

Supplementary Table 1: A list of all pathways included in the study

No.	Pathway source	Pathway name	# genes	*p-value
1	BioCarta	The 4-1BB-dependent immune response	17	0.50589
2	BioCarta	Role of nicotinic acetylcholine receptors in the regulation of apoptosis	11	0.32105
3	BioCarta	Y branching of actin filaments	11	0.20063
4	BioCarta	Agrin in Postsynaptic Differentiation	25	0.32947
5	BioCarta	Protein Kinase A at the Centrosome	12	0.11179
6	BioCarta	AKT Signaling Pathway	18	0.86674
7	BioCarta	ALK in cardiac myocytes	33	0.02484
8	BioCarta	Acute Myocardial Infarction	13	0.13137
9	BioCarta	ADP-Ribosylation Factor	16	0.01989
10	BioCarta	Oxidative Stress Induced Gene Expression Via Nrf2	17	0.61684
11	BioCarta	Tumor Suppressor Arf Inhibits Ribosomal Biogenesis	12	0.10305
12	BioCarta	Antigen Dependent B Cell Activation	12	0.36684
13	BioCarta	Angiotensin II mediated activation of JNK Pathway via Pyk2 dependent signaling	27	0.04758
14	BioCarta	ATM Signaling Pathway	19	0.10379
15	BioCarta	Role of BRCA1, BRCA2 and ATR in Cancer Susceptibility	21	0.16611
16	BioCarta	Regulation of BAD phosphorylation	15	0.50842
17	BioCarta	ζ -arrestins in GPCR Desensitization	11	0.47411
18	BioCarta	Roles of ζ -arrestin-dependent Recruitment of Src Kinases in GPCR Signaling	18	0.45442
19	BioCarta	Role of ζ -arrestins in the activation and targeting of MAP kinases	14	0.55379
20	BioCarta	B Cell Survival Pathway	12	0.68474
21	BioCarta	BCR Signaling Pathway	26	0.09453
22	BioCarta	Bioactive Peptide Induced Signaling Pathway	30	0.44263
23	BioCarta	B Lymphocyte Cell Surface Molecules	11	0.70211
24	BioCarta	Effects of calcineurin in Keratinocyte Differentiation	10	0.34979
25	BioCarta	Role of EGF Receptor Transactivation by GPCRs in Cardiac Hypertrophy	15	0.91305
26	BioCarta	CARM1 and Regulation of the Estrogen Receptor	25	0.81916
27	BioCarta	Caspase Cascade in Apoptosis	23	0.39811
28	BioCarta	CBL mediated ligand-induced downregulation of EGF receptors	11	0.43305

