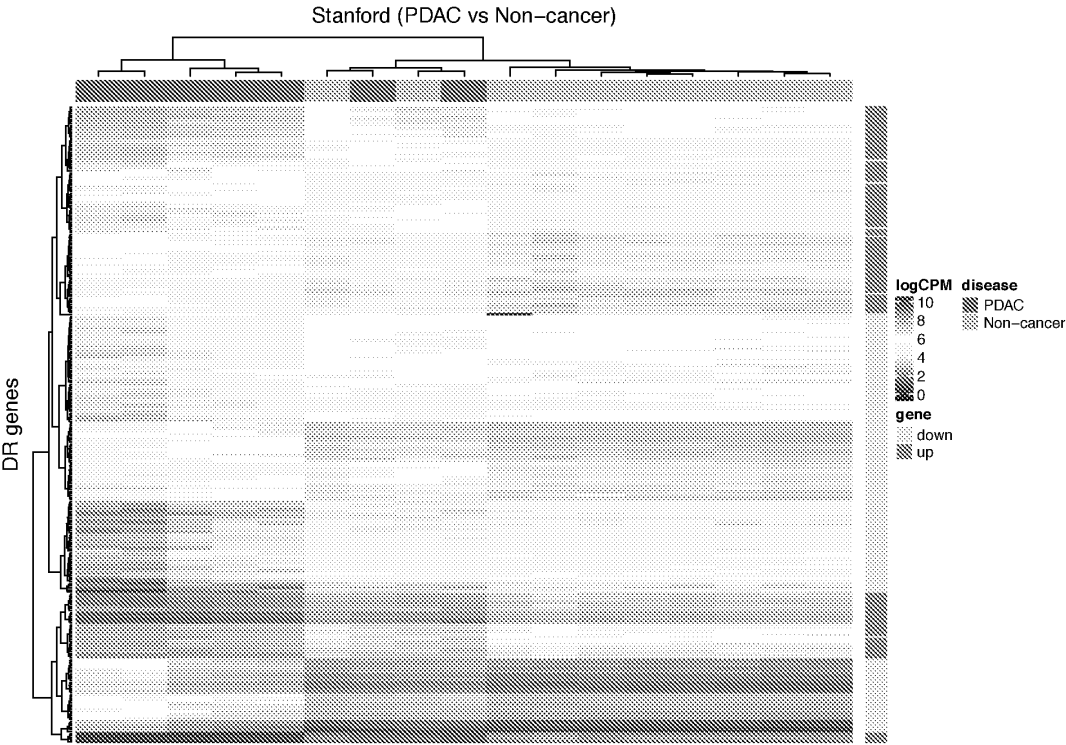


FIG. 14

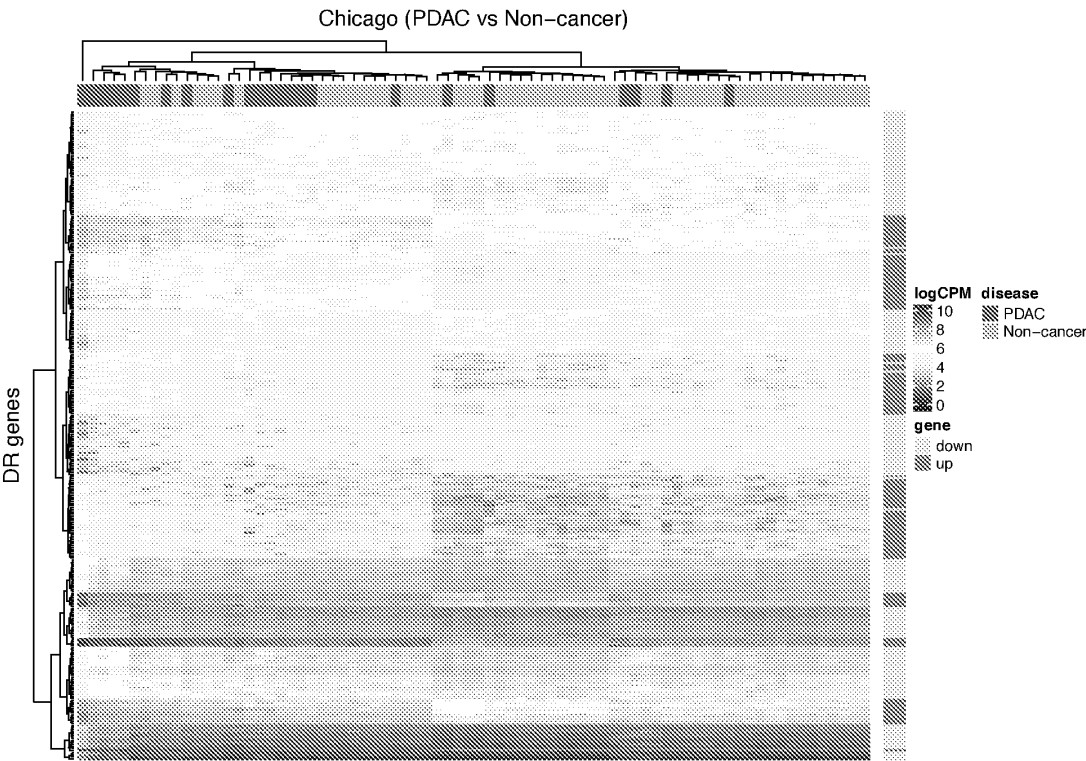


FIG. 15

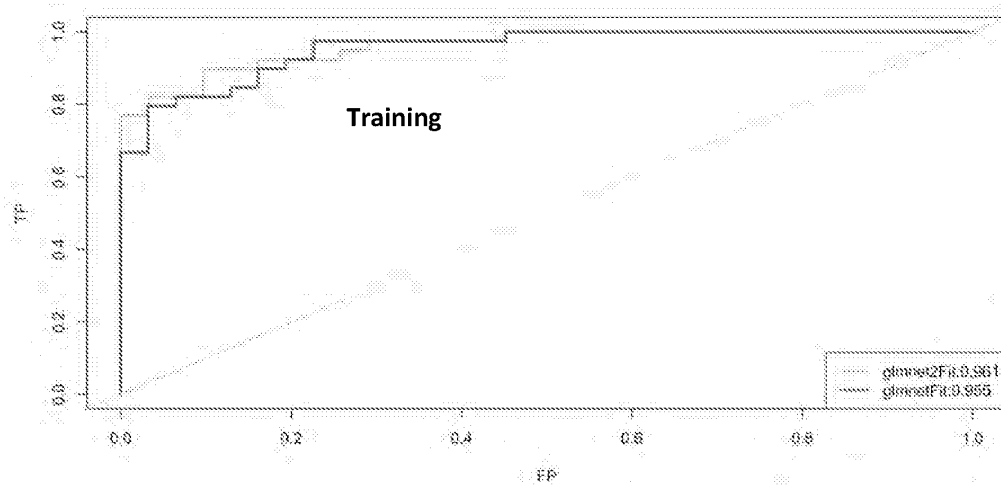


FIG. 16

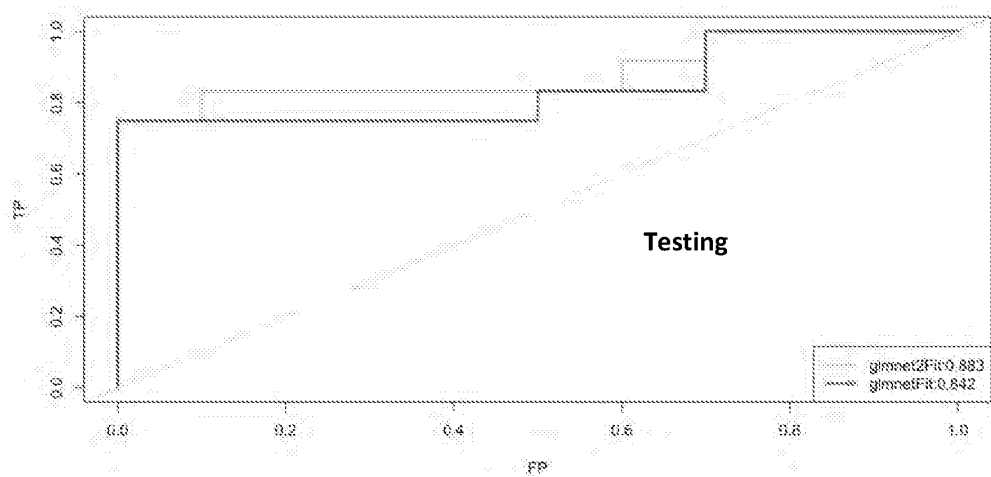


FIG. 17

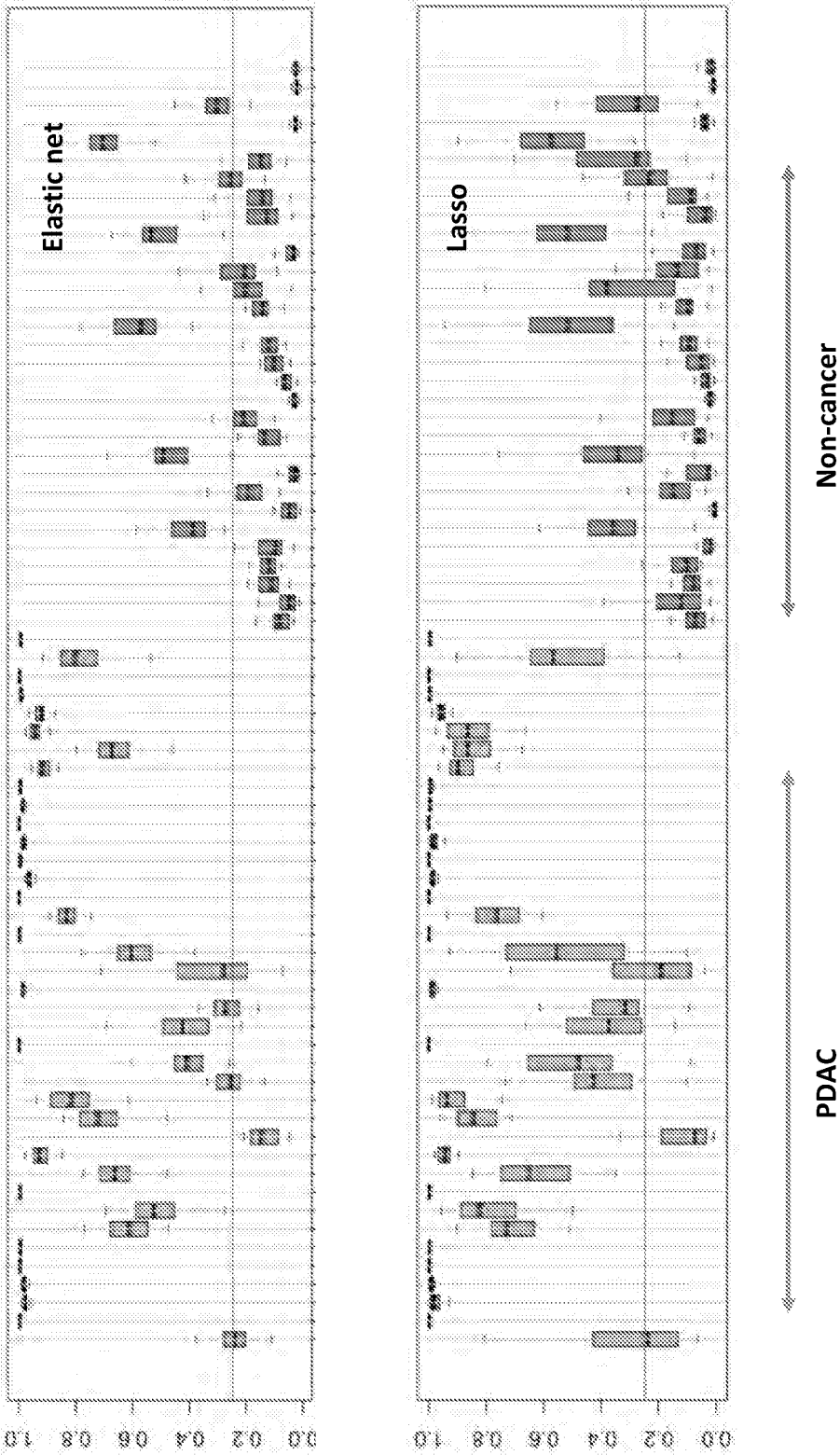


FIG. 18

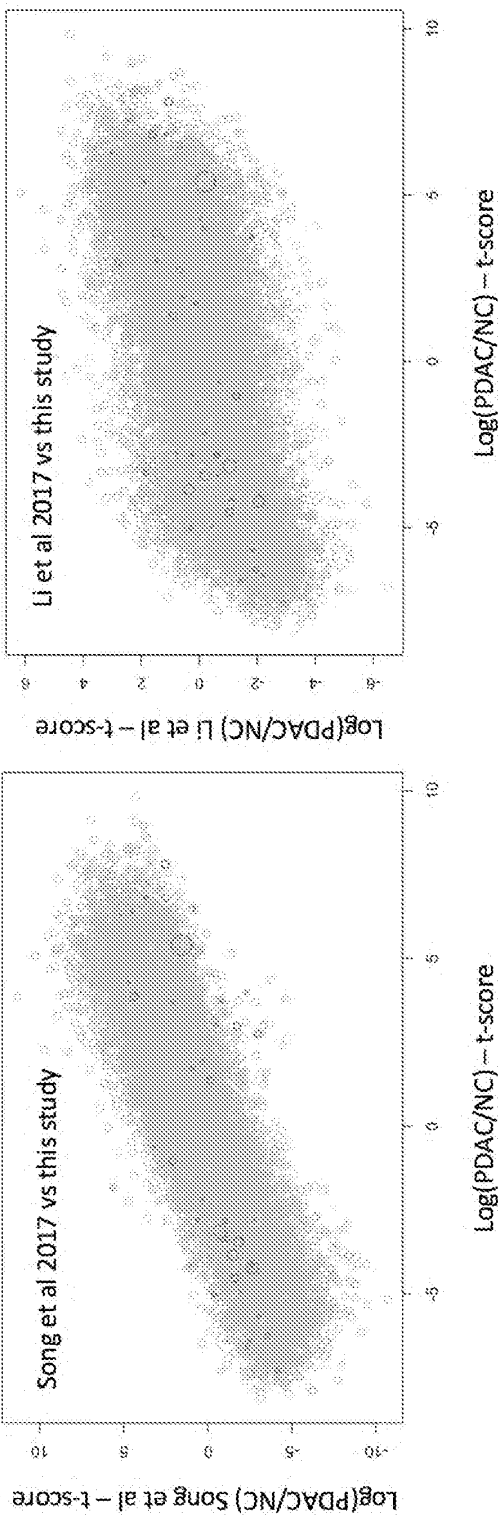


FIG. 19

5hmC Occupancy

5hmC Similarity to Histone Map

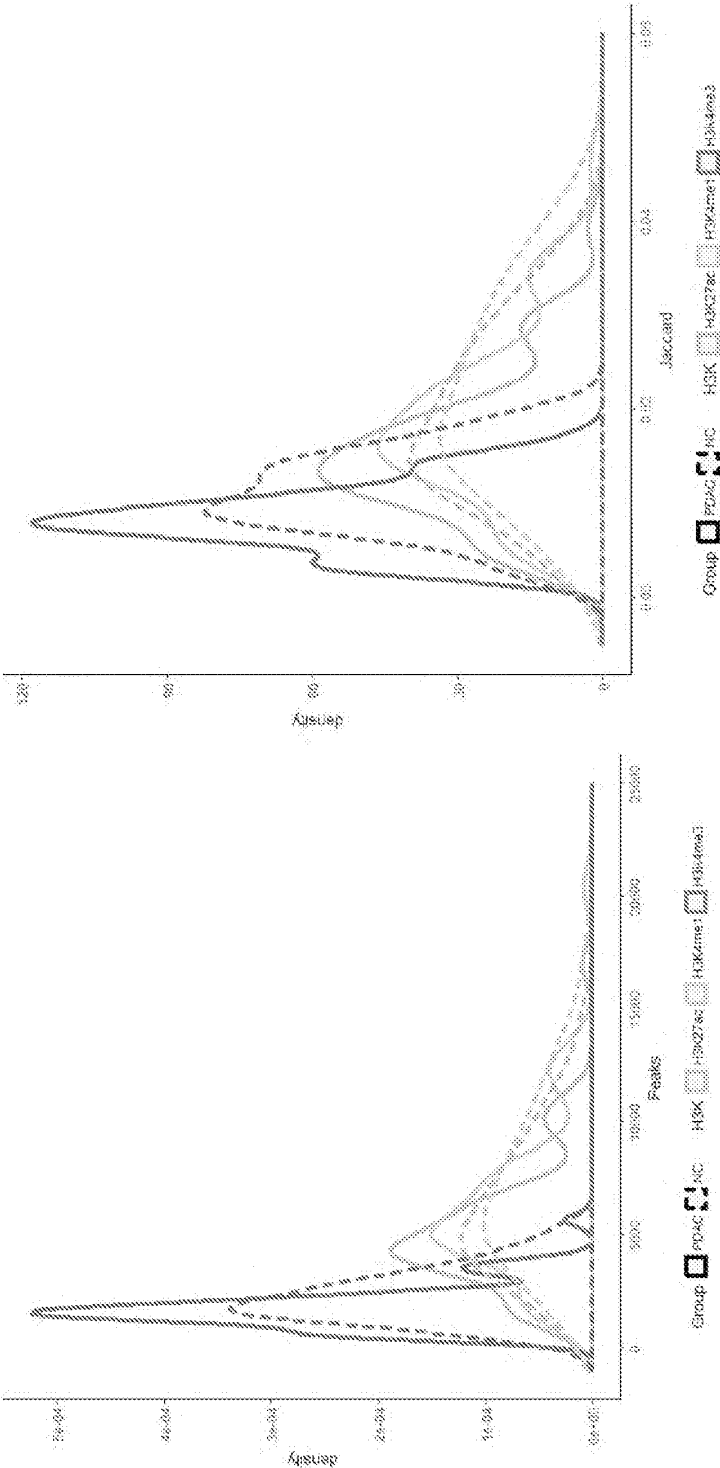


FIG. 20

Location (chr)	Gene	glmnet	glmnet2	GlmineF	Glmine2F	glmnetF coefficient	Glmine2F coefficient	Mean	SD	NC-Mean	NC-SD	C-Mean	C-SD	Vote	C/NC Means
chr01	LGALS8-AS1	NA	NA	40	32	-0.168	-0.254	0.892	0.675	1.315	0.518	0.552	0.591	72	0.419771863
chr18	DYNAP	NA	NA	43	27	-0.181	-0.209	1.184	0.534	1.423	0.497	0.991	0.486	70	0.696416022
chr20	LINC00266-1	NA	NA	35	27	0.148	0.213	0.763	0.454	0.582	0.374	0.909	0.463	62	1.56185567
chr02	IL36G	NA	NA	29	29	-0.12	-0.225	1.74	0.409	1.933	0.329	1.586	0.404	58	0.820486291
chr07	CLK2P	NA	NA	30	24	0.125	0.19	0.907	0.513	0.824	0.556	0.974	0.471	54	1.182038835
chr03	GPX1	NA	NA	25	22	-0.107	-0.172	0.257	0.469	0.422	0.46	0.124	0.438	47	0.293838863
chr13	GAS6	NA	NA	28	18	0.119	0.138	6.961	0.199	6.896	0.16	7.013	0.213	46	1.016966357
chr14	PPP1R3E	NA	NA	30	12	-0.126	-0.098	2.949	0.288	3.057	0.272	2.862	0.272	42	0.936211973
