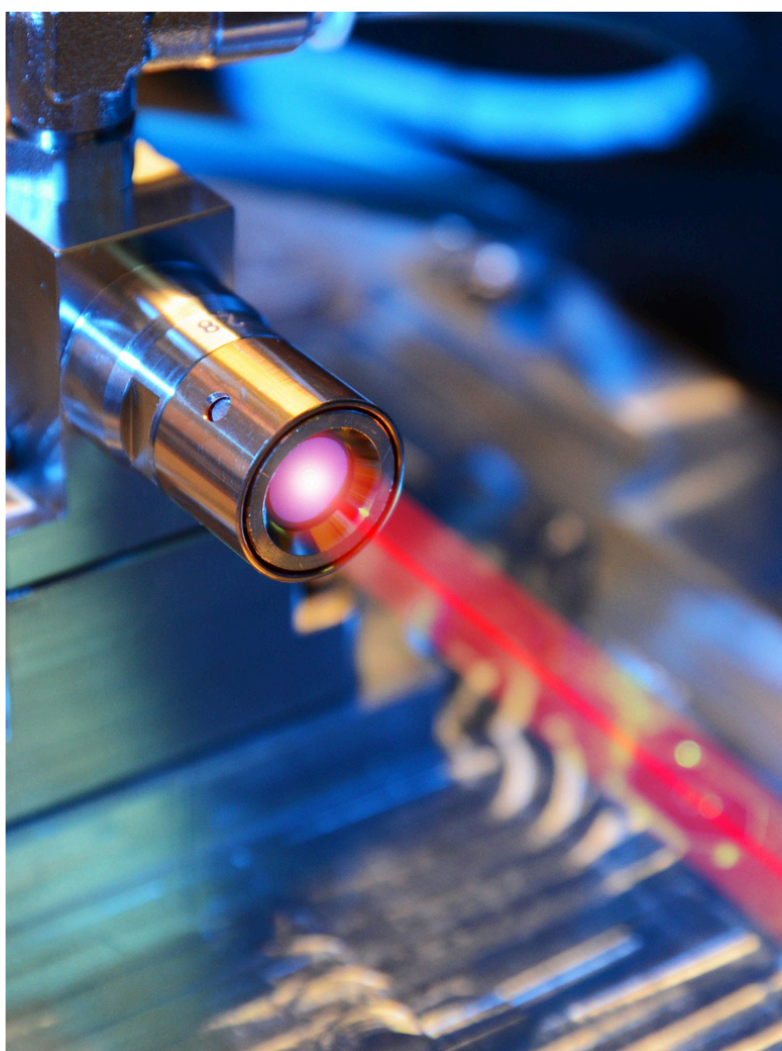


# CENTER FOR MOLECULAR FINGERPRINTING NATIONAL LABORATORY

## *LASER PHYSICS FOR HEALTH*

The primary mission of the Center for Molecular Fingerprinting National Laboratory is to explore the potential of infrared “molecular fingerprinting” of blood. The research will combine laser physics, life and data science in a unique way, enabling early detection, progression and modification of cancer and cardiovascular diseases, and health monitoring.



## MAIN RESEARCH AREAS

- Laser technologies
- Collection and analysis of blood samples
- Machine learning algorithms
- Biobanking

### IMPLEMENTERS:

Center for Molecular Fingerprinting Research Nonprofit LLC.  
University of Szeged

**PROJECT NUMBER:** 2020-2.1.1-ED-2023-00235

**FUNDING PERIOD:** 01.01.2022 - 31.12.2025

**OVERALL BUDGET:** 16.155.255.120 HUF

## BENEFITS TO BE EXPECTED FROM LABORATORY RESEARCH

- Early detection of diseases
- Health monitoring
- Development of a national and international research network

