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AAV Gene Transfer and Cell Therapy Core Facility



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Location

Biomedicum Helsinki, University of Helsinki
Biomedicum Helsinki, Room A518, Haartmaninkatu 8, 00290 Helsinki

Core summary

The AAV Gene Transfer and Cell Therapy Core Facility provides AAV viral vectors for research applications. The Core provides training and advice on vector usage and design and both small and large scale vector preparations.

Access

University of Helsinki and other non-profit organizations, including institutions outside of Finland

Affiliation

Biomedicum Helsinki

Core Details

AAVs have proven to be a vector of choice in many applications of gene therapy. AAVs are able to transduce both dividing and non-dividing cells, does not provoke insertional mutagenesis and possesses very low immunogenicity. This last feature makes it possible to maintain the expression of the transgene in transduced tissue for months and years following a single administration of the virus. The Biomedicum AAV Core Facility has all the necessary equipment to produce an AAV preps that is pure enough for experimental applications. Genes of interest can be expressed in AAVs of different serotypes (currently AAV2, 8 and 9), which makes it possible to further adjust the tissue-targeting specificity. For AAV vector serotypes 8 and 9, the users must obtain a MTA from [University of Pennsylvania](#) before use. The final virus prep is usually 3 ml in volume having a concentration of $1.0E+11$ to $1.0E+12$ virus genomes per ml. For successful production of recombinant AAVs, the transgene must be inserted into a special plasmid vector, by using a simple 1-step cloning protocol. Final virus preps are analyzed in vitro to ensure their transducing capability by transfecting of a suitable cell line (usually 293T) and analyzing the transgene expression. Currently we are using ubiquitous CAB (chicken β actin promoter with CMV enhancer). However, a large variety of tissue-specific promoters can be used instead of CAB. For more details, please, see the Core web-site.

Services

Design, preparation and quantification of recombinant AAV (rAAV) vectors for research applications, based on customer's gene-encoding plasmids. This service can also include functional tests in vitro to visualize the expression and/or functional activity of the rAAV-encoded protein. The Core provides training and advice on vector usage and design.

Equipment

The Core has all necessary equipment to produce, purify and quantify the viral preps.

Advanced Microscopy Unit



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Location

Haartman Institute
Haartmaninkatu 3, Room DK 139

Core summary

AMU is a core facility of Haartman Institute. It is the only unit with EM in Faculty of Medicine and Meilahti campus. It's also equipped with confocal, fluorescence, DIC microscopy, live cell imaging facilities, and brightfield photomicrography of wide field at magnification down to 0.5 x. AMU serves Haartman institute, faculty of medicine and the whole university with instruments, sample preparation, scientific consultation on experiment planning, and results interpretation.

Access

Service available to all entities, including for-profit organization.

TEM Jeol 1400 has priority to hospital users; other two TEMs and light microscopes have no priority.

Affiliation

Haartman Institute, Faculty of Medicine; university hospital, HUSLAB

Core Details

AMU is the microscopy core facility of Haartman Institute (Institute of clinical-theoretical medicine), an institute located in Meilahti Campus, Faculty of Medicine, University of Helsinki. The Institute comprises the departments of Bacteriology and Immunology, Medical Genetics, Pathology and Virology and the Transplantation Laboratory.

AMU is equipped with electron microscopes, confocal microscope, fluorescence microscopes, brightfield microscopy, DIC microscopy, and live cell imaging devices.

AMU is the oldest imaging core unit in faculty of medicine. Over years, the unit is developed from a simple EM-room into a station comprising variety of microscopic approaches, performing research, teaching and clinical diagnostic activities, serving the institute, the faculty of medicine and the whole university with its hardware devices, technical know-how and expertise in cellular, subcellular structure, morphology recognition and interpreting. The unit contributes to various research projects, graduate programs; promotes clinical diagnosis level of viral disease and surgical pathology; strengthens the status of these clinical entities in their fields.

The unit offers two courses on light microscopy and ultrastructures of the cells.

1. "Advanced microscopy in Medicine" for translational medicine master program in Faculty of Medicine, University of Helsinki.
 2. "Ultrastructures of the Cell, Matrix and their Alteration" for PhD student program, HBGS, University of Helsinki.
- Established in year 1967 as an EM unit and underwent several TEM upgrading and addition of the first confocal microscope in Finland in 1993. Later, several other microscopes were added and upgraded. The unit was renamed as Advanced Microscopy Unit (AMU) since year 2002.

