

Table 5 Pathway analysis of GS87, SB and Li from gene microarray study

GS87 Pathway Analysis

Upstream Regulator	Molecule Type	Activation z-score	p-value of overlap	Mechanistic Network
IL26	cytokine	2	1.90E-05	338 (17)
MSGN1	transcription regulator	2	4.09E-05	299 (10)
PADI2	enzyme	2	6.38E-03	381 (19)
TCF12	transcription regulator	2	7.45E-03	340 (20)
Angiotensin II receptor type 1	group	2	1.02E-02	
EREG	growth factor	2	1.02E-02	
oxysterol	chemical	2	1.02E-02	
TARDBP	transcription regulator	2	1.26E-02	
RAPGEF3	other	2	1.53E-02	
HISTONE	group	2	1.86E-02	
CYBB	enzyme	2	1.86E-02	
CHADL	other	2	6.25E-02	
CSF3	cytokine	2.001	1.83E-16	384 (20)
ceruletide	biologic drug	2.007	8.94E-05	341 (20)
RNASE2	enzyme	2.02	2.31E-03	262 (19)
streptozocin	chemical drug	2.021	1.43E-06	355 (20)
JAK1	kinase	2.022	6.83E-09	256 (16)
sulindac sulfide	chemical drug	2.026	2.92E-02	
PDX1	transcription regulator	2.03	1.22E-05	411 (18)
TNFRSF8	transmembrane receptor	2.031	1.29E-05	189 (12)
cadmium	chemical toxicant	2.031	1.38E-03	282 (18)
KLF6	transcription regulator	2.032	6.16E-08	355 (16)
Tlr	group	2.032	8.06E-08	344 (18)
CCL2	cytokine	2.034	2.16E-05	264 (18)
IL7	cytokine	2.035	6.29E-06	386 (24)
MYOD1	transcription regulator	2.037	2.79E-04	381 (24)
MAPKAPK2	kinase	2.037	3.12E-04	335 (20)
paclitaxel	chemical drug	2.038	3.42E-16	374 (19)
cephaloridine	chemical drug	2.041	1.64E-02	
SMAD3	transcription regulator	2.044	5.66E-10	454 (19)
PRL	cytokine	2.051	5.09E-11	437 (24)
25-hydroxycholesterol	chemical reagent	2.054	1.55E-05	386 (21)
Ras	group	2.055	1.54E-06	341 (18)
BMP6	growth factor	2.062	3.10E-06	476 (24)
lysophosphatidic acid	chemical	2.063	2.43E-07	393 (18)
lfnar	group	2.064	2.67E-07	369 (16)
GDF2	growth factor	2.077	1.89E-06	352 (19)

PRKCZ	kinase	2.078	2.66E-05	294 (18)
NFKB1	transcription regulator	2.085	5.59E-13	330 (12)
RET	kinase	2.086	1.19E-05	267 (15)
prostaglandin E2	chemical	2.087	4.53E-11	412 (14)
phenylbutazone	chemical drug	2.089	1.02E-03	222 (13)
RHOA	enzyme	2.093	3.47E-05	381 (18)
LGALS1	other	2.095	7.11E-07	378 (19)
SASH1	other	2.111	1.09E-03	252 (16)
3,3'-diindolylmethane	chemical drug	2.116	9.16E-05	454 (26)
BRCA1	transcription regulator	2.119	7.90E-05	387 (15)
NEDD9	other	2.121	4.45E-04	349 (21)
ARHGAP21	other	2.121	1.54E-03	314 (16)
BTNL2	transmembrane receptor	2.121	4.17E-02	
PPIF	enzyme	2.121	1.24E-01	
IFNA2	cytokine	2.128	4.44E-12	298 (16)
alitretinoin	chemical drug	2.128	1.27E-05	420 (19)
CX3CL1	cytokine	2.13	1.32E-05	343 (19)
Fc gamma receptor	group	2.13	2.01E-05	227 (18)
FOXC2	transcription regulator	2.132	7.50E-04	383 (23)
acetaldehyde	chemical	2.135	6.03E-06	324 (17)
PLAU	peptidase	2.137	9.62E-07	345 (19)
FOXO4	transcription regulator	2.14	9.34E-06	382 (19)
heme	chemical	2.149	1.49E-06	376 (16)
delta-9-tetrahydrocannabinol	chemical drug	2.15	2.64E-03	386 (22)
cyclic AMP	chemical	2.151	1.23E-05	437 (19)
DDX58	enzyme	2.151	6.67E-03	253 (16)
MOG	other	2.153	1.87E-04	368 (23)
leukotriene B4	chemical	2.157	4.38E-09	304 (19)
N-acetylsphingosine	chemical reagent	2.159	1.80E-03	346 (23)
CD44	enzyme	2.162	4.90E-08	429 (22)
NfkB-RelA	complex	2.163	1.32E-05	384 (17)
dimethyl sulfoxide	chemical drug	2.164	1.42E-07	382 (17)
nickel chloride	chemical toxicant	2.165	4.09E-05	315 (17)
MAPK8	kinase	2.168	3.65E-05	391 (19)
RIPK1	kinase	2.169	4.84E-03	246 (19)
BSG	transporter	2.173	1.86E-02	
PLA2G4A	enzyme	2.174	2.25E-04	294 (19)
PYCARD	transcription regulator	2.183	4.46E-05	330 (18)
TGFA	growth factor	2.183	7.21E-05	392 (16)
IGF2	growth factor	2.183	1.24E-04	400 (19)
chrysotile asbestos	chemical toxicant	2.183	8.58E-03	409 (18)

