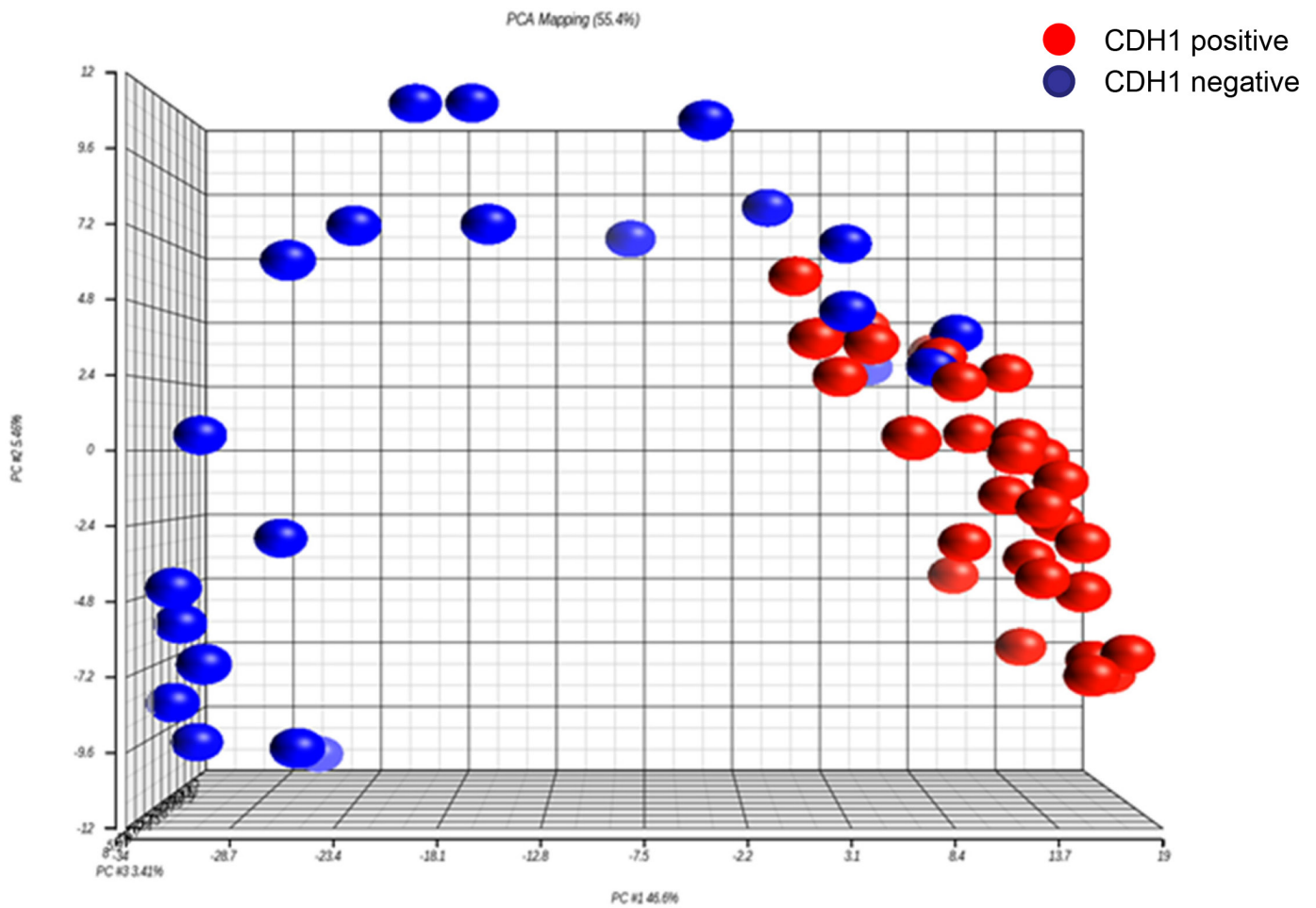
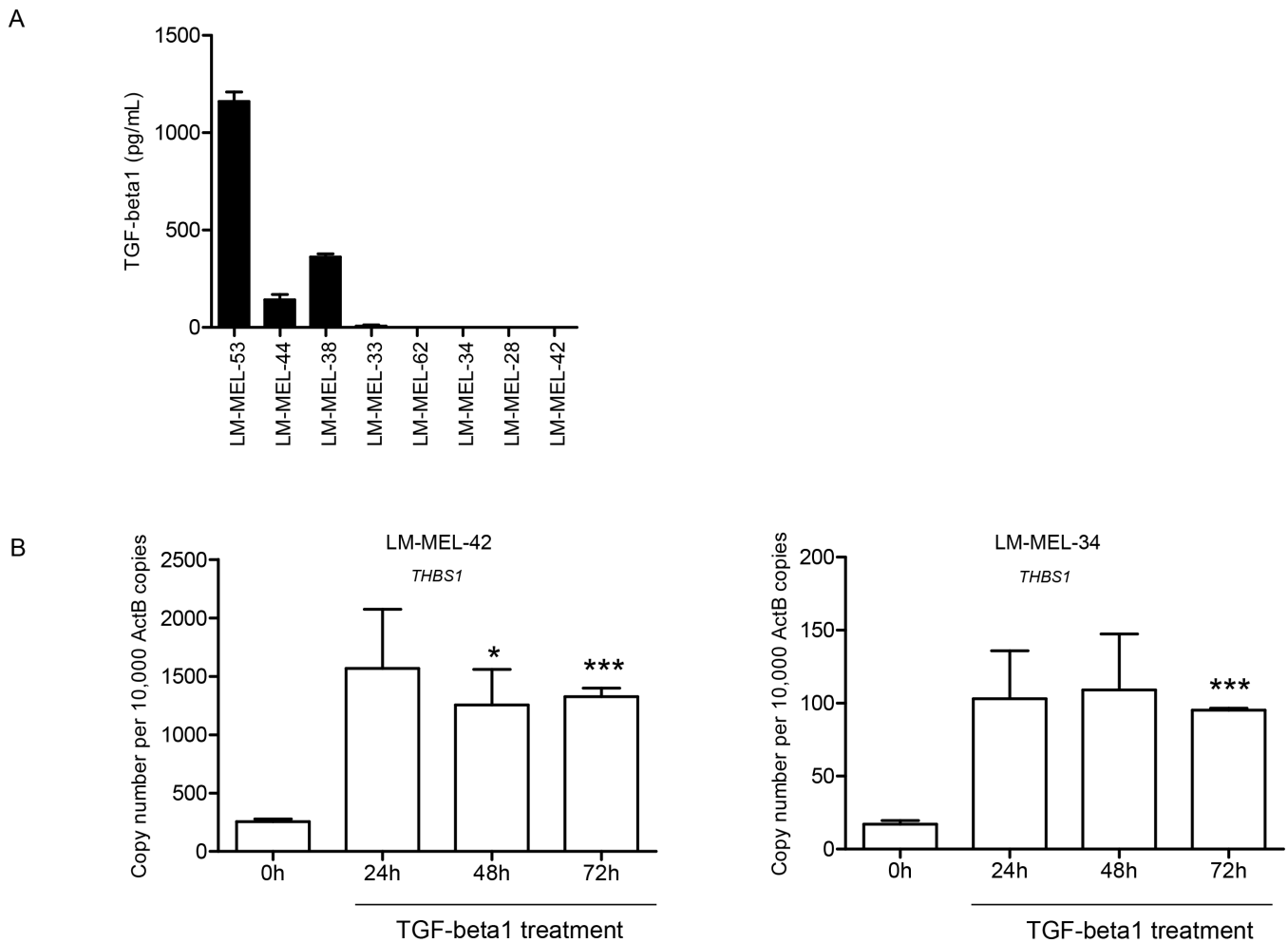


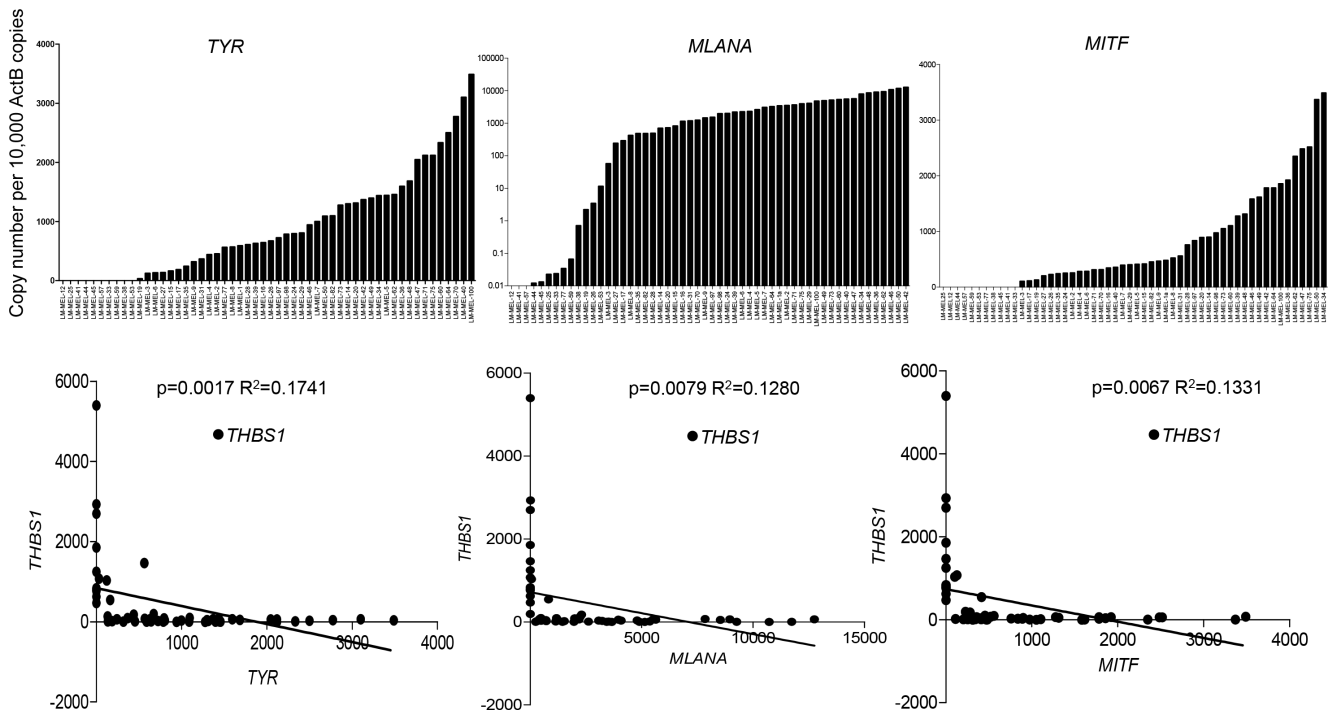
## SUPPLEMENTARY FIGURES AND TABLES



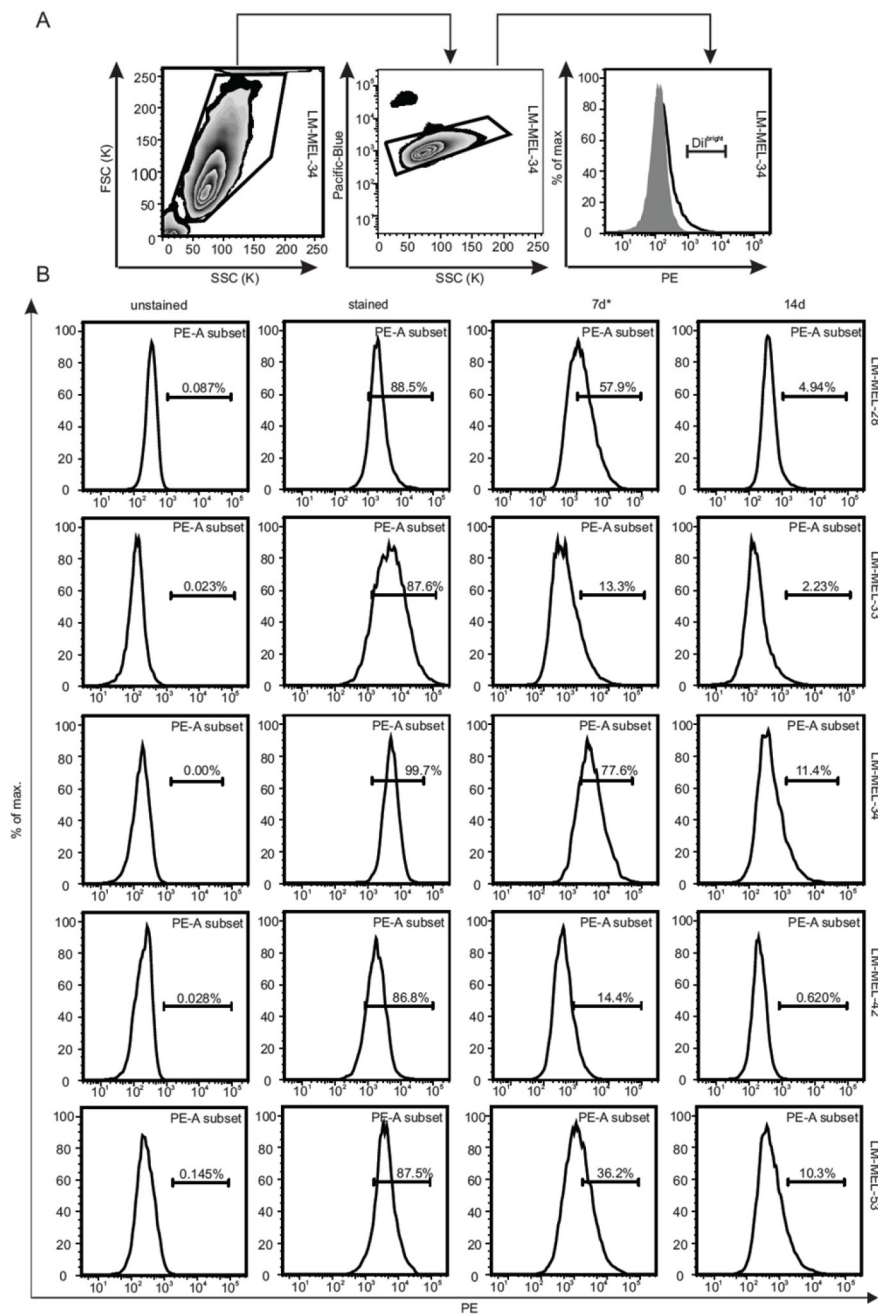
**Supplementary Figure S1: Segregation of melanoma cell lines based on differential gene expression.** Principal components analysis of the genes differentially expressed between 54 melanoma cell lines divided based on presence or absence of E-cadherin (*CDH1*) expression by qRT-PCR.