chr12	LOC100288778	NA	NA	19	1818	-0.08	-0.139	1.298	0.601	1.522	0.521	1.117	0.605	1837	0.73390276
chr03	FAM86JP	NA	NA	33	NA	0.137	NA	3.405	0.361	3.135	0.279	3.622	0.259	33	1.155342903
chr06	VGLL2	NA	NA	26	5	-0.108	-0.042	1.078	0.53	1.142	0.521	1.026	0.536	31	0.898423818
chr19	KLK2	NA	NA	14	17	-0.057	-0.136	1.459	0.408	1.592	0.468	1.353	0.319	31	0.849874372
chr01	LOC100130557	NA	NA	21	5	-0.088	-0.036	2.226	0.372	2.277	0.352	2.185	0.385	26	0.95959596
chr09	FAM166A	NA	NA	13	11	0.054	0.085	3.846	0.265	3.741	0.236	3.931	0.258	24	1.050788559
chr15	ODF3L1	NA	NA	19	4	0.08	0.034	2.58	0.342	2.511	0.372	2.636	0.308	23	1.049780964
chr01	BOLA1	NA	NA	15	6	-0.065	-0.044	1.897	0.366	2.011	0.317	1.806	0.38	21	0.898060666
chr01	PLA2G2E	NA	NA	19	NA	0.079	NA	2.315	0.426	2.082	0.377	2.502	0.37	19	1.201729107
chr02	DNAJC27	NA	NA	16	2	-0.066	-0.015	4.708	0.212	4.838	0.164	4.603	0.188	18	0.951426209
chr10	ADARB2-AS1	NA	NA	17	NA	-0.072	NA	4.132	0.31	4.265	0.296	4.025	0.281	17	0.943728019
chr08	KLHL38	NA	NA	17	NA	-0.07	NA	2.139	0.409	2.224	0.416	2.069	0.393	17	0.930305755
chr17	LRRC37A2	NA	NA	16	NA	0.068	NA	2.1	0.65	1.799	0.688	2.343	0.505	16	1.302390217
chr01	CAMSAP2	NA	NA	14	NA	0.06	NA	6.053	0.24	5.9	0.162	6.176	0.222	14	1.046779661

FIG. 20 cont.

