

Cross-talk between chromatin acetylation and TRIM24 SUMOylation impacts cell adhesion

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Supplementary Table S1: List of differentially expressed genes with fold change between WT TRIM24-expressing and SUMO mutant-expressing MCF7 cells (DM).

Supplementary Table S2: List of enriched biological process and cellular component gene ontology terms from DAVID pathway analysis

Supplementary Table S3: List of cloning and qPCR primers

Supplementary Table S4: List of antibodies used for immunoblot and immunoprecipitation experiments.

Supp. Table 1

hgnc_symbol	ensembl_gene_id	gene_biotype	baseMean_WT	baseMean_DM	fold Change
ABCC3	ENSG00000108846	protein_coding	2294.751843	1741.766869	0.759021885
ABLIM1	ENSG00000099204	protein_coding	752.8425663	1009.505425	1.340925009
ACE2	ENSG00000130234	protein_coding	125.5279924	55.23380668	0.44001187
ACYP2	ENSG00000170634	protein_coding	287.0581202	386.7399927	1.347253276
ADA	ENSG00000196839	protein_coding	300.2538611	193.7833716	0.645398433
ADAMTSL1	ENSG00000178031	protein_coding	2.290688233	22.79241226	9.950028089
ADI1	ENSG00000182551	protein_coding	5564.361649	7298.030916	1.311566605
ADPRH	ENSG00000144843	protein_coding	109.9635624	189.312525	1.721593233
ADRA2A	ENSG00000150594	protein_coding	116.9916245	206.9428185	1.768868663
AMOTL1	ENSG00000166025	protein_coding	5117.269314	6890.539762	1.3465267
ANK1	ENSG00000029534	protein_coding	289.925428	455.2287772	1.570158162
ANO7	ENSG00000146205	protein_coding	386.7698088	692.5493456	1.790598257
ANXA6	ENSG00000197043	protein_coding	2726.721003	3647.345457	1.337630602
ARHGAP36	ENSG00000147256	protein_coding	234.6484002	328.3091212	1.399153461
ASPH	ENSG00000198363	protein_coding	1843.567605	1360.615961	0.73803421
ASTL	ENSG00000188886	protein_coding	36.95343741	67.73522325	1.832988431
AZGP1	ENSG00000160862	protein_coding	432.2457381	270.3972984	0.625563828
BMPER	ENSG00000164619	protein_coding	130.8434232	199.6738263	1.526051683
BRINP2	ENSG00000198797	protein_coding	2642.820665	1829.784616	0.692360492
BST2	ENSG00000130303	protein_coding	1480.174581	962.0986863	0.649990007
BTF3P7	ENSG00000219986	processed_pseudogene	331.6956751	244.6139253	0.737464922
BTG3	ENSG00000154640	protein_coding	183.3584165	122.8908018	0.670221766
CACNA1I	ENSG00000100346	protein_coding	251.0200969	172.129652	0.685720602
CALCR	ENSG00000004948	protein_coding	277.3335816	398.9883118	1.43865849
CALML5	ENSG00000178372	protein_coding	1265.872511	1884.380329	1.488601982