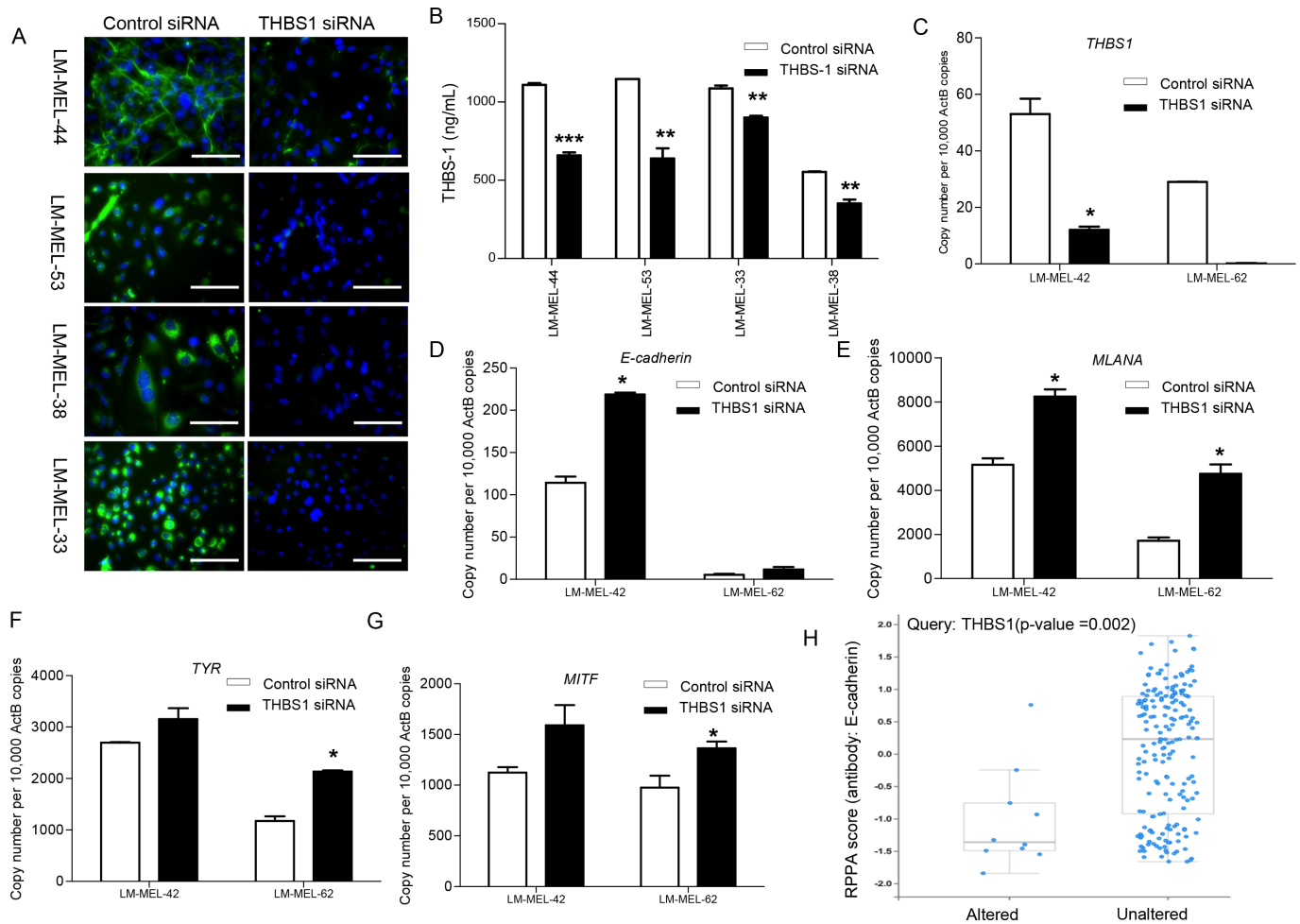
**Supplementary Figure S2: TGF-beta 1 secretion and expression in melanoma cells.** (A) Media from 4 mesenchymal- and 4 epithelial-like melanoma cells were collected and subjected to TGF-beta 1 ELISA, and only mesenchymal-like lines secreted TGF-beta 1. (B) *THBS1* expression was assessed by qRT-PCR in 2 epithelial-like melanoma cell lines; LM-MEL-42 and -34 treated with 5ng/ml of TGF-beta 1 for 24, 48 or 72 hours. Bars are mean values +/- SEM from experiments in triplicate (\* p<0.05, \*\*\* p<0.0005).



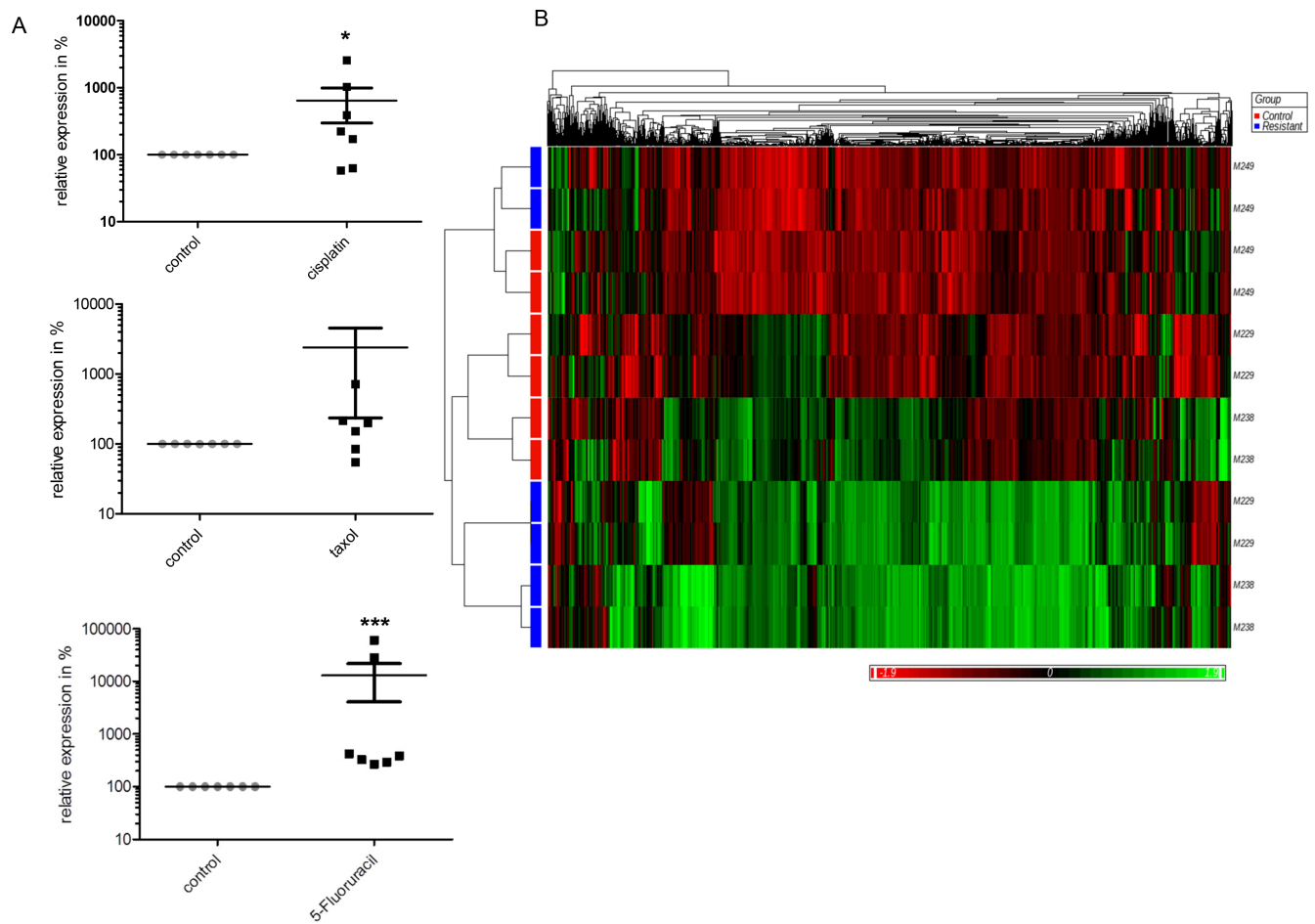
**Supplementary Figure S3: Correlation between *THBS1* and differentiation marker mRNA expression in melanoma cells.** qRT-PCR analysis of *TYR*, *MLANA* and *MITF* in 54 melanoma cell lines. Regression analysis of all the three genes with *THBS1* expression is shown.



**Supplementary Figure S4: Flow profile of the LRC population in different melanoma cell lines. (A)** Gating strategy for detection of the DiI<sup>bright</sup> population. Cell lines were CM-Dil labeled, cultured and gated based on FSC/SSC; dead cells were excluded using Pacific-Blue viable cell stain and then gated compared to unstained cells (from left to right). **(B)** The indicated melanoma cell lines were stained with CM-Dil and cultured for the indicated time-frame. FACS analysis was performed either with unstained cells (unstained), two hours after labeling (stained), after seven days (7d) or after fourteen days (14d). The \* indicates that LM-MEL-33 histograms have been derived after 8 days. All cell lines were co-stained with Pacific-Blue to exclude dead cells from the analysis.



**Supplementary Figure S5: Loss of THBS1 effects E-cadherin and differentiation marker expression.** Melanoma cells were plated out and transfected with either 20nM scrambled siRNA or THBS1 specific siRNA. (A) After 48 hours cells were fixed and stained using a THBS1 antibody in conjunction with an Alexa-488 conjugated secondary antibody (scale bar = 100µm). (B) Simultaneously treated cells were used for THBS1 ELISA. Epithelial-like melanoma cell lines LM-MEL-42 and LM-MEL-62 were treated with THBS1 siRNA and mRNA expression level of THBS1 (C), E-cadherin (D), MLANA (E), TYR (F) and MITF (G) were assessed. Bars are mean values +/- SEM from three independent experiments in triplicate (\* p<0.05, \*\*\* p<0.0005). (H) TCGA obtained dataset demonstrating E-cadherin protein levels in THBS1 altered (high) and unaltered (lower) melanoma patient samples.



**Supplementary Figure S6: *THBS1* is enriched in melanoma cells with acquired anti-tumor drug resistance and BRAF inhibitor resistance.** (A) RNA was extracted from melanoma cell that survived after a three-day treatment with 40nM taxol, 150 $\mu$ M 5FU or 1 $\mu$ M cisplatin or DMSO (control) and *THBS1* expression was performed by qRT-PCR. Bars show percentage of expression  $\pm$  SEM compared to control (\*  $p < 0.05$ , \*\*\*  $p < 0.0005$ ). (B) Comparison of a publicly available dataset (referenced in the text) of PLX4032 resistant BRAF V600E melanoma cell lines and their sensitive parental lines, based on the gene up-regulated in mesenchymal-like melanoma cells (Supplementary Table S1). *THBS1* was significantly up-regulated in the M229 (mean 2.34 fold) and M238 (mean 1.68 fold) resistant lines compared to the parental lines (*THBS1* probe IDs 7982599 and 7982600; ANOVA FDR cut-off  $< 5\%$ ). M249 did not show a change in expression for *THBS1*.

Supplementary Table S1.

Symbol	Probe ID	p-value	Fold-Change
LOC100134134	ILMN_337630	1.74E-07	32.11
AXL	ILMN_28087	1.23E-07	22.47
THBS1	ILMN_182705	5.53E-07	18.90
AXL	ILMN_180683	8.51E-08	18.11
PXDN	ILMN_165066	3.00E-07	16.40
FAM20C	ILMN_5460	1.09E-07	13.33
COL5A1	ILMN_31902	5.34E-07	13.24
CCL2	ILMN_25185	9.67E-07	13.15
NTM	ILMN_169728	6.17E-10	11.06
C20orf100	ILMN_17741	3.25E-05	10.70
TPM2	ILMN_22618	0.000129141	10.18
NRP1	ILMN_17483	1.20E-07	9.98
HLA-B	ILMN_18149	2.68E-06	9.87
ID1	ILMN_28002	4.71E-07	9.72
IGFBP6	ILMN_5216	9.40E-10	9.66
EFEMP1	ILMN_41104	8.65E-08	9.55
C5orf13	ILMN_2442	1.76E-08	9.51
COL6A1	ILMN_179738	2.35E-07	9.44
BASP1	ILMN_28962	1.12E-05	9.34
DKK3	ILMN_4127	0.000355612	9.19
FOXD1	ILMN_182299	2.57E-09	9.15
COL6A2	ILMN_21525	7.00E-08	9.09
COL8A1	ILMN_10408	1.91E-05	8.75
DKK3	ILMN_181104	0.000309747	8.44
TPM2	ILMN_22618	0.00016883	8.34
PMEPA1	ILMN_13834	8.93E-07	8.29
LOC652683	ILMN_36509	7.05E-05	8.17
SPANXA2	ILMN_28893	0.000124942	7.91
SPANXB1	ILMN_23554	0.000118767	7.83
SFRP1	ILMN_21487	0.000280032	7.81
PMEPA1	ILMN_13834	6.95E-06	7.81
CDH2	ILMN_28694	6.21E-06	7.42
JUN	ILMN_7746	7.70E-09	7.39
TM4SF1	ILMN_6834	0.000306286	7.08
WNT5A	ILMN_164155	1.11E-06	6.94
HS3ST3A1	ILMN_21069	2.41E-05	6.75
NDRG1	ILMN_24220	2.65E-05	6.65

