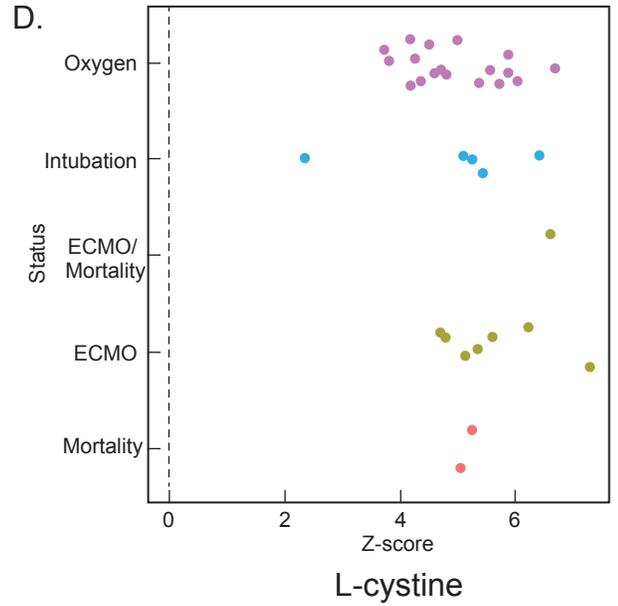
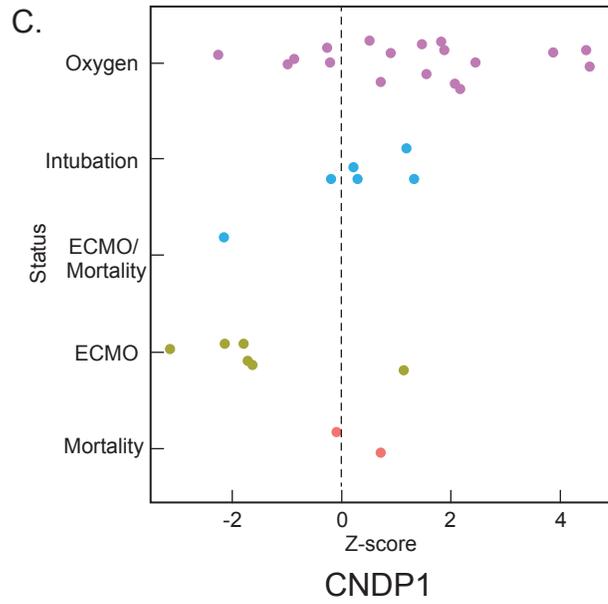
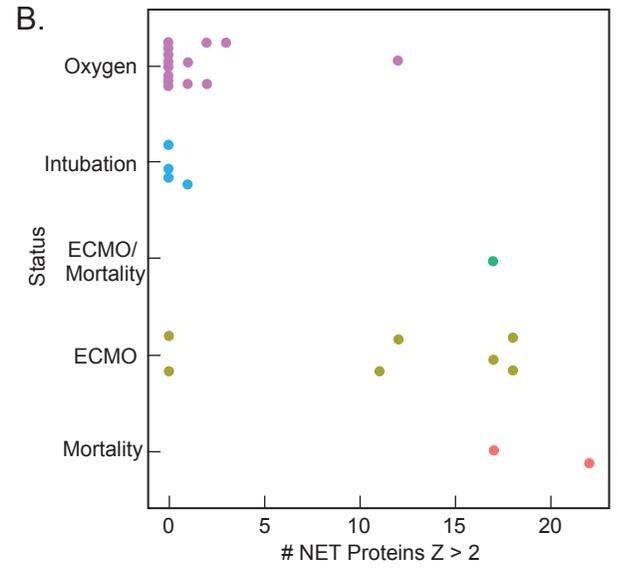
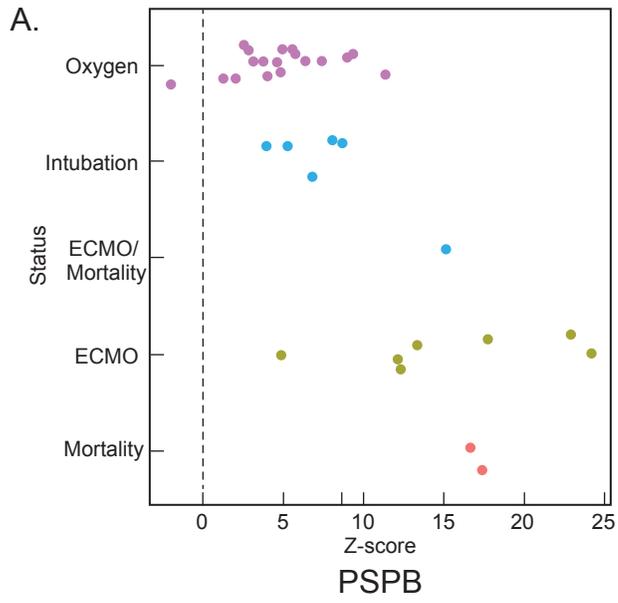
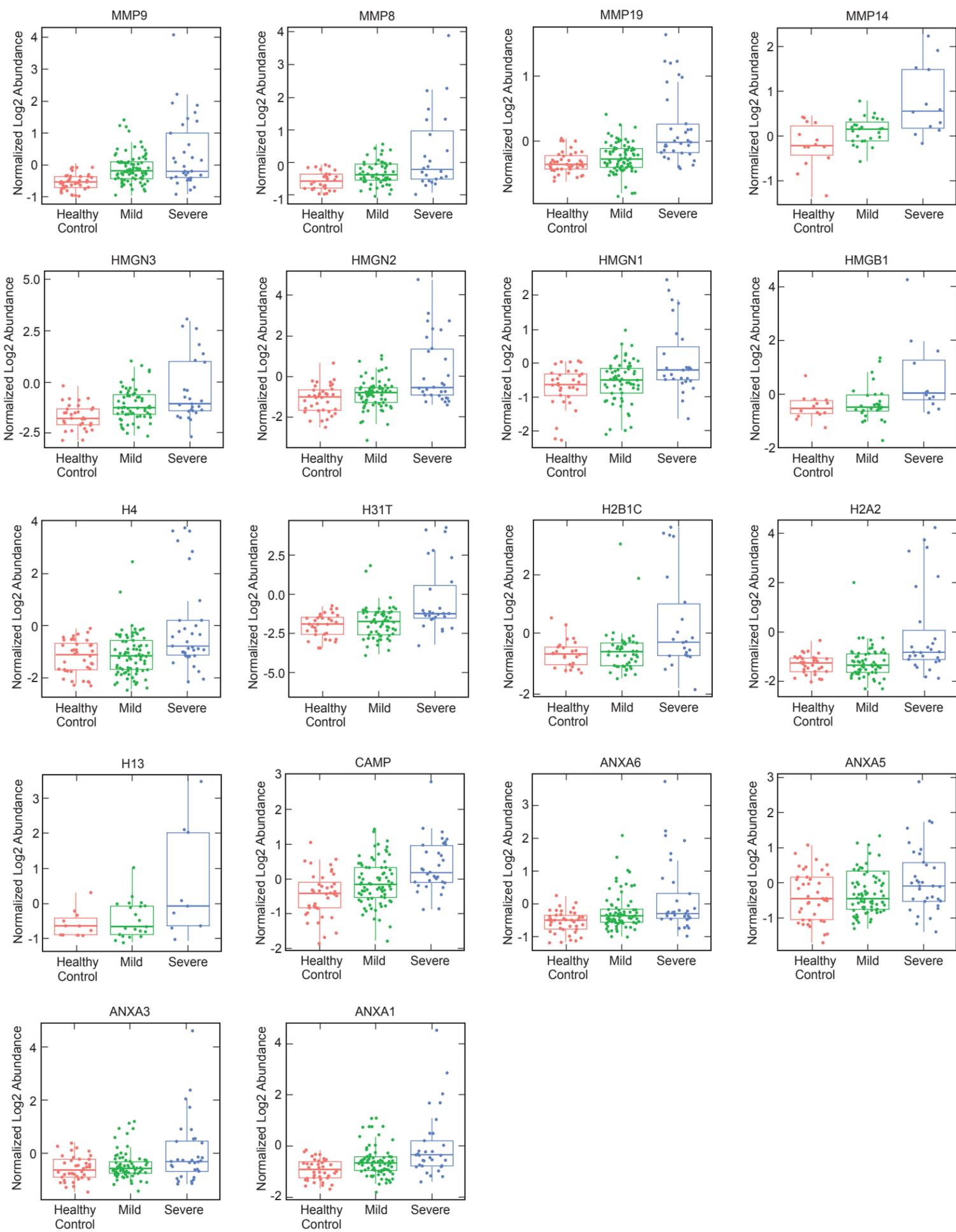


