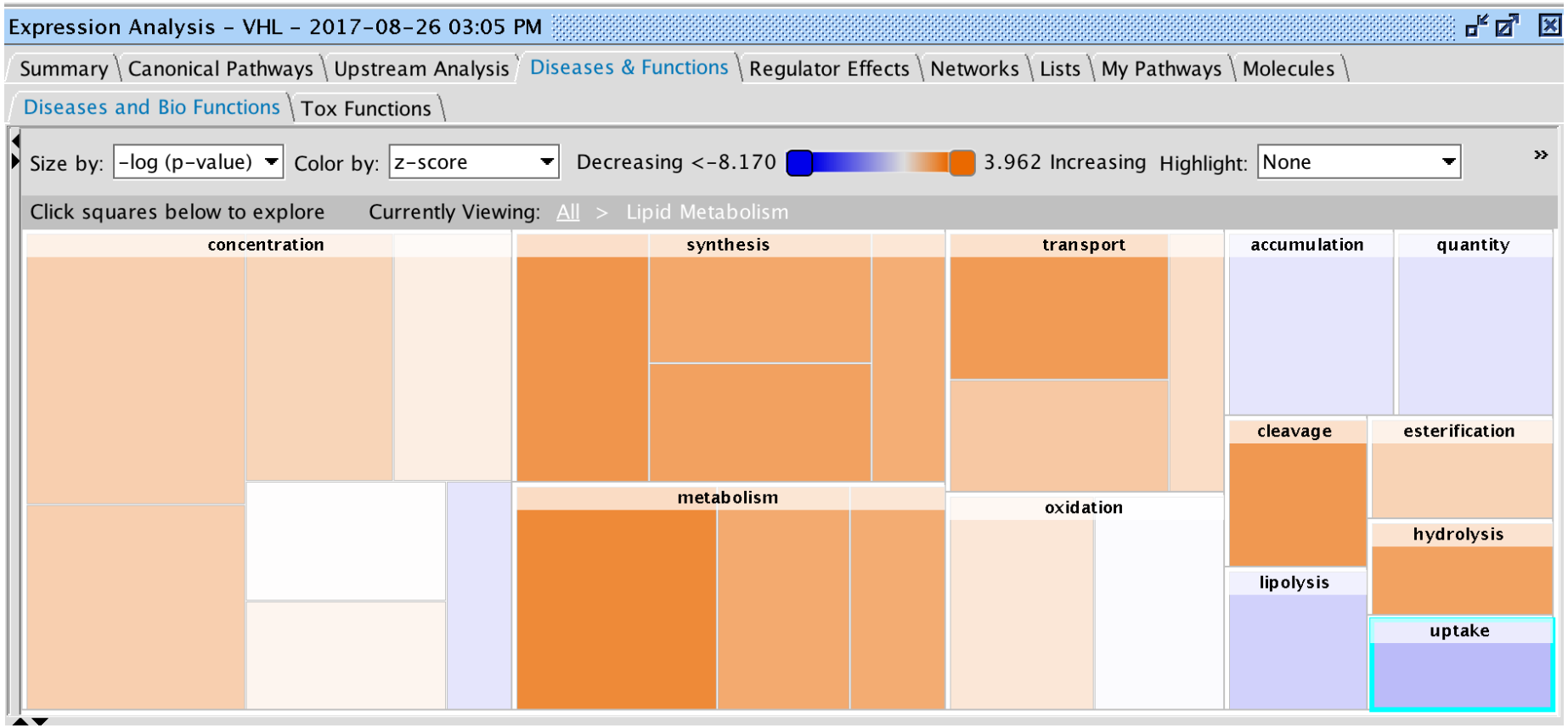
Lipid metabolism



Enriched within "Lipid Metabolism"

Top 3 functional annotations with the lowest p-value and highest enrichment score are:

	p-Value	Activation z-score
fatty acid metabolism	4.50E-14	2.502
synthesis of lipid	1.91E-10	2.08
transport of lipid	4.61E-09	1.914

INGENUITY
PATHWAY ANALYSIS

Analysis Name: VHL - 2017-08-26 03:05 PM
Analysis Creation Date: 2017-08-26
Build version: 448560M
Content version: 36601845 (Release Date: 2017-06-22)

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 relationships where
confidence = Experimentally Observed

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Top Canonical Pathways

Name	p-value	Overlap
Glycolysis I	2.98E-13	53.8 % 14/26
FXR/RXR Activation	3.18E-13	22.2 % 28/126
LXR/RXR Activation	5.07E-12	21.5 % 26/121
Protein Ubiquitination Pathway	5.69E-10	13.6 % 36/265
The Visual Cycle	2.08E-09	50.0 % 10/20

Top Upstream Regulators

Upstream Regulator	p-value of overlap	Predicted Activation
pirinixic acid	4.39E-35	
dexamethasone	1.57E-34	
beta-estradiol	1.07E-32	
MYC	1.23E-32	Activated
TP53	2.76E-32	

Top Diseases and Bio Functions

Diseases and Disorders

Name	p-value	#Molecules
Cancer	8.01E-07 - 1.19E-23	836
Organismal Injury and Abnormalities	8.01E-07 - 1.19E-23	861
Cardiovascular Disease	7.13E-07 - 2.98E-17	239
Hematological Disease	7.97E-07 - 7.01E-17	293
Metabolic Disease	7.64E-07 - 7.35E-16	229

Molecular and Cellular Functions

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Name	p-value	#Molecules
Cell Death and Survival	7.48E-07 - 3.33E-38	406
Cell Morphology	7.59E-07 - 4.96E-24	250
Lipid Metabolism	6.50E-07 - 8.54E-17	175
Molecular Transport	6.50E-07 - 8.54E-17	270
Small Molecule Biochemistry	6.50E-07 - 8.54E-17	258

Physiological System Development and Function

Name	p-value	#Molecules
Organismal Survival	5.45E-13 - 2.12E-24	293
Cardiovascular System Development and Function	7.59E-07 - 1.47E-23	232
Organismal Development	7.97E-07 - 1.43E-20	347
Connective Tissue Development and Function	3.89E-07 - 4.23E-15	200
Tissue Development	7.97E-07 - 4.23E-15	281

Top Tox Functions

Assays: Clinical Chemistry and Hematology

Name	p-value	#Molecules
Increased Levels of Hematocrit	8.93E-08 - 8.93E-08	18
Decreased Levels of Hematocrit	1.43E-05 - 1.43E-05	5
Increased Levels of LDH	3.77E-01 - 3.73E-04	7
Increased Levels of Red Blood Cells	1.58E-01 - 3.83E-04	13
Increased Levels of ALT	2.60E-01 - 1.02E-02	5

Cardiotoxicity

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Name	p-value	#Molecules
Cardiac Infarction	2.60E-01 - 2.95E-12	38
Cardiac Enlargement	3.77E-01 - 1.58E-10	51
Cardiac Arrythmia	2.82E-01 - 1.88E-08	34
Cardiac Dysfunction	4.37E-01 - 5.37E-08	31
Cardiac Necrosis/Cell Death	1.58E-01 - 1.22E-06	33

Hepatotoxicity

Name	p-value	#Molecules
Liver Steatosis	9.64E-02 - 1.78E-10	46
Hepatocellular Carcinoma	4.03E-01 - 4.78E-08	83
Liver Hyperplasia/Hyperproliferation	4.52E-01 - 4.78E-08	344
Liver Proliferation	5.39E-01 - 9.17E-07	28
Liver Necrosis/Cell Death	5.95E-01 - 3.82E-06	31

Nephrotoxicity

Name	p-value	#Molecules
Kidney Failure	2.60E-01 - 3.96E-12	42
Renal Damage	8.24E-02 - 2.95E-11	38
Renal Tubule Injury	8.24E-02 - 2.95E-11	28
Renal Necrosis/Cell Death	6.12E-01 - 5.92E-09	56
Glomerular Injury	6.12E-01 - 6.30E-07	38

Top Regulator Effect Networks

ID	Regulators	Diseases & Functions	Consistency Score
1	BSG,CCNE1,DTNBP1,DYRK1A,E2F2,E2F3,FOXM1,MED13 (+7 more)	cell cycle progression (+8 more)	22.847

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2	BSG,CCNE1,CEBPD,CYP19A1,DYRK1A,E2F2,E2F3,FOXM1 (+6 more)	cell cycle progression (+5 more)	17.582
3	BSG,COMMD1,CSF1,E2F3,FOXM1,let-7,MBD2,RABL6,RBL1 (+3 more)	binding of blood cells (+4 more)	15.948
4	Collagen type I,CSF1,DYRK1A,E2F3,FOXM1,ITGAV,let-7 (+5 more)	cell proliferation of breast cancer cell lines (+5 more)	15.753
5	BSG,CCNE1,DMD,DYRK1A,E2F2,FOXM1,NELFCD,NELFE (+3 more)	cell cycle progression (+6 more)	15.232

Top Networks

ID	Associated Network Functions	Score
1	Developmental Disorder, Skeletal and Muscular Disorders, Cellular Assembly and Organization	51
2	Carbohydrate Metabolism, Small Molecule Biochemistry, Decreased Levels of Albumin	41
3	Organ Development, Organ Morphology, Skeletal and Muscular System Development and Function	41
4	Post-Translational Modification, Protein Degradation, Protein Synthesis	38
5	Cell Cycle, Cellular Movement, Reproductive System Development and Function	38

Top Tox Lists

Name	p-value	Overlap	
FXR/RXR Activation	3.18E-13	22.2 %	28/126
Cardiac Hypertrophy	8.59E-13	13.7 %	47/342
LXR/RXR Activation	7.53E-12	21.1 %	26/123
Renal Necrosis/Cell Death	4.39E-10	10.4 %	56/538
Positive Acute Phase Response Proteins	1.80E-08	36.7 %	11/30

Top Analysis-Ready Molecules

Expr Fold Change up-regulated

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INGENUITY PATHWAY ANALYSIS

Molecules	Expr. Value	Expr. Chart
HPX*	↑ 27.342	
EGLN3	↑ 21.626	
COX4I2	↑ 19.256	
ALAS2*	↑ 13.245	
HBE1*	↑ 12.880	
HBZ*	↑ 12.448	
SLC4A1*	↑ 11.416	
EPB41	↑ 9.159	
ANGPTL4*	↑ 8.737	
P4HA1	↑ 7.871	

Expr Fold Change down-regulated

Molecules	Expr. Value	Expr. Chart
HAMP*	↓ -8.222	
ARG2	↓ -6.039	
PRSS1*	↓ -4.617	
TAT*	↓ -4.558	
CEL*	↓ -4.097	
C1orf226	↓ -4.046	
CPA1*	↓ -3.983	
AMY2A*	↓ -3.788	
CPB1*	↓ -3.759	
CELA1*	↓ -3.689	

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INGENUITY PATHWAY ANALYSIS