CASC9	ENSG00000249395	lincRNA	75.21659259	41.09932508	0.546413014
CCDC152	ENSG00000198865	protein_coding	505.601361	748.6607173	1.480733192
CCDC82	ENSG00000149231	protein_coding	349.277081	260.0640122	0.744577948
CD36	ENSG00000135218	protein_coding	81.95754348	44.73477777	0.54582868
CDH18	ENSG00000145526	protein_coding	428.1471961	645.5282575	1.507725061
CDKN2D	ENSG00000129355	protein_coding	1080.893328	820.5026549	0.75909679
CDSN	ENSG00000204539	protein_coding	215.1782663	329.7558635	1.532477556
CEP295NL	ENSG00000178404	protein_coding	465.0656979	336.0549494	0.722596723
CFB	ENSG00000243649	protein_coding	4267.268414	3062.563243	0.717687041
CHCHD10	ENSG00000250479	protein_coding	1325.219847	981.0311821	0.740278064
CHI3L2	ENSG00000064886	protein_coding	156.6917832	99.60643368	0.635683835
CLSTN3	ENSG00000139182	protein_coding	2653.437641	1988.893297	0.749553435
CNN2	ENSG00000064666	protein_coding	717.5873984	514.0041555	0.716294847
CNTD2	ENSG00000105219	protein_coding	687.0681877	1022.557752	1.488291512
COL3A1	ENSG00000168542	protein_coding	14591.90612	9288.339684	0.636540532
COL6A2	ENSG00000142173	protein_coding	1577.586013	1116.156916	0.707509389
COL6A3	ENSG00000163359	protein_coding	598.3055667	796.7998722	1.331760753
CPT1C	ENSG00000169169	protein_coding	195.9416506	116.1695004	0.592878033
CRABP1	ENSG00000166426	protein_coding	1335.657382	938.5924885	0.702719501
CSGALNACT1	ENSG00000147408	protein_coding	255.5253869	184.2752385	0.721162154
CST9	ENSG00000173335	protein_coding	31.48296658	67.38795879	2.140457718
CTNND2	ENSG00000169862	protein_coding	1770.151242	2626.891695	1.483992798
CTSO	ENSG00000256043	protein_coding	42.58708656	85.0504415	1.997094621
CYP26B1	ENSG00000003137	protein_coding	43.47187418	112.4717745	2.587230862
DCLK1	ENSG00000133083	protein_coding	5242.135514	3845.181407	0.733514309
DLX1	ENSG00000144355	protein_coding	268.8594225	424.4782677	1.578811201
DNAAF3	ENSG00000167646	protein_coding	904.6371455	687.657881	0.760147739
DOCK8	ENSG00000107099	protein_coding	1430.86954	1880.313447	1.31410544
DUSP2	ENSG00000158050	protein_coding	292.0352328	392.8659465	1.345269003
EDN1	ENSG00000078401	protein_coding	158.5173462	226.5950474	1.42946531
EFCAB2	ENSG00000203666	protein_coding	302.2804075	395.7648134	1.309263861
EPHA4	ENSG00000116106	protein_coding	915.8733396	1264.343084	1.380478096
EPHB2	ENSG00000133216	protein_coding	374.7397492	284.6654892	0.75963516
ERMAP	ENSG00000164010	protein_coding	633.4511422	844.8209708	1.333679766
ERO1LB	ENSG00000086619	protein_coding	388.0187557	286.7107005	0.738909386