Supplemental Figure 1

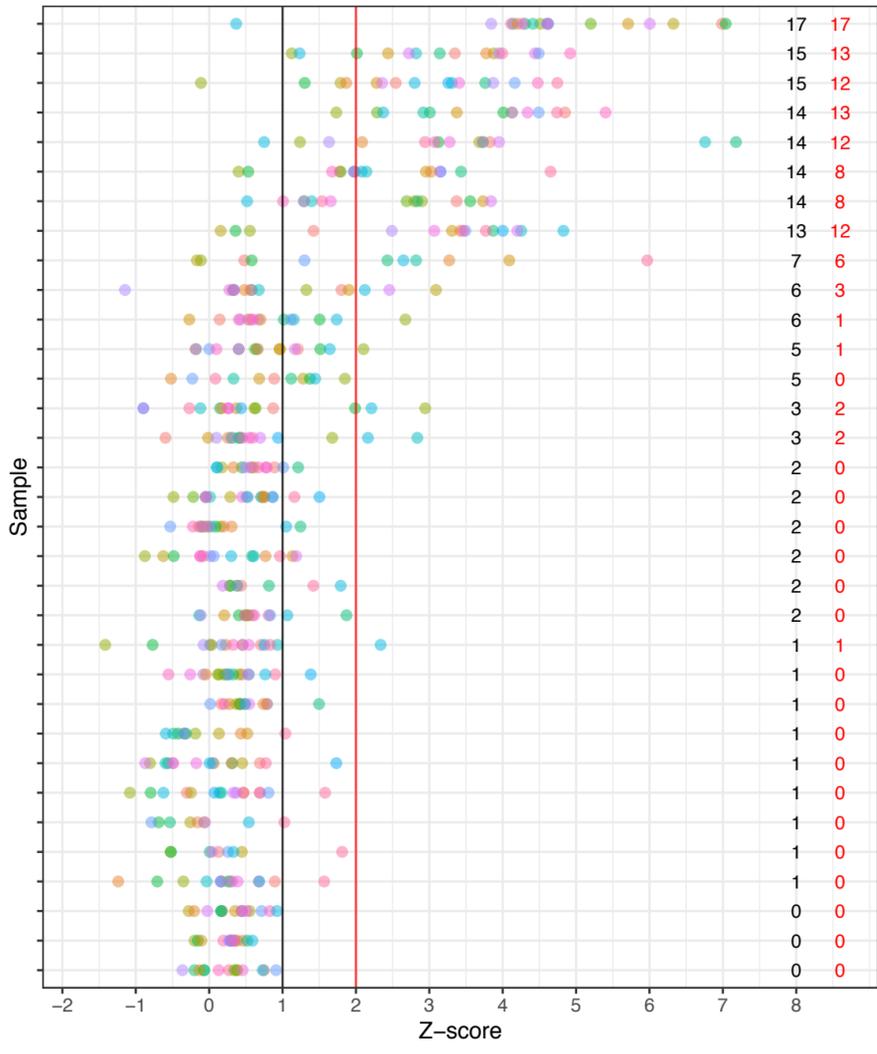


Supplemental
Figure 2



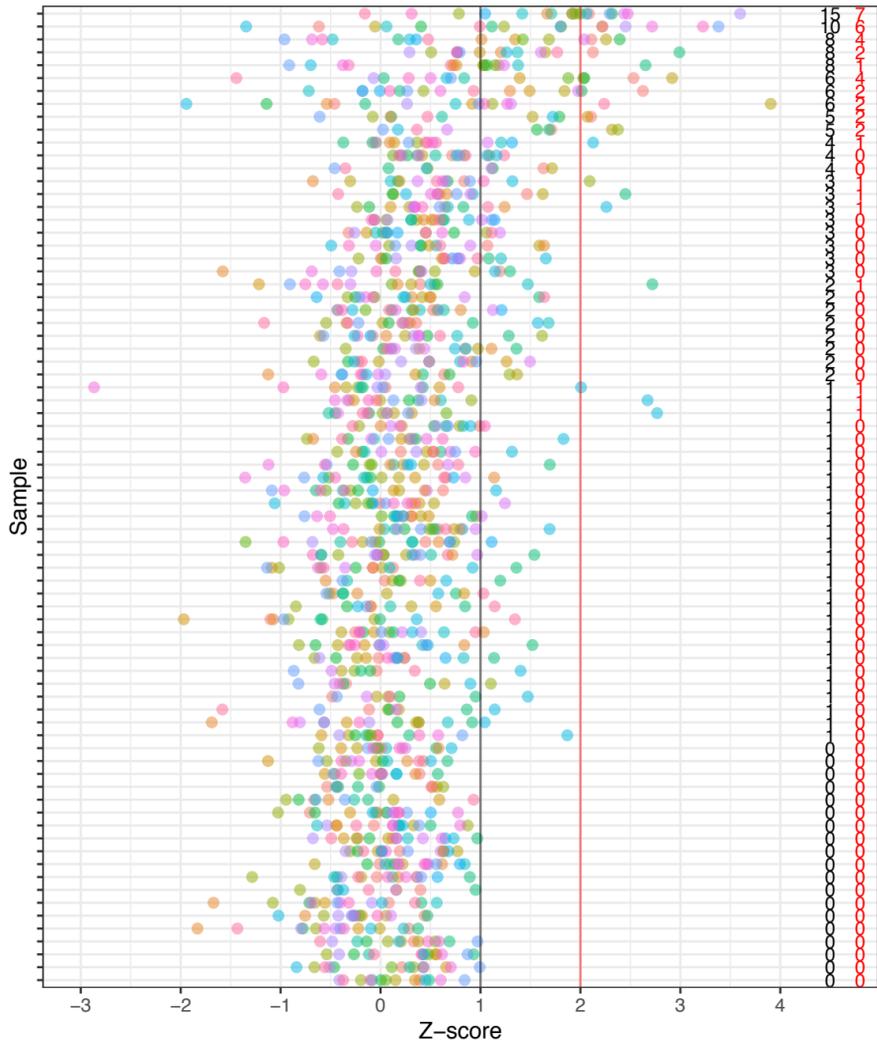
Supplemental Figure 3

Severe



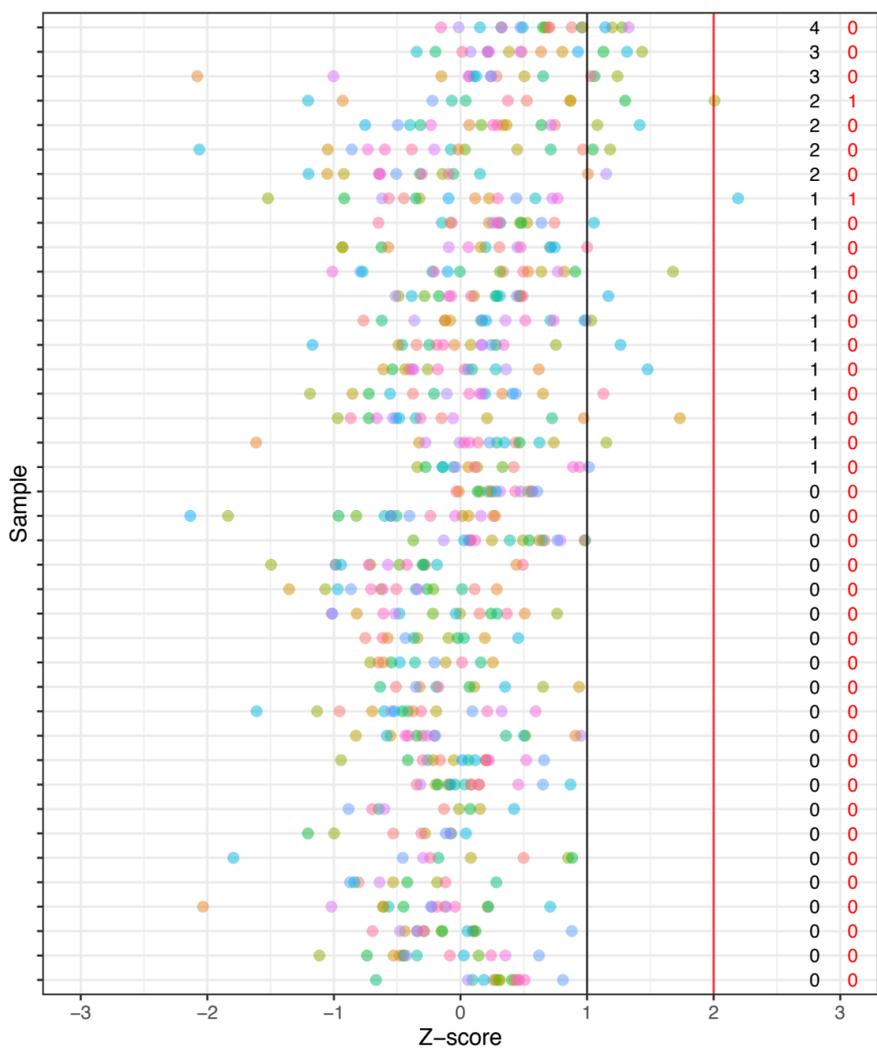
- Protein
- P04083
 - P05114
 - P05204
 - P08133
 - P08758
 - P09429
 - P12429
 - P14780
 - P16402
 - P22894
 - P49913
 - P50281
 - P62805
 - P62807
 - Q15651
 - Q16695
 - Q6F113
 - Q99542

Mild



- Protein
- P04083
 - P05114
 - P05204
 - P08133
 - P08758
 - P09429
 - P12429
 - P14780
 - P16402
 - P22894
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 - Q15651
 - Q16695
 - Q6F113
 - Q99542

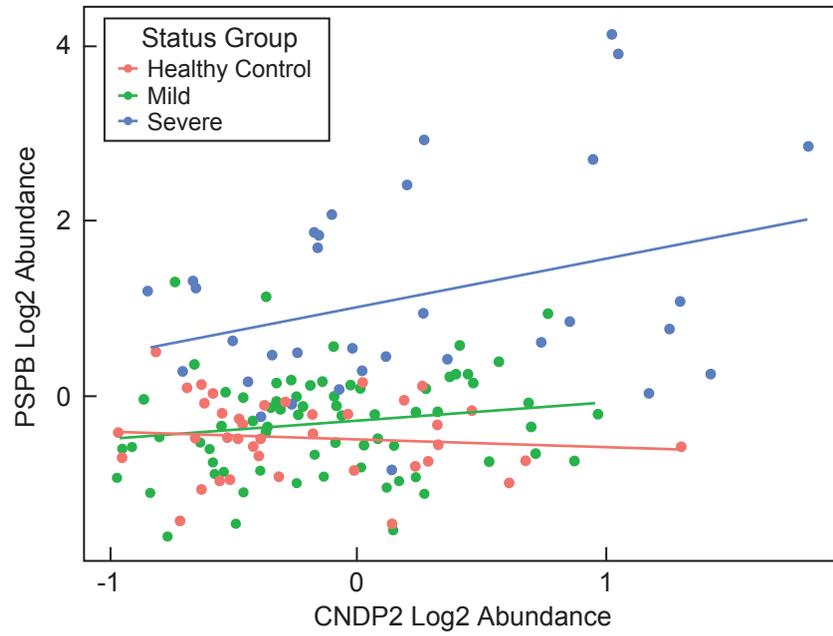
Healthy Controls



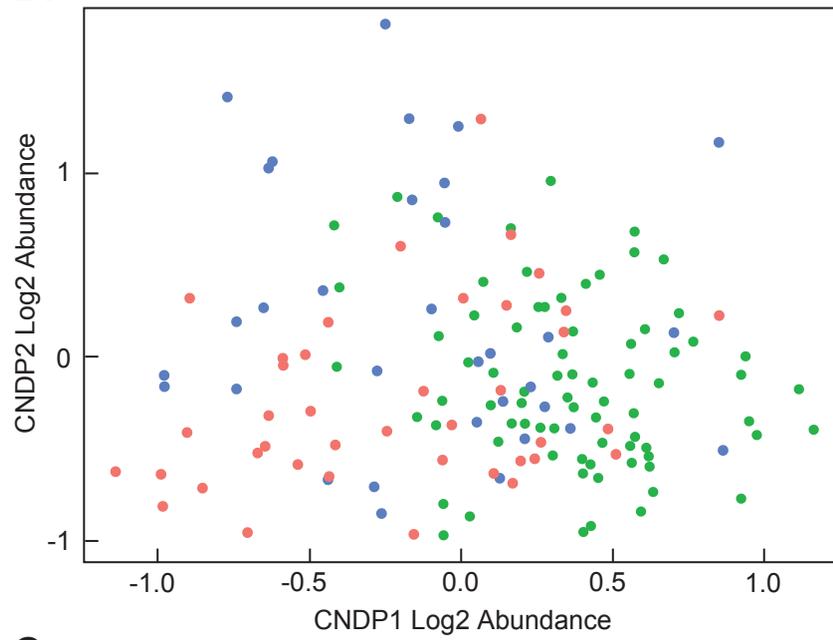
- Protein
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 - P05204
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 - P62807
 - Q15651
 - Q16695
 - Q6F113
 - Q99542

Supplemental Figure 4

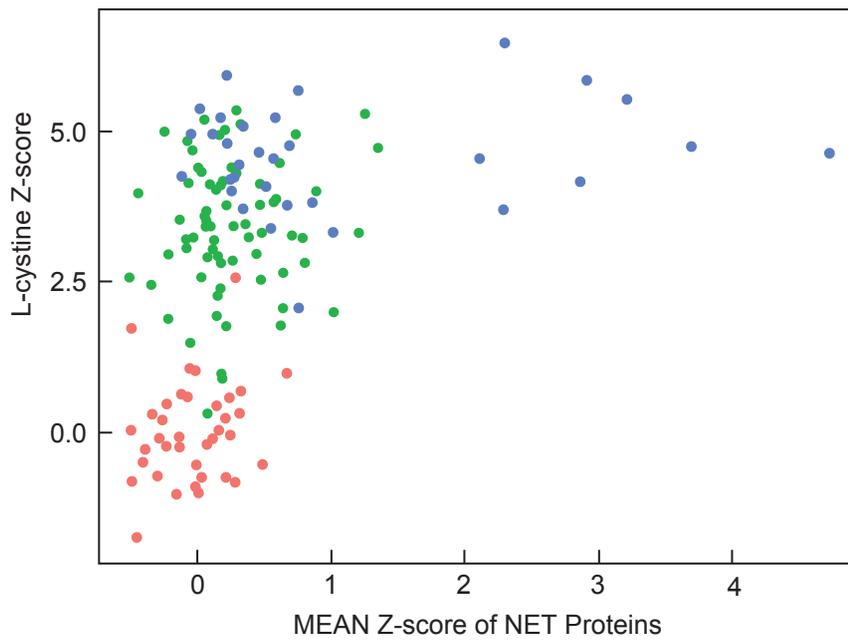
A.



B.



C.

