

Table S1. Result of Ingenuity Pathway Analysis (IPA). Total of 157 ingenuity canonical pathways were identified from IPA database.

#	Ingenuity Canonical Pathways	-log(p-value)
1	Mitochondrial Dysfunction	13.6
2	Oxidative Phosphorylation	12.3
3	Sirtuin Signaling Pathway	12.2
4	Regulation of eIF4 and p70S6K Signaling	6.86
5	mTOR Signaling	5.73
6	Aspartate Degradation II	5.25
7	Mechanisms of Viral Exit from Host Cells	5.16
8	Neuregulin Signaling	5.11
9	Huntington's Disease Signaling	4.97
10	Virus Entry via Endocytic Pathways	4.93
11	TCA Cycle II (Eukaryotic)	4.77
12	Gluconeogenesis I	4.44
13	Estrogen Receptor Signaling	4.37
14	Sertoli Cell-Sertoli Cell Junction Signaling	4.16
15	Regulation of Cellular Mechanics by Calpain Protease	4.10
16	Caveolar-mediated Endocytosis Signaling	3.97
17	Semaphorin Neuronal Repulsive Signaling Pathway	3.93
18	Protein Kinase A Signaling	3.93
19	HGF Signaling	3.90
20	Glycogen Degradation II	3.78
21	Necroptosis Signaling Pathway	3.76
22	HER-2 Signaling in Breast Cancer	3.67
23	Fatty Acid β -oxidation I	3.60
24	Tumoricidal Function of Hepatic Natural Killer Cells	3.55
25	Apoptosis Signaling	3.54
26	Glycine Cleavage Complex	3.53
27	Glycogen Degradation III	3.49
28	α -Adrenergic Signaling	3.41
29	Clathrin-mediated Endocytosis Signaling	3.41
30	Signaling by Rho Family GTPases	3.33

31	AMPK Signaling	3.32
32	L-dopachrome Biosynthesis	3.20
33	Role of Tissue Factor in Cancer	3.16
34	NF- κ B Activation by Viruses	3.12
35	Isoleucine Degradation I	3.04
36	Integrin Signaling	2.99
37	RHO GDI Signaling	2.95
38	Dilated Cardiomyopathy Signaling Pathway	2.88
39	PTEN Signaling	2.84
40	Insulin Secretion Signaling Pathway	2.82
41	PI3K/AKT Signaling	2.79
42	Paxillin Signaling	2.79
43	EIF2 Signaling	2.78
44	Pyrimidine Ribonucleotides Interconversion	2.77
45	Glucocorticoid Receptor Signaling	2.76
46	Methylglyoxal Degradation I	2.73
47	Glutamate Degradation II	2.73
48	Aspartate Biosynthesis	2.73
49	Unfolded protein response	2.72
50	Coronavirus Pathogenesis Pathway	2.71
51	The Visual Cycle	2.70
52	RAR Activation	2.69
53	Pyrimidine Ribonucleotides De Novo Biosynthesis	2.66
54	Noradrenaline and Adrenaline Degradation	2.66
55	Sucrose Degradation V (Mammalian)	2.65
56	Molecular Mechanisms of Cancer	2.65
57	Actin Nucleation by ARP-WASP Complex	2.63
58	HIF1 α Signaling	2.62
59	Acute Phase Response Signaling	2.59
60	Regulation of Actin-based Motility by Rho	2.58
61	Ethanol Degradation IV	2.55
62	Synaptogenesis Signaling Pathway	2.54
63	Aldosterone Signaling in Epithelial Cells	2.53
64	Macropinocytosis Signaling	2.53