The unit has long history of services on microscopy for biomedical material with experienced staff on electron microscopy, familiar with ultrastructure of cells, their alteration and pathological changes, thus providing not only services on instruments, but also consultation including experiment planning concerning, hands-on help of TEM observation, results interpretation, help on drafting description of EM findings and discussion in right terminology for using in publication.

AMU is a member of Helsinki Functional Image Center (HFIC); a member of the Finnish national imaging core; a member of Nordic Network on Imaging in Medicine and Biology (NIN); a member of European Light Microscopy Initiative (ELMI).

Services

Electron Microscopy:

Specimen preparation: whole process for routine TEM: embedding, semithin, thin sectioning; special specimen prepare methods like whole-mount cell on grids for TEM; critical point drying and carbon/metal coating for TEM and SEM; Freeze drying, rotary shadowing and negative staining for macromolecules.

TEM observation: Training for users on TEM operation and digital electron micrograph acquiring; advice on ultrastructure recognition and results interpretation.

Electron tomography: help on acquiring tilting series and image processing and 3D reconstruction, results interpretation.

Confocal microscopy: Provide advices for sample preparation incl. choice of fluorophores, acquisition methods; training for users and help on troubleshooting and 3D-reconstruction of optical section series. Live cell imaging is available.

Fluorescence microscopy: Access to three fluorescent microscopes in the institute; help users for trouble-shooting and digital photography.

DIC (differential interference contrast) microscopy and live cell imaging:

High resolution bright field DIC and live cell imaging in non-fluorescent mode, benefit from reduced cytotoxicity with white light illumination.

Bright field microscopy and digital photomicrography:

Provide guidance for device setup, Köhler illumination for high quality bright-field digital photomicrography with big field of view (down to 0.5x).

Teaching: Besides hands-on teaching for users, two courses "Advanced Microscopy in Medicine" and "Ultrastructures of the Cells, Matrix and their Alteration" are offered by the unit.

Equipment

Three Transmission Electron Microscopes:

JEOL JEM-1400: 40-120 KV; Resolution:0.2/0.38 nm; Magnification: 50x -1.2 million x.

With 11 mega-pixel Morada side-mounted CCD camera

JEOL JEM 1200 EX: 40-120 KV; Resolution: 0.16/3.5 nm; Magnification: 50x – 300 000x

With 1.4 mega-pixel MegaView G2 side-mounted CCD camera

JEOL JEM 1200 EX II: 40-120 KV; Resolution: 0.16/3.4 nm; Magnification: 600x – 500 000x With 1.4 mega pixel Gatan ES500W Erlangshen 782 side-mounted camera

TEM sample preparation devices:

Balzer MED 020 Multiple function coating device for carbon/metal coating, rotary shadowing, sputter coating, glow discharging;

Leica CDP 030 critical point dryer for SEM and TEM specimen drying

EMITECH K100 X glow discharge unit for glow discharge of EM grids.

Two Reichert Jung ultra-microtomes; Automatic tissue embedding machine and automatic thin section staining machine

Confocal microscope: Leica sp2 confocal microscope with AOBs, AOTF, Spectro-detecting system; Laser lines: 458, 476, 488, 496, 514, 567, 633 nm, with live cell imaging device.

Objective lens: 2,5x, 5x, 10x, 20x, 40x, 63x, 100x.

Three fluorescence microscopes with digital camera

One brightfield microscope with low magnification and big field of view digital photomicrography: objective lens 0.5x, 1x, 2x, 4x, 10x, 20x,40x,100x; three rotating condensers.

One inverted microscope equipped with DIC optics and on-stage incubator for live cell imaging

Biochemical Analysis Core for Experimental Research



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Location

Institute of Biomedicine
Biomedicum Helsinki 1, rooms B212a and A229b, Haartmaninkatu 8, Helsinki

Core summary

The Clinical Chemistry Core (CCC) operates at Biomedicum Helsinki to provide research groups with clinical chemistry analysis services.

Access

Services are primarily intended to serve the needs of research groups within the University of Helsinki as well as the Meilahti Campus area. However, we also welcome orders from outside the campus.