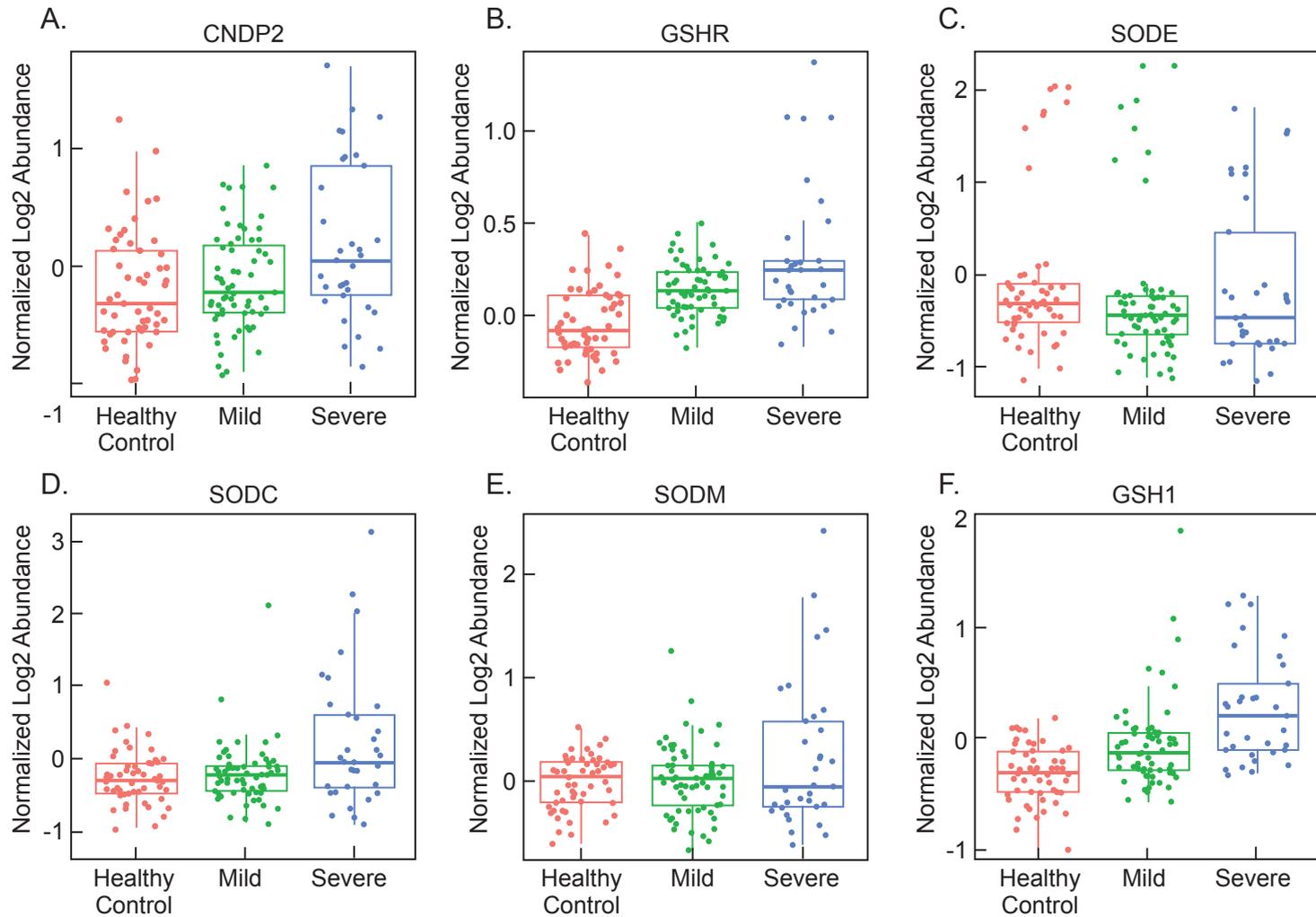


Supplemental Figure 5

>sp|Q96KN2|CNDP1_HUMAN Beta-Ala-His dipeptidase OS=Homo sapiens OX=9606 GN=CNDP1 PE=1 SV=4
MDPKLGRMAASLLAVLLLLLLERGMFSS**SPSPPPALLEKVFQYIDLHQDEFVQTLKEWVAIESDSVQPVPRFRQELFRMMAVAADTLQRLGA**
RVASVDMGPQQLPDGQSLPI PPI ILAELGSDPTKGTVC FYGHLDVQPADRGDGWL TDPYVLTEVDGKLYGRGATDNKGPVLAWINAVSAF
RALEQDLPVNIKF I IEGMEEAGSVALEELVEKEKDRFFSGVDYIVISDNLWISQRKPAITYGTRGNSYFMVEVKCRDQDFHSGTFGGILH
EPMADLVALLGSLVDSSGH**ILVPGIYDEVVPLTEEEINTYKAIHLDLEEYRNSSRVEKFLFDTKEEILMHLWRYP SLSIHGIEGAFDEPG**
TKTVIPGRVIGKFSIRLVPHMNVSAVEKQVTRHLEDVFSKRNSSNKMVVSMTLGLHPWIANIDDTQYLAAKRAIRTVFGTEPDMIRDGST
IPIAKMFQEIVHKS VVLIPLGAVDDGEHSQNEKINRWNYIEGTKLFAAFFLEMAQLH

>sp|Q96KP4|CNDP2_HUMAN Cytosolic non-specific dipeptidase OS=Homo sapiens OX=9606 GN=CNDP2
PE=1 SV=2
MAALTTLFK**YIDENQDRYIKKLAKWVAIQSVSAWPEKRGEIRRMEVAAADVKQLGGSVELVDIGKQKLPDGSEIPLPPILLGR**LGSDPQ
KKTVCIYGHLDVQPAAL EDGWDSEPF T LVERD G KLYGRGSTDDKGPVAGWINALEAYQK**TGQEI PVNVR**FCLEGMEESGSEGLDELIFAR
KDTFFK**DVDYVCI SDNYWLGKKKPCITYGLRGICYFFIEVECSNKDLHSGVYGGSVHEAMTDLILLMGSLVDKRGNILIPGINEA**VAAVT
EEHKLYDDIDFDIEEFAK**DVGAQILLHSHK**KDILMHRWRYP SLSLHGIEGAFSGSGAKTVIPRKVVGKFSIRLVPNMTPEVVGEQVTSY
LTKKFAELRSPNEFK**VYMGHGK**PWVSDFSHPHYLGRRAMK**TVFGVEPDLTREGGSI PVTTLTFQEATGK**NVMLLPVGSADDGAHSQNEK
LNRNYIEGTK**MLAAYLYEVSQLKD**

Supplemental Figure 6



sp|P61019|RAB2A_HUMAN 1 33 62 27 0.019608 0.072924186 0.384679108 0.053315753 0.365070676 0.311754922 0.793115745 0.000977531 0.001601728

sp Q5TFQ8 SIRBL_HUMAN	229	30	55	24	-0.34539	-0.069523328	-0.121868815	0.275870012	0.223524525	-0.052345487	0.340556606	0.612921608	0.966719751
sp O75487 GPC4_HUMAN	16	4	7	3	-0.02067	0.017984564	-0.127974765	0.038652987	-0.107306342	-0.145959329	0.918753865	0.653328665	0.398603874
sp POC7U1 ASA2B_HUMAN	30	23	41	17	0.203415	0.092183289	-0.097155334	-0.111231709	-0.300570332	-0.189338623	0.440678971	0.022776266	0.149242511
sp O94903 PLPH_HUMAN	6	11	20	9	-0.14922	-0.12929562	0.28183041	0.019922219	0.431048249	0.41112603	0.992828966	0.111238885	0.083494157
sp O95302 FKBP9_HUMAN	3	11	20	9	0.114261	0.150392806	0.246434448	0.036131487	0.132173129	0.096041643	0.950102247	0.624025094	0.730709176
sp P20337 RAB3B_HUMAN	41	24	48	22	-0.19569	-0.083824729	0.23894058	0.111868968	0.434634277	0.322765309	0.419855306	0.000214764	0.001829913
sp P12724 ECP_HUMAN	1	24	49	21	-0.05481	-0.070090477	0.141470896	-0.01527773	0.196283642	0.211561372	0.992219378	0.412794823	0.261813699
sp Q8N1N4 K2C7B_HUMAN	2	14	28	13	0.109004	-0.056593259	-0.364940975	-0.165597752	-0.473945369	-0.308347616	0.891156387	0.510188883	0.685406027
sp A8MUU1 FB5L3_HUMAN	28	40	76	33	-0.52415	-0.373750618	0.091972651	0.150403505	0.616126774	0.465723268	0.523288523	0.000882698	0.005494206
sp Q9C0H2 TTYH3_HUMAN	1	15	28	12	-1.09134	0.094287384	0.150328271	1.185623958	1.241664845	0.056040887	0.000100929	0.000745511	0.978480657
sp Q95866 G6B_HUMAN	2	33	62	27	-0.42435	0.137710678	0.059612075	0.562059654	0.483961052	-0.078098602	5.87E-05	0.005331295	0.832556361
sp Q9BYX7 ACTBM_HUMAN	1	15	27	11	-0.01456	-0.191253411	0.055619203	-0.176690788	0.070181826	0.246872614	0.461665051	0.921649503	0.29810833
sp Q9Y3Q8 T22D4_HUMAN	9	7	14	6	-0.69278	-0.112799324	0.78922918	0.579982511	1.482011015	0.902028504	0.163422999	0.001412357	0.026616062
sp Q9UKR3 KLK13_HUMAN	12	7	14	6	-0.4191	-0.113066021	-0.41877019	0.306037611	0.000333442	-0.305704169	0.733542801	0.999999742	0.756787138
sp P17066 HSP76_HUMAN	15	40	76	33	0.053013	0.087365127	0.125023723	0.034351831	0.072010427	0.037658596	0.726715521	0.382399175	0.714078862
sp P35606 COPB2_HUMAN	6	7	14	6	-0.12641	0.057965745	0.285366268	0.184372484	0.411773007	0.227400523	0.795870014	0.463420335	0.732419047
sp Q96A72 MG2N_HUMAN	2	4	6	3	-0.22958	0.154200522	0.145421695	0.383775543	0.374996716	-0.008778827	0.387573855	0.513709491	0.999543271
sp Q14213 IL27B_HUMAN	2	15	28	12	-0.13393	-0.009977554	0.164186439	0.123952175	0.298116167	0.174163993	0.547280731	0.101320583	0.362833705
sp P52597 HNRPF_HUMAN	16	7	14	6	-0.13317	-0.148799432	0.417620619	-0.01562567	0.550794381	0.566420051	0.998143243	0.224710333	0.134696174
sp Q6ZMR3 LDH6A_HUMAN	27	40	76	33	-0.09341	-0.028550867	0.242722796	0.06485695	0.336130612	0.271273663	0.653489759	0.000639817	0.002101959
sp Q95803 NDST3_HUMAN	7	4	7	3	0.102677	0.049329383	0.089655466	-0.053348002	-0.013021919	0.040326084	0.728633786	0.987007237	0.8593318
sp Q08397 LOXL1_HUMAN	3	7	13	6	0.3771	0.290344449	0.243998255	-0.086755092	-0.133101286	-0.046346193	0.83028477	0.734157437	0.952937475
sp Q969P0 IGSF8_HUMAN	1	10	21	10	-0.11057	0.022930109	-0.074410952	0.133498648	0.036157588	-0.09734106	0.801886683	0.988041589	0.888915836
sp P25705 ATPA_HUMAN	3	8	13	6	0.001067	-0.265465586	0.712665497	-0.266532495	0.711598588	0.978131083	0.856756996	0.475862154	0.199065417
sp P55010 IF5_HUMAN	22	4	7	3	-0.59973	-0.32072814	0.869485553	0.279004826	1.469218519	1.190213693	0.753177515	0.023505569	0.041065902
sp P84085 ARF5_HUMAN	5	11	21	9	0.241137	0.259086088	0.274888544	0.017949429	0.033751885	0.015802456	0.996389743	0.99127047	0.997556378
sp O75821 EIF3G_HUMAN	15	8	13	6	-0.40528	-0.447617256	0.219675868	-0.042341014	0.62495211	0.667293124	0.996442881	0.591693555	0.491500028
sp Q6UXB4 CLC4G_HUMAN	6	12	21	9	-0.30135	-0.149380349	-0.054536803	0.151967967	0.246811513	0.094843546	0.187451429	0.056627679	0.573463908
sp Q8N6G6 ATL1_HUMAN	3	4	7	3	-0.18692	-0.407801993	-0.5536664	-0.220880315	-0.366744722	-0.145864407	0.128829086	0.035418823	0.435640356
sp P03971 MIS_HUMAN	9	4	7	3	0.340621	0.259253028	-0.012323823	-0.081368018	-0.352944869	-0.271576851	0.899663564	0.299748209	0.406511867
sp Q96F85 CNRP1_HUMAN	8	11	21	9	-0.0877	-0.135857114	0.411997537	-0.04815756	0.499697092	0.547854652	0.96666576	0.096820296	0.031621468
sp Q02223 TNK17_HUMAN	28	19	35	15	0.005062	-0.077278082	0.347746762	-0.082339755	0.34268509	0.425024844	0.62237323	0.005933509	0.000102744
sp P35625 TIMP3_HUMAN	2	7	14	7	-0.03721	0.056059792	0.143654655	0.093269179	0.180864043	0.087594863	0.873128227	0.684852533	0.887141301
sp Q14353 GAMT_HUMAN	446	4	7	3	-0.16289	-0.178496346	0.356494451	-0.01560923	0.519381567	0.534990797	0.998980402	0.491388599	0.40407771
sp P14866 HNRPL_HUMAN	1	7	14	5	-0.41804	-0.430417606	0.736405412	-0.012379897	1.15444312	1.166823017	0.999467886	0.077345743	0.04067815
sp Q16553 LY6E_HUMAN	2	25	48	21	0.019135	0.073633991	0.125110693	0.054499411	0.105976113	0.051476702	0.751827762	0.475310562	0.797433522
sp P01611 KVD12_HUMAN	15	15	27	12	0.005928	-0.006959527	-0.017744453	-0.012887912	-0.023672838	-0.010784926	0.994385089	0.986953973	0.996608481