Symbol	Probe ID	p-value	Fold-Change
VCAN	ILMN_25778	3.07E-05	6.64
NPTX1	ILMN_5048	0.000220168	6.57
IFITM3	ILMN_6890	7.19E-05	6.46
LOC100133171	ILMN_346604	0.000103143	6.37
PODXL	ILMN_24120	9.93E-05	6.36
LOC387882	ILMN_23241	2.78E-06	6.32
IRF1	ILMN_11739	3.38E-06	6.24
BGN	ILMN_6146	0.000142392	6.22
FER1L3	ILMN_18562	2.98E-07	6.16
PLAU	ILMN_24167	0.000114489	6.15
FAM171A1	ILMN_17888	5.01E-06	6.03
TPM1	ILMN_14091	9.29E-06	5.95
LEPREL1	ILMN_11123	0.000183491	5.89
CAV1	ILMN_178269	1.39E-06	5.89
NPTX2	ILMN_22638	0.000120175	5.89
SPOCK1	ILMN_25886	0.000204002	5.85
SERPINE1	ILMN_6244	1.90E-05	5.82
IL1RAPL1	ILMN_7989	0.000444637	5.79
COL6A2	ILMN_21525	3.39E-07	5.73
TPM1	ILMN_8136	1.07E-05	5.71
ADAM19	ILMN_12727	0.000461085	5.69
SPANXA1	ILMN_9452	0.000125831	5.67
MYOF	ILMN_371188	3.76E-06	5.57
LPAR1	ILMN_28278	4.03E-06	5.57
RUNX1	ILMN_19125	1.13E-07	5.57
SPANXC	ILMN_1520	0.00013928	5.45
PRKCA	ILMN_24085	3.21E-07	5.40
KRT80	ILMN_3629	1.34E-05	5.39
FER1L3	ILMN_28913	6.59E-06	5.34
NRP1	ILMN_16360	8.43E-07	5.34
GLIPR1	ILMN_3517	2.53E-05	5.32
GBP2	ILMN_183366	0.000134175	5.29
GAD1	ILMN_4673	1.67E-05	5.26
KIAA1644	ILMN_45890	1.12E-05	5.24
ERRFI1	ILMN_4328	0.00021487	5.22
TOX2	ILMN_308609	1.85E-05	5.22
VASN	ILMN_31069	3.50E-05	5.21
RIN2	ILMN_17838	5.63E-07	5.20

(Continued)



Symbol	Probe ID	p-value	Fold-Change
IFITM2	ILMN_2038	0.000193514	5.18
TLE4	ILMN_14046	1.73E-07	5.16
FZD2	ILMN_12499	4.56E-07	5.12
TAGLN	ILMN_2335	0.000661612	5.05
IL1B	ILMN_27277	0.000164867	5.02
LOC399959	ILMN_371215	4.16E-06	4.98
EFNB2	ILMN_3827	2.89E-06	4.96
IL6	ILMN_6469	0.000405885	4.91
VEGFC	ILMN_161973	1.10E-05	4.90
PTRF	ILMN_22301	0.000488678	4.80
NNMT	ILMN_22529	0.000937969	4.79
KCNMA1	ILMN_24236	2.43E-06	4.76
TFPI	ILMN_17834	1.77E-05	4.75
SPANXB2	ILMN_2518	0.00091498	4.73
ADAMTS1	ILMN_11081	1.47E-05	4.71
GAS6	ILMN_10723	0.00050824	4.68
COL8A1	ILMN_10408	7.62E-05	4.68
AFAP1	ILMN_5058	4.35E-06	4.68
TMEM158	ILMN_13668	0.000335444	4.64
ITGA5	ILMN_165321	0.000776225	4.64
EFEMP2	ILMN_42286	7.02E-05	4.64
COL7A1	ILMN_24830	0.000496306	4.64
MYLK	ILMN_11781	9.18E-06	4.63
APCDD1L	ILMN_29515	0.000251296	4.54
FLJ40504	ILMN_176567	2.40E-05	4.45
GAS6	ILMN_10723	0.000627717	4.45
TFPI	ILMN_17834	2.22E-05	4.45
ANTXR2	ILMN_165233	0.000158199	4.39
NUAK1	ILMN_12806	0.000231994	4.39
IL7R	ILMN_137414	9.87E-06	4.38
SPANXE	ILMN_3888	0.000170825	4.34
LDOC1	ILMN_8953	6.82E-05	4.33
KRT18P13	ILMN_344563	9.74E-06	4.30
CDR2L	ILMN_26231	0.000133274	4.30
CPA4	ILMN_164642	0.00036069	4.29
PRSS23	ILMN_22272	4.79E-05	4.29
PITPNC1	ILMN_12660	2.81E-05	4.28
PTPRE	ILMN_23422	1.46E-05	4.21

Symbol	Probe ID	p-value	Fold-Change
SLFN11	ILMN_2517	0.000389881	4.15
BCL3	ILMN_17874	7.06E-07	4.14
TNFRSF21	ILMN_9651	9.09E-05	4.11
	ILMN_92725	0.000436828	4.11
STEAP3	ILMN_28415	8.03E-06	4.10
COLEC12	ILMN_4310	0.00040579	4.09
NTM	ILMN_169728	2.43E-07	4.06
SPANXE	ILMN_3888	0.000190895	4.03
ANXA1	ILMN_14184	0.000135662	4.00
CARD10	ILMN_28765	4.64E-05	3.98
CRIM1	ILMN_10588	9.45E-06	3.90
GBP1	ILMN_28413	7.99E-05	3.89
SMAD3	ILMN_16351	1.13E-05	3.89
IRAK2	ILMN_174255	4.21E-06	3.88
TSPAN5	ILMN_8032	4.22E-05	3.87
MXRA5	ILMN_29922	0.000136814	3.84
KCNG1	ILMN_28652	0.000313746	3.77
SCG5	ILMN_6950	0.000971664	3.75
IFIT2	ILMN_28123	0.000107131	3.74
ARHGAP23	ILMN_162296	4.43E-05	3.74
TGFB1I1	ILMN_27048	0.00028205	3.72
SLC2A4RG	ILMN_11640	3.49E-05	3.71
TMEM47	ILMN_2011	2.92E-06	3.71
SPOCD1	ILMN_6339	0.000205229	3.68
PVRL3	ILMN_2284	0.000197657	3.66
S100A3	ILMN_19000	1.13E-06	3.65
C1orf133	ILMN_370905	0.000215443	3.62
ITGA11	ILMN_26949	3.58E-05	3.61
LARP6	ILMN_25584	7.18E-05	3.61
FLNC	ILMN_167330	0.000539122	3.59
ITGA2	ILMN_12662	1.26E-05	3.58
PDGFC	ILMN_13763	0.000113346	3.57
PAPPA	ILMN_177957	0.000383103	3.51
NUAK1	ILMN_12806	2.43E-05	3.48
HEG1	ILMN_306841	0.000204586	3.48
GPX8	ILMN_364670	2.18E-06	3.46
SDC4	ILMN_24480	6.54E-05	3.45

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Symbol	Probe ID	p-value	Fold-Change
RARRES3	ILMN_1164	0.000219272	3.45
SORBS3	ILMN_23885	0.000224004	3.44
NCAM1	ILMN_7059	0.000251405	3.43
SMAGP	ILMN_22631	0.000678242	3.41
RRAS	ILMN_23748	5.37E-06	3.41
PVRL3	ILMN_2284	0.000291111	3.37
TNFRSF11B	ILMN_6495	0.000356991	3.35
DSE	ILMN_14589	9.43E-05	3.34
	ILMN_71954	0.000225806	3.34
TMEM45A	ILMN_30168	6.03E-05	3.32
SOX9	ILMN_17599	0.000682599	3.30
SLC10A3	ILMN_162950	4.17E-07	3.29
SRPX2	ILMN_23854	5.48E-05	3.29
DUSP1	ILMN_20700	0.000711119	3.29
PSMB9	ILMN_12611	0.000840226	3.26
LRIG1	ILMN_3319	0.000196562	3.25
CAV1	ILMN_178269	1.85E-05	3.25
CRISPLD2	ILMN_7921	0.000247317	3.21
CYB561	ILMN_8373	3.57E-05	3.16
H2AFY	ILMN_2037	4.03E-05	3.13
ANTXR1	ILMN_14947	2.10E-05	3.12
PDGFRB	ILMN_25767	0.000268609	3.08
RRAS2	ILMN_165732	0.000660422	2.99
BIN1	ILMN_22961	0.00088286	2.99
ECOP	ILMN_30115	0.000103824	2.98
CD151	ILMN_44972	2.45E-05	2.97
LOC728855	ILMN_371939	0.000360861	2.97
LRIG1	ILMN_3319	0.000108921	2.95
PLEC1	ILMN_27233	0.000244607	2.94
UBA7	ILMN_22067	0.000155014	2.92
FHL1	ILMN_7975	0.000447745	2.91
ELL2	ILMN_15317	9.79E-05	2.90
SMTN	ILMN_18885	0.000408067	2.89
CYB561	ILMN_20474	1.03E-05	2.88
GBP1	ILMN_28413	0.000178108	2.88
SLC25A24	ILMN_183710	4.78E-05	2.87
CDH13	ILMN_26240	7.04E-05	2.87
DPYSL2	ILMN_9671	1.57E-06	2.87

Symbol	Probe ID	p-value	Fold-Change
NTN4	ILMN_29679	3.45E-05	2.87
CAV2	ILMN_177870	6.30E-05	2.84
COL12A1	ILMN_12229	0.000296527	2.84
EDN1	ILMN_28724	0.000650459	2.82
BDNF	ILMN_7507	0.000238527	2.78
FAM113B	ILMN_9482	0.000745868	2.78
CCDC102A	ILMN_12942	9.96E-05	2.77
STARD13	ILMN_4466	0.000645096	2.77
EGFR	ILMN_164647	5.55E-05	2.77
SCHIP1	ILMN_29529	0.000921965	2.76
C3orf59	ILMN_14619	9.86E-05	2.74
SDC2	ILMN_12108	0.000571732	2.73
BMP1	ILMN_6483	0.000351816	2.72
SLC14A1	ILMN_10720	0.00051494	2.72
PPAP2A	ILMN_5193	3.40E-05	2.72
TBX3	ILMN_23090	0.000270281	2.72
DLX1	ILMN_164629	0.000146461	2.71
ACPL2	ILMN_138667	9.44E-05	2.70
DDAH1	ILMN_182204	0.000707959	2.70
TMEM132A	ILMN_41781	0.000404537	2.70
C21orf7	ILMN_9078	1.22E-05	2.69
TGFBR2	ILMN_22189	4.79E-06	2.69
IL7R	ILMN_10513	9.97E-05	2.67
LOC387841	ILMN_37989	0.000238086	2.66
TGFBR2	ILMN_22189	8.29E-06	2.66
VOPP1	ILMN_30115	3.55E-05	2.65
SEMA4B	ILMN_25258	0.000165652	2.65
TIPARP	ILMN_4419	1.47E-05	2.64
SLC44A2	ILMN_5176	0.000602377	2.63
GLIS3	ILMN_25239	0.000114088	2.63
PAWR	ILMN_18537	0.000365278	2.62
TMEM44	ILMN_165329	0.000311266	2.62
SMOX	ILMN_14770	0.0004041	2.60
SLIT2	ILMN_12361	0.000373011	2.59
ACPL2	ILMN_7605	0.000400906	2.58
EML1	ILMN_8689	0.000797292	2.58
PITX1	ILMN_19276	0.000707844	2.57
TMEM45A	ILMN_30168	6.02E-05	2.57

(Continued)

Symbol	Probe ID	p-value	Fold-Change
ENG	ILMN_18184	0.000947904	2.57
BIRC2	ILMN_23760	0.000171375	2.56
EXT1	ILMN_18298	3.49E-05	2.55
GAD1	ILMN_4673	2.05E-05	2.54
STX1A	ILMN_11463	0.000228726	2.54
IRS1	ILMN_18432	0.000818928	2.53
EFEMP1	ILMN_41541	0.000952514	2.52
PTPRE	ILMN_23422	0.000459091	2.52
RUNX2	ILMN_11767	0.000189897	2.52
MGC16121	ILMN_171797	0.000242529	2.51
AHR	ILMN_174431	0.000640662	2.51
SMAD6	ILMN_169773	0.000868132	2.49
VCL	ILMN_26712	0.000882981	2.49
C17orf60	ILMN_307137	0.000363649	2.49
FUT8	ILMN_12324	0.000181522	2.48
SSBP2	ILMN_5320	0.000387408	2.44
NMI	ILMN_3552	3.46E-07	2.43
TRPC1	ILMN_182033	1.71E-05	2.42
WNK4	ILMN_180414	0.000475743	2.41
ZHX3	ILMN_6636	0.000359101	2.40
SLC4A7	ILMN_163925	0.000440965	2.40
LOC100133999	ILMN_347150	0.00018259	2.40
RILPL2	ILMN_2260	0.000361433	2.40
RGS17	ILMN_25210	0.000322783	2.39
CCL5	ILMN_22732	0.000919953	2.39
FAM176B	ILMN_3804	0.000271883	2.37
SPARC	ILMN_1780	0.000261452	2.37
COL13A1	ILMN_507	0.000276227	2.36
ARHGAP22	ILMN_15801	0.000174159	2.36
MEX3B	ILMN_29516	0.000381794	2.35
GOLPH4	ILMN_179486	0.000354709	2.35
ADK	ILMN_4107	0.000123904	2.35
DPYD	ILMN_19002	2.11E-05	2.35
	ILMN_123169	3.06E-05	2.34
OSMR	ILMN_165419	6.22E-05	2.34
UAP1	ILMN_162883	0.000404853	2.32
SMOX	ILMN_14642	0.000458511	2.32
KLF10	ILMN_2466	4.17E-05	2.32

