BF Biocenter Finland

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SUPPORTING FRONTIER RESEARCH IN LIFE SCIENCES

UNIVERSITY OF OULU

Tampere University

UNIVERSITY OF EASTERN FINLAND

UNIVERSITY OF TURKU

Åbo Akademi

UNIVERSITY OF HELSINKI

WATCH OUR VIDEO!

From data to innovations and beyond.

Biocenter Finland is a cornerstone of Finland's life sciences and biomedical research, offering open-access cutting-edge technologies and infrastructures that serve researchers in universities, companies, hospitals, and research institutions both nationally and internationally. The services are complemented by diverse training opportunities for researchers and students in the field.

These infrastructures are indispensable for tackling global challenges, from climate change to pandemics, and play a vital role in national preparedness, such as addressing COVID-19 and future pandemics. By integrating expertise from six universities into a unified network of excellence, Biocenter Finland ensures efficient coordination of investments in research infrastructures, supported by its host universities. Biocenter Finland was selected for the Finland's national Roadmap for Finnish Research Infrastructures 2025–2028 with excellent reviews. In addition, Biocenter Finland received the "Lighthouse status", which was granted for the first time to the most successful infrastructures, that meet the lighthouse criteria and lead the way in all key infrastructure areas, service provision, impact, functionality and shared use.

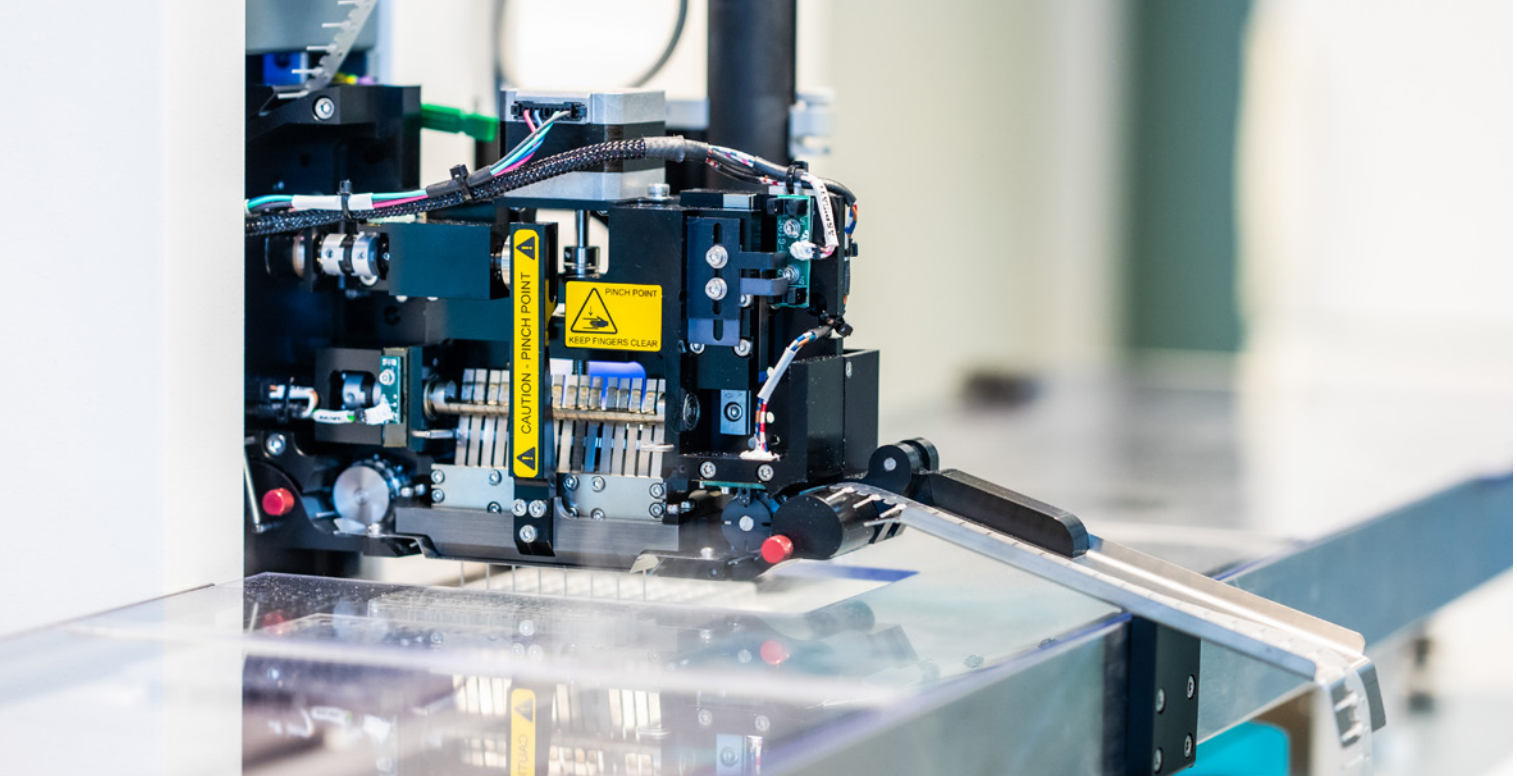
Sustaining these state-of-the-art resources is essential for maintaining Finland's leadership in life sciences, fostering innovation, supporting businesses, and ensuring resilience to global and national challenges.