Location (chr)	Gene	glmnet	glmnet2	GlmlnetF	Glmlnet2F	glmnetF. coefficient	Glmlnet2F coefficient	Mean	SD	NC-Mean	NC-SD	C-Mean	C-SD	Vote	C/NC Means
chr19	KCTD15	NA	NA	4	9	0.018	0.068	5.185	0.188	5.105	0.167	5.25	0.181	13	1.028403526
chr01	LOC100505633	NA	NA	13	NA	0.053	NA	3.76	0.291	3.583	0.198	3.902	0.275	13	1.089031538
chr17	KANSL1	NA	NA	10	NA	0.041	NA	8.504	0.265	8.394	0.251	8.592	0.243	10	1.023588277
chr16	LOC100130894	NA	NA	10	NA	-0.043	NA	5.365	0.244	5.487	0.187	5.267	0.241	10	0.959905231
chr17	SLC4A1	NA	NA	10	NA	0.042	NA	4.875	0.17	4.77	0.123	4.959	0.156	10	1.039622642
chr12	CSRP2	NA	NA	9	NA	0.04	NA	4.272	0.272	4.123	0.238	4.392	0.238	9	1.065243755
chr17	KCNH6	NA	NA	7	1	0.029	0.005	4.374	0.245	4.216	0.189	4.501	0.21	8	1.06759962
chr02	ATG4B	NA	NA	8	NA	0.032	NA	5.885	0.199	5.747	0.126	5.996	0.176	8	1.043326953
chr19	CRTC1	NA	NA	8	NA	0.033	NA	7.488	0.174	7.366	0.092	7.586	0.163	8	1.029866956
chr03	PLSCR4	NA	NA	8	NA	0.032	NA	5.073	0.234	4.931	0.137	5.188	0.233	8	1.052119246
chr17	C17orf97	NA	NA	7	0	-0.031	-0.002	3.024	0.309	3.186	0.221	2.894	0.31	7	0.908349027
chr18	ATP8B1	NA	NA	7	NA	0.031	NA	7.403	0.217	7.249	0.122	7.527	0.195	7	1.038350117
chr08	C8orf74	NA	NA	7	NA	0.03	NA	5.177	0.321	4.938	0.184	5.369	0.275	7	1.087282301
chr14	GLRX5	NA	NA	7	NA	-0.028	NA	3.989	0.266	4.126	0.203	3.879	0.261	7	0.940135725
chr02	LOC90784	NA	NA	7	NA	0.028	NA	3.487	0.261	3.369	0.229	3.583	0.248	7	1.063520332
chr02	NEUROD1	NA	NA	7	NA	0.029	NA	0.971	0.508	0.879	0.552	1.045	0.461	7	1.188850967
chr01	SHISA4	NA	NA	7	NA	0.029	NA	2.247	0.488	1.924	0.387	2.507	0.398	7	1.303014553
chr04	FAT4	NA	NA	6	NA	0.023	NA	6.325	0.276	6.165	0.133	6.454	0.294	6	1.046877534
chr06	TDRD6	NA	NA	6	NA	0.024	NA	2.928	0.455	2.642	0.369	3.158	0.384	6	1.195306586
chr02	LOC389033	NA	NA	5	NA	0.023	NA	2.285	0.433	2.187	0.318	2.364	0.496	5	1.080932785
chr14	TMEM253	NA	NA	5	NA	-0.021	NA	2.472	0.358	2.613	0.338	2.359	0.335	5	0.902793724
chr03	TTC14	NA	NA	5	NA	-0.022	NA	1.872	0.419	1.978	0.378	1.786	0.435	5	0.902932255
chr07	ZNF789	NA	NA	5	NA	-0.023	NA	4.282	0.199	4.357	0.156	4.222	0.212	5	0.969015378
chr11	HBD	NA	NA	4	NA	-0.018	NA	0.658	0.522	0.88	0.443	0.48	0.516	4	0.545454545

FIG. 20 cont.

Location (chr)	Gene	glmnet	glmnet2	GlmlnetF	Glmlnet2F	glmnetF. coefficient	Glmlnet2F coefficient	Mean	SD	NC-Mean	NC-SD	C-Mean	C-SD	Vote	C/NC Means
chr01	C1orf170	NA	NA	3	NA	0.012	NA	3.286	0.324	3.1	0.281	3.436	0.277	3	1.108387097
chr12	CCDC59	NA	NA	3	NA	-0.014	NA	1.686	0.442	1.751	0.416	1.634	0.459	3	0.933181039
chr17	GAS2L2	NA	NA	3	NA	0.013	NA	3.024	0.301	2.897	0.301	3.127	0.262	3	1.079392475
chr15	STRA6	NA	NA	3	NA	0.015	NA	4.72	0.284	4.648	0.177	4.778	0.338	3	1.027969019
chr02	LOC100130452	NA	NA	NA	2	NA	-0.012	1.574	0.427	1.677	0.364	1.491	0.458	2	0.889087657
chr07	FAM188B	NA	NA	2	NA	0.009	NA	6.881	0.156	6.836	0.114	6.917	0.177	2	1.011849035
chr06	FBXO5	NA	NA	2	NA	-0.007	NA	3.337	0.377	3.576	0.238	3.145	0.359	2	0.879474273
chr05	LOC100505738	NA	NA	2	NA	0.008	NA	1.656	0.513	1.413	0.505	1.852	0.435	2	1.3106886483
chr13	TEX26	NA	NA	2	NA	-0.007	NA	3.2	0.389	3.339	0.353	3.088	0.383	2	0.924827793
chr02	WASH2P	NA	NA	2	NA	-0.01	NA	3.748	0.28	3.817	0.216	3.693	0.313	2	0.967513754
chr06	GPX5	NA	NA	1	0	-0.006	-0.003	1.526	0.407	1.596	0.383	1.469	0.42	1	0.920426065
chr10	PGAM1	NA	NA	1	NA	-0.003	NA	3.277	0.264	3.391	0.227	3.186	0.259	1	0.939545857
chr08	REXO1L1	NA	NA	1	NA	0.005	NA	1.284	0.747	1.043	0.757	1.478	0.686	1	1.4170666155
chr22	RIMBP3	NA	NA	1	NA	0.002	NA	0.443	0.438	0.314	0.447	0.546	0.406	1	1.738853503
chr01	RPS27	NA	NA	1	NA	-0.002	NA	0.652	0.505	0.868	0.394	0.479	0.521	1	0.551843318
chr08	SLCO5A1	NA	NA	1	NA	-0.003	NA	5.951	0.265	6.022	0.266	5.893	0.253	1	0.978578545
chr20	SRSF6	NA	NA	1	NA	-0.003	NA	3.277	0.344	3.463	0.296	3.127	0.306	1	0.9029743
chr02	TUBA4A	NA	NA	1	NA	-0.005	NA	3.73	0.333	3.861	0.281	3.624	0.335	1	0.938616939
chr10	ASH2B	NA	NA	NA	0	NA	0	1.145	0.496	1.1	0.512	1.181	0.485	0	1.073636364
chr19	LOC100652909	NA	NA	0	NA	-0.001	NA	0.744	0.562	0.923	0.526	0.601	0.554	0	0.651137595
NA	Intercep	NA	NA	NA	NA	0.785	0.919	NA	NA	NA	NA	NA	NA	0	#VALUE!
chr13	GGACT	100	100	93	92	0.392	0.719	6.316	0.308	6.145	0.291	6.454	0.248	385	1.050284784
chr03	NPRL2	96	99	100	100	-0.421	-0.78	2.32	0.355	2.538	0.275	2.145	0.314	395	0.845153664
chr17	MED11	61	55	52	47	-0.221	-0.365	1.88	0.445	2.013	0.325	1.773	0.5	215	0.880774963

FIG. 20 cont.