Symbol	Probe ID	p-value	Fold-Change
CDK6	ILMN_178275	0.00034469	2.31
ASAM	ILMN_27333	0.000229548	2.31
PLK2	ILMN_5648	0.000254697	2.31
LOC728069	ILMN_169318	0.000676845	2.28
LOC643319	ILMN_41137	5.63E-05	2.28
GAD1	ILMN_4770	0.000128466	2.28
TMEM44	ILMN_165329	4.73E-05	2.28
LOC653778	ILMN_32201	8.89E-05	2.21
CAMK2G	ILMN_25332	0.000906732	2.21
LOC654103	ILMN_37027	0.00067133	2.20
CDKN2C	ILMN_36950	2.45E-05	2.16
ULBP2	ILMN_27661	0.000222377	2.15
COL13A1	ILMN_25843	0.000337238	2.15
P4HA2	ILMN_9080	0.000670117	2.13
ZNFX1	ILMN_176843	0.000215938	2.12
FN1	ILMN_20090	0.00086466	2.11
TAGLN2	ILMN_14546	1.37E-06	2.11
TRAM2	ILMN_26252	0.000323518	2.11
PLP2	ILMN_21868	0.000914472	2.10
CAPN2	ILMN_24443	0.000837345	2.10
NR2F1	ILMN_177945	0.000670925	2.10
LOC493869	ILMN_7364	0.000538336	2.10
LEPRE1	ILMN_165693	0.000186912	2.09
NFKBIA	ILMN_6745	2.51E-05	2.06
ARSJ	ILMN_24631	3.85E-05	2.05
CDC42EP1	ILMN_9329	0.000185168	2.05
TMEM189-UBE2V1	ILMN_20084	0.000416263	2.03
PDLIM7	ILMN_28275	4.81E-05	2.03
NRIP1	ILMN_4339	6.23E-05	2.01
BIRC2	ILMN_23760	0.000209075	2.01
FYN	ILMN_25662	0.000242352	-2.01
CDC16	ILMN_175130	6.99E-06	-2.02
WDSUB1	ILMN_9810	0.000392264	-2.02
SLC25A13	ILMN_162783	2.62E-06	-2.03
C21orf91	ILMN_19108	0.000133742	-2.03
MYO9B	ILMN_25414	0.000125509	-2.04
STRADB	ILMN_24336	9.93E-05	-2.04

(Continued)

Symbol	Probe ID	p-value	Fold-Change
GBA	ILMN_28933	0.000419869	-2.05
SDHC	ILMN_14364	1.06E-05	-2.05
CCDC43	ILMN_306768	0.000204178	-2.05
ST7	ILMN_15870	0.000138737	-2.06
CLCN7	ILMN_8600	1.31E-06	-2.07
C12orf5	ILMN_183781	2.02E-05	-2.07
CHMP1B	ILMN_27331	3.55E-05	-2.07
PPFIA1	ILMN_28981	0.000582279	-2.08
C5orf32	ILMN_11272	0.000517774	-2.08
SLC3A2	ILMN_12826	2.14E-08	-2.08
CHKA	ILMN_28401	1.97E-05	-2.09
CDC16	ILMN_175130	9.49E-07	-2.09
SEC11C	ILMN_29023	2.67E-09	-2.09
RPAP1	ILMN_22842	0.000894721	-2.10
HSPA4	ILMN_166427	0.000926623	-2.12
DUSP22	ILMN_15436	0.000635356	-2.13
EPS15	ILMN_183380	0.000394287	-2.13
IDH3A	ILMN_3303	0.000266058	-2.13
SGK	ILMN_2451	5.27E-05	-2.13
YOD1	ILMN_19081	0.000220719	-2.13
PPFIA1	ILMN_28981	0.000483093	-2.14
SEH1L	ILMN_177006	0.000684094	-2.15
SLC22A23	ILMN_356887	0.000527871	-2.15
GNPTAB	ILMN_5374	0.000511113	-2.15
SCARB1	ILMN_5375	2.84E-05	-2.16
FAHD1	ILMN_2449	6.58E-06	-2.18
PAFAH2	ILMN_3410	0.000189882	-2.19
MRPL44	ILMN_16607	2.50E-05	-2.20
FASTKD1	ILMN_5271	0.000911014	-2.20
SPIRE1	ILMN_2975	3.47E-06	-2.20
NIN	ILMN_172996	0.000375173	-2.21
CHD7	ILMN_29669	0.000765999	-2.22
SAPS1	ILMN_21557	0.000568904	-2.22
ZNF654	ILMN_6649	0.000215631	-2.22
ZEB2	ILMN_14685	0.000334629	-2.22
FBXO2	ILMN_166168	0.000649004	-2.24

Symbol	Probe ID	p-value	Fold-Change
TMEM199	ILMN_3696	7.18E-05	-2.24
NAB2	ILMN_17333	2.26E-05	-2.24
BACE2	ILMN_12258	0.000914343	-2.26
ATP6V0A2	ILMN_23163	0.000106488	-2.26
TOMM40L	ILMN_42128	0.000414352	-2.27
SGK1	ILMN_2451	6.27E-05	-2.27
LOC730167	ILMN_342323	0.000269087	-2.28
TBC1D14	ILMN_165668	8.99E-05	-2.29
MAP3K11	ILMN_23190	9.83E-05	-2.29
SLC31A1	ILMN_28027	4.76E-07	-2.29
RETSAT	ILMN_28492	0.00037606	-2.29
TMEM170B	ILMN_339531	0.00050239	-2.31
C12orf49	ILMN_20444	0.00034345	-2.31
CDC16	ILMN_28112	1.36E-06	-2.32
MARS2	ILMN_19018	4.25E-06	-2.33
VAT1	ILMN_26285	0.000163	-2.33
SLC25A4	ILMN_2485	6.11E-06	-2.33
EXOC2	ILMN_172388	6.35E-05	-2.34
GGA2	ILMN_17168	0.000621985	-2.34
SNX30	ILMN_309807	0.000701473	-2.34
SGK1	ILMN_2451	9.43E-05	-2.35
USP48	ILMN_163754	6.74E-06	-2.35
STXBP1	ILMN_182537	0.000967824	-2.35
ZNF689	ILMN_14716	0.00028809	-2.35
ZBTB24	ILMN_6521	5.61E-07	-2.36
EXOC2	ILMN_172388	0.000313823	-2.37
ACSL3	ILMN_416	0.000286463	-2.37
DUSP22	ILMN_15436	6.40E-05	-2.37
FCGR2B	ILMN_27581	0.000272575	-2.37
NAP1L5	ILMN_5355	0.000456444	-2.38
FABP5L2	ILMN_177732	0.000172346	-2.38
HAGH	ILMN_22401	5.84E-05	-2.38
C17orf63	ILMN_173887	1.66E-07	-2.41
FAM195A	ILMN_9509	0.000226578	-2.41
GAS8	ILMN_26809	0.000102631	-2.41
DAAM1	ILMN_183695	0.00060562	-2.41

(Continued)



Symbol	Probe ID	p-value	Fold-Change
IVNS1ABP	ILMN_26781	4.19E-05	-2.43
MESDC1	ILMN_18570	9.25E-05	-2.43
MYCBP2	ILMN_7642	0.000432138	-2.44
C15orf39	ILMN_18382	0.000237453	-2.45
SLC43A3	ILMN_165230	0.000456408	-2.45
ME2	ILMN_176679	3.47E-05	-2.46
FLJ38482	ILMN_2215	1.89E-05	-2.47
FABP5	ILMN_27564	0.000340688	-2.48
VEGFB	ILMN_15862	0.000351163	-2.49
ZNF697	ILMN_174344	0.000130113	-2.50
SLAIN1	ILMN_165142	0.00039226	-2.50
MSI2	ILMN_525	3.22E-05	-2.52
PIK3CB	ILMN_22394	0.000190395	-2.52
LOC731007	ILMN_176314	0.00064071	-2.54
FASTKD2	ILMN_12269	0.000125027	-2.54
AGA	ILMN_165746	0.000253853	-2.54
UBL3	ILMN_25010	2.88E-05	-2.55
ABHD6	ILMN_9952	1.25E-05	-2.55
HS1BP3	ILMN_1874	0.000126476	-2.56
THNSL1	ILMN_10160	7.16E-05	-2.56
IVNS1ABP	ILMN_26781	6.20E-07	-2.56
ZNF280B	ILMN_19056	0.000124126	-2.57
ZADH2	ILMN_5633	0.000249744	-2.58
EN2	ILMN_171364	0.000374559	-2.58
STX3	ILMN_18859	1.17E-05	-2.59
SLC39A6	ILMN_170037	2.08E-07	-2.60
IDI1	ILMN_20349	0.000707879	-2.60
CYBASC3	ILMN_28843	0.000131069	-2.60
USP48	ILMN_29650	0.000120015	-2.63
ANKRD28	ILMN_161875	8.31E-05	-2.63
PRR5	ILMN_5791	0.000480657	-2.63
LOC654244	ILMN_31329	1.22E-05	-2.66
BAMBI	ILMN_8469	0.000107735	-2.66
VAC14	ILMN_30132	1.34E-05	-2.68
PLEKHG3	ILMN_28109	4.25E-05	-2.69
TMEM192	ILMN_307671	2.57E-06	-2.69

Symbol	Probe ID	p-value	Fold-Change
NARS2	ILMN_13605	1.48E-05	-2.71
PAG1	ILMN_20316	0.000791062	-2.72
C14orf109	ILMN_307789	1.99E-08	-2.72
CHKA	ILMN_28401	1.52E-05	-2.73
MIPEP	ILMN_24370	5.99E-05	-2.75
QPRT	ILMN_21680	0.000323818	-2.76
CDS2	ILMN_18323	1.11E-06	-2.76
PTPRM	ILMN_19957	8.59E-05	-2.77
PLD1	ILMN_20063	9.36E-05	-2.79
SYNGR1	ILMN_20235	0.000850295	-2.80
STOM	ILMN_183628	5.58E-05	-2.82
KIAA1598	ILMN_4741	0.000208839	-2.82
LOC440731	ILMN_36463	5.89E-06	-2.83
ACSL1	ILMN_12367	0.000430032	-2.84
LOC729009	ILMN_347545	0.000950114	-2.85
	ILMN_91344	0.000357348	-2.87
FTHL3	ILMN_27691	0.000637655	-2.87
RPS6KA5	ILMN_13156	0.000311936	-2.88
AVPI1	ILMN_9920	7.69E-07	-2.88
SLC25A4	ILMN_2485	2.10E-05	-2.88
SMPDL3A	ILMN_16204	0.000492497	-2.88
RANBP10	ILMN_21091	3.43E-06	-2.89
MGC13057	ILMN_13440	0.000455491	-2.90
POLR3G	ILMN_13297	8.38E-06	-2.91
SLC7A5	ILMN_25446	6.96E-07	-2.91
PSEN2	ILMN_4951	4.25E-06	-2.93
P2RX4	ILMN_25537	6.31E-05	-2.93
SLC3A2	ILMN_12826	0.00014587	-2.94
AMDHD2	ILMN_26534	5.52E-05	-2.95
CPEB1	ILMN_183191	1.60E-05	-2.96
C14orf109	ILMN_307789	3.16E-07	-2.96
BCL2	ILMN_171007	3.49E-05	-2.96
PAG1	ILMN_174074	0.000391055	-2.96
MOAP1	ILMN_165500	8.20E-07	-2.97
LOC389599	ILMN_165271	6.45E-05	-2.98
HAGHL	ILMN_15715	0.000154931	-2.99

(Continued)

Symbol	Probe ID	p-value	Fold-Change
RTN4R	ILMN_13643	5.03E-05	-2.99
IRF4	ILMN_12414	0.000123787	-2.99
DSTYK	ILMN_370446	0.000175241	-2.99
FIG4	ILMN_20404	3.94E-05	-3.01
ABCC2	ILMN_9691	0.00054703	-3.01
ENOSF1	ILMN_12398	9.77E-06	-3.01
TGFBRAP1	ILMN_30176	0.000126304	-3.01
FAM53B	ILMN_26314	0.000969088	-3.01
MYO10	ILMN_28857	3.80E-05	-3.02
SLC11A2	ILMN_10129	6.52E-05	-3.03
METTL9	ILMN_22037	0.000183645	-3.04
RNF144B	ILMN_9298	0.00013559	-3.05
STXBP6	ILMN_18387	0.000614655	-3.05
WDR91	ILMN_20547	0.000197012	-3.07
SLC16A10	ILMN_10556	4.31E-05	-3.08
CPEB2	ILMN_3402	0.000338478	-3.11
NUP98	ILMN_21954	1.51E-06	-3.13
LOC284988	ILMN_164134	0.000167525	-3.13
QDPR	ILMN_26096	2.75E-05	-3.15
ATP6V1C1	ILMN_181099	8.56E-05	-3.17
	ILMN_70822	0.000385505	-3.17
RAB27A	ILMN_26005	1.53E-05	-3.18
LOC645904	ILMN_39266	2.60E-06	-3.18
FLJ46906	ILMN_40537	0.00015516	-3.22
POLR3G	ILMN_13297	1.82E-05	-3.22
PTP4A1	ILMN_165831	2.21E-05	-3.24
STXBP1	ILMN_10266	0.00011764	-3.27
GYPC	ILMN_17566	2.07E-06	-3.28
KCNN2	ILMN_165586	0.000389758	-3.30
TPD52	ILMN_8812	1.78E-05	-3.31
GYPC	ILMN_17566	3.06E-06	-3.33
LOC644590	ILMN_45611	2.68E-05	-3.33
MYO5A	ILMN_12618	0.000114869	-3.35
SLC22A18	ILMN_20563	9.14E-05	-3.36
CPEB1	ILMN_183191	1.10E-06	-3.36
STOM	ILMN_183628	8.43E-05	-3.41

Symbol	Probe ID	p-value	Fold-Change
DCLK1	ILMN_178525	0.000737489	-3.41
C22orf25	ILMN_13683	8.76E-05	-3.43
MAD1L1	ILMN_9328	4.22E-08	-3.45
DSTYK	ILMN_370437	0.00014763	-3.46
ASAH1	ILMN_26236	7.73E-06	-3.46
C19orf28	ILMN_11361	0.000170076	-3.46
LOC642956	ILMN_42416	0.000303075	-3.46
CDK2	ILMN_12332	2.80E-11	-3.48
HPS4	ILMN_7734	3.41E-05	-3.50
SETDB2	ILMN_24431	7.55E-07	-3.52
OSTM1	ILMN_21496	4.18E-05	-3.52
TBC1D7	ILMN_10292	1.74E-08	-3.53
TDRD7	ILMN_27692	1.95E-05	-3.54
STXBP6	ILMN_18387	0.000187123	-3.54
LOC388588	ILMN_33026	4.85E-05	-3.55
NPL	ILMN_25291	0.00018053	-3.56
PIK3CD	ILMN_15406	0.00018874	-3.59
RIPK5	ILMN_27483	0.000119582	-3.61
C9orf91	ILMN_21211	2.95E-06	-3.61
GREB1	ILMN_167773	3.93E-05	-3.62
C5orf22	ILMN_19584	1.07E-06	-3.67
BCL2	ILMN_171007	8.44E-06	-3.68
CDH3	ILMN_12740	0.000601941	-3.74
SOX13	ILMN_20138	3.11E-07	-3.78
PROS1	ILMN_3398	0.000374802	-3.82
FABP5L2	ILMN_336422	0.000156471	-3.84
DYNC111	ILMN_7312	0.000334358	-3.85
STX7	ILMN_23974	3.75E-06	-3.88
NPL	ILMN_25291	5.96E-05	-3.89
PIR	ILMN_13999	2.77E-05	-3.90
C10orf11	ILMN_17394	2.72E-05	-3.91
GPR137B	ILMN_10711	2.23E-05	-3.92
GK	ILMN_10128	1.07E-05	-3.94
TMEM8	ILMN_19628	8.19E-08	-3.97
SNCA	ILMN_2235	1.28E-06	-4.04
SYNGR1	ILMN_175984	7.29E-05	-4.05

