MAPPING METABOLITES IN METABOLIC NETWORKS: THE IDENTIFIER CHALLENGE

METABOLIC NETWORKS FOR MULTI-OMICS STUDIES

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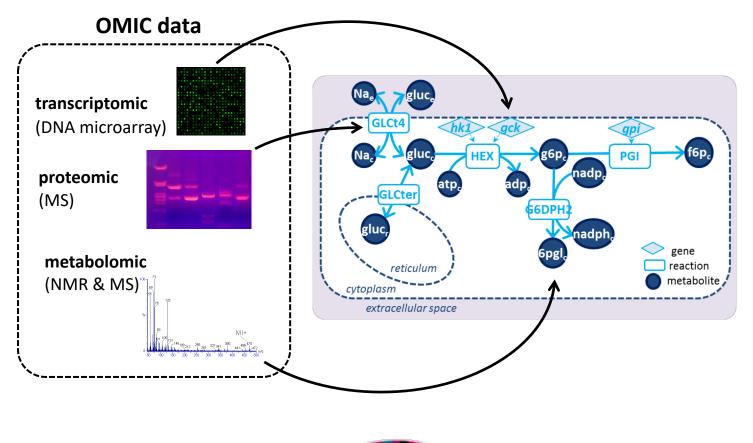




METABOLIC NETWORKS FOR OMICS DATA INTEGRATION



Metabolic networks for multi-omic interpretation

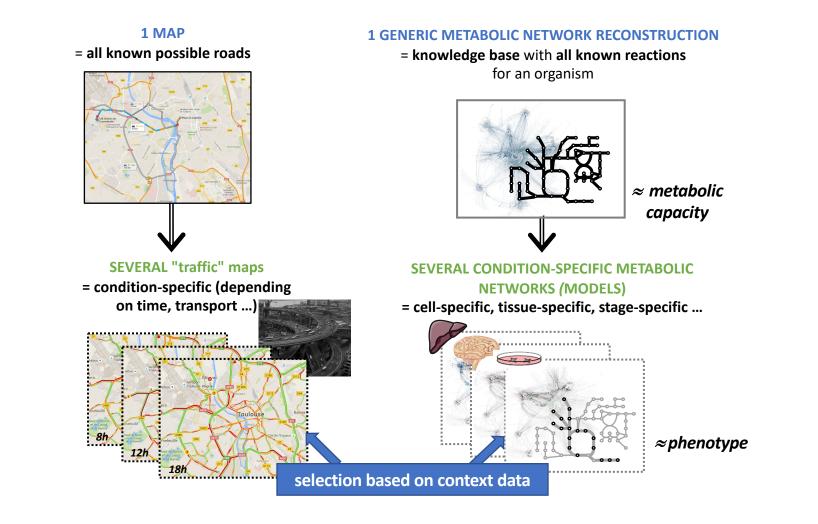








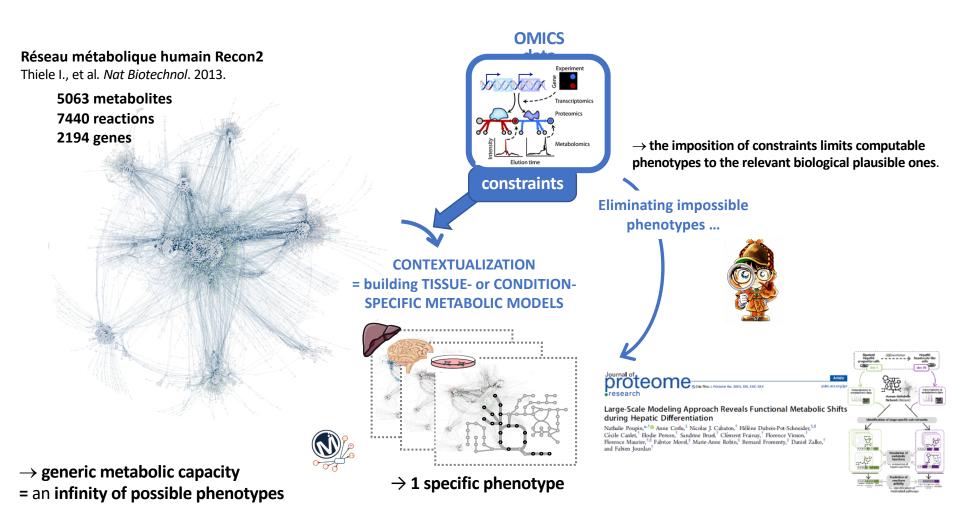






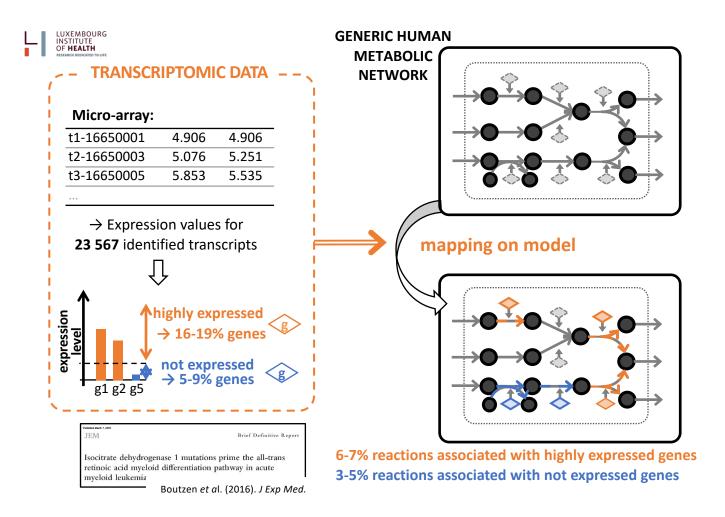


MEX — Toxalim-





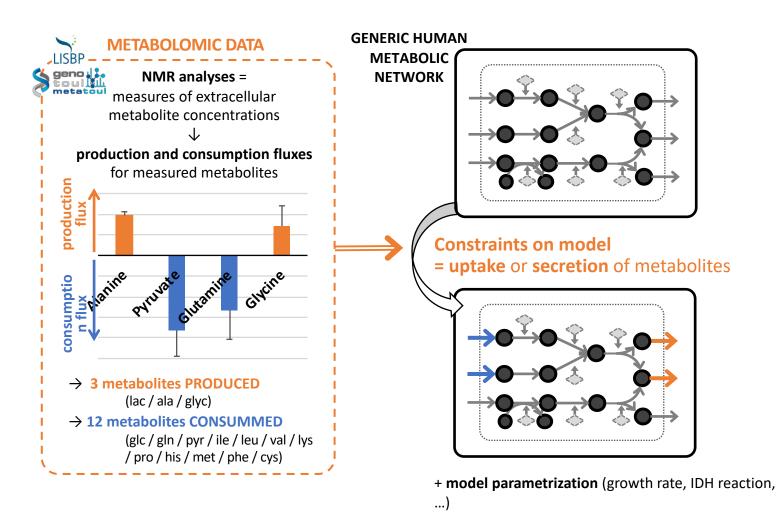
MEX — Texalim-





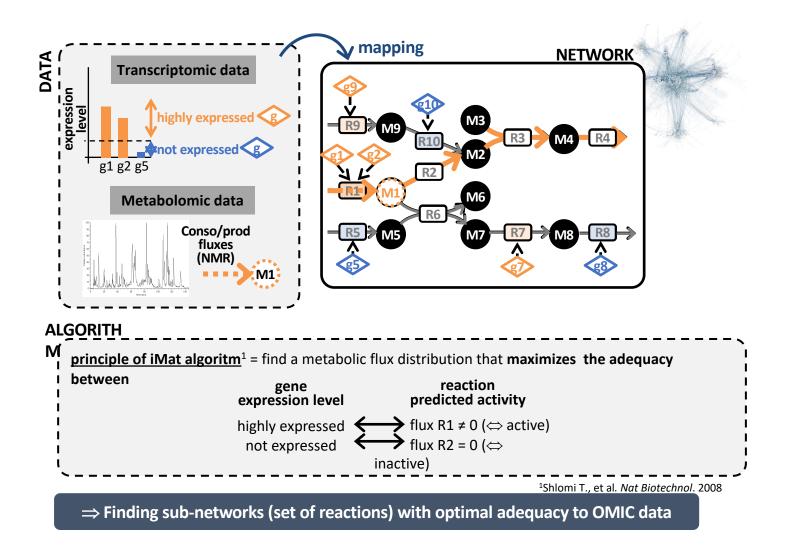