Location (chr)	Gene	glmt2	glmt2F	glmt2F coefficient	glmt2F coefficient	Glmt2F	Mean	SD	NC-Mean	NC-SD	C-Mean	C-SD	Vote	C/NC Means
chr15	LOC100505648	61	51	47	44	-0.197	-0.345	1.529	0.428	1.722	0.394	1.373	0.393	0.797328688
chr11	C11orf88	60	59	25	27	-0.106	-0.208	3.158	0.321	3.322	0.274	3.026	0.296	0.91089705
chr04	NAT8L	57	59	39	26	0.166	0.205	4.102	0.322	3.878	0.221	4.282	0.274	1.104177411
chr01	LAMC1	48	44	19	NA	0.078	NA	6.744	0.227	6.599	0.181	6.861	0.191	1.039702985
chr03	SLC25A38	43	40	17	3	-0.071	-0.026	3.748	0.227	3.765	0.212	3.735	0.24	0.992031873
chr05	NME5	39	25	41	52	-0.172	-0.409	3.56	0.301	3.727	0.207	3.426	0.299	0.919237993
chr11	MRPL23-AS1	39	39	4	NA	0.015	NA	4.492	0.346	4.3	0.196	4.646	0.364	1.080465116
chr01	SERTAD4	37	11	NA	NA	NA	NA	2.149	0.523	2.059	0.402	2.221	0.597	1.07867897
chr19	LGALS14	34	19	18	2	-0.077	-0.017	1.165	0.521	1.376	0.386	0.996	0.556	0.723837209
chr17	WNT9B	34	2	15	NA	0.062	NA	4.802	0.234	4.659	0.168	4.916	0.216	1.055162052
chr19	LOC147646	33	16	NA	NA	NA	NA	2.109	0.365	2.23	0.33	2.011	0.366	0.901793722
chr13	LINC00366	31	9	NA	NA	NA	NA	1.231	0.519	1.102	0.474	1.335	0.535	1.211433757
chr05	SH3PXD2B	30	17	44	49	0.184	0.385	7.285	0.149	7.184	0.122	7.365	0.116	1.025194878
chr13	BRCA2	30	45	NA	NA	NA	NA	6.024	0.228	6.184	0.13	5.895	0.208	0.953266494
chr15	RPP25	29	22	14	NA	0.059	NA	1.783	0.495	1.604	0.56	1.926	0.384	1.20074813
chr16	NME3	28	10	NA	NA	NA	NA	2.185	0.781	2.639	0.39	1.821	0.827	0.690034104
chr19	FUT2	27	24	50	48	0.211	0.374	3.207	0.312	3.011	0.271	3.365	0.247	1.117568914
chr18	PARD6G	27	20	30	NA	0.128	NA	6.103	0.229	5.939	0.152	6.235	0.194	1.04984004
chr17	PLD6	27	10	NA	NA	NA	NA	4.088	0.247	4.205	0.206	3.994	0.239	0.949821641
chr12	RASSF8	27	3	NA	NA	NA	NA	6.251	0.226	6.108	0.101	6.366	0.233	1.042239686
chr02	HOXD1	27	0	NA	NA	NA	NA	1.085	0.477	0.894	0.498	1.238	0.403	1.384787472
chr13	TNFSF13B	25	9	49	45	-0.207	-0.347	4.484	0.255	4.636	0.176	4.362	0.243	0.940897325
chr10	FBXL15	25	6	NA	NA	NA	NA	0.44	0.516	0.544	0.418	0.357	0.573	0.65625
chr21	LINC00310	24	2	35	26	0.148	0.201	3.23	0.267	3.116	0.276	3.322	0.223	1.066110398

FIG. 20 Cont.

Location (chr)	Gene	glmnet	glmnet2	GlmlnetF	Glmlnet2F	glmnetF. coefficient	Glmlnet2F coefficient	Mean	SD	NC-Mean	NC-SD	C-Mean	C-SD	Vote	C/NC Means
chr20	SDCBP2	24	0	NA	NA	NA	NA	4.638	0.219	4.707	0.173	4.582	0.236	24	0.973443807
chr10	FAM196A	23	2	10	NA	0.041	NA	6.231	0.264	6.189	0.303	6.264	0.226	35	1.012118274
chr03	HTR1F	22	0	3	NA	-0.011	NA	1.704	0.425	1.886	0.392	1.557	0.396	25	0.825556734
chr02	FKBP1B	22	0	NA	NA	NA	NA	3.809	0.242	3.917	0.216	3.722	0.228	22	0.950217003
chr03	CCDC54	20	0	26	5	-0.109	-0.04	0.097	0.497	0.325	0.535	-0.087	0.378	51	-0.267692308
chr01	LOC643355	20	0	NA	NA	NA	NA	2.623	0.328	2.473	0.302	2.744	0.299	20	1.109583502
chr02	RAB11FIP5	19	14	NA	NA	NA	NA	5.459	0.211	5.319	0.154	5.571	0.183	33	1.047377327
chr09	FAM206A	19	6	NA	NA	NA	NA	1.779	0.405	1.66	0.378	1.875	0.405	25	1.129518072
chr18	OACYLP	19	6	NA	NA	NA	NA	3.535	0.345	3.343	0.244	3.69	0.338	25	1.103798983
chr17	UBB	17	0	12	NA	-0.052	NA	0.701	0.507	0.879	0.491	0.557	0.477	29	0.63367463
chr02	ANKRD36B	17	0	6	NA	-0.024	NA	4.154	0.528	4.502	0.334	3.874	0.489	23	0.860506442
chr13	CKAP2	16	0	57	67	-0.241	-0.524	4.109	0.341	4.337	0.245	3.926	0.295	140	0.905234033
chr04	NEUROG2	16	0	36	17	0.15	0.133	0.657	0.489	0.381	0.499	0.879	0.352	69	2.307086614
chr16	RNU6-76	16	0	3	NA	-0.014	NA	4.788	0.649	5.049	0.583	4.578	0.627	19	0.906714201
chr06	ATP6V1G2	16	0	NA	NA	NA	NA	0.373	0.445	0.437	0.372	0.322	0.494	16	0.736842105
chr14	GEMIN2	15	0	NA	NA	NA	NA	3.393	0.446	3.139	0.363	3.597	0.402	15	1.14590634
chr17	RNF126P1	14	14	21	9	0.088	0.071	1.906	0.445	1.752	0.483	2.03	0.372	58	1.158675799
chr01	OSCP1	14	0	14	NA	-0.059	NA	4.641	0.248	4.737	0.218	4.563	0.246	28	0.963267891
chr08	CYC1	14	0	NA	NA	NA	NA	1.531	0.359	1.577	0.365	1.493	0.353	14	0.946734306
chr05	PPAP2A	13	0	6	NA	0.027	NA	6.783	0.229	6.626	0.148	6.91	0.204	19	1.042861455
chr16	LOC81691	13	0	NA	NA	NA	NA	4.704	0.242	4.848	0.21	4.589	0.202	13	0.946575908
chr04	LRR66	13	0	NA	NA	NA	NA	3.327	0.473	3.04	0.394	3.558	0.401	13	1.170394737
chr22	KDELR3	12	0	NA	NA	NA	NA	4.544	0.232	4.417	0.216	4.645	0.193	12	1.051618746
chr19	ZNF44	12	0	NA	NA	NA	NA	4.114	0.388	3.865	0.275	4.314	0.348	12	1.116170763

FIG. 20 Cont.

Location (chr)	Gene	glmn2	glmn2F	Glmm2F	Glmm2F coefficient	glmn2F coefficient	Glmm2F coefficient	Mean	SD	NC-Mean	NC-SD	C-Mean	C-SD	Vote	C/NC Means
chr04	FGF2	11	0	38	14	0.158	0.109	5.515	0.243	5.403	0.23	5.604	0.215	63	1.037201555
chr12	BTG1	11	0	NA	NA	NA	NA	1.626	0.528	1.915	0.368	1.393	0.524	11	0.727415144
chr11	LAMTOR1	11	0	NA	NA	NA	NA	2.791	0.334	2.974	0.271	2.645	0.309	11	0.88937458
chr19	ODF3L2	10	0	7	NA	0.031	NA	4.105	0.314	3.885	0.232	4.282	0.255	17	1.102187902
chr13	TMTC4	10	0	NA	NA	NA	NA	6.124	0.161	6.028	0.097	6.201	0.161	10	1.028699403
chr06	HLA-A	9	0	13	NA	-0.054	NA	2.728	0.41	2.912	0.41	2.58	0.349	22	0.885989011
chr04	NDNF	9	0	NA	NA	NA	NA	3.971	0.299	3.908	0.25	4.023	0.327	9	1.029426817
chr11	TAGLN	9	0	NA	NA	NA	NA	3.711	0.264	3.572	0.225	3.823	0.24	9	1.070268757
chr12	TUBA1B	9	0	NA	NA	NA	NA	1.882	0.42	1.951	0.452	1.827	0.387	9	0.93644285
chr14	ARF6	8	0	NA	NA	NA	NA	1.998	0.453	2.17	0.506	1.86	0.353	8	0.857142857
chr19	CCDC151	8	0	NA	NA	NA	NA	3.738	0.325	3.578	0.277	3.867	0.305	8	1.080771381
chr17	RASL10B	7	0	55	36	0.23	0.281	3.87	0.281	3.688	0.232	4.016	0.227	98	1.088937093
chr06	SPDEF	7	0	14	NA	0.059	NA	4.509	0.2	4.387	0.148	4.606	0.183	21	1.049920219
chr19	TBCB	7	0	0	NA	0	NA	4.058	0.248	4.198	0.144	3.946	0.258	7	0.939971415
chr04	DDIT4L	7	0	NA	NA	NA	NA	1.209	0.535	0.961	0.477	1.408	0.498	7	1.465140479
chr18	LOC728606	7	0	NA	NA	NA	NA	3.797	0.372	4.037	0.161	3.605	0.383	7	0.892989844
chr02	MEIS1-AS3	7	0	NA	NA	NA	NA	2.437	0.332	2.494	0.36	2.391	0.304	7	0.958700882
chr05	LIFR	6	15	24	34	0.099	0.269	5.592	0.426	5.339	0.278	5.796	0.417	79	1.085596554
chr15	SYNM	6	0	9	NA	0.039	NA	5.903	0.2	5.8	0.194	5.986	0.165	15	1.032068966
chr13	DIS3	6	0	NA	NA	NA	NA	3.798	0.3	3.654	0.249	3.913	0.289	6	1.070881226
chr01	HMCN1	6	0	NA	NA	NA	NA	7.322	0.205	7.256	0.144	7.374	0.231	6	1.016262404
chr10	LRRTM3	6	0	NA	NA	NA	NA	5.692	0.465	5.402	0.332	5.925	0.425	6	1.096815994
chr01	LAMC2	5	0	NA	NA	NA	NA	5.319	0.217	5.284	0.22	5.347	0.212	5	1.011922786
chr07	LOC728377	5	0	NA	NA	NA	NA	0.443	0.531	0.328	0.532	0.536	0.517	5	1.634146341

FIG. 20 cont.