Biocenter Finland unites expertise from six universities across Finland, creating a nationwide network of cutting-edge research infrastructures and open-access services.

biocenter.fi

Olli Silvennoinen

Director of Biocenter Finland



17 PLATFORMS

Advanced technology platforms driving life science research.

Biocenter Finland's 17 technology platforms serve over 3,000 research groups each year, offering advanced tools and expertise to support academia, healthcare, and industry. Covering areas from genome editing to imaging, structural biology, and metabolomics, these platforms enable innovative research and foster global partnerships, reinforcing Finland's position in life sciences.

To maintain their leading-edge capabilities, the platforms are continuously updated with the latest technological advancements and undergo regular assessments by an international Scientific Advisory Board.

Read more:
biocenter.fi/technology-platform-services/

GENOMICS AND SINGLE-CELL OMICS

- Genome-Wide Methods (GWM)
- Single-Cell Omics

CELL AND TISSUE PHENOTYPING

- Biobank Technologies
- Flow Cytometry
- Finnish Electrophysiology (FinE)
- National Plant Phenotyping Infrastructure (NaPPI)

DIGITAL DATA DRIVEN SCIENCE

- Bioinformatics

MODEL ORGANISMS

- FinGMice – Mouse Models
- Non-Mammalian Model organisms

GENE AND CELL THERAPY AND DRUG DISCOVERY

- Stem Cells and Genome Editing (SCGE)
- Viral Gene Transfer and Cell Therapy (VGTCT)
- Drug Discovery and Chemical Biology (DDCB)