Affiliation

Institute of Biomedicine, Pharmacology

Core Details

The core provides service to analyze standard clinical chemistry parameters from blood or urine samples. The service is provided using the Siemens ADVIA 1650 clinical chemistry analyzer at the Institute of Biomedicine.

Services

Please check the core's [website](#) for the list of services. Contact the core for details and further information on the service, and to discuss the possibilities for analyzing required parameters in your samples. Updated pricelist is available on website.

Equipment

- Siemens Advia 1650 Clinical Chemistry System for all analysis

Bioinformatics helpdesk



Biocenter Finland Bioinformatics infrastructure network provides a wide spectrum of bioinformatics services from consulting to data analysis of genetics, transcriptomics, proteomics, deep sequencing, FACS and imaging data. See the full list of the services and contact information at <http://bioinformatics.biocenter.fi/index.html>

BioMag Laboratory



Director: Jyrki Mäkelä, MD, PhD, Adjunct Professor

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Location

Helsinki University Central Hospital (HUCH), Medical Imaging Center

Haartmaninkatu 4, 00290 Helsinki

HUCH main patient care building, "Laboratory wing", P- and T-levels

Core summary

BioMag Laboratory (BioMag) was founded in 1995 to enhance the development of the scientific and clinical use of bioelectromagnetism and to develop further the related techniques. It belongs to *Center for Systems Neuroimaging*, nominated by the Ministry of Education and Culture in 2009 as one of the 24 significant national research infrastructures. The laboratory is a research partner in national Strategic Center for Health and Well-being (SaWe SHOK).

Access

If interested, please contact the head of the laboratory. As usual, ethical approval and research permission from HUS are required for studies on humans.

Priority service to owners: HUCH, Aalto University and University of Helsinki

Affiliation

HUCH, Aalto University, University of Helsinki

Core Details

BioMag houses a whole-head 306-channel Elekta Magnetoencephalography (MEG) device with 60-channel EEG, and has access to the latest versions of Elekta MEG analysis tools. For MEG improvement, BioMag participates in development of algorithms for magnetic interference removal. MEG recordings combined with time-locked video are developed for both clinical and basic research applications.

For transcranial magnetic stimulation (TMS) BioMag houses Nexstim NBS4 navigational TMS (nTMS) system, eXimia nTMS with coils both for mono- and bi-phasic stimulation, as well as TMS-compatible EEG-mapping and EMG systems. A nTMS-linked video recording system, developed in BioMag, is available for detection of nTMS-elicited errors in various tasks. BioMag also houses a 16-channel near-infrared spectroscopic imaging (NIRSI) system, developed jointly with Aalto University for functional brain research, and Elekta Neuromag 99-channel magnetocardiography (MCG) equipment for cardiac research.

The primary focus of BioMag is to develop clinical applications of bioelectromagnetism and make clinical research. Measurements requiring special equipment or preparedness (newborns, patients in anesthesia, patients in need for

acute care, patients with brain stimulators, cardiac patients, studies of the effects of medication) are possible within the hospital. For instance, BioMag actively participates in development of preoperative workup of tumor and epilepsy surgery patients, Effects of deep brain stimulation are assessed by MEG. The effects of stroke on brain function are analyzed by MEG and nTMS.

Services

Equipment

- 306-channel MEG system with 64-channel EEG (Elekta Neuromag)
- 99- channel MCG system and 64- channel ECG (Elekta Neuromag)
- Two 3-layered magnetically shielded rooms (ETS-Lindgren)
- Navigated transcranial magnetic stimulator (TMS) combined with 60-channel EEG and 6-channel EMG (Nexstim)
- 16-ch. near-infrared spectroscopic imaging (NIRSI) (AU)
- Versatile stimulation systems and eye tracking
- 128-ch. ECG (Univ. Amsterdam and AU)

Biomedicum Flow Cytometry Core Facility



Director: Nina Peitsaro, PhD
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Location

Institute of Biomedicine
Biomedicum Helsinki 1, room B416b and C206a

Core summary

The Biomedicum Flow Cytometry Core Facility is running at Biomedicum Helsinki 1. The facility has a total of around 80 users mainly from research groups at the University of Helsinki and Helsinki University Central Hospital at the Meilahti campus but also from other research institutes and the Viikki campus. The core facility is providing state-of-the-art instrumentation for cell sorting and analysing experiments. The experiment can be carried out by the researcher or ordered as a service from the core facility. This service is unique at the campus.