Location (chr)	Gene	glmnet	glmnet2	GlmetaF	Glmeta2F	glmnetF coefficient	Glmeta2F coefficient	Mean	SD	NC-Mean	NC-SD	C-Mean	C-SD	Vote	C/NC Means
chr22	C22orf26	4	0	NA	NA	NA	NA	2.758	0.327	2.822	0.343	2.706	0.306	4	0.958894401
chr11	PLAC1L	3	0	NA	NA	NA	NA	1.58	0.45	1.768	0.368	1.429	0.456	3	0.808257919
chr02	VAMP8	2	0	4	2	-0.019	-0.015	2.982	0.258	3.078	0.258	2.904	0.232	8	0.943469786
chr06	GPANK1	2	0	NA	NA	NA	NA	3.182	0.317	3.331	0.258	3.063	0.311	2	0.919543681
chr09	IL33	2	0	NA	NA	NA	NA	3.707	0.371	3.565	0.34	3.821	0.358	2	1.071809257
chr16	IRX3	2	0	NA	NA	NA	NA	1.558	0.444	1.394	0.382	1.689	0.45	2	1.211621234
chr11	NR1H3	2	0	NA	NA	NA	NA	5.405	0.188	5.479	0.157	5.345	0.191	2	0.975542982
chr12	KRT6B	1	0	25	9	-0.107	-0.073	1.693	0.486	1.942	0.409	1.493	0.451	35	0.768795057
chr11	LRRC55	1	10	NA	NA	NA	NA	2.448	0.436	2.255	0.392	2.603	0.41	11	1.154323725
chr17	CYB5D1	1	0	7	NA	-0.029	NA	2.085	0.373	2.242	0.348	1.958	0.346	8	0.873327386
chr15	BCI2A1	1	0	NA	NA	NA	NA	4.274	0.262	4.413	0.24	4.162	0.225	1	0.943122592
chr01	LEPR	1	0	NA	NA	NA	NA	7.122	0.187	6.995	0.115	7.224	0.172	1	1.03273767
chr05	PCDH1	1	0	NA	NA	NA	NA	5.077	0.401	4.792	0.223	5.306	0.363	1	1.107262104
chr02	PTRHD1	1	0	NA	NA	NA	NA	2.323	0.395	2.524	0.259	2.161	0.412	1	0.856180666
chr17	NXN	0	0	48	65	0.203	0.508	7.965	0.265	7.808	0.14	8.091	0.275	113	1.036244877
chr16	NOMO3	0	6	39	34	0.162	0.262	3.622	0.572	3.431	0.759	3.776	0.285	79	1.100553774
chr22	XBP1	0	0	6	NA	-0.023	NA	2.587	0.435	2.863	0.29	2.366	0.405	6	0.826405868
chr12	MFS5	0	5	NA	NA	NA	NA	1.941	0.472	1.75	0.546	2.094	0.338	5	1.196571429
chr19	PPP1R15A	0	0	4	NA	-0.015	NA	2.975	0.335	3.078	0.254	2.892	0.37	4	0.93957115
chr11	SCGB1D1	0	1	NA	NA	NA	NA	0.893	0.507	0.988	0.539	0.817	0.471	1	0.826923077
chr05	CBY3	0	0	NA	NA	NA	NA	2.979	0.359	3.146	0.275	2.845	0.363	0	0.90432295
chr10	LZTS2	0	0	NA	NA	NA	NA	3.901	0.304	3.734	0.179	4.035	0.319	0	1.080610605
chr03	RBP1	0	0	NA	NA	NA	NA	4.044	0.267	3.892	0.231	4.166	0.229	0	1.070400822

FIG. 21

Location and Gene	glmet	Location and Gene	glmet	Location and Gene	glmet
chr17~+~18380098~18398259~LGALS9C	100	chr01~+~150768683~150780917~CTSK	59	chr16~+~74330672~74340186~PSMD7	48
chr15~+~75118950~75124136~CPLX3	96	chr09~+~80850990~80881983~CEP78	57	chr14~+~30045686~30396899~PRKD1	48
chr07~+~100797685~100804557~AP1S1	90	chr07~+~149535508~149564568~ZNF862	57	chr13~+~35009590~35214822~LINC00457	48
chr22~+~23915312~23922495~IGLL1	89	chr02~+~177037923~177053686~HOXD-AS1	57	chr05~+~177419235~177423243~PROP1	48
chr17~+~34851598~34891305~MYO19	80	chr11~+~115626050~115630918~LOC283143	55	chr04~+~264463~289944~ZNF732	48
chr08~+~92967194~93115454~RUNX1T1	77	chr19~+~9577030~9609279~ZNF560	53	chr01~+~33938231~33961995~ZSCAN20	48
chr15~+~22278031~22371088~LOC727924	75	chr19~+~42363987~42375484~RPS19	52	chr09~+~34368906~34376894~KIAA1161	47
chr02~+~47055002~47086145~LOC100134259	74	chr16~+~67218281~672224107~EXOC3L1	52	chr19~+~42349085~42356397~DMRTC2	46
chr01~+~956699710~95712781~RWDD3	73	chr16~+~58283839~58317734~CCDC113	52	chr13~+~77526623~77532776~IRG1	46
chr06~+~37137921~37143204~PIM1	72	chr04~+~15937192~15940363~FGFBP1	52	chr01~+~173152869~173176471~TNFSF4	46
chr17~+~34891402~34895150~PIGW	70	chr17~+~4634722~4636896~MED11	51	chr01~+~145592604~145610884~POLR3C	46
chr12~+~9436252~9466684~LOC642846	68	chr12~+~9217772~9220651~A2M-AS1	51	chr06~+~28048481~28057340~ZNF165	45
chr01~+~173833038~173837125~GAS5	68	chr19~+~49216254~49222976~MAMSTR	50	chr02~+~189156395~189460652~GULP1	45
chr15~+~86840064~86860199~LOC727915	67	chr19~+~42177234~42192096~CEACAM7	50	chr12~+~8383644~8395542~FAM86FP	44
chr06~+~165740775~166075588~PDE10A	67	chr13~+~36742344~36788752~SOHLH2	50	chr12~+~53907767~53911392~LOC100652999	44
chr09~+~35099888~35103154~STOML2	65	chr12~+~26272958~26278003~BHLHE41	50	chr17~+~44928967~44954437~WNT9B	43
chr14~+~63671101~63760230~RHOJ	63	chr02~+~27359714~27362332~C2orf53	50	chr15~+~47476402~48066420~SEMA6D	43
chr02~+~88422507~88427650~FABP1	63	chr16~+~48116883~48180881~ABCC12	49	chr09~+~33441151~33447631~AQP3	43
chr01~+~79355448~79472495~ELTD1	63	chr14~+~102196773~102198862~LINC00239	49	chr19~+~35606731~35615228~FXD3	42
chr12~+~9208184~9217666~LINC00612	61	chr09~+~98828120~98864194~LOC158435	49	chr07~+~128784711~128809534~TSPAN33	42
chr06~+~100367785~100442114~MCHR2	60	chr06~+~27325601~27343153~ZNF204P	49	chr06~+~55192266~55267291~GFRAL	42
chr01~+~162824086~162838605~C1orf110	59	chr18~+~32820993~32838397~ZNF397	48	chr05~+~16451627~16465894~ZNF622	42

FIG. 21, continued

Location and Gene	glimnet	Location and Gene	glimnet	Location and Gene	glimnet
chr02~+~14772809~14780168~FAM84A	42	chr04~+~140374960~140397069~RAB33B	37	chr08~+~38831667~38846181~HTRA4	32
chr15~+~75628373~75632614~COMMMD4	41	chr03~+~183960116~183967313~ALG3	37	chr07~+~66093867~66108216~KCTD7	32
chr11~+~43930838~43942494~LOC100507300	41	chr20~+~49575350~49578399~MOCS3	36	chr03~+~52529355~52558511~STAB1	32
chr08~+~39308563~39380508~ADAM3A	41	chr19~+~59062932~59066486~CHMP2A	36	chr22~+~20301760~20307628~DGCR6L	31
chr07~+~5920428~5925994~OCM	41	chr17~+~74075262~74078885~ZACN	36	chr16~+~65318401~65610203~LOC283867	31
chr06~+~31132113~31138451~POU5F1	41	chr14~+~93648540~93651249~MOAP1	36	chr16~+~23313590~23392620~SCNN1B	31
chr02~+~45169036~45173216~SIX3	41	chr12~+~32943679~33049780~PKP2	36	chr10~+~91137812~91144962~IFIT1B	31
chr17~+~16453630~16472520~ZNF287	40	chr08~+~143783669~143808391~LOC100288181	36	chr09~+~89623365~89657041~LOC440173	31
chr04~+~30722029~31148423~PCDH7	40	chr01~+~38158072~38175391~CDCA8	36	chr09~+~16409500~16870786~BNC2	31
chr02~+~121554866~121750229~GLI2	40	chr01~+~223566714~223568812~C1orf65	36	chr07~+~64126510~64171401~ZNF107	31
chr01~+~230838271~230850336~AGT	40	chr17~+~75084724~75091068~SEC14L1	35	chr03~+~2152092~2185925~CNTN4-AS2	31
chr21~+~14410486~14490571~ANKRD30BP2	39	chr15~+~42834719~42841002~LRRCS7	34	chr19~+~43428283~43441330~PSG7	30
chr19~+~42212529~42234437~CEACAM5	39	chr07~+~116916685~116963343~WNT2	34	chr19~+~45202420~45213986~CEACAM16	30
chr08~+~26362195~26371483~PNMA2	39	chr02~+~213864410~214016333~IKZF2	34	chr06~+~165693152~165723111~C6orf118	30
chr19~+~36203829~36207940~ZBTB32	38	chr17~+~4981753~4996669~ZFP3	33	chr05~+~1877540~1882880~IRX4	30
chr13~+~25946208~26595420~ATP8A2	38	chr15~+~90808894~90815443~NGRN	33	chr19~+~44416775~44439411~ZNF45	29
chr07~+~94285636~94299006~PEG10	38	chr15~+~74466086~74469212~ISLR	33	chr17~+~12569206~12670651~MYOCD	29
chr06~+~35773070~35791852~LHFPL5	38	chr14~+~105046055~105056183~C14orf180	33	chr14~+~68086578~68118436~ARG2	29
chr01~+~166882440~166944561~ILDR2	38	chr11~+~57791352~57949038~OR9Q1	33	chr11~+~58601539~58611997~GLYATL2	29
chr11~+~8941622~8954553~C11orf16	37	chr10~+~42827313~42863493~LOC441666	33	chr04~+~142142048~142155850~ZNF330	29
chr10~+~112631552~112659764~PDCD4	37	chr07~+~116593952~116599867~ST7-OT4	33	chr03~+~12194567~12200851~TIMP4	29
chr07~+~63773185~63810017~ZNF736	37	chr11~+~102733463~102745764~MMP12	32	chr03~+~72200407~72223490~LOC201617	29