FAM110B	ENSG00000169122	protein_coding	434.4545987	628.3568861	1.446311969
FAM133A	ENSG00000179083	protein_coding	42.48037589	13.56381024	0.319295909
FAM65C	ENSG00000042062	protein_coding	223.0590586	469.5702598	2.105138714
FAM71E1	ENSG00000142530	protein_coding	523.2267836	724.1063573	1.383924486
FAM84A	ENSG00000162981	protein_coding	586.0979706	820.7087174	1.400292713
FBLN1	ENSG00000077942	protein_coding	913.2921838	656.4022867	0.718721016
FGFR2	ENSG00000066468	protein_coding	292.2395643	401.6007574	1.374217616
FN1	ENSG00000115414	protein_coding	2929.706521	1874.37424	0.639782254
FRMD3	ENSG00000172159	protein_coding	213.7092024	308.9880207	1.445833952
GABRP	ENSG00000094755	protein_coding	16.92295574	43.61649344	2.577356704
GEMIN2P2	ENSG00000235339	processed_pseudogene	408.2808425	303.1088435	0.742402807
GJA1	ENSG00000152661	protein_coding	442.2923254	230.6086058	0.521394093
GJB7	ENSG00000164411	protein_coding	110.4698397	186.1271632	1.684868592
GNG4	ENSG00000168243	protein_coding	289.1540467	205.4459411	0.710506885
GP1BB	ENSG00000203618	protein_coding	377.509441	285.624118	0.756601258
GPFR1	ENSG00000164850	protein_coding	1730.686967	2502.403675	1.445901958
GPNMB	ENSG00000136235	protein_coding	239.6001499	344.2204369	1.436645332
GRIK3	ENSG00000163873	protein_coding	549.6809607	775.8696553	1.411490866
GSC	ENSG00000133937	protein_coding	479.2510246	662.4326157	1.382224725
GSTA2	ENSG00000244067	protein_coding	70.56918049	35.20134142	0.498820323
GYG2	ENSG00000056998	protein_coding	1575.828892	1179.102395	0.748242656
H19	ENSG00000130600	processed_transcript	7298.574865	4336.900773	0.594212001
HECW2	ENSG00000138411	protein_coding	603.1783653	861.8451885	1.42883969
HEG1	ENSG00000173706	protein_coding	74.59929792	126.4746936	1.695387183
HIST1H2AI	ENSG00000196747	protein_coding	707.5575683	1004.960316	1.42032304
HSPG2	ENSG00000142798	protein_coding	3165.704825	2101.369733	0.663792062
IFI27	ENSG00000165949	protein_coding	918.307098	469.2978482	0.511046739
IFITM10	ENSG00000244242	protein_coding	7644.964504	5777.561938	0.755734305
IGSF1	ENSG00000147255	protein_coding	18132.18564	13329.7071	0.73514067
JAZF1	ENSG00000153814	protein_coding	231.5035462	145.1721979	0.627084121
KCNF1	ENSG00000162975	protein_coding	88.66978096	148.0529791	1.669711795
KCNK5	ENSG00000164626	protein_coding	168.9840763	231.7350461	1.371342503
