

1 **SUPPLEMENTARY METHODS**

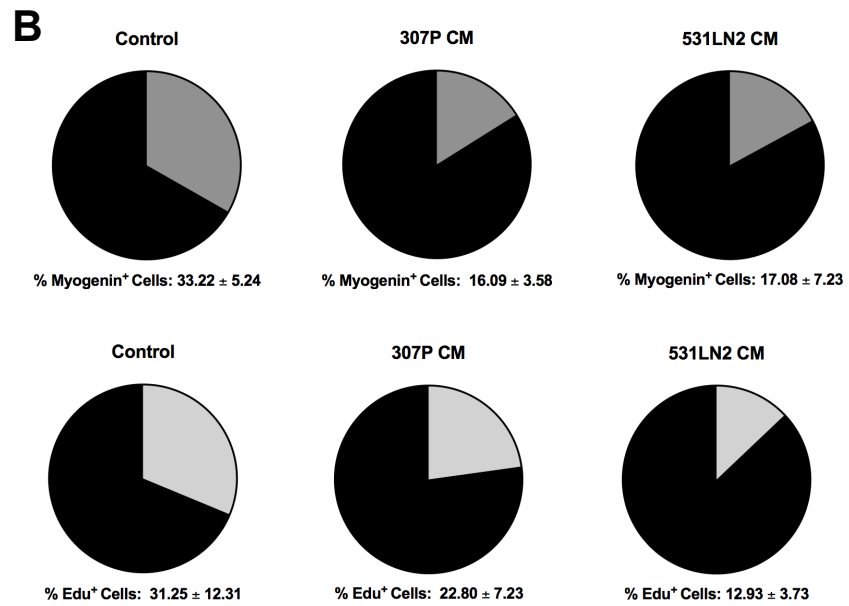
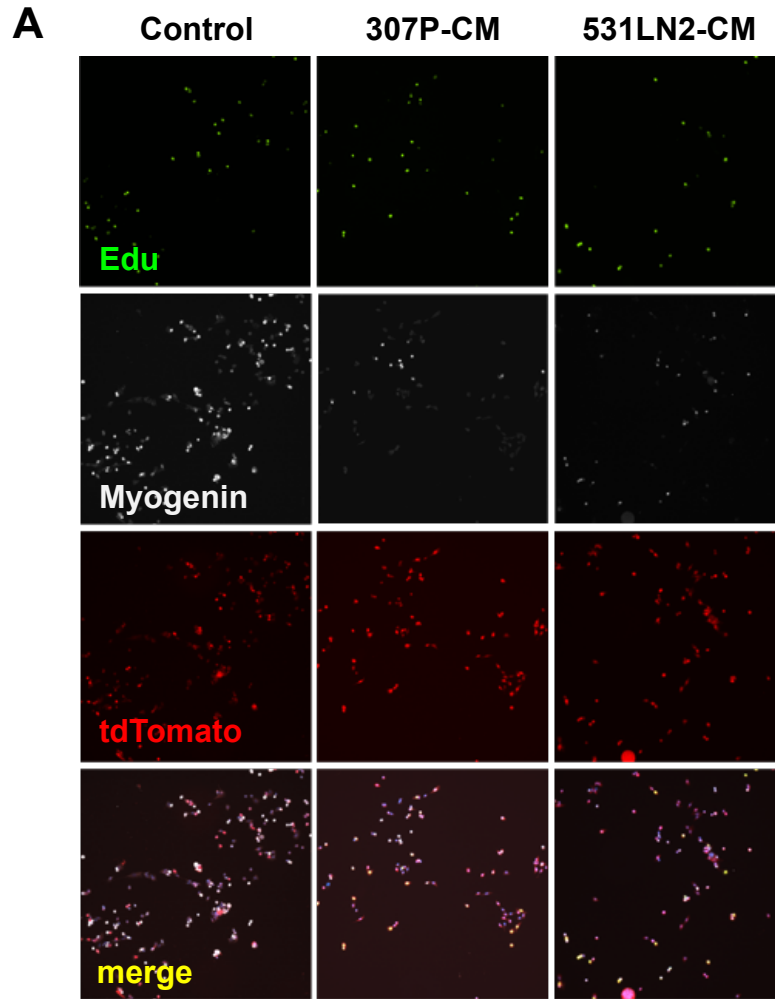
2 **Primary Myoblast Culture**