29	BioCarta	CCR3 signaling in Eosinophils	21	0.20137
30	BioCarta	Pertussis toxin-insensitive CCR5 Signaling in Macrophage	13	0.68832
31	BioCarta	Cadmium induces DNA synthesis and proliferation in macrophages	14	0.44516
32	BioCarta	Cell to Cell Adhesion Signaling	10	0.21568
33	BioCarta	Cyclins and Cell Cycle Regulation	23	0.90263
34	BioCarta	Ceramide Signaling Pathway	21	0.49684
35	BioCarta	Apoptotic Signaling in Response to DNA Damage	21	0.41642
36	BioCarta	Classical Complement Pathway	10	0.67105
37	BioCarta	Complement Pathway	15	0.70526
38	BioCarta	Transcription factor CREB and its extracellular signals	17	0.10758
39	BioCarta	Activation of Csk by cAMP-dependent Protein Kinase Inhibits Signaling through the T Ce	17	0.84442
40	BioCarta	CXCR4 Signaling Pathway	22	0.80295
41	BioCarta	Cytokine Network	20	0.23874
42	BioCarta	D4-GDI Signaling Pathway	13	0.17095
43	BioCarta	Dendritic cells in regulating TH1 and TH2 Development	21	0.06137
44	BioCarta	Induction of apoptosis through DR3 and DR4/5 Death Receptors	28	0.25958
45	BioCarta	Erk and PI-3 Kinase Are Necessary for Collagen Binding in Corneal Epithelia	21	0.10379
46	BioCarta	Phospholipids as signalling intermediaries	22	0.25305
47	BioCarta	EGF Signaling Pathway	26	0.48305
48	BioCarta	Eicosanoid Metabolism	19	0.00768
49	BioCarta	Regulation of eIF2	11	0.40084
50	BioCarta	Regulation of eIF4e and p70 S6 Kinase	18	0.46126
51	BioCarta	Erythropoietin mediated neuroprotection through NF-kB	11	0.79853
52	BioCarta	EPO Signaling Pathway	18	0.64074
53	BioCarta	ER-associated degradation (ERAD) Pathway	12	0.97537
54	BioCarta	Role of Erk5 in Neuronal Survival	13	0.73916
55	BioCarta	Erk1/Erk2 Mapk Signaling pathway	28	0.88737
56	BioCarta	Erythrocyte Differentiation Pathway	13	0.34463
57	BioCarta	METS affect on Macrophage Differentiation	16	0.31526
58	BioCarta	Extrinsic Prothrombin Activation Pathway	11	0.12189
59	BioCarta	FAS signaling pathway (CD95)	30	0.77326
60	BioCarta	Fc Epsilon Receptor I Signaling in Mast Cells	30	0.73474
61	BioCarta	Fibrinolysis Pathway	10	0.36200

62	BioCarta	fMLP induced chemokine gene expression in HMC-1 cells	25	0.57284
63	BioCarta	Cell Cycle: G1/S Check Point	26	0.52842
64	BioCarta	Cell Cycle: G2/M Checkpoint	21	0.35158
65	BioCarta	Corticosteroids and cardioprotection	14	0.95789
66	BioCarta	Growth Hormone Signaling Pathway	22	0.00084
67	BioCarta	Ghrelin: Regulation of Food Intake and Energy Homeostasis	13	0.11347
68	BioCarta	Inhibition of Cellular Proliferation by Gleevec	20	0.43105
69	BioCarta	Signaling Pathway from G-Protein Families	20	0.56105
70	BioCarta	Adhesion and Diapedesis of Granulocytes	15	0.32726
71	BioCarta	Inactivation of Gsk3 by AKT causes accumulation of b-catenin in Alveolar Macrophages	25	0.66453
72	BioCarta	Human Cytomegalovirus and Map Kinase Pathways	14	0.63737
73	BioCarta	Control of skeletal myogenesis by HDAC & calcium/calmodulin-dependent kinase (CaMK)	16	0.70611
74	BioCarta	Role of ERBB2 in Signal Transduction and Oncology	21	0.84905
75	BioCarta	Segmentation Clock	13	0.07284
76	BioCarta	Hypoxia-Inducible Factor in the Cardiovascular System	15	0.57884
77	BioCarta	HIV-1 Nef: negative effector of Fas and TNF	51	0.39242
78	BioCarta	Stress Induction of HSP Regulation	14	0.51400
79	BioCarta	Chromatin Remodeling by hSWI/SNF ATP-dependent Complexes	17	0.32200
80	BioCarta	Skeletal muscle hypertrophy is regulated via AKT/mTOR pathway	19	0.45168
81	BioCarta	IGF-1 Signaling Pathway	19	0.30716
82	BioCarta	Multiple antiapoptotic pathways from IGF-1R signaling lead to BAD phosphorylation	16	0.26242
83	BioCarta	IL12 and Stat4 Dependent Signaling Pathway in Th1 Development	20	0.75042
84	BioCarta	IL 17 Signaling Pathway	16	0.47084
85	BioCarta	Signal transduction through IL1R	29	0.28642
86	BioCarta	IL 2 signaling pathway	21	0.16747
87	BioCarta	IL-2 Receptor Beta Chain in T cell Activation	34	0.03632
88	BioCarta	IL 5 Signaling Pathway	10	0.68726
89	BioCarta	IL 6 signaling pathway	19	0.16305
90	BioCarta	IL-7 Signal Transduction	14	0.16884
91	BioCarta	Cytokines and Inflammatory Response	25	0.23811
92	BioCarta	Insulin Signaling Pathway	19	0.00916
93	BioCarta	Integrin Signaling Pathway	33	0.37716
94	BioCarta	Intrinsic Prothrombin Activation Pathway	16	0.03737