(Continued)

Symbol	Probe ID	p-value	Fold-Change
C6orf192	ILMN_166002	0.000362297	-4.06
INPP4B	ILMN_22637	4.55E-07	-4.07
NEDD4L	ILMN_18912	1.50E-07	-4.10
PRDM7	ILMN_307242	0.000326591	-4.12
BIRC7	ILMN_21032	2.48E-05	-4.13
KU-MEL-3	ILMN_3790	0.000212321	-4.15
TBC1D16	ILMN_17194	4.98E-07	-4.16
OR7E156P	ILMN_13738	3.45E-05	-4.18
SLC39A6	ILMN_170037	8.04E-07	-4.18
	ILMN_84306	0.000224537	-4.19
SORT1	ILMN_165748	6.32E-06	-4.26
PSEN2	ILMN_21140	1.10E-06	-4.30
DLL3	ILMN_21363	0.00041846	-4.34
GPM6B	ILMN_23991	0.000574913	-4.34
SIRPA	ILMN_166179	1.87E-05	-4.36
FAM174B	ILMN_1130	9.87E-05	-4.37
PPM1H	ILMN_308090	2.41E-05	-4.39
SLC3A2	ILMN_178961	4.51E-09	-4.39
TNFRSF14	ILMN_3329	2.37E-06	-4.41
HRASLS3	ILMN_15631	0.000843533	-4.44
EPB41L3	ILMN_14465	0.000108819	-4.44
CYFIP2	ILMN_15047	0.00011641	-4.49
LZTS1	ILMN_3351	0.000121107	-4.50
PIR	ILMN_13999	9.22E-06	-4.54
GK	ILMN_28282	2.24E-06	-4.57
CEACAM1	ILMN_21651	0.000215908	-4.57
GPM6B	ILMN_23991	0.000540196	-4.65
LAMA1	ILMN_27530	1.66E-08	-4.66
SOX10	ILMN_13184	0.000646769	-4.68
KIAA1026	ILMN_3555	3.80E-08	-4.70
RUNX3	ILMN_166428	6.26E-05	-4.71
RENBP	ILMN_17151	0.000132876	-4.74
ST6GALNAC2	ILMN_15305	0.000294835	-4.80
ACP5	ILMN_20083	0.000242815	-4.81
FAM69B	ILMN_173053	3.06E-05	-4.84
SLC7A8	ILMN_22403	4.48E-05	-4.92

Symbol	Probe ID	p-value	Fold-Change
GJB1	ILMN_8143	1.43E-05	-5.02
GPR19	ILMN_20675	8.22E-08	-5.08
GPR143	ILMN_15627	0.000393721	-5.18
SLC45A2	ILMN_16585	6.28E-06	-5.24
ZFYVE16	ILMN_25838	2.43E-07	-5.24
PAR6G	ILMN_4804	1.14E-09	-5.28
LONRF1	ILMN_38387	2.68E-07	-5.29
PPFIBP2	ILMN_183115	1.98E-06	-5.34
MICAL1	ILMN_18994	3.33E-06	-5.43
SNCA	ILMN_3516	3.20E-07	-5.43
MC1R	ILMN_25536	9.39E-07	-5.54
LOC440459	ILMN_183612	0.00017076	-5.55
SLC1A4	ILMN_12585	2.08E-05	-5.59
KIT	ILMN_306843	0.000332358	-5.65
TIMP2	ILMN_166675	1.06E-06	-5.66
RGS12	ILMN_161894	1.10E-05	-5.71
LGALS3	ILMN_14333	5.94E-06	-5.75
CEACAM1	ILMN_20142	9.39E-05	-5.85
CTSH	ILMN_8602	3.76E-08	-5.95
FAIM3	ILMN_28190	1.14E-05	-5.96
C19orf28	ILMN_161980	1.20E-05	-5.98
C6orf218	ILMN_27124	9.17E-09	-6.16
RRAGD	ILMN_5663	1.98E-06	-6.19
SIRPA	ILMN_1639	2.10E-07	-6.25
RAP1GAP	ILMN_13405	2.93E-06	-6.27
MYO1D	ILMN_22644	2.47E-07	-6.47
CTSH	ILMN_8602	6.86E-07	-6.61
HES6	ILMN_4854	5.37E-08	-6.69
CDK5R1	ILMN_4868	4.34E-09	-6.77
LOC387763	ILMN_43061	3.51E-05	-6.80
CABLES1	ILMN_26976	2.69E-08	-6.84
EDNRB	ILMN_22613	4.58E-05	-6.93
CDK2	ILMN_12332	1.17E-08	-7.01
TUBB4	ILMN_23388	2.31E-06	-7.07
TTYH2	ILMN_25738	2.45E-07	-7.11
ST3GAL6	ILMN_2870	1.09E-06	-7.41

(Continued)

Symbol	Probe ID	p-value	Fold-Change
RGS1	ILMN_177208	0.000198809	-7.63
BEST1	ILMN_19773	8.00E-07	-7.66
ADCY1	ILMN_179982	5.65E-06	-7.69
SLC16A6	ILMN_14509	0.000232387	-7.70
CEACAM1	ILMN_20142	8.83E-06	-8.19
ITPKB	ILMN_12468	1.35E-07	-8.31
IGSF11	ILMN_551	7.09E-08	-8.39
TMC6	ILMN_19035	8.31E-08	-8.44
MBP	ILMN_14913	8.43E-08	-8.61
QPCT	ILMN_6510	1.75E-05	-9.37
CA14	ILMN_2282	1.86E-06	-9.39
RAB38	ILMN_22951	5.85E-06	-9.50
CHCHD6	ILMN_19685	1.36E-09	-9.51
PHACTR1	ILMN_17425	3.05E-07	-9.86
MITF	ILMN_1045	1.09E-07	-9.87
TRIM63	ILMN_27419	2.80E-09	-10.05
GDF15	ILMN_2688	0.00058484	-10.34
MBP	ILMN_10370	1.35E-09	-10.43
MBP	ILMN_3041	2.37E-08	-10.43
DNAJA4	ILMN_23222	1.21E-05	-10.51
GYG2	ILMN_24869	5.62E-10	-10.58
D4S234E	ILMN_173747	1.30E-06	-11.26
OCA2	ILMN_177862	4.25E-06	-11.56
APOE	ILMN_11525	3.41E-06	-11.66
SLC27A3	ILMN_820	5.04E-06	-11.84
VGF	ILMN_9112	5.85E-06	-12.06
GYG2	ILMN_176856	5.12E-09	-12.30
IGFBP1	ILMN_19001	2.58E-11	-12.31
DCT	ILMN_1796	3.83E-05	-12.57
SEMA6A	ILMN_11282	1.16E-07	-12.60
BIRC7	ILMN_21032	2.10E-07	-13.09
RAB17	ILMN_9806	1.68E-09	-13.19
CDH1	ILMN_29401	1.07E-07	-13.51
LOC641738	ILMN_31380	2.11E-08	-14.15
TSPAN10	ILMN_12531	1.88E-07	-14.39

Symbol	Probe ID	p-value	Fold-Change
SLC45A2	ILMN_29672	5.73E-09	-15.52
CAPN3	ILMN_8100	1.11E-07	-15.93
APOLD1	ILMN_21263	1.89E-10	-16.67
LAMA1	ILMN_27530	1.42E-11	-17.05
CAPN3	ILMN_25522	9.31E-08	-17.61
SLC45A2	ILMN_29672	4.55E-10	-22.25
SLC45A2	ILMN_29672	9.68E-10	-25.05
TYR	ILMN_16044	5.94E-08	-27.25
MLANA	ILMN_22830	2.27E-09	-36.94
SILV	ILMN_9512	1.23E-10	-75.07



## Supplementary Table S2.

Mesenchymal-phenotype enrichment			
Gene Set	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
CHARAFE_BREAST_CANCER_LUMINAL_VS_MESENCHYMAL_DN	1.87	0	0
SCHUETZ_BREAST_CANCER_DUCTAL_INVASIVE_UP	1.87	0	0
VECCHI_GASTRIC_CANCER_ADVANCED_VS_EARLY_UP	1.86	0	0
REN_ALVEOLAR_RHABDOMYOSARCOMA_DN	1.86	0	0
REACTOME_EXTRACELLULAR_MATRIX_ORGANIZATION	1.86	0	0
REACTOME_COLLAGEN_FORMATION	1.85	0	0
ANASTASSIOU_CANCER_MESENCHYMAL_TRANSITION_SIGNATURE	1.83	0	0
KIM_GLIS2_TARGETS_UP	1.82	0	0
PETROVA_ENDOTHELIUM_LYMPHATIC_VS_BLOOD_DN	1.82	0	0
WIEDERSCHAIN_TARGETS_OF_BMI1_AND_PCGF2	1.81	0	0
ONDER_CDH1_TARGETS_2_UP	1.81	0	0
GU_PDEF_TARGETS_UP	1.8	0	0
KEGG_GRAFT_VERSUS_HOST_DISEASE	1.79	0	0.001
VART_KSHV_INFECTION_ANGIOGENIC_MARKERS_UP	1.78	0	0.001
WANG_SMARCE1_TARGETS_UP	1.78	0	0.001
POTTI_TOPOTECAN_SENSITIVITY	1.77	0	0.001
PID_INTEGRIN3_PATHWAY	1.77	0	0.001
PHONG_TNF_RESPONSE_VIA_P38_PARTIAL	1.77	0	0.001
PID_INTEGRIN1_PATHWAY	1.77	0.002	0.001
PASINI_SUZ12_TARGETS_DN	1.76	0	0.001
AZARE_NEOPLASTIC_TRANSFORMATION_BY_STAT3_DN	1.75	0	0.002
CHARAFE_BREAST_CANCER_LUMINAL_VS_BASAL_DN	1.74	0	0.002
HINATA_NFKB_TARGETS_KERATINOCYTE_UP	1.74	0.002	0.002
GRAHAM_CML_DIVIDING_VS_NORMAL_QUIESCENT_DN	1.73	0	0.003
GAURNIER_PSMD4_TARGETS	1.73	0	0.003
CROMER_TUMORIGENESIS_UP	1.72	0	0.004
WESTON_VEGFA_TARGETS_6HR	1.72	0	0.004
WILCOX_PRESPONSE_TO_ROGESTERONE_DN	1.72	0	0.004
PICCALUGA_ANGIOIMMUNOBLASTIC_LYMPHOMA_UP	1.72	0	0.004
SANA_TNF_SIGNALING_UP	1.71	0	0.004
ZHU_CMV_24_HR_DN	1.71	0	0.004
CHEN_LVAD_SUPPORT_OF_FAILING_HEART_UP	1.71	0	0.004
PID_AVB3_INTEGRIN_PATHWAY	1.71	0	0.005
SWEET_KRAS_TARGETS_UP	1.71	0	0.006

Mesenchymal-phenotype enrichment			
Gene Set	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
BOQUEST_STEM_CELL_UP	1.7	0	0.006
JECHLINGER_EPITHELIAL_TO_MESENCHYMAL_TRANSITION_UP	1.7	0	0.006
VERRECCHIA_EARLY_RESPONSE_TO_TGFB1	1.7	0	0.006
ZWANG_CLASS_2_TRANSIENTLY_INDUCED_BY_EGF	1.7	0	0.006
KEGG_TYPE_I_DIABETES_MELLITUS	1.69	0	0.007
KEGG_ECM_RECEPTOR_INTERACTION	1.69	0	0.006
PHONG_TNF_RESPONSE_NOT_VIA_P38	1.69	0	0.007
KEGG_AUTOIMMUNE_THYROID_DISEASE	1.69	0	0.007
BRUECKNER_TARGETS_OF_MIRLET7A3_DN	1.69	0	0.007
VART_KSHV_INFECTION_ANGIOGENIC_MARKERS_DN	1.69	0	0.007
PETROVA_PROX1_TARGETS_DN	1.69	0	0.007
WU_CELL_MIGRATION	1.69	0	0.007
KEGG_HYPERTROPHIC_CARDIOMYOPATHY_HCM	1.68	0	0.007
KEGG_ASTHMA	1.68	0	0.008
HUANG_DASATINIB_RESISTANCE_UP	1.68	0	0.008
SASAI_RESISTANCE_TO_NEOPLASTIC_TRANSFORMATION	1.68	0	0.008
SENESE_HDAC1_AND_HDAC2_TARGETS_DN	1.68	0	0.008
SCHOEN_NFKB_SIGNALING	1.68	0	0.008
MIYAGAWA_TARGETS_OF_EWSR1_ETS_FUSIONS_DN	1.68	0	0.008
BASAKI_YBX1_TARGETS_UP	1.67	0	0.009
ZHU_CMV_ALL_DN	1.67	0	0.009
REACTOME_INTERFERON_ALPHA_BETA_SIGNALING	1.67	0	0.009
GRAESSMANN_RESPONSE_TO_MC_AND_SERUM_DEPRIVATION_UP	1.67	0	0.009
SENESE_HDAC2_TARGETS_DN	1.67	0	0.01
ONDER_CDH1_TARGETS_3_DN	1.66	0	0.01
ALTEMEIER_RESPONSE_TO_LPS_WITH_MECHANICAL_VENTILATION	1.66	0	0.01
CROONQUIST_NRAS_VS_STROMAL_STIMULATION_DN	1.66	0	0.011
LIM_MAMMARY_STEM_CELL_UP	1.66	0	0.011
DASU_IL6_SIGNALING_UP	1.66	0.002	0.011
RODWELL_AGING_KIDNEY_NO_BLOOD_UP	1.66	0	0.012
PID_SYNDECAN_1_PATHWAY	1.66	0	0.012
RIGGI_EWING_SARCOMA_PROGENITOR_DN	1.65	0	0.013
SWEET_LUNG_CANCER_KRAS_DN	1.65	0	0.014
NAKAMURA_TUMOR_ZONE_PERIPHERAL_VS_CENTRAL_UP	1.65	0	0.014
TSAI_RESPONSE_TO_RADIATION_THERAPY	1.65	0	0.014