Supplemental Table II:

Description	SvsHC_padjust	SvsHC_Count	SvsM_padjust	SvsM_Count	MvsHC_padjust	MvsHC_Count
Neutrophil degranulation	3.92E-59	183	7.76E-59	177	0.000172546	23
Extracellular matrix organization	5.50E-40	120	4.05E-34	109	1.88E-09	25
Regulation of Insulin-like Growth Factor (IGF) transport and uptake by Insulin-like Growth Factor Binding Proteins (IGFBPs)	3.40E-27	63	5.85E-24	58	0.005455229	9
Post-translational protein phosphorylation	5.76E-24	55	1.61E-20	50	0.002464872	9
Platelet degranulation	1.21E-23	60	7.65E-15	47	1.89E-16	24
Binding and Uptake of Ligands by Scavenger Receptors	6.84E-23	33	4.35E-18	29	NA	NA
Response to elevated platelet cytosolic Ca ²⁺	9.84E-23	60	3.52E-14	47	2.41E-16	24
AUF1 (hnRNP D0) binds and destabilizes mRNA	9.84E-23	38	8.94E-20	35	NA	NA
ER-Phagosome pathway	2.67E-21	47	9.21E-14	37	NA	NA
Antigen processing-Cross presentation	2.67E-21	51	1.40E-13	40	NA	NA
The role of GTSE1 in G2/M progression after G2 checkpoint	5.29E-21	43	9.21E-14	34	NA	NA
Regulation of activated PAK-2p34 by proteasome mediated degradation	1.85E-20	34	1.89E-15	29	NA	NA
RUNX1 regulates transcription of genes involved in differentiation of HSCs	2.31E-20	56	2.89E-17	51	NA	NA
Vif-mediated degradation of APOBEC3G	3.82E-20	35	2.49E-15	30	NA	NA
FBXL7 down-regulates AURKA during mitotic entry and in early mitosis	3.82E-20	35	2.49E-15	30	NA	NA
Negative regulation of NOTCH4 signaling	3.82E-20	35	3.17E-16	31	NA	NA
Cross-presentation of soluble exogenous antigens (endosomes)	8.25E-20	33	8.21E-15	28	NA	NA
SCF-beta-TrCP mediated degradation of Emi1	8.25E-20	35	4.73E-15	30	NA	NA
Vpu mediated degradation of CD4	8.25E-20	34	6.31E-15	29	NA	NA
NIK-->noncanonical NF-kB signaling	1.60E-19	36	5.71E-15	31	NA	NA
Regulation of Apoptosis	1.88E-19	34	1.07E-14	29	NA	NA
Dectin-1 mediated noncanonical NF-kB signaling	3.27E-19	36	9.02E-15	31	NA	NA
Regulation of RUNX3 expression and activity	9.00E-19	34	2.42E-13	28	NA	NA
Autodegradation of the E3 ubiquitin ligase COP1	9.00E-19	33	4.75E-14	28	NA	NA
Ubiquitin Mediated Degradation of Phosphorylated Cdc25A	9.00E-19	33	4.75E-14	28	NA	NA
p53-Independent DNA Damage Response	9.00E-19	33	4.75E-14	28	NA	NA
p53-Independent G1/S DNA damage checkpoint	9.00E-19	33	4.75E-14	28	NA	NA
Ubiquitin-dependent degradation of Cyclin D	9.00E-19	33	4.75E-14	28	NA	NA
G2/M Checkpoints	9.33E-19	62	3.55E-16	57	NA	NA
SCF(Skp2)-mediated degradation of p27/p21	2.83E-18	35	6.24E-14	30	NA	NA
Degradation of GLI1 by the proteasome	2.83E-18	35	1.32E-15	32	NA	NA
Degradation of GLI2 by the proteasome	2.83E-18	35	1.32E-15	32	NA	NA
GLI3 is processed to GLI3R by the proteasome	2.83E-18	35	1.32E-15	32	NA	NA
Regulation of ornithine decarboxylase (ODC)	4.68E-18	32	2.14E-13	27	NA	NA
Degradation of AXIN	9.02E-18	33	2.42E-13	28	NA	NA
Regulation of mRNA stability by proteins that bind AU-rich elements	1.40E-17	42	4.45E-17	41	NA	NA
Oxygen-dependent proline hydroxylation of Hypoxia-inducible Factor Alpha	1.61E-17	36	1.69E-13	31	NA	NA
Hh mutants are degraded by ERAD	1.83E-17	33	4.12E-13	28	NA	NA
Signaling by NOTCH	3.49E-17	73	2.86E-16	70	NA	NA
Degradation of DVL	3.54E-17	33	6.44E-13	28	NA	NA
Stabilization of p53	3.54E-17	33	6.44E-13	28	NA	NA
ROS sensing by NFE2L2	3.54E-17	33	9.40E-14	29	NA	NA
Interleukin-1 signaling	4.97E-17	45	3.41E-13	39	NA	NA
Hedgehog ligand biogenesis	7.20E-17	35	6.44E-13	30	NA	NA
Regulation of HMOX1 expression and activity	7.20E-17	35	1.04E-13	31	NA	NA
CLEC7A (Dectin-1) signaling	1.28E-16	44	3.17E-16	43	NA	NA
Hh mutants abrogate ligand secretion	1.33E-16	33	1.76E-12	28	NA	NA
CDT1 association with the CDC6:ORC:origin complex	1.33E-16	33	1.76E-12	28	NA	NA
FCER1 mediated NF-kB activation	2.25E-16	39	6.44E-13	34	NA	NA
Activation of NF-kappaB in B cells	2.35E-16	35	1.65E-12	30	NA	NA
Defective CFTR causes cystic fibrosis	4.93E-16	33	4.73E-12	28	NA	NA
ECM proteoglycans	5.55E-16	37	6.33E-11	30	3.58E-05	10
Cellular response to chemical stress	6.16E-16	56	4.80E-13	50	NA	NA
Regulation of RUNX2 expression and activity	8.51E-16	36	2.09E-11	30	NA	NA
TNFR2 non-canonical NF-kB pathway	1.15E-15	43	5.56E-12	37	NA	NA
Metabolism of polyamines	1.25E-15	32	1.29E-11	27	NA	NA
Platelet activation, signaling and aggregation	1.32E-15	75	3.10E-11	64	2.33E-13	28
Signaling by NOTCH4	1.52E-15	38	6.44E-13	34	NA	NA
Orc1 removal from chromatin	2.15E-15	35	9.35E-12	30	NA	NA
Degradation of the extracellular matrix	2.15E-15	51	3.26E-17	53	NA	NA
Cellular response to hypoxia	2.30E-15	36	7.95E-12	31	NA	NA
Downstream signaling events of B Cell Receptor (BCR)	2.36E-15	38	3.66E-14	36	NA	NA
Autodegradation of Cdh1 by Cdh1:APC/C	2.68E-15	33	1.87E-11	28	NA	NA
Asymmetric localization of PCP proteins	2.68E-15	33	2.80E-12	29	NA	NA
Regulation of RAS by GAPs	3.12E-15	34	1.65E-11	29	NA	NA
MAPK6/MAPK4 signaling	5.61E-15	39	6.24E-14	37	NA	NA
p53-Dependent G1 DNA Damage Response	8.34E-15	33	4.30E-11	28	NA	NA
p53-Dependent G1/S DNA damage checkpoint	8.34E-15	33	4.30E-11	28	NA	NA
Signaling by Interleukins	1.02E-14	106	6.42E-13	98	NA	NA
Interleukin-1 family signaling	1.33E-14	50	3.32E-12	45	NA	NA
Degradation of beta-catenin by the destruction complex	1.54E-14	37	2.91E-11	32	NA	NA
APC/C:Cdc20 mediated degradation of Securin	2.39E-14	33	9.42E-11	28	NA	NA
Assembly of the pre-replicative complex	2.39E-14	33	9.42E-11	28	NA	NA
G1/S DNA Damage Checkpoints	2.39E-14	33	9.42E-11	28	NA	NA
Amyloid fiber formation	3.43E-14	43	4.29E-12	39	NA	NA
Apoptosis	3.82E-14	57	3.11E-13	54	NA	NA
Host Interactions of HIV factors	3.82E-14	47	4.90E-11	41	NA	NA
Regulation of PTEN stability and activity	3.92E-14	33	1.39E-10	28	NA	NA
Hedgehog 'off' state	6.96E-14	43	6.24E-10	36	NA	NA
Transcriptional regulation by RUNX3	1.02E-13	39	1.79E-09	32	NA	NA
Formation of Fibrin Clot (Clotting Cascade)	1.44E-13	24	4.05E-08	18	0.009288971	5
UCH proteinases	1.86E-13	40	1.16E-10	35	NA	NA
Downstream TCR signaling	2.22E-13	39	1.58E-10	34	NA	NA
Integrin cell surface interactions	2.28E-13	36	2.88E-10	31	0.002532341	8
Regulation of APC/C activators between G1/S and early anaphase	2.50E-13	35	3.79E-10	30	NA	NA
ABC transporter disorders	2.68E-13	34	4.97E-10	29	NA	NA
Cdc20:Phospho-APC/C mediated degradation of Cyclin A	2.75E-13	33	6.31E-10	28	NA	NA
CDK-mediated phosphorylation and removal of Cdc6	2.75E-13	33	6.31E-10	28	NA	NA
Programmed Cell Death	2.96E-13	61	1.43E-12	58	NA	NA
C-type lectin receptors (CLRs)	3.32E-13	48	1.87E-14	49	NA	NA
APC/C:Cdh1 mediated degradation of Cdc20 and other APC/C:Cdh1 targeted proteins in late mitosis/early G1	4.28E-13	33	8.96E-10	28	NA	NA
APC/Cdc20 mediated degradation of cell cycle proteins prior to satisfaction of the cell cycle checkpoint	4.28E-13	33	8.96E-10	28	NA	NA

