**INTRODUCING METABOLOMICS**

**10th -13th March 2015**

Day 1

9,00-10,00h

1.-**Introductory concepts**: Analytical process in metabolomics: experimental design; Sample pre-treatment; Quality control (1h)

10,30-12,30h

2.-**Analytical Techniques in Metabolomics I**: Separation techniques coupled to mass spectrometry: LC; GC; CE (2h)

13,30-15,30h

3.-**Data Processing:** Alignment; normalization; scaling; filtering; univariate and multivariate analysis (2h)

Homework: Critical reading of a paper assigned by groups

Day 2

9,00-10,30h

1.-**General discussion**

11.00 – 12.00h

2.-**Compound identification I**: Levels of identification; Isotopic distribution, Fragmentation rules, comparison with standards.

13.00 – 14.00h

3.-**Compound identification II:** databases and structural elucidation. Libraries

14.30 – 15.30h

4.-**Compound identification III**: based on MS/MS spectra and using internet libraries or structural elucidation

Day 3

9.00 – 10.00h

1.-**Analytical Techniques in Metabolomics II**: NMR

10.30 – 11.30h

 2.-**Targeted metabolite analysis**: validation of biomarkers with LC-QQQ

12,00-13,00h

3.-**A Biologist point of view**: Pathway analysis

14,00-15,30h

4.-Practical work on data treatment

Day 4

10,00h

Summary lectures: **Applications of metabolomics to different pathophysiological situations**: Cardiovascular diseases; diabetes; oncology

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