95	BioCarta	Keratinocyte Differentiation	37	0.79000
96	BioCarta	Cells and Molecules involved in local acute inflammatory response	16	0.70505
97	BioCarta	Lectin Induced Complement Pathway	10	0.79811
98	BioCarta	Adhesion and Diapedesis of Lymphocytes	14	0.28411
99	BioCarta	Role of MAL in Rho-Mediated Activation of SRF	19	0.40495
100	BioCarta	MAPKinase Signaling Pathway	81	0.57442
101	BioCarta	mCalpain and friends in Cell motility	14	0.07347
102	BioCarta	Role of MEF2D in T-cell Apoptosis	11	0.81589
103	BioCarta	Signaling of Hepatocyte Growth Factor Receptor	33	0.00063
104	BioCarta	Role of Mitochondria in Apoptotic Signaling	21	0.13653
105	BioCarta	Monocyte and its Surface Molecules	10	0.48137
106	BioCarta	How Progesterone Initiates the Oocyte Maturation	19	0.26737
107	BioCarta	Downregulated of MTA-3 in ER-negative Breast Tumors	13	0.78263
108	BioCarta	mTOR Signaling Pathway	19	0.44874
109	BioCarta	PKC-catalyzed phosphorylation of inhibitory phosphoprotein of myosin phosphatase	13	0.27516
110	BioCarta	NFAT and Hypertrophy of the heart (Transcription in the broken heart)	36	0.23758
111	BioCarta	NF-kB Signaling Pathway	22	0.47737
112	BioCarta	Nerve growth factor pathway (NGF)	16	0.43758
113	BioCarta	Ras-Independent pathway in NK cell-mediated cytotoxicity	17	0.59326
114	BioCarta	Selective expression of chemokine receptors during T-cell polarization	24	0.38295
115	BioCarta	Actions of Nitric Oxide in the Heart	16	0.95789
116	BioCarta	NO2-dependent IL 12 Pathway in NK cells	12	0.63716
117	BioCarta	NFkB activation by Nontypeable Hemophilus influenzae	24	0.98611
118	BioCarta	Nuclear Receptors in Lipid Metabolism and Toxicity	33	0.53147
119	BioCarta	p38 MAPK Signaling Pathway	34	0.18526
120	BioCarta	Hypoxia and p53 in the Cardiovascular system	22	0.07189
121	BioCarta	p53 Signaling Pathway	16	0.60116
122	BioCarta	Thrombin signaling and protease-activated receptors	16	0.55758
123	BioCarta	PDGF Signaling Pathway	24	0.38411
124	BioCarta	Synaptic Proteins at the Synaptic Junction	17	0.40326
125	BioCarta	Multi-step Regulation of Transcription by Pitx2	15	0.12358
126	BioCarta	Regulation of transcriptional activity by PML	15	0.79421
127	BioCarta	Mechanism of Gene Regulation by Peroxisome Proliferators via PPARa(alpha)	40	0.53421