PIK3CG	kinase	2.184	7.87E-04	293 (20)
lauric acid	chemical	2.187	7.49E-04	320 (17)
diallyl disulfide	chemical	2.189	1.20E-02	
C5	other	2.195	1.41E-03	232 (16)
MAPK10	kinase	2.197	1.37E-04	311 (19)
pentylentetrazol	chemical drug	2.198	3.50E-04	364 (22)
TET1	other	2.198	3.91E-03	255 (16)
fulvestrant	chemical drug	2.2	3.17E-05	463 (21)
NCR2	transmembrane receptor	2.2	1.41E-03	325 (19)
LCK	kinase	2.2	4.06E-03	380 (22)
titanium dioxide	chemical drug	2.201	1.39E-02	
cytarabine	chemical drug	2.205	5.79E-04	267 (22)
peroxynitrite	chemical toxicant	2.207	1.04E-03	352 (21)
DDIT3	transcription regulator	2.208	5.29E-03	427 (23)
AIMP1	cytokine	2.209	2.53E-07	266 (18)
IL3	cytokine	2.21	1.12E-09	336 (20)
RORC	nuclear receptor	2.213	8.65E-04	273 (18)
Raf	group	2.213	2.31E-03	402 (21)
IL17a dimer	complex	2.214	5.92E-03	251 (17)
D-galactosamine	chemical	2.215	7.60E-07	359 (14)
2-mercaptoacetate	chemical	2.216	3.91E-03	329 (20)
PAX6	transcription regulator	2.216	1.30E-01	
8-hydroxyguanine	chemical	2.219	2.23E-06	322 (12)
NAMPT	cytokine	2.219	9.03E-06	268 (12)
NTRK1	kinase	2.219	8.94E-05	324 (23)
ACVRL1	kinase	2.219	1.86E-04	395 (24)
lymphotoxin-alpha1-beta2	complex	2.219	5.22E-04	374 (21)
diosgenin	chemical	2.219	7.17E-03	356 (19)
letrozole	chemical drug	2.219	1.02E-02	
RETN	other	2.222	2.64E-04	344 (19)
USP7	peptidase	2.224	1.52E-04	339 (19)
uric acid	chemical	2.225	9.99E-06	263 (16)
3M-002	chemical reagent	2.23	1.41E-03	250 (17)
domoic acid	chemical toxicant	2.232	4.09E-05	381 (20)
OGG1	enzyme	2.233	2.23E-06	343 (17)
TET2	other	2.236	7.20E-07	99 (8)
IL22	cytokine	2.236	2.05E-04	242 (17)
D-sphingosine	chemical	2.236	2.25E-04	282 (17)
7-ketocholesterol	chemical	2.236	2.44E-03	335 (16)
HOXA5	transcription regulator	2.236	3.11E-03	412 (20)
RNASE1	enzyme	2.236	3.91E-03	231 (18)

SEMA7A	transmembrane receptor	2.236	4.84E-03	438 (19)
5-fluorouracil	chemical drug	2.238	3.00E-04	390 (20)
CCL11	cytokine	2.248	1.36E-03	254 (12)
IL32	cytokine	2.26	7.16E-05	276 (16)
methamphetamine	chemical drug	2.263	1.83E-05	311 (19)
ETS1	transcription regulator	2.266	8.62E-05	467 (25)
vancomycin	biologic drug	2.266	1.24E-04	374 (21)
3-deazaneplanocin	chemical drug	2.27	1.76E-05	231 (8)
vinblastine	chemical drug	2.272	5.64E-06	257 (16)
CD40	transmembrane receptor	2.274	2.52E-10	379 (17)
dinoprost	chemical	2.282	1.57E-06	344 (20)
histamine	chemical	2.286	5.36E-07	287 (20)
Mapk	group	2.287	6.33E-09	391 (19)
DETA-NONOate	chemical reagent	2.287	6.02E-06	263 (16)
Ni2+	chemical reagent	2.287	1.89E-05	374 (19)
TNFRSF1B	transmembrane receptor	2.292	1.38E-03	276 (18)
CD2	transmembrane receptor	2.294	2.11E-02	
okadaic acid	chemical toxicant	2.299	6.98E-11	341 (18)
FN1	enzyme	2.301	7.07E-08	393 (21)
JAK2	kinase	2.303	6.04E-11	375 (15)
PTPRJ	phosphatase	2.309	1.93E-06	338 (19)
NUPR1	transcription regulator	2.309	5.00E-05	423 (23)
IFNGR1	transmembrane receptor	2.313	1.19E-05	251 (16)
acetaminophen	chemical drug	2.316	7.47E-07	281 (15)
Ifn gamma	complex	2.323	2.23E-06	360 (18)
Pam3-Cys-Ser-Lys4	chemical reagent	2.327	2.42E-08	253 (16)
triclosan	chemical drug	2.333	4.71E-08	347 (16)
EHF	transcription regulator	2.333	7.98E-03	263 (18)
DOCK8	other	2.333	9.55E-03	247 (17)
PRKCE	kinase	2.338	2.54E-07	287 (19)
RICTOR	other	2.338	5.12E-01	
IL17C	cytokine	2.346	1.10E-05	251 (20)
nitroprusside	chemical drug	2.348	2.94E-06	317 (17)
formaldehyde	chemical	2.351	4.71E-04	369 (23)
linoleic acid	chemical	2.353	3.83E-04	379 (20)
IL3	cytokine	2.356	1.00E-12	375 (21)
ETV4	transcription regulator	2.356	9.13E-04	440 (23)
MAP2K1/2	group	2.365	6.66E-09	376 (20)
IL17RA	transmembrane receptor	2.372	1.66E-07	242 (13)
PDGFB	growth factor	2.372	4.80E-07	324 (18)
colchicine	chemical drug	2.374	5.31E-02	

