

PhD training

# Metabolomics

Lectures - Practical's

Wageningen, June 6-8, 2007

## Speakers:

- Dr G. Harrigan (Monsanto, St. Louis, USA)
- Dr R. Looser (Metanomics, Berlin, Germany)
- Dr S Rezziv (Nesle, Lausanne, Switzerland)
- Dr A. Aharoni (Weizmann Institute, Israel)
- Prof. M. Haring (UVA, Amsterdam Netherlands)
- Dr E. Schijlen (PRI, Netherlands)
- Dr R. de Vos (PRI, Netherlands)
- Dr J-P Vincken (FoodScience, WUR, Netherlands)
- Dr A. Lommen (RIKILT, WUR, Netherlands)
- Drs S Moco (Biochemistry WUR, Netherlands)
- Dr C. Maliepaard (Plant Breeding WUR, Netherlands)
- Dr J. Vervoort (Biochemistry WUR, Netherlands)
- Dr R. Bino (Plant Physiology, WUR, Netherlands)

## Practicals:

- LC/GCMS
- Spectral alignment
- Multivariate analysis
- Pathway analysis

Cost: 225 € (EPS/VLAG), 700 € (others)

Information and registration: [Sander.vanderKrol@wur.nl](mailto:Sander.vanderKrol@wur.nl)

## **PhD training "Metabolomics" June 6-8, 2007**

### **Background**

Metabolites produced in plants or other organisms are an invaluable source of pharmaceuticals, drugs, health-promoting compounds, flavors, fragrances, biocides, chemicals and toxins. Only recently analytical techniques have progressed to a level that broad metabolic profiling has become a reality and has evolved in the science of Metabolomics.

### **Aim**

The aim of the course is to provide hands-on experience with metabolomics data sets, processing and interpretation and to present developments in specific fields of applied metabolomics.

### **Course content**

In this course we will cover the principles of LC/GCMS chromatogram alignment, techniques in metabolomics (GC-MS, LC-MS, NMR) and we will practice with GC/LCMS chromatograms and Mass spectra, alignment of chromatograms, statistical design and analysis of metabolomics data sets and Metabolic Pathway analysis. Moreover, the practical's are embedded in a series of lectures illustrating the state of the art in industrial applications of Metabolomics (Metanomics GmbH, Monsanto) , Metabolic engineering and Metabolomics database developments.

### **Participants**

A basic knowledge on biology, chemistry and analytical techniques as well as mathematics and statistics is required.

### **Course details**

Language: The course will be conducted in English.

**Date and duration:** 3 days, June 6-8, 2007.

**Venue:** Lectures and demonstrations will be given at Wageningen University. Computer exercises will be held to practise data processing, data visualisations and pathway analysis tools.

**Fee:** For PhD students affiliated with the graduate schools VLAG or EPS the course fee is € 225,- (including materials/ lunches/tea/coffee and course dinner). Others will be charged € 700,-. Cancellations may be made free of charge until May 1 2007. After that date the charge will be 25 % of the fee paid or due. Substitutions may be made at any time.

**Registration:** mail [Sander.vanderkrol@wur.nl](mailto:Sander.vanderkrol@wur.nl)

### **Organization:**

Sander van der Krol, Lab. of Plant Physiology, Wageningen University.([Sander.vanderkrol@wur.nl](mailto:Sander.vanderkrol@wur.nl))

**Putative Schedule:**

|                              |   |                                     |
|------------------------------|---|-------------------------------------|
| <b>June 6</b><br>09.00-10.00 | Registration + welcome  |                                     |
| 10.00-11.00                  | Overview metabolomics   | Raoul Bino                          |
| 11.00-12.00                  | LCMS based metabolomics   | Ric de Vos                          |
| <b>12.00-13.00</b>           | <b>Lunch</b>  |                                     |
| 13.00-14.00                  | Principles of LC/GCMS   | Sander van der Krol                 |
| 14.00-16.00                  | LCMS data processing with Masslynx  | Sander van der Krol<br>Ric de Vos   |
| 16.00-17.00                  | NMR based metabolomics  | Jacques Vervoort                    |
| <b>18.00-19.30</b>           | <b>Diner</b>  |                                     |
| 19.30-20.30                  | Industrial applications of Metabolomics:<br>Metanomics, Berlin Germany    | Ralph Looser                        |
| <b>June 7</b><br>09.00-10.00 | Tomato GMO's  | Elio Schijlen                       |
| 10.00-11.00                  | Developing a Metabolomics Database  | Sofia Moco                          |
| 11.00-12.00                  | Tomato volatiles  | Michel Haring                       |
| <b>12.00-13.00</b>           | <b>Lunch</b>  |                                     |
| 13.00-13.30                  | Alignment chromatograms   | Arjen Lommen                        |
| 13.30-14.30                  | Statistical analysis of metabolomics data                                 | Chris Maliepaard                    |
| 14.30-17.00                  | Alignment and Multivariate analysis                                       | Sander van der Krol<br>Arjen Lommen |
| <b>18.00-19.30</b>           | <b>Diner</b>  |                                     |
| 19.30-20.30                  | Industrial applications of Metabolomics:<br>Nestlé, LAUSANNE, Switzerland | Serge Rezziv                        |
| <b>June 8</b><br>09.00-10.00 | Functional analysis metabolites   | Jean Paul Vincken                   |
| 10.00-11.00                  | Metabolic engineering   | Asaph Aharoni                       |
| 11.00-12.00                  | Industrial applications of Metabolomics:<br>Monsanto, St Louis, USA       | George Harrigan                     |
| <b>12.00-13.00</b>           | <b>Lunch</b>  |                                     |
| 13.00-14.00                  | Tools in pathway analysis   | Sander van der Krol                 |
| 14.00-15.00                  | Exercise pathway tools  | Sander van der Krol                 |
| 15.00-16.00                  | Evaluation and farewell drinks  |                                     |