128	BioCarta	Prion Pathway	12	0.27853
129	BioCarta	Presenilin action in Notch and Wnt signaling	13	0.07505
130	BioCarta	Phosphoinositides and their downstream targets.	19	0.70168
131	BioCarta	PTEN dependent cell cycle arrest and apoptosis	19	0.07042
132	BioCarta	Rab GTPases Mark Targets In The Endocytotic Machinery	12	0.98347
133	BioCarta	Rac 1 cell motility signaling pathway	20	0.19053
134	BioCarta	Influence of Ras and Rho proteins on G1 to S Transition	24	0.73642
135	BioCarta	Sumoylation by RanBP2 Regulates Transcriptional Repression	11	0.26221
136	BioCarta	Bone Remodelling	13	0.54442
137	BioCarta	Nuclear receptors coordinate the activities of chromatin remodeling complexes and coa	15	0.21453
138	BioCarta	Ras Signaling Pathway	20	0.51505
139	BioCarta	Acetylation and Deacetylation of RelA in The Nucleus	13	0.50337
140	BioCarta	Rho cell motility signaling pathway	23	0.60000
141	BioCarta	Spliceosomal Assembly	14	0.86842
142	BioCarta	Aspirin Blocks Signaling Pathway Involved in Platelet Activation	18	0.21358
143	BioCarta	Sprouty regulation of tyrosine kinase signals	15	0.05105
144	BioCarta	Stathmin and breast cancer resistance to antimicrotubule agents	12	0.22411
145	BioCarta	Regulation of hematopoiesis by cytokines	15	0.04621
146	BioCarta	Lck and Fyn tyrosine kinases in initiation of TCR Activation	12	0.96253
147	BioCarta	T Cytotoxic Cell Surface Molecules	13	0.59274
148	BioCarta	Telomeres, Telomerase, Cellular Aging, and Immortality	18	0.99526
149	BioCarta	Trefoil Factors Initiate Mucosal Healing	22	0.41884
150	BioCarta	TGF beta signaling pathway	17	0.78084
151	BioCarta	Th1/Th2 Differentiation	20	0.28926
152	BioCarta	T Helper Cell Surface Molecules	13	0.76368
153	BioCarta	Chaperones modulate interferon Signaling Pathway	17	0.40453
154	BioCarta	TNFR1 Signaling Pathway	29	0.26884
155	BioCarta	TNFR2 Signaling Pathway	17	0.24989
156	BioCarta	Role of Tob in T-cell activation	15	0.46526
157	BioCarta	Toll-Like Receptor Pathway	36	0.68821
158	BioCarta	TPO Signaling Pathway	19	0.60305
159	BioCarta	Trka Receptor Signaling Pathway	11	0.61411
160	BioCarta	uCalpain and friends in Cell spread	13	0.08863

161	BioCarta	Control of Gene Expression by Vitamin D Receptor	27	0.07547
162	BioCarta	VEGF, Hypoxia, and Angiogenesis	15	0.33905
163	BioCarta	Neuropeptides VIP and PACAP inhibit the apoptosis of activated T cells	14	0.87253
164	BioCarta	WNT Signaling Pathway	24	0.05347
165	KEGG	Glycolysis / Gluconeogenesis	60	0.71137
166	KEGG	Citrate cycle (TCA cycle)	28	0.41347
167	KEGG	Pentose phosphate pathway	25	0.40042
168	KEGG	Pentose and glucuronate interconversions	22	0.88800
169	KEGG	Fructose and mannose metabolism	37	0.31032
170	KEGG	Galactose metabolism	26	0.26095
171	KEGG	Fatty acid metabolism	46	0.26126
172	KEGG	Biosynthesis of steroids	24	0.19579
173	KEGG	Bile acid biosynthesis	33	0.26621
174	KEGG	Androgen and estrogen metabolism	52	0.99074
175	KEGG	Oxidative phosphorylation	88	0.95232
176	KEGG	Urea cycle and metabolism of amino groups	27	0.38884
177	KEGG	Pyrimidine metabolism	89	0.42411
178	KEGG	Glutamate metabolism	29	0.28368
179	KEGG	Alanine and aspartate metabolism	33	0.16116
180	KEGG	Glycine, serine and threonine metabolism	41	0.90211
181	KEGG	Methionine metabolism	21	0.06189
182	KEGG	Cysteine metabolism	13	0.35947
183	KEGG	Valine, leucine and isoleucine degradation	44	0.17032
184	KEGG	Lysine degradation	42	0.34421
185	KEGG	Arginine and proline metabolism	32	0.91232
186	KEGG	Histidine metabolism	40	0.48863
187	KEGG	Tyrosine metabolism	56	0.47516
188	KEGG	Phenylalanine metabolism	25	0.60589
189	KEGG	gamma-Hexachlorocyclohexane degradation	18	0.23842
190	KEGG	Tryptophan metabolism	57	0.01105
191	KEGG	beta-Alanine metabolism	24	0.28421
192	KEGG	Aminophosphonate metabolism	17	0.21295
193	KEGG	Selenoamino acid metabolism	32	0.90021

