



MetExplore: Omics data analysis in the context of metabolic networks

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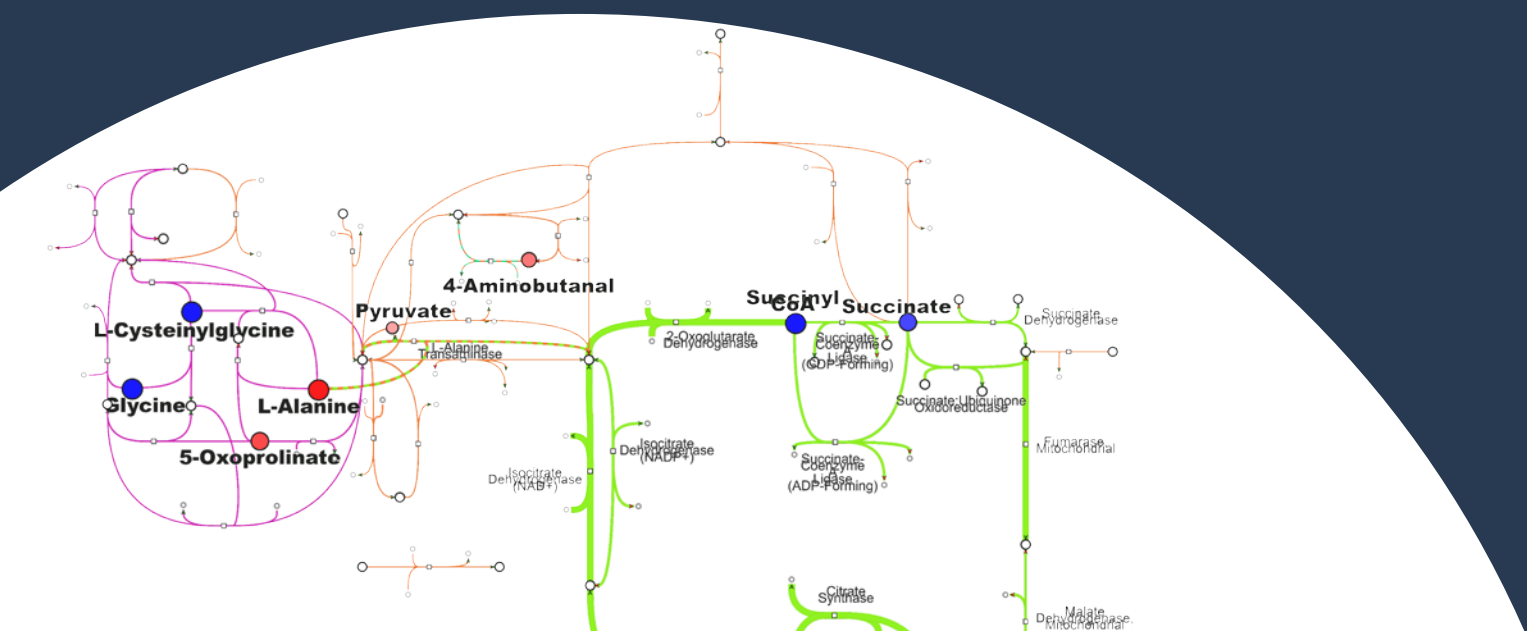
Omics data analysis in the context of metabolic networks

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Mapping omics data on
pathways, reactions,
metabolites, enzymes, protein
and genesCoverage: how many
components are
mapped on reactions
and pathwaysPathway enrichment with
Fisher's exact test and
Bonferroni correction
Benjamini-Hochberg correction

Name	No. Reactions	Coverage	No. of Mapped	p-value	Bonferroni corrected p-value	BH-corrected p-value
Citric acid cycle	14	16.67	5	1.84e-9	*** (7.17e-8)	*** (7.17e-8)
Glutathione metabolism	10	22.22	4	3.25e-8	*** (1.27e-6)	*** (5.34e-7)
Glutamate metabolism	16	14.29	4	2.15e-7	*** (8.40e-6)	*** (2.72e-5)
Pyruvate cycle	47	6.33	5	2.79e-7	*** (1.09e-5)	*** (2.72e-5)
Alanine and aspartate metabolism	13	12.5	4	3.77e-7	*** (1.47e-5)	*** (2.94e-5)
Glutamine and glutamate metabolism	297	1.4	7	1.11e-5	*** (4.32e-4)	*** (7.20e-5)
Glutamine, alanine, and threonine m...	46	5	4	1.58e-5	*** (6.16e-4)	*** (8.81e-5)
Glutamate and aspartate metabolism	17	1.87	3	2.75e-5	*** (1.07e-3)	*** (1.17e-3)