Cyclin E associated events during G1/S transition	5.62E-13	35	7.34E-10	30	NA	NA	
TCR signaling	7.06E-13	43	5.67E-11	39	NA	NA	
APC/C:Cdc20 mediated degradation of mitotic proteins	1.07E-12	33	1.78E-09	28	NA	NA	
Signaling by the B Cell Receptor (BCR)	1.17E-12	41	1.26E-12	40	NA	NA	
Cyclin A:Cdk2-associated events at S phase entry	1.28E-12	35	1.37E-09	30	NA	NA	
Activation of APC/C and APC/C:Cdc20 mediated degradation of mitotic proteins	1.63E-12	33	2.44E-09	28	NA	NA	
PCP/CE pathway	3.56E-12	36	2.48E-11	34	NA	NA	
Transcriptional regulation by RUNX1	3.87E-12	64	2.52E-09	56	NA	NA	
APC/C-mediated degradation of cell cycle proteins	4.19E-12	35	3.33E-09	30	NA	NA	
Regulation of mitotic cell cycle	4.19E-12	35	3.33E-09	30	NA	NA	
Metabolism of carbohydrates	5.95E-12	73	1.12E-11	70	NA	NA	
G2/M Transition	6.48E-12	56	7.83E-08	46	NA	NA	
Mitotic G2-G2/M phases	1.02E-11	56	1.08E-07	46	NA	NA	
Fc epsilon receptor (FCER1) signaling	1.09E-11	44	3.48E-11	42	NA	NA	
Cytoprotection by HMOX1	1.10E-11	42	2.44E-09	37	NA	NA	
Switching of origins to a post-replicative state	1.28E-11	35	7.89E-09	30	NA	NA	
Non-integrin membrane-ECM interactions	3.73E-11	27	3.13E-09	24	0.000241742		8
Hedgehog 'on' state	4.06E-11	33	6.33E-09	29	NA	NA	
DNA Replication Pre-Initiation	4.06E-11	33	2.83E-08	28	NA	NA	
Scavenging by Class A Receptors	4.31E-11	15	9.05E-13	16	NA	NA	
Gene and protein expression by JAK-STAT signaling after Interleukin-12 stimulation	9.32E-11	21	3.09E-09	19	0.048698799		4
Cell surface interactions at the vascular wall	1.02E-10	43	1.46E-06	34	4.85E-06		14
TCF dependent signaling in response to WNT	1.14E-10	60	3.37E-10	57	NA	NA	
Signaling by Hedgehog	1.44E-10	45	4.40E-08	39	NA	NA	
ABC-family proteins mediated transport	1.51E-10	36	4.61E-08	31	NA	NA	
Scavenging of heme from plasma	1.75E-10	12	4.05E-05	8	NA	NA	
RHO GTPases activate PKNs	2.59E-10	34	6.33E-11	34	NA	NA	
Collagen degradation	3.56E-10	27	1.12E-10	27	NA	NA	
Packaging Of Telomere Ends	4.35E-10	24	1.52E-10	24	NA	NA	
M Phase	7.61E-10	87	3.06E-07	76	NA	NA	
Cell Cycle Checkpoints	8.52E-10	68	3.36E-09	64	NA	NA	
Common Pathway of Fibrin Clot Formation	1.27E-09	15	9.39E-05	10	0.009288971		4
Interleukin-12 signaling	1.95E-09	22	3.26E-08	20	NA	NA	
Diseases of programmed cell death	2.28E-09	34	8.90E-09	32	NA	NA	
Recognition and association of DNA glycosylase with site containing an affected purine	2.76E-09	24	9.19E-10	24	NA	NA	
Cleavage of the damaged purine	2.76E-09	24	9.19E-10	24	NA	NA	
Depurination	2.76E-09	24	9.19E-10	24	NA	NA	
Diseases of metabolism	2.76E-09	59	2.39E-09	57	0.005049397		13
Interleukin-12 family signaling	4.26E-09	24	2.55E-07	21	NA	NA	
Transcriptional regulation by RUNX2	5.72E-09	37	7.07E-07	32	NA	NA	
Regulation of expression of SLTs and ROBOs	1.87E-08	45	7.26E-07	40	NA	NA	
Recognition and association of DNA glycosylase with site containing an affected pyrimidine	2.16E-08	24	6.71E-09	24	NA	NA	
Cleavage of the damaged pyrimidine	2.16E-08	24	6.71E-09	24	NA	NA	
Depyrimidination	2.16E-08	24	6.71E-09	24	NA	NA	
Elastic fibre formation	3.72E-08	20	3.00E-06	17	0.002763594		6
Base-Excision Repair, AP Site Formation	4.57E-08	24	1.39E-08	24	NA	NA	
G1/S Transition	6.22E-08	37	4.50E-06	32	NA	NA	
Molecules associated with elastic fibres	6.25E-08	18	7.26E-06	15	0.008831027		5
Synthesis of DNA	6.25E-08	35	5.86E-06	30	NA	NA	
HSP90 chaperone cycle for steroid hormone receptors (SHR)	6.68E-08	22	0.000239457	16	NA	NA	
Signaling by WNT	6.88E-08	69	5.65E-11	74	NA	NA	
Nonhomologous End-Joining (NHEJ)	7.02E-08	25	2.15E-08	25	NA	NA	
Meiotic synapsis	7.66E-08	27	2.17E-08	27	NA	NA	
Metabolism of amino acids and derivatives	7.66E-08	75	0.000962166	58	NA	NA	
Separation of Sister Chromatids	7.79E-08	47	7.64E-05	38	NA	NA	
Plasma lipoprotein remodeling	8.53E-08	16	2.39E-06	14	0.000444061		6
Plasma lipoprotein assembly, remodeling, and clearance	9.54E-08	25	2.97E-08	25	0.004215306		7
Recruitment and ATM-mediated phosphorylation of repair and signaling proteins at DNA double strand breaks	1.86E-07	26	2.43E-07	25	NA	NA	
Diseases of glycosylation	2.23E-07	38	4.40E-08	38	NA	NA	
RNA Polymerase I Promoter Opening	2.23E-07	23	7.31E-08	23	NA	NA	
Inhibition of DNA recombination at telomere	2.38E-07	24	7.50E-08	24	NA	NA	
DNA Double Strand Break Response	2.45E-07	26	3.17E-07	25	NA	NA	
Mitotic Anaphase	2.47E-07	53	0.00019331	43	NA	NA	
Mitotic Metaphase and Anaphase	2.85E-07	53	0.000211739	43	NA	NA	
Signaling by ROBO receptors	2.94E-07	50	4.27E-08	50	NA	NA	
MAPK family signaling cascades	3.42E-07	66	2.33E-09	69	NA	NA	
DNA Replication	3.43E-07	35	2.38E-05	30	NA	NA	
G2/M DNA damage checkpoint	3.54E-07	29	9.66E-08	29	NA	NA	
Beta-catenin independent WNT signaling	3.83E-07	38	7.12E-09	40	NA	NA	
Laminin interactions	3.97E-07	15	1.49E-06	14	0.023394658		4
MAPK1/MAPK3 signaling	4.08E-07	60	4.64E-08	60	NA	NA	
DNA methylation	4.08E-07	23	1.40E-07	23	NA	NA	
DNA Damage/Telomere Stress Induced Senescence	4.13E-07	26	1.28E-07	26	NA	NA	
RAF/MAP kinase cascade	4.41E-07	59	5.22E-08	59	NA	NA	
Intrinsic Pathway of Fibrin Clot Formation	4.53E-07	13	2.36E-06	12	NA	NA	
L1CAM interactions	5.45E-07	33	0.000314061	26	0.013689406		8
Mitotic G1 phase and G1/S transition	6.54E-07	38	7.39E-05	32	NA	NA	
Pre-NOTCH Expression and Processing	7.11E-07	31	1.91E-07	31	NA	NA	
Activated PKN1 stimulates transcription of AR (androgen receptor) regulated genes KLK2 and KLK3	7.47E-07	23	2.64E-07	23	NA	NA	
SIRT1 negatively regulates rRNA expression	1.01E-06	23	3.55E-07	23	NA	NA	
HIV Infection	1.11E-06	51	3.39E-05	45	NA	NA	
Regulation of TLR by endogenous ligand	1.21E-06	12	0.000402886	9	NA	NA	
Condensation of Prophase Chromosomes	1.32E-06	24	4.50E-07	24	NA	NA	
Collagen formation	1.39E-06	27	4.32E-07	27	NA	NA	
Formation of tubulin folding intermediates by CCT/TriC	1.59E-06	13	0.001629824	9	NA	NA	
RUNX1 regulates genes involved in megakaryocyte differentiation and platelet function	2.01E-06	28	2.50E-05	25	NA	NA	
Class I MHC mediated antigen processing & presentation	2.12E-06	71	0.000397383	60	NA	NA	
Ub-specific processing proteases	2.40E-06	48	3.54E-05	43	NA	NA	
Neddylation	2.67E-06	50	0.00015853	43	NA	NA	
MET activates PTK2 signaling	2.96E-06	14	1.49E-06	14	NA	NA	
PTEN Regulation	3.26E-06	35	0.000336898	29	NA	NA	
MHC class II antigen presentation	3.84E-06	32	0.023821381	21	NA	NA	
Metabolism of nucleotides	3.86E-06	28	4.29E-05	25	NA	NA	