KCTD12	ENSG00000178695	protein_coding	117.0892436	182.4989079	1.558630855
KIF21B	ENSG00000116852	protein_coding	339.5635437	230.0815568	0.677580268
KLHL4	ENSG00000102271	protein_coding	1570.781923	2237.85286	1.424674442
KNDC1	ENSG00000171798	protein_coding	2258.321912	1685.287026	0.746256331
KREMEN2	ENSG00000131650	protein_coding	293.469841	173.0958258	0.589824921
KRT18P4	ENSG00000229222	processed_pseudogene	429.470307	577.2959457	1.344204562
L3MBTL3	ENSG00000198945	protein_coding	505.43148	386.2526619	0.764203809
LAMB1	ENSG00000091136	protein_coding	287.713698	181.266897	0.630025259
LANCL2	ENSG00000132434	protein_coding	981.7783592	1359.037032	1.38426053
LBX2-AS1	ENSG00000257702	antisense	309.1883588	435.9932579	1.410121842
LCN2	ENSG00000148346	protein_coding	1530.031883	1097.913841	0.717575792
LDHBP2	ENSG00000213684	processed_pseudogene	81.9785985	48.99913118	0.597706378
LDLRAD2	ENSG00000187942	protein_coding	658.1515236	387.9072359	0.589388951
LDLRAD4	ENSG00000168675	protein_coding	238.676604	319.0461833	1.336730027
LGALS3BP	ENSG00000108679	protein_coding	5548.581903	4069.564719	0.733442308
LINC00494	ENSG00000235621	lincRNA	532.238324	784.3679625	1.473715678
LINC01116	ENSG00000163364	lincRNA	132.9345667	193.9979794	1.459349395
LINC01270	ENSG00000203999	lincRNA	222.7571075	149.8476289	0.672695164
LINC01522	ENSG00000237423	lincRNA	590.6008741	893.0569428	1.51211585
LRG1	ENSG00000171236	protein_coding	687.6754162	490.2388551	0.712892803
LRP8	ENSG00000157193	protein_coding	825.9780533	625.7456286	0.757581422
LY6G5C	ENSG00000204428	protein_coding	175.1565388	242.1595336	1.382532078
LYPD1	ENSG00000150551	protein_coding	497.6473469	669.8846077	1.346103043
MAOA	ENSG00000189221	protein_coding	1545.610196	1164.021567	0.753114576
MAOB	ENSG00000069535	protein_coding	372.4481053	571.1251196	1.533435428
MARC2	ENSG00000117791	protein_coding	335.2558842	445.8137746	1.329771663
MFS2B	ENSG00000205639	protein_coding	77.88052937	41.90101021	0.538016505
MMP16	ENSG00000156103	protein_coding	1104.816603	1619.153284	1.465540326
MTND4P12	ENSG00000247627	processed_pseudogene	1159.774458	831.4484721	0.716905314
MTND6P4	ENSG00000249119	processed_pseudogene	1225.976157	884.9413367	0.721825895
MUC16	ENSG00000181143	protein_coding	367.8629037	757.3872164	2.058884461

MUC5B	ENSG00000117983	protein_coding	19181.15869	14116.48456	0.735955778
NCKAP5	ENSG00000176771	protein_coding	1592.882971	2183.888554	1.371028878
NPIP5	ENSG00000243716	protein_coding	11832.26453	6930.464013	0.585725919
OLFML3	ENSG00000116774	protein_coding	78.43800827	116.2195577	1.481674003
PADI3	ENSG00000142619	protein_coding	520.485326	267.2209533	0.513407276
PAR3B	ENSG00000116117	protein_coding	361.1214735	495.3747002	1.371767498
PCP4	ENSG00000183036	protein_coding	1466.399367	917.5375898	0.625707846
PCSK2	ENSG00000125851	protein_coding	388.1690138	615.4473416	1.585513835
PDE9A	ENSG00000160191	protein_coding	1037.283155	787.0079721	0.758720479
PDK4	ENSG00000004799	protein_coding	1158.390073	858.4911961	0.741107176
PDZK1	ENSG00000174827	protein_coding	173.1835913	250.8048228	1.448201997
PEPD	ENSG00000142499	protein_coding	918.1066028	1201.583513	1.308762522
PGM5	ENSG00000154330	protein_coding	193.2226847	317.2901213	1.642095605
PHEX	ENSG00000102174	protein_coding	94.67141208	159.8831427	1.68882178
PISD	ENSG00000241878	protein_coding	3965.719207	5402.23535	1.362233448
PLAT	ENSG00000104368	protein_coding	34.1751351	16.54546849	0.484137618
PLCH1	ENSG00000114805	protein_coding	1421.690506	1071.54908	0.753714733
PLD1	ENSG00000075651	protein_coding	2296.608518	1633.569995	0.711296672
PPP1R3C	ENSG00000119938	protein_coding	712.1896577	956.4261581	1.342937443
PRKAR1B	ENSG00000188191	protein_coding	1528.28288	2091.562759	1.36857043
PSCA	ENSG00000167653	protein_coding	331.7607562	531.9033136	1.603273756
PSORS1C1	ENSG00000204540	protein_coding	252.9686383	362.5330892	1.433114759
PTTG1	ENSG00000164611	protein_coding	902.3593698	687.7701496	0.762190955
RCAN1	ENSG00000159200	protein_coding	488.6152384	361.0467844	0.738918388
RCOR2	ENSG00000167771	protein_coding	331.1075726	201.1205067	0.607417418
REEP1	ENSG00000068615	protein_coding	286.1800324	523.6814844	1.829902248
RIMKLA	ENSG00000177181	protein_coding	203.9860982	338.7146422	1.660479048
RPL15P2	ENSG00000240914	processed_pseudogene	799.829669	578.4565313	0.723224649
RSPO1	ENSG00000169218	protein_coding	364.1060252	222.5671519	0.61127017
S1PR5	ENSG00000180739	protein_coding	348.5310591	238.172155	0.683359915
SAMD5	ENSG00000203727	protein_coding	88.47837151	5.642797095	0.063776005
SEMA6B	ENSG00000167680	protein_coding	1981.676444	1396.107842	0.704508471
SEPP1	ENSG00000150722	protein_coding	762.5781085	1122.843828	1.472431238
SEPT5	ENSG00000184702	protein_coding	1475.339605	1030.505961	0.698487289
SERPINA1	ENSG00000197249	protein_coding	4312.363915	3272.165858	0.758787042
SETD9	ENSG00000155542	protein_coding	270.7098721	361.3084059	1.334670225
SHISA2	ENSG00000180730	protein_coding	226.7762214	348.4694006	1.536622307
SIM1	ENSG00000112246	protein_coding	40.78784101	90.86850139	2.227833078
SLC25A45	ENSG00000162241	protein_coding	284.7746122	412.5588939	1.448720764
SLC26A2	ENSG00000155850	protein_coding	416.7248585	557.7246356	1.338352211
SLC7A8	ENSG00000092068	protein_coding	455.3923604	344.5395305	0.756577318
SLC8A1	ENSG00000183023	protein_coding	798.2223128	1097.583941	1.375035405
SLIT1	ENSG00000187122	protein_coding	191.7756345	325.6223677	1.697933987
SMPDL3B	ENSG00000130768	protein_coding	425.681842	557.5603346	1.309805304
SORCS2	ENSG00000184985	protein_coding	522.8382235	375.5752488	0.71833931
SOST	ENSG00000167941	protein_coding	3.258260934	38.02270104	11.66963046
SOX3	ENSG00000134595	protein_coding	2797.43709	3825.472412	1.367491846
ST6GALNAC5	ENSG00000117069	protein_coding	50.34920367	127.8790835	2.539843219
STARD4	ENSG00000164211	protein_coding	166.5488753	229.2956346	1.376746821
STRA6	ENSG00000137868	protein_coding	329.3164601	239.8784296	0.728413118
STS	ENSG00000101846	protein_coding	369.3659429	491.2266135	1.329918535
SUSD2	ENSG00000099994	protein_coding	357.8742197	469.2358703	1.311175392
SYNDIG1	ENSG00000101463	protein_coding	186.3912968	262.7314718	1.409569418
SYT15	ENSG00000204176	protein_coding	270.3150898	366.685817	1.356512569
TBX4	ENSG00000121075	protein_coding	275.6266897	198.9578983	0.72183829
TCAF2	ENSG00000170379	protein_coding	556.4314719	778.4766109	1.399052085
TCAF2P1	ENSG00000159860	processed_pseudogene	146.0762365	215.7287807	1.476823239
TGFB2	ENSG00000092969	protein_coding	31.85621453	59.90172472	1.880377992
TIMP2	ENSG00000035862	protein_coding	4582.591888	3250.506111	0.709316079
TMCC3	ENSG00000057704	protein_coding	270.6878579	183.3988562	0.677528936
TNS4	ENSG00000131746	protein_coding	528.1397761	364.8442314	0.690809986
TP53I3	ENSG00000115129	protein_coding	566.6364532	779.953691	1.376462257
TRPV3	ENSG00000167723	protein_coding	351.3926235	264.637182	0.753109668

TSPY26P	ENSG00000235217	libed_processed_pseu	302.5871393	436.8603121	1.443750429
TUBA4A	ENSG00000127824	protein_coding	479.6529825	357.2959576	0.74490511
TUBB8P7	ENSG00000261812	polymorphic_pseudogen	100.703668	156.4005374	1.55307687
UBE2L6	ENSG00000156587	protein_coding	1325.848622	963.7147141	0.726866324
UGT1A1	ENSG00000241635	protein_coding	1044.026978	571.0030408	0.546923646
UGT1A10	ENSG00000242515	protein_coding	1029.653112	563.9191013	0.547678723
UGT1A3	ENSG00000243135	protein_coding	991.9570071	546.5291858	0.550960558
UGT1A4	ENSG00000244474	protein_coding	1009.702065	552.8283336	0.547516295
UGT1A5	ENSG00000240224	protein_coding	991.3942646	545.1464124	0.549878522
UGT1A6	ENSG00000167165	protein_coding	1228.806611	660.992915	0.537914517
UGT1A7	ENSG00000244122	protein_coding	1086.917448	594.6305357	0.547079759
UGT1A8	ENSG00000242366	protein_coding	992.3168561	547.123403	0.551359578
UGT1A9	ENSG00000241119	protein_coding	992.2833595	545.530761	0.549773163
ULBP2	ENSG00000131015	protein_coding	367.6753217	275.9764059	0.750598122
VGLL3	ENSG00000206538	protein_coding	32.23711795	1.339933759	0.041564936
VSIG10L	ENSG00000186806	protein_coding	296.3208828	214.373805	0.72345156
VWA7	ENSG00000204396	protein_coding	572.7644162	405.8529982	0.708586265
XIST	ENSG00000229807	lincRNA	3359.343334	1848.559701	0.550274121
ZBED3-AS1	ENSG00000250802	antisense	225.0411007	327.5676565	1.455590358
ZBTB18	ENSG00000179456	protein_coding	95.18008118	54.65129261	0.574188338
ZDHC2	ENSG00000177108	protein_coding	105.4113775	158.5587383	1.504189984
ZDHC8P1	ENSG00000133519	libed_unprocessed_pse	206.1083463	295.1357821	1.431944836
ZNF135	ENSG00000176293	protein_coding	429.1578304	323.3089189	0.753356681
ZNF204P	ENSG00000204789	processed_pseudogen	748.8980939	486.9041246	0.650160721
ZNF486	ENSG00000256229	protein_coding	259.1865626	186.8531764	0.720921542
ZNF804A	ENSG00000170396	protein_coding	113.039986	202.4746059	1.791176848
ZSWIM5P1	ENSG00000235430	processed_pseudogen	135.1151967	200.9819804	1.487486125
	ENSG00000231699	processed_pseudogen	30.17229256	6.95662886	0.230563483
	ENSG00000244076	processed_pseudogen	33.63344761	9.301795546	0.276563844
	ENSG00000215022	antisense	58.66066374	22.71580193	0.387240793
	ENSG00000224814	antisense	64.73885888	29.13752112	0.450077768
	ENSG00000227854	processed_pseudogen	119.8292674	57.34887252	0.478588193
	ENSG00000243779	processed_pseudogen	184.489648	92.28523748	0.500219056
	ENSG00000129951	protein_coding	364.1261151	218.6344717	0.60043612
	ENSG00000259884	lincRNA	314.8526297	208.1840998	0.661211247
	ENSG00000231916	processed_pseudogen	218.3972877	153.3315821	0.702076402
	ENSG00000244255	protein_coding	3882.732346	2776.669348	0.715132824
	ENSG00000233461	antisense	260.7455918	187.945924	0.720801923
	ENSG00000198832	protein_coding	478.0504124	349.2356972	0.730541567
	ENSG00000261578	sense_overlapping	1649.634323	1237.036338	0.749885184
	ENSG00000234928	lincRNA	15.42709392	37.71041554	2.444427689
	ENSG00000203635	lincRNA	151.9400529	273.3946257	1.7993585
	ENSG00000253669	lincRNA	68.55651421	119.3415158	1.740775726
	ENSG00000224071	processed_pseudogen	86.48341154	147.1509459	1.701493307
	ENSG00000235996	antisense	81.2325813	134.0857439	1.65063995
	ENSG00000218416	processed_transcript	234.9871924	369.5012451	1.572431422
	ENSG00000235078	antisense	568.1753824	796.5354449	1.401918262
	ENSG00000245330	lincRNA	508.2002149	693.5649336	1.364747423
	ENSG00000259424	antisense	333.6313004	451.3512829	1.352844539
	ENSG00000234432	lincRNA	307.5642549	412.3967599	1.340847492
	ENSG00000229273	processed_pseudogen	330.9396088	437.4712669	1.321906642
	ENSG00000177738	sense_overlapping	510.9062593	672.710281	1.316700018
	ENSG00000170161	lincRNA	412.8244181	540.9209785	1.31029308