## THE PROFESSIONAL TEAM

### **Dr. Ferenc Krausz, chief executive officer**

Dr. Ferenc Krausz studied theoretical physics at Eötvös Loránd University and electrical engineering at the Technical University of Budapest in Hungary. In 2003, he was appointed director at the Max Planck Institute for Quantum Optics in Garching, and in 2004, he became chair of experimental physics at the Ludwig-Maximilians-Universität München (LMU). In 2006, he co-founded the Munich- Centre of Advanced Photonics (MAP) and began serving as one of its directors. Dr. Ferenc Krausz's research team has generated and measured the first attosecond light pulse and used it for capturing electrons' motion inside atoms, marking the birth of attophysics. For two decades, Dr. Krausz's team has been pushing the limits of ultrashort pulse laser technology. The team's expertise enabled the development of new laser sources and measurement techniques that enable the recognition of the molecular fingerprint. Dr. Krausz in 2022 received the prestigious Wolf Prize for his pioneering work in the field of ultrafast laser science and attosecond physics. In 2023, together with Pierre Agostini and Anne L'Huillier, he was awarded the Nobel Prize in Physics for “experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter.”

### **Dr. László Vastag, managing director**

After obtaining his medical degree, Dr. László Vastag worked in the pharmaceutical industry for about 12 years in the field of research and development and clinical trials at local and international CROs and pharmaceutical companies as clinical research associate and local and regional project manager. Subsequently, he performed project-related professional leadership and project management tasks at the National Institute of Pharmacy and Nutrition in European Union projects. He joined CMF in 2020 as managing director.

### **Dr. Mihaela Žigman, research director**

Dr. Mihaela Žigman studied at the University of Ljubljana (Slovenia) and received her Ph.D. from the University of Vienna. After her postdoctoral research with Dr. Juergen A. Knoblich at the Institute of Molecular Biotechnology of the Austrian Academy of Sciences (IMBA), she joined the laboratory of Dr. Cecilia B. Moens as a postdoctoral Howard Hughes Medical Institute associate at the Fred Hutchinson Cancer Research Institute (FHCRC, Seattle). Dr. Žigman serves as a research program leader at the Ludwig-Maximilians-Universität München (LMU) and the Max Planck Institute of Quantum Optics (MPQ), as well as a research director at the Center for Molecular Fingerprinting (CMF).

## POSSIBLE PARTNERSHIPS

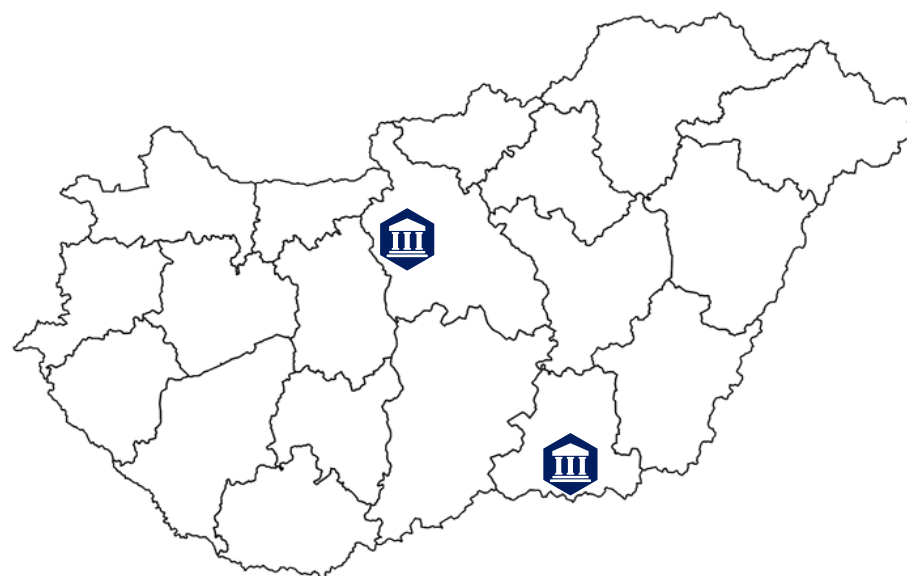
- Developing close collaborations with academic and healthcare providers.
- Specific research and development collaborations and joint consortium tenders with small and medium-sized companies.
- Asset development, possible production, service operation, or infrastructure operation can provide space for Hungarian companies to join us.

## TARGET GROUP

- Healthy volunteers over the age of 40
- Volunteers above 50 with cardiovascular risk factors
- Institutions of higher education, research centers
- Healthcare providers

## PLACES OF IMPLEMENTATION:

- Budapest
- Szeged



## CONTACT



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