The core facility is supported by Biocentrum Helsinki.

Access

All research groups at Meilahti campus and other research groups at need.

Priority service to Faculty of Medicine at University of Helsinki and HUS

Affiliation

Core leader: Nina Peitsaro, Ph.D.
Institute of Biomedicine, Biomedicum Flow Cytometry Facility, Biomedicum Helsinki.
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Core Details

The core facility is running since 2005 in Biomedicum Helsinki.

At present the core facility is run by a manager (Nina Peitsaro) and a research assistant.

The flow cytometers are routinely checked and serviced to be at top performance. The FACSARIA was upgraded to FACSARIA IIu in March 2012 and the Accuri C6 was purchased in July 2012.

Researchers interested in using the equipment can get more information on the web site or by contacting Nina.

Services

At the core facility the researcher can choose to use the equipment independently or as a service. Training is obligatory for new users and the core facility offers training at need. Sorting and sample analysis using the FACSARIA II can be ordered as service carried out by the core staff. The staining and sample preparation are not a part of the service at this point! The core is offering experimental setup and analysis assistance.

The core facility is providing different beads for set up and the liquids required for running and cleaning the equipment. Most consumables needed are offered by the core facility. The customer brings his/her sample ready for the analysis and possible collecting medium if sorting.

Equipment

The FACS core facility in Biomedicum Helsinki harbours three flow cytometers. The BD FACSAria II Cell Sorting System and a BD FACSArray Bioanalyser are located in room B416b and the Accuri C6 in room C206a.

The cell sorter FACSAria II has three lasers (violet 407 nm, blue 488 nm and red 633 nm) and the possibility for multiple color analysis and sorting into desired format; tubes, plates, microscope slides.

The FACSArray has two lasers (yellow 532nm and red 635nm) providing a fast and sensitive system for analysis of proteins and cells in 96-well plate format.

The Accuri C6 has two lasers (blue 488 nm and red 640 nm) and four fluorescence detectors including a selectable lasers module offering the possibility to choose detectors. The Accuri is a fast analyser reading samples as single tubes, 24-tube rack and different plate formats.

The facility provides a computer with flow cytometric softwares for advanced data analyzes.

Biomedicum Functional Genomics Unit (FuGU)



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Location

Institute of Biomedicine
Biomedicum Helsinki 1, B226a1, B227a, B234a1, B520b

Core summary

Biomedicum Functional Genomics Unit (FuGU) provides a wide range of services related to functional genomics. These services cover areas such as genome profiling (microarrays and next-generation sequencing), computational analyses and virus mediated gene silencing and overexpression. We are also housing a genome-wide shRNA library that contains hairpins for 16,000 human and mouse genes each. The unit is located in Biomedicum Helsinki and operates under the national Biocenter Finland infrastructure network.

Access

Service available to all. Served on first-come-first-served basis.

Affiliation

Research Programs Unit, Biocentrum Helsinki, Biocenter Finland

Core Details

For core details, please visit www.helsinki.fi/fugu

Services

GENOME PROFILING

- Transcript and miRNA expression profiling by four microarray systems (Affymetrix, Agilent, Illumina, Nimblegen)
- Copy number profiling by arrayCGH
- Next-generation sequencing (incl. library preparation, template amplification, sequencing)
- Data pre-processing and analyses for microarray and NGS data
- Nucleic acid extraction and QC (Qubit, NanoDrop, Bioanalyzer)

RECOMBINANT VIRUS TECHNOLOGIES

- Lenti- and retroviral particles for gene silencing and expression (regular titer, concentrated)
- Whole human and mouse genome TRC1 libraries, tot. 159.000 shRNA constructs (3-5 per gene), provided as glycerol stock, DNA, or lentiviral particles
- Biosafety tests (p24, RCV)
- Biosafety level 2 space for working with lentiviral particles

Equipment

Agilent Bioanalyzer
NanoDrop single and eight channel equipment
Qubit
Affymetrix GeneChip System
Agilent Scanner and Microarray System
NimbleGen compatible microarray system
Illumina BeadStation

Illumina Genome Analyzer Ix and cBOT
Qiagility robot
Roche 480 LightCycler
TRC1 human and mouse shRNA libraries

Biomedicum Imaging Unit



Director: Elina Ikonen, MD, PhD, Academy Professor
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Location

Institute of Biomedicine
Biomedicum Helsinki 1, offices located in rooms B501a and B117a

Core summary

Biomedicum Imaging Unit (BIU) provides imaging expertise and access to state-of-the-art equipment for light microscopy and preclinical in vivo imaging applications.

