TURKU BIOSCIENCE

2025

TURKU BIOSCIENCE CENTRE.

Our expertise. Your discoveries.





www.bioscience.fi

UNIVERSITY OF TURKU

Åbo Akademi University

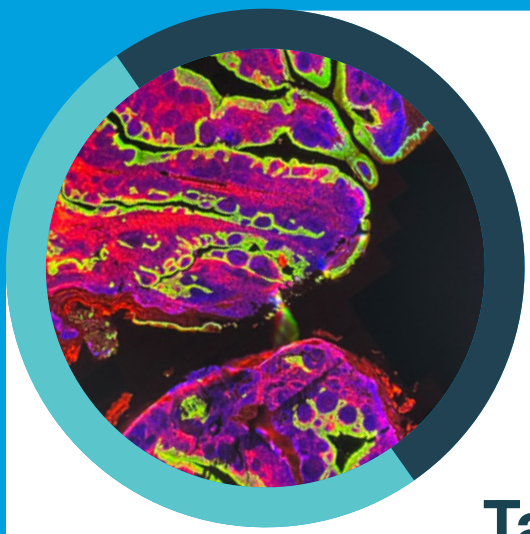


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Our organisation

About us

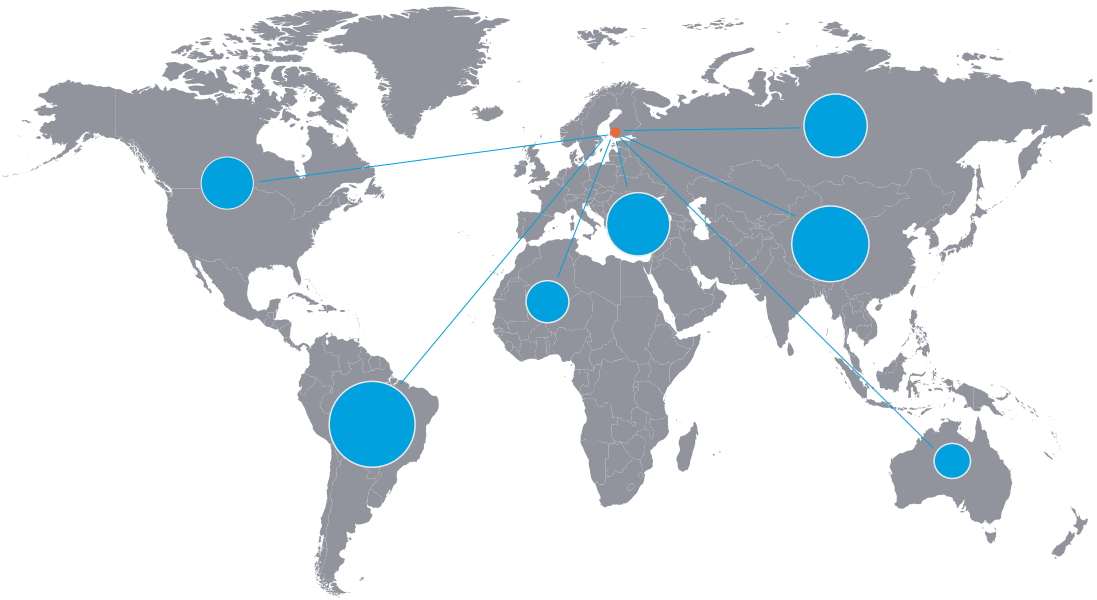
Turku Bioscience Centre is a joint department of the University of Turku and Åbo Akademi University, providing expertise and cutting-edge technologies to both academic and corporate users.

In molecular biosciences, advanced technologies along with clever thinking drive discoveries and innovation. Our goal is to provide technologies that are state-of-the-art and even beyond state-of-the-art. When it comes to intellectual input, the services at Turku Bioscience also benefit from the excellent research carried out by the investigators at Turku Bioscience.

We are very passionate about Open Access and Open Science. We work hard to share all the resources we have in terms of expertise, methods, tools, probes, techniques, and technologies with scientists coming from a global or local background and with academic, non-profit, or business interests.

Our staff

Our centre thrives in an inspiring international environment, where more than 50% of researchers and alumni are recruited worldwide. Our centre hosts renowned researchers and visitors from around the world.

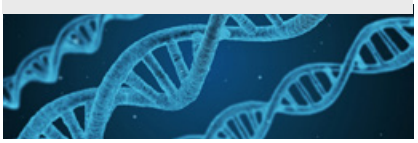


Our services

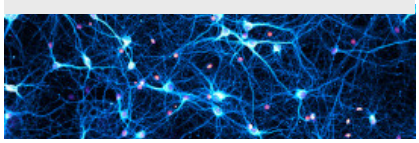
What we offer

At Turku Bioscience, we empower scientific discovery through cutting-edge technology platforms and deep expertise across genomics, proteomics, metabolomics, single-cell omics, imaging, genome editing, screening, protein structure and chemistry, and bioinformatics. As part of the Biocenter Finland national infrastructure network, our core facilities serve researchers locally, nationally and internationally, providing access to world-class tools and support that accelerate innovation across disciplines.

Finnish Functional Genomics Centre



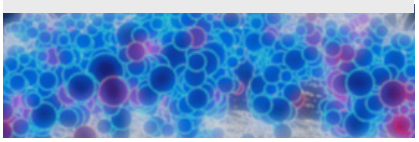
Cell Imaging and Cytometry Core



Turku Proteomics Facility



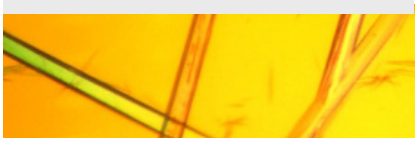
Medical Bioinformatics Centre



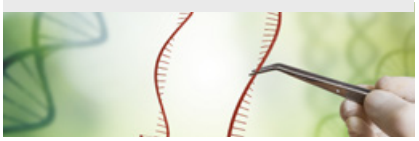
Single Cell Omics Core Facility



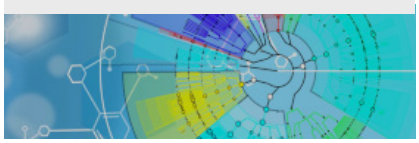
Protein Structure and Chemistry Core Facility



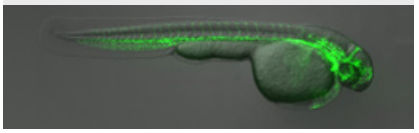
Genome Editing Core



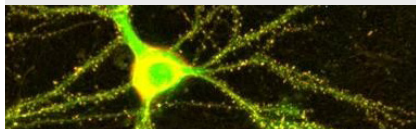
Turku Metabolomics Centre



Zebrafish Core



Turku Screening Core



> **We enable science and provide impact**

1 Finnish Functional Genomics Centre

“ ... for us, each project is an opportunity to promote high-level research and innovations.

The Finnish Functional Genomics Centre supports high level research by providing open-access to the cutting-edge technologies and applications in genomics, epigenomics, transcriptomics and metagenomics. FFGC is a testing laboratory T351 accredited by FINAS Finnish Accreditation Service, accreditation requirement SFS-EN ISO/IEC 17025:2017. Information on the activities within the scope of the accreditation is available upon request.

Next-generation sequencing enables unbiased analysis of a genome and its function in a high-throughput manner.

Unlock the power of next-generation sequencing with FFGC

Services

- Consultation and training
- NGS library preparation and sequencing
- WGS and WES of human samples (accredited service)
- Sequencing of ready libraries
- Hands-on training for open-access instruments

Applications

- Genome analysis
- Epigenome analysis
- Transcriptome analysis
- Metagenome analysis
- Targeted analysis
- Sequencing of ready-made libraries

Instruments

- Illumina Novaseq X
- Illumina Miseq I 100 PLUS
- Sample preparation robots
- Quantstudio 12K Flex



ffgc@bioscience.fi



Turku Bioscience Centre

We enable innovation

We offer complete packages of service expertise and know-how to provide both academic and corporate research groups the tools and means to shorten the runway from initial discovery to the take-off of a success story. We strive to stay at the frontiers of new technologies and research and we also actively facilitate facilitating interactions and joint projects between academia and industry.

We warmly welcome you to contact us or visit the centre if you have a research problem or if you want to access specific technologies or infrastructure services. We are always open to new ideas and are excited to discuss research projects or new technologies that you think would be important for the community. Stay tuned and stay in touch! We have the means to help you in your research and together we can take your ideas to completely new horizons.

www.bioscience.fi/services

2 Cell Imaging and Cytometry Core

We promote the use of cutting-edge instruments, for your research to always be state-of-the-art.

The Cell Imaging and Cytometry Core (CIC) is a centralized facility where users receive the support needed to carry out conventional and advanced imaging, flow cytometry and mass cytometry techniques. The unit has combined resources to provide state-of-the-art equipment that is open to all researchers. We cooperate with Turku Bioimaging and Euro-BioImaging to improve the international accessibility of imaging technologies among the bioscience community.

Services



Microscopy



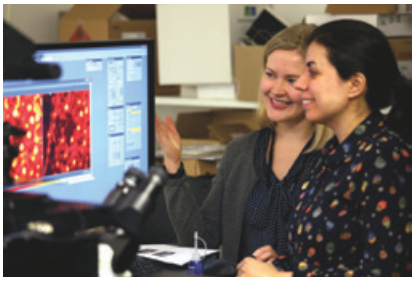
Flow cytometry



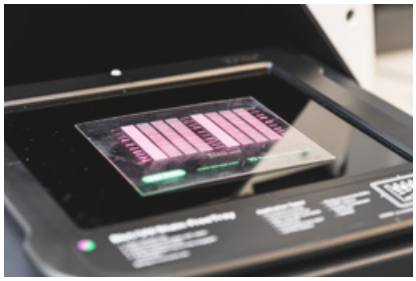
Mass cytometery



Data storage and analysis



Education and training



Gel and plate analysis

microscopy@bioscience.fi | cytometry@bioscience.fi.

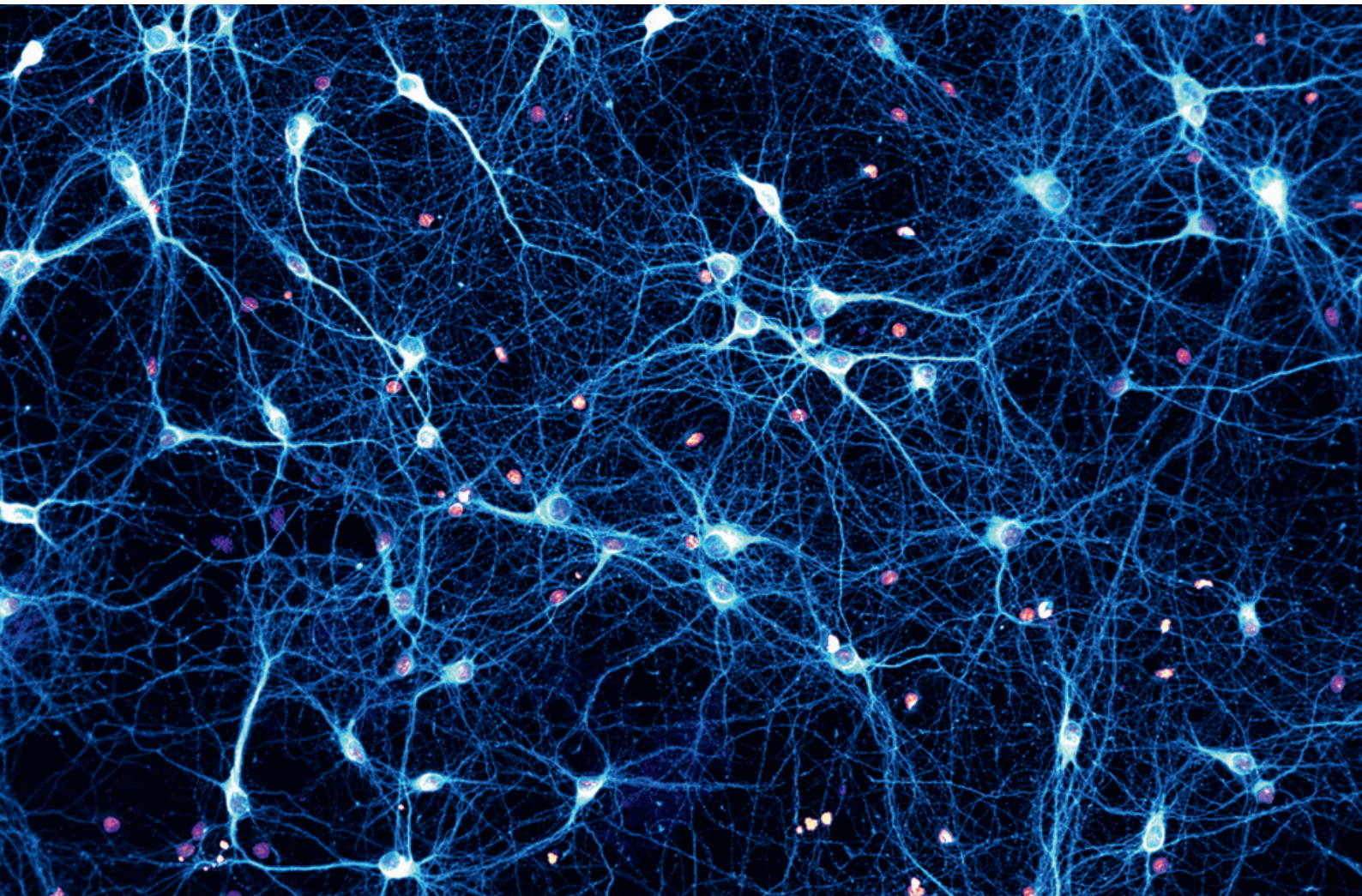


We expose the invisible

Instruments

- Wide field microscopes
- Confocal and super-resolution microscopes
- Live cell and functional imaging
- Flow cytometers and sorters
- Mass cytometers
- Gel scanners and plate readers
- Image analysis workstations with specialised software packages

We enable you to capture your boldest idea



3 Turku Proteomics Facility

We provide a comprehensive proteomics service portfolio starting from consultation on experiment design to mass spectrometry and data analysis. We have extensive experience in a wide variety of research projects and sample types including biomarker discovery from clinical serum and tissue samples, metaproteomics, plant proteomics, archaeological samples, and more. When needed, we can also develop new custom applications to answer your specific research questions.

> **Where cutting-edge proteomics meets your research goals.**



Services and area of expertise

- Consultation and training
- Access to Instruments and software
- Sample preparation and analysis
- Detection of post-translational modifications
- Intact protein analysis
- Protein Interactions (AP-MS, XL-MS, BioID, chemoproteomics)
- Single-cell proteomics (SCoPE2)
- Quantitative shotgun (DDA, DIA, TMT) and targeted (SRM, PRM, SureQuant) proteomics

Instruments

Mass spectrometers

- Orbitrap Astral with FAIMS Pro Duo
- Sciex ZenoTOF 7600
- Exploris 480 with FAIMS Pro Duo
- Orbitrap Fusion Lumos with FAIMS Pro
- Q-Exactive HF

Chromatography

- Evosep One
- EASY-nLC 1200/1000
- Agilent 1260 (offline)

proteomics@bioscience.fi *+358 (0)503831782*

4 Medical Bioinformatics Centre

The Medical Bioinformatics Centre provides support for the analysis of high-throughput data produced by modern biotechnologies.

We have strong expertise in analysing and interpreting molecular data and we constantly strive for developing new data analysis methods and workflows to support cutting-edge research in biology and medicine.

> **“Transforming data into knowledge by revealing the numbers in between.**

Services

Data analysis support and consultation

- Open consultation for researchers on bioinformatics and data analysis
- Data analysis packages for RNA-sequencing data (human, mouse, zebrafish) and single cell RNA-sequencing data

Software tools

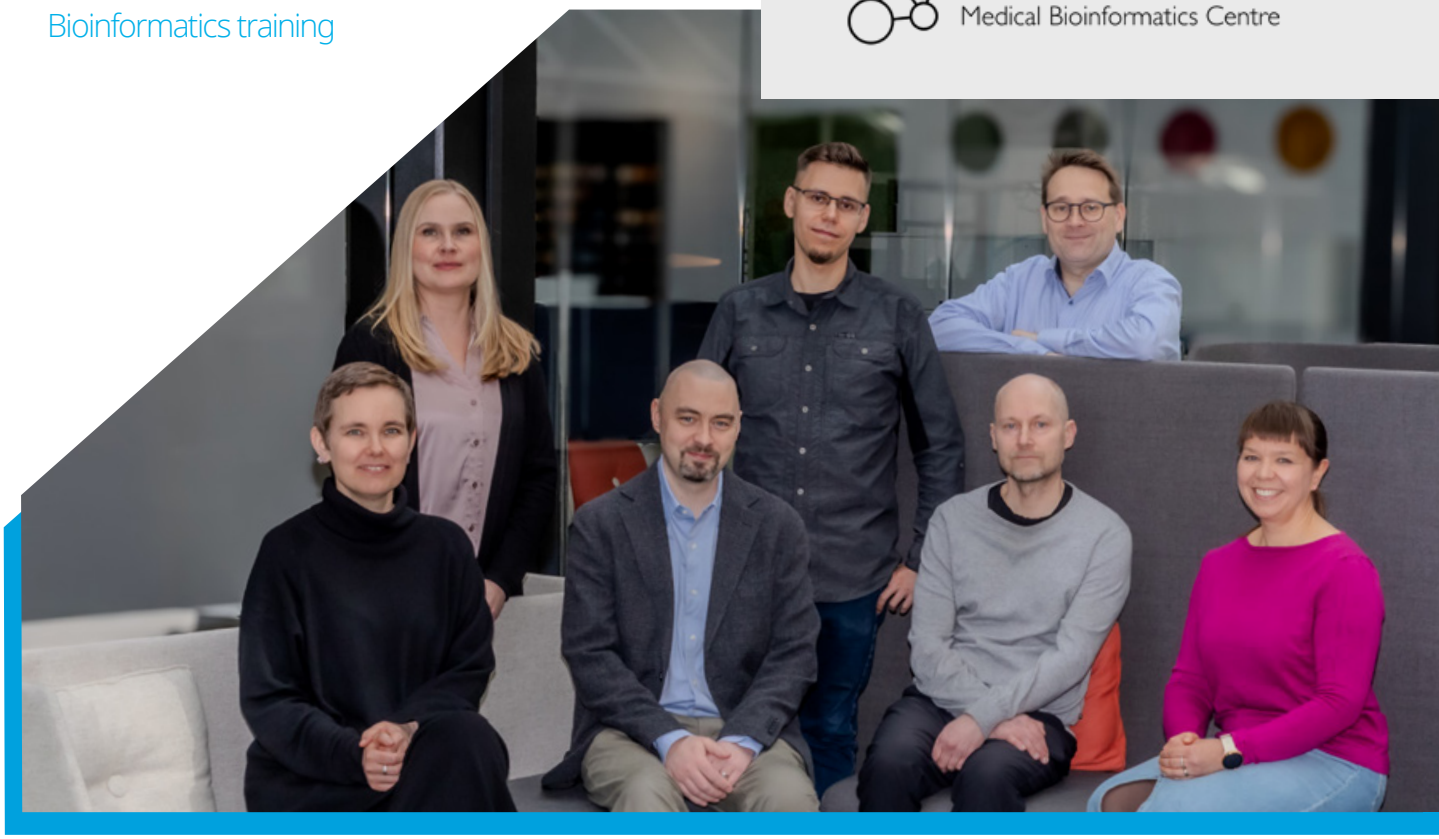
- Development and maintenance of open-source software packages for data analysis

Bioinformatics training

Areas of expertise

- Medical bioinformatics
- Computational modelling of large-scale molecular and clinical data
- Artificial intelligence

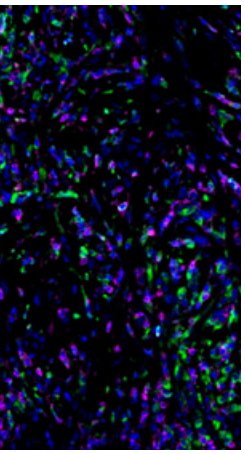
MBC
Medical Bioinformatics Centre



mbc@bioscience.fi

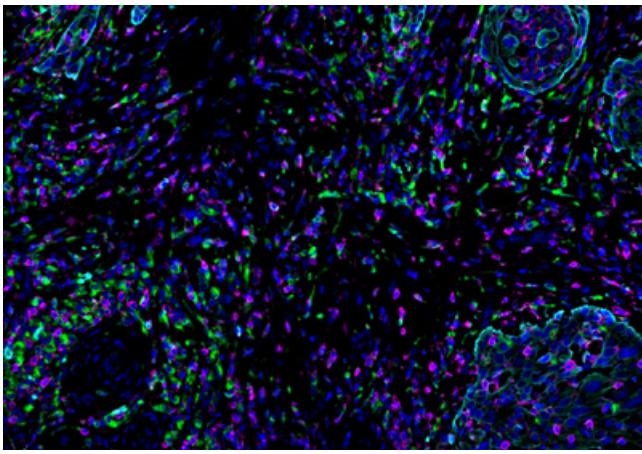
5 Single Cell Omics Core Facility

Our mission is to provide a one-stop solution for single-cell analyses. We offer consultation and services for single-cell and spatially resolved gene expression and protein profiling as a part of the national Biocenter Finland infrastructure network.



Services

- Single-cell transcriptomics (scRNA-seq)
- Single-cell epigenomics (scATAC-seq)
- Single-cell immune receptor sequencing
- Single-cell proteogenomics (cell surface protein + RNA)
- Spatial gene expression and protein profiling



> **Enabling exploration — one cell at a time, all the way.**

Our single-cell platforms allow unbiased characterisation of cellular identities and regulatory states from heterogeneous samples. Such analyses of individual cells rather than bulk populations provide new insights into cellular development and responses of individual cells to biological signals or other perturbations, and can reveal new cell types.

Technologies

Visium Gene Expression **10x Genomics**	**RNA**	Chromium X **10x Genomics**
Visium Gene and Protein Expression **10x Genomics**	**Tissue Sections** / **Cell suspensions**	Chromium Connect **10x Genomics**
Hyperion™ Imaging System **Standard BioTools**	**Protein**	Helios™ Mass Cytometer **Standard BioTools**

sc-genomics@bioscience.fi *@singlecellturku*

6 Protein Structure and Chemistry Core Facility

The Protein Chemistry and Structure core facility enables analysis of protein interactions and protein structure and provides protein expression and purification services for both academic research groups and pharmaceutical companies.

We use a number of techniques to extract valuable structural information from proteins. An in-house X-ray generator equipped with an hybrid photon counting X-ray detector is used to test crystals and collect high-resolution data. Special focus areas of our research include drug design against cancer and infectious diseases, protein design for bioremediation, and diagnostics for various pollutants.



> **From structure to insight, revealing the chemistry of life in health and disease.**

Services

- Expert consultation
- Protein interaction assays
- Evaluation of protein quality and stability
- Protein crystallization
- X-ray crystal structure determination (macromolecules and small molecules)
- Structural modelling, ligand docking, and AI predictions
- Powder diffraction
- Access to European structural biology infrastructures
- Training in structural biology techniques

Instruments

- Protein crystallization robot
- Protein expression and purification equipment
- Microscale thermophoresis
- Differential scanning fluorimetry
- Crystal imager and crystallization hotel
- Microfocus X-ray generator equipped with hybrid photon counting X-ray detector
- Crystal cryoprotection equipment
- Automated mass photometer
- In-situ X-ray data collection system



Applications

- Drug discovery
- Biotechnology
- Smart materials
- Diagnostics
- Nanotechnology

pcs@bioscience.fi

7 Genome Editing Core

The Genome Editing Core is a full service facility aiming for targeted modifications in the genome via viral vectors or non-viral gRNA/Cas9 complex assembly and delivery. We specialize in the design and implementation of CRISPR genome editing solutions across a wide range of cell types.

> “ **Accelerating discovery through genetic modifications that enable imagination.**

At the Genome Editing Core we harness state-of-the-art CRISPR genome-editing technologies. We offer consultation, guidance, reagents on a per reaction basis as well as full service from design to delivery.



APPLICATIONS

- Gene knock-out
- Gene tagging/ point mutations
- Epigenetic modifications
- Gene overexpression
- shRNA gene silencing
- Targeted genetic modifications

Services

CRISPR

- Project consultation
- gRNA/ HDR template template design
- Reagents on a per reaction basis
- Cas9/gRNA complex assembly and delivery
- Nucleofection
- Sequencing (Sanger, NGS)

Viral vectors

- Project consultation
- RCV test (lenti)
- viral vector production (AAV, lenti)
- virus titration (AAV, lenti)

gene_editing@bioscience.fi

8 Turku Metabolomics Centre

The Turku Metabolomics Core is a joint venture between five laboratories from the University of Turku and Åbo Akademi University, with a primary focus on the clinical applications of metabolomics. The core facility brings the constituent laboratories under one organisational structure in order to provide broad expertise across the many complementary aspects of metabolomics from research to services. The core facility service is based in Turku Bioscience Centre and has the infrastructure listed below.

We discover pathways

Metabolomics allows us to understand the link between genotype and phenotype. Metabolomics gives us a snapshot of the cell, tissue or organ metabolism, and associated biological pathways in both health and disease.

Services

- Expert consultation
- Full service (assays conducted by the core staff)
- Analysis of the results
- GLP certified assays
- Tissue NMR spectroscopy
- Custom designed assays
- Biomarker discovery
- Intergrated 'omics' analysis

Instruments

- Targeted LC-MS (Sciex 5500 QTrap, Sciex 7500 QTrap[1], Agilent 6460 QqQ[1])
- Untargeted LC-MS (Sciex 6600 TripleTOF)
- Targeted LC-MS: GLP (Sciex 6500+ [2], Sciex 4000[2])
- Targeted GC-MS (Agilent 5977A MSD)
- Targeted/Untargeted GC-MS (LECO Pegasus BT)
- Liquid NMR (Bruker 600 MHz with cryoprobe [1])
- Solid/semi-solid NMR (Bruker 400 MHz [1])
- Pipetting robot (Hamilton MicroLab Star)

Available metabolomics assays

- Bile acids
- Endocannabinoids
- Central carbon metabolites
- Prediction of the outcomes in traumatic brain injury
- Plant hormones
- Steroids
- Lipidomics

[1] Turku Centre for Chemical and Molecular Analytics
[2] Bioanalytics laboratory



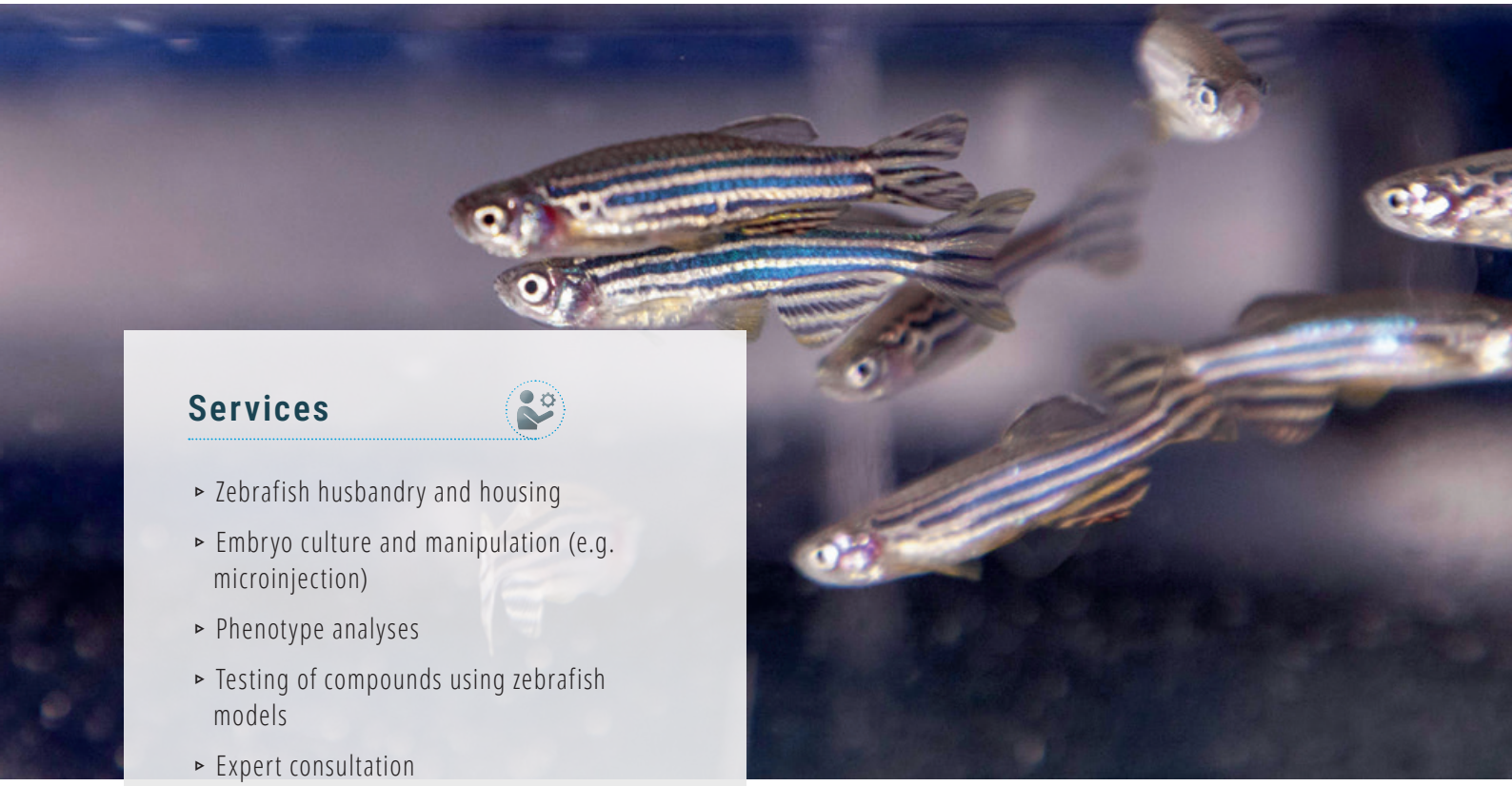
metabolomics@bioscience.fi

9 Zebrafish Core

“ We make our best to lead your research to success.

The zebrafish (Danio rerio) is a small tropical freshwater fish and a common species in home aquariums. The rapid external development and transparency of the embryos combined with high fecundity and availability of a large number of mutant and transgenic strains, have made zebrafish a popular model for scientific research. Zebrafish have also been used to solve problems in various biomedical areas such as cardiovascular research, cancer biology, neuroscience, toxicology and pharmacology. Zebrafish embryos offer an ethical, practical and low-cost model for scientific studies.

We support researchers in using zebrafish as an *in vivo* model for their research. Our long and deep expertise extends to efficient experimental design and to the practical aspects of working with zebrafish. This allows researchers without experience in zebrafish to benefit from the wide applicability of the model. We are happy to fine-tune and develop new applications and methods, in order to fulfil unmet scientific needs.

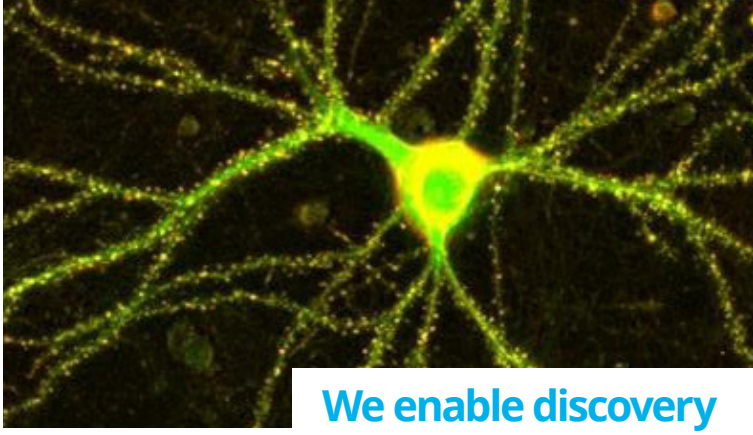


Services

- Zebrafish husbandry and housing
- Embryo culture and manipulation (e.g. microinjection)
- Phenotype analyses
- Testing of compounds using zebrafish models
- Expert consultation
- Scientific collaboration
- Training

zebrafish@bioscience.fi

10 Turku Screening Core



We enable discovery

The Screening Core offers open access to instruments, library resources and expertise for automating sample preparation, measurement and analysis pipelines at scales from single multiwell plates up to entire compound library screens. The core hosts a fully integrated liquid handling platform, automated cell incubator and 4 high throughput microscopes suitable for living cells, to ensure systematic and reproducible workflows. Single-objective light sheet imaging offers rapid and non-invasive acquisition of 3D volumes from multiple samples. Users may access instruments directly or order services.

The screening core, together with the zebrafish core, is a partner site of the Europe-wide screening infrastructure, EU-Openscreen, where our focus is complex cell systems, especially as disease models, for phenotyping, compound screens, hit validation and probe development. In addition, the core collaborates with research teams on campus to complement the wet lab automation approaches with virtual screening and molecular modelling approaches.

APPLICATIONS

- Integrated systems for walk-away automation of treating and imaging multiple sample plates
- Queueing capacity of 240, 80 and 40 plates from ambient, cell incubator and cooled storage respectively.
- Four fully automated fluorescence imagers for dynamic imaging with on-stage fluidics and optogenetic options
- Multi-mode plate readers
- High-throughput live-cell kinetics and endpoints, in imagers and readers
- Wide-field and confocal spinning disk options in high content screening imagers
- 3D volume kinetics from multiwell plates – avoiding harmful inefficient confocal configurations – by single objective light-sheet imaging
- Acoustic non-contact nanolitre dispenser for efficient library use and assay set-up
- Bulk liquid handlers - dispensers, washers, pipetting robots - automating assay set-up
- Libraries of compounds (> 40000 on-site), as well as gene knockdown reagents, reporters, optogenetic actuators, expression constructs and gene transfer vectors

Capabilities

- Phenotypic assays
- Mechanistic assays
- Protein Interaction assays
- Customised assays
- Automated and high-throughput
- sample preparation

screening@bioscience.fi

Facts about Turku Bioscience Centre

- Turku Bioscience Centre is an independent department of University of Turku and Åbo Akademi University established in 1989
- Turku Bioscience Centre contributes to more than 100 publications annually
- The Center is a host organization to one Research Council of Finland Centre of Excellence.



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