INGENUITY
PATHWAY ANALYSIS

Analysis Name: FLAG_EGR1_LPS_vs_WT_LPS_DESeq_fc2_padj0.05 - 2020-03-06 02:00 PM
Analysis Creation Date: 2020-03-06
Build version: exported
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Experiment Metadata

Name	Value

Analysis Settings

Reference set: Ingenuity Knowledge Base (Genes Only)
Relationship to include: Direct and Indirect
Includes Endogenous Chemicals
Optional Analyses: My Pathways My List

Filter Summary:
Consider only molecules and/or relationships where
(species = Human OR Uncategorized OR Rat OR Mouse) AND
(confidence = Experimentally Observed) AND
(tissues/cell lines = Vd1 Gamma-delta T cells OR HL-60 OR Langerhans cells OR Cerebral Cortex OR Immune cell lines not otherwise specified OR Megakaryocytes OR Cerebral Ventricles OR Stem cells not otherwise specified OR Cervical cancer cell line not otherwise specified OR Pituitary Gland OR KM-12 OR Retina OR Other Lymphocytes OR Mononuclear leukocytes not otherwise specified OR Plasmacytoid dendritic

regulator OR translation regulator OR transmembrane receptor OR transporter) AND
(data sources = An Open Access Database of Genome-wide Association Results OR BIND OR BioGRID OR Catalogue Of Somatic Mutations In Cancer (COSMIC) OR Chemical Carcinogenesis Research Information System (CCRIS) OR ClinicalTrials.gov OR ClinVar OR Cognia OR DIP OR DrugBank OR Gene Ontology (GO) OR GVK Biosciences OR Hazardous Substances Data Bank (HSDB) OR HumanCyc OR Ingenuity Expert Findings OR Ingenuity ExpertAssist Findings OR IntAct OR Interactome studies OR MIPS OR miRBase OR miRecords OR Mouse Genome Database (MGD) OR Obesity Gene Map Database OR Online Mendelian Inheritance in Man (OMIM) OR TarBase OR TargetScan Human)

Top Canonical Pathways

Name	p-value	Overlap
Role of NFAT in Regulation of the Immune Response	3.14E-17	42.0 % 76/181
Integrin Signaling	2.36E-16	39.0 % 83/213
B Cell Receptor Signaling	5.16E-16	40.5 % 75/185
Systemic Lupus Erythematosus In B Cell Signaling Pathway	4.70E-15	34.9 % 96/275
Production of Nitric Oxide and Reactive Oxygen Species in Macrophages	5.23E-15	39.4 % 74/188

Top Upstream Regulators

Upstream Regulators

Name	p-value	Predicted Activation

lipopolysaccharide	1.12E-53	Inhibited
IFNG	4.52E-50	Inhibited
Interferon alpha	1.00E-44	Inhibited
TNF	8.10E-38	Inhibited
dexamethasone	2.02E-34	

Causal Network

Name	p-value	Predicted Activation
IFNG	2.70E-53	Inhibited
lipopolysaccharide	6.18E-50	Inhibited
6-aminopyrazolopyrimidine derivative compound II	3.35E-47	Activated
5'-adenylyl (beta,gamma-methylene)diphosphonate	9.59E-43	Activated
TBK1	8.35E-42	Inhibited

Top Diseases and Bio Functions

Diseases and Disorders

Name	p-value range	# Molecules
Cancer	5.83E-16 - 2.49E-135	3392
Organismal Injury and Abnormalities	5.83E-16 - 2.49E-135	3443
Inflammatory Response	6.30E-16 - 2.66E-87	1277
Endocrine System Disorders	1.23E-16 - 2.19E-84	2657

Gastrointestinal Disease	3.23E-16 - 1.84E-72	2968

Molecular and Cellular Functions

Name	p-value range	# Molecules
Cellular Compromise	6.80E-16 - 9.20E-86	414
Cellular Function and Maintenance	4.24E-16 - 5.70E-71	1229
Cell Death and Survival	6.80E-16 - 1.17E-62	1318
Cellular Movement	6.30E-16 - 1.40E-61	1016
Cellular Development	4.96E-16 - 8.51E-55	1185

Physiological System Development and Function

Name	p-value range	# Molecules
Hematological System Development and Function	6.30E-16 - 1.05E-56	1042
Tissue Morphology	6.10E-16 - 1.05E-56	755
Immune Cell Trafficking	6.30E-16 - 3.04E-55	628
Lymphoid Tissue Structure and Development	6.10E-16 - 9.29E-55	729
Organismal Survival	7.57E-34 - 1.21E-54	1035