3 Primary myoblasts were harvested from Pax7^{iCreERT2}/ROSA26^{LSL-tdTomato} mice by
4 dissecting out the hind limb muscles. Tissue was minced to a fine paste and then
5 mixed with 2% w/v collagenase II (Gibco 17101-015) in F12 media and digested
6 with rotation for 1 hour at 37^o C. Digested sample was triturated with an 18G
7 needle, returned to rotate/incubate for 15 minutes, and triturated again. The
8 collagenase reaction was quenched with F12+15% horse serum, 1%
9 penicillin/streptomycin and then filtered through 100, 70 and 40 µm cell strainers
10 (Fisher 22363547). Resultant suspension was run through satellite cell negative
11 isolation columns (Miltenyi Biotech 130-042-401) and flow through was plated on
12 0.1% gelatin-coated coverslips. Satellite cells were grown in DMEM/F12 20%
13 fetal bovine serum, 10% horse serum, 1% penicillin/streptomycin, 1% chick
14 embryo extract, 0.1% amphotericin B and FGF (1:5000) for 4 days until cells
15 were adhered. On the 4th day, cultures were switched to LC-CM and allowed to
16 grow for 48 hours until clone sizes on the coverslip were at 64-128 cell stage.
17 Cells were treated with EdU for 2 hours prior to fixing. Coverslips were fixed and
18 stained for Myogenin and EdU as described previously.

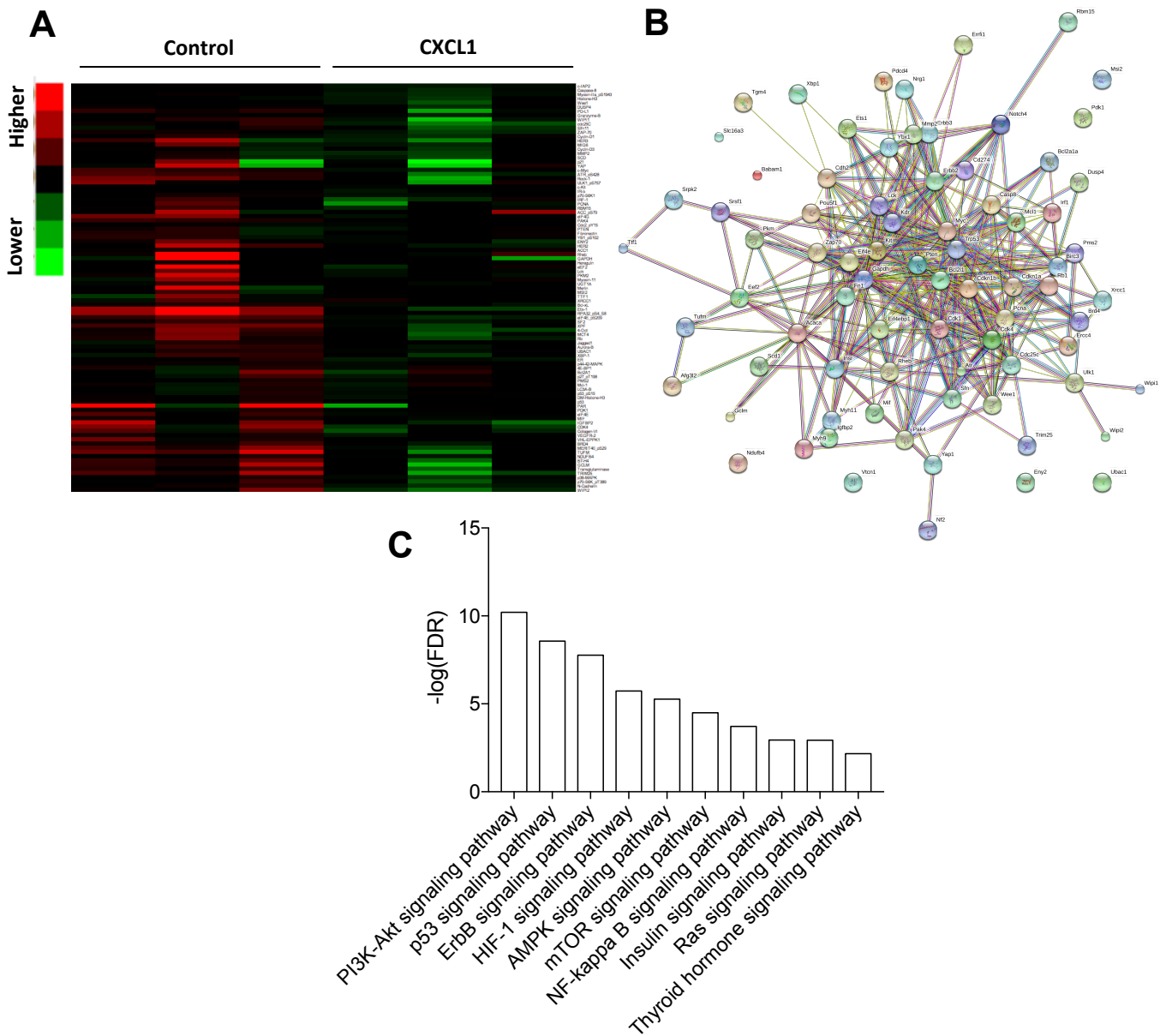
19 **Reverse phase protein array (RPPA) analysis**