(Continued)

## Mesenchymal-phenotype enrichment

Gene Set	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
SEITZ_NEOPLASTIC_TRANSFORMATION_BY_8P_DELETION_UP	1.65	0	0.014
RODWELL_AGING_KIDNEY_UP	1.65	0	0.014
KEGG_ALLOGRAFT_REJECTION	1.65	0.002	0.014
REACTOME_NCAM1_INTERACTIONS	1.64	0	0.016
REACTOME_INTERFERON_GAMMA_SIGNALING	1.64	0	0.016
BIOCARTA_INFLAM_PATHWAY	1.64	0	0.016
GOTZMANN_EPITHELIAL_TO_MESENCHYMAL_TRANSITION_UP	1.64	0.002	0.017
CLASPER_LYMPHATIC_VESSELS_DURING_METASTASIS_DN	1.63	0	0.019
MURATA_VIRULENCE_OF_H_PILORI	1.63	0	0.019
CHARAFE_BREAST_CANCER_BASAL_VS_MESENCHYMAL_DN	1.63	0.002	0.019
HECKER_IFNB1_TARGETS	1.63	0	0.019
ZHANG_ANTIVIRAL_RESPONSE_TO_RIBAVIRIN_UP	1.63	0.002	0.019
WINZEN_DEGRADED_VIA_KHSRP	1.63	0.002	0.019
LINDGREN_BLADDER_CANCER_CLUSTER_2B	1.63	0	0.02
YAO_TEMPORAL_RESPONSE_TO_PROGESTERONE_CLUSTER_16	1.63	0	0.02
PHONG_TNF_TARGETS_UP	1.62	0.002	0.021
LIU_TARGETS_OF_VMYB_VS_CMYB_DN	1.62	0.002	0.02
BURTON_ADIPOGENESIS_PEAK_AT_2HR	1.62	0	0.02
ONDER_CDH1_SIGNALING_VIA_CTNNB1	1.62	0	0.022
BEGUM_TARGETS_OF_PAX3_FOXO1_FUSION_DN	1.62	0	0.021
YAMASHITA_METHYLATED_IN_PROSTATE_CANCER	1.62	0	0.021
CHIBA_RESPONSE_TO_TSA_UP	1.62	0.004	0.022
DER_IFN_BETA_RESPONSE_UP	1.62	0	0.022
TURASHVILI_BREAST_LOBULAR_CARCINOMA_VS_DUCTAL_NORMAL_UP	1.62	0	0.022
GENTILE_UV_HIGH_DOSE_DN	1.62	0	0.023
CROONQUIST_STROMAL_STIMULATION_UP	1.61	0.002	0.024
IGLESIAS_E2F_TARGETS_UP	1.61	0	0.024
BILD_HRAS_ONCOGENIC_SIGNATURE	1.61	0	0.023
CHIARADONNA_NEOPLASTIC_TRANSFORMATION_CDC25_UP	1.61	0	0.024
WEINMANN_ADAPTATION_TO_HYPOXIA_DN	1.61	0.002	0.024
DAVICIONI_TARGETS_OF_PAX_FOXO1_FUSIONS_UP	1.61	0	0.024
ICHIBA_GRAFT_VERSUS_HOST_DISEASE_D7_UP	1.61	0	0.025
RICKMAN_HEAD_AND_NECK_CANCER_C	1.61	0.002	0.026
KEGG_FOCAL_ADHESION	1.61	0	0.026
PID_API_PATHWAY	1.61	0.002	0.027

## Mesenchymal-phenotype enrichment

Gene Set	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
ROZANOV_MMP14_TARGETS_UP	1.61	0	0.027
BROWNE_HCMV_INFECTION_18HR_DN	1.6	0	0.028
WESTON_VEGFA_TARGETS_12HR	1.6	0.006	0.028
WONG_ENDMETRIUM_CANCER_DN	1.6	0	0.029
REACTOME_INTERFERON_SIGNALING	1.6	0	0.031
RUIZ_TNC_TARGETS_DN	1.6	0	0.031
HINATA_NFKB_TARGETS_FIBROBLAST_UP	1.6	0.002	0.031
GALINDO_IMMUNE_RESPONSE_TO_ENTEROTOXIN	1.6	0	0.031
AMIT_EGF_RESPONSE_240_HELA	1.59	0.004	0.034
SMID_BREAST_CANCER_LUMINAL_A_UP	1.59	0	0.034
REACTOME_STRIATED_MUSCLE_CONTRACTION	1.59	0	0.036
BERTUCCI_MEDULLARY_VS_DUCTAL_BREAST_CANCER_DN	1.59	0	0.037
LAIHO_COLORECTAL_CANCER_SERRATED_UP	1.59	0	0.038
HARRIS_BRAIN_CANCER_PROGENITORS	1.58	0	0.042
DAVICIONI_MOLECULAR_ARMS_VS_ERMS_DN	1.58	0	0.041
HUPER_BREAST_BASAL_VS_LUMINAL_DN	1.58	0.002	0.041
REACTOME_HS_GAG_BIOSYNTHESIS	1.58	0.002	0.042
SUNG_METASTASIS_STROMA_UP	1.58	0	0.043
HOSHIDA_LIVER_CANCER_SUBCLASS_S1	1.58	0	0.045
KEGG_CYTOKINE_CYTOKINE_RECEPTOR_INTERACTION	1.57	0	0.045
VERHAAK_GLIOMASTOMA_NEURAL	1.57	0	0.045
BURTON_ADIPOGENESIS_3	1.57	0.002	0.045
KEEN_RESPONSE_TO_ROSIGLITAZONE_DN	1.57	0	0.046
KEGG_ARRHYTHMOGENIC_RIGHT_VENTRICULAR_CARDIOMYOPATHY_ARVC	1.57	0.002	0.047
TURASHVILI_BREAST_LOBULAR_CARCINOMA_VS_LOBULAR_NORMAL_DN	1.57	0.006	0.05
KOKKINAKIS_METHIONINE_DEPRIVATION_96HR_UP	1.57	0	0.05
REACTOME_MUSCLE_CONTRACTION	1.57	0.008	0.05

## Epithelial-phenotype enrichment

Gene Set	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
KEGG_OXIDATIVE_PHOSPHORYLATION	-1.76	0	0.011
KEGG_LYSOSOME	-1.7	0	0.036
REACTOME_TCA_CYCLE_AND_RESPIRATORY_ELECTRON_TRANSPORT	-1.7	0	0.05

(Continued)

Supplementary Table S3.

Symbol	ProbeID	FC:(class1/class2)	pfp	
PAPSS2	1690259	4.323389537	0	Hs.524491
LUM	2490364	3.486750349	0.005	Hs.406475
IGFBP5	2120524	3.285151117	0.01	Hs.635441
DCN	7650296	3.272251309	0.0233	Hs.156316
IGFBP5	2190674	2.996703626	0.01	Hs.635441
HLA-B	5310168	2.973535534	0.0067	Hs.77961
TGFBI	7650358	2.933411558	0.0056	Hs.369397
PAPPA	730754	2.930832356	0.0067	Hs.643599
HS.552871	1690575	2.765486726	0.006	<b>HS.552871</b>
COL5A1	4920369	2.718129927	0.0071	Hs.210283
EEF1A2	6370356	2.664535039	0.0223	Hs.433839
THBS1	5810685	2.66028199	0.0062	Hs.164226
MATN2	5810746	2.63227165	0.0164	Hs.189445
PLA2G4C	1990672	2.491280518	0.035	Hs.631562
HLA-DPA1	1190039	2.365744026	0.0427	Hs.347270
HLA-DMA	540563	2.361275089	0.0438	Hs.351279
HS.562219	5960086	-2.0966	0.031	<b>HS.562219</b>
SNORD15B	2710719	-2.243	0.0469	Hs.689080
RPPH1	2260309	-2.37	0.03	Hs.613102
HS.171009	3450379	-2.3845	0.0471	<b>HS.171009</b>
IL24	4290201	-2.4175	0.0256	Hs.58831
UBA2	4290632	-2.4322	0.05	Hs.631580
LOC199800	5960735	-2.4582	0.03	Hs.311193
SNORD34	3780050	-2.4926	0.036	
HPDL	6480026	-2.5799	0.0262	Hs.162717
ADRB2	7570326	-2.6116	0.0436	Hs.591251
HS.543887	6840477	-2.7403	0.0075	<b>HS.543887</b>
CYORF15A	6860102	-3.528	0.005	Hs.522863
EIF1AY	4150600	-4.4136	0.01	Hs.461178
RPS4Y1	6100687	-5.4352	0.01	Hs.282376
Probe Set ID	Gene Symbol			
201107_s_at	THBS1			
201108_s_at	THBS1			
201109_s_at	THBS1			
201110_s_at	THBS1			
201177_s_at	UBA2			

Symbol	ProbeID	FC:(class1/class2)	pdf	
201506_at	TGFBI			
201744_s_at	LUM			
201893_x_at	DCN			
201909_at	RPS4Y1			
201981_at	PAPPA			
201982_s_at	PAPPA			
202350_s_at	MATN2			
203058_s_at	PAPSS2			
203059_s_at	PAPSS2			
203060_s_at	PAPSS2			
203325_s_at	COL5A1			
204409_s_at	EIF1AY			
204410_at	EIF1AY			
204540_at	EEF1A2			
206569_at	IL24			
209335_at	DCN			
209785_s_at	PLA2G4C			
211813_x_at	DCN			
211896_s_at	DCN			
211990_at	HLA-DPA1			
211991_s_at	HLA-DPA1			
212488_at	COL5A1			
212489_at	COL5A1			
213537_at	HLA-DPA1			
217478_s_at	HLA-DMA			

Supplementary Table S4.

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
Genes up-regulated in mesenchymal-like melanoma cell line vs epithelial-like cell lines (Supplementary Table S1, current study)	-2.71	0	0
GU_PDEF_TARGETS_UP	-2.52	0	0
DAUER_STAT3_TARGETS_DN	-2.44	0	0
SENESE_HDAC1_AND_HDAC2_TARGETS_DN	-2.42	0	0
SENESE_HDAC2_TARGETS_DN	-2.41	0	0
PID_INTEGRIN1_PATHWAY	-2.38	0	0
SEITZ_NEOPLASTIC_TRANSFORMATION_BY_8P_DELETION_UP	-2.35	0	0
WANG_SMARCE1_TARGETS_UP	-2.35	0	0
BOWIE_RESPONSE_TO_TAMOXIFEN	-2.34	0	0
ANASTASSIOU_CANCER_MESENCHYMAL_TRANSITION_SIGNATURE	-2.34	0	0
TAKEDA_TARGETS_OF_NUP98_HOXA9_FUSION_3D_UP	-2.34	0	0
STAMBOLSKY_TARGETS_OF_MUTATED_TP53_DN	-2.34	0	0
SIMBULAN_PARP1_TARGETS_UP	-2.33	0	0
KIM_GLIS2_TARGETS_UP	-2.33	0	0
GRAHAM_CML QUIESCENT_VS_NORMAL QUIESCENT_DN	-2.31	0	0
ZHU_CMV_24_HR_DN	-2.3	0	0
SWEET_KRAS_TARGETS_UP	-2.29	0	0
MOSERLE_IFNA_RESPONSE	-2.28	0	0
GRAHAM_CML_DIVIDING_VS_NORMAL QUIESCENT_DN	-2.27	0	0

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
TAKEDA_TARGETS_OF_NUP98_HOXA9_FUSION_8D_UP	-2.27	0	0
SCHUETZ_BREAST_CANCER_DUCTAL_INVASIVE_UP	-2.26	0	0
KIM_LRRC3B_TARGETS	-2.25	0	0
HUANG_DASATINIB_RESISTANCE_UP	-2.24	0	0
REN_ALVEOLAR_RHABDOMYOSARCOMA_DN	-2.23	0	0
PICCALUGA_ANGIOIMMUNOBLASTIC_LYMPHOMA_UP	-2.23	0	0
KOBAYASHI_EGFR_SIGNALING_24HR_UP	-2.23	0	0
TAKEDA_TARGETS_OF_NUP98_HOXA9_FUSION_10D_UP	-2.21	0	0
HELLEBREKERS_SILENCED_DURING_TUMOR_ANGIOGENESIS	-2.2	0	0
TSAI_RESPONSE_TO_RADIATION_THERAPY	-2.2	0	0
FURUKAWA_DUSP6_TARGETS_PCI35_UP	-2.2	0	0
BOWIE_RESPONSE_TO_EXTRACELLULAR_MATRIX	-2.19	0	0
KRASNOSELSKAYA_ILF3_TARGETS_UP	-2.19	0	0
PETROVA_ENDOTHELIUM_LYMPHATIC_VS_BLOOD_DN	-2.19	0	0
ROZANOV_MMP14_TARGETS_UP	-2.18	0	0
CHICAS_RBI_TARGETS_CONFLUENT	-2.18	0	0
FARMER_BREAST_CANCER_CLUSTER_1	-2.16	0	0
AZARE NEOPLASTIC_TRANSFORMATION_BY_STAT3_DN	-2.15	0	0

(Continued)



DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
XU_AKT1_TARGETS_6HR	-2.15	0	0
CUI_TCF21_TARGETS_UP	-2.14	0	0
KEGG_TYPE_I_DIABETES_MELLITUS	-2.12	0	0.001
WU_CELL_MIGRATION	-2.11	0	0.001
ZHU_CMV_ALL_DN	-2.11	0	0.001
NAKAYAMA_SOFT_TISSUE_TUMORS_PCA1_UP	-2.11	0	0.001
LIANG_SILENCED_BY_METHYLATION_2	-2.11	0	0.001
RODWELL_AGING_KIDNEY_NO_BLOOD_UP	-2.1	0	0.001
LIU_PROSTATE_CANCER_DN	-2.09	0	0.001
LANDIS_BREAST_CANCER_PROGRESSION_DN	-2.09	0	0.001
RADAEVA_RESPONSE_TO_IFNA1_UP	-2.09	0	0.001
COLIN_PILOCYTIC_ASTROCYTOMA_VS_GLIOMASTOMA_UP	-2.08	0	0.001
COWLING_MYCN_TARGETS	-2.08	0	0.001
ROY_WOUND_BLOOD_VESSEL_UP	-2.08	0	0.001
HECKER_IFNB1_TARGETS	-2.07	0	0.001
RUIZ_TNC_TARGETS_UP	-2.07	0	0.001
SANA_TNF_SIGNALING_DN	-2.07	0	0.001
MAHADEVAN_IMATINIB_RESISTANCE_UP	-2.06	0	0.001
LIANG_SILENCED_BY_METHYLATION_UP	-2.05	0	0.002
KANG_GIST_WITH_PDGFR_A_UP	-2.05	0	0.001
MISSIAGLIA_REGULATED_BY_METHYLATION_UP	-2.05	0	0.001
MIYAGAWA_TARGETS_OF_EWSR1_ETS_FUSIONS_DN	-2.04	0	0.002
CROMER_TUMORIGENESIS_UP	-2.04	0	0.002

