



2nd International Summer School: “PROTEOMICS – from Introduction to Clinical Applications”

Programme

Monday, 9th July 2018

Ferdinand Room /UAIC

- 16:00 – 17:00 **Registrations at Al. I. Cuza University of Iasi**
- 17:00 – 18:00 **Welcome & Opening Addresses**
Alina Petre, Gabriel Dimofte
- Short presentation of lecturers**
Alina Petre, UAIC / TRANSCEND – IRO, Iasi, RO
- Opening lecture: A journey through 20+ years of proteomics**
*Christoph Borchers, University of Victoria, Genome British Columbia
Proteomics Centre, CA*
- 18:00– 18:45 **Guided tour - “Hall of the Lost Footsteps” at "Al. I. Cuza" University
of Iasi**
- 19.00 **Dinner at “Berăria veche” restaurant**

Tuesday, 10th July 2018

Ferdinand Room /UAIC

- 09:00 – 09:15 **Reviewing the week ahead: program, experimental part and
examination procedure**
Alina Petre, UAIC / TRANSCEND – IRO, Iasi, RO
- 09:15 – 11:00 **5 minutes talks – getting to know the students/ junior researchers
and their area of research**
Laura Ion, UAIC, Iasi, RO
- 11:00 – 11:15 *Networking with coffee, soda and sweets*



Session 1:

Introductory lectures in Proteomics and related methods

Chair: Michael Przybylski

11:15 – 11:45

Higher order structure of multi-domain proteins

Michael O. Glocker, Proteome Center Rostock, DE

11:45 – 12:15

Separation methods: electrophoresis and liquid chromatography

Robert Gradinaru, UAIC, Iasi, RO

12:30

Lunch at Gaudeamus student restaurant

14:00 – 15:00

Introduction in mass spectrometry: ionization techniques & mass analyzers

Stefan Slamnoi, Bruker –Daltonics, Bremen, DE

15:00 – 15:30

MS strategies / topdown and bottom up approaches

Costel Darie, Clarkson University, Potsdam, NY, USA

15:30 – 15:45

Networking with coffee, soda and sweets

15:45 – 16:15

Fragmentation in MS and MS data interpretation

Igor Popov, Moscow Institute of Physics and Technology, Moscow, RU

16:15 – 16:45

MALDI - Imaging methodology and biomedical applications

*Christoph Borchers, University of Victoria, Genome British Columbia
Proteomics Centre, CA*

16:45 – 17:15

Introduction in protein molecular simulations

Andrei Neamtu, TRANSCEND – IRO, Iasi, RO

17:15 – 17:30

Day in review

Alina Petre, UAIC / TRANSCEND – IRO, Iasi, RO

17:30

Individual program/ dinner on your own



Wednesday, 11th July 2018

Ferdinand Room /UAIC

Session 2:

Mass Spectrometry: instrumental development and novel analytical concepts

Chair: Radu Iliescu

09:00 – 09:15

Methods for studying affinity interactions by mass spectrometry: approaches and examples

Alina Petre, UAIC / TRANSCEND – IRO, Iasi, RO

09:15 – 09:45

Protein epitope identification by SPR Biosensor – Mass Spectrometry: clinical application for enzyme replacement therapy of lysosomal storage diseases

Michael Przybylski, Steinbeis Centre for Biopolymer Analysis, Rüsselsheim, DE

09:45 – 10:15

Intact Transition Epitope Mapping – Thermodynamic Weak-force Observation (ITEM-TWO)

Michael O. Glocker, Proteome Center Rostock, DE

10:15– 10:45

Utilising size exclusion chromatography & optimised Q-ToF instrumentation for routine native mass spectrometry

Matt Kennedy, Waters MS Technologies, Wilmslow, UK

10:45 – 11:00

Networking with coffee, soda and sweets

11:00 – 11:30

TimsTOF Pro powered by PASEF – the new standard for shotgun proteomics

Stefan Slamnoi, Bruker –Daltonics, Bremen, DE

11:30 – 12:00

Tissue proteomics analysis in a rat model with Obstructive Sleep Apnea and matched controls

Costel Darie, Clarkson University, Potsdam, NY, USA

12:15

Lunch at Gaudeamus student restaurant



Session 3:

Biomedical applications of Mass Spectrometry

Chair: Michael O. Glocker

14:00 – 14:30

Orbitrap mass spectrometry applications in molecular biology

Cristian Munteanu, Institute of Biochemistry of the Romanian Academy, Bucharest, RO

14:30 – 15:00

The diversity of amyloid-beta peptides revealed by high resolution mass spectrometry – on the way for early recognition of Alzheimer's disease.