FIG. 21, continued

Location and Gene	glimnet	Location and Gene	glimnet	Location and Gene	glimnet
chr03~+~50388296~50391496~CYB561D2	29	chr02~+~207024317~207027653~EEF1B2	27	chr22~+~48934711~48943199~LOC284933	23
chr01~+~150488232~150490508~LINC00568	29	chr01~+~44165408~44173012~KDM4A-AS1	27	chr20~+~61726844~61733671~HAR1B	23
chr19~+~50655804~50666538~ZUMO2	28	chr09~+~89763558~89774641~C9orf170	26	chr20~+~1184097~1188918~C20orf202	23
chr19~+~21106058~21133503~ZNF85	28	chr07~+~130126897~130131013~MESTIT1	26	chr19~+~5678432~5680911~C19orf70	23
chr17~+~67074846~67138015~ABCA6	28	chr07~+~140396480~140406446~NDUFB2	26	chr17~+~15879874~15903006~ZSWIM7	23
chr17~+~16690205~16707819~USP32P1	28	chr06~+~5998232~6007633~NRN1	26	chr16~+~77316024~77469011~ADAMTS18	23
chr15~+~64443915~64449680~SNX22	28	chr03~+~38492517~38496311~ACVR2B-AS1	26	chr12~+~71031852~71314584~PTPRR	23
chr14~+~73945188~74025651~HEATR4	28	chr16~+~432240~442960~LOC100134368	25	chr12~+~52862299~52867569~KRT6C	23
chr14~+~42076763~42373752~LRFN5	28	chr16~+~1031807~1036979~SOX8	25	chr09~+~41958801~42019584~KGFLP2	23
chr06~+~29973747~29977733~HLA-J	28	chr10~+~23983674~24836772~KIAA1217	25	chr08~+~94146323~94179079~C8orf87	23
chr01~+~231473681~231490769~SPRTN	28	chr08~+~97154557~97173020~GDF6	25	chr07~+~142568959~142583490~TRPV6	23
chr22~+~22890122~22901696~PRAME	27	chr05~+~33527286~33892124~ADAMTS12	25	chr06~+~170188885~170198921~LINC00242	23
chr22~+~42896584~42908566~SERHL	27	chr05~+~128301209~128369335~SLC27A6	25	chr05~+~178322915~178360210~ZFP2	23
chr20~+~55204357~55214338~TFAP2C	27	chr01~+~25548766~25559013~SYF2	25	chr05~+~15500304~15939900~FBXL7	23
chr20~+~43343884~43356452~WISP2	27	chr20~+~62665696~62671315~LINC00176	24	chr05~+~140345746~140391929~PCDHAC2	23
chr19~+~37959981~37976242~ZNF570	27	chr17~+~4487275~4511614~SMTNL2	24	chr02~+~208473838~208489973~METTL21A	23
chr15~+~22546564~22570831~REREP3	27	chr14~+~74003927~74010498~ACOT1	24	chr02~+~240684553~240722356~LOC150935	23
chr14~+~68117866~68141602~VT11B	27	chr13~+~108870762~108886603~ABHD13	24	chr02~+~120189445~120196096~TMEM37	23
chr10~+~87337487~87366972~GRID1-AS1	27	chr09~+~38392660~38398662~ALDH1B1	24	chr01~+~109756514~109780804~SARS	23
chr09~+~96938851~96966848~MIRLET7DHG	27	chr03~+~139279022~139396885~NMNAT3	24	chr19~+~23157684~23186010~ZNF728	22
chr06~+~88032305~88052043~SMIM8	27	chr02~+~153508106~153573975~PRPF40A	24	chr17~+~18414575~18424566~USP32P2	22
chr03~+~38537762~38567796~EXOG	27	chr01~+~75594118~75627218~LHX8	24	chr17~+~30367354~30369851~SH3GL1P1	22

FIG. 21, continued

Location and Gene	glimnet	Location and Gene	glimnet	Location and Gene	glimnet
chr16~+~14014013~14046205~ERCC4	22	chr20~+~25121433~25129426~LOC284798	20	chr09~+~34521039~34523037~ENHO	19
chr15~+~93160678~93199031~FAM174B	22	chr20~+~23345020~23353683~GZF1	20	chr09~+~95571892~95600739~ANKRD19P	19
chr12~+~108956293~108963160~ISCU	22	chr17~+~77071018~77084685~ENGASE	20	chr07~+~1609708~1629261~PSMG3-AS1	19
chr08~+~24771273~24776606~NEFM	22	chr15~+~52401821~52404972~BCL2L10	20	chr06~+~76017799~76203496~FILIP1	19
chr06~+~55921387~56112378~COL21A1	22	chr15~+~75941347~75950968~SNX33	20	chr06~+~31913720~31919861~CFB	19
chr06~+~96463844~96663488~FUT9	22	chr14~+~77940737~77965210~ISM2	20	chr02~+~105858199~105859924~GPR45	19
chr04~+~187454808~187476537~MTNR1A	22	chr13~+~49822046~49867622~CDADC1	20	chr01~+~11148981~111506566~LRIF1	19
chr02~+~172864803~172945587~METAP1D	22	chr13~+~22245214~22278640~FGF9	20	chr01~+~84944919~84964033~RPF1	19
chr21~+~10906742~10990920~TPTE	21	chr11~+~63228875~632258680~HRASLS5	20	chr01~+~230883129~230937749~CAPN9	19
chr15~+~51973549~52013223~SCG3	21	chr06~+~117113247~117150198~GPRC6A	20	chr20~+~55926144~55953519~RAE1	18
chr10~+~38238794~38265453~ZNF25	21	chr06~+~119215240~119230335~ASF1A	20	chr17~+~10395626~10421859~MYH1	18
chr09~+~139956578~139965028~SAPCD2	21	chr05~+~151771101~151784840~NMUR2	20	chr14~+~26915088~27066960~NOVA1	18
chr07~+~27282163~27286192~EVX1	21	chr04~+~41983712~41988484~DCAF4L1	20	chr09~+~131707808~131710012~DOLK	18
chr05~+~177433966~177476088~FAM153C	21	chr02~+~56411257~56613309~CCDC85A	20	chr09~+~123555774~123561009~LOC100288842	18
chr05~+~140306301~140391929~PCDHAC1	21	chr01~+~23253371~232651243~SIPA1L2	20	chr08~+~93725189~93798288~FLJ46284	18
chr03~+~151153777~151176497~IGSF10	21	chr01~+~190066796~190446759~FAM5C	20	chr07~+~137638093~137642712~LOC100130880	18
chr03~+~89156673~89531284~EPHA3	21	chr01~+~185087217~185126230~TRMT1L	20	chr05~+~158875563~158893284~LOC285627	18
chr03~+~519893329~51991520~GPR62	21	chr20~+~56136136~56141513~PCK1	19	chr05~+~153825516~153840613~SAP30L	18
chr02~+~210288770~210598834~MAP2	21	chr19~+~2233154~2236328~PLEKHJ1	19	chr05~+~131993864~131996801~IL13	18
chr01~+~218066241~218094146~LINC00210	21	chr17~+~72199794~72206019~RPL38	19	chr01~+~39987951~40025370~PPIEL	18
chr01~+~201857796~201861715~SHISA4	21	chr12~+~56552044~56555366~MYL6	19	chr01~+~241792166~241799232~CHML	18
chr01~+~161136180~161141010~PPOX	21	chr10~+~51827683~51893269~FAM21A	19	chr01~+~55446464~55457966~TMEM61	18

FIG. 21, continued

Location and Gene	glmet	Location and Gene	glmet	Location and Gene	glmet
chr01~+~145096406~145116997~SEC22B	18	chr19~+~52800425~52829174~ZNF480	16	chr02~+~108443387~108509000~RGPDP4	15
chr22~+~21827286~21871780~PI4KAP2	17	chr17~+~80009762~80015346~GPS1	16	chr01~+~22970117~22974603~C1QC	15
chr19~+~9868150~9879410~ZNF846	17	chr17~+~16593638~16678311~CCDC144A	16	chr01~+~155036212~155042029~EFNA4	15
chr19~+~35978225~35981433~KRTDAP	17	chr16~+~1832932~1839192~NUBP2	16	chr21~+~29094697~29123552~LINC00113	14
chr17~+~7761063~7765600~CYB5D1	17	chr13~+~111516333~111522655~LINC00346	16	chr20~+~31781410~31798268~BPIFA4P	14
chr17~+~49242795~49249105~NME2	17	chr12~+~56211805~56214959~ORMDL2	16	chr19~+~58433251~58446740~ZNF418	14
chr17~+~44270938~44274089~KANS1-AS1	17	chr10~+~51837885~51893269~FAM21B	16	chr19~+~46498718~46521874~CCDC61	14
chr17~+~38024454~38034149~ZBP2	17	chr06~+~94416800~94486199~TSG1	16	chr12~+~120759913~120765592~PLA2G1B	14
chr16~+~2286467~2288712~DNASE1L2	17	chr05~+~160715435~160975130~GABRB2	16	chr11~+~49580079~49831969~LOC440040	14
chr13~+~36342788~36705514~DCLK1	17	chr04~+~53656160~53681631~LOC152578	16	chr11~+~34127110~34168458~NAT10	14
chr11~+~22359666~22401046~SLC17A6	17	chr04~+~17616272~17626160~MED28	16	chr09~+~98868942~98878693~LOC158434	14
chr10~+~10976902~10994126~LINC00710	17	chr04~+~123747862~123819390~FGF2	16	chr09~+~139088095~139096955~LHX3	14
chr10~+~14920781~14946304~SUV39H2	17	chr03~+~183967444~184010819~ECE2	16	chr08~+~131792546~132052835~ADCY8	14
chr09~+~6011018~6015640~RANBP6	17	chr19~+~46969747~46974820~PNMAL1	15	chr07~+~419390~422845~LOC442497	14
chr08~+~70378858~70573147~SULF1	17	chr12~+~69068150~69080639~LOC100507250	15	chr06~+~170591293~170599697~DLL1	14
chr08~+~136246373~136311962~LOC286094	17	chr12~+~104343980~104350993~C12orf73	15	chr04~+~104510624~104640973~TACR3	14
chr07~+~94536948~94925727~PPP1R9A	17	chr08~+~38268655~38326352~FGFR1	15	chr02~+~63815742~63834330~MDH1	14
chr04~+~76404246~76439640~RCHY1	17	chr05~+~175386533~175395545~THOC3	15	chr01~+~144851423~145076186~PDE4DIP	14
chr04~+~166794409~167025609~TLL1	17	chr05~+~160358785~160365633~LOC285629	15	chr22~+~2373791~23744799~ZDHHCP1	13
chr01~+~28918711~28921088~RAB42	17	chr04~+~6202459~6235663~LOC285484	15	chr21~+~28659821~29283529~MIR5009	13
chr01~+~12916940~12921764~PRAMEF2	17	chr03~+~125688027~125702296~ROPN1B	15	chr17~+~39576808~39580822~KRT37	13
chr22~+~51017386~51021428~CHKB	16	chr02~+~131100488~131104197~IMP4	15	chr12~+~52301201~52317145~ACVRL1	13

