

## SESIÓN CIENTÍFICA 24 ENERO 2014 SALÓN DE ACTOS DEL CTB, 10:30

### **Metabollomics: a new tool for biomedical research**

Coral Barbas,

CEMBIO (Center for Metabolomics and Bioanalysis) Facultad de Farmacia. Universidad San Pablo-CEU. Boadilla del Monte. 28668 Madrid. Spain. [cbarbas@ceu.es](mailto:cbarbas@ceu.es).

Metabolomics seeks to quantify the whole set of small molecules that serve as physiological indicators within circulating plasma or particular cells and tissues. The potential list of small molecules runs into the thousands and includes carbohydrates, peptides, lipids, and metabolic intermediates such as amino acids, organic acids, and drug metabolites. One of the strategies employed by the emergent science of metabolomics is **metabolic fingerprinting**; which involves rapid, high-throughput global analysis of the samples to discriminate between groups of different biological status by pattern recognition techniques and multivariate data analysis. Variables accounting for the classification are afterwards revealed and identified. Finally, transforming chemical data into biological knowledge requires to interpret the markers under their contribution to biochemical pathways and to study the molecular mechanisms of the disease. There are two main groups of analytical techniques used for this purpose: spectroscopy, mainly <sup>1</sup>H-NMR, and mass spectrometry generally coupled to separation techniques (gas chromatography, HPLC, and capillary electrophoresis).

Our group is currently working on developing and applying robust analytical methods and chemometric tools for metabolic fingerprinting of different samples and pathologies with separation techniques and mass spectrometry. Examples will be presented looking for diagnostic markers and/or markers of the effect of a treatment.

### **PROF.CORAL BARBAS**

PhD in Analytical Chemistry at Complutense University in Madrid

#### **Current positions:**

- Professor of Analytical Chemistry, Pharmacy Faculty, Universidad CEU San Pablo, Madrid (Spain) and
- Responsible for the "Centre for Metabolomics and Bioanalysis" (CEMBIO) at this Faculty.
- Vice-Chancellor for Research at Universidad CEU San Pablo
- Visiting Professor at Imperial College London

#### **Previous appointments:**

Marie Curie Fellow at Kings College London

#### **Awards:**

Angel Herrera Research award 2004-05

**Main Research Areas:**

-Bioanalysis:

Development of analytical methodology for in vivo assays

Study of in vivo effect of natural extracts with potential antioxidant activity in diabetic rats

Lastly, metabolomic fingerprinting of biofluids looking for biomarkers of cardiovascular diseases, diabetes, pulmonary diseases, leishmania infection, among others with GC-MS, LC-MS and CE-MS.

**Others:**

-Collaboration with leading groups in different countries.

-Over 130 publications in main journals of the area. 10 PhD thesis with the highest marks

-Member of Boards of Scientific Societies: Spanish Society for Chromatography and Related Techniques and Royal Spanish Society of Chemistry