Alexey Kononikhin, V.L. Talrose Institute for Energy Problems of Chemical Physics RAS, Moscow, RU

15:00 – 15:30

Proteomic identification of potential biomarkers in pancreatic diseases

Cristina Adela Iuga, University of Medicine and Pharmacy "Iuliu Hatieganu", Cluj-Napoca, RO

15:30 – 16:00

Networking with coffee, soda and sweets

16:00

Guided Sightseeing Tour

19:30

Dinner – get together at Bistro Felix

Thursday, 12th July 2018

Ferdinand Room / UAIC

Session 4:

New bioanalytical approaches to elucidate biomedical problems

Chair: Cristina Adela Iuga

09:30 – 10:00

Cell-penetrating peptides: from design to medical applications

Dana Copolovici, "Aurel Vlaicu" University of Arad, RO

10:00 – 10:30

IUGR risk prediction by LC-MRM/MS analysis of serum proteins from pregnant women

Charles A. Okai, Proteome Center Rostock, DE

10:30 – 11:15

Past and present of high throughput RNA-binding proteome study

Eneko Villanueva Verdejo, University of Cambridge, UK



11:15 – 11:30 *Networking with coffee, soda and sweets*

11:30 – 11:45 **Application of MALDI-TOF/TOF-MS for relative quantitation of a- and b-Asp7 isoforms of amyloid-b peptide**
Daniil Ivanov, Moscow Institute of Physics and Technology, Moscow, RU

11:45 – 12:00 **Enzyme activity determination of lysosomal storage disorders by novel analytic approaches**
Laura Ion, Faculty of Chemistry, UAIC, RO

12:00 – 12:15 **Effect of legacy chemicals on the Great Lakes ecosystem: a proteomic approach**
Emmalyn Dupree, Clarkson University, Potsdam, NY, USA

12:30 *Lunch at Gaudeamus student restaurant*

Session 5: **Statistical analysis and bioinformatic tools in proteomics**
Chair: Andrei Neamtu

14:00 – 14:20 **Introduction to biological interpretation of MS data**
Eneko Villanueva Verdejo, University of Cambridge, UK

14:20 – 14:45 **Different strategies and proteomic tools for high throughput LC-MS/MS data analysis**
Maria Indeykina, Emanuel Institute for Biochemical Physics RAS, Moscow, RU

14:45 – 15:00 *Networking with coffee, soda and sweets*

15:00 – 16:30 *Examination / Discussion, questions and exercises solving with lecturers*

16:30 *Individual program/ dinner on your own*



Friday, 13th July 2018

TRANSCEND Centre

Practical part – work plan

08:45 Meeting point at TRANSCEND str. General Henry Mathias Berthlot nr. 2-4, Iasi

No.	Time	Molecular Biology	Proteomics	Cell culture	Flow cytometry
Team 1	09:00 – 10:30				
Team 2	09:00 – 10:30				
Team 3	09:00 – 10:30				
Team 4	09:00 – 10:30				
15 minute short refreshment break and exchange laboratory					
Team 1	10:45 – 12:15				
Team 2	10:45 – 12:15				
Team 3	10:45 – 12:15				
Team 4	10:45 – 12:15				
12:30 Lunch at Gaudeamus student restaurant					
Team 1	13:30 – 15:00				
Team 2	13:30 – 15:00				
Team 3	13:30 – 15:00				
Team 4	13:30 – 15:00				
15 minute short refreshment break and exchange laboratory					
Team 1	15:15 – 16:45				
Team 2	15:15 – 16:45				
Team 3	15:15 – 16:45				
Team 4	15:15 – 16:45				
Closing remarks					



Proteomics laboratory will provide demonstration of:

- I. Affinity – mass spectrometric approach for studying antigen -antibody interaction;
- II. MALDI - Imaging experimental work flow;

Trainers: *Dr. A. Petre, Dr. A. Neamtu and Dr. R. Iliescu*

Molecular Biology - the functioning principle of molecular biology techniques

- I. Work flow and interpretation of Sanger sequencing data
- II. CGH microarray work flow and data interpretation

Trainer: *Dr. Iuliu Ivanov*

Cell culture laboratory will provide demonstration of:

- I. 2D cell culture (handling procedure, preparation for future analysis)
- II. SDS-PAGE and Western blot technique (sample preparation and migration, wet protein transfer, antibodies, chemiluminescent detection)

Trainer: *Dr. Mihaela Mentel*

Flow cytometry laboratory will provide demonstration of:

- I. Work flow of cell suspension samples in a patient diagnostic setup;
- II. Immune phenotype data analysis;

Trainer: *Dr Mihaela Zlei and Florin Zugun*