Access

All entities, including for-profit organizations.

Affiliation

The Biomedicum Imaging Unit is affiliated with the Institute of Biomedicine, University of Helsinki. It is a multi-site facility operating at Biomedicum Helsinki 1, in the premises of the Institute of Biomedicine, the Research Programs Unit, and the Laboratory Animal Centre.

Core Details

The Biomedicum Imaging Unit provides a comprehensive range of imaging services for both light microscopy and in vivo imaging activities. The equipment currently available at the BIU light microscopy core includes a number of confocal microscopes, a multiphoton microscope with second harmonic generation (SHG) and Coherent anti-Stokes Raman spectroscopy (CARS) modalities, fast widefield microscopes with live cell imaging capabilities, cell based high content screening platform, total internal reflection fluorescence (TIRF) microscope, stochastic optical reconstruction microscopy (STORM) for sub-diffraction resolution, and a number of image post-processing workstations. The in vivo core offers intravital multiphoton microscopy with SHG modality, optical projection tomography (OPT) for 3D reconstruction of embryos and model organisms, and two fluorescence and bioluminescence based preclinical imaging systems. We also offer expertise in magnetic resonance imaging with a 155 mm-bore 4.7 Tesla MRI system capable of fast imaging of rodent models. We provide analysis and data services for user specific applications, and offer software platforms for image restoration and deconvolution, volume and surface reconstructions, and 3–4D animations of biological and biomedical image data.

Services

Light Microscopy Core

- Confocal and widefield live cell microscopy
- Total internal reflection microscopy
- Superresolution microscopy
- Multiphoton, SHG and CARS microscopy
- Cell based high content screening
- Image deconvolution, modelling and analysis

In Vivo Core

- Intravital multiphoton and SHG microscopy
- Optical projection tomography
- Preclinical in vivo fluorescence and bioluminescence imaging

- Magnetic resonance imaging

Equipment

Confocal microscopes

- Leica TCS SP2 AOBS upright scanner
- Leica TCS SP8 AOBS inverted scanner with MP, SHG and CARS modalities
- Zeiss LSM 5 Duo inverted tandem scanner
- Zeiss LSM 780 inverted scanner with FCS modality

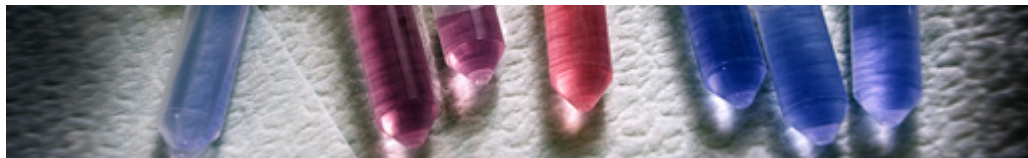
Widefield live-cell microscopes

- Nikon Eclipse Ti-E with TIRF and STORM modalities
- Olympus-TILL Photonics inverted microscope
- Zeiss-3i Stallion HSI inverted microscope

Widefield conventional microscopes

- Olympus Provis AX70 upright microscope
- Zeiss Axiovert 200 inverted microscope

Biomedicum Sequencing Unit (BSU)



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Location

Research Programs Unit
Biomedicum 1 , Room A510

Core summary

The BSU core facility provides services in sequencing of customer's DNA templates (plasmid DNA, PCR products). Sequencing reactions are performed at the unit using Applied Biosystems Big Dye Terminator (v1.1) kit for PCR and analysed by Applied Biosystems ABI Prism 3130xl 16 capillary Genetic Analyzer. The Facility offers M13-F, M13-R, T7, T3 and SP6 primers, whereas special primers should be provided by the customer.