20 C2C12 cells were treated with CXCL1 (as in figure 2) and protein lysates were
21 prepared 6h post-treatment according to instructions from the MD Anderson
22 Functional Proteomics Core Facility
23 ([https://www.mdanderson.org/research/research-resources/core-](https://www.mdanderson.org/research/research-resources/core-facilities/functional-proteomics-rppa-core/getting-started.html)
24 [facilities/functional-proteomics-rppa-core/getting-started.html](https://www.mdanderson.org/research/research-resources/core-facilities/functional-proteomics-rppa-core/getting-started.html)). Protein lysates
25 were quantified by BCA prior to analysis. Bioinformatics analyses were
26 performed using Gene Cluster 3.0
27 (<http://bonsai.hgc.jp/~mdehoon/software/cluster/>) and visualized using Java
28 TreeView (<http://jtreeview.sourceforge.net/>). Interaction networks and pathway
29 analyses were performed in STRING (<https://string-db.org/>).

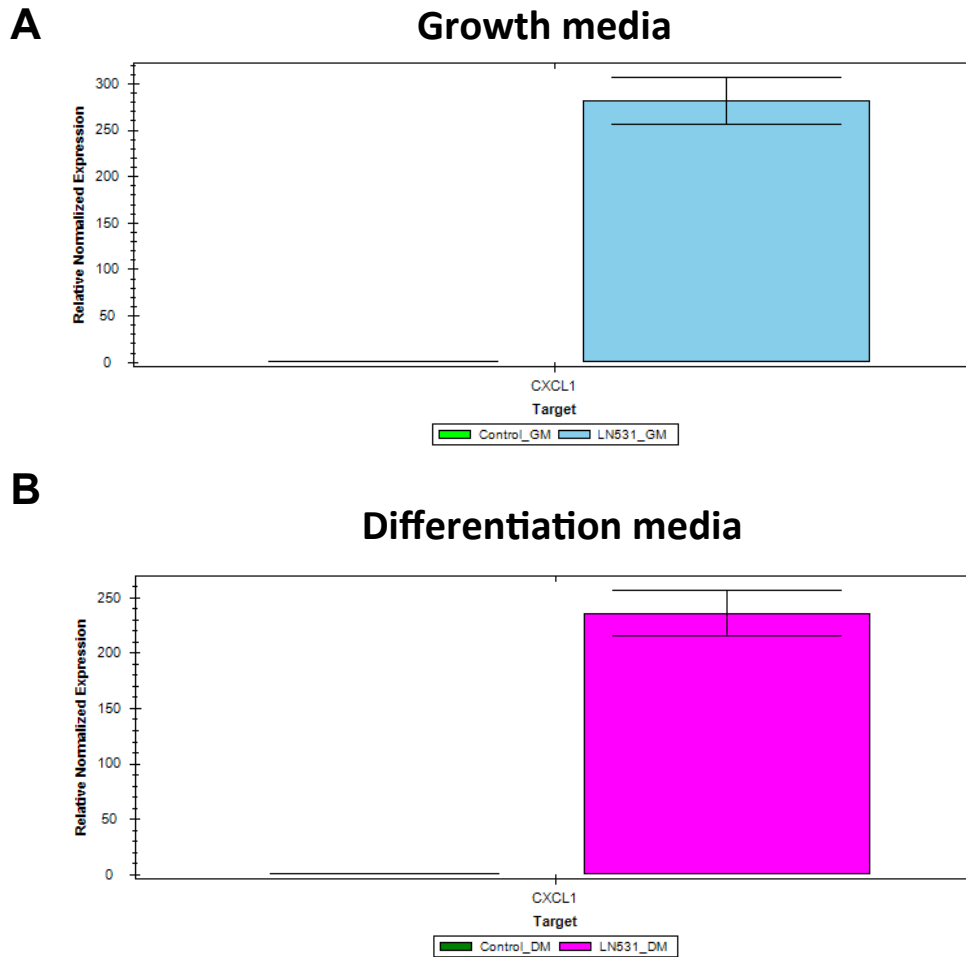
Supplementary Figure S1



Supplementary Figure S1. Tumor-derived factors impair myogenic progression of primary myoblast cell cultures. (A) Representative images of primary myoblasts from Pax7^{iCreERT2}/ROSA26^{LSL-tdTomato} mice treated with control (primary myoblast growth media), 531LN2 LC-CM, or 307P LC-CM media and stained/imaged to detect total Pax7⁺ cell number, Edu⁺ cell abundance, and Myogenin expression. **(B)** Pie graphs depicting the fraction of Myogenin^{+/-} (top) or Edu^{+/-} (bottom) cells within the Pax7⁺/tdTomato⁺ population. Myogenin levels were significantly lower in both LC-CM treatments as compared to control ($p < 0.05$ using a two-tailed paired t test). 5-7 representative fields quantified for each biological replicate (control, 307P: N=5; 531LN2: N=3) and at least 100 cells were quantified for each biological replicate.

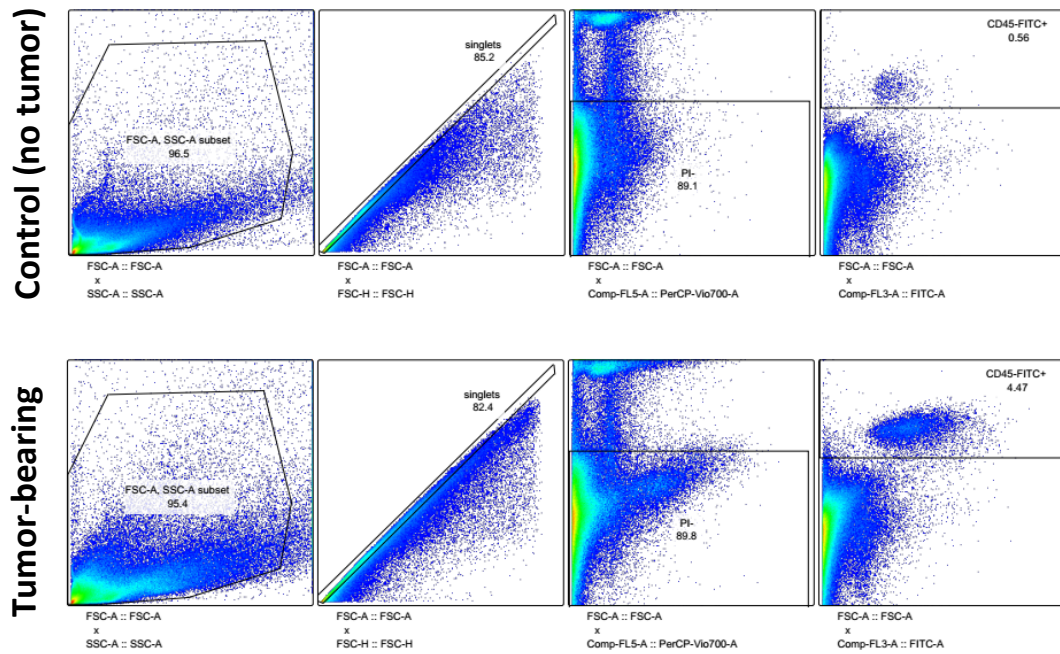


Supplementary Figure S2. Tumor-derived factors impair myogenic progression of primary myoblast cell cultures. (A) Heatmap depicting selected down regulated proteins in CXCL1- treated C2C12 cultures as determined by reverse phase protein array (RPPA) analyses. **(B)** STRING-generated protein interaction network of down-regulated proteins from (A). **(C)** A graph depicting log-transformed false discovery rate values of top KEGG annotated “signaling pathways”.

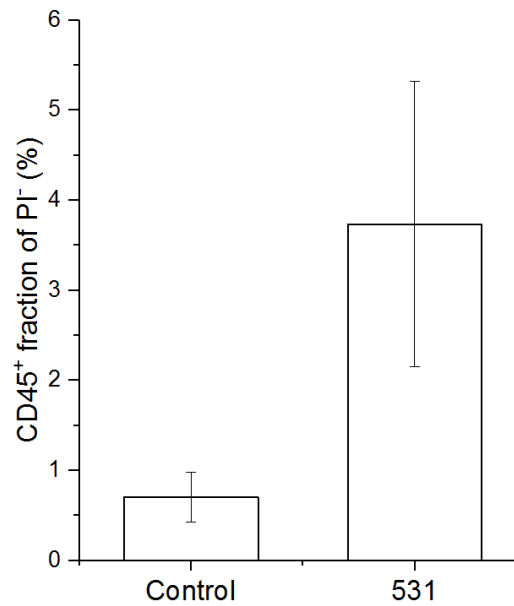


Supplementary Figure S3. Tumor-derived factors promote *cxc1* mRNA expression in muscle cells. (A) C2C12s were cultured for 4d in growth media as exposed to a control growth media or 531LN2 conditioned growth media for an additional 24h. Shown is a graph of *cxc1* mRNA expression as determined by qRT-PCR. **(B)** C2C12s were cultured for 4d in differentiation media as exposed to a control differentiation media or 531LN2 conditioned differentiation media for an additional 24h. Shown is a graph of *cxc1* mRNA expression as determined by qRT-PCR. Error bars represent the SD of n=3 experimental replicates.

A



B



Supplementary Figure S4. Tumor-bearing mice exhibit elevated CD45⁺ cells in hindlimb muscle. (A) Representative flow cytometry plots depicting CD45 cell abundance in control (top row) and 531LN2 tumor-bearing mice (bottom row). **(B)** A bar graph of CD45⁺ cell abundance (% of PI^{negative}) in control and tumor-bearing mice. Error bars represent the SD of n=5 mice.

Supplementary Table 1

List of normalized RPPA values (control vs CXCL1; SD=std deviation)

Target	control	SD	CXCL1	SD
14-3-3-beta	0.03815381	0.01442723	-0.066464	0.04975697
4-3-3-epsilon	-0.02541424	0.02290762	0.00140555	0.01816274
14-3-3-zeta	-0.0174338	0.00749574	-0.0177657	0.03519765
4E-BP1	0.0205827	0.06464331	0.00668345	0.03167115
4E-BP1_p56	0.02012838	0.01856424	0.01188807	0.03717514
5BP1	-0.0156002	0.06101067	0.02332603	0.04040187
A-Raf	-0.0336348	0.03133628	0.00740939	0.03214634
ACC1	0.02653805	0.03848648	-0.00704584	0.01220376
ACC_p579	0.09797503	0.22548094	0.09653952	0.16712943
ADAR1	-0.0878174	0.0853535	0.02286576	0.00879138
Akt	0	0	0.01109402	0.06325718
Akt_p5473	-0.091795	0.17258072	0.02707223	0.04689047
Akt_pT308	0.02391163	0.12078071	-0.0317837	0.02904862
MPK-a2_p534	-0.0698907	0.04874567	0.02287544	0.01898958
AMPKa	-0.0332367	0.00717933	0.01419893	0.01400447
AMPKa_pT17	0.085275	0.16672617	-0.1023525	0.29436266
Annexin-I	-0.0118735	0.08134258	-0.0032767	0.01201627
Annexin-VII	-0.0295841	0.1085457	-0.0184029	0.0318748
AR	-0.0474804	0.04117454	0.00693823	0.02000858
ARID1A	-0.0415763	0.20311289	0.11610217	0.26569096
Atg3	-0.0142928	0.0707929	-0.0265983	0.03097983
Atg7	0	0	-0.0851042	0.11586887
ATM	0.00519995	0.08428045	0.00571083	0.00989144
ATR	0.07276101	0.12620571	-0.0693667	0.43726168
ATR_p5428	0.10825702	0.03617716	-0.0950249	0.12231762
Aurora-B	0.05877266	0.06294819	-0.0120229	0.02082431
Axl	-0.0079564	0.01378097	0.00467181	0.25628511
b-Actin	-0.0197255	0.0880106	0.00663489	0.02132325
b-Catenin	-0.0007121	0.01764878	0.01224111	0.06890831
atenin_pT41	-0.019967	0.02231411	0.04179813	0.04509307
B-Raf	-0.0260757	0.02335783	0.02351732	0.01670899
B-Raf_p5445	-0.0204263	0.06628456	0.02935673	0.05403538
B7-H4	0.10524505	0.07281512	-0.0631389	0.10935973
Bad_p5112	-0.0377918	0.04204904	0.0518439	0.03025973
Bak	-0.041063	0.00371347	0.01248026	0.00792062
BAP1	-0.0485262	0.04849381	-0.0431172	0.07468125
Bax	0.00408858	0.02533224	0.0221379	0.03834396
Bcl-xL	0.05021764	0.02397173	-0.0170694	0.01742228
Bcl2	-0.0327306	0.05669107	-0.0106609	0.03631121
Bcl2A1	0.05099225	0.1585495	-0.0120076	0.09653042
Bcln	-0.0150567	0.02609674	-0.0084206	0.02841412
Bid	-0.0008632	0.00145907	0.00571793	0.01621265
Bim	-0.0050409	0.01254848	-0.0102316	0.01772216
BIP-GRP78	-0.02071008	0.02566008	-0.0446668	0.07736514
BRD4	0.06506631	0.0544017	0.0151787	0.02629029
c-Abl	-0.2723326	0.25164207	0.00605515	0.01048782
c-IP2A	0.0026211	0.00453987	-0.0339901	0.01271437
c-Jun_p573	-0.0262251	0.04991334	0.01802405	0.02823622
c-Kit	0	0	-0.0038322	0.00664822
c-Met	0.00220001	0.02638385	-0.0174992	0.01617011
ct_pY1234_Y	-0.089852	0.03097532	0.01351326	0.01696947
c-Myc	0.08156235	0.04136915	-0.0332354	0.03571196
C-Raf	-0.0249709	0.04457299	0.01206802	0.02088996
C-Raf_p5338	-0.0643737	0.02980805	0.01974682	0.02429286
Caspase-3	-0.0008415	0.0377566	-0.0237981	0.03178928
spase-7-cleav	0.01010338	0.0310304	-0.0022921	0.00397002