IL23A	cytokine	2.375	4.82E-03	348 (24)
JUN	transcription regulator	2.376	5.40E-10	332 (17)
JUNB	transcription regulator	2.377	1.66E-05	288 (18)
hyaluronic acid	chemical	2.383	4.70E-09	370 (18)
reactive oxygen species	chemical toxicant	2.387	1.80E-07	329 (16)
sphingosine-1-phosphate	chemical	2.387	1.72E-05	369 (19)
methylnitronitrosoguanidine	chemical toxicant	2.39	3.40E-03	427 (21)
PLAUR	transmembrane receptor	2.396	8.13E-06	352 (16)
genistein	chemical drug	2.398	1.24E-19	369 (17)
C5AR1	g-protein coupled receptor	2.399	1.45E-04	265 (15)
CXCL8	cytokine	2.401	1.29E-07	341 (19)
TAC1	other	2.401	9.50E-05	286 (19)
romidepsin	biologic drug	2.404	6.90E-08	415 (21)
S1PR2	g-protein coupled receptor	2.404	6.71E-05	272 (17)
MAPK13	kinase	2.404	4.15E-04	337 (22)
gentamicin	chemical drug	2.405	1.59E-09	388 (17)
Pro-inflammatory Cytokine	group	2.408	6.37E-05	398 (16)
CXCL2	cytokine	2.408	1.03E-04	281 (18)
IL12 (family)	group	2.409	1.60E-04	374 (21)
S100A9	other	2.412	9.13E-04	392 (21)
SYK	kinase	2.412	1.89E-02	
monocrotaline	chemical toxicant	2.414	1.63E-03	389 (19)
panobinostat	chemical drug	2.417	1.88E-03	402 (23)
MAPK12	kinase	2.418	2.17E-04	237 (17)
TLR5	transmembrane receptor	2.42	2.72E-03	279 (17)
EPHB1	kinase	2.429	3.53E-06	318 (23)
TRPV4	ion channel	2.429	1.20E-03	295 (18)
nitroarginine	chemical reagent	2.429	2.82E-03	331 (19)
EDNRA	transmembrane receptor	2.433	4.66E-06	433 (22)
CFB	peptidase	2.433	1.03E-04	325 (21)
CD40LG	cytokine	2.437	3.22E-19	347 (16)
benzo(a)pyrene	chemical toxicant	2.447	1.67E-06	345 (18)
arachidonic acid	chemical	2.447	9.99E-06	346 (20)
LY-2510924	biologic drug	2.447	1.42E-05	
ST3-Hel2A-2	chemical reagent	2.449	7.43E-06	260 (15)
BTC	growth factor	2.449	1.42E-05	402 (18)
nitric oxide	chemical	2.451	3.55E-09	387 (16)
ceramide	chemical	2.457	5.48E-07	373 (19)
TGFB3	growth factor	2.458	6.95E-03	398 (19)
KLF4	transcription regulator	2.462	1.22E-04	424 (21)
camptothecin	chemical drug	2.475	4.19E-18	281 (15)

Lh	complex	2.477	2.13E-06	452 (20)
TFEB	transcription regulator	2.482	8.13E-06	179 (7)
F3	transmembrane receptor	2.493	4.34E-06	254 (18)
Map3k7	kinase	2.494	1.23E-06	420 (23)
trovafloxacin	chemical drug	2.496	4.37E-05	417 (16)
SAMSN1	other	2.5	1.80E-05	367 (16)
C5	cytokine	2.501	1.96E-13	389 (17)
IGF1	growth factor	2.502	4.08E-11	379 (17)
cocaine	chemical drug	2.509	1.06E-06	396 (24)
thioacetamide	chemical toxicant	2.511	1.59E-05	399 (19)
tamoxifen	chemical drug	2.515	3.47E-08	398 (22)
Pkc(s)	group	2.517	3.22E-09	388 (16)
5-azacytidine	chemical drug	2.529	8.15E-04	475 (21)
CREB1	transcription regulator	2.535	1.49E-08	427 (26)
Pam3-Cys	chemical toxicant	2.538	1.81E-05	240 (16)
ethionine	chemical toxicant	2.538	2.33E-05	192 (7)
2-bromoethylamine	chemical reagent	2.538	1.87E-04	192 (7)
CAMP	other	2.539	8.86E-07	340 (19)
VitaminD3-VDR-RXR	complex	2.547	1.07E-04	377 (22)
IRF5	transcription regulator	2.547	8.69E-03	327 (17)
ELANE	peptidase	2.55	1.75E-09	328 (20)
ozone	chemical toxicant	2.55	3.62E-07	292 (18)
SYVN1	transporter	2.558	1.73E-06	
Tnf (family)	group	2.564	1.55E-04	278 (17)
PGF	growth factor	2.565	2.66E-05	275 (18)
Akt	group	2.574	1.90E-10	335 (15)
IL21	cytokine	2.581	2.02E-06	361 (19)
GAST	other	2.582	1.66E-04	356 (22)
LEP	growth factor	2.583	6.54E-10	378 (18)
IL17F	cytokine	2.586	4.71E-04	279 (15)
PTK2	kinase	2.586	3.19E-03	410 (21)
PTGS2	enzyme	2.592	7.42E-06	349 (17)
trichostatin A	chemical drug	2.593	4.14E-11	405 (22)
FGF10	growth factor	2.596	7.65E-05	325 (16)
GNRH1	other	2.597	2.84E-02	
carbamylcholine	chemical drug	2.602	3.19E-03	335 (21)
PI3K (family)	group	2.606	2.48E-10	350 (20)
MAP3K1	kinase	2.606	4.29E-04	268 (17)
bryostatin 1	chemical drug	2.61	2.87E-04	388 (23)
SELP	transmembrane receptor	2.617	6.79E-09	393 (18)
cholecalciferol	chemical	2.623	5.31E-06	465 (25)

