

Plant

The technological developments or routine NMR and MS-based metabolomics & lipidomics analyses profile the impact of genotype, time, biotic stress and environmental perturbation on hundreds of metabolites for plant ecophysiology, pathology, functional genomics, genetics and systems biology studies

Nutrition-Health

Metabolomics provide biomarkers to discover new therapeutic targets, to improve diagnosis and diseases follow-up from samples collected from animal models to large cohorts in the aim to maintain and improve health by personalized medicine, personalized and preventive nutrition

Environment

The studies deal with specific ecosystems and exotic matrices. Currently, our major concerns are focused on cloud metabolomics under harsh conditions of life, honeybee exposure to pesticides and parasites as well as bacteria-virus interactions in Pavin Lake

PROGRAMS AND APPLICATIONS

Toxicology

The studies concern the impact of multi-exposure and low doses of toxic agents from artificial or natural origin on all living organisms. Metabolomics is used as a powerful tool for providing information on subtle metabolic shifts and disturbances, which can be linked to other types of information

White biotechnology

The development of high-throughput fluxomics allows detailed metabolomics characterization of complete libraries of organisms, strains and mutants to understand living systems

MetaboHUB is a national infrastructure of metabolomics and fluxomics that provides tools and services to academic research teams and industrial partners in the fields of health, nutrition, agriculture, environment and biotechnology



Platforms

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MetExplore 2

A web server for access to more than 600 metabolic networks representing a large variety of organisms

Access: <http://www.metexplore.fr>
Contact: metexplore@toulouse.inra.fr

PeakForest

A spectral database devoted to the high-throughput annotation and de novo identification of metabolites

Contact: contact@peakforest.org

Annotation

Wide range of complementary methods using UPLC-(API)HRMS, GC-QToF and NMR to perform untargeted metabolomic analyses on biofluids and tissue samples or extracts

Contact: estelle.pujos@clermont.inra.fr

CHALLENGES AND ADVANCES

MetaboHUB infrastructure gathers the equipment, expertise, competences and human resources to meet the specific requirements of current and future metabolomics

MetaboHUB has the ambition to push forward the state-of-the-art, provide services and support in metabolomics and fluxomics approaches to address major challenges of this field

Workflow4Metabolomics

An online resource for high-throughput data processing, statistical analysis and annotation of metabolomics data

Access: <http://workflow4metabolomics.org>
Contact: contact@workflow4metabolomics.org

Lipidomics

An untargeted lipidomic approach with profiling of the five major lipid families in a relative quantitation and a targeted approach to absolute quantify minor lipids in biological samples

Contact: justine.bertrand-michel@inserm.fr

Quantification

A relative and absolute quantification for data standardization in high-throughput metabolomics

Contact: christophe.junot@cea.fr

Fluxomics

A complete workflow for automated and parallelized ¹³C-fluxomics experiments to represent the quantitative distribution of fluxes in the metabolic network of the biological system of interest

Contact : portais@insa-toulouse.fr

