
THE UNIVERSITY OF ALABAMA AT BIRMINGHAM
 Knowledge that will change your world

Pathway analysis with Metaboanalyst and KEGG

Stephen Barnes, PhD
 Professor of Pharmacology & Toxicology
sbarnes@uab.edu

Targeted
Metabolomics &
Proteomics
Laboratory

Files in mummichog results folder

File Name	Date/Time	Size	Type
1531447106.01.Workshop_neg_out	Today, 3:52 PM	--	Folder
tsv	Today, 3:52 PM	--	Folder
_tentative_featurematch_Workshop_neg_out.xlsx	Jul 12, 2018, 9:03 PM	117 KB	Micros...(.xlsx)
InspectedNodes_ActivityNetwork.tsv	Jul 12, 2018, 9:03 PM	20 KB	Plain Text
mcg_metabolite_works...t_Workshop_neg_out.tsv	Jul 12, 2018, 9:03 PM	67 KB	Plain Text
mcg_metabolite_works...Workshop_neg_out.xlsx	Jul 12, 2018, 9:03 PM	26 KB	Micros...(.xlsx)
mcg_modularanalysis_Workshop_neg_out.tsv	Jul 12, 2018, 9:03 PM	81 KB	Plain Text
mcg_modularanalysis_Workshop_neg_out.xlsx	Jul 12, 2018, 9:03 PM	25 KB	Micros...(.xlsx)
mcg_pathwayanalysis_Workshop_neg_out.tsv	Jul 12, 2018, 9:03 PM	183 KB	Plain Text
mcg_pathwayanalysis_Workshop_neg_out.xlsx	Jul 12, 2018, 9:03 PM	57 KB	Micros...(.xlsx)
_tentative_featurematch_Workshop_neg_out.tsv	Jul 12, 2018, 9:03 PM	383 KB	Plain Text
mummichog.log	Jul 12, 2018, 9:03 PM	16 KB	Log File
result.html	Jul 12, 2018, 9:03 PM	163 KB	HTML
sif	Jul 12, 2018, 9:03 PM	--	Folder
web	Jul 12, 2018, 8:58 PM	--	Folder

Open the file. It's on your thumb drive.

Identification of each observed ion

m/z	id	match_for	mz_differe	name	pathway
73.0294	C00116	M-H2O-H[-]	0	Glycerol; G	Phosphatidylinositol phosphate metabolism\$Galactose metabolism\$Fatty Acid Metabolism\$Si
73.0294	C00163	M-H[-]	-0.0001	Propanoate	Bile acid biosynthesis\$Propanoate metabolism
73.0294	C00207	M-H+O[-]	-0.0001	Acetone; D	Pyruvate Metabolism\$Propanoate metabolism
73.0294	C00418	M-2H[2-]	-0.0001	(R)-Mevalo	Squalene and cholesterol biosynthesis
73.0294	C00424	M-H[-]	-0.0001	(S)-Lactalde	Pyruvate Metabolism
73.0294	C00479	M-H+O[-]	-0.0001		Tryptophan metabolism
73.0294	C00937	M-H[-]	-0.0001	(R)-Lactalde	Pyruvate Metabolism\$Glycine, serine, alanine and threonine metabolism
73.0294	C05235	M-H[-]	-0.0001	Hydroxyacc	Pyruvate Metabolism
73.0294	C05999	M-H[-]	-0.0001	Lactaldehyde; 2-Hydroxypropionaldehyde; 2-Hydroxypropanal	
75.0101	C00385	M-2H[2-]	0.0007	Xanthine	Purine metabolism
87.0456	C00246	M-H[-]	0.0005	Butanoic ac	Butanoate metabolism\$Fatty acid activation
93.0353	C00116	M(S34)-H[-]	-0.0005	Glycerol; G	Phosphatidylinositol phosphate metabolism\$Galactose metabolism\$Fatty Acid Metabolism\$Si
93.0353	C00146	M-H[-]	0.0007	Phenol; Bei	Benzoate degradation via CoA ligation
93.0353	C04221	M-H2O-H[-]	0.0008	trans-1,2-Dihydrobenzene-1,2-diol	
93.0353	C15584	M-H[-]	0.0007	Phenol	
93.0355	C00116	M(S34)-H[-]	-0.0003	Glycerol; G	Phosphatidylinositol phosphate metabolism\$Galactose metabolism\$Fatty Acid Metabolism\$Si
93.0355	C00146	M-H[-]	0.0009	Phenol; Bei	Benzoate degradation via CoA ligation
93.0355	C15584	M-H[-]	0.0009	Phenol	
93.0374	C00116	M(C137)-H[-]	0.0002	Glycerol; G	Phosphatidylinositol phosphate metabolism\$Galactose metabolism\$Fatty Acid Metabolism\$Si
99.0079	C00042	M-H2O-H[-]	-0.0008	Succinate; ; Valine, leucine and isoleucine degradation\$Phytanic acid peroxisomal oxidation\$Arginine and f	
99.0079	C01036	M-2H[2-]	-0.0009	4-Maleylac	Tyrosine metabolism
99.0079	C01061	M-2H[2-]	-0.0009	4-Fumarylac	Tyrosine metabolism
99.0079	C02170	M-H2O-H[-]	-0.0008	Methylmalic	Valine, leucine and isoleucine degradation
99.0079	C05985	M+HCOO[-]	-0.0003	2-Propyn-1	Propanoate metabolism

Select and copy the KEGG IDs

m/z	id	match_for	mz_differe	name	pathway
73.0294	C00116	M-H2O-H[-]	0	Glycerol; G	Phosphatidylinositol phosphate metabolism\$Galactose metabolism\$Fatty Acid Metabolism\$Si
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73.0294	C00418	M-2H[2-]	-0.0001	(R)-Mevalo	Squalene and cholesterol biosynthesis
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73.0294	C00937	M-H[-]	-0.0001	(R)-Lactalde	Pyruvate Metabolism\$Glycine, serine, alanine and threonine metabolism
73.0294	C05235	M-H[-]	-0.0001	Hydroxyacc	Pyruvate Metabolism
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93.0353	C00146	M-H[-]	0.0007	Phenol; Bei	Benzoate degradation via CoA ligation
93.0353	C04221	M-H2O-H[-]	0.0008	trans-1,2-Dihydrobenzene-1,2-diol	
93.0353	C15584	M-H[-]	0.0007	Phenol	
93.0355	C00116	M(S34)-H[-]	-0.0003	Glycerol; G	Phosphatidylinositol phosphate metabolism\$Galactose metabolism\$Fatty Acid Metabolism\$Si
93.0355	C00146	M-H[-]	0.0009	Phenol; Bei	Benzoate degradation via CoA ligation
93.0355	C15584	M-H[-]	0.0009	Phenol	
93.0374	C00116	M(C137)-H[-]	0.0002	Glycerol; G	Phosphatidylinositol phosphate metabolism\$Galactose metabolism\$Fatty Acid Metabolism\$Si
99.0079	C00042	M-H2O-H[-]	-0.0008	Succinate; ; Valine, leucine and isoleucine degradation\$Phytanic acid peroxisomal oxidation\$Arginine and	
99.0079	C01036	M-2H[2-]	-0.0009	4-Maleylac	Tyrosine metabolism
99.0079	C01061	M-2H[2-]	-0.0009	4-Fumarylac	Tyrosine metabolism
99.0079	C02170	M-H2O-H[-]	-0.0008	Methylmalic	Valine, leucine and isoleucine degradation
99.0079	C05985	M+HCOO[-]	-0.0003	2-Propyn-1	Propanoate metabolism

Go to Metaboanalyst

MetaboAnalyst - statistical, functional and integrative analysis of metabolomics data

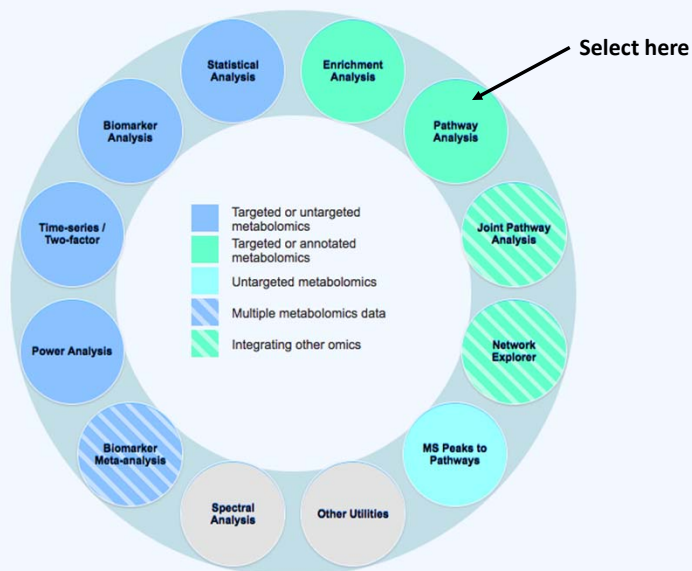
Welcome >> [click here to start](#) <<

News & Updates

- Check out our latest paper on [MetaboAnalyst 4.0](#); **NEW**
- Check out our [OmicsNet](#) for flexible creation & 3D visualization of complex networks integrating metabolites, genes/proteins, miRNAs and transcription factors; **NEW**
- Fixed issue with name mapping in enrichment analysis (06/28/2018); **NEW**
- Fixed issue with pathway visualization (06/18/2018); **NEW**
- Enhanced pathway image generation to deal with concurrency issue (06/13/2018); **NEW**
- Fixed the issues for name mapping and node-click information in pathway visualization (06/12/2018); **NEW**
- Fixed the issue for data editor in biomarker analysis (05/28/2018); **NEW**
- Fixed the issue for sample hold-out analysis in biomarker analysis (04/23/2018); **NEW**
- Fixed the issue with time-series group ordering based on numeric values (04/19/2018); **NEW**
- Enhanced support for SVG export for KEGG global network (04/04/2018); **NEW**
- Check out our [MicrobiomeAnalyst](#) for comprehensive analysis of microbiome data;
- Release of MetaboAnalyst 4.0 together with a companion R package [MetaboAnalystR](#). You can still access [version 3.0 here](#) (01/29/2018);

MetaboAnalyst - statistical, functional and integrative analysis of metabolomics data

Click a module to proceed, or scroll down for more details:



Please enter a one-column compound list:

iC00116
 C00163
 C00207
 C00418
 C00424
 C00479
 C00937
 C05235
 C05999
 C00385
 C00246
 C00116
 C00146
 C04221
 C15584
 C00116
 C00116

Transfer the KEGG IDs into the box, select the input type and submit

Input Type:

Use our example data

Listed metabolites

Compound Name/ID Standardization:

Please note:

- Greek alphabets are not recognized, they should be replaced by English names (i.e. alpha, beta)
- Query names in normal white indicate exact match - marked by "1" in the download file;
- Query names highlighted indicate **no exact or unique match** - marked by "0" in the downloaded file;
- For **compound name**, you should click the **View** link to perform **approximate search** and manually select the correct match if found;
- For **KEGG ID**, it is possible to have multiple hits, you should click the **View** link to manually select the correct match if found;

Query	Hit	HMDB	PubChem	KEGG	Details
C00116	Glycerol	HMDB0000131	753	C00116	
C00163	Propionic acid	HMDB0000237	1032	C00163	
C00207	Acetone	HMDB0001659	180	C00207	
C00418	Mevalonic acid	HMDB0000227	449	C00418	
C00424	Lactaldehyde	HMDB0003052	439231	C00424	
C00479	Propanal	HMDB0003366	527	C00479	
C00937	D-Lactaldehyde	HMDB0006458	439350	C00937	
C05235	Hydroxyacetone	HMDB0006961	8299	C05235	
C05999		-	-	-	View
C00385	Xanthine	HMDB0000292	1188	C00385	
C00246	Butyric acid	HMDB0000039	264	C00246	
C00116	Glycerol	HMDB0000131	753	C00116	
C00146	Phenol	HMDB0000228	996	C00146	
C04221	trans-1,2-Dihydrobenzene-1,2-diol	HMDB0001164	149186	C04221	

No records?

Query name: **CE0520**

Matched Name	HMDB	PubChem	KEGG
No records found.			

OK

Cancel

Search unknown on KEGG to identify metabolite

Proceed to bottom of the table

C00016	FAD	HMDB0001248	643975	C00016	
C00016	FAD	HMDB0001248	643975	C00016	
C01352	FADH	HMDB0001197	446013	C01352	

You can download the result [here](#)

Submit

Choose a species

Please select a pathway library:

Mammals	<input type="radio"/> Homo sapiens (human) [80] <input checked="" type="radio"/> Mus musculus (mouse) [82] <input type="radio"/> Rattus norvegicus (rat) [81] <input type="radio"/> Bos taurus (cow) [81]
Birds	<input type="radio"/> Gallus gallus (chicken) [78]
Fish	<input type="radio"/> Danio rerio (zebrafish) [81]
Insects	<input type="radio"/> Drosophila melanogaster (fruit fly) [79]
Nematodes	<input type="radio"/> Caenorhabditis elegans (nematode) [78]
Fungi	<input type="radio"/> Saccharomyces cerevisiae (yeast) [65]
Plants	<input type="radio"/> Oryza sativa japonica (Japanese rice) [83] <input type="radio"/> Arabidopsis thaliana (thale cress) [87]
Parasites	<input type="radio"/> Schistosoma mansoni [69] <input type="radio"/> Plasmodium falciparum 3D7 (Malaria) [47] <input type="radio"/> Trypanosoma brucei [54]
Prokaryotes	<input type="radio"/> Escherichia coli K-12 MG1655 [87] <input type="radio"/> Bacillus subtilis [80] <input type="radio"/> Pseudomonas putida KT2440 [89] <input type="radio"/> Staphylococcus aureus N315 (MRSA/VSSA) [73] <input type="radio"/> Thermotoga maritima [57] <input type="radio"/> Synechococcus elongatus PCC7942 [75] <input type="radio"/> Mesorhizobium loti [86]

Statistical analysis selection

Please specify pathway analysis algorithms:

Over Representation Analysis

Hypergeometric Test

Fisher's Exact Test

Pathway Topology Analysis

Relative-betweenness Centrality

Out-degree Centrality

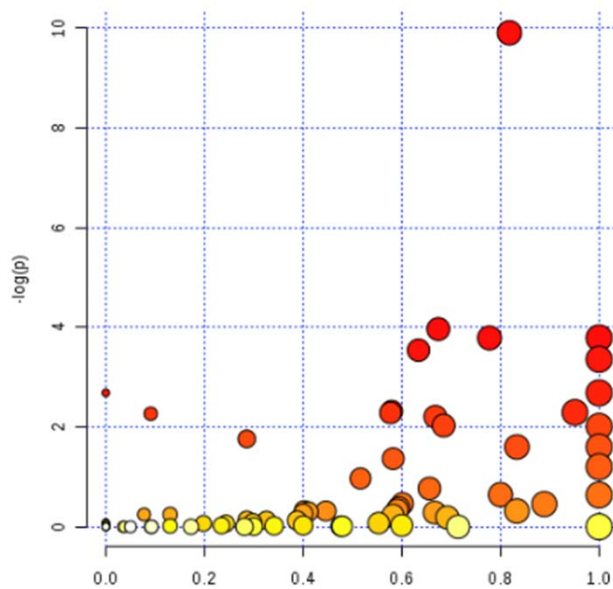
Please specify a reference metabolome:

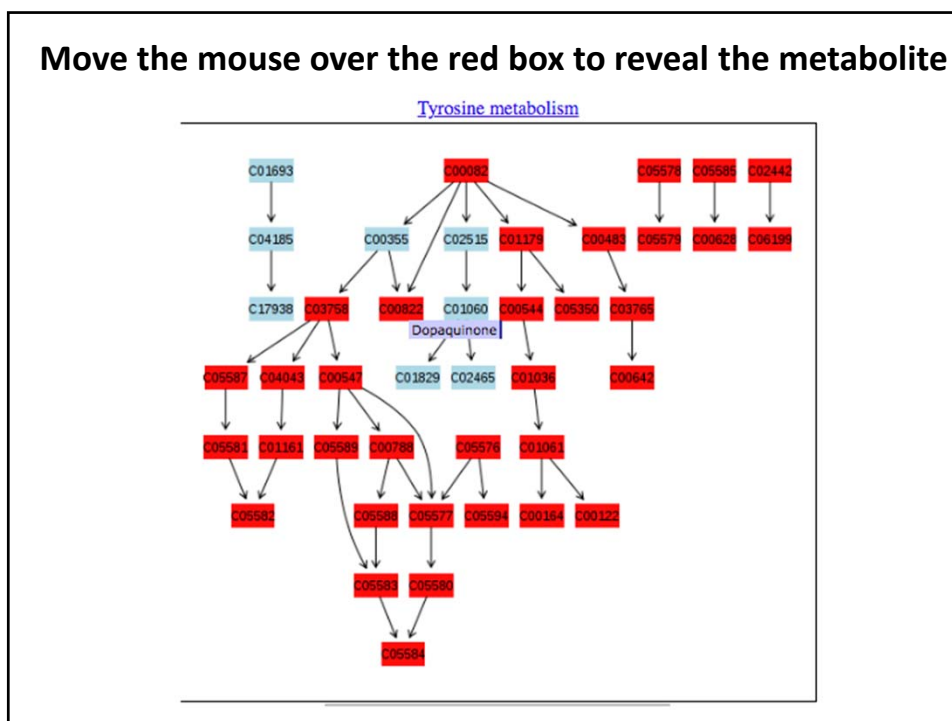
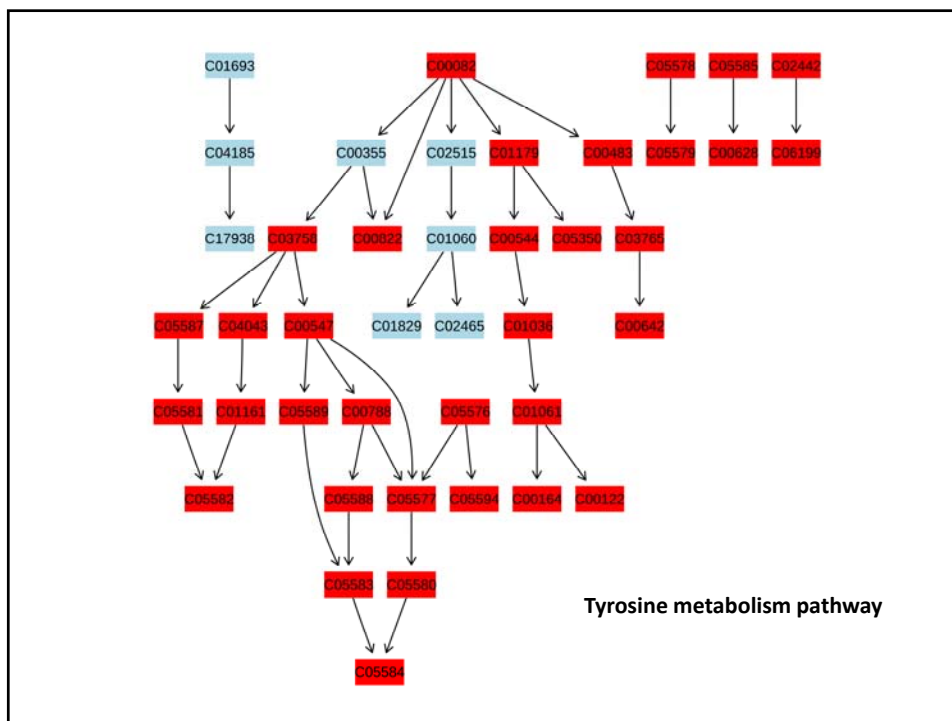
Use all compounds in the selected pathways

[Upload a reference metabolome based on your technical platform](#)

Submit

Overview of Pathway Analysis





Summary table

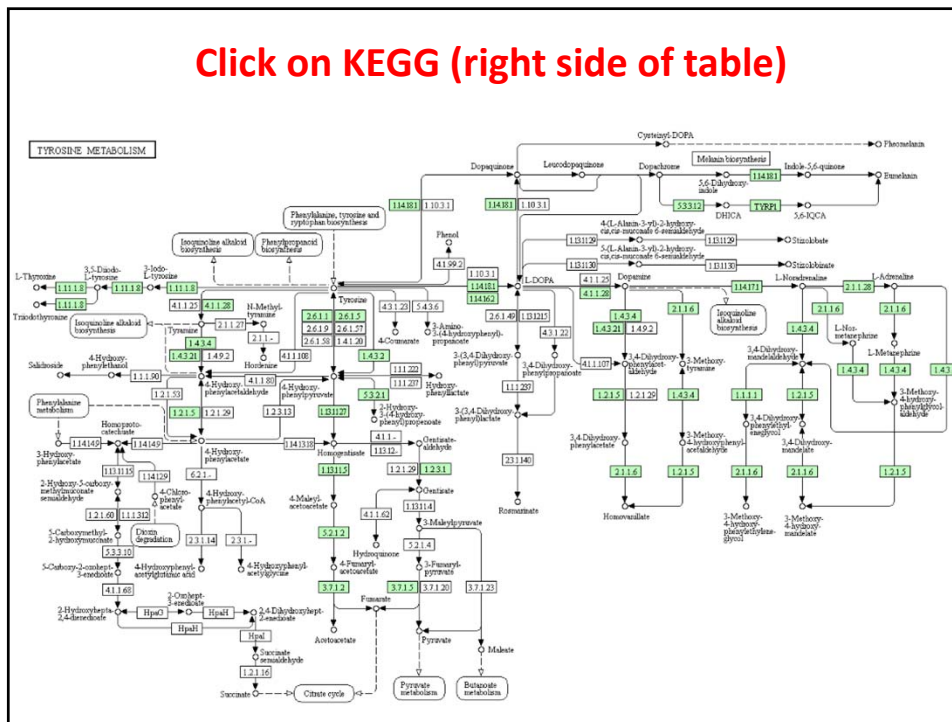
Pathway Name	Match Status	p	-log(p)	Holm p	FDR	Impact	Details
Tyrosine metabolism	34/42	4.9719E-5	9.9091	0.0040272	0.0040272	0.81825	KEGG
Arachidonic acid metabolism	25/36	0.018939	3.9665	1.0	0.45836	0.67402	KEGG
Phenylalanine metabolism	8/9	0.022635	3.7882	1.0	0.45836	0.77778	KEGG
One carbon pool by folate	8/9	0.022635	3.7882	1.0	0.45836	1.0	KEGG
Steroid hormone biosynthesis	44/70	0.028935	3.5427	1.0	0.46875	0.83389	KEGG
D-Glutamine and D-glutamate metabolism	5/5	0.034745	3.3597	1.0	0.46905	1.0	KEGG
D-Arjinine and D-ornithine metabolism	4/4	0.068125	2.6864	1.0	0.6852	0.0	KEGG
Phenylalanine, tyrosine and tryptophan biosynthesis	4/4	0.068125	2.6864	1.0	0.6852	1.0	KEGG
Pentose phosphate pathway	13/19	0.098427	2.3184	1.0	0.6852	0.57963	KEGG
Vitamin B6 metabolism	7/9	0.10086	2.294	1.0	0.6852	0.95098	KEGG
Galactose metabolism	17/26	0.10173	2.2854	1.0	0.6852	0.57712	KEGG
Pentose and glucuronate interconversions	10/14	0.10339	2.2693	1.0	0.6852	0.09091	KEGG
Arginine and proline metabolism	27/44	0.10997	2.2075	1.0	0.6852	0.66803	KEGG
Tryptophan metabolism	25/41	0.13119	2.0311	1.0	0.72081	0.68487	KEGG
Ubiquinone and other terpenoid-quinone biosynthesis	3/3	0.13348	2.0138	1.0	0.72081	1.0	KEGG
Pantothenate and CoA biosynthesis	10/15	0.17143	1.7636	1.0	0.86788	0.28571	KEGG
Biotin metabolism	4/5	0.20165	1.6012	1.0	0.9074	0.83334	KEGG
Linoleic acid metabolism	4/5	0.20165	1.6012	1.0	0.9074	1.0	KEGG
Folate biosynthesis	10/16	0.25483	1.3671	1.0	1.0	0.58261	KEGG
Valine, leucine and isoleucine biosynthesis	7/11	0.29998	1.204	1.0	1.0	0.99999	KEGG

Click on matched metabolites in the table

Matched metabolites:

Pathway	Metabolites
Tyrosine metabolism	L-Dopachrome; Normetanephrine; 3-Methoxy-4-hydroxyphenylglycolaldehyde; Norepinephrine; Epinephrine; 3,4-Dihydroxymandelate; 3,4-Dihydroxymandelaldehyde; 3,4-Dihydroxyphenylglycol; Metanephrine; Dopamine; 3,4-Dihydroxyphenylacetaldehyde; 3,4-Dihydroxybenzeneacetic acid; Homovanillin; 3-Methoxytyramine; L-Dopa; 3,5-Diiodo-L-tyrosine; Iodotyrosine; L-Tyrosine; 4-Fumarylacetoacetic acid; Maleylacetoacetic acid; Homogentisic acid; 4-Hydroxyphenylpyruvic acid; 4-Hydroxyphenylacetaldehyde; Tyramine; 5,6-Dihydroxyindole; Gentisate aldehyde; N-Methyltyramine; 5,6-Dihydroxyindole-2-carboxylic acid; Vanillylmandelic acid; Vanylglycol; Homovanillic acid; Liothyronine; Fumaric acid; Acetoacetic acid; 2-Hydroxy-3-(4-hydroxyphenyl)propenoic acid; p-Hydroxyphenylacetic acid; Indole-5,6-quinone; Dopaquinone; Thyroxine; Gentisic acid; Hordenine; 5,6-Indolequinone-2-carboxylic acid

Click on KEGG (right side of table)



Pathway mapping with KEGG

- KEGG, Kyoto Encyclopedia of Genes and Genomes
- A comprehensive resource of genes, proteins and metabolites
- Has a Pathway tool
- https://www.genome.jp/kegg/tool/map_pathway2.html

Enter the KEGG IDs into the box

KEGG Mapper – Search&Color Pathway

About KEGG Mapper

Search Pathway
 Search&Color Pathway
 Color Pathway

Search Brite
 Search&Color Brite
 Join Brite
 Join Brite Table

Search Module
 Search&Color Module

Search Disease

Reconstruct Pathway
 Reconstruct Brite
 Reconstruct Module

Search against: Enter: map, ko, ec, rn, hsadd, or

Primary ID: (Outside IDs for organism-specific pathways only)

Enter objects one per line followed by bgcolor, fgcolor:

Examples:

Alternatively, enter the file name containing the data:
 No file chosen

If necessary, change default bgcolor:

Press the "Exec" button below the table

Pathway Search Result

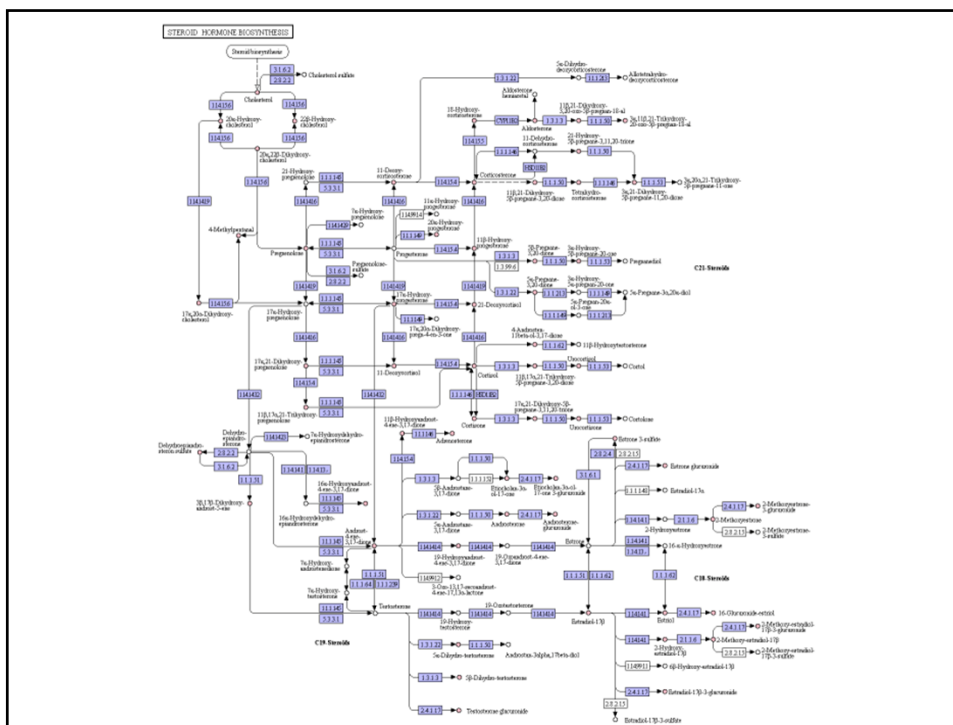
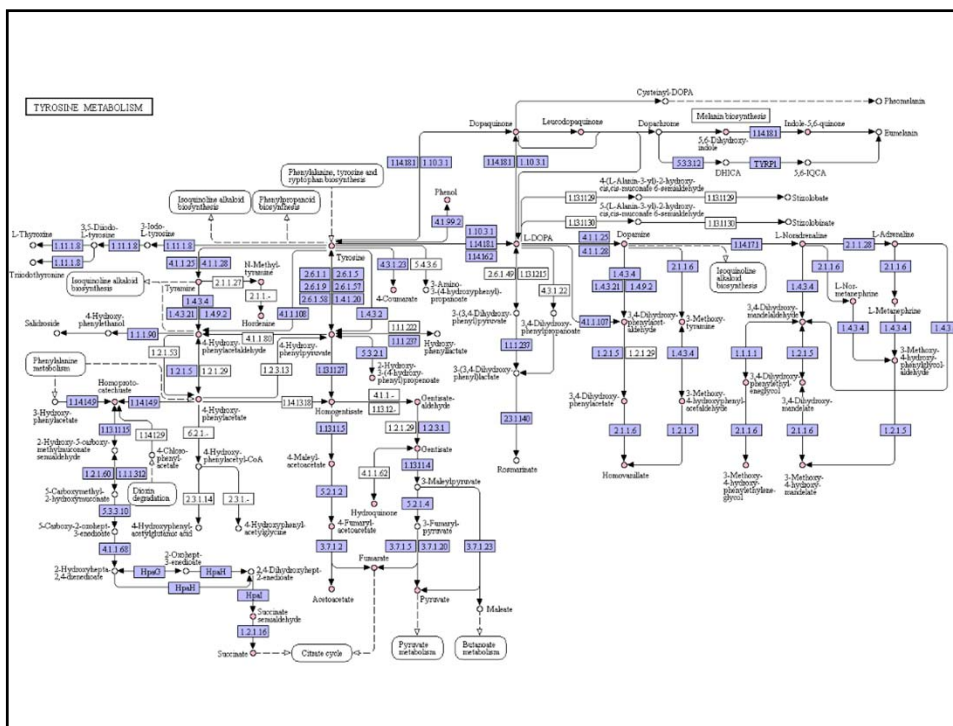
Following object(s) was/were not found: cp:CO5999 cpd:C04221 cpd:C15584 cpd:CO5985 cpd:C02045 ko:CE5985 cpd:C01188 cpd:C03197 cpd:C03214 cpd:CO5650 ko:CE2705 ko:CE5236 ko:CE5511 cpd:C02238 cpd:C01087 cpd:C03196 ko:CE5665 cpd:C03711 ko:CE1395 cpd:CO5649 ko:CE0520 cpd:CO2558 cpd:C02912 cpd:C02917 cpd:C15587 cpd:C03465 ko:CE5538 ko:CE2172 ko:CE5542 ko:CE4888 cpd:CO5522 cpd:C06078 cpd:C06306 ko:CE2006 ko:CE5006 cpd:CO5520 cpd:C01183 cpd:C02735 ko:CE5536 ko:CE4788 cpd:CO9642 cpd:CO2933 cpd:C00738 cpd:CO0936 cpd:CO0962 cpd:C01582 cpd:CO5100 ko:CE2174 cpd:CO0906 cpd:C01507 cpd:C15853 cpd:CO0950 cpd:CO4686 cpd:CO4849 ko:CE2061 cpd:C01603 ko:CE3087 cpd:CO8261 cpd:CO0850 cpd:CO0425 cpd:CO6472 ko:glc ko:CE1918 ko:CE5629 ko:CE5541 ko:CE5068 cpd:C07453 cpd:CO2532 cpd:CO0248 cpd:CO0579 cpd:CO2712 ko:CE2152 ko:CE2176 cpd:C01601 cpd:C01387 ko:regm ko:prn cpd:CO3494 ko:CE2122 cpd:C00725 cpd:CO0525 ko:CE6205 ko:CE1924 cpd:C02147 cpd:C01756 cpd:C09640 ko:CE4890 cpd:CO3356 ko:CE5626 cpd:CO5394 cpd:CO0442 cpd:C03736 ko:mpgwf cpd:CO4776 ko:CE5627 cpd:CO4441 cpd:C03626 cpd:CO4209 cpd:C01136 ko:CE2065 ko:CE2110 ko:kyrmf ko:hsqfMacam cpd:CO0542 cpd:C01075 cpd:C16015 cpd:C01239 cpd:C01736 cpd:C15586 cpd:CO0612 cpd:C01029 ko:CE1938 cpd:CO6350 cpd:C01171 cpd:CO2965 cpd:CO2976 cpd:CO3735 ko:CE3075 ko:CE5698 cpd:CO1449 ko:CE1936 cpd:C00370 cpd:CO5198 cpd:C01893 ko:CE2179 ko:hestretrol cpd:CO0281 cpd:CO6222 cpd:CO5118 cpd:CO5119 ko:CE3074 ko:taglp-D cpd:CO8249 ko:CE5795 ko:CE2182 ko:CE2183 ko:CE2186 ko:CE5251 ko:CE5252 ko:CE5256 cpd:CO6486 cpd:C07486 cpd:CO2838 cpd:CO4692 ko:CE1243 ko:CE5653 cpd:CO2406 cpd:C15605 ko:CE5535 ko:CE5537 ko:CE5925 ko:CE5928 ko:CE5575 ko:CE5589 ko:retinal-11-cis ko:retinal-cis-D cpd:C15658 ko:andrstn cpd:CO0948 cpd:CO4707 cpd:CO6439 ko:CE5848 ko:CE7109 ko:CE7110 ko:CE2566 ko:CE2567 ko:CE4876 ko:CE4990 ko:CE5178 ko:CE5304 ko:CE5349 ko:CE5721 ko:CE6508 ko:CE7080 ko:CE7083 ko:CE7084 ko:CE7091 ko:CE7097 ko:CE2102 cpd:CO4540 cpd:CO4886 ko:CE2184 ko:CE2189 ko:CE6185 ko:13-cis-retn ko:CE1617 ko:CE2952 ko:CE5594 cpd:C16265 cpd:CO5403 ko:CE5013 ko:CE5932 cpd:CO3693 ko:17ahprgstrn cpd:CO3748 ko:CE1347 ko:CE1353 ko:CE5888 ko:CE5247 ko:CE5248 cpd:C01169 ko:CE5072 cpd:CO0619 cpd:C01034 ko:CE5845 cpd:CO0897 cpd:CO6373 ko:CE5525 ko:CE2211 cpd:CO2999 ko:CE5016 ko:CE5851 cpd:CO4654 cpd:CO4671 ko:CE1447 ko:CE2656 ko:CE5533 ko:CE5534 ko:CE5926 ko:CE5930 cpd:C01225 ko:CE5526 ko:CE5527 ko:CE1343 ko:CE2961 ko:CE5787 ko:CE5849 ko:CE5140 ko:CE2053 ko:CE5138 ko:CE5661 ko:CE7088 ko:CE7112 ko:CE7113 ko:CE7114 ko:CE7115 ko:CE5947 ko:CE2568 ko:CE2569 ko:CE5662 ko:CE6247 ko:CE6248 ko:CE7092 ko:CE4989 ko:CE5663 ko:CE5828 ko:CE5924 ko:CE5929 ko:CE5931 ko:CE6234 ko:CE7093 ko:CE5528 cpd:C01607 ko:ttderm ko:CE5707 ko:CE2054 ko:CE5976 ko:CE5139 ko:CE7105 ko:CE2947 cpd:CO0611 ko:mn ko:CE0955 ko:CE5945 ko:CE5232 ko:CE5856 ko:CE5847 ko:CE2835 cpd:CO4741 cpd:CO4843 ko:CE5850 ko:CE5855 ko:CE5946 ko:CE4980 ko:estronlegic ko:estradiolgc ko:CE6229 ko:CE4878 ko:CE3481 ko:CE6193 cpd:CO6340 ko:stndcsm ko:CE7072 ko:CE4753 ko:CE2862 cpd:CO5462 cpd:C11356 cpd:CO5457 ko:CE1337 ko:CE2201 cpd:CE9458 ko:CE5530 ko:CE7145 ko:CE5846 ko:hsdrcm ko:hsdrcm cpd:CO5691 ko:stststeronegic cpd:CO3091 ko:CE2315 ko:CE2203 ko:CE2206 ko:CE2202 ko:CE2205 cpd:CO5692 ko:hdccm ko:hd2cm cpd:CO4453 cpd:CO5463 ko:CE2890 cpd:CO2592 ko:stch2 cpd:CO5850 ko:c26cm ko:CE5994 ko:hpdcacm ko:CE2313 ko:CE7047 cpd:C15516 ko:5adstststeronegic ko:ahandrostangic ko:andrstmgic ko:CE5995 ko:CE5708 ko:elaidrcm ko:odcsm ko:vecrcm ko:stcm ko:CE7144 cpd:CO2744 ko:CE5798 cpd:CO0687 cpd:C01628 ko:CE1277 ko:CE1278 ko:CE1279 ko:CE4874 ko:CE5186 ko:CE6182 ko:CE5187 ko:CE2837 ko:CE2751 cpd:CO4847 ko:CE5240 ko:CE5242 ko:CE5244 ko:CE5790 cpd:CO2097 cpd:CO0923 cpd:CO0924 cpd:CO5928 cpd:C11304 ko:CE6238 ko:CE6244 ko:CE5531 ko:CE6235 ko:CE6242 ko:CE6243 ko:CE7086 cpd:CO4500 cpd:CO3246 ko:CE5797 ko:CE4993 ko:CE6236 ko:CE6241 ko:CE6245 ko:CE6250 ko:CE4754 ko:m2mn cpd:CO2052 ko:CE5791 cpd:CO3374

Sort by the pathway list

Show all objects

- ko01100 Metabolic pathways (482)
- ko01110 Biosynthesis of secondary metabolites (162)
- ko01120 Microbial metabolism in diverse environments (126)
- ko01130 Biosynthesis of antibiotics (109)
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- ko01230 Biosynthesis of amino acids (56)
- ko01200 Carbon metabolism (43)
- ko00982 Drug metabolism - cytochrome P450 (42)
- ko00590 Arachidonic acid metabolism (42)
- ko02010 ABC transporters (42)
- ko00350 Tyrosine metabolism (42)

These are the IDs that weren't recognized



Questions?