NGF	growth factor	2.623	8.15E-05	342 (18)
CpG ODN 1668	chemical reagent	2.626	5.00E-04	258 (19)
resiquimod	chemical drug	2.637	9.90E-08	258 (15)
KLK5	peptidase	2.646	2.01E-05	316 (21)
calyculin A	chemical toxicant	2.646	4.46E-05	352 (18)
sodium arsenite	chemical drug	2.663	3.94E-08	343 (18)
SPI1	transcription regulator	2.665	1.22E-15	380 (25)
fluticasone	chemical drug	2.676	4.77E-17	298 (17)
HRAS	enzyme	2.677	3.48E-14	447 (21)
MIF	cytokine	2.682	2.62E-06	317 (19)
SIM1	transcription regulator	2.683	7.95E-03	355 (23)
Fcer1	complex	2.689	1.06E-05	364 (20)
cisplatin	chemical drug	2.695	1.87E-16	468 (21)
TRAF6	enzyme	2.695	5.29E-03	297 (14)
norepinephrine	chemical	2.712	3.16E-04	271 (17)
Fibrinogen	complex	2.715	4.71E-07	284 (17)
ITK	kinase	2.728	3.21E-03	398 (20)
arsenite	chemical toxicant	2.738	1.68E-06	365 (20)
TYROBP	transmembrane receptor	2.739	1.41E-08	330 (20)
CTNNB1	transcription regulator	2.743	8.93E-06	372 (24)
MAP2K3	kinase	2.76	1.10E-05	334 (18)
CYP2E1	enzyme	2.762	3.91E-06	314 (19)
AREG	growth factor	2.764	8.74E-05	399 (19)
NADPH oxidase	complex	2.765	1.63E-07	312 (14)
N-formyl-Met-Leu-Phe	chemical reagent	2.765	2.64E-04	205 (14)
carrageenan	chemical	2.766	5.65E-07	385 (23)
MAPK7	kinase	2.768	2.01E-05	304 (24)
Tgf beta	group	2.776	1.02E-07	345 (18)
methyl methanesulfonate	chemical toxicant	2.777	1.54E-03	375 (17)
SRC (family)	group	2.778	7.16E-05	369 (23)
IRF6	transcription regulator	2.779	2.18E-04	228 (19)
Ccl2	cytokine	2.781	1.09E-04	348 (16)
F2R	g-protein coupled receptor	2.782	7.15E-06	357 (18)
mycophenolic acid	chemical drug	2.793	5.78E-12	293 (17)
STAT1	transcription regulator	2.793	1.22E-11	371 (19)
AGN194204	chemical drug	2.794	1.24E-04	435 (20)
lipoarabinomannan	chemical	2.795	1.19E-06	326 (21)
cis-urocanic acid	chemical drug	2.8	9.03E-06	353 (14)
CD14	transmembrane receptor	2.805	7.65E-05	234 (18)
D-fructose	chemical	2.815	1.01E-06	323 (20)
leukotriene C4	chemical	2.82	2.53E-07	336 (17)

IRF1	transcription regulator	2.827	4.78E-06	389 (17)
KRT17	other	2.828	1.14E-04	316 (17)
3-methylcholanthrene	chemical toxicant	2.835	2.23E-04	422 (21)
ARNT2	transcription regulator	2.837	2.72E-03	355 (23)
FOXO1	transcription regulator	2.856	1.47E-10	393 (17)
Cg	complex	2.865	1.94E-16	462 (20)
IL12 (complex)	complex	2.87	4.29E-09	385 (18)
captopril	chemical drug	2.902	1.26E-04	395 (19)
ELK1	transcription regulator	2.903	2.88E-05	298 (19)
CpG ODN 1826	chemical reagent	2.907	1.95E-07	324 (19)
sodium chloride	chemical	2.91	3.32E-04	259 (15)
hemozoin	chemical	2.912	3.31E-09	244 (16)
fatty acid	chemical	2.918	1.80E-05	366 (21)
zymosan	chemical	2.922	4.72E-06	321 (19)
ETS2	transcription regulator	2.925	1.55E-05	410 (22)
FOXO3	transcription regulator	2.927	1.28E-07	405 (23)
mitomycin C	chemical drug	2.931	7.75E-04	374 (22)
LCN2	transporter	2.932	2.33E-03	246 (14)
lipid A	chemical toxicant	2.936	1.19E-05	263 (22)
bicuculline	chemical	2.946	1.45E-04	410 (23)
ALB	transporter	2.949	3.83E-04	336 (19)
stallimycin	biologic drug	2.95	5.41E-04	368 (15)
bromodeoxyuridine	chemical drug	2.95	1.57E-03	368 (15)
TREM1	transmembrane receptor	2.954	5.21E-15	372 (15)
NFKBIA	transcription regulator	2.959	1.29E-19	381 (14)
TNFSF10	cytokine	2.966	6.65E-07	390 (20)
TRADD	other	2.985	7.93E-06	289 (15)
PAF1	other	2.985	6.39E-04	
thapsigargin	chemical toxicant	2.994	2.06E-10	267 (15)
aldosterone	chemical	2.994	2.55E-05	370 (18)
RIPK2	kinase	2.997	2.62E-06	383 (24)
dalfampridine	chemical drug	3	2.66E-05	404 (22)
platelet activating factor	chemical	3.002	1.17E-08	310 (16)
PRKCD	kinase	3.005	3.43E-09	306 (15)
HGF	growth factor	3.007	5.15E-15	442 (17)
L-triiodothyronine	chemical	3.01	1.54E-05	378 (22)
TP53	transcription regulator	3.027	3.11E-29	466 (17)
CEBPD	transcription regulator	3.028	2.85E-11	391 (18)
IRF8	transcription regulator	3.028	4.90E-11	434 (21)
MAPK3	kinase	3.056	1.45E-06	366 (20)
butyric acid	chemical	3.06	7.73E-19	442 (18)