Access

The unit services research groups at the campus including Biomedicum Helsinki, Haartman Institute, the hospital researchers and Aalto university.

Core Details

BSU sequences customer's DNA templates (plasmid DNA, PCR products) by using Applied Biosystems Big Dye Terminator (v1.1) kit for PCR and Applied Biosystems ABI Prism 3130xl 16 capillary Genetic Analyzer for analyzing. The Facility offers M13-F, M13-R, T7, T3 and SP6 primers, if special primers are required they should be provided by the customer.

Required amounts of templates: Plasmid-DNA 500 ng - 1 µg (100 ng/1kb) PCR-products: 100-200 bp 5 ng 200-500 bp 10 ng 500 -1000 bp 20 ng 2 kb-3kb 50 ng 3.2 pmol primer per reaction Add deionized water to bring total volume of 12 µl, When customer wants to use the primers provided, the total volume should be 11 µl.

Results will be available at least earliest the next morning, if samples are brought before 9 am.

Equipment

Applied Biosystems ABI Prism 3130xl 16 capillary Genetic Analyzer.

Biomedicum Stem Cell Center (BSCC)



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Location

Institute of Clinical Medicine
Biomedicum Helsinki, C507b

Core summary

Biomedicum stem cell centre (BSCC) is focused on human embryonic stem cells (hESC) and human induced pluripotent stem cells (hiPSC). BSCC provides technical help and training in the maintaining and characterization of human pluripotent stem cells. The core also offers services for induction of patient specific hiPSC to academic and for-profit organizations. In addition BSCC distributes locally derived human pluripotent stem cell lines to other researchers.

Access

All academic and for-profit organizations in Finland and abroad.

Priority is given to academic research groups.

Affiliation

Research Programs Unit, Molecular Neurology, Biomedicum Stem Cell Centre, University of Helsinki, Helsinki, Finland

Children's Hospital, Helsinki University Central Hospital, Helsinki, Finland

Core Details

BSCC is a comprehensive provider of human pluripotent stem cell services in Meilahti campus of the University of Helsinki. The unit was established in 2009 and is currently a part of the Biocenter Finland sponsored national infrastructure platform for stem cells and biomaterials.

BSCC provides services related to human embryonic and induced pluripotent stem cells. These services include:

- Provision of well-characterized human pluripotent stem cell lines upon request
- High quality, reliable, and efficient reprogramming of patient specific cell lines using integrative (retroviruses) or non-integrative (Sendai viruses) delivering methods
- Support for researchers to conduct pluripotent stem cell research.
- Teratoma generation, a golden standard for demonstrating pluripotency of stem cell lines
- Live long-term visualization of cultured cells using Cell-IQ,
- Tailored training packages for researchers in human pluripotent stem cell technology

Services

Provision of human pluripotent cells. Human pluripotent stem cells derived locally are provided upon request. A material transfer agreement has to be made with the provider.

Reprogramming of patient specific cell lines provided by the client. BSCC offers generation of hiPSC from cells provided by the client using integrative (retroviruses) or non-integrative (Sendai virus) delivery methods. Donor cell lines include: fibroblasts, myoblasts, mesenchymal stem cells, and peripheral blood cells. Before hiPSC induction can be initiated from patient cells, the client needs to obtain ethical approval for the experiment from the Coordinating Ethics Committee of HUS (Helsinki and Uusimaa Hospital District).

Providing support for researchers to conduct stem cell research. The core offers **training courses:**

Basic, Suitable for the users without prior working experience with human pluripotent stem cells

Intermediate, Suitable for the user with some knowledge in work with human pluripotent stem cells

Advanced, Includes hands-on training in iPS cell induction, culture and characterization

Teratoma generation. Teratoma generation in immunodeficient mice from human pluripotent stem cells serve as a golden standard for demonstrating pluripotency.