MEX — Texalim-





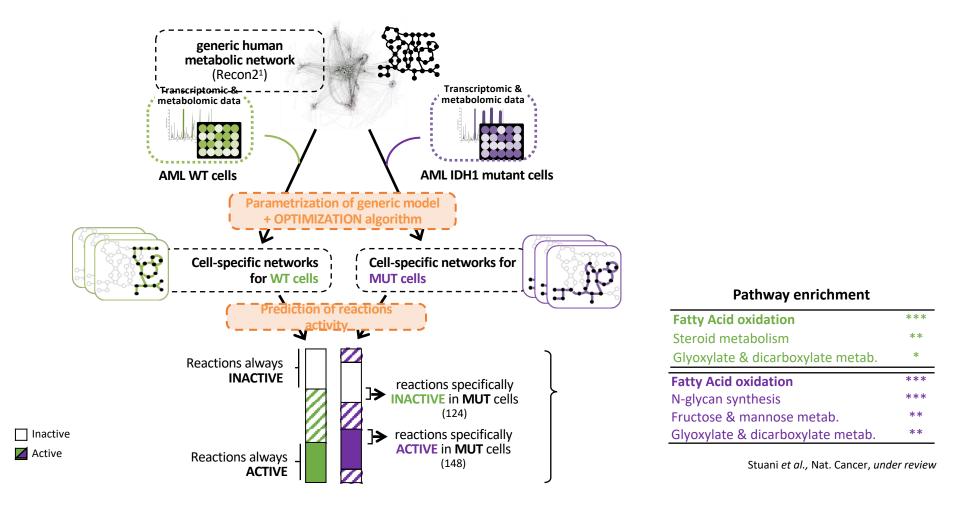






MX — Texalim-

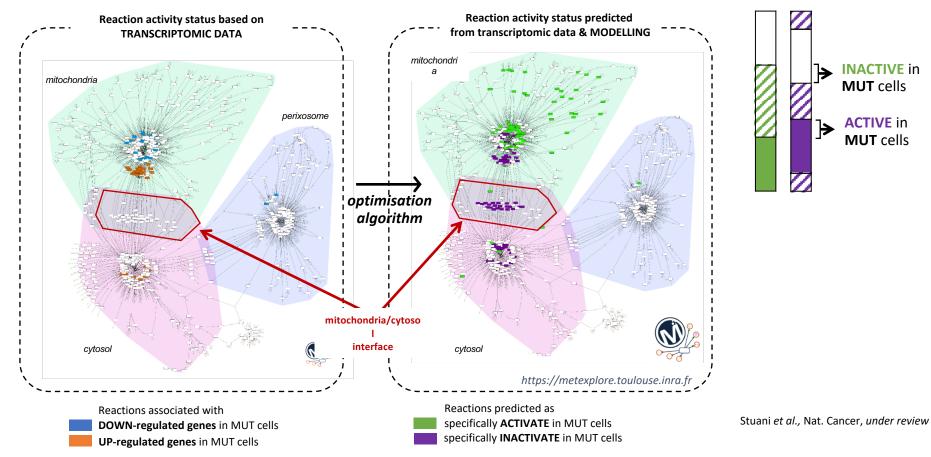
Comparison of cell-specific subnetworks







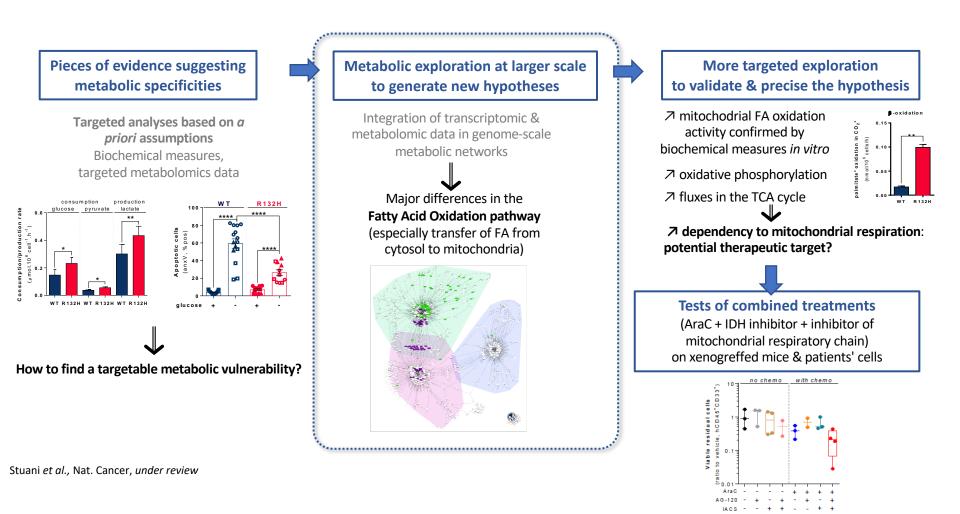
MX — Texalim-



Fatty Acid oxidation pathway (577 reactions)