HCMV Early Events	3.88E-06	34	0.00017554	29	NA	NA	
PRC2 methylates histones and DNA	3.96E-06	23	1.46E-06	23	NA	NA	
Defective pyroptosis	3.96E-06	23	1.46E-06	23	NA	NA	
RHO GTPase Effectors	4.17E-06	63	7.12E-09	68	NA	NA	
Signaling by PDGF	4.20E-06	20	1.72E-06	20	0.039349738		5
Syndecan interactions	4.68E-06	13	0.002930495	9	0.000225937		6
Deposition of new CENPA-containing nucleosomes at the centromere	5.06E-06	23	1.86E-06	23	NA	NA	
Nucleosome assembly	5.06E-06	23	1.86E-06	23	NA	NA	
Immunoregulatory interactions between a Lymphoid and a non-Lymphoid cell	6.51E-06	33	0.0002921	28	NA	NA	
Cooperation of Prefoldin and TriC/CCT in actin and tubulin folding	7.34E-06	14	0.002675233	10	NA	NA	
Diseases associated with glycosaminoglycan metabolism	8.08E-06	16	3.89E-06	16	NA	NA	
MET promotes cell motility	8.08E-06	16	6.68E-07	17	NA	NA	
ERCC6 (CSB) and EHMT2 (G9a) positively regulate rRNA expression	8.33E-06	23	7.80E-07	24	NA	NA	
Pre-NOTCH Transcription and Translation	9.33E-06	26	8.87E-07	27	NA	NA	
COPI-independent Golgi-to-ER retrograde traffic	9.83E-06	18	0.010670328	12	NA	NA	
Assembly of collagen fibrils and other multimeric structures	9.92E-06	20	9.23E-07	21	NA	NA	
Transport to the Golgi and subsequent modification	9.96E-06	41	0.000436547	35	NA	NA	
Diseases of signal transduction by growth factor receptors and second messengers	1.14E-05	71	5.37E-06	69	NA	NA	
Asparagine N-linked glycosylation	1.49E-05	58	0.000647254	50	NA	NA	
Aggrephagy	1.64E-05	16	0.007962825	11	NA	NA	
Gluconeogenesis	1.68E-05	14	0.004327317	10	NA	NA	
Signaling by MET	1.68E-05	23	1.68E-06	24	NA	NA	
Deregulated CDK5 triggers multiple neurodegenerative pathways in Alzheimer's disease models	1.95E-05	11	0.000600248	9	7.61E-05		6
Neurodegenerative Diseases	1.95E-05	11	0.000600248	9	7.61E-05		6
Chaperone Mediated Autophagy	1.95E-05	11	1.21E-05	11	NA	NA	
Meiotic recombination	2.29E-05	24	8.80E-06	24	NA	NA	
Glutathione synthesis and recycling	2.54E-05	8	0.002007169	6	NA	NA	
Processing of DNA double-strand break ends	2.54E-05	26	9.23E-06	26	NA	NA	
PIP3 activates AKT signaling	2.54E-05	52	0.000208567	47	NA	NA	
Chondroitin sulfate/dermatan sulfate metabolism	3.20E-05	17	0.009060506	12	NA	NA	
Glutathione conjugation	3.59E-05	14	0.001845358	11	NA	NA	
COPI-mediated anterograde transport	4.55E-05	26	0.002513656	21	NA	NA	
Toll-like Receptor Cascades	4.60E-05	35	0.000208567	32	NA	NA	
Prefoldin mediated transfer of substrate to CCT/TriC	5.02E-05	12	0.000908139	10	NA	NA	
Detoxification of Reactive Oxygen Species	5.11E-05	14	0.000143072	13	0.008475125		5
Defective B3GALT1 causes Peters-plus syndrome (PpS)	5.11E-05	14	0.000635663	12	0.046379153		4
Defective B3GAT3 causes JDSSDHD	5.26E-05	10	0.000258445	9	NA	NA	
Dissolution of Fibrin Clot	5.71E-05	8	0.003254419	6	NA	NA	
Diseases associated with O-glycosylation of proteins	5.79E-05	20	9.49E-05	19	NA	NA	
Formation of the beta-catenin:TCF transactivating complex	6.24E-05	24	2.50E-05	24	NA	NA	
HCMV Infection	6.89E-05	35	0.001410284	30	NA	NA	
O-glycosylation of TSR domain-containing proteins	7.13E-05	14	0.000817677	12	0.048698799		4
Base Excision Repair	7.53E-05	24	3.05E-05	24	NA	NA	
Disorders of transmembrane transporters	8.74E-05	37	0.000698581	33	NA	NA	
S Phase	9.00E-05	35	0.001685437	30	NA	NA	
Retinoid metabolism and transport	0.000102323	15	0.003098587	12	0.013689406		5
Interconversion of nucleotide di- and triphosphates	0.000110685	12	0.001587191	10	NA	NA	
CS/DS degradation	0.000115908	8	0.000755221	7	NA	NA	
Deubiquitination	0.000122016	54	0.001241469	48	NA	NA	
A tetrasaccharide linker sequence is required for GAG synthesis	0.000129489	11	0.00219405	9	NA	NA	
Post-chaperonin tubulin folding pathway	0.000142712	10	NA	NA	NA	NA	
Transcriptional regulation of granulopoiesis	0.000156027	23	6.60E-05	23	NA	NA	
Collagen biosynthesis and modifying enzymes	0.000159742	19	7.62E-05	19	NA	NA	
ER to Golgi Anterograde Transport	0.00017853	33	0.00655574	27	NA	NA	
B-WICH complex positively regulates rRNA expression	0.00018563	23	2.50E-05	24	NA	NA	
RNA Polymerase I Promoter Escape	0.00018563	23	2.50E-05	24	NA	NA	
Mitotic Prophase	0.000207357	31	7.16E-05	31	NA	NA	
Pentose phosphate pathway	0.000216613	8	0.001219647	7	NA	NA	
Recycling pathway of L1	0.000235207	15	0.015736693	11	NA	NA	
Glycosaminoglycan metabolism	0.000252833	28	0.000246678	27	NA	NA	
Complement cascade	0.000252833	17	1.22E-08	23	NA	NA	
Meiosis	0.000266728	27	0.000103247	27	NA	NA	
Transcriptional regulation by small RNAs	0.000293402	25	0.000120101	25	NA	NA	
Metabolism of fat-soluble vitamins	0.000303638	15	0.006534901	12	0.019256708		5
Ethanol oxidation	0.000307735	7	NA	NA	NA	NA	
HDACs deacetylate histones	0.000308893	23	0.000135438	23	NA	NA	
Defective B4GALT7 causes EDS, progeroid type	0.000376111	9	0.001548229	8	NA	NA	
Defective B3GALT6 causes EDS P2 and SEMDJL1	0.000376111	9	0.001548229	8	NA	NA	
Translocation of SLC2A4 (GLUT4) to the plasma membrane	0.00044238	19	0.001837812	17	NA	NA	
Glucose metabolism	0.000528749	22	0.001648163	20	NA	NA	
Estrogen-dependent gene expression	0.000582822	31	0.002213128	28	NA	NA	
Advanced glycosylation endproduct receptor signaling	0.000588928	7	0.003254419	6	NA	NA	
RHOBTB GTPase Cycle	0.000588928	12	0.001485548	11	NA	NA	
O-linked glycosylation	0.000623949	25	0.001573624	23	NA	NA	
MyD88 deficiency (TLR2/4)	0.000632962	8	0.014323589	6	NA	NA	
Intracellular signaling by second messengers	0.000643979	53	1.82E-05	56	NA	NA	
Senescence-Associated Secretory Phenotype (SASP)	0.000717819	25	0.000300099	25	NA	NA	
Removal of aminoterminal propeptides from gamma-carboxylated proteins	0.000826653	6	0.000638339	6	NA	NA	
Chylomicron assembly	0.000826653	6	0.000638339	6	0.010004681		3
Chylomicron remodeling	0.000826653	6	0.000638339	6	0.010004681		3
HDL remodeling	0.000826653	6	4.64E-05	7	NA	NA	
Regulation of Complement cascade	0.000881679	14	2.97E-05	16	NA	NA	
Microtubule-dependent trafficking of connexons from Golgi to the plasma membrane	0.001002007	8	NA	NA	NA	NA	
IRAK4 deficiency (TLR2/4)	0.001002007	8	0.018949236	6	NA	NA	
Interleukin-4 and Interleukin-13 signaling	0.00100795	24	0.005644107	21	NA	NA	
Attenuation phase	0.001020949	7	0.005000985	6	NA	NA	
TGF-beta receptor signaling activates SMADS	0.001043282	11	0.002675233	10	NA	NA	
Toll Like Receptor 4 (TLR4) Cascade	0.00107709	28	0.000982359	27	NA	NA	
Reproduction	0.001253369	29	0.001092839	28	NA	NA	
RHOBTB2 GTPase cycle	0.001264327	9	0.000862559	9	NA	NA	
Plasma lipoprotein clearance	0.001399953	11	0.003372905	10	NA	NA	
Transport of connexons to the plasma membrane	0.001524045	8	NA	NA	NA	NA	
LDL clearance	0.001524045	8	0.024470873	6	NA	NA	

Collagen chain trimerization	0.001556626	13	0.000920395	13	NA	NA
Endosomal/Vacuolar pathway	0.001571254	6	0.049623749	4	NA	NA
Gamma-carboxylation, transport, and amino-terminal cleavage of proteins	0.001571254	6	0.001196477	6	NA	NA
Oxidative Stress Induced Senescence	0.001640441	26	0.000691473	26	NA	NA
Activation of BAD and translocation to mitochondria	0.001658641	7	0.000156212	8	NA	NA
GRB2:SOS provides linkage to MAPK signaling for Integrins	0.001658641	7	NA	NA	NA	NA
Platelet Adhesion to exposed collagen	0.001658641	7	0.035312991	5	0.028806283	3
HDMs demethylate histones	0.001680419	14	0.00097685	14	NA	NA
Platelet Aggregation (Plug Formation)	0.001680419	12	NA	NA	NA	NA
RHO GTPases activate PAKs	0.001756173	9	3.37E-05	11	NA	NA
Positive epigenetic regulation of rRNA expression	0.0018227	23	0.000120101	25	NA	NA
Telomere Maintenance	0.0019187	24	0.000863046	24	NA	NA
Antigen processing: Ubiquitination & Proteasome degradation	0.001988697	51	0.007767537	46	NA	NA
NoRC negatively regulates rRNA expression	0.002078402	23	0.000959129	23	NA	NA
Chondroitin sulfate biosynthesis	0.002193527	8	0.031175551	6	NA	NA
Antimicrobial peptides	0.002420953	21	0.001168376	21	NA	NA
Defects of contact activation system (CAS) and kallikrein/kinin system (KKS)	0.002587482	7	0.001841868	7	NA	NA
Diseases of hemostasis	0.002587482	7	0.001841868	7	NA	NA
HCMV Late Events	0.002796947	24	0.001244581	24	NA	NA
SUMOylation of chromatin organization proteins	0.002997977	17	0.001573624	17	NA	NA
Glycolysis	0.002997977	17	0.001573624	17	NA	NA
Negative epigenetic regulation of rRNA expression	0.003038265	23	0.001402057	23	NA	NA
RNA Polymerase I Promoter Clearance	0.003038265	23	0.000587807	24	NA	NA
Gene Silencing by RNA	0.003272849	27	0.001381685	27	NA	NA
Toll Like Receptor TLR1:TLR2 Cascade	0.003300637	22	0.007962825	20	NA	NA
Toll Like Receptor 2 (TLR2) Cascade	0.003300637	22	0.007962825	20	NA	NA
Gamma carboxylation, hypusine formation and arylsulfatase activation	0.003340833	12	0.006679624	11	NA	NA
HDR through Homologous Recombination (HRR) or Single Strand Annealing (SSA)	0.003611063	26	0.001557407	26	NA	NA
RNA Polymerase I Transcription	0.003869433	23	0.000755818	24	NA	NA
EPH-Ephrin signaling	0.003872328	20	2.53E-06	26	NA	NA
RHO GTPases activate IQGAPs	0.004156637	10	0.002675233	10	NA	NA
Infection with Mycobacterium tuberculosis	0.004316415	9	0.011557951	8	NA	NA
Erythrocytes take up carbon dioxide and release oxygen	0.004316415	6	0.000436547	7	NA	NA
O2/CO2 exchange in erythrocytes	0.004316415	6	0.000436547	7	NA	NA
Trafficking and processing of endosomal TLR	0.004316415	6	0.019354134	5	NA	NA
Keratan sulfate degradation	0.004316415	6	4.05E-05	8	NA	NA
Purine salvage	0.004316415	6	0.019354134	5	NA	NA
Chk1/Chk2(Cds1) mediated inactivation of Cyclin B:Cdk1 complex	0.004316415	6	0.003254419	6	NA	NA
Heparan sulfate/heparin (HS-GAG) metabolism	0.004316415	14	0.045848681	11	NA	NA
Post-translational modification: synthesis of GPI-anchored proteins	0.004324987	20	0.011705452	18	NA	NA
Selective autophagy	0.005057682	18	NA	NA	NA	NA
Activation of Matrix Metalloproteinases	0.00523388	10	0.003372905	10	NA	NA
Pre-NOTCH Processing in Golgi	0.005498592	7	0.003974798	7	NA	NA
Metabolism of Angiotensinogen to Angiotensins	0.005498592	7	NA	NA	NA	NA
Sulfur amino acid metabolism	0.005658755	9	NA	NA	NA	NA
Phase II - Conjugation of compounds	0.005924181	22	0.026648914	19	NA	NA
NCAM signaling for neurite out-growth	0.005924181	15	0.00334773	15	NA	NA
Keratan sulfate/keratin metabolism	0.006615454	10	5.20E-05	13	NA	NA
Homology Directed Repair	0.00663756	26	0.002930495	26	NA	NA
Gamma-carboxylation of protein precursors	0.007221244	5	0.005603758	5	NA	NA
Folding of actin by CCT/TriC	0.007221244	5	4.64E-05	7	NA	NA
Metabolism of vitamins and cofactors	0.007226646	33	0.009694596	31	NA	NA
Glycogen metabolism	0.007284199	9	0.00496138	9	NA	NA
Apoptotic execution phase	0.007335592	13	0.00443201	13	NA	NA
Assembly of active LPL and LIPC lipase complexes	0.007676325	7	0.005557148	7	NA	NA
Triglyceride catabolism	0.00772085	8	0.000221681	10	NA	NA
Semaphorin interactions	0.008021306	15	0.001648163	16	0.002763594	7
Signaling by Nuclear Receptors	0.008040292	47	0.002470854	47	NA	NA
Golgi-to-ER retrograde transport	0.008087523	25	NA	NA	NA	NA
GPVI-mediated activation cascade	0.008120336	10	0.017683844	9	NA	NA
Biological oxidations	0.008241539	37	NA	NA	NA	NA
trans-Golgi Network Vesicle Budding	0.008646441	16	NA	NA	NA	NA
Signaling by CSF3 (G-CSF)	0.009190361	9	0.021558731	8	NA	NA
Prolactin receptor signaling	0.009696333	6	0.007312466	6	NA	NA
p130Cas linkage to MAPK signaling for integrins	0.009696333	6	NA	NA	NA	NA
Activation of anterior HOX genes in hindbrain development during early embryogenesis	0.010045639	23	0.004880256	23	NA	NA
Activation of HOX genes during differentiation	0.010045639	23	0.004880256	23	NA	NA
Receptor-type tyrosine-protein phosphatases	0.010350013	7	0.007560886	7	NA	NA
NCAM1 interactions	0.010350013	11	0.006679624	11	NA	NA
MyD88:MAL(TIRAP) cascade initiated on plasma membrane	0.011176935	20	0.025834797	18	NA	NA
Toll Like Receptor TLR6:TLR2 Cascade	0.011176935	20	0.025834797	18	NA	NA
Dermatan sulfate biosynthesis	0.011393367	5	0.008959336	5	NA	NA
DNA Double-Strand Break Repair	0.012445536	29	0.010202569	28	NA	NA
Downregulation of TGF-beta receptor signaling	0.012885256	8	NA	NA	NA	NA
Nuclear Envelope (NE) Reassembly	0.012885256	16	NA	NA	NA	NA
Glycogen synthesis	0.013695241	6	NA	NA	NA	NA
Signal regulatory protein family interactions	0.013695241	6	0.001841868	7	NA	NA
Signal transduction by L1	0.013784594	7	NA	NA	0.008699543	4
ESR-mediated signaling	0.015324819	36	0.003254419	37	NA	NA
Metabolism of porphyrins	0.016392045	8	NA	NA	NA	NA
Integrin signaling	0.016392045	8	NA	NA	NA	NA
Caspase-mediated cleavage of cytoskeletal proteins	0.017245803	5	NA	NA	NA	NA
HSF1 activation	0.017245803	5	0.013662988	5	NA	NA
GP1b-IX-V activation signalling	0.017245803	5	NA	NA	NA	NA
Purine ribonucleoside monophosphate biosynthesis	0.017245803	5	0.002007169	6	NA	NA
TAK1 activates Nfkb by phosphorylation and activation of IKKs complex	0.017495455	9	0.03665047	8	NA	NA
Intra-Golgi and retrograde Golgi-to-ER traffic	0.0176637	33	NA	NA	NA	NA
Signaling by ERBB2 TMD/JMD mutants	0.017941042	7	0.047323229	6	NA	NA
PKMTs methylate histone lysines	0.017966218	15	0.010645707	15	NA	NA
Glycosphingolipid metabolism	0.020745945	11	0.035510466	10	NA	NA
Autophagy	0.020898154	26	NA	NA	NA	NA
RMTs methylate histone arginines	0.020957759	16	0.012080994	16	NA	NA
Nucleotide salvage	0.023154118	7	0.016859694	7	NA	NA