Live long-term visualization of cultured cells. CELL-IQ is a fully integrated continuous live cell imaging and analysis platform with contrast microscopy and three different fluorescent filters (GFP, Cy3, and Cy5). CellIQ platform can be used for the analysis of cell growth, death, migration, differentiation, and expression of reporter genes or cell surface antigens

Equipment

A fully equipped cell culture room dedicated to human pluripotent stem cells (C505a2) containing:

- Four Bio-Safety hoods
- Five incubators
- Two phase contrast microscopes

A fully equipped P2-level cell culture room dedicated to work with primary cell lines and iPSC induction (C509b) containing:

- Four Bio-Safety hoods
 - Two incubators
 - One phase contrast microscope
- Essential equipment for transfection, clone picking, and cryopreservation
- Sanyo -150oC freezer
- Appropriate computer support for record keeping

CELL-IQ for continuous live cell imaging (room C515b) including:

- Analysis protocols that can be modified free of charge using the Cell-IQ Analysis program on the computers in room C515b
- Support provided by CM Technologies
- Custom made advanced analysis protocols available for purchasing from CM Technologies

FIMM Genomics



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Location

Institute for Molecular Medicine Finland, FIMM
Biomedicum Helsinki 2U, 2nd floor, F wing, Tukholmankatu 8, Helsinki

Core summary

Services of the Genomics unit include SNP genotyping and CNV analysis, microsatellite, gene expression and DNA methylation analysis, as well as cell line authentication. Project collaboration can also include e.g. project planning, laboratory analysis, quality control, and statistical analysis of the results. We analyze both human samples and samples from other organisms, and are also flexible for different project sizes, with emphasis on quality control both in laboratory and in data handling.

Access

National and international academic community, also commercial projects are possible.
We operate on first come first served basis.
You can also contact us using the [project contact form](#)

Affiliation

University of Helsinki, FIMM

Core Details

We offer SNP genotyping and CNV analysis services on Illumina, Sequenom (iPLEX), Affymetrix, and Roche Lightcycler (TaqMan chemistry) platforms. Gene expression analysis is currently available on Illumina platform, and DNA methylation is studied in our lab on both Illumina and Sequenom (EpiTYPER) platforms. Microsatellite analysis is performed on ABI 3730XL platform. For Illumina applications we provide all available whole genome and custom or targeted BeadChip formats, including e.g. GoldenGate and Infinium chemistries for SNP analysis, and Direct Hybridization for gene expression studies, in addition to human methylation chips. Our cell line authentication service currently utilizes Promega StemElite kits with STR markers. Mouse speed congenic tests are performed with Illumina Mouse MD Linkage set. We are not restricted to analyzing human samples, but other organisms with available array types or enough sequence information for assay design are also welcome.

We emphasize quality control both in laboratory and in data handling, with e.g. standardized laboratory workflows, use of electronic laboratory notebook, and in-house developed database tools to ensure reliability of our services. We are also flexible for projects of various kinds and different sizes. In 2011, the Genomics Unit handled approximately 70 projects.

Services

- SNP genotyping and CNV analysis
- Gene expression analysis
- DNA methylation analysis
- Microsatellite genotyping, including mouse speed congenics testing
- Cell line authentication
- Data handling services
- Project planning
- Statistical analysis

Equipment

- Illumina iScan
- Illumina BeadStation
- Sequenom MassArray Compact (2)
- Sequenom Nanodispenser
- Roche Light Cycler 480 II
- ABI 3730XL
- Tecan Genesis
- Robbins Hydra (2)
- Beckman Multimek
- ABI 9700 (5)
- Agilent Bioanalyzer
- Nanodrop
- Centrifuges, ovens etc. other basic lab equipment
- Database & Electronic laboratory notebook

FIMM High Throughput Biomedicine Unit (Chemical Biology)



Director: Krister Wennerberg, PhD, head of High Throughput Biomedicine Unit

Contact: Jani Saarela

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Web: <http://www.fimm.fi/en/technologycentre/htb/>

Location

Institute for Molecular Medicine Finland FIMM

Biomedicum Helsinki 2U (D201a), Tukholmankatu 8, FIN-00290 Helsinki, Finland

Core summary

The High Throughput Biomedicine Unit provides high-throughput screening approaches of many types: cell-based and biochemical screens using targeted or large chemically diverse libraries, molecular probe discovery, biological profiling using libraries of known bioactives, drug repositioning, and personalized medicine screening (drug resistance and sensitivity) using approved and investigational drugs.

Access

All entities.

When considering a new project, please fill out and submit the following [web-form](#)

Affiliation

University of Helsinki, Institute for Molecular Medicine Finland (FIMM), FIMM Technology Centre, Biocenter Finland, