

Table S21 - IPA canonical pathways of the MII to 8-cell mega-group

Canonical Pathways	p-value ^a	Z-score ^b	Activation State	Total DEGs
EIF2 Signaling	3.16E-22	4.352	Activated	66
Insulin Receptor Signaling	6.92E-03	2.828	Activated	20
Estrogen-mediated S-phase Entry	1.35E-02	2.449	Activated	6
Endometrial Cancer Signaling	2.63E-02	2.333	Activated	10
Non-Small Cell Lung Cancer Signaling	3.72E-02	2.333	Activated	11
Acute Myeloid Leukemia Signaling	1.32E-02	2.309	Activated	14
Purine Nucleotides De Novo Biosynthesis II	9.12E-04	2.236	Activated	5
Glycolysis I	4.79E-02	2.236	Activated	5
IGF-1 Signaling	1.41E-03	2.138	Activated	18
VEGF Signaling	6.17E-03	2.111	Activated	16
ErbB2-ErbB3 Signaling	1.78E-02	2.111	Activated	11
PDGF Signaling	2.24E-02	1.941		13
GM-CSF Signaling	2.57E-02	1.897		11
Cell Cycle: G1/S Checkpoint Regulation	3.47E-02	-1.897		10
Aryl Hydrocarbon Receptor Signaling	2.69E-02	1.732		18
RANK Signaling in Osteoclasts	2.75E-02	1.732		14
Regulation of eIF4 and p70S6K Signaling	3.16E-12	1.667		41
Small Cell Lung Cancer Signaling	1.45E-02	1.667		13
Induction of Apoptosis by HIV1	4.68E-02	1.667		9
Gluconeogenesis I	1.35E-02	1.633		6
Cardiac Hypertrophy Signaling	1.70E-02	1.633		28
EGF Signaling	1.58E-02	1.508		11
Sirtuin Signaling Pathway	3.31E-02	1.46		32
IL-2 Signaling	2.63E-02	1.414		10
Apoptosis Signaling	1.00E-02	1.387		14
Telomerase Signaling	1.26E-02	1.387		16
Methionine Degradation I (to Homocysteine)	2.51E-02	1.342		5
Pyrimidine Deoxyribonucleotides De Novo Biosynthesis I	3.02E-02	1.342		5
Cysteine Biosynthesis III (mammalia)	3.55E-02	1.342		5
Integrin Signaling	3.63E-02	1.342		25
Phosphatidylglycerol Biosynthesis II (Non-plastidic)	4.79E-02	-1.342		5
HGF Signaling	1.48E-03	1.213		19
Glioma Signaling	3.24E-03	1.155		18
mTOR Signaling	1.07E-09	1.147		43
AMPK Signaling	5.75E-03	1.147		28
UVC-Induced MAPK Signaling	1.70E-02	-1.134		8
Aldosterone Signaling in Epithelial Cells	6.03E-03	1.069		23
Gαq Signaling	1.32E-04	1.043		27
Prolactin Signaling	2.00E-04	1		17
Amyloid Processing	4.37E-02	-1		8
Sumoylation Pathway	7.41E-03	-0.905		15
ErbB4 Signaling	2.34E-02	0.905		11
Neuregulin Signaling	4.07E-02	0.905		12
Thrombopoietin Signaling	1.38E-03	0.832		13
PI3K/AKT Signaling	8.51E-03	0.775		18
Ephrin Receptor Signaling	3.31E-02	0.728		21
Thrombin Signaling	4.90E-02	0.728		23
HIPPO signaling	3.80E-02	-0.707		12
Antioxidant Action of Vitamin C	2.09E-02	0.632		15
IL-8 Signaling	6.03E-03	0.626		26
Growth Hormone Signaling	1.45E-02	0.577		13
NF-κB Activation by Viruses	3.80E-02	0.577		12

VEGF Family Ligand-Receptor Interactions	4.07E-02	0.577	12
IL-3 Signaling	4.90E-03	0.535	14
LPS-stimulated MAPK Signaling	7.41E-03	0.535	14
Fc Epsilon RI Signaling	4.47E-02	0.535	15
p70S6K Signaling	1.48E-02	0.5	18
IL-6 Signaling	2.19E-02	0.5	17
CXCR4 Signaling	3.31E-02	0.5	20
Huntington's Disease Signaling	7.24E-03	-0.471	31
Production of Nitric Oxide and Reactive Oxygen Species in Macrophages	9.33E-03	-0.408	25
Cyclins and Cell Cycle Regulation	2.34E-02	0.378	12
Cell Cycle: G2/M DNA Damage Checkpoint Regulation	3.89E-02	0.378	8
p53 Signaling	2.63E-02	-0.333	15
NRF2-mediated Oxidative Stress Response	4.57E-03	0.302	26
UVB-Induced MAPK Signaling	4.79E-03	0.302	12
CCR3 Signaling in Eosinophils	1.26E-02	-0.277	18
Fcγ Receptor-mediated Phagocytosis in Macrophages and Monocytes	2.88E-02	0.277	13
14-3-3-mediated Signaling	2.95E-03	0.258	20
fMLP Signaling in Neutrophils	1.51E-02	0.258	17
ErbB Signaling	2.00E-02	0	14
Cell Cycle Regulation by BTG Family Proteins	2.29E-02	0	7
Mitotic Roles of Polo-Like Kinase	3.16E-02	0	10
5-aminoimidazole Ribonucleotide Biosynthesis I	4.79E-04		3
Protein Ubiquitination Pathway	8.32E-04		36
DNA Methylation and Transcriptional Repression Signaling	9.33E-04		9
Virus Entry via Endocytic Pathways	2.14E-03		18
Role of Oct4 in Mammalian Embryonic Stem Cell Pluripotency	2.51E-03		10
Systemic Lupus Erythematosus Signaling	3.31E-03		30
Gap Junction Signaling	5.25E-03		26
Vitamin-C Transport	6.17E-03		5
RAN Signaling	8.13E-03		5
Chronic Myeloid Leukemia Signaling	8.13E-03		16
Transcriptional Regulatory Network in Embryonic Stem Cells	8.32E-03		10
Hereditary Breast Cancer Signaling	8.51E-03		20
Erythropoietin Signaling	9.77E-03		13
Breast Cancer Regulation by Stathmin1	1.00E-02		26
RAR Activation	1.35E-02		24
Diphthamide Biosynthesis	1.74E-02		2
Hypusine Biosynthesis	1.74E-02		2
Remodeling of Epithelial Adherens Junctions	1.78E-02		11
Myc Mediated Apoptosis Signaling	1.95E-02		11
Estrogen Receptor Signaling	2.19E-02		17
nNOS Signaling in Neurons	2.82E-02		8
Germ Cell-Sertoli Cell Junction Signaling	2.95E-02		21
N-acetylglucosamine Degradation II	3.31E-02		2
Clathrin-mediated Endocytosis Signaling	3.39E-02		24
IL-12 Signaling and Production in Macrophages	3.63E-02		18
Embryonic Stem Cell Differentiation into Cardiac Lineages	3.80E-02		3
Mechanisms of Viral Exit from Host Cells	3.80E-02		7
HER-2 Signaling in Breast Cancer	4.07E-02		12
Caveolar-mediated Endocytosis Signaling	4.90E-02		10

a) The p-value: statistical overlap of differentially expressed gene list and gene set

b) Z-score: $z > 1.96$ to be significantly activated or increased, and those with $z < -1.96$ to be significantly inhibited