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
BROWNE_HCMV_INFECTION_24HR_DN	-2.04	0	0.002
JOHNSTONE_PARVB_TARGETS_2_UP	-2.04	0	0.002
KEGG_ALLOGRAFT_REJECTION	-2.04	0	0.002
SANA_RESPONSE_TO_IFNG_UP	-2.03	0	0.002
BOQUEST_STEM_CELL_UP	-2.03	0	0.002
WONG_ENDMETRIUM_CANCER_DN	-2.03	0	0.002
KARLSSON_TGFB1_TARGETS_DN	-2.03	0	0.002
KEGG_GRAFT_VERSUS_HOST_DISEASE	-2.02	0	0.002
SUNG_METASTASIS_STROMA_UP	-2.02	0	0.002
FRIDMAN_IMMORTALIZATION_DN	-2.02	0	0.002
KANNAN_TP53_TARGETS_UP	-2.01	0	0.002
MANALO_HYPOXIA_UP	-2.01	0	0.002
KAAB_HEART_ATRIUM_VS_VENTRICLE_UP	-2.01	0	0.003
WARTERS_RESPONSE_TO_IR_SKIN	-2.01	0	0.003
ZHANG_INTERFERON_RESPONSE	-2.01	0	0.003
LAIHO_COLORECTAL_CANCER_SERRATED_UP	-2	0	0.003
SENESE_HDAC1_TARGETS_DN	-2	0	0.003
HENDRICKS_SMARCA4_TARGETS_UP	-2	0	0.003
BENNETT_SYSTEMIC_LUPUS_ERYTHEMATOSUS	-1.99	0	0.003
LINDSTEDT_DENDRITIC_CELL_MATURATION_D	-1.99	0.002	0.003
KEGG_CELL_ADHESION_MOLECULES_CAMS	-1.99	0	0.003
GILDEA_METASTASIS	-1.99	0	0.003

(Continued)

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
MCCLUNG_DELTA_FOSB_TARGETS_2WK	-1.99	0	0.003
PID_SYNDECAN_1_PATHWAY	-1.99	0	0.003
WIELAND_UP_BY_HBV_INFECTION	-1.98	0	0.003
THUM_MIR21_TARGETS_HEART_DISEASE_UP	-1.98	0	0.003
BECKER_TAMOXIFEN_RESISTANCE_UP	-1.98	0	0.003
GAUSSMANN_MLL_AF4_FUSION_TARGETS_F_UP	-1.98	0	0.003
ZHAN_MULTIPLE_MYELOMA_LB_DN	-1.97	0	0.003
UROSEVIC_RESPONSE_TO_IMIQUMOD	-1.97	0	0.003
DER_IFN_ALPHA_RESPONSE_UP	-1.97	0	0.004
KINSEY_TARGETS_OF_EWSR1_FLII_FUSION_DN	-1.97	0	0.004
CROONQUIST_IL6_DEPRIVATION_UP	-1.96	0	0.004
DANG_REGULATED_BY_MYC_DN	-1.96	0	0.004
ZIRN_TRETINOIN_RESPONSE_UP	-1.95	0	0.004
REACTOME_INTERFERON_ALPHA_BETA_SIGNALING	-1.95	0	0.004
HARRIS_BRAIN_CANCER_PROGENITORS	-1.95	0.002	0.004
GUENTHER_GROWTH_SPHERICAL_VS_ADHERENT_DN	-1.95	0	0.004
LIM_MAMMARY_STEM_CELL_UP	-1.95	0	0.004
REACTOME_NCAM1_INTERACTIONS	-1.95	0.002	0.004
EINAV_INTERFERON_SIGNATURE_IN_CANCER	-1.95	0	0.004
VANTVEER_BREAST_CANCER_METASTASIS_UP	-1.95	0	0.004
DASU_IL6_SIGNALING_SCAR_DN	-1.95	0	0.004

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
BROWNE_INTERFERON_RESPONSIVE_GENES	-1.94	0	0.004
JI_CARCIANOGENESIS_BY_KRAS_AND_STK11_DN	-1.94	0.002	0.004
KEGG_VIRAL_MYOCARDITIS	-1.94	0	0.005
TURASHVILI_BREAST_LOBULAR_CARCIANOMA_VS_DUCTAL_NORMAL_UP	-1.94	0	0.004
HELLER_SILENCED_BY_METHYLATION_UP	-1.94	0	0.004
PETRETTO_CARDIAC_HYPERTROPHY	-1.93	0	0.005
KORKOLA_YOLK_SAC_TUMOR	-1.93	0	0.005
POTTI_TOPOTECAN_SENSITIVITY	-1.93	0	0.005
NIELSEN_SYNOVIAL_SARCOMA_DN	-1.93	0	0.005
POOLA_INVASIVE_BREAST_CANCER_DN	-1.92	0	0.005
PETROVA_PROX1_TARGETS_DN	-1.92	0	0.005
DASU_IL6_SIGNALING_UP	-1.92	0	0.005
ISSAEVA_MLL2_TARGETS	-1.92	0	0.005
WOTTON_RUNX_TARGETS_UP	-1.92	0.004	0.005
SUZUKI_RESPONSE_TO_TSA_AND_DECITABINE_1A	-1.91	0.002	0.006
CERVERA_SDHB_TARGETS_2	-1.91	0	0.006
CLASPER_LYMPHATIC_VESSELS_DURING_METASTASIS_UP	-1.91	0.002	0.006
XU_HGF_TARGETS_INDUCED_BY_AKT1_6HR	-1.91	0.004	0.006
REACTOME_INTEGRIN_CELL_SURFACE_INTERACTIONS	-1.9	0	0.006
KOYAMA_SEMA3B_TARGETS_UP	-1.9	0	0.006

(Continued)

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
BERENJENO_TRANSFORMED_BY_RHOA_DN	-1.9	0	0.006
GRANDVAUX_IRF3_TARGETS_UP	-1.9	0	0.007
AMUNDSON_GAMMA_RADIATION_RESISTANCE	-1.89	0	0.008
CORRE_MULTIPLE_MYELOMA_UP	-1.89	0	0.008
TURASHVILI_BREAST_LOBULAR_CARCINOMA_VS_LOBULAR_NORMAL_DN	-1.89	0	0.008
KANG_CISPLATIN_RESISTANCE_UP	-1.88	0.002	0.008
GARCIA_TARGETS_OF_FLI1_AND_DAX1_UP	-1.88	0.002	0.008
VERHAAK_AML_WITH_NPM1_MUTATED_DN	-1.88	0	0.008
KEGG_AUTOIMMUNE_THYROID_DISEASE	-1.88	0	0.009
LEE_NEURAL_CREAST_STEM_CELL_UP	-1.88	0	0.009
IGLESIAS_E2F_TARGETS_UP	-1.88	0	0.009
MCCABE_HOXC6_TARGETS_DN	-1.87	0	0.009
SMID_BREAST_CANCER_RELAPSE_IN_BRAIN_DN	-1.87	0	0.009
GAURNIER_PSMD4_TARGETS	-1.87	0	0.009
PID_AVB3_INTEGRIN_PATHWAY	-1.86	0	0.01
RIGGI_EWING_SARCOMA_PROGENITOR_DN	-1.86	0	0.01
REACTOME_COLLAGEN_FORMATION	-1.86	0	0.01
REACTOME_HDL_MEDIATED_LIPID_TRANSPORT	-1.86	0.002	0.01
IZADPANAH_STEM_CELL_ADIPOSE_VS_BONE_DN	-1.86	0	0.01
RODWELL_AGING_KIDNEY_UP	-1.86	0	0.01

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
VALK_AML_CLUSTER_11	-1.86	0.002	0.01
HUANG_FOXA2_TARGETS_DN	-1.85	0	0.011
REACTOME_EXTRACELLULAR_MATRIX_ORGANIZATION	-1.85	0	0.011
KONDO_EZH2_TARGETS	-1.85	0	0.011
TRAYNOR_RETT_SYNDROM_UP	-1.85	0.004	0.011
LINDGREN_BLADDER_CANCER_CLUSTER_2B	-1.85	0	0.011
ACEVEDO_FGFR1_TARGETS_IN_PROSTATE_CANCER_MODEL_DN	-1.85	0	0.012
YANG_BCL3_TARGETS_UP	-1.84	0	0.012
ZHANG_GATA6_TARGETS_DN	-1.84	0	0.012
KEGG_ECM_RECEPTOR_INTERACTION	-1.84	0	0.012
VART_KSHV_INFECTION_ANGIOGENIC_MARKERS_UP	-1.84	0	0.012
DUNNE_TARGETS_OF_AML1_MTG8_FUSION_DN	-1.84	0.002	0.012
CHANG_IMMORTALIZED_BY_HP31_DN	-1.84	0	0.013
FRIDMAN_SENESCENCE_UP	-1.84	0	0.012
WESTON_VEGFA_TARGETS_12HR	-1.84	0.002	0.013
KERLEY_RESPONSE_TO_CISPLATIN_UP	-1.83	0	0.013
REACTOME_PYRIMIDINE_METABOLISM	-1.83	0	0.013
ICHIBA_GRAFT_VERSUS_HOST_DISEASE_D7_UP	-1.83	0	0.013
PHESSSE_TARGETS_OF_APC_AND_MBD2_UP	-1.83	0.002	0.013
BAELDE_DIABETIC_NEPHROPATHY_DN	-1.83	0	0.014
VANASSE_BCL2_TARGETS_UP	-1.82	0.002	0.014

(Continued)

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
PID_INTEGRIN3_PATHWAY	-1.82	0	0.015
FUJII_YBX1_TARGETS_UP	-1.82	0	0.015
ROSS_AML_WITH_PML_RARA_FUSION	-1.82	0	0.015
TUOMISTO_TUMOR_SUPPRESSION_BY_COL13A1_UP	-1.81	0.002	0.016
DELYS_THYROID_CANCER_UP	-1.81	0	0.016
JECHLINGER_EPITHELIAL_TO_MESENCHYMAL_TRANSITION_UP	-1.81	0	0.016
BRUECKNER_TARGETS_OF_MIRLET7A3_DN	-1.81	0	0.017
CHIARADONNA_NEOPLASTIC_TRANSFORMATION_KRAS_DN	-1.81	0	0.017
CASTELLANO_NRAS_TARGETS_UP	-1.81	0	0.017
HAN_SATB1_TARGETS_UP	-1.81	0	0.017
LEIN_CHOROID_PLEXUS_MARKERS	-1.81	0	0.017
ONDER_CDH1_TARGETS_2_UP	-1.8	0	0.017
SASAI_RESISTANCE_TO_NEOPLASTIC_TRANSFORMATION	-1.8	0.002	0.017
NEWMAN_ERCC6_TARGETS_DN	-1.8	0.002	0.017
TSUNODA_CISPLATIN_RESISTANCE_DN	-1.8	0	0.017
LU_AGING_BRAIN_UP	-1.8	0	0.017
BERTUCCI_MEDULLARY_VS_DUCTAL_BREAST_CANCER_DN	-1.8	0	0.018
ZHANG_ANTIVIRAL_RESPONSE_TO_RIBAVIRIN_UP	-1.8	0.004	0.018
FRASOR_RESPONSE_TO ESTRADIOL_DN	-1.8	0	0.018
NIELSEN_SCHWANNOMA_UP	-1.8	0	0.018

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
BURTON_ADIPOGENESIS_7	-1.8	0	0.018
ZHANG_TLX_TARGETS_DN	-1.79	0	0.018
DUTERTRE ESTRADIOL_RESPONSE_24HR_DN	-1.79	0	0.018
DIRMEIER_LMP1_RESPONSE_LATE_DN	-1.79	0.002	0.018
MCLACHLAN_DENTAL_CARIES_UP	-1.79	0	0.019
MIKKELSEN_MEF_LCP_WITH_H3K4ME3	-1.79	0	0.019
DER_IFN_BETA_RESPONSE_UP	-1.79	0	0.018
DEMAGALHAES_AGING_UP	-1.79	0	0.019
GRADE_COLON_AND_RECTAL_CANCER_DN	-1.79	0	0.019
HELLER_HDAC_TARGETS_SILENCED_BY_METHYLATION_UP	-1.79	0	0.019
LOPEZ_MESOTHELIOMA_SURVIVAL_OVERALL_DN	-1.79	0.002	0.019
JOHNSTONE_PARVB_TARGETS_3_UP	-1.79	0	0.019
ONDER_CDH1_TARGETS_1_UP	-1.79	0	0.019
PEDERSEN_METASTASIS_BY_ERBB2_ISOFORM_4	-1.79	0	0.019
LEE_LIVER_CANCER_DENA_UP	-1.78	0.002	0.019
BOQUEST_STEM_CELL_CULTURED_VS_FRESH_UP	-1.78	0	0.019
HOELZEL_NF1_TARGETS_UP	-1.78	0	0.02
SENGUPTA_NASOPHARYNGEAL_CARCINOMA_WITH_LMP1_DN	-1.78	0	0.02
WINZEN_DEGRADED_VIA_KHSRP	-1.78	0	0.02
SATO_SILENCED_BY_METHYLATION_IN_PANCREATIC_CANCER_1	-1.78	0	0.02

(Continued)



DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
ELVIDGE_HIF1A_AND_HIF2A_TARGETS_DN	-1.78	0	0.02
FARMER_BREAST_CANCER_CLUSTER_5	-1.78	0.006	0.02
WAMUNYOKOLI_OVARIAN_CANCER_LMP_DN	-1.77	0	0.021
CHANG_CORE_SERUM_RESPONSE_DN	-1.77	0	0.021
TAKEDA_TARGETS_OF_NUP98_HOXA9_FUSION_16D_UP	-1.77	0	0.021
CERVERA_SDHB_TARGETS_1_UP	-1.77	0	0.022
SANA_TNF_SIGNALING_UP	-1.77	0.002	0.022
PLASARI_TGFB1_TARGETS_10HR_DN	-1.77	0	0.022
KEGG_GLYCOSAMINOGLYCAN_BIOSYNTHESIS_CHONDROITIN_SULFATE	-1.77	0.002	0.022
PEREZ_TP63_TARGETS	-1.77	0	0.022
TONKS_TARGETS_OF_RUNX1_RUNX1T1_FUSION_HSC_UP	-1.77	0	0.022
CHANDRAN_METASTASIS_DN	-1.77	0	0.022
VERRECCHIA_EARLY_RESPONSE_TO_TGFB1	-1.77	0	0.022
ROZANOV_MMP14_TARGETS_SUBSET	-1.76	0.004	0.022
SHARMA_PILOCYTIC_ASTROCYTOMA_LOCATION_UP	-1.76	0.004	0.022
EBAUER_TARGETS_OF_PAX3_FOXO1_FUSION_UP	-1.76	0	0.022
SMID_BREAST_CANCER_LUMINAL_B_UP	-1.76	0	0.022
LI_WILMS_TUMOR_VS_FETAL_KIDNEY_1_UP	-1.76	0	0.022
RIGGINS_TAMOXIFEN_RESISTANCE_DN	-1.76	0	0.023

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
ZEMBUTSU_SENSITIVITY_TO_VINBLASTINE	-1.76	0	0.023
DUNNE_TARGETS_OF_AML1_MTG8_FUSION_UP	-1.76	0	0.023
PEREZ_TP53_AND_TP63_TARGETS	-1.75	0	0.024
KOKKINAKIS_METHIONINE_DEPRIVATION_96HR_UP	-1.75	0	0.024
ZHAN_V1_LATE_DIFFERENTIATION_GENES_UP	-1.75	0.004	0.024
PASINI_SUZ12_TARGETS_DN	-1.75	0	0.024
KEGG_ASTHMA	-1.75	0.004	0.024
ICHIBA_GRAFT_VERSUS_HOST_DISEASE_35D_UP	-1.75	0	0.025
BOYVAULT_LIVER_CANCER_SUBCLASS_G5_DN	-1.75	0.004	0.025
KIM_WT1_TARGETS_12HR_UP	-1.75	0	0.025
LIU_SMARCA4_TARGETS	-1.75	0.002	0.025
REACTOME_INTERFERON_SIGNALING	-1.75	0	0.026
PAPASPYRIDONOS_UNSTABLE_ATEROSCLEROTIC_PLAQUE_DN	-1.74	0.002	0.026
CHIANG_LIVER_CANCER_SUBCLASS_INTERFERON_UP	-1.74	0.009	0.026
LABBE_TGFB1_TARGETS_UP	-1.74	0	0.026
URS_ADIPOCYTE_DIFFERENTIATION_DN	-1.74	0.005	0.026
MCLACHLAN_DENTAL_CARIES_DN	-1.74	0	0.026
YAO_TEMPORAL_RESPONSE_TO_PROGESTERONE_CLUSTER_16	-1.74	0.003	0.028

(Continued)

<b>DiI Bright Enrichment</b>			
<b>GS</b>	<b>NES</b>	<b>NOM p-val</b>	<b>FDR q-val</b>
<b>follow link to MSigDB</b>			
DOANE_BREAST_CANCER_ESR1_UP	-1.74	0.002	0.028
VALK_AML_WITH_EV11	-1.74	0.009	0.027
LEIN_NEURON_MARKERS	-1.73	0.002	0.028
HELLER_HDAC_TARGETS_UP	-1.73	0	0.028
VALK_AML_WITH_FLT3_ITD	-1.73	0.002	0.028
CHEMNITZ_RESPONSE_TO_PROSTAGLANDIN_E2_DN	-1.73	0	0.029
KEGG_REGULATION_OF_ACTIN_CYTOSKELETON	-1.73	0	0.029
REACTOME_NEGATIVE_REGULATORS_OF_RIG_I_MDA5_SIGNALING	-1.73	0	0.029
SERVITJA_ISLET_HNF1A_TARGETS_UP	-1.73	0	0.029
MARKEY_RB1_ACUTE_LOF_UP	-1.72	0	0.03
TONKS_TARGETS_OF_RUNX1_RUNX1T1_FUSION_ERYTHROCYTE_UP	-1.72	0	0.03
CHARAFE_BREAST_CANCER_LUMINAL_VS_BASAL_DN	-1.72	0	0.03
CHARAFE_BREAST_CANCER_LUMINAL_VS_MESENCHYMAL_DN	-1.72	0	0.03
ELVIDGE_HYPOXIA_UP	-1.72	0	0.03
IVANOVA_HEMATOPOIESIS_STEM_CELL_LONG_TERM	-1.72	0	0.03
GRUETZMANN_PANCREATIC_CANCER_UP	-1.72	0	0.03
SMID_BREAST_CANCER_LUMINAL_B_DN	-1.72	0	0.03
HIRSCH_CELLULAR_TRANSFORMATION_SIGNATURE_DN	-1.72	0	0.03
GARGALOVIC_RESPONSE_TO_OXIDIZED_PHOSPHOLIPIDS_GREY_DN	-1.72	0.002	0.03

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
HEIDENBLAD_AMPLICON_8Q24_DN	-1.72	0.002	0.031
REACTOME_GLYCOSAMINOGLYCAN_METABOLISM	-1.72	0.002	0.031
LIEN_BREAST_CARCINOMA_METAPLASTIC	-1.72	0.002	0.031
NADERI_BREAST_CANCER_PROGNOSIS_DN	-1.72	0.006	0.031
ELVIDGE_HIF1A_TARGETS_DN	-1.71	0.002	0.031
REACTOME_COMPLEMENT_CASCADE	-1.71	0.007	0.031
REACTOME_SIGNALING_BY_PDGF	-1.71	0.002	0.032
HORIUCHI_WTAP_TARGETS_UP	-1.71	0	0.032
YAO_HOXA10_TARGETS_VIA_PROGESTERONE_DN	-1.71	0.004	0.033
BROWNE_HCMV_INFECTION_4HR_UP	-1.71	0.002	0.033
DER_IFN_GAMMA_RESPONSE_UP	-1.71	0	0.033
ALONSO_METASTASIS_EMT_UP	-1.71	0.005	0.033
SAMOLS_TARGETS_OF_KHSV_MIRNAS_DN	-1.71	0.002	0.033
MASRI_RESISTANCE_TO_TAMOXIFEN_AND_AROMATASE_INHIBITORS_DN	-1.7	0.025	0.034
DURAND_STROMA_MAX_UP	-1.7	0	0.034
LANDIS_ERBB2_BREAST_TUMORS_324_DN	-1.7	0.002	0.034
CAIRO_LIVER_DEVELOPMENT_DN	-1.7	0	0.034
WESTON_VEGFA_TARGETS_6HR	-1.7	0.005	0.034
REACTOME_INTERFERON_GAMMA_SIGNALING	-1.7	0	0.034

(Continued)

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
CROONQUIST_STROMAL_STIMULATION_UP	-1.7	0.004	0.035
BOQUEST_STEM_CELL_DN	-1.7	0	0.035
BIOCARTA_RHO_PATHWAY	-1.69	0.009	0.036
VALK_AML_CLUSTER_10	-1.69	0.009	0.037
YAO_TEMPORAL_RESPONSE_TO_PROGESTERONE_CLUSTER_15	-1.69	0.005	0.037
VALK_AML_CLUSTER_4	-1.69	0.005	0.037
HANN_RESISTANCE_TO_BCL2_INHIBITOR_UP	-1.69	0.007	0.037
SCHAEFFER_PROSTATE_DEVELOPMENT_48HR_DN	-1.69	0	0.038
HAN_SATB1_TARGETS_DN	-1.69	0	0.038
GAUSSMANN_MLL_AF4_FUSION_TARGETS_E_UP	-1.69	0.002	0.038
VALK_AML_CLUSTER_13	-1.69	0.006	0.038
VALK_AML_CLUSTER_12	-1.69	0.004	0.038
VECCHI_GASTRIC_CANCER_EARLY_DN	-1.69	0	0.038
PID_INTEGRIN_CS_PATHWAY	-1.69	0.013	0.038
HOSHIDA_LIVER_CANCER_SUBCLASS_S1	-1.68	0	0.038
VECCHI_GASTRIC_CANCER_ADVANCED_VS_EARLY_UP	-1.68	0.002	0.038
WELCSH_BRCA1_TARGETS_UP	-1.68	0	0.04
VERHAAK_GLIOMASTOMA_NEURAL	-1.68	0	0.04
ZHANG_TLX_TARGETS_60HR_UP	-1.68	0	0.041
THUM_SYSTOLIC_HEART_FAILURE_UP	-1.68	0	0.041
RICKMAN_TUMOR_DIFFERENTIATED_MODERATELY_VS_POORLY_UP	-1.67	0.002	0.041

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
GREENBAUM_E2A_TARGETS_DN	-1.67	0.013	0.041
KEGG_INTESTINAL_IMMUNE_NETWORK_FOR_IGA_PRODUCTION	-1.67	0.002	0.041
ELVIDGE_HYPOXIA_BY_DMOG_UP	-1.67	0.002	0.041
KEGG_FOCAL_ADHESION	-1.67	0	0.041
CHEBOTAEV_GR_TARGETS_DN	-1.67	0	0.042
YAMASHITA_METHYLATED_IN_PROSTATE_CANCER	-1.67	0.004	0.042
NAKAMURA_ADIPOGENESIS_LATE_DN	-1.67	0.002	0.042
HUPER_BREAST_BASAL_VS_LUMINAL_DN	-1.67	0.003	0.044
ACEVEDO_LIVER_CANCER_WITH_H3K27ME3_UP	-1.66	0	0.044
SMID_BREAST_CANCER_NORMAL_LIKE_UP	-1.66	0	0.045
ZHENG_IL22_SIGNALING_UP	-1.66	0.01	0.045
MAHADEVAN_GIST_MORPHOLOGICAL_SWITCH	-1.66	0.017	0.045
REACTOME_KERATAN_SULFATE_KERATIN_METABOLISM	-1.66	0.013	0.045
JOHANSSON_BRAIN_CANCER_EARLY_VS_LATE_DN	-1.66	0.007	0.045
SCIBETTA_KDM5B_TARGETS_DN	-1.66	0.007	0.046
REICHERT_MITOSIS_LIN9_TARGETS	-1.66	0.022	0.046
MCMURRAY_TP53_HRAS_COOPERATION_RESPONSE_DN	-1.66	0.002	0.046
MIKKELSEN_MCV6_LCP_WITH_H3K4ME3	-1.66	0	0.046

(Continued)

<b>DiI Bright Enrichment</b>			
<b>GS</b>	<b>NES</b>	<b>NOM p-val</b>	<b>FDR q-val</b>
<b>follow link to MSigDB</b>			
LINDVALL_ IMMORTALIZED_BY_TERT_ DN	-1.66	0.002	0.046
CLASPER_LYMPHATIC_ VESSELS_DURING_ METASTASIS_ DN	-1.66	0.009	0.045
PID_ LYMPHANGIOGENESIS_ PATHWAY	-1.66	0.007	0.046
LEE_AGING_ NEOCORTEX_ DN	-1.66	0	0.046
POMEROY_ MEDULLOBLASTOMA_ DESMOPLASIC_VS_ CLASSIC_ DN	-1.65	0.007	0.048
LA_MEN1_TARGETS	-1.65	0.013	0.048
TARTE_PLASMA_CELL_VS_ PLASMABLAST_UP	-1.65	0	0.049
<b>DiI Dull Enrichment</b>			
<b>GS</b>	<b>NES</b>	<b>NOM p-val</b>	<b>FDR q-val</b>
<b>follow link to MSigDB</b>			
MANALO_HYPOXIA_ DN	2.23	0	0.003
REACTOME_RNA_POL_II_ TRANSCRIPTION	2.14	0	0.01
REACTOME_PROCESSING_ OF_CAPPED_INTRON_ CONTAINING_PRE_MRNA	2.12	0	0.009
REACTOME_MRNA_ SPLICING	2.1	0	0.01
SCHLOSSER_MYC_ TARGETS_AND_SERUM_ RESPONSE_ DN	2.09	0	0.009
REACTOME_MRNA_ PROCESSING	2.08	0	0.009
Genes up-regulated in epithelial-like melanoma cell line vs mesenchymal-like cell lines (Supplementary Table S1, current study)	2.07	0	0.001
WALLACE_JAK2_ TARGETS_UP	2.03	0	0.017

DiI Bright Enrichment			
GS	NES	NOM p-val	FDR q-val
<b>follow link to MSigDB</b>			
REACTOME_METABOLISM_OF_NON_CODING_RNA	2.03	0	0.015
REACTOME_ELONGATION_ARREST_AND_RECOVERY	2	0	0.022
PICCALUGA_ANGIOIMMUNOBLASTIC_LYMPHOMA_DN	1.99	0	0.021
PID_MAPKTRKPATHWAY	1.98	0	0.024
SCHUHMACHER_MYC_TARGETS_UP	1.96	0	0.027
KEGG_SPLICEOSOME	1.95	0	0.029
REACTOME_HIV_LIFE_CYCLE	1.94	0	0.031
MMS_MOUSE_LYMPH_HIGH_4HRS_UP	1.93	0	0.034
REACTOME_LATE_PHASE_OF_HIV_LIFE_CYCLE	1.93	0	0.032
REACTOME_RNA_POL_III_TRANSCRIPTION	1.93	0	0.03
GARCIA_TARGETS_OF_FLI1_AND_DAX1_DN	1.9	0	0.042
MUELLER_PLURINET	1.9	0	0.04
REACTOME_FORMATION_OF_RNA_POL_II_ELONGATION_COMPLEX	1.9	0.002	0.039
PID_ATM_PATHWAY	1.89	0.002	0.042
PID_ATF2_PATHWAY	1.88	0	0.041
REACTOME_MRNA_SPLICING_MINOR_PATHWAY	1.88	0	0.041