cyclophosphamide	chemical drug	3.062	5.44E-06	416 (20)
ethanol	chemical	3.063	1.48E-08	362 (17)
SPP1	cytokine	3.066	5.81E-12	287 (16)
TLR9	transmembrane receptor	3.066	8.55E-08	369 (17)
IL2	cytokine	3.071	2.16E-22	417 (18)
IRF7	transcription regulator	3.072	1.29E-06	273 (16)
TCF7L2	transcription regulator	3.075	3.68E-04	363 (23)
PF4	cytokine	3.086	1.47E-07	325 (17)
MAP2K1	kinase	3.092	4.83E-10	405 (17)
FGF2	growth factor	3.098	1.70E-09	385 (17)
5-hydroxytryptamine	chemical	3.105	1.48E-09	341 (20)
TNFRSF1A	transmembrane receptor	3.108	5.87E-06	277 (21)
forskolin	chemical toxicant	3.11	6.85E-15	448 (22)
E. coli lipopolysaccharide	chemical	3.126	3.21E-08	360 (15)
etoposide	chemical drug	3.131	6.09E-13	214 (14)
oblimersen	biologic drug	3.138	4.29E-04	415 (24)
lipoteichoic acid	chemical	3.144	3.13E-11	262 (16)
STAT4	transcription regulator	3.149	4.48E-07	356 (18)
TLR2	transmembrane receptor	3.15	8.21E-06	206 (12)
CXCL12	cytokine	3.161	1.64E-05	347 (19)
HMGB1	transcription regulator	3.178	2.54E-05	239 (16)
NFATC2	transcription regulator	3.206	1.46E-06	395 (15)
SP1	transcription regulator	3.219	2.56E-15	473 (17)
TLR4	transmembrane receptor	3.22	1.60E-20	425 (18)
hydrogen peroxide	chemical	3.223	7.81E-14	352 (17)
tributyrin	chemical drug	3.223	2.51E-08	336 (19)
IL12B	cytokine	3.225	7.65E-05	357 (20)
phorbol esters	chemical	3.231	1.35E-05	284 (18)
F2RL1	g-protein coupled receptor	3.235	1.33E-10	289 (19)
EDN1	cytokine	3.241	1.02E-05	404 (18)
NRG1	growth factor	3.252	6.24E-06	427 (19)
IKBKG	kinase	3.259	1.36E-10	330 (13)
BID	other	3.302	1.73E-10	336 (20)
CREBBP	transcription regulator	3.303	3.46E-08	377 (27)
NOS2	enzyme	3.312	1.16E-07	299 (16)
Ca2+	chemical	3.329	3.19E-11	387 (17)
TGFB1	growth factor	3.335	2.79E-26	484 (16)
cholesterol	chemical	3.358	6.74E-08	325 (22)
Ap1	complex	3.37	2.38E-06	290 (20)
bucladesine	chemical toxicant	3.393	3.39E-08	343 (17)
VEGFA	growth factor	3.394	1.67E-06	337 (17)

CEBPB	transcription regulator	3.41	2.75E-11	435 (19)
FOXL2	transcription regulator	3.411	3.16E-07	360 (23)
OLR1	transmembrane receptor	3.412	6.56E-08	359 (19)
MAPK14	kinase	3.429	8.35E-04	284 (18)
bleomycin	chemical drug	3.45	1.71E-07	408 (16)
decitabine	chemical drug	3.454	2.74E-08	475 (20)
SELPLG	other	3.464	5.04E-08	366 (20)
cardiotoxin	chemical	3.5	3.81E-06	339 (18)
EIF2AK2	kinase	3.507	1.66E-08	342 (20)
IL18	cytokine	3.514	1.78E-09	374 (18)
homocysteine	chemical	3.518	4.04E-05	295 (16)
arsenic trioxide	chemical drug	3.529	2.16E-10	337 (18)
PRKCA	kinase	3.553	9.90E-11	341 (18)
KITLG	growth factor	3.57	4.92E-11	382 (24)
CSF1	cytokine	3.577	1.75E-19	404 (17)
EP300	transcription regulator	3.593	1.06E-08	491 (22)
CpG oligonucleotide	chemical drug	3.67	6.65E-12	337 (15)
PI3K (complex)	complex	3.676	2.10E-13	338 (15)
deferoxamine	chemical drug	3.676	2.81E-12	376 (15)
PPRC1	transcription regulator	3.693	3.84E-08	299 (10)
Interferon alpha	group	3.696	1.91E-11	374 (16)
GnRH-A	chemical reagent	3.706	1.83E-05	414 (24)
IL6R	transmembrane receptor	3.741	4.62E-10	289 (14)
EGF	growth factor	3.762	5.20E-08	383 (15)
MAP3K8	kinase	3.765	2.11E-06	276 (15)
APP	other	3.768	4.37E-14	417 (19)
RELA	transcription regulator	3.776	1.51E-13	390 (14)
cigarette smoke	chemical toxicant	3.782	9.76E-10	399 (20)
ERK1/2	group	3.805	8.31E-11	318 (12)
D-glucose	chemical	3.826	2.46E-16	379 (18)
IL5	cytokine	3.84	2.49E-16	405 (20)
palmitic acid	chemical	3.855	1.09E-12	310 (18)
RAF1	kinase	3.879	4.46E-16	361 (19)
NOD2	other	3.882	1.83E-11	330 (20)
OSM	cytokine	3.889	4.26E-17	455 (16)
peptidoglycan	chemical	3.901	9.39E-09	231 (15)
leukotriene D4	chemical	3.91	1.22E-08	354 (17)
kainic acid	chemical toxicant	3.923	3.42E-07	417 (22)
ERK	group	3.961	8.06E-17	392 (16)
Jnk	group	3.966	7.79E-07	323 (16)
CCL5	cytokine	3.995	5.61E-12	349 (18)

LDL	complex	4.001	9.48E-18	441 (18)
CHUK	kinase	4.042	2.16E-15	332 (14)
TNFSF12	cytokine	4.047	1.16E-09	347 (18)
EGR1	transcription regulator	4.05	9.37E-14	407 (20)
carbon tetrachloride	chemical toxicant	4.078	6.01E-13	400 (18)
SMARCA4	transcription regulator	4.112	2.03E-12	423 (22)
Nfat (family)	group	4.122	7.36E-10	373 (20)
CEBPA	transcription regulator	4.125	8.80E-21	412 (20)
TLR3	transmembrane receptor	4.164	3.09E-10	370 (17)
IL17A	cytokine	4.175	2.83E-11	355 (18)
HIF1A	transcription regulator	4.175	1.26E-08	418 (23)
TLR7	transmembrane receptor	4.197	1.31E-08	235 (16)
IL1A	cytokine	4.211	9.63E-11	427 (17)
P38 MAPK	group	4.236	1.53E-13	353 (15)
mir-223	microRNA	4.238	1.05E-07	337 (25)
TNFSF11	cytokine	4.42	1.34E-23	317 (17)
CSF2	cytokine	4.582	1.36E-16	422 (15)
STAT3	transcription regulator	4.596	7.94E-21	461 (18)
Vegf	group	4.632	1.49E-13	423 (16)
doxorubicin	chemical drug	4.709	1.11E-11	326 (14)
AGT	growth factor	4.75	5.06E-14	469 (16)
TICAM1	other	4.964	2.49E-15	354 (16)
IL1	group	4.969	5.74E-10	384 (15)
E. coli B5 lipopolysaccharide	chemical	5.142	1.61E-12	415 (16)
IKBKB	kinase	5.496	9.40E-16	330 (14)
IL1B	cytokine	5.552	2.79E-26	413 (14)
NFkB (complex)	complex	5.579	2.87E-20	416 (15)
MYD88	other	5.595	5.71E-18	383 (16)
IL6	cytokine	5.7	6.16E-21	421 (14)
poly rI:rC-RNA	biologic drug	5.743	3.65E-16	419 (14)
PDGF BB	complex	5.93	9.88E-16	415 (19)
IFNG	cytokine	6.091	3.44E-34	404 (15)
phorbol myristate acetate	chemical drug	6.56	5.78E-26	492 (19)
TNF	cytokine	6.959	3.64E-48	452 (16)
lipopolysaccharide	chemical drug	7.928	2.12E-50	454 (14)
TGM2	enzyme	8.296	4.73E-47	412 (18)
tretinoin	chemical	8.592	5.01E-42	477 (22)
SB203580	chemical	-5.84	5.43E-13	387 (16)
PD98059	chemical	-5.231	7.30E-26	367 (17)
U0126	chemical	-4.754	5.18E-15	380 (13)
Alpha catenin	group	-4.722	1.02E-08	326 (11)