194	KEGG	Glutathione metabolism	47	0.73516
195	KEGG	Starch and sucrose metabolism	46	0.85168
196	KEGG	N-Glycan biosynthesis	44	0.53347
197	KEGG	N-Glycan degradation	16	0.55589
198	KEGG	O-Glycan biosynthesis	31	0.14905
199	KEGG	Streptomycin biosynthesis	10	0.03937
200	KEGG	Aminosugars metabolism	28	0.69842
201	KEGG	Glycosaminoglycan degradation	17	0.28326
202	KEGG	Chondroitin sulfate biosynthesis	21	0.99579
203	KEGG	Keratan sulfate biosynthesis	16	0.43284
204	KEGG	Heparan sulfate biosynthesis	20	0.53147
205	KEGG	Glycerolipid metabolism	49	0.06442
206	KEGG	Inositol phosphate metabolism	47	0.17368
207	KEGG	Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	22	0.26126
208	KEGG	Glycerophospholipid metabolism	67	0.29505
209	KEGG	Ether lipid metabolism	31	0.89137
210	KEGG	Arachidonic acid metabolism	54	0.44874
211	KEGG	Linoleic acid metabolism	27	0.26821
212	KEGG	alpha-Linolenic acid metabolism	15	0.08411
213	KEGG	Sphingolipid metabolism	39	0.69116
214	KEGG	Glycosphingolipid biosynthesis - neo-lactoseries	21	0.34189
215	KEGG	Glycosphingolipid biosynthesis - globoseries	14	0.35611
216	KEGG	Glycosphingolipid biosynthesis - ganglioseries	16	0.53084
217	KEGG	Pyruvate metabolism	42	0.17832
218	KEGG	1- and 2-Methylnaphthalene degradation	18	0.45095
219	KEGG	Glyoxylate and dicarboxylate metabolism	14	0.85905
220	KEGG	Benzoate degradation via CoA ligation	19	0.48811
221	KEGG	Propanoate metabolism	34	0.20463
222	KEGG	3-Chloroacrylic acid degradation	14	0.48158
223	KEGG	Butanoate metabolism	35	0.05042
224	KEGG	One carbon pool by folate	15	0.86695
225	KEGG	Carbon fixation	23	0.08811
226	KEGG	Riboflavin metabolism	16	0.49979

227	KEGG	Nicotinate and nicotinamide metabolism	23	0.25463
228	KEGG	Pantothenate and CoA biosynthesis	14	0.58726
229	KEGG	Folate biosynthesis	36	0.06263
230	KEGG	Retinol metabolism	61	0.79547
231	KEGG	Porphyrin and chlorophyll metabolism	38	0.86716
232	KEGG	Limonene and pinene degradation	23	0.71653
233	KEGG	Nitrogen metabolism	23	0.47368
234	KEGG	Sulfur metabolism	12	0.60421
235	KEGG	Alkaloid biosynthesis II	19	0.72221
236	KEGG	Aminoacyl-tRNA biosynthesis	39	0.29411
237	KEGG	Metabolism of xenobiotics by cytochrome P450	65	0.97937
238	KEGG	Drug metabolism - cytochrome P450	67	0.91874
239	KEGG	Drug metabolism - other enzymes	49	0.91316
240	KEGG	Glycan structures - biosynthesis 2	62	0.45274
241	KEGG	Glycan structures - degradation	30	0.55874
242	KEGG	Biosynthesis of unsaturated fatty acids	23	0.20726
243	KEGG	Neurodegenerative Diseases	39	0.87863
244	KEGG	ABC transporters	44	0.79505
245	KEGG	Ribosome	86	0.74568
246	KEGG	RNA polymerase	25	0.10674
247	KEGG	Basal transcription factors	32	0.85716
248	KEGG	DNA replication	36	0.51958
249	KEGG	Proteasome	22	0.13779
250	KEGG	Protein export	12	0.90105
251	KEGG	PPAR signaling pathway	67	0.93979
252	KEGG	Base excision repair	34	0.29979
253	KEGG	Nucleotide excision repair	41	0.53126
254	KEGG	Mismatch repair	23	0.27021
255	KEGG	Homologous recombination	28	0.12358
256	KEGG	Non-homologous end-joining	13	0.32211
257	KEGG	ErbB signaling pathway	86	0.02463
258	KEGG	Phosphatidylinositol signaling system	75	0.04274
259	KEGG	Cell cycle	101	0.97000