Multi omics mapping

MetExplore
is a well-established sustainable web server
dedicated to the analysis of genome scale
metabolic networks

- Freely available project maintained since 2010
- Certified within Elixir Service Delivery Plan
- Using 3 VMs to build, test and release the application
- Cluster based high performance computing

297
Private
networks404
organisms1196
Public
networks

Name	Identifier	Formula	Compar	Normalized	Average	Sub	IncH	IncHway
1	(S-malate2-)	M_mal_L_4	C4H4	x	0.00	0.00	✓	HOCH+15/CH4O5/CS-24H8
2	(S-malate2-)	M_mal_L_1m	C4H4	m	0.00	0.00	✓	HOCH+15/CH4O5/CS-24H8
3	(S-malate2-)	M_mal_L_4	C4H4	a	0.00	0.00	✓	HOCH+15/CH4O5/CS-24H8
4	(S-malate2-)	M_mal_L_1b	C4H4	b	0.00	0.00	✓	HOCH+15/CH4O5/CS-24H8
5	(S-malate2-)	M_mal_L_1c	C4H4	c	0.00	0.00	✓	HOCH+15/CH4O5/CS-24H8
6	2-oxoglutarate2-	M_oxg_L	C5H4	x	0.00	0.00	✓	HOCH+15/CH4O5/CS-35H8
7	2-oxoglutarate2-	M_oxg_L	C5H4	y	0.00	0.00	✓	HOCH+15/CH4O5/CS-35H8
8	2-oxoglutarate2-	M_oxg_L	C5H4	z	0.00	0.00	✓	HOCH+15/CH4O5/CS-35H8
9	2-oxoglutarate2-	M_oxg_L	C5H4	a	0.00	0.00	✓	HOCH+15/CH4O5/CS-35H8
10	2-oxoglutarate2-	M_oxg_L	C5H4	r	0.00	0.00	✓	HOCH+15/CH4O5/CS-35H8
11	2-oxoglutarate2-	M_oxg_m	C5H4	m	0.00	0.00	✓	HOCH+15/CH4O5/CS-35H8
12	oxetyl-GalA-)	M_oxet_G	C23H4	r	0.00	0.00	✓	HOCH+15/CH38H70/1793
13	oxetyl-GalA-)	M_oxet_G	C23H4	r	0.00	0.00	✓	HOCH+15/CH38H70/1793
14	oxetyl-GalA-)	M_oxet_G	C23H4	x	0.00	0.00	✓	HOCH+15/CH38H70/1793
15	oxetyl-GalA-)	M_oxet_G	C23H4	c	0.00	0.00	✓	HOCH+15/CH38H70/1793
16	oxetyl-GalA-)	M_oxet_G	C23H4	r	0.00	0.00	✓	HOCH+15/CH38H70/1793
17	oxetyl-GalA-)	M_oxet_G	C23H4	m	0.00	0.00	✓	HOCH+15/CH38H70/1793
18	oxetyl-GalA-)	M_oxet_G	C23H4	m	0.00	0.00	✓	HOCH+15/CH38H70/1793
19	oxetyl-GalA-)	M_oxet_G	C23H4	m	0.00	0.00	✓	HOCH+15/CH38H70/1793
20	oxetyl-GalA-)	M_oxet_G	C23H4	m	0.00	0.00	✓	HOCH+15/CH38H70/1793
21	oxetyl-GalA-)	M_oxet_G	C23H4	m	0.00	0.00	✓	HOCH+15/CH38H70/1793
22	Fumarate2-	M_fum_m	C4H2	m	0.00	0.00	✓	HOCH+15/CH4O4/CS-31H6
23	Fumarate2-	M_fum_L	C4H2	c	0.00	0.00	✓	HOCH+15/CH4O4/CS-31H6
24	Fumarate2-	M_fum_m	C4H2	e	0.00	0.00	✓	HOCH+15/CH4O4/CS-31H6
25	Fumarate2-	M_fum_m	C4H2	a	0.00	0.00	✓	HOCH+15/CH4O4/CS-31H6