LY294002	chemical	-4.305	1.64E-17	414 (14)
N-acetyl-L-cysteine	chemical drug	-4.269	6.50E-10	375 (18)
SP600125	chemical	-3.885	1.92E-09	327 (17)
IL1RN	cytokine	-3.818	5.58E-08	374 (17)
tyrphostin AG 1478	chemical	-3.766	1.45E-06	446 (23)
MYC	transcription regulator	-3.515	5.58E-27	499 (25)
losartan potassium	chemical drug	-3.489	6.17E-07	344 (18)
SFTPA1	transporter	-3.306	5.44E-06	403 (18)
H89	chemical	-3.278	3.84E-08	348 (16)
SOCS1	other	-3.245	4.54E-06	266 (17)
APOE	transporter	-3.243	1.38E-11	436 (19)
diphenyleneiodonium	chemical reagent	-3.243	1.09E-04	301 (17)
DUSP1	phosphatase	-3.2	5.39E-10	345 (18)
wortmannin	chemical	-3.194	4.84E-11	433 (18)
epigallocatechin-gallate	chemical drug	-3.179	1.93E-07	273 (12)
NLRP12	other	-3.121	8.13E-06	237 (17)
Sb202190	chemical	-3.024	1.36E-10	385 (16)
SMAD7	transcription regulator	-3.015	1.54E-06	308 (15)
FBXO32	enzyme	-2.982	3.12E-02	
etanercept	biologic drug	-2.975	1.49E-05	304 (15)
tempol	chemical drug	-2.97	2.66E-05	375 (20)
bisindolylmaleimide I	chemical	-2.958	1.89E-04	414 (20)
BRD4	kinase	-2.915	3.99E-18	403 (27)
BAPTA-AM	chemical reagent	-2.906	7.60E-07	283 (16)
ZFP36	transcription regulator	-2.806	1.63E-12	320 (12)
Go 6976	chemical	-2.789	1.36E-03	340 (20)
acetovanillone	chemical drug	-2.779	2.35E-04	256 (19)
Bay 11-7082	chemical	-2.775	1.22E-08	308 (21)
ADRB	group	-2.77	2.95E-09	362 (22)
thioctic acid	chemical drug	-2.763	3.80E-06	311 (19)
TSC22D3	transcription regulator	-2.759	7.17E-07	320 (16)
actinomycin D	chemical drug	-2.725	1.44E-09	454 (17)
GFI1	transcription regulator	-2.685	1.81E-09	251 (18)
dipyridamole	chemical drug	-2.646	1.49E-06	281 (20)
chromium	chemical drug	-2.646	1.98E-02	
candesartan	chemical drug	-2.63	8.35E-03	311 (20)
IL10RA	transmembrane receptor	-2.628	3.54E-08	409 (17)
DACH1	transcription regulator	-2.608	3.19E-03	395 (24)
ADA	enzyme	-2.596	4.96E-05	414 (18)
eplerenone	chemical drug	-2.564	1.69E-06	378 (21)
SOCS3	phosphatase	-2.562	1.26E-04	284 (18)

thalidomide	chemical drug	-2.559	7.40E-04	327 (14)
Ro31-8220	chemical	-2.54	1.72E-07	362 (19)
CHD4	enzyme	-2.534	4.29E-04	
PDPK1	kinase	-2.513	5.64E-06	323 (20)
Nr1h	group	-2.506	7.97E-06	306 (20)
pyrrolidine dithiocarbamate	chemical reagent	-2.505	1.95E-06	267 (13)
curcumin	chemical drug	-2.458	1.79E-10	353 (18)
RABL6	other	-2.449	1.23E-01	
salicylic acid	chemical drug	-2.446	2.22E-07	285 (14)
ABCB4	transporter	-2.438	4.82E-03	407 (20)
LY6E	other	-2.429	7.43E-06	267 (16)
kaempferol	chemical toxicant	-2.425	2.66E-05	285 (17)
ADAMTS12	peptidase	-2.425	1.88E-03	272 (13)
HMOX1	enzyme	-2.42	4.49E-07	281 (17)
SOD1	enzyme	-2.412	3.76E-03	332 (21)
BACH2	transcription regulator	-2.401	2.60E-02	
ESR1	nuclear receptor	-2.398	9.10E-16	477 (18)
bisindolylmaleimide	chemical	-2.383	1.88E-03	280 (19)
2-aminopurine	chemical reagent	-2.368	9.44E-04	269 (22)
valsartan	chemical drug	-2.36	2.96E-05	414 (21)
hydroxypropyl-beta-cyclodextrin	chemical drug	-2.359	1.63E-07	285 (16)
MYCN	transcription regulator	-2.353	2.00E-01	
PTPN6	phosphatase	-2.343	7.40E-05	246 (15)
NS-398	chemical reagent	-2.306	1.12E-06	346 (18)
rottlerin	chemical toxicant	-2.283	9.08E-06	346 (19)
PP1	chemical	-2.28	7.42E-08	315 (16)
Hdac	group	-2.27	6.58E-07	433 (24)
astragalin	chemical	-2.236	1.37E-04	341 (19)
CBX7	other	-2.236	2.44E-03	145 (7)
S100A6	transporter	-2.236	1.61E-02	
nitrofen	chemical toxicant	-2.236	4.65E-02	
CYP1A2	enzyme	-2.236	9.09E-02	
AG490	chemical	-2.232	1.49E-07	412 (20)
erythromycin	chemical drug	-2.229	1.04E-03	303 (20)
KLF2	transcription regulator	-2.22	1.07E-12	391 (15)
ebselen	chemical drug	-2.219	2.25E-04	272 (18)
artesunic acid	chemical drug	-2.219	1.87E-03	383 (19)
BMPER	other	-2.216	1.41E-03	
mibolerone	chemical drug	-2.216	1.86E-03	369 (16)
Igm	complex	-2.209	5.00E-07	340 (18)
clarithromycin	chemical drug	-2.207	5.22E-04	373 (20)