Top Tox Functions

Assays: Clinical Chemistry and Hematology

Name	p-value range	# Molecules
Increased Levels of ALT	2.43E-01 - 1.86E-06	18
Increased Levels of Red Blood Cells	4.98E-01 - 1.40E-05	35
Increased Levels of Hematocrit	7.12E-05 - 7.12E-05	31
Increased Levels of Albumin	6.44E-01 - 9.93E-04	10
Increased Levels of Alkaline Phosphatase	1.58E-01 - 1.27E-03	23

Cardiotoxicity

Name	p-value range	# Molecules
Cardiac Necrosis/Cell Death	3.69E-01 - 2.28E-14	99
Cardiac Fibrosis	4.29E-01 - 4.98E-08	75
Cardiac Enlargement	1.00E00 - 1.17E-07	189
Cardiac Infarction	5.59E-01 - 6.34E-06	81
Congenital Heart Anomaly	1.00E00 - 8.23E-05	86

Hepatotoxicity

Name	p-value range	# Molecules
Liver Damage	5.77E-01 - 9.19E-18	97
Liver Necrosis/Cell Death	4.03E-01 - 1.74E-15	108
Liver Inflammation/Hepatitis	4.98E-01 - 7.04E-15	141
Liver Hyperplasia/Hyperproliferation	5.88E-01 - 7.78E-14	1403
Liver Steatosis	4.42E-01 - 2.82E-11	121

Nephrotoxicity

Name	p-value range	# Molecules
Renal Necrosis/Cell Death	5.77E-01 - 1.35E-19	181
Renal Damage	5.39E-01 - 1.37E-10	103
Glomerular Injury	5.88E-01 - 1.39E-10	173
Renal Inflammation	6.44E-01 - 1.39E-10	132
Renal Nephritis	6.44E-01 - 1.39E-10	132

Top Regulator Effect Networks

ID	Regulators	Disease & Functions	Consistency Score
1	Ifnar	Immune response of cells	5.029
2	curcumin	Colony formation	4.526
3	curcumin	Colony formation of cells	4.311
4	F2R	Cell movement of tumor cell lines	4.249
5	E. coli B5 lipopolysaccharide	Interaction of lymphocytes	4.146

Top Networks

ID	Associated Network Functions	Score

1	Psychological Disorders, Hereditary Disorder, Organismal Injury and Abnormalities	33
2	Cellular Assembly and Organization, DNA Replication, Recombination, and Repair, Post-Translational Modification	33
3	Organ Morphology, Tissue Morphology, Visual System Development and Function	30
4	Inflammatory Response, Cell Morphology, Connective Tissue Development and Function	30
5	Post-Translational Modification, Developmental Disorder, Hereditary Disorder	30

Top Tox Lists

Name	p-value	Overlap
Renal Necrosis/Cell Death	3.04E-21	31.4 % 181/577
Liver Necrosis/Cell Death	2.22E-15	33.5 % 108/322
Cardiac Necrosis/Cell Death	2.55E-13	32.6 % 99/304

Increases Liver Damage	1.55E-12	46.8 % 44/94
Increases Renal Damage	2.96E-09	41.8 % 38/91

Top My Lists

Name	p-value	Overlap
Lung Cancer	2.60E-13	29.5 % 129/437
Prostate Adhesion and Invasion	7.83E-04	32.8 % 20/61

Top My Pathways

Name	p-value	Overlap
Lung Cancer	2.60E-13	29.5 % 129/437
Prostate Adhesion and Invasion	7.83E-04	32.8 % 20/61
RelB and immune response	7.72E-02	26.5 % 9/34

Top Analysis-Ready Molecules

Expr Log Ratio

Molecules	Expr. Value	Chart
TKTL1	↑ 2.062	
CYP1D1P	↑ 1.926	

EGR1	1.676
ROR1-AS1	1.668
HS3ST2	1.488
LURAP1L-AS1	1.404
RP11-2H3.7	1.371
RP11_315E171	1.316
KLF5	1.242
ATP6V0D2	1.141

Expr Log Ratio

Molecules	Expr. Value	Chart
FTH1P2	-5.282	
HLA-C	-3.871	
TACC3	-3.341	
P2RY13	-2.920	
FCGR2C	-2.904	
FCGR2B	-2.898	
CH25H	-2.880	
S100A8	-2.864	
CD14	-2.857	
HSPA7	-2.844	