Caspase-8	0	0	-0.0407842	0.03328553
Caveolin-1	-0.0036411	0.00630652	-0.020613	0.07981277
CD171	-0.0329216	0.03878572	-0.0784952	0.18418679
CD26	-0.0585527	0.10146118	0.01196969	0.03269735
CD29	-0.0262708	0.04550229	-0.0123383	0.03142721
CD31	-0.0223074	0.05664854	-0.0146087	0.01265364
CD44	-0.0266001	0.04607265	-0.057686	0.05771131
CD49b	-0.0084509	0.05072028	-0.0081942	0.01419227
cdc25C	0.04169363	0.0524452	-0.1503458	0.09196145
Cdc2_pY15	0.00043125	0.01458556	-0.0036044	0.00624307
CDK1	-0.0216401	0.07359216	0.00672905	0.01165506
CDK2	-0.0448124	0.07544595	-0.0075842	0.01313628
CDK4	0.15839485	0.1756707	-0.0667024	0.06143417
Chk1	-0.0289603	0.11732359	-0.0094757	0.10475643
Chk1_pS296	-0.0085734	0.08210648	-0.0135951	0.06907213
Chk2	0.00154638	0.08453818	-0.075714	0.13654433
Chk2_pT68	-0.0859314	0.08162531	0.00356622	0.01923311
Claudin-7	-0.1000438	0.11457206	0.0109356	0.02087269
COG3	-0.0420986	0.05545514	-0.013326	0.00230812
Collagen-VI	0.0895797	0.10548706	-0.0731793	0.07889213
Connexin-43	0.03047109	0.05277747	-0.0132323	0.07644909
Cox-IV	0.14883311	0.17174249	-0.0906231	0.15696381
Cox2	-0.0078886	0.01366348	0.00228928	0.02994783
Creb	-0.0340303	0.03520207	0.0084719	0.00964444
Cyclin-B1	-0.0647366	0.05166051	0	0
Cyclin-D1	0.01612438	0.04360313	-0.0410461	0.05142554
Cyclin-D3	-0.0130998	0.03840284	-0.0325455	0.0563704
Cyclin-E1	0.0091941	0.01713837	-0.0417591	0.06480925
Cytopliphin-F	-0.0140714	0.01312128	-0.0435184	0.03237528
D-a-Tubulin	0.02168477	0.03755913	0.0286642	0.02774803
DJ1	-0.067739	0.07956212	0.0017321	0.01914449
M-Histone-H	0.0215661	0.02584953	-0.0108381	0.01666839
I-K9-Histone	-0.0091829	0.03578413	0	0
DUSP4	0.00980363	0.00878775	-0.0284206	0.04922591
E-Cadherin	-0.0898502	0.10020654	0	0
E2F1	-0.0094244	0.01632352	-0.019999	0.02604446
eEF2	0.3428896	0.59291011	-0.0184491	0.0547246
eEF2K	-0.0760169	0.02978882	0	0
EGFR	-0.0914419	0.07427189	0	0
EGFR_pY117	-0.0116513	0.01484273	-0.0152619	0.02643435
eIF4E	0.08947384	0.08165839	-0.0074446	0.00808616
eIF4E_pS209	0.13466186	0.05047422	-0.0524289	0.03462917
eIF4G	0.15746667	0.13737887	-0.008448	0.02001538
Etk1_pS383	-0.0384585	0.034238	-0.0109427	0.03083884
EMA	-0.0153511	0.07325739	0.00146527	0.00253792
ENVY2	0.07808606	0.11487175	-0.0322415	0.04568163
ER	0.02284734	0.0362103	-0.034357	0.01733744
ER-a_pS118	-0.0631472	0.03028256	0.00396407	0.01925791
ERCC1	-0.0565281	0.09790955	0.00014741	0.18483294
ERCC5	-0.1181381	0.37497208	0	0
Ets-1	0.38433224	0.18095553	-0.0782596	0.06784968
FAK	0.00086573	0.04887692	0	0
FAK_pY397	-0.0179528	0.03318227	0.02601075	0.07584853
FASN	-0.014213	0.04061756	0.04310315	0.06313933
Fibronectin	0.02369972	0.02746011	0.00557144	0.00965002
FoxM1	0	0	-0.0333103	0.06164085
FoxO3a	-0.0038311	0.02038769	-0.0331183	0.08402958
G3a_pS318_S	-0.0219159	0.07228663	0.00137653	0.00238422
FR-1	0.1558986	0.15563268	-0.153537	0.26593383
G6PD	-0.0066104	0.01144951	-0.0389456	0.05350693