manumycin A	chemical reagent	-2.2	1.37E-04	360 (19)
RPSA	translation regulator	-2.2	1.86E-02	
MEOX2	transcription regulator	-2.194	4.15E-07	327 (13)
hexamethoxyflavone	chemical toxicant	-2.191	4.09E-05	363 (17)
PS-1145	chemical	-2.191	2.44E-03	302 (15)
NAB2	transcription regulator	-2.189	2.17E-04	421 (21)
dehydroisoandrosterone	chemical	-2.186	3.64E-02	
triflusal	chemical drug	-2.178	2.44E-03	358 (18)
RCAN1	transcription regulator	-2.176	1.51E-03	332 (16)
resolvin D1	chemical	-2.171	2.46E-06	255 (15)
vitamin E	chemical drug	-2.167	5.37E-05	344 (18)
KDM1A	enzyme	-2.163	1.04E-01	
herbimycin	chemical	-2.161	1.50E-05	346 (17)
flutamide	chemical drug	-2.16	1.04E-04	409 (21)
JAG2	growth factor	-2.153	4.15E-07	366 (16)
BACH1	transcription regulator	-2.152	3.04E-04	267 (20)
FOSL1	transcription regulator	-2.142	1.31E-05	365 (17)
PP2/AG1879				
tyrosine kinase inhibitor	chemical	-2.116	4.16E-09	347 (19)
COL18A1	other	-2.114	6.65E-07	405 (21)
geldanamycin	chemical	-2.101	1.88E-02	
nifedipine	chemical drug	-2.071	1.38E-03	295 (19)
RBPJ	transcription regulator	-2.055	2.09E-02	
mir-146	microrna	-2.049	2.18E-04	363 (21)
fasudil	chemical drug	-2.041	5.65E-06	276 (15)
plicamycin	chemical drug	-2.013	1.15E-02	
EGTA acetoxymethyl ester	chemical reagent	-2	1.02E-04	340 (16)
rabeprazole	chemical drug	-2	2.29E-04	368 (18)
N,N-dimethylsphingosine	chemical reagent	-2	2.62E-03	326 (17)
ethylenediaminetetraacetic acid	chemical drug	-2	3.64E-03	246 (18)
palmitoleic acid	chemical	-2	3.64E-03	236 (14)
NT5E	phosphatase	-2	8.16E-03	349 (20)
USP18	peptidase	-2	1.26E-02	

SB Pathway Analysis

Upstream Regulator	Molecule Type	Activation z-score	p-value of overlap	Mechanistic Network
KRT17	other	2	3.78E-06	
ERK	group	2	1.70E-05	28 (21)
cardiotoxin	chemical	2	2.07E-03	
IFNG	cytokine	2.012	6.33E-08	28 (19)
AGT	growth factor	2.056	3.77E-07	22 (18)
IL2	cytokine	2.099	1.46E-06	26 (16)
CSF2	cytokine	2.106	2.13E-02	
kainic acid	chemical toxicant	2.133	1.53E-04	24 (20)
tretinoin	chemical	2.143	1.19E-04	25 (16)
E. coli B4 lipopolysaccharide	chemical toxicant	2.147	2.90E-03	24 (15)
gentamicin	chemical drug	2.156	1.78E-03	22 (11)
PRL	cytokine	2.156	2.68E-03	23 (19)
PDGF BB	complex	2.158	9.49E-04	20 (18)
peptidoglycan	chemical	2.172	3.03E-05	23 (14)
trinitrobenzenesulfonic acid	chemical reagent	2.18	1.73E-05	21 (10)
CCL5	cytokine	2.183	5.41E-06	24 (17)
IL17A	cytokine	2.192	6.43E-04	24 (17)
bleomycin	chemical drug	2.194	2.44E-04	23 (17)
okadaic acid	chemical toxicant	2.195	1.47E-05	31 (18)
EGR1	transcription regulator	2.196	3.22E-05	31 (20)
AGER	transmembrane receptor	2.2	1.67E-07	27 (15)
E. coli lipopolysaccharide	chemical	2.2	3.77E-06	24 (17)
SRC	kinase	2.213	6.13E-05	24 (17)
nitrofurantoin	chemical drug	2.213	3.16E-04	
PLAU	peptidase	2.215	3.49E-06	25 (22)
lysophosphatidylcholine	chemical	2.219	2.98E-07	20 (17)
KLF6	transcription regulator	2.229	2.54E-06	23 (18)
JUN	transcription regulator	2.229	3.53E-03	32 (16)
MYD88	other	2.252	1.36E-08	21 (16)
NFkB (complex)	complex	2.258	4.39E-05	29 (19)
poly rl:rC-RNA	biologic drug	2.269	1.08E-04	24 (17)
APP	other	2.303	1.58E-06	23 (15)
phorbol myristate acetate	chemical drug	2.31	2.99E-07	26 (20)
EGF	growth factor	2.347	7.47E-03	31 (22)
TNFSF12	cytokine	2.368	8.74E-07	25 (14)
F2	peptidase	2.384	2.67E-04	24 (19)
Ap1	complex	2.387	9.38E-07	24 (13)