Supp Table 2

GOTERM_BP_FAT	Count	%	PValue
GO:0007155~cell adhesion	18	1.074626866	2.38E-04
GO:0022610~biological adhesion	18	1.074626866	2.42E-04
GO:0044057~regulation of system process	10	0.597014925	0.002273047
GO:0001501~skeletal system development	10	0.597014925	0.002814296
GO:0044259~multicellular organismal macromolecule metabolic process	4	0.23880597	0.002865926
GO:0044236~multicellular organismal metabolic process	4	0.23880597	0.004758699
GO:0045823~positive regulation of heart contraction	3	0.179104478	0.007167566
GO:0001666~response to hypoxia	6	0.358208955	0.00804856
GO:0042060~wound healing	7	0.417910448	0.008589641
GO:0070482~response to oxygen levels	6	0.358208955	0.009905971
GO:0050878~regulation of body fluid levels	6	0.358208955	0.009905971
GO:0007610~behavior	11	0.656716418	0.0116085
GO:0042127~regulation of cell proliferation	15	0.895522388	0.01382459
GO:0050817~coagulation	5	0.298507463	0.014733089
GO:0007596~blood coagulation	5	0.298507463	0.014733089
GO:0030198~extracellular matrix organization	5	0.298507463	0.015720064
GO:0000902~cell morphogenesis	9	0.537313433	0.017450109
GO:0007599~hemostasis	5	0.298507463	0.01781666
GO:0009725~response to hormone stimulus	9	0.537313433	0.020534546
GO:0044243~multicellular organismal catabolic process	3	0.179104478	0.023818905
GO:0033692~cellular polysaccharide biosynthetic process	3	0.179104478	0.023818905
GO:0000904~cell morphogenesis involved in differentiation	7	0.417910448	0.025704135
GO:0032963~collagen metabolic process	3	0.179104478	0.027374232
GO:0032989~cellular component morphogenesis	9	0.537313433	0.030891029
GO:0048545~response to steroid hormone stimulus	6	0.358208955	0.032741764
GO:0009719~response to endogenous stimulus	9	0.537313433	0.034169098
GO:0008016~regulation of heart contraction	4	0.23880597	0.034355874
GO:0010033~response to organic substance	13	0.776119403	0.034551433
GO:0050804~regulation of synaptic transmission	5	0.298507463	0.037308584
GO:0060284~regulation of cell development	6	0.358208955	0.041539004
GO:0008361~regulation of cell size	6	0.358208955	0.042269538
GO:0051969~regulation of transmission of nerve impulse	5	0.298507463	0.047356184
GO:0030335~positive regulation of cell migration	4	0.23880597	0.049301038
GO:0008285~negative regulation of cell proliferation	8	0.47761194	0.050087201
GO:0010817~regulation of hormone levels	5	0.298507463	0.051347713
GO:0030900~forebrain development	5	0.298507463	0.052373638
GO:0031644~regulation of neurological system process	5	0.298507463	0.053410753
GO:0051272~positive regulation of cell motion	4	0.23880597	0.06226363
GO:0040017~positive regulation of locomotion	4	0.23880597	0.06226363
GO:0034446~substrate adhesion-dependent cell spreading	2	0.119402985	0.062928625
GO:0033628~regulation of cell adhesion mediated by integrin	2	0.119402985	0.062928625
GO:0043062~extracellular structure organization	5	0.298507463	0.064392977
GO:0000271~polysaccharide biosynthetic process	3	0.179104478	0.064818849
GO:0030814~regulation of cAMP metabolic process	4	0.23880597	0.070082082
GO:0030334~regulation of cell migration	5	0.298507463	0.071508763
GO:0043094~cellular metabolic compound salvage	2	0.119402985	0.071591736
GO:0006928~cell motion	9	0.537313433	0.073195003
GO:0016042~lipid catabolic process	5	0.298507463	0.076467786
GO:0010648~negative regulation of cell communication	6	0.358208955	0.080000363
GO:0019934~cGMP-mediated signaling	2	0.119402985	0.080175392
GO:0008277~regulation of G-protein coupled receptor protein signaling pathway	3	0.179104478	0.080586058
GO:0007611~learning or memory	4	0.23880597	0.083459604
GO:0005976~polysaccharide metabolic process	4	0.23880597	0.083459604
GO:0044264~cellular polysaccharide metabolic process	3	0.179104478	0.08608144
GO:0030799~regulation of cyclic nucleotide metabolic process	4	0.23880597	0.086963964
GO:0010460~positive regulation of heart rate	2	0.119402985	0.088680317
GO:0031175~neuron projection development	6	0.358208955	0.088733645
GO:0042476~odontogenesis	3	0.179104478	0.088870628
GO:0001503~ossification	4	0.23880597	0.09052999
GO:0008544~epidermis development	5	0.298507463	0.090969649
GO:0006140~regulation of nucleotide metabolic process	4	0.23880597	0.092335755
GO:0048666~neuron development	7	0.417910448	0.094286717
GO:0005978~glycogen biosynthetic process	2	0.119402985	0.097107226
GO:0009250~glucan biosynthetic process	2	0.119402985	0.097107226
GO:0034330~cell junction organization	3	0.179104478	0.097395421
GO:0006811~ion transport	12	0.71641791	0.098214518

