

Table S30 - IPA upstream regulators overlapping super-groups and pathway membership

Super-group	UR	Category	Canonical Pathway Member
M	PSEN1	peptidase, gamma-secretase	Notch Signaling, ErbB4 Signaling, Molecular Mechanisms of Cancer, Regulation of the Epithelial-Mesenchymal Transition Pathway, Th2 Pathway, Th1 and Th2 Activation Pathway, Mitochondrial Dysfunction, Neuregulin Signaling, Neuroinflammation Signaling Pathway, Amyloid Processing
M	PRKCE	kinase, PKC-Epsilon	Protein Kinase A Signaling, Synaptic Long Term Depression, Dopamine-DARPP32 Feedback in cAMP Signaling, Gap Junction Signaling, Pyridoxal 5'-phosphate Salvage Pathway, CREB Signaling in Neurons, Endothelin-1 Signaling, Salvage Pathways of Pyrimidine Ribonucleotides, Axonal Guidance Signaling, G Beta Gamma Signaling, Role of NFAT in Cardiac Hypertrophy, CXCR4 Signaling, P2Y Purigenic Receptor Signaling Pathway, GPCR-Mediated Nutrient Sensing in Enteroendocrine Cells, Breast Cancer Regulation by Stathmin1, ErbB4 Signaling, Molecular Mechanisms of Cancer, 14-3-3-mediated Signaling, RAR Activation, Thrombin Signaling, VDR/RXR Activation, Macropinocytosis Signaling, Leukocyte Extravasation Signaling, Sperm Motility, mTOR Signaling, Virus Entry via Endocytic Pathways, Glioma Signaling, Gαq Signaling, Prolactin Signaling, Huntington's Disease Signaling, NRF2-mediated Oxidative Stress Response, HGF Signaling, Apoptosis Signaling, Thrombopoietin Signaling, UVB-Induced MAPK Signaling, Erythropoietin Signaling, IL-8 Signaling, IL-3 Signaling, p70S6K Signaling, LPS-stimulated MAPK Signaling, HER-2 Signaling in Breast Cancer, fMLP Signaling in Neutrophils, Synaptic Long Term Potentiation, Production of Nitric Oxide and Reactive Oxygen Species in Macrophages, IL-12 Signaling and Production in Macrophages, UVC-Induced MAPK Signaling, CCR3 Signaling in Eosinophils, nNOS Signaling in Neurons, Fc Epsilon RI Signaling, ErbB Signaling, Natural Killer Cell Signaling, Cholecystokinin/Gastrin-mediated Signaling, Phospholipase C Signaling, Hepatic Cholestasis, Role of Pattern Recognition Receptors in Recognition of Bacteria and Viruses, Factors Promoting Cardiogenesis in Vertebrates, Fcγ Receptor-mediated Phagocytosis in Macrophages and Monocytes, Melatonin Signaling, Mechanisms of Viral Exit from Host Cells, Xenobiotic Metabolism Signaling, Role of Macrophages, Fibroblasts and Endothelial Cells in Rheumatoid Arthritis, ERK/MAPK Signaling, Androgen Signaling, Type II Diabetes Mellitus Signaling, CCR5 Signaling in Macrophages, Opioid Signaling Pathway, Neuregulin Signaling, GP6 Signaling Pathway, Growth Hormone Signaling, NF-κB Activation by Viruses, VEGF Family Ligand-Receptor Interactions, Nitric Oxide Signaling in the Cardiovascular System, Renin-Angiotensin Signaling, Phagosome Formation, Tec Kinase Signaling, eNOS Signaling, Calcium-induced T Lymphocyte Apoptosis, Amyloid Processing
M	NFKBIA	transcription regulator, NF-kappa-B inhibitor	Protein Kinase A Signaling, Gα12/13 Signaling, Molecular Mechanisms of Cancer, Gαq Signaling, Sumoylation Pathway, PI3K/AKT Signaling, RANK Signaling in Osteoclasts, Apoptosis Signaling, Erythropoietin Signaling, IL-6 Signaling, Prostate Cancer Signaling, Lymphotoxin β Receptor Signaling, Small Cell Lung Cancer Signaling, LPS-stimulated MAPK Signaling, fMLP Signaling in Neutrophils, Production of Nitric Oxide and Reactive Oxygen Species in Macrophages, Antioxidant Action of Vitamin C, Hepatic Cholestasis, IL-10 