



TRANSBIO Workshop

Practical Courses of Metabolomics

Toulouse – France

February 13th & 14th 2014

Program

February 13th 1:00 – 1:30 pm: INTRODUCTION

Jean Charles PORTAIS & Justine Bertrand-Michel

February 13th 1:30 pm to 14th 5:00 pm: Parallel Practical Courses

Each practical course will take place in a specific location of MetaToul. Practical details (location of the workshop, public transportation, etc) will be provided to participants in due time.

2. QUANTITATIVE METABOLOMICS (Lindsay PEYRIGA, Hanna KULYK and Fabien LETISSE)

Location: site *MetaToul-Metabolic networks* (Rangueil Campus)

This practical course aims at the absolute quantification of intracellular metabolites using LC-MS-MS methods. The different steps of the analysis will be presented and performed by the participants:

- Principles of quantitative metabolomics by Isotopic Dilution Mass Spectrometry
- Metabolite sampling: comparison of two methods (differential method and fast filtration)
- Sample preparation
- Ion Chromatography/MS-MS analysis
- Data processing and absolute quantification

3. METABOLOMIC FINGERPRINTING BY 1H-NMR (Cécile CANLET, Marie TREMBLAY-FRANCO)

Location: site *MetaToul-AXIOM* (Saint-Martin-du-Touch)

This practical course aims at the collection and analysis of metabolomic fingerprints of plasma samples (as a test sample) by NMR-based metabolomic. The different steps of the analysis will be presented and performed by the participants:

- Sample preparation
- ¹H NMR spectroscopy of plasma samples
- Processing of NMR data
- Multivariate statistical Analysis of NMR data (Principal Component Analysis, Hierarchical Cluster Analysis, Partial Least Squares Regression)
- Identification of discriminating metabolites

4. **GLOBAL METABOLOMICS by High Resolution MS** (Emilien JAMIN, Marie TREMBLAY-FRANCO, Laurent DEBRAUWER)

Location: site *MetaToul-AXIOM* (Saint-Martin-du-Touch)

This practical course aims at applying high-resolution Mass Spectrometry for global metabolomics.

The different steps of the analysis will be presented and performed by the participants:

- Sample preparation
- Data generation using LC coupled to Orbitrap HRMS
- Filtering and pre-treatment of MS data (XCMS, Camera...)
- Multivariate statistical Analyses (Principal Component Analysis, Hierarchical Cluster Analysis, Partial Least Squares Regression)
- Metabolite identification

5. **LIPIDOMIC** (Pauline LE FAOUDER, Aude DUPUY, Justine BERTRAND-MICHEL) :

Location: site *MetaToul-Lipidomics* (Ranguel Hospital)

Studying lipids in biological samples is quite complicated because of the very large diversity of lipid species. For this practical course, the following families can be investigated depending on specific requirements by the participants: fatty acids, phospholipids, sphingolipids, eicosanoids, sterols... The different steps of the analysis will be presented and performed by the participants:

- a. Extraction
- b. Pre-purification
- c. Derivatization
- d. Chromatographic analysis
- e. Quantification