FIG. 21, continued

Location and Gene	glnet	Location and Gene	glnet	Location and Gene	glnet
chr11~73583712~73587890~COA4	13	chr03~+~238278~451097~CHL1	12	chr04~+~144434615~144478642~SMARCA5	11
chr11~116649275~116658739~ZNF259	13	chr03~+~126707436~126756235~PLXNA1	12	chr02~+~198318230~198339851~COQ10B	11
chr08~95261484~95274547~GEM	13	chr02~+~264868~278282~ACP1	12	chr02~+~193614570~193641625~PCGEM1	11
chr08~+~74903563~74941307~LY96	13	chr01~+~89646830~89664633~GBP4	12	chr02~+~131513076~131525707~AMER3	11
chr05~141971742~142077635~FGF1	13	chr01~+~152321212~152332482~FLG2	12	chr01~+~54497348~54519111~TMEM59	11
chr04~177134825~177190373~ASB5	13	chr01~+~8611120~879961~SAMD11	12	chr01~+~156374054~156399184~C1orf61	11
chr04~+~16228285~16259810~TAPT1-AS1	13	chr22~+~39828164~39833133~LOC100506472	11	chr22~+~21356210~21364663~THAP7-AS1	10
chr03~190023489~190040235~CLDN1	13	chr15~+~71123888~71146498~LARP6	11	chr21~+~40777769~40816128~LCA5L	10
chr02~+~24397971~24414567~FAM228A	13	chr15~+~86685241~87572283~AGBL1	11	chr21~+~11020841~11098925~BAGE5	10
chr01~+~35447126~35450948~ZMYM6NB	13	chr14~+~36942493~36982990~SFTA3	11	chr21~+~11020841~11098925~BAGE4	10
chr22~+~23701792~23724313~CES5AP1	12	chr14~+~90528107~90652195~KCNK13	11	chr21~+~11020841~11098925~BAGE3	10
chr20~+~44462469~44471914~SNX21	12	chr13~+~31506833~31549153~TEX26	11	chr21~+~42792519~42831141~MX1	10
chr19~+~58944180~58951589~ZNF132	12	chr10~+~96092988~96122683~NOC3L	11	chr19~+~11487880~11495018~EPOR	10
chr19~+~53641956~53662322~ZNF347	12	chr10~+~110930414~110999490~RNU6-53	11	chr19~+~39687603~39692522~NCCRP1	10
chr19~+~46442770~46476657~NOVA2	12	chr09~+~19376253~19380235~RPS6	11	chr17~+~58160926~58165828~LOC645638	10
chr19~+~22148896~22193745~ZNF208	12	chr08~+~146102335~146126846~ZNF250	11	chr17~+~43189007~43209891~PLCD3	10
chr19~+~4247110~4269085~CCDC94	12	chr08~+~99956630~99964326~OSR2	11	chr15~+~88795960~88814297~NTRK3-AS1	10
chr19~+~30863327~31048965~ZNF536	12	chr07~+~53723201~53879624~FLJ45974	11	chr13~+~107820878~108519460~FAM155A	10
chr17~+~12453284~12540504~LINC000670	12	chr07~+~33134409~33149002~RP9	11	chr09~+~138073454~138079152~LOC401557	10
chr16~+~31142753~31147151~PRSS8	12	chr06~+~169615874~169654137~THBS2	11	chr08~+~39442086~39587583~ADAM18	10
chr12~+~32899477~32908887~YARS2	12	chr04~+~188916924~188926199~ZFP42	11	chr08~+~15397595~15624158~TUSC3	10
chr09~+~1050345~1057554~DMRT2	12	chr04~+~164415672~164441691~TMA16	11	chr08~+~144718182~144735900~ZNF623	10

FIG. 21, continued

Location and Gene	glnet	Location and Gene	glnet	Location and Gene	glnet
chr06~+~35465650~35480647~TULP1	10	chr08~+~101145587~101158099~FBXO43	9	chr01~+~27992571~27998724~IF16	8
chr06~+~311105310~31107127~PSORS1C2	10	chr07~+~45022626~45026259~SNHG15	9	chr01~+~209757044~209787284~CAMK1G	8
chr06~+~158422138~158423415~SYNJ2-IT1	10	chr05~+~150070351~150080669~RBM22	9	chr22~+~24385937~24401899~GSTTP2	7
chr05~+~178537851~178772431~ADAMTS2	10	chr05~+~180257956~180262726~LINC00847	9	chr19~+~9405985~9415795~ZNF699	7
chr05~+~31532372~31555165~C5orf22	10	chr05~+~140247830~140391929~PCDHA11	9	chr19~+~43225793~43244668~PSG3	7
chr03~+~126061477~126076236~KLF15	10	chr21~+~11057795~11098937~BAGE	8	chr19~+~38229202~38270230~ZNF573	7
chr03~+~158288952~158324249~MLF1	10	chr19~+~12428303~12444534~ZNF563	8	chr18~+~904943~912173~ADCYAP1	7
chr01~+~24446260~24469775~IL22RA1	10	chr19~+~15939756~15947131~UCA1	8	chr16~+~30125425~30134630~MAPK3	7
chr01~+~24526729~24538180~LOC284632	10	chr13~+~79894099~79979923~RBM26	8	chr15~+~78206558~78219188~LOC645752	7
chr01~+~233086369~233114219~NTPCR	10	chr13~+~27844463~27847827~RASL11A	8	chr10~+~50817140~50873150~CHAT	7
chr21~+~41990432~42002693~DSCAM-IT1	9	chr10~+~118423206~118429481~C10orf82	8	chr10~+~106028630~106059176~GSTO2	7
chr21~+~35275756~35288158~ATP5O	9	chr08~+~39601254~39695779~ADAM2	8	chr08~+~38368351~38386180~C8orf86	7
chr19~+~51515999~51523431~KLK10	9	chr08~+~144295067~144299044~GPIHBP1	8	chr07~+~56078743~56119268~PSPH	7
chr19~+~47549166~47551882~TMEM160	9	chr07~+~148766732~148787869~ZNF786	8	chr05~+~140261853~140391929~PCDHA13	7
chr19~+~1473199~1479228~C19orf25	9	chr06~+~42174538~42185633~MRPS10	8	chr04~+~68603098~68621804~GNRHR	7
chr17~+~56282796~56296966~MKS1	9	chr06~+~117073359~117086886~FAM162B	8	chr02~+~25383721~25391559~POMC	7
chr17~+~41102542~41116515~PTGES3L-AARSD1	9	chr06~+~10428017~10435055~LINC00518	8	chr02~+~202484906~202508252~TMEM237	7
chr17~+~77019015~77045870~C1QTNF1	9	chr06~+~116359893~116361107~TP1P3	8	chr02~+~177494308~177502302~LOC375295	7
chr16~+~20744988~20753199~THUMPD1	9	chr06~+~10747994~10757214~TMEM14B	8	chr02~+~101869344~101886778~CNOT11	7
chr14~+~105403590~105444694~AHNAK2	9	chr05~+~138727634~138730885~PROB1	8	chr01~+~151810338~151813033~C2CD4D	7
chr14~+~96343108~96391908~LINC00617	9	chr02~+~242434121~242448987~STK25	8	chr01~+~100652477~100715409~DBT	7
chr11~+~124636393~124670299~MSANTD2	9	chr01~+~32117847~32169768~COL16A1	8	chr01~+~71512188~71532865~ZRANB2-AS1	7

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FIG. 21, continued

Location and Gene	glimnet	Location and Gene	glimnet	Location and Gene	glimnet
chr01~+~39957317~39995541~BMP8A	7	chr04~+~122745483~122791652~BBS7	6	chr04~+~181985242~182080302~LINC00290	5
chr22~+~37966252~37976024~LGALS2	6	chr02~+~205410515~206484886~PARD3B	6	chr03~+~12045861~12233532~SYN2	5
chr22~+~38219388~38221502~GALR3	6	chr01~+~1447522~1470067~ATAD3A	6	chr02~+~73989324~74007284~DUSP11	5
chr20~+~44509847~44513905~ZSWIM1	6	chr01~+~111889194~111895639~PIFO	6	chr02~+~239840997~239847965~FLJ43879	5
chr19~+~11616730~11639987~ECSIT	6	chr20~+~740723~749228~SLC52A3	5	chr20~+~11247306~11254031~LOC339593	4
chr19~+~40697650~40721482~MAP3K10	6	chr19~+~55912649~55919325~UBE2S	5	chr19~+~14583277~14586174~PTGER1	4
chr19~+~12863406~12869271~BEST2	6	chr17~+~53796987~53809482~TMEM100	5	chr19~+~53898396~53915262~ZNF765	4
chr17~+~10346607~10372876~MYH4	6	chr16~+~64980682~65155919~CDH11	5	chr17~+~62850487~62914903~LRRC37A3	4
chr16~+~4307186~4323001~TFAP4	6	chr16~+~66613350~66622177~CMTM2	5	chr17~+~45286427~45301045~MYL4	4
chr14~+~71050956~71067384~MED6	6	chr15~+~21932513~21940739~LOC646214	5	chr16~+~2022063~2028751~TBL3	4
chr12~+~44902057~45307711~NELL2	6	chr12~+~58019677~58027022~B4GALNT1	5	chr15~+~101811213~101817700~VIMP	4
chr12~+~25146364~25150373~C12orf77	6	chr12~+~57422300~57444549~MYO1A	5	chr13~+~31480311~31499709~MEDAG	4
chr11~+~4619901~4629489~TRIM68	6	chr12~+~52840434~52845910~KRT6B	5	chr12~+~70910631~71031220~PTPRB	4
chr09~+~87283465~87638505~NTRK2	6	chr12~+~97301000~97347469~NEDD1	5	chr12~+~52604713~52617597~LINC00592	4
chr08~+~38020838~38034248~LSM1	6	chr12~+~9392598~9395645~LOC100499405	5	chr12~+~25348149~25357949~LYRM5	4
chr08~+~23699433~23712320~STC1	6	chr12~+~85674035~85695561~ALX1	5	chr12~+~10457049~10469850~KLRD1	4
chr07~+~57233376~57247863~GUSBP10	6	chr11~+~3659735~3663546~ART5	5	chr10~+~50887683~50916956~C10orf53	4
chr07~+~2273925~2281833~FTSJ2	6	chr11~+~60609428~60618561~CCDC86	5	chr08~+~21971931~21988565~HR	4
chr07~+~142829173~142836834~PIP	6	chr09~+~132374503~132383055~C9orf50	5	chr07~+~83587658~83824217~SEMA3A	4
chr07~+~123565285~123611461~SPAM1	6	chr09~+~140657473~140659224~FLJ40292	5	chr06~+~114257319~114292359~HDAC2	4
chr05~+~140254930~140391929~PCDHA12	6	chr07~+~45951843~45960871~IGFBP3	5	chr06~+~54173202~54254950~TINAG	4
chr04~+~83374466~83295149~HNRNP	6	chr05~+~72416387~72427644~TMEM171	5	chr06~+~100441913~100524295~LOC728012	4