RHOBTB1 GTPase cycle	0.023154118	7	0.016859694	7	NA	NA
Activation of AMPK downstream of NMDARs	0.025332545	8	NA	NA	NA	NA
Signaling by TGFβ family members	0.02595621	19	NA	NA	NA	NA
Regulation of PLK1 Activity at G2/M Transition	0.026510185	17	NA	NA	NA	NA
HSF1-dependent transactivation	0.029516368	7	0.00542735	8	NA	NA
Activation of BH3-only proteins	0.031072616	8	0.00628775	9	NA	NA
EPHA-mediated growth cone collapse	0.031072616	8	NA	NA	0.023394658	4
Chromosome Maintenance	0.03153092	24	0.015672058	24	NA	NA
Ephrin signaling	0.033017058	6	0.005557148	7	NA	NA
Plasma lipoprotein assembly	0.033017058	6	0.000161907	9	0.048999353	3
Methylation	0.034678478	5	0.026460847	5	NA	NA
Heme biosynthesis	0.034678478	5	NA	NA	NA	NA
Golgi Associated Vesicle Biogenesis	0.034768198	12	NA	NA	NA	NA
IKK complex recruitment mediated by RIP1	0.036265016	7	0.00706967	8	NA	NA
Signaling by ERBB2 KD Mutants	0.036265016	7	NA	NA	NA	NA
Inactivation of CSF3 (G-CSF) signaling	0.036265016	7	NA	NA	NA	NA
Antigen Presentation: Folding, assembly and peptide loading of class I MHC	0.036265016	7	NA	NA	NA	NA
Diseases of Immune System	0.036819132	8	NA	NA	NA	NA
Uptake and actions of bacterial toxins	0.036819132	8	0.007844962	9	NA	NA
Diseases associated with the TLR signaling cascade	0.036819132	8	NA	NA	NA	NA
Sealing of the nuclear envelope (NE) by ESCRT-III	0.036819132	8	NA	NA	NA	NA
Cell-Cell communication	0.039665264	22	0.001117136	26	NA	NA
Apoptotic cleavage of cellular proteins	0.042669498	9	0.02915956	9	NA	NA
DNA Damage Recognition in GG-NER	0.042669498	9	0.02915956	9	NA	NA
EPH-ephrin mediated repulsion of cells	0.042769695	11	0.010670328	12	NA	NA
Signaling by ERBB2 in Cancer	0.044033774	7	NA	NA	NA	NA
Purinergic signaling in leishmaniasis infection	0.044033774	7	NA	NA	NA	NA
Cell recruitment (pro-inflammatory response)	0.044033774	7	NA	NA	NA	NA
Iron uptake and transport	0.044033774	12	0.011449431	13	NA	NA
Urea cycle	0.044990414	4	NA	NA	NA	NA
Signaling by NOTCH1 HD Domain Mutants in Cancer	0.045086085	5	0.035312991	5	NA	NA
Constitutive Signaling by NOTCH1 HD Domain Mutants	0.045086085	5	0.035312991	5	NA	NA
ERBB2 Regulates Cell Motility	0.045086085	5	NA	NA	NA	NA
Nucleobase biosynthesis	0.045086085	5	0.007312466	6	NA	NA
Recruitment of NuMA to mitotic centrosomes	0.046770436	17	NA	NA	NA	NA
TP53 Regulates Metabolic Genes	0.047968599	16	NA	NA	NA	NA
Signaling by TGF-beta Receptor Complex	0.049572079	14	NA	NA	NA	NA
Smooth Muscle Contraction	NA	NA	1.53E-05	15	0.010004681	5
Initial triggering of complement	NA	NA	2.09E-05	11	NA	NA
DARPP-32 events	NA	NA	0.000473668	10	NA	NA
Striated Muscle Contraction	NA	NA	0.000480462	12	NA	NA
EPHB-mediated forward signaling	NA	NA	0.000582218	13	NA	NA
Calcineurin activates NFAT	NA	NA	0.001196477	6	NA	NA
eNOS activation	NA	NA	0.003254419	6	NA	NA
Adherens junctions interactions	NA	NA	0.003372905	10	NA	NA
Keratan sulfate biosynthesis	NA	NA	0.003811283	9	NA	NA
Creation of C4 and C2 activators	NA	NA	0.005000985	6	NA	NA
CREB1 phosphorylation through the activation of Adenylate Cyclase	NA	NA	0.005000985	6	NA	NA
Fcγ receptor (FCGR) dependent phagocytosis	NA	NA	0.005139349	18	NA	NA
Regulation of actin dynamics for phagocytic cup formation	NA	NA	0.006691711	14	NA	NA
Triglyceride metabolism	NA	NA	0.008044861	10	NA	NA
CaMK IV-mediated phosphorylation of CREB	NA	NA	0.013662988	5	NA	NA
Metabolism of nitric oxide: NOS3 activation and regulation	NA	NA	0.014323589	6	NA	NA
Signaling by BRAF and RAF fusions	NA	NA	0.015611743	14	NA	NA
Epigenetic regulation of gene expression	NA	NA	0.015736693	25	NA	NA
Signaling by moderate kinase activity BRAF mutants	NA	NA	0.015736693	11	NA	NA
Signaling by RAS mutants	NA	NA	0.015736693	11	NA	NA
Paradoxical activation of RAF signaling by kinase inactive BRAF	NA	NA	0.015736693	11	NA	NA
Signaling downstream of RAS mutants	NA	NA	0.015736693	11	NA	NA
HATs acetylate histones	NA	NA	0.01684925	24	NA	NA
Downstream signal transduction	NA	NA	0.017806081	8	NA	NA
Crosslinking of collagen fibrils	NA	NA	0.018949236	6	NA	NA
Uptake and function of anthrax toxins	NA	NA	0.019354134	5	NA	NA
Cell junction organization	NA	NA	0.020432009	17	NA	NA
RHO GTPases Activate WASPs and WAVES	NA	NA	0.021079591	9	NA	NA
RAF activation	NA	NA	0.021079591	9	NA	NA
Cytosolic tRNA aminoacylation	NA	NA	0.02121053	7	NA	NA
MyD88-independent TLR4 cascade	NA	NA	0.021474363	18	NA	NA
TRIF(TICAM1)-mediated TLR4 signaling	NA	NA	0.021474363	18	NA	NA
Clathrin-mediated endocytosis	NA	NA	0.022928951	24	NA	NA
Signaling by RAF1 mutants	NA	NA	0.023135898	10	NA	NA
Protein methylation	NA	NA	0.024470873	6	NA	NA
Calmodulin induced events	NA	NA	0.02479162	9	NA	NA
CaM pathway	NA	NA	0.02479162	9	NA	NA
Activated NOTCH1 Transmits Signal to the Nucleus	NA	NA	0.025961493	8	NA	NA
Cellular Senescence	NA	NA	0.027033861	30	NA	NA
PKA activation	NA	NA	0.031175551	6	NA	NA
Parasite infection	NA	NA	0.031816869	12	NA	NA
Leishmania phagocytosis	NA	NA	0.031816869	12	NA	NA
FCGR3A-mediated phagocytosis	NA	NA	0.031816869	12	NA	NA
Ca-dependent events	NA	NA	0.034214398	9	NA	NA
Anchoring fibril formation	NA	NA	0.035312991	5	NA	NA
CREB1 phosphorylation through the activation of CaMKII/CaMKK/CaMKIV cascade	NA	NA	0.036049905	4	NA	NA
STAT5 activation downstream of FLT3 ITD mutants	NA	NA	0.036049905	4	NA	NA
VEGFR2 mediated cell proliferation	NA	NA	0.038871267	6	NA	NA
PI3P, PP2A and IER3 Regulate PI3K/AKT Signaling	NA	NA	0.039986865	18	NA	NA
TRAF6 mediated induction of NFκB and MAP kinases upon TLR7/8 or 9 activation	NA	NA	0.041540161	16	NA	NA
VEGFA-VEGFR2 Pathway	NA	NA	0.042747921	17	NA	NA
Oncogenic MAPK signaling	NA	NA	0.043998945	15	NA	NA
Muscle contraction	NA	NA	0.045104075	29	NA	NA
MyD88 dependent cascade initiated on endosome	NA	NA	0.045473832	16	NA	NA
Spry regulation of FGF signaling	NA	NA	0.045764395	5	NA	NA
Sema3A PAK dependent Axon repulsion	NA	NA	0.045764395	5	NA	NA