260	KEGG	p53 signaling pathway	66	0.45211
261	KEGG	SNARE interactions in vesicular transport	36	0.59611
262	KEGG	Regulation of autophagy	29	0.53968
263	KEGG	mTOR signaling pathway	49	0.89084
264	KEGG	Apoptosis	82	0.39526
265	KEGG	Notch signaling pathway	45	0.50305
266	KEGG	Hedgehog signaling pathway	55	0.06411
267	KEGG	TGF-beta signaling pathway	87	0.63137
268	KEGG	VEGF signaling pathway	71	0.75000
269	KEGG	ECM-receptor interaction	86	0.98453
270	KEGG	Adherens junction	75	0.49474
271	KEGG	Gap junction	91	0.66484
272	KEGG	Complement and coagulation cascades	68	0.66800
273	KEGG	Antigen processing and presentation	78	0.74421
274	KEGG	Renin-angiotensin system	17	0.60137
275	KEGG	Toll-like receptor signaling pathway	101	0.91568
276	KEGG	Hematopoietic cell lineage	79	0.21337
277	KEGG	T cell receptor signaling pathway	92	0.56516
278	KEGG	B cell receptor signaling pathway	63	0.61653
279	KEGG	Fc epsilon RI signaling pathway	75	0.59884
280	KEGG	Circadian rhythm	13	0.60495
281	KEGG	Long-term potentiation	69	0.76758
282	KEGG	Long-term depression	76	0.58358
283	KEGG	Taste transduction	46	0.40000
284	KEGG	GnRH signaling pathway	97	0.59242
285	KEGG	Melanogenesis	98	0.03768
286	KEGG	Adipocytokine signaling pathway	67	0.26737
287	KEGG	Type II diabetes mellitus	44	0.47337
288	KEGG	Type I diabetes mellitus	40	0.52347
289	KEGG	Maturity onset diabetes of the young	24	0.03853
290	KEGG	Alzheimers disease	28	0.67768
291	KEGG	Parkinsons disease	19	0.06042
292	KEGG	Amyotrophic lateral sclerosis (ALS)	19	0.44653