www.metexplore.fr

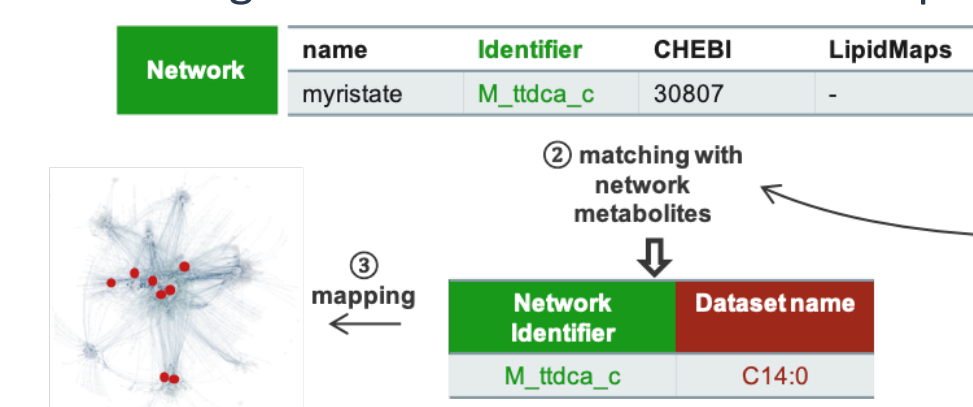
- MetExplore highly facilitates metabolic network exploration thanks to interactive tables and smart filters
- Exact search on each attributes
- Fuzzy search on metabolite names