E. coli B5 lipopolysaccharide	chemical	2.408	2.79E-04	26 (20)
hydrogen peroxide	chemical	2.409	1.62E-04	31 (18)
hemozoin	chemical	2.411	4.65E-10	28 (21)
Ca2+	chemical	2.414	3.39E-05	29 (21)
carbon tetrachloride	chemical toxicant	2.42	6.78E-06	27 (17)
TNF	cytokine	2.437	4.19E-07	29 (18)
IL1B	cytokine	2.45	1.38E-06	29 (20)
IL18	cytokine	2.553	2.91E-08	28 (17)
FGF2	growth factor	2.567	3.06E-05	23 (19)
ERK1/2	group	2.586	5.22E-05	24 (14)
IL1A	cytokine	2.759	8.82E-07	22 (18)
LEP	growth factor	2.771	1.38E-04	30 (18)
lipopolysaccharide	chemical drug	2.955	1.81E-07	29 (19)
U0126	chemical	-2.949	9.97E-07	24 (17)
LY294002	chemical	-2.681	6.23E-05	24 (18)
PD98059	chemical	-2.662	2.13E-05	29 (18)
curcumin	chemical drug	-2.581	3.06E-05	28 (20)
DUSP1	phosphatase	-2.442	4.06E-07	24 (17)
N-acetyl-L-cysteine	chemical drug	-2.409	7.11E-05	22 (18)
simvastatin	chemical drug	-2.226	8.17E-05	23 (17)
TP73	transcription regulator	-2.213	5.89E-03	13 (7)
SB203580	chemical	-2.153	2.32E-04	28 (17)

Lithium Pathway Analysis

Upstream Regulator	Molecule Type	Activation z-score	p-value of overlap	Mechanistic Network
cardiotoxin	chemical	2	1.78E-03	
thioacetamide	chemical toxicant	2	1.39E-02	
IL1A	cytokine	2.033	2.23E-04	32 (19)
IGF1	growth factor	2.034	9.80E-05	35 (17)
RELA	transcription regulator	2.064	1.26E-03	30 (14)
TLR7	transmembrane receptor	2.069	1.24E-03	27 (17)
IL1B	cytokine	2.074	3.22E-04	30 (21)
CD40LG	cytokine	2.084	6.31E-03	22 (13)
KLF6	transcription regulator	2.145	2.61E-05	26 (18)
TLR3	transmembrane receptor	2.152	1.26E-02	
enterotoxin B	biologic drug	2.155	5.83E-05	25 (7)
AR	nuclear receptor	2.156	3.39E-02	
TAC1	other	2.16	1.15E-04	28 (17)
PTGS2	enzyme	2.165	2.11E-03	33 (18)
CpG oligonucleotide	chemical drug	2.17	7.40E-04	31 (15)
HMGB1	transcription regulator	2.171	6.65E-05	25 (14)
SPP1	cytokine	2.177	3.37E-03	36 (18)
hemozoin	chemical	2.179	4.13E-07	33 (17)
carbon tetrachloride	chemical toxicant	2.18	9.87E-04	34 (19)
peptidoglycan	chemical	2.185	2.89E-04	25 (17)
bleomycin	chemical drug	2.187	2.11E-03	30 (20)
trinitrobenzenesulfonic acid	chemical reagent	2.192	1.69E-04	28 (10)
CTNNB1	transcription regulator	2.195	1.47E-02	
KLF4	transcription regulator	2.2	9.41E-03	14 (7)
JAK2	kinase	2.213	5.91E-04	29 (19)
cytarabine	chemical drug	2.219	3.83E-05	30 (17)
IL22	cytokine	2.219	1.60E-04	27 (14)
Jnk	group	2.221	4.88E-03	31 (20)
hydrogen peroxide	chemical	2.221	3.99E-02	
APP	other	2.258	2.39E-02	
CSF2	cytokine	2.267	4.18E-03	25 (16)
doxorubicin	chemical drug	2.283	2.05E-02	
IFNG	cytokine	2.297	2.24E-03	38 (16)
lipopolysaccharide	chemical drug	2.319	5.68E-06	39 (17)
Pam3-Cys-Ser-Lys4	chemical reagent	2.36	5.27E-05	31 (15)
IL6R	transmembrane receptor	2.369	3.58E-06	29 (23)
AGER	transmembrane receptor	2.372	2.78E-06	29 (23)

CCL5	cytokine	2.373	3.29E-06	34 (20)
palmitic acid	chemical	2.389	2.91E-04	29 (19)
fulvestrant	chemical drug	2.39	3.59E-03	37 (18)
TNFSF12	cytokine	2.393	1.40E-05	40 (18)
TLR4	transmembrane receptor	2.395	8.28E-03	24 (18)
EGR1	transcription regulator	2.412	4.45E-04	40 (21)
MYD88	other	2.413	1.02E-05	30 (15)
phorbol myristate acetate	chemical drug	2.484	2.90E-10	37 (19)
tretinoin	chemical	2.485	1.14E-03	36 (20)
poly rI:rC-RNA	biologic drug	2.508	9.62E-03	30 (17)
ERK	group	2.592	3.47E-04	31 (18)
E. coli B5 lipopolysaccharide	chemical	2.599	6.29E-04	31 (16)
F2	peptidase	2.602	6.00E-04	27 (19)
mir-223	microrna	2.646	7.36E-06	
IL2	cytokine	2.712	2.93E-05	30 (17)
NFkB (complex)	complex	2.969	7.21E-06	23 (16)
Alpha catenin	group	-2.412	6.38E-05	20 (11)
GATA3	transcription regulator	-2.224	4.67E-03	35 (15)
Nr1h	group	-2.219	1.12E-03	33 (15)
ZFP36	transcription regulator	-2.208	1.20E-08	31 (16)
SATB1	transcription regulator	-2.186	2.62E-03	12 (7)
FOSL1	transcription regulator	-2	6.99E-04	28 (6)