293	KEGG	Huntingtons disease	32	0.69126
294	KEGG	Dentatorubropallidoluysian atrophy (DRPLA)	15	0.44358
295	KEGG	Prion disease	14	0.32905
296	KEGG	Vibrio cholerae infection	57	0.58305
297	KEGG	Epithelial cell signaling in Helicobacter pylori infection	68	0.93800
298	KEGG	Pathogenic Escherichia coli infection - EHEC	47	0.46200
299	KEGG	Pathogenic Escherichia coli infection - EPEC	47	0.46200
300	KEGG	Colorectal cancer	83	0.67432
301	KEGG	Renal cell carcinoma	68	0.41421
302	KEGG	Pancreatic cancer	73	0.88821
303	KEGG	Endometrial cancer	52	0.17968
304	KEGG	Glioma	64	0.70011
305	KEGG	Prostate cancer	88	0.62832
306	KEGG	Thyroid cancer	29	0.58684
307	KEGG	Basal cell carcinoma	53	0.00463
308	KEGG	Melanoma	70	0.57968
309	KEGG	Bladder cancer	42	0.87737
310	KEGG	Chronic myeloid leukemia	76	0.74863
311	KEGG	Acute myeloid leukemia	57	0.54516
312	KEGG	Small cell lung cancer	87	0.54979
313	KEGG	Non-small cell lung cancer	54	0.55189
314	KEGG	Asthma	27	0.29484
315	KEGG	Autoimmune thyroid disease	49	0.46537
316	KEGG	Systemic lupus erythematosus	74	0.56253
317	KEGG	Allograft rejection	34	0.38705
318	KEGG	Graft-versus-host disease	35	0.37032
319	KEGG	Primary immunodeficiency	34	0.36853
320	PID	Paxillin-dependent events mediated by a4b1	19	0.87000
321	PID	Paxillin-independent events mediated by a4b1 and a4b7	23	0.06589
322	PID	a6b1 and a6b4 Integrin signaling	42	0.90621
323	PID	Alpha-synuclein signaling	32	0.36589
324	PID	amb2 Integrin signaling	58	0.45705
325	PID	Angiopoietin receptor Tie2-mediated signaling	45	0.43716

326	PID	Cellular roles of Anthrax toxin	16	0.95200
327	PID	ADP-ribosylation factor 1 pathway	15	0.20821
328	PID	Aurora A signaling	29	0.69021
329	PID	Aurora B signaling	34	0.50400
330	PID	Integrins in angiogenesis	47	0.30495
331	PID	Osteopontin-mediated events	31	0.78789
332	PID	BARD1 signaling events	27	0.24695
333	PID	BCR signaling pathway	63	0.65768
334	PID	BMP Signaling	38	0.17821
335	PID	Caspase cascade in apoptosis	51	0.30821
336	PID	Downstream signaling in naïve CD8+ T cells	65	0.92042
337	PID	TCR signaling in naïve CD8+ T cells	52	0.24200
338	PID	Ceramide signaling pathway	45	0.53053
339	PID	Circadian rhythm pathway	13	0.47895
340	PID	Visual signal transduction: Cones	19	0.12379
341	PID	Endothelins	66	0.70842
342	PID	EPO signaling pathway	34	0.33621
343	PID	FAS signaling pathway (CD95)	35	0.78600
344	PID	Fc-epsilon receptor I signaling in mast cells	60	0.44726
345	PID	FGF signaling pathway	52	0.02274
346	PID	FoxO family signaling	46	0.32684
347	PID	Signaling events mediated by HDAC Class I	56	0.43653
348	PID	Signaling events mediated by HDAC Class II	31	0.39337
349	PID	Signaling events mediated by HDAC Class III	24	0.55432
350	PID	Signaling events mediated by the Hedgehog family	22	0.84789
351	PID	Hedgehog signaling events mediated by Gli proteins	43	0.26547
352	PID	HIV-1 Nef: Negative effector of Fas and TNF-alpha	35	0.42453
353	PID	IFN-gamma pathway	41	0.25863
354	PID	IGF1 pathway	30	0.26674
355	PID	IL12-mediated signaling events	61	0.71221
356	PID	IL12 signaling mediated by STAT4	33	0.88179
357	PID	IL1-mediated signaling events	32	0.91432
358	PID	IL2-mediated signaling events	54	0.59632