Signaling, Toll-like Receptor Signaling, 4-1BB Signaling in T Lymphocytes, Hypoxia Signaling in the Cardiovascular System, Role of Osteoblasts, Osteoclasts and Chondrocytes in Rheumatoid Arthritis, Role of Macrophages, Fibroblasts and Endothelial Cells in Rheumatoid Arthritis, Type II Diabetes Mellitus Signaling, PKCθ Signaling in T Lymphocytes, Opioid Signaling Pathway, Glucocorticoid Receptor Signaling, PPAR Signaling, NF-κB Activation by Viruses, Type I Diabetes Mellitus Signaling, TNFR2 Signaling, Angiopoietin Signaling, IL-17A Signaling in Airway Cells, Role of PI3K/AKT Signaling in the Pathogenesis of Influenza, PEDF Signaling, iCOS-iCOSL Signaling in T Helper Cells, PI3K Signaling in B Lymphocytes, CD28 Signaling in T Helper Cells, Relaxin Signaling, Acute Phase Response Signaling, NF-κB Signaling
M	JAG1	growth factor, notch ligand	Notch Signaling, Regulation of the Epithelial-Mesenchymal Transition Pathway, Th2 Pathway, Th1 and Th2 Activation Pathway, Osteoarthritis Pathway
M	ESR2	ligand-dependent nuclear receptor	RhoGDI Signaling, Estrogen Receptor Signaling, Aryl Hydrocarbon Receptor Signaling, Estrogen-mediated S-phase Entry, eNOS Signaling
EGA1	SOX11	transcription regulator	Wnt/β-catenin Signaling
EGA1	LDLR	transporter, cell surface receptor	Clathrin-mediated Endocytosis Signaling, LXR/RXR Activation, TR/RXR Activation
EGA1	CXCR4	g-protein coupled receptor, chemokine receptors	Axonal Guidance Signaling, CXCR4 Signaling, Th2 Pathway, Leukocyte Extravasation Signaling, Ephrin Receptor Signaling, Chemokine Signaling, Th1 and Th2 Activation Pathway, Agranulocyte Adhesion and Diapedesis, Atherosclerosis Signaling
EGA1	CCND1	transcription regulator	p53 Signaling, Molecular Mechanisms of Cancer, EIF2 Signaling, Hereditary Breast Cancer Signaling, Glioma Signaling, Chronic Myeloid Leukemia Signaling, PI3K/AKT Signaling, Non-Small Cell Lung Cancer Signaling, Cyclins and Cell Cycle Regulation, HGF Signaling, AMPK Signaling, IL-7 Signaling Pathway, Acute Myeloid Leukemia Signaling, Cell Cycle Regulation by BTG Family Proteins, Aryl Hydrocarbon Receptor Signaling, Prostate Cancer Signaling, IL-8 Signaling, ErbB2-ErbB3 Signaling, Melanoma Signaling, Small Cell Lung Cancer Signaling, Pancreatic Adenocarcinoma Signaling, HER-2 Signaling in Breast Cancer, GM-CSF Signaling, ILK Signaling, Colorectal Cancer Metastasis Signaling, Ovarian Cancer Signaling, Glioblastoma Multiforme Signaling, Role of Macrophages, Fibroblasts and Endothelial Cells in Rheumatoid Arthritis, Estrogen-Dependent Breast Cancer Signaling, Estrogen-mediated S-phase Entry, Wnt/β-catenin Signaling, Thyroid Cancer Signaling, GADD45 Signaling, PTEN Signaling, Androgen Signaling, Endometrial Cancer Signaling
EGA2	SSRP1	other, chromatin binding	

EGA2	SET	phosphatase, inhibits acetylation	Superpathway of Inositol Phosphate Compounds, D-myo-inositol-5-phosphate Metabolism, 3-phosphoinositide Biosynthesis, 3-phosphoinositide Degradation, Transcriptional Regulatory Network in Embryonic Stem Cells, D-myo-inositol (1, 4, 5, 6)-Tetrakisphosphate Biosynthesis, D-myo-inositol (3, 6)-tetrakisphosphate Biosynthesis
EGA2	RRP1B	transcription regulator	
