

PROGRAM

Intensive Course 22-31 May 2024 CEEPUS, In the frame of RO-0010-18-2324 network,
Teaching, and Learning Bioanalysis CEEPUS Network (coordinator Jolan Harsfalvi)
Semmelweis University Institution of Biophysics and Radiation Biology

BIO- AND SINGLE MOLECULAR ANALYSIS FROM BASICS TO PRACTICE

Semmelweis University Basic Medical Science Center, Room 1.205,

Days started with lectures at 9 am, continued with practices, ended with quizzes of the lecturers and demonstrators, and **closed at 5 pm**^{*1}. The student with the most correct answer was awarded a Semmelweis flask.

D1

ARRIVAL to Budapest

D2

Welcome **Gabriella Donath Nagy, Jolán Hársfalvi**,

Introduction of the **Students**

Periodic phenomena and pattern formation in chemical and biological systems (**Gabriella Donáth-Nagy**)

Protein structure determination in solution with X-ray and neutron small-angle scattering. Hands-on experience in interpreting structural biology data (**Bence Fehér**)

Protein structure determination in solution with X-ray and neutron small-angle scattering. Hands-on experience in interpreting structural biology data (**Bence Fehér**)

Nanomanipulation of single viruses (**Bálint Kiss**)

D3

From single molecules to the living organism. Passion for discovery and value-driven leadership (**Miklós Kellermayer**)

Semmelweis University and Budapest (**Bálint Budavári**)

Resonance theory and practice in small groups at 7 working places (**Ádám Zolcsák**)

Békésy György Research Center Atomic force microscopy (AFM) (**Ádám Zolcsák**)

Practice: preparation of a multimer protein and its AFM analysis (**Jolán Hársfalvi**)

D4

Explore links between bioanalysis and biophysics, force sensing during primary hemostasis.

Practice: preparation of a multimer protein and its AFM analysis (**Jolán Hársfalvi**), Atomic force microscopy (AFM) (**Ádám Zolcsák**)

Universal method for synthesis of artificial gel antibodies by the imprinting approach combined with a unique electrophoresis technique for detection of minute structural differences of proteins, viruses, and bacteria (**Anikó Takátsy**)

D5

Visiting museums: Natural History Museum; Semmelweis History of Medicine; Hospital in The Rock Nuclear Bunker. (Show contexts of the Course and science in Hungary.)

D6

All-atom simulation of biological macromolecules (**Erika Balog**)

In silico biophysics of transmembrane proteins (**Tamás Hegedüs**)

Analytical and biomedical applications of molecularly imprinted polymers (**Ede Bodoki**)

¹ *To meet the students' requirements, the duration of the lectures and demonstrations are not limited strictly, but a short lunchtime before 2 pm is obligatory.

Demonstration of electrochemical sensing using a portable electrochemical system (**Bogdan Cezar Iacob**)

[Békésy György](#) Research Center, Demonstrations and measurement options (Optical tweezers, Optical microscopy, Optical spectroscopy (**Balazs Kretzer**))

D7

Phosphorylation-dependent structure of titin (**Zsolt Mártonfalvi**)

Nanochemistry and its medical applications (**Angéla Jedlovsky-Hajdu**)

Laboratory visit & work *Bálint Budavári, Kristóf Molnár, Sarolta Halmóczy, Veronika Pálos, Ákos Juhász*)

How to develop an HPLC separation method for pharmaceutical quality control (**Martin Schmid**)^{2**}

Live demonstration of how to compare analysis results of real Viagra samples with fakes (**Martin Schmid**)^{**}

D8

Recent advances in chiral analysis (**Gergő Tóth**)^{**}

HPLC measurement by students in 4 groups in the laboratory (**Gergő Tóth**)^{**}

Practical method development in capillary electrophoresis (**Tomas Krizek**)^{**}

Showing quantitative *in vivo* molecular Imaging center with an explanation of the Instruments and presentation of an animal experiment (**Noémi Kovács**),

D9

Békésy György Research Center Fluorescent- and Optical microscopy, Spectroscopy (**Jolán Hársfalvi**)

D10 LEAVE for home

^{2 **} ALL IN [Department](#) of Pharmaceutical Chemistry, Faculty of Pharmacy, Semmelweis University, 1092 Budapest, Hőgyes Endre u. 9