FIG. 21, continued

Location and Gene	glimnet	Location and Gene	glimnet	Location and Gene	glimnet
chr05~+~175810939~175815763~NOP16	4	chr01~+~53692563~53704282~MAGOH	3	chr05~+~140174443~140391929~PCDHA2	2
chr05~+~149380168~149432706~HMGXB3	4	chr01~+~228391206~228401365~C1orf145	3	chr03~+~49758931~49761384~GMPPB	2
chr02~+~218148745~218621316~DIRC3	4	chr01~+~210406194~210416440~SERTAD4	3	chr03~+~29322802~30051886~RBMS3	2
chr02~+~27651472~27665124~NRBP1	4	chr22~+~46316247~46373008~WNT7B	2	chr03~+~114012832~114029135~TIGIT	2
chr01~+~19592475~19600568~AKR7L	4	chr20~+~61669362~61685215~LOC100144597	2	chr02~+~120436742~120439694~TMEM177	2
chr01~+~47264669~47285021~CYP4B1	4	chr20~+~44746905~44758384~CD40	2	chr01~+~228581376~228594517~TRIM11	2
chr19~+~44830705~44860856~ZFP112	3	chr19~+~52617652~52643191~ZNF616	2	chr01~+~156213111~156217908~PAQR6	2
chr19~+~23835707~23870017~ZNF675	3	chr19~+~18043823~18054794~CCDC124	2	chr01~+~53704281~53708455~LOC100507564	2
chr19~+~48325098~48346586~CRX	3	chr18~+~14748238~14852737~ANKRD30B	2	chr01~+~43824625~43828873~CDC20	2
chr17~+~47007458~47022154~SNF8	3	chr17~+~43583248~43597889~LRR37A4P	2	chr01~+~24018268~24022915~RPL11	2
chr16~+~75572014~75590184~TMEM231	3	chr15~+~85198359~85201802~NMB	2	chr19~+~53268747~53290034~ZNF600	1
chr14~+~21214098~21216539~EDDM3A	3	chr13~+~36048405~36515382~MIR548F5	2	chr19~+~51446558~51456344~KLK5	1
chr12~+~7917811~7926717~NANOGNB	3	chr12~+~57106210~57119326~NACA	2	chr19~+~43370612~43383871~PSG1	1
chr09~+~35749276~35753264~RGP1	3	chr12~+~123565930~123569291~LOC100507091	2	chr18~+~12308256~12326568~TUBB6	1
chr07~+~55247442~55256642~EGFR-AS1	3	chr11~+~106544737~106889171~GUCY1A2	2	chr17~+~70399462~70588943~LINC00673	1
chr07~+~34386123~34873943~NPSR1-AS1	3	chr09~+~13406378~13431328~FLJ41200	2	chr17~+~43697711~43715329~MGC57346	1
chr07~+~77976558~77988770~RPL13AP17	3	chr08~+~12579405~12612992~LONRF1	2	chr16~+~88744089~88752882~SNAI3	1
chr07~+~57509882~57533265~ZNF716	3	chr07~+~63688851~63727309~ZNF679	2	chr16~+~684428~686347~C16orf13	1
chr05~+~140235633~140391929~PCDHA10	3	chr07~+~44240577~44253893~YKT6	2	chr12~+~48103517~48119355~ENDOU	1
chr05~+~140165875~140391929~PCDHA1	3	chr06~+~123537483~123958238~TRDN	2	chr12~+~108983621~108991894~TMEM119	1
chr04~+~186421814~186456712~PDLIM3	3	chr05~+~36876860~37065921~NIPBL	2	chr11~+~73711325~73720282~UCP3	1
chr04~+~107842958~107957453~DKK2	3	chr05~+~140213968~140391929~PCDHA7	2	chr09~+~35860270~35865515~FP588	1

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FIG. 21, continued

[illegible]

FIG. 22

Chr	Gene	glmnet	glmnet2	glmnetF	glmnet2F	glmnetF.coef	mean	sd	nonCancer.mean	nonCancer.sd	Cancer.mean	Cancer.sd
chr16	ABCC12	11	0	11	NA	NA	4.564	0.371	4.297	0.147	4.831	0.332
chr03	ADAMTS9-AS2	2	0	1	NA	NA	6.294	0.629	5.828	0.332	6.76	0.496
chr09	BNC2	12	0	12	NA	NA	6.979	0.487	6.621	0.234	7.338	0.401
chr14	C14orf64	45	0	45	NA	NA	3.355	0.517	2.976	0.273	3.733	0.418
chr15	C15orf53	7	8	7	8	-0.04	1.791	0.456	2.076	0.289	1.505	0.412
chr17	C17orf51	2	0	2	NA	NA	4.211	0.396	3.962	0.339	4.459	0.274
chr01	CAMK1G	7	0	7	NA	NA	4.383	0.2	4.257	0.153	4.508	0.159
chr07	CCDC129	5	0	5	NA	NA	4.33	0.481	3.984	0.248	4.675	0.403
chr15	CERS3	67	57	67	57	0.085	5.702	0.425	5.403	0.347	6	0.25
chr13	DCLK1	15	0	15	NA	NA	5.861	0.611	5.404	0.246	6.317	0.518
chr05	FBXL7	31	0	30	NA	NA	6.493	0.71	5.965	0.413	7.022	0.528
chr13	FGF9	5	0	5	NA	NA	3.799	0.296	3.598	0.187	4.001	0.244
chr06	FILIP1	16	0	16	NA	NA	5.357	0.371	5.091	0.247	5.622	0.271
chr15	GABRA5	1	0	1	NA	NA	3.815	0.538	3.43	0.23	4.201	0.478
chr15	GABRG3	33	0	33	NA	NA	6.227	0.599	5.784	0.276	6.669	0.499
chr16	GP2	56	42	56	42	0.071	1.791	0.646	1.322	0.31	2.259	0.546
chr19	HKR1	17	0	17	NA	NA	4.049	0.407	3.759	0.228	4.339	0.334
chr07	HOXA4	50	42	50	42	-0.063	1.054	0.548	1.4	0.331	0.708	0.503
NA	Intercep	NA	NA	NA	NA	0.05	NA	NA	NA	NA	NA	NA
chr15	ISLR2	4	11	4	11	0.005	2.223	0.431	1.958	0.301	2.487	0.377
chr09	KLF9	0	5	NA	5	NA	5.671	0.255	5.833	0.13	5.51	0.247
chr13	LINC00457	100	100	100	100	0.127	4.579	0.659	4.071	0.282	5.087	0.521

FIG. 22, continued

chr	Gene	glmnet	glmnet2	glmnetF	glmnet2F	glmnetF.coef	glmnet2F.coef	mean	sd	nonCancer.mean	nonCancer.sd	Cancer.mean	Cancer.sd
chr17	LINC00670	16	0	15	NA	NA	NA	3.693	0.686	3.181	0.253	4.205	0.594
chr15	LOC100128714	23	0	23	NA	NA	NA	4.936	0.416	4.637	0.189	5.235	0.363
chr02	LOC151171	23	2	23	2	0.009	0.009	4.412	0.311	4.206	0.229	4.617	0.238
chr16	LOC283867	0	0	1	NA	NA	NA	5.383	0.483	5.035	0.226	5.73	0.417
chr05	LOC285629	65	49	65	48	0.083	0.243	1.836	0.665	1.349	0.425	2.322	0.479
chr06	LY6G6F	51	3	51	3	-0.065	-0.014	2.949	0.463	3.284	0.26	2.613	0.369
chr21	MIR5009	20	0	20	NA	0.025	NA	6.323	0.688	5.807	0.333	6.838	0.551
chr02	MRPS5	8	0	8	NA	0.01	NA	4.834	0.335	4.597	0.219	5.072	0.254
chr17	MYOCD	46	0	46	NA	0.059	NA	4.255	0.662	3.756	0.238	4.753	0.568
chr09	NTRK2	36	49	36	49	0.046	0.245	6.424	0.314	6.225	0.244	6.624	0.242
chr14	OSGEP	13	0	13	NA	-0.016	NA	3.706	0.316	3.926	0.18	3.486	0.264
chr04	PCDH7	10	0	10	NA	0.012	NA	5.744	0.463	5.424	0.243	6.064	0.407
chr06	PDE10A	42	0	42	NA	0.053	NA	6.079	0.468	5.732	0.251	6.426	0.365
chr10	PDLIM1	9	0	9	NA	-0.011	NA	6.426	0.203	6.562	0.133	6.29	0.167
chr06	PTCRA	42	0	42	NA	-0.053	NA	4.151	0.309	4.374	0.188	3.927	0.236
chr14	RHOJ	57	28	57	27	0.073	0.138	4.586	0.343	4.343	0.225	4.829	0.259
chr06	RWDD2A	0	0	NA	NA	NA	NA	1.383	0.34	1.246	0.303	1.519	0.323
chr08	SFRP1	56	0	57	NA	0.072	NA	4.423	0.422	4.116	0.197	4.73	0.358
chr07	TSPAN33	9	16	9	16	-0.011	-0.082	5.367	0.151	5.454	0.126	5.28	0.121
chr02	TWIST2	6	0	6	NA	0.008	NA	4.661	0.367	4.405	0.208	4.918	0.306
chr11	UCP3	41	13	41	13	-0.052	-0.065	4.271	0.188	4.394	0.132	4.149	0.151
chr02	ZNF2	10	0	10	NA	0.013	NA	3.594	0.415	3.304	0.231	3.883	0.351
chr19	ZNF573	16	0	16	NA	0.02	NA	3.688	0.459	3.359	0.206	4.017	0.403