359	PID	IL2 signaling events mediated by PI3K	35	0.41505
360	PID	IL2 signaling events mediated by STAT5	30	0.44716
361	PID	IL23-mediated signaling events	34	0.86600
362	PID	IL27-mediated signaling events	23	0.63621
363	PID	IL4-mediated signaling events	60	0.28726
364	PID	IL6-mediated signaling events	44	0.72526
365	PID	Insulin-mediated glucose transport	24	0.08642
366	PID	Insulin Pathway	39	0.52042
367	PID	Signaling events mediated by Stem cell factor receptor (c-Kit)	50	0.00979
368	PID	Lissencephaly gene (LIS1) in neuronal migration and development	25	0.81621
369	PID	LPA4-mediated signaling events	15	0.75368
370	PID	VEGFR3 signaling in lymphatic endothelium	24	0.63389
371	PID	LPA receptor mediated events	64	0.68821
372	PID	Trk receptor signaling mediated by the MAPK pathway	33	0.83000
373	PID	Signaling events activated by Hepatocyte Growth Factor Receptor (c-Met)	52	0.17168
374	PID	mTOR signaling pathway	24	0.08326
375	PID	Role of Calcineurin-dependent NFAT signaling in lymphocytes	48	0.06011
376	PID	Calcineurin-regulated NFAT-dependent transcription in lymphocytes	44	0.53463
377	PID	Atypical NF-kappaB pathway	16	0.90895
378	PID	Canonical NF-kappaB pathway	23	0.41611
379	PID	p38 signaling mediated by MAPKAP kinases	19	0.34432
380	PID	p38 MAPK signaling pathway	26	0.19726
381	PID	Signaling mediated by p38-alpha and p38-beta	36	0.80453
382	PID	Regulation of p38-alpha and p38-beta	30	0.18600
383	PID	Signaling mediated by p38-gamma and p38-delta	9	0.44505
384	PID	p75(NTR)-mediated signaling	63	0.99305
385	PID	PDGFR-alpha signaling pathway	24	0.93211
386	PID	PDGFR-beta signaling pathway	51	0.39347
387	PID	Class I PI3K signaling events mediated by Akt	40	0.06200
388	PID	Class I PI3K signaling events	51	0.32958
389	PID	Trk receptor signaling mediated by PI3K and PLC-gamma	32	0.27389
390	PID	Signaling events mediated by PRL	19	0.69621
391	PID	Presenilin action in Notch and Wnt signaling	41	0.23611

392	PID	Signaling events mediated by PTP1B	49	0.06411
393	PID	Sumoylation by RanBP2 regulates transcriptional repression	11	0.28105
394	PID	Reelin signaling pathway	25	0.83368
395	PID	Signaling events regulated by Ret tyrosine kinase	34	0.21295
396	PID	Retinoic acid receptors-mediated signaling	26	0.93653
397	PID	Visual signal transduction: Rods	20	0.61968
398	PID	RXR and RAR heterodimerization with other nuclear receptor	21	0.11547
399	PID	Sphingosine 1-phosphate (S1P) pathway	19	0.43484
400	PID	S1P1 pathway	19	0.09684
401	PID	S1P2 pathway	24	0.63105
402	PID	S1P3 pathway	27	0.47653
403	PID	S1P4 pathway	14	0.75137
404	PID	Regulation of nuclear SMAD2/3 signaling	76	0.80168
405	PID	Regulation of cytoplasmic and nuclear SMAD2/3 signaling	17	0.64284
406	PID	Syndecan-1-mediated signaling events	13	0.00053
407	PID	Syndecan-2-mediated signaling events	33	0.34200
408	PID	Syndecan-3-mediated signaling events	16	0.13968
409	PID	Syndecan-4-mediated signaling events	31	0.31021
410	PID	Calcium signaling in the CD4+ TCR pathway	29	0.26242
411	PID	JNK signaling in the CD4+ TCR pathway	13	0.81663
412	PID	TCR signaling in naïve CD4+ T cells	66	0.21453
413	PID	Ras signaling in the CD4+ TCR pathway	14	0.80916
414	PID	Regulation of Telomerase	62	0.76505
415	PID	TGF-beta receptor signaling	49	0.38589
416	PID	Neurotrophic factor-mediated Trk receptor signaling	61	0.12337
417	PID	Thromboxane A2 receptor signaling	53	0.53505
418	PID	Signaling events mediated by VEGFR1 and VEGFR2	61	0.17568
419	PID	VEGFR1 specific signals	26	0.58411
420	PID	Noncanonical Wnt signaling pathway	18	0.65063
421	PID	Canonical Wnt signaling pathway	34	0.26768

* p-value is for the significance of the enrichment score (ES) based on 10,000 permutations