Interactive browsing of
metabolic network
contentOther
features

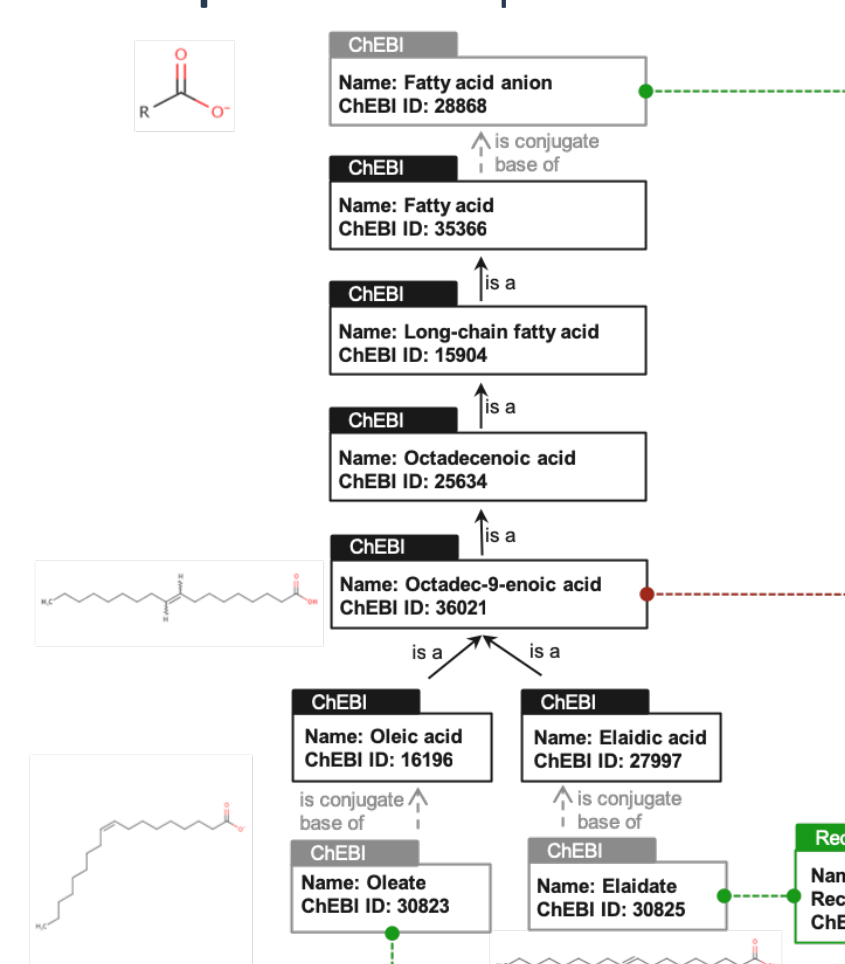
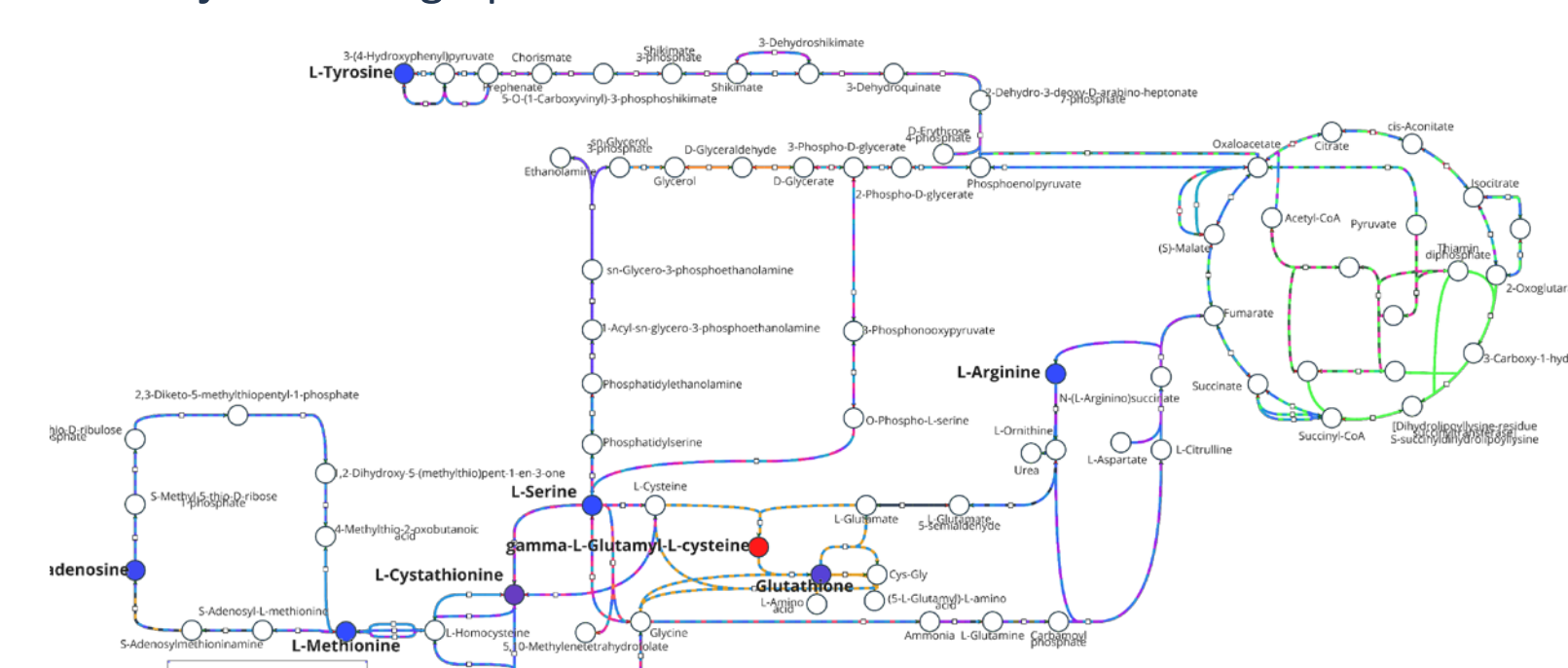
Flux computation

MetaboRank computation on
human networkMetabolic network annotation
» Import/export
» Curation
» CollaborationAdvanced metabolites
and lipids matching

- MetExplore allows matching metabolites of your database with those of metabolic networks through external database IDs correspondence like ChEBI or PubChem ids



- In order to have more matches and especially on lipids, it uses ChEBI ontology to connect classes or species of compounds

[MetExploreViz]
Basic featuresA free and open source javascript library to visualize metabolic networks
Use D3.js to draw graphsFeatures:
Network interactivity
Visualisation export
Save session
Subnetwork extraction
Visual mapping of data
Style configurationMetExploreViz v3
2020

- New GUI for style configuration and visual mapping of data
- » Per type metabolite / reaction and edges
 - » Per style default / mapping / bypass
 - » New scale editor for continuous values
 - » Update all styles for nodes or edges

New GUI for interaction