Signaling by ERBB2 ECD mutants	NA	NA	0.045764395	5	NA	NA
Interleukin-3, Interleukin-5 and GM-CSF signaling	NA	NA	0.046079633	10	NA	NA
Translation of structural proteins	NA	NA	0.046096413	7	NA	NA
Signaling by VEGF	NA	NA	0.04667717	18	NA	NA
PKA-mediated phosphorylation of CREB	NA	NA	0.047323229	6	NA	NA
NOTCH2 Activation and Transmission of Signal to the Nucleus	NA	NA	0.047323229	6	NA	NA
Toll Like Receptor 7/8 (TLR7/8) Cascade	NA	NA	0.048861225	16	NA	NA
Regulation of localization of FOXO transcription factors	NA	NA	0.049623749	4	NA	NA
Constitutive Signaling by Overexpressed ERBB2	NA	NA	0.049623749	4	NA	NA
N-glycan trimming in the ER and Calnexin/Calreticulin cycle	NA	NA	0.049623749	8	NA	NA
Sema4D induced cell migration and growth-cone collapse	NA	NA	NA	NA	0.000823938	5
Sema4D in semaphorin signaling	NA	NA	NA	NA	0.001896423	5
PECAM1 interactions	NA	NA	NA	NA	0.016233959	3
Metabolic disorders of biological oxidation enzymes	NA	NA	NA	NA	0.03563081	4
Other semaphorin interactions	NA	NA	NA	NA	0.048999353	3

204 Unknown 101	39	74	33	-2.22748	-2.261232904	-2.358659818	-0.033749888	-0.131176802	-0.097426914	0.993087642	0.929335817	0.949682941
205 Unknown 102	39	73	33	-3.51935	-1.981837844	-1.641701816	1.537507857	1.877643885	0.340136028	1.69E-05	1.04E-05	0.586642877
206 Unknown 103	39	74	33	0.011495	0.172496474	0.154895125	0.161001151	0.143399801	-0.01760135	0.591706571	0.74670605	0.994379888
207 Unknown 104	39	70	32	-1.64607	-4.286801006	-5.077334368	-2.640731845	-3.431265207	-0.790533362	8.66E-08	6.60E-09	0.228642052
208 Unknown 105	39	74	33	0.44489	0.336857909	0.281883988	-0.108032012	-0.163005933	-0.054973921	0.811256064	0.716876499	0.952671057
209 Unknown 106	39	74	33	-0.65443	-0.650681906	-0.677986907	0.003748679	-0.023556323	-0.027305002	0.999834414	0.995434048	0.992180286
210 Unknown 107	39	74	33	4.079474	4.187140091	4.252216362	0.10766614	0.172742411	0.065076271	0.833517076	0.720677336	0.942209108
211 Unknown 108	39	74	33	-1.60148	-1.531654425	-1.474809211	0.06982402	0.126669234	0.056845214	0.950927434	0.890638518	0.970631518
212 Unknown 109	39	74	33	-2.04133	-1.727937458	-1.950211685	0.31339412	0.091119892	-0.222274227	0.510154406	0.960698314	0.738046604
213 Unknown 110	38	74	33	-1.07312	-0.557021525	-0.37689771	0.516100639	0.696224454	0.180123815	0.264552258	0.183479702	0.861466226

Supplemental Table IV:

Protein	uniprot_url	Cor_w_NET
P62258	https://www.uniprot.org/uniprot/P62258	0.691252814
P02671	https://www.uniprot.org/uniprot/P02671	0.608444092
P15291	https://www.uniprot.org/uniprot/P15291	0.791351511
P11047	https://www.uniprot.org/uniprot/P11047	0.762476326
P0DOY3	https://www.uniprot.org/uniprot/P0DOY3	0.684550547
P06744	https://www.uniprot.org/uniprot/P06744	0.808941074
P24821	https://www.uniprot.org/uniprot/P24821	0.682467661
P01033	https://www.uniprot.org/uniprot/P01033	0.827003164
P14625	https://www.uniprot.org/uniprot/P14625	0.739693826
Q12907	https://www.uniprot.org/uniprot/Q12907	0.686606335
P0DJ18	https://www.uniprot.org/uniprot/P0DJ18	0.743892057
P69905	https://www.uniprot.org/uniprot/P69905	0.619340603
P13667	https://www.uniprot.org/uniprot/P13667	0.761316849
P01011	https://www.uniprot.org/uniprot/P01011	0.678784994
P02741	https://www.uniprot.org/uniprot/P02741	0.74196483
P02788	https://www.uniprot.org/uniprot/P02788	0.740338601
P55854	https://www.uniprot.org/uniprot/P55854	0.661225392
P20160	https://www.uniprot.org/uniprot/P20160	0.769067958
P02042	https://www.uniprot.org/uniprot/P02042	0.612421726
Q02809	https://www.uniprot.org/uniprot/Q02809	0.635092928
P18428	https://www.uniprot.org/uniprot/P18428	0.769097603
Q9UHI8	https://www.uniprot.org/uniprot/Q9UHI8	0.655870394
P20333	https://www.uniprot.org/uniprot/P20333	0.641866
Q15485	https://www.uniprot.org/uniprot/Q15485	0.606446189
P10451	https://www.uniprot.org/uniprot/P10451	0.667184233
P05164	https://www.uniprot.org/uniprot/P05164	0.82327699
P13796	https://www.uniprot.org/uniprot/P13796	0.666850137
P04275	https://www.uniprot.org/uniprot/P04275	0.628584018
P25786	https://www.uniprot.org/uniprot/P25786	0.797779734
Q9BYE9	https://www.uniprot.org/uniprot/Q9BYE9	0.605212344
P02750	https://www.uniprot.org/uniprot/P02750	0.667660953
Q06033	https://www.uniprot.org/uniprot/Q06033	0.635130951
P01034	https://www.uniprot.org/uniprot/P01034	0.652683816
P23381	https://www.uniprot.org/uniprot/P23381	0.701027123
P60900	https://www.uniprot.org/uniprot/P60900	0.805532798
P07998	https://www.uniprot.org/uniprot/P07998	0.601512371
P33908	https://www.uniprot.org/uniprot/P33908	0.604425892
Q8TDQ0	https://www.uniprot.org/uniprot/Q8TDQ0	0.722261494
P00338	https://www.uniprot.org/uniprot/P00338	0.732384091
P01762	https://www.uniprot.org/uniprot/P01762	0.703321131
P05362	https://www.uniprot.org/uniprot/P05362	0.713910191
P14543	https://www.uniprot.org/uniprot/P14543	0.791857117
O43278	https://www.uniprot.org/uniprot/O43278	0.646364245
Q14118	https://www.uniprot.org/uniprot/Q14118	0.626801502
P25789	https://www.uniprot.org/uniprot/P25789	0.802991068
P68871	https://www.uniprot.org/uniprot/P68871	0.666536499

P08670	https://www.uniprot.org/uniprot/P08670	0.884880768
P07602	https://www.uniprot.org/uniprot/P07602	0.796856263
P14314	https://www.uniprot.org/uniprot/P14314	0.816199799
P34096	https://www.uniprot.org/uniprot/P34096	0.634115535
P04040	https://www.uniprot.org/uniprot/P04040	0.760608695
P35442	https://www.uniprot.org/uniprot/P35442	0.719742337
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P06312	https://www.uniprot.org/uniprot/P06312	0.654293225
P01619	https://www.uniprot.org/uniprot/P01619	0.617770057
Q14767	https://www.uniprot.org/uniprot/Q14767	0.699846897
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P39060	https://www.uniprot.org/uniprot/P39060	0.689603103
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P27824	https://www.uniprot.org/uniprot/P27824	0.724100564
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P80723	https://www.uniprot.org/uniprot/P80723	0.709838428
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Q12882	https://www.uniprot.org/uniprot/Q12882	0.659915578
Q5JRA6	https://www.uniprot.org/uniprot/Q5JRA6	0.708539419
P05386	https://www.uniprot.org/uniprot/P05386	0.799088732
P80511	https://www.uniprot.org/uniprot/P80511	0.800440275
P25787	https://www.uniprot.org/uniprot/P25787	0.760424836
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P37837	https://www.uniprot.org/uniprot/P37837	0.896216698
P22234	https://www.uniprot.org/uniprot/P22234	0.774540359
P22897	https://www.uniprot.org/uniprot/P22897	0.782048936
P00441	https://www.uniprot.org/uniprot/P00441	0.690698022
P61970	https://www.uniprot.org/uniprot/P61970	0.665618755
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P07900	https://www.uniprot.org/uniprot/P07900	0.702408536
P30740	https://www.uniprot.org/uniprot/P30740	0.733393687
P11234	https://www.uniprot.org/uniprot/P11234	0.674426981
P34932	https://www.uniprot.org/uniprot/P34932	0.820761479
P13798	https://www.uniprot.org/uniprot/P13798	0.644591851

P53396	https://www.uniprot.org/uniprot/P53396	0.675525827
P55786	https://www.uniprot.org/uniprot/P55786	0.686136776
P05388	https://www.uniprot.org/uniprot/P05388	0.785111322
P09603	https://www.uniprot.org/uniprot/P09603	0.632987154
Q9UNZ2	https://www.uniprot.org/uniprot/Q9UNZ2	0.747321332
P48147	https://www.uniprot.org/uniprot/P48147	0.714580535
P0DMV8	https://www.uniprot.org/uniprot/P0DMV8	0.756017785
P02461	https://www.uniprot.org/uniprot/P02461	0.681093691
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P35858	https://www.uniprot.org/uniprot/P35858	-0.648599681
P19823	https://www.uniprot.org/uniprot/P19823	-0.711987021
P43652	https://www.uniprot.org/uniprot/P43652	-0.628269694
P55290	https://www.uniprot.org/uniprot/P55290	-0.676283516
P02790	https://www.uniprot.org/uniprot/P02790	-0.678288707
P17936	https://www.uniprot.org/uniprot/P17936	-0.692204038
O14793	https://www.uniprot.org/uniprot/O14793	-0.610419332
P29622	https://www.uniprot.org/uniprot/P29622	-0.759938045
P06276	https://www.uniprot.org/uniprot/P06276	-0.665540769
P43251	https://www.uniprot.org/uniprot/P43251	-0.679348744

P54289	https://www.uniprot.org/uniprot/P54289	-0.637604299
P05452	https://www.uniprot.org/uniprot/P05452	-0.702117454
P27918	https://www.uniprot.org/uniprot/P27918	-0.614091681
Q12860	https://www.uniprot.org/uniprot/Q12860	-0.63492054
Q76LX8	https://www.uniprot.org/uniprot/Q76LX8	-0.643813892
P49908	https://www.uniprot.org/uniprot/P49908	-0.645291133
P00533	https://www.uniprot.org/uniprot/P00533	-0.643473616
Q9UBQ6	https://www.uniprot.org/uniprot/Q9UBQ6	-0.605808746
O15335	https://www.uniprot.org/uniprot/O15335	-0.668053383
Q12913	https://www.uniprot.org/uniprot/Q12913	-0.641679392
Q16832	https://www.uniprot.org/uniprot/Q16832	-0.635131472
Q8NFT8	https://www.uniprot.org/uniprot/Q8NFT8	-0.625062185
Q16620	https://www.uniprot.org/uniprot/Q16620	-0.703619993
O75144	https://www.uniprot.org/uniprot/O75144	-0.617410449