Supp Table 2			
GOTERM_CC_FAT	Count	%	PValue
GO:0044459~plasma membrane part	46	2.75	5.7E-07
GO:0044421~extracellular region part	27	1.61	2.1E-06
GO:0005886~plasma membrane	63	3.76	3.5E-06
GO:0005576~extracellular region	41	2.45	6.4E-06
GO:0005615~extracellular space	21	1.25	1.3E-05
GO:0031012~extracellular matrix	13	0.78	1.6E-04
GO:0005578~proteinaceous extracellular matrix	12	0.72	3.4E-04
GO:0030141~secretory granule	8	0.48	2.1E-03
GO:0031091~platelet alpha granule	5	0.30	2.3E-03
GO:0044420~extracellular matrix part	6	0.36	6.2E-03
GO:0005911~cell-cell junction	7	0.42	1.2E-02
GO:0005887~integral to plasma membrane	21	1.25	1.3E-02
GO:0030054~cell junction	12	0.72	1.4E-02
GO:0031226~intrinsic to plasma membrane	21	1.25	1.7E-02
GO:0042383~sarcolemma	4	0.24	2.9E-02
GO:0031982~vesicle	13	0.78	3.4E-02
GO:0044433~cytoplasmic vesicle part	6	0.36	3.9E-02
GO:0005604~basement membrane	4	0.24	4.3E-02
GO:0016023~cytoplasmic membrane-bounded vesicle	11	0.66	4.7E-02
GO:0031410~cytoplasmic vesicle	12	0.72	5.5E-02
GO:0031988~membrane-bounded vesicle	11	0.66	5.6E-02
GO:0032839~dendrite cytoplasm	2	0.12	5.8E-02
GO:0005741~mitochondrial outer membrane	4	0.24	6.0E-02
GO:0031093~platelet alpha granule lumen	3	0.18	6.2E-02
GO:0032838~cell projection cytoplasm	2	0.12	6.8E-02
GO:0060205~cytoplasmic membrane-bounded vesicle lumen	3	0.18	7.1E-02
GO:0031983~vesicle lumen	3	0.18	7.6E-02
GO:0031968~organelle outer membrane	4	0.24	8.5E-02
GO:0043025~cell soma	5	0.30	8.6E-02
GO:0070161~anchoring junction	5	0.30	9.2E-02
GO:0019867~outer membrane	4	0.24	9.3E-02
GO:0031092~platelet alpha granule membrane	2	0.12	9.5E-02

Supplementary Table 3

Cloning/mutation Primers

TRIM24-K723R-For	TGCTGGAGCCAATTCGAATAAGACAAGAAAACAG		
TRIM24-K723R-Rev	ATAAGCTTAACCGAGGTCGTA CTGGTGACC		
TRIM24-K741R-For	ATTTCCCTGTTGTTATAGTGAGGCAAGAATCAG		
TRIM24-K741R-Rev	GTGATATTGTTGTCCCTTTAGTATTTAAAAG		
qRT-PCR primers			
Gene	Species	Forward primer	Reverse primer
TRIM24	Human	GTGGATCAGCAAGCAGGAG	TTTGTCAAGAAAGGGTGTAACG
β -ACTIN	Human	GGACTTCGAGCAAGAGATGG	AGCACTGTGTTGGCGTACAG
CDH18	Human	CACCACAGCTCCATCAAGGT	TGGAGTGCAGCTTTCCAACA
PGM5	Human	CAACGGGATTGGACGACT	TCTGAGACAACATCGGGTGC
COL3A1	Human	GCAGGGTCTCCTGGTTCAA	CGGGACCCATTTGCCTTTA
FN1	Human	ACAAACACTAATGTTAATTGCCCA	GAACTCTAAGCTGGGTCTGCT
LAMB1	Human	GATTGGACGTCAGTGCAACG	CCACTATGCTAACCCAGGC
AZGP1	Human	CGACAGTAACGGGTCTCACG	TTGGTTATCTGGGCTGCTGG

Supp Table 4

List of Antibodies

1	Acetylated-lysine (Pan-Ac) (Cell signaling, 9441)
2	Actin-HRP (Cell Signaling, 5125)
3	FLAG-HRP (Sigma, A8592)
4	GAPDH (GeneTex, GTX627408)
5	H3 (Active Motif, 61277)
6	H3K23ac (Active Motif, 39131)
7	HA (Roche, 11583816001)
8	Lamin B (Santa Cruz, sc-6217)
9	p84 (GeneTex, GTX70220)
10	SUMO1 (Cell signaling, 4930)
11	SUMO2/3 (Cell signaling, 4971)
12	TRIM24 (Novus Biologicals, NB100-2597)
13	TRIM28 (KAP1) (Abcam, ab22553)
14	TRIM33 (Bethyl A301-060A)