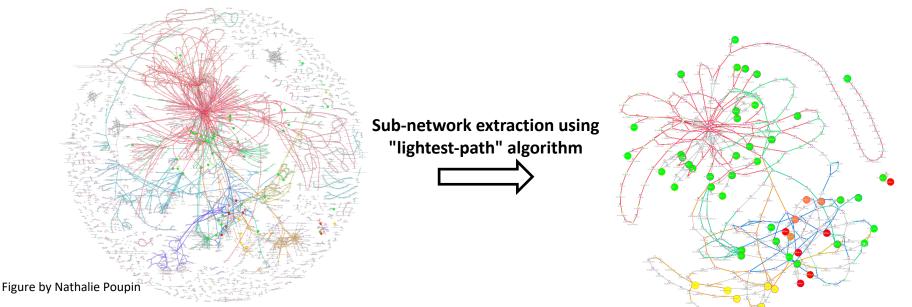
MEX — Texalim-





Max -Toxalim-

Visualisation and algorithms for omics integration



18 metabolic pathways including at least 1 mapped metabolites → 2345 reactions

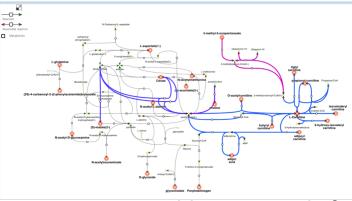
Bioinformatics, 34(2), 2018, 312-313 doi: 10.1093/bioinformatics/bb588 Advance Access Publication Date: 15 September 2017 Applications Note OXF

Systems biology

MetExploreViz: web component for interactive metabolic network visualization

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Creating publication ready figures

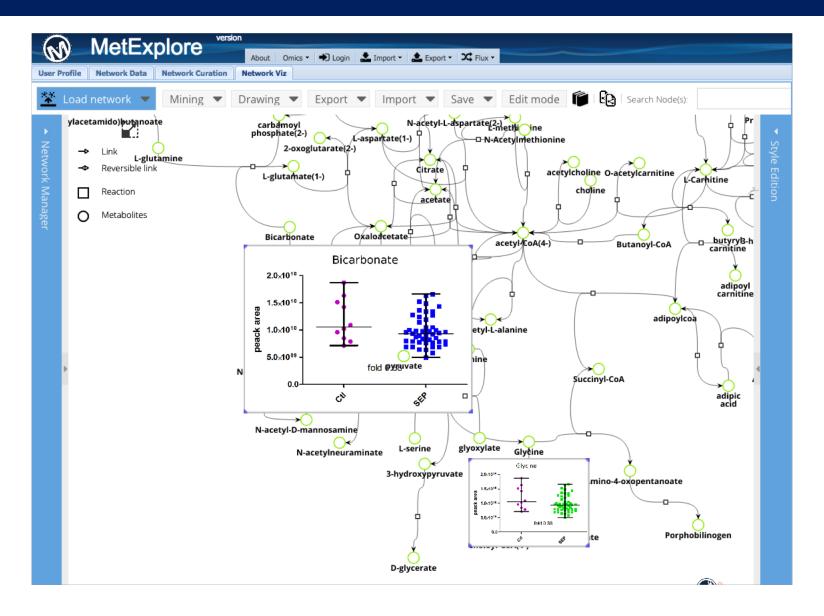




 \rightarrow 231 reactions



Omics data mapping on genes, proteins, reactions and metabolites





Conclusion

- Metabolic networks is a good framework to integrate omics data ... related to metabolism.
- It is <u>not</u> a statistical integration
- Identifiers is a challenge even for proteomics and transcriptomics
- Mapping on reactions is not a bijection (logical rules on GPRs)
- Visualisation is an added value for multi-omics data interpretation
- MetExplore is still not able to have all data at the same time (under construction)
- General remark: important to be precise on what we mean by integration. Too generic word.









PhenoMeNal





European RFMF Metabomeeting 2020



European RFMF Metabomeeting 2020

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TOULOUSE, FRANCE

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Pr. Warwick (Rick) Dunn, University of Birmingham, UK.
Dr. Maria Fedorova, Universität Leipzig, Germany.
Dr. Ingela Lankoff, University of Uppsala, Sweden
Pr. Zoran Nikoloski, Max Planck Institute, Germany.
Dr. Emma Schymanski, University of Luxembourg, Luxembourg.
Pr. Marcel Utz. University of Southampton, UK.



Involvement of early career scientists

Workshop before the event

Networking opportunities

Good Food! Good Science!











German Society for Metabolomics Research

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