Gab2	-0.0440562	0.07409373	0.03565658	0.0419822
GAPDH	0.56347395	0.12035038	-0.10138	0.17595299
GATA3	-0.0301364	0.06578105	0.00026636	0.01268653
GCLM	0.16234055	0.16489565	-0.1244785	0.21560314
GCN5L2	-0.0058414	0.01011762	0.00529939	0.03114279
lutamide-D1	0.0080238	0.0108539	-0.0947962	0.03201699
Glutaminase	-0.0050918	0.00881929	-0.0200205	0.06534163
Granzyme-B	0.00411986	0.00713581	-0.022392	0.02918233
GSK-3a-b	0.00399157	0.0069136	0.00464578	0.04505832
K-3a-b_pS21	-0.0498239	0.12132553	0.01013843	0.01756028
Gys	-0.0292131	0.20037607	0.08794355	0.13481503
Gys_pS641	-0.1115592	0.18862595	0.08497819	0.0908867
H2AX_pS140	-0.0143652	0.03495963	0.00429147	0.03707133
HER2	0.16151164	0.19024741	-0.293024	0.02561865
HER2_pY1248	-0.0273033	0.05049267	0.05871192	0.0696102
HER3	0.09885369	0.23317973	-0.1045518	0.13468474
HER3_pY1288	-0.001692	0.07579816	0.02960036	0.03636436
Heretulin	0.012403	0.02292593	-0.0025651	0.0044429
HESt1	-0.0034117	0.05232563	-0.049053	0.00849617
Hexokinase-1	-0.0269148	0.03285423	-0.0204722	0.06340757
Hif-1-alpha	-0.070649	0.02647478	0.00691618	0.01197917
Histone-H3	-0.0061747	0.01069487	-0.0472657	0.05159175
HSP27	-0.00779587	0.04143888	-0.0779215	0.08796247
HSP27_pS82	-0.0536509	0.0923603	0.17351101	0.26291935
HSP70	-0.0027832	0.03013924	0.02028748	0.0293037
R_pY1135_Y	0.03180273	0.05508395	0.02547671	0.0372365
IGFBP2	0.19817697	0.18692855	-0.0921489	0.10394795
IGFBP3	-0.0530058	0.0523233	0.00928481	0.0239356
INPP4B	-0.0614416	0.0408073	0.01147309	0.01987197
IR-b	0.00342912	0.0059394	-0.014877	0.02182354
IRF-1	0.04137773	0.06725349	-0.0733774	0.09741215
IRS1	-0.0707133	0.1083761	0.00655229	0.00570853
Jagged1	0.02462189	0.05474855	0	0
Jak2	-0.0220387	0.14043417	0.01571046	0.02721132
JNK2	-0.047405	0.04292028	0.0269273	0.03416427
K_pT183_Y1	0.04667688	0.11340305	0.00455442	0.05461864
L-CA3-B	-0.0014784	0.04696996	-0.0090844	0.01573465
Lck	0.06811133	0.11797229	-0.0138542	0.01562331
LDHA	-0.0973931	0.06871215	0.00013168	0.009915725
LRP_pS149C	-0.0361687	0.07844571	0.01052426	0.01572536
PK_pT202_Y	-0.0517102	0.1884161	-0.0208119	0.04278123
Mcl-1	0.01522167	0.05239894	0.00089787	0.04700712
MCT4	0.11312172	0.10672625	-0.0642113	0.09947457
MDM2_pS16	-0.0402798	0.2862681	0	0
MEK1	-0.0494647	0.05922443	0.07003971	0.04846928
K1_pS217_Y	-0.0264765	0.06015136	-0.0022139	0.01917297
MERIT40_pS2	0.15038475	0.10673402	-0.0481426	0.07244001
Merlin	0.11241487	0.29320888	-0.0004488	0.00077732
MIF	0.02990708	0.02611416	-0.0090199	0.00805716
MIG6	0.05143543	0.1281801	-0.0356765	0.03267798
MMP2	-0.0183706	0.06350029	-0.066377	0.0623947
Mnk1	-0.082367	0.01137503	0	0
MSH6	-0.1384334	0.13403279	0.00498907	0.00864132
MSI2	0.01992902	0.10196906	-0.0003683	0.00063788
mTOR	-0.0015503	0.00179438	0.01221345	0.01229985
nTOR_pS244	-0.0101524	0.01758449	0.07976109	0.13194032
Mysin-11	0.08217239	0.17504432		