MetaboHUB-ANR-11-INBS-0010

MetaboHUB: a national infrastructure for metabolomics and fluxomics (http://www.metabohub.fr)

MetaboHUB: Innovation, development and training dedicated to metabolomics and fluxomics

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Metabolomics and fluxomics require several complementary analytical and computational approaches such as nuclear magnetic resonance (NMR), mass spectrometry (MS) and bioinformatics.
To meet the metabolomics community needs involving large-scale programs, MetaboHUB is developing :

- **Robotic workflows** enabling high-throughput cell culture and sample preparation
- **Analytical procedures** for metabolic profiling, and **methods** for absolute quantitation

Many training sessions and workshops are organized on these technologies: http://www.metabohub.fr/next-trainings.html

Bioinformatics resources are of prime importance for analyzing and handling the large amount of data generated in such studies:

- A **web portal "MAMA"** gives the entire community access to these developments and facilities
- Three long-term sustained **e-MetaboHUB platforms** offer online data processing, analysis, and interpretation

MAMA
MetaboHUB Analyst MAnager

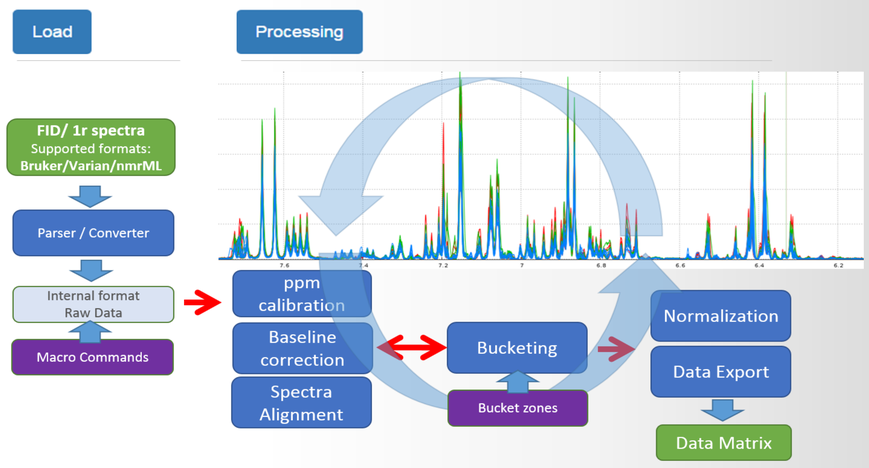
- Analytical request centralisation and management for MetaboHUB users
- Create your account and enter your analytical request
- mama-webapp.metabohub.fr

MetExplore
In silico global analysis of metabolism

- Import/export networks
- Collaborative curation
- Pathway enrichment
- Omics data mapping
- Chemical library mapping
- Flux computations
- Network visualization
- www.metexplore.fr

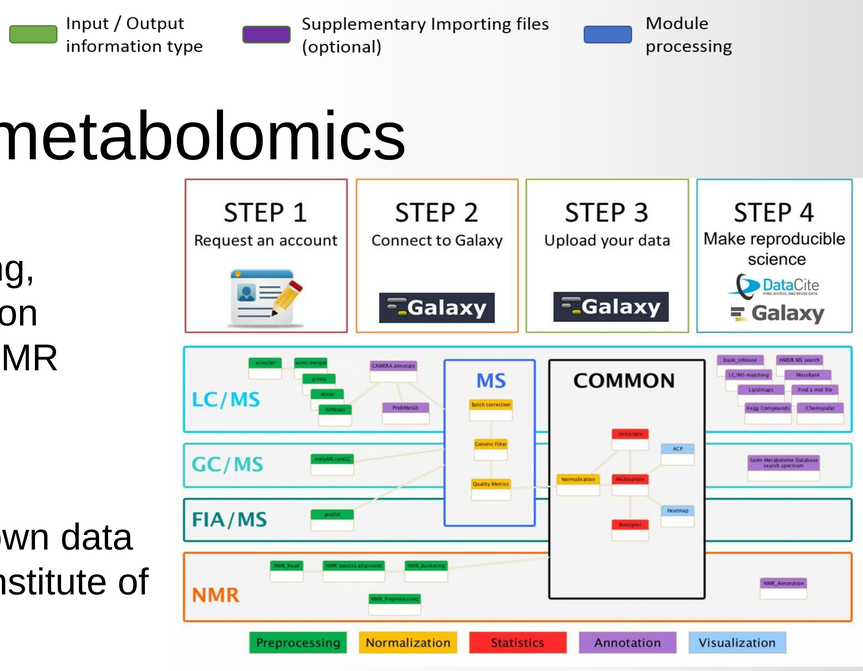
NMRProcFlow

- A complete set of tools for processing and visualization of 1D NMR data
- Interactive interface based on spectra visualization
- Open-source software
- > 800 users from 5 continents, 3,100 sessions since July 2016
- nmrprocflow.org



Workflow4metabolomics

- > 40 modules for data processing, statistical analysis, and annotation
- LC-MS, FIA-MS, GC-MS, and NMR
- Galaxy environment
- Referencing of workflows (DOI)
- > 800 users
- Trainings with tutoring on your own data
- In partnership with the French Institute of Bioinformatics (IFB)
- workflow4metabolomics.org



Examples of **two proofs of concept projects** designed to apply the **MetaboHUB** high-value service in health and disease fields:

- An investigation of the links between nutrition and chronic metabolic diseases within the Canadian NuAge cohort :
  - Lipidomic and metabolomic phenotyping
  - Statistical methods for longitudinal studies and data integration
  - Metadata and data management, data analysis workflows

- Metabolomic and fluxomic studies on acute myeloid leukemia to highlight new therapeutic targets and strategies:
  - Quantitative metabolomics by LC-MS/MS of acute myeloid leukemia (AML) cells
  - Reconstitution of metabolic fluxes in AML cells
  - Integrative omics and *in silico* modelling

MetaboHUB is also involved in:
O19-O21-O35-O43-O45-O55
P2-P12-P22-P24-P43-P47-P55-P73-P79-P82-P108-P129-P146-P147-P151-P154-P170-P181-P184-P188-P192-P226-P231-P239-P244

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