PROTEOMICS AND METABOLOMICS

- Protein-Proteome Network (PPN)
- Metabolomics

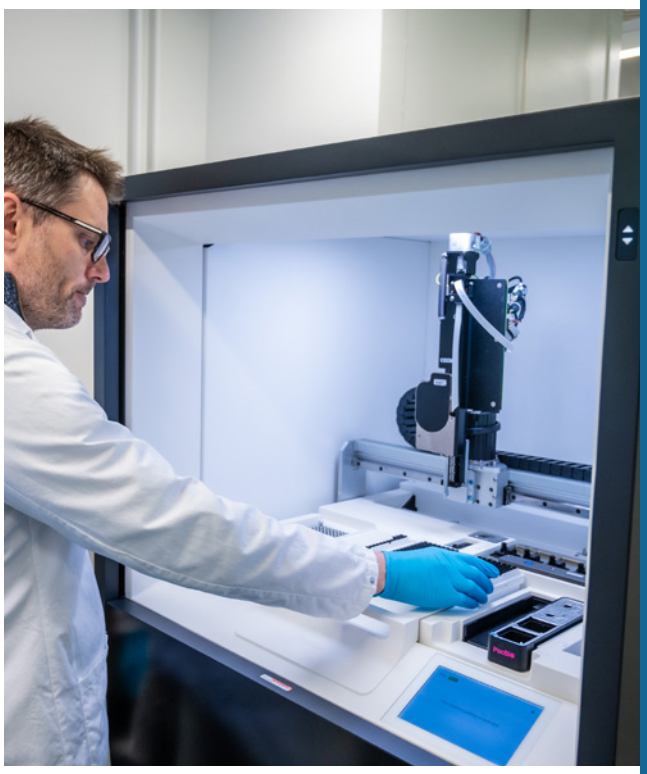
IMAGING AND STRUCTURAL BIOLOGY

- BioImaging
- Real-Time Imaging
- Structural Biology

Genomics and single-cell omics

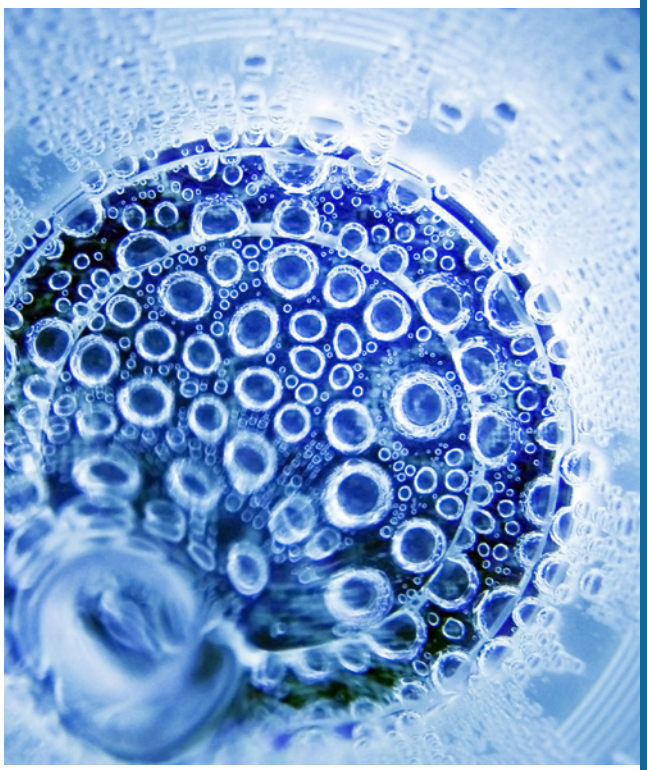
Genome-Wide Methods (GWM)

The Genome-Wide Methods (GWM) platform provides advanced tools for genome-wide analysis, focusing on DNA, RNA, and epigenome studies. It offers technologies like next-generation sequencing (NGS) and long-read sequencing, enabling groundbreaking research into genetic variations and epigenetics. Open to academia, healthcare, and industry, the platform fosters innovation and collaboration, driving progress in genomic science.



Single-Cell Omics

The Single-Cell Omics platform delivers cutting-edge technologies to analyze individual cells, offering detailed insights into cellular heterogeneity and dynamic processes. Its tools include single-cell and spatially resolved transcriptomics, epigenomics, and proteomics. These approaches are accelerating groundbreaking research in multiple biomedical fields including cancer, immunology, developmental biology, cardiometabolic health and neurogenerative diseases. Open to all disciplines, the platform identifies unique cell states, discovers biomarkers, and advances both basic and applied research.



