



**SEMMELWEIS**  
UNIVERSITY 1769

SEMMELWEIS FOR GLOBAL HEALTH

# Implementation of Precision Antibiotic Therapy with Nonparametric PK Modeling & Simulation

**A HANDS-ON WORKSHOP**

SEMMELWEIS UNIVERSITY  
Budapest, Hungary

23-25 April 2026



UNIVERSITY  
OF OSLO



Organized by: Semmelweis University, Department of Laboratory Medicine  
International Relations and Alumni Affairs  
Location: Semmelweis University, Budapest, Hungary  
Nagyvárad tér Theoretical Building (NET)  
1st Floor, Room L2

# WHO WE ARE

## About Semmelweis University



### SEMMEWEIS UNIVERSITY IN WORLD RANKINGS

**Times Higher Education Rankings 2026**  
Medical and Health TOP 176-200

**THE World University Rankings 2026**  
TOP 251-300

**Shanghai Ranking 2025**  
Pharmaceutical Sciences TOP 51-75  
Clinical Medicine TOP 151-200

**US News Best Global Universities 2025**  
Cardiac and Cardiovascular Systems 35th  
Clinical Medicine TOP 200

## EDUCATION, RESEARCH AND HEALTHCARE

Semmelweis University was **founded in 1769**, more than 250 years ago. Today Semmelweis University is one of **the leading medical higher education institutions, healthcare providers**, and centers of research excellence in Hungary and Central Europe.

With its six faculties and a Doctoral School, the University covers all aspects of medical and health sciences education, offering a wide range of programs from undergraduate to doctorate level in three languages: Hungarian, English and German.

International students from around the world choose Semmelweis University to acquire hands-on, competitive knowledge from distinguished professors in an environment equipped with state-of-the-art technology.

Semmelweis University is widely known for its strong emphasis on a balanced ratio of **theoretical knowledge and practical skill development in the field of medicine and health sciences**.

**More than 40 patient care units** provide a perfect place for students to the development of their practical skills, enabling them to become future-proof health professionals.

The international **short courses and intensive training programs** provide a unique opportunity for students and professionals to get an insight into Semmelweis University's international education, scientific and patient care activities, and also gain valuable professional and cultural experiences.

We are looking forward to welcoming international students for our short courses and training programs in Budapest, Hungary!

**Dr. Tamás Hegedüs**

Director of International Relations and Alumni Affairs



Find out more about Semmelweis University [here](#).

# WHAT WE OFFER



## Why attend

This 3-day, hands-on workshop is designed to help participants implement precision antibiotic therapy using nonparametric pharmacokinetic (PK) modeling and simulation.

Participants will learn practical workflows in R using Pmetrics™, and how these tools support clinical decision-making through dose optimization with BestDose™.



## Who should attend

- Clinicians and trainees involved in antibiotic therapy (e.g., infectious diseases, intensive care, internal medicine)
- Clinical pharmacologists and pharmacists
- TDM / laboratory professionals supporting dosing decisions
- Researchers and analysts interested in PK/PD and pharmacometrics

## What you will gain

By the end of the workshop, participants will be able to:

- Understand the clinical value of nonparametric PK models and how they support individualized dosing
- Build and interpret nonparametric PK models in R using Pmetrics™
- Use Monte Carlo simulation to explore PK/PD target attainment and support treatment decisions
- Apply BestDose™ principles for individualized dose prediction and optimization using patient data and TDM results
- Translate workshop learning into a practical implementation pathway for clinical or research settings

# SCHEDULE

## Day 1-2



### DAY 1: NONPARAMETRIC PHARMACOKINETIC MODELING USING R AND THE Pmetrics™ PACKAGE

8:00-9:00	Registration, computer preparation
9:00-9:45	Introduction to pharmacometrics
9:45-10:30	Introduction to the Pmetrics™ package
10:30-10:50	Break
10:50-12:20	Fitting models to data in Pmetrics™
12:20-13:50	Lunch
13:50-15:20	Details and plotting Pmetrics™ objects during run. Model evaluation and validation
15:20-15:40	Break
15:40-17:00	Hands-on exercise: modeling and model evaluation using Pmetrics™

### DAY 2: ELEMENTS OF THE CLINICAL IMPLEMENTATION OF PRECISION ANTIBIOTIC THERAPY. ROLE OF THE TDM LABORATORY, MONTE-CARLO SIMULATIONS FOR EVALUATING MICROBIAL PK-PD TARGET ATTAINMENT

8:00-9:00	Computer preparation
9:00-10:30	Nonparametric Monte-Carlo simulations / Evaluation of the attainment of microbial PK-PD targets
10:30-10:50	Break
10:50-12:20	Hands-on exercise: Nonparametric Monte-Carlo simulations in Pmetrics™ / Evaluation of the attainment of microbial PK-PD targets
12:20-13:50	Lunch
13:50-15:20	Translation of parametric to nonparametric pharmacokinetic models
15:20-15:40	Break
15:40-17:00	Hands-on exercise: Translation of parametric to nonparametric pharmacokinetic models

# SCHEDULE

## Day 3



### DAY 3: ELEMENTS OF THE CLINICAL IMPLEMENTATION OF PRECISION ANTIBIOTIC THERAPY. TRANSLATION OF PARAMETRIC TO NONPARAMETRIC MODELS. PRECISION PHARMACOTHERAPY USING BESTDOSE™. CASE EXAMPLES. THE UTILITY OF ARTIFICIAL QUASI-MODELS

8:30-9:00	Computer preparation
9:00-10:00	Finding the optimal sampling times for nonparametric pharmacokinetic modeling and simulations
10:00-10:30	Modeling individual pharmacokinetic properties using artificial quasi-models
10:30-10:50	Break
10:50-12:20	Model application - dose optimization with BestDose™
12:30-14:00	Lunch
14:00-15:00	Case examples with BestDose™
15:00-16:30	Preanalytical, analytical and postanalytical considerations of antibiotic TDM
16:30-17:00	Discussion
17:00	Wrap-up, adjourn

# LECTURERS



## **Professor Michael N. Neely MD, MSc, FCP**

Chief, Division of Infectious Diseases, Children's Hospital Los Angeles  
Director, Laboratory of Applied Pharmacokinetics and Bioinformatics  
Keck School of Medicine  
University of Southern California  
Los Angeles, CA, United States



## **Professor Sylvain Goutelle PharmD, PhD**

University professor, Evaluation and Modeling with the Therapeutic Effects Group, Department of Statistics and Modeling for the Health Sciences, Laboratory of Biometry and Evolutionary Biology  
Hospital pharmacist, Hospices Civils de Lyon  
Université Claude Bernard Lyon 1  
Lyon, France



## **Markus Hovd PharmD, PhD**

Researcher, K.G. Jebsen Centre for Brain Fluid Research  
Researcher, Department of Transplantation Medicine  
Senior lecturer, Department of Pharmacy  
University of Oslo  
Oslo, Norway



## **Julian David Otalvaro MSc, PhD**

Researcher, Laboratory of Applied Pharmacokinetics and Bioinformatics  
Keck School of Medicine  
University of Southern California  
Los Angeles, CA, United States  
Researcher, Universidad de Antioquía  
Medellín, Antioquía, Colombia



## **Gellért Balázs Karvaly PharmD, PhD**

Assistant professor, board-certified laboratory pharmacist, Head, Laboratory of Mass Spectrometry and Separation Technology  
Department of Laboratory Medicine, Semmelweis University  
Budapest, Hungary

# JOIN THE PROGRAM

## Application & Registration



## APPLICATION PROCESS

### 1. APPLICATION

- Interested participants should submit their application on our [online registration portal](#).

### 2. BOOKING

- Following applications, participants will receive a booking confirmation to secure their spot.

### 3. TUITION FEE

- The total tuition fee is **EUR 360** in case of **in-person participation**.
- The total tuition fee is **EUR 300** in case of **online participation**.

### 4. PAYMENT

- Participants will receive information about payment options by email after registration.
- The total tuition fee must be paid 1 week before the start of the program, until **15 April 2026**.

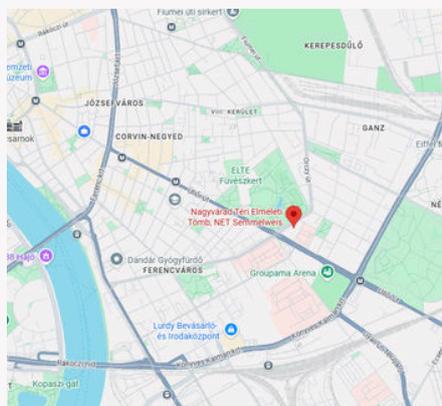
**Tuition fee:**  
**In person: EUR 360**  
**Online: EUR 300**

## LOCATION

Semmelweis University  
Nagyvárad Tér Theoretical  
Building, 1st Floor, Room L2.

Directly accessible by metro  
line M3 or tram lines 23 and 24.

Address: 1089 Budapest,  
Nagyvárad tér 4.





SEMMELWEIS

INTERNATIONAL  
RELATIONS | MOBILITY | PROGRAMS

## CONTACT

### **Semmelweis University**

Directorate of International Relations and  
Alumni Affairs

**Dr. Tamás Hegedüs**, Director

**Levente Vágó**, Program manager

**Laura Zódi**, Program coordinator

 H-1085 Budapest, Üllői út 25. 2nd floor

 [international@semmelweis.hu](mailto:international@semmelweis.hu)

Find more information about the Directorate [HERE](#).