EGA2	ROCK2	kinase, serine/threonine kinase	Protein Kinase A Signaling, RhoA Signaling, Actin Cytoskeleton Signaling, Axonal Guidance Signaling, CXCR4 Signaling, RhoGDI Signaling, Signaling by Rho Family GTPases, Gα12/13 Signaling, Breast Cancer Regulation by Stathmin1, Thrombin Signaling, Leukocyte Extravasation Signaling, Cardiac Hypertrophy Signaling, VEGF Signaling, Gαq Signaling, NGF Signaling, IL-8 Signaling, CCR3 Signaling in Eosinophils, Ephrin Receptor Signaling, Cholecystokinin/Gastrin-mediated Signaling, Chemokine Signaling, PCP pathway, Role of Macrophages, Fibroblasts and Endothelial Cells in Rheumatoid Arthritis, Actin Nucleation by ARP-WASP Complex, Semaphorin Signaling in Neurons, Ephrin A Signaling, PEDF Signaling
EGA2	KITLG	growth factor, ligand of the tyrosine-kinase receptor	Acute Myeloid Leukemia Signaling
EGA2	INSR	kinase, receptor tyrosine kinase	EIF2 Signaling, mTOR Signaling, Insulin Receptor Signaling, Caveolar-mediated Endocytosis Signaling, AMPK Signaling, Hepatic Cholestasis, STAT3 Pathway, Maturity Onset Diabetes of Young (MODY) Signaling, PTEN Signaling, Type II Diabetes Mellitus Signaling, PPAR Signaling, PXR/RXR Activation, NF-κB Signaling
EGA2	HSPA5	kinase, endoplasmic reticulum	Aldosterone Signaling in Epithelial Cells, EIF2 Signaling, Huntington's Disease Signaling, Protein Ubiquitination Pathway, Endoplasmic Reticulum Stress Pathway, Glucocorticoid Receptor Signaling
EGA2	HNRNPU	transporter, binds RNAs	
EGA2	HNF4A	transcription regulator, nuclear receptor	TGF-β Signaling, Transcriptional Regulatory Network in Embryonic Stem Cells, AMPK Signaling, Hepatic Cholestasis, Maturity Onset Diabetes of Young (MODY) Signaling, Stearate Biosynthesis I (Animals), PXR/RXR Activation, Acyl-CoA Hydrolysis, FXR/RXR Activation
EGA2	CDK4/6	group, cell cycle progression	Molecular Mechanisms of Cancer, Hereditary Breast Cancer Signaling, Glioma Signaling, Chronic Myeloid Leukemia Signaling, Non-Small Cell Lung Cancer Signaling, Cyclins and Cell Cycle Regulation, Aryl Hydrocarbon Receptor Signaling, Small Cell Lung Cancer Signaling, Glioblastoma Multiforme Signaling
EGA3	ERBB2	kinase, tyrosine kinase	Superpathway of Inositol Phosphate Compounds, Axonal Guidance Signaling, 3-phosphoinositide Biosynthesis, Non-Small Cell Lung Cancer Signaling, ErbB2-ErbB3 Signaling, Pancreatic Adenocarcinoma Signaling, HER-2 Signaling in Breast Cancer, ErbB Signaling, Agrin Interactions at Neuromuscular Junction, Neuregulin Signaling, Endometrial Cancer Signaling
EGA3	ELF3	transcription regulator	Telomerase Signaling, HGF Signaling, Osteoarthritis Pathway, ERK/MAPK Signaling
EGA3	ACOX1	enzyme	LPS/IL-1 Mediated Inhibition of RXR Function
EGA4	TCF7L2	transcription regulator	Protein Kinase A Signaling, Regulation of the Epithelial-Mesenchymal Transition Pathway, Acute Myeloid Leukemia Signaling, Mouse Embryonic Stem Cell Pluripotency, Factors Promoting Cardiogenesis in Vertebrates, Osteoarthritis Pathway, Role of Osteoblasts, Osteoclasts and Chondrocytes in Rheumatoid Arthritis, Human Embryonic Stem Cell Pluripotency, Basal Cell Carcinoma Signaling, Role of Wnt/GSK-3β Signaling in the Pathogenesis of Influenza, Colorectal Cancer Metastasis Signaling, Ovarian Cancer Signaling, Role of Macrophages, Fibroblasts and Endothelial Cells in Rheumatoid Arthritis, Wnt/β-catenin Signaling, Thyroid Cancer Signaling, PEDF Signaling, Epithelial Adherens Junction Signaling
EGA4	FN1	enzyme, glycoproteins	Actin Cytoskeleton Signaling, ILK Signaling, Agranulocyte Adhesion and Diapedesis, Osteoarthritis Pathway, Hepatic Fibrosis/Hepatic Stellate Cell Activation, Role of Macrophages, Fibroblasts and Endothelial Cells in Rheumatoid Arthritis, Phagosome Formation, Acute Phase Response Signaling