65	Nitric Oxide Signaling in the Cardiovascular System	2.51
66	Melanocyte Development and Pigmentation Signaling	2.49
67	2-ketoglutarate Dehydrogenase Complex	2.44
68	Eumelanin Biosynthesis	2.44
69	L-cysteine Degradation I	2.44
70	Actin Cytoskeleton Signaling	2.43
71	UDP-N-acetyl-D-galactosamine Biosynthesis II	2.43
72	Glioma Signaling	2.39
73	Role of NFAT in Cardiac Hypertrophy	2.38
74	Protein Ubiquitination Pathway	2.37
75	Glycolysis I	2.36
76	Phenylalanine Degradation IV (Mammalian, via Side Chain)	2.33
77	GP6 Signaling Pathway	2.32
78	ILK Signaling	2.32
79	Type II Diabetes Mellitus Signaling	2.27
80	G Beta Gamma Signaling	2.27
81	Ephrin Receptor Signaling	2.27
82	CLEAR Signaling Pathway	2.23
83	Creatine-phosphate Biosynthesis	2.22
84	Lysine Degradation II	2.22
85	Galactose Degradation I (Leloir Pathway)	2.22
86	Aryl Hydrocarbon Receptor Signaling	2.16
87	eNOS Signaling	2.16
88	Granzyme B Signaling	2.16
89	D-myo-inositol (1,4,5)-trisphosphate Degradation	2.16
90	Phagosome Maturation	2.16
91	IL-8 Signaling	2.15
92	SNARE Signaling Pathway	2.13
93	Dopamine Degradation	2.09
94	UDP-N-acetyl-D-glucosamine Biosynthesis II	2.05
95	Amyloid Processing	2.05
96	Melatonin Signaling	2.03
97	Apelin Endothelial Signaling Pathway	2.03
98	Fcy Receptor-mediated Phagocytosis in Macrophages and Monocytes	2.02

99	Fc Epsilon RI Signaling	2.01
100	PAK Signaling	2.01
101	Leukocyte Extravasation Signaling	2.01
102	Ethanol Degradation II	2.00
103	CXCR4 Signaling	1.98
104	Androgen Signaling	1.98
105	Cardiac Hypertrophy Signaling (Enhanced)	1.98
106	Phototransduction Pathway	1.95
107	Opioid Signaling Pathway	1.94
108	Thrombin Signaling	1.93
109	Acetyl-CoA Biosynthesis I (Pyruvate Dehydrogenase Complex)	1.92
110	NAD Signaling Pathway	1.85
111	IL-3 Signaling	1.84
112	Cardiac β -adrenergic Signaling	1.83
113	Tight Junction Signaling	1.83
114	Glutaryl-CoA Degradation	1.83
115	Valine Degradation I	1.83
116	Histamine Degradation	1.83
117	Fatty Acid α -oxidation	1.83
118	Renal Cell Carcinoma Signaling	1.82
119	Superoxide Radicals Degradation	1.80
120	Osteoarthritis Pathway	1.78
121	Superpathway of D-myo-inositol (1,4,5)-trisphosphate Metabolism	1.77
122	Putrescine Degradation III	1.77
123	Telomerase Signaling	1.74
124	p70S6K Signaling	1.74
125	Axonal Guidance Signaling	1.74
126	P2Y Purigenic Receptor Signaling Pathway	1.72
127	ERK/MAPK Signaling	1.68
128	Thrombopoietin Signaling	1.68
129	Xenobiotic Metabolism AHR Signaling Pathway	1.65
130	Induction of Apoptosis by HIV1	1.63
131	RAC Signaling	1.63
132	Prostanoid Biosynthesis	1.61

133	Insulin Receptor Signaling	1.60
134	Pyridoxal 5'-phosphate Salvage Pathway	1.60
135	Glutamine Biosynthesis I	1.60
136	PPAR α /RXR α Activation	1.59
137	Oxytocin Signaling Pathway	1.59
138	Amyotrophic Lateral Sclerosis Signaling	1.59
139	GPCR-Mediated Nutrient Sensing in Enteroendocrine Cells	1.53
140	NAD Salvage Pathway II	1.53
141	Tryptophan Degradation X (Mammalian, via Tryptamine)	1.53
142	Purine Nucleotides De Novo Biosynthesis II	1.53
143	GDP-glucose Biosynthesis	1.53
144	nNOS Signaling in Neurons	1.52
145	WNT/ β -catenin Signaling	1.51
146	Apelin Muscle Signaling Pathway	1.49
147	Tryptophan Degradation III (Eukaryotic)	1.49
148	Renin-Angiotensin Signaling	1.46
149	Cleavage and Polyadenylation of Pre-mRNA	1.45
150	Glucose and Glucose-1-phosphate Degradation	1.45
151	Hepatic Fibrosis Signaling Pathway	1.42
152	Apelin Cardiomyocyte Signaling Pathway	1.41
153	VEGF Signaling	1.41
154	UVC-Induced MAPK Signaling	1.41
155	NAD Phosphorylation and Dephosphorylation	1.39
156	Dopamine-DARPP32 Feedback in cAMP Signaling	1.38
157	Relaxin Signaling	1.38