Cell and tissue phenotyping

Biobank Technologies

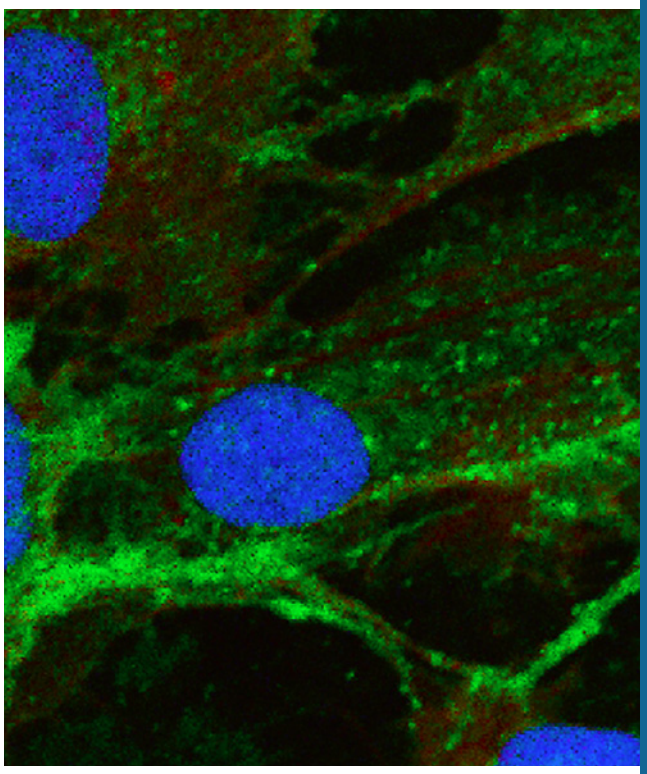
The Biobank Technologies platform facilitates preparation, processing and data-driven analysis of biobank samples, enabling their integration into scientific research. It supports ethical use and state-of-the-art processing of samples, combined with advanced data management systems and image-based artificial intelligence to ensure high quality of sample analysis. The platform plays a vital role in translational research and personalized medicine by providing resources that bridge basic science and clinical applications. Researchers in academia, healthcare, and industry rely on these services to advance innovations in healthcare.

Flow Cytometry

The Flow Cytometry platform offers sophisticated solutions for analyzing and sorting cells based on their physical and chemical properties. Equipped with cutting-edge instruments, it enables high-throughput analysis, detailed multiparameter data collection, and precise cell sorting. Researchers use these capabilities for breakthroughs in immunology, cancer research, and cell biology. The platform also provides expert guidance, ensuring that users can maximize the potential of this powerful technology.

Finnish Electrophysiology (FinE)

The Finnish Electrophysiology (FinE) platform specializes in tools and expertise for studying electrical properties of cells, tissues, and organisms. Techniques such as patch-clamp and multi-electrode array systems allow researchers to explore neural activity, cardiac function, and ion channel behavior at high resolution. These capabilities are crucial for advancing neuroscience, pharmacology, and broader life sciences research, making FinE an indispensable resource for scientists.



National Plant Phenotyping Infrastructure (NaPPI)

The National Plant Phenotyping Infrastructure (NaPPI) platform supports research into plant traits and their interactions with the environment. Using advanced imaging and sensor-based phenotyping tools, the platform enables systematic studies of plant growth, physiology, and productivity at the whole plant and organ levels. These methods allow comprehensive analysis of plant responses and thereby addressing challenges like climate change and food security. NaPPI provides a unique resource for agricultural and plant biology research in Finland.

Digital data driven science

Bioinformatics

The Bioinformatics platform offers advanced computational tools and expertise for analyzing complex biological data. Facilitating research in areas such as genomics, transcriptomics, proteomics, and metabolomics, the platform provides support for using high-performance computing, state-of-the-art software, and robust data analysis pipelines. Expert consultation and training further equip researchers to extract meaningful insights from large datasets. This platform is key to driving progress in fields like personalized medicine, systems biology, and evolutionary studies.

Photo: Adobe Stock

CSC – ICT Solutions for brilliant minds

CSC as part of the national research system and as ELIXIR Finland node offers:

- comprehensive scientific computing and data analytics services
- services for secure data management - also for sensitive data
- flexible solutions for life science researchers
- training and expert support

In most cases our services are free of charge for academic research, education and training purposes in Finnish higher education institutes and in state research institutes.

Read how to get started: **research.csc.fi/biosciences**

ELIXIR – as a distributed infrastructure for biological data

- brings together experts and resources across Europe
- enables life science researchers across the world to access and analyse life science data

This infrastructure makes it easier for scientists to find and share data, exchange expertise, and agree on best practices.

Read more about ELIXIR: **elixir-europe.org**

Model organisms

FinGMice – Mouse Models

The FinGMice platform provides specialized resources for generation and analysis of genetically engineered mouse and rat models tailored to specific research needs. These models are critical for studying gene function, disease mechanisms, and therapeutic interventions. Services include genome editing, transgenic model generation, and phenotyping, supporting preclinical and translational research. The platform is a cornerstone for advancing life sciences and biomedical research in Finland.

Non-Mammalian Model Organisms

The Non-Mammalian Organisms platform supports research using model species like zebrafish and fruit flies, which are essential for studying developmental processes, genetics, and disease mechanisms. These cost-effective and ethical models allow researchers to explore complex biological questions in an organism context. The platform provides services for model generation, maintenance, and phenotyping, fostering cutting-edge innovation across a range of fields, including neurobiology, cancer research, and environmental science.

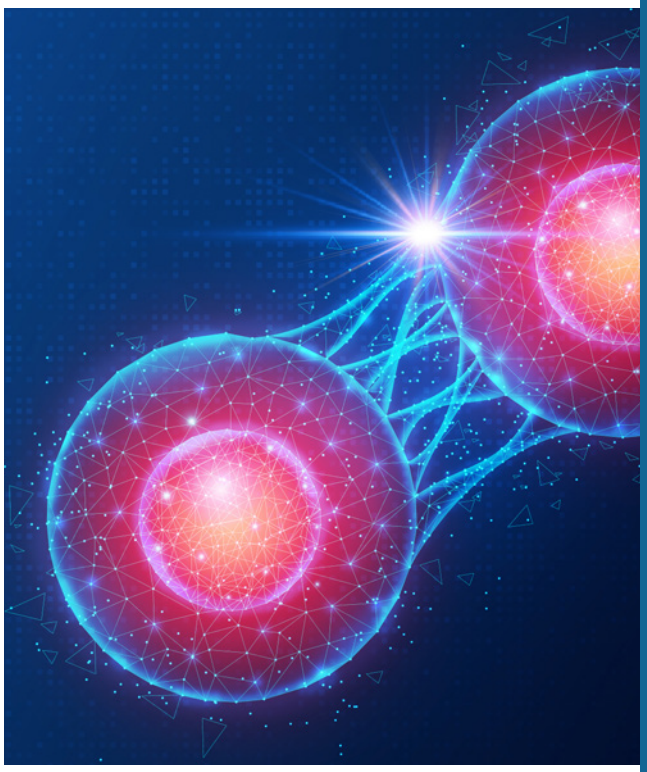
Gene and cell therapy and drug discovery

Stem Cells and Genome Editing (SCGE)

The Stem Cells and Genome Editing (SCGE) platform supports research into stem cells and genetically modified cell lines. It provides expertise in generating, culturing, and differentiating stem cells, along with precise genome editing using tools like CRISPR-Cas9. Researchers use these capabilities for disease modeling, regenerative medicine, and gene function studies. The platform's services play a pivotal role in both fundamental research and applied biomedical sciences.

Viral Gene Transfer and Cell Therapy (VGTCT)

The Viral Gene Transfer and Cell Therapy (VGTCT) platform specializes in the production and application of viral vectors for gene delivery and cell modification. It provides essential services for producing, purifying, and characterizing viral vectors used in research and therapeutic development. This platform advances gene therapy, regenerative medicine, and the study of disease mechanisms, supporting both academic and industrial innovation.



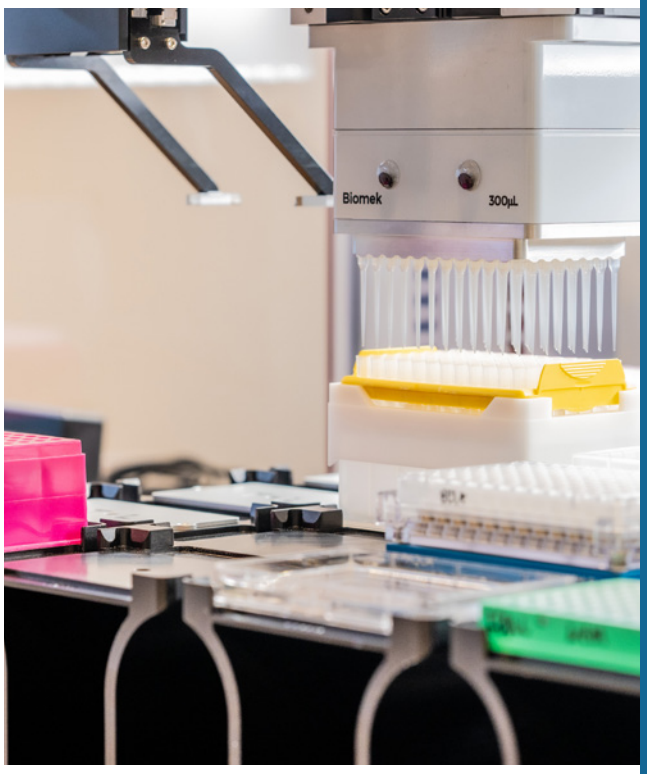
Drug Discovery and Chemical Biology (DDCB)

The Drug Discovery and Chemical Biology (DDCB) platform accelerates the identification and development of new therapeutic compounds and chemical probes. It provides advanced technologies for high-throughput screening, assay development, medicinal and computational chemistry, and follow-up assays as well as access to chemical libraries. Researchers use these services to develop innovative treatments, bridging the gap between academic research and pharmaceutical applications.

Proteomics and metabolomics

Protein-Proteome Network (PPN)

The Protein-Proteome Network (PPN) platform provides expertise and tools for large-scale proteomics and biophysical characterization of proteins. Techniques such as mass spectrometry, optical biosensing and calorimetry enable studies of protein structure, function, and interactions, as well as post-translational modifications. These services are essential for understanding cellular mechanisms and advancing biomedical research.



Metabolomics

The Metabolomics platform supports the analysis of metabolites to explore metabolic pathways and discover biomarkers. Using mass spectrometry and nuclear magnetic resonance (NMR) technologies, the platform provides high-resolution insights into how genetic and environmental factors influence metabolism. These tools are valuable for basic and applied research in health, agricultural, and environmental science.

Imaging and structural biology

BioImaging

The BioImaging platform provides state-of-the-art imaging technologies to visualize biological structures and processes in detail. Applications range from live-cell imaging to advanced microscopy techniques like super-resolution and electron microscopy. These tools help researchers uncover cellular and molecular dynamics and structures, enabling significant progress in neuroscience, cell biology, and biomedical research.

Real-Time Imaging

The Real-Time Imaging platform offers technologies for studying dynamic biological processes as they occur in living systems. Technologies like SPECT/CT allow researchers to capture specific tracer distribution in physiological context, and longitudinally, revealing drug targets, treatment effect on specific targets, and disease models. These capabilities are essential for breakthroughs in the fields of pharmacology, pharmacokinetics, drug development, and drug targeting.

Structural Biology

The Structural Biology platform supports researchers in determining the three-dimensional structures of biomolecules. Using techniques such as X-ray crystallography, cryo-electron microscopy, and native mass-spectrometry, the platform reveals molecular details that are critical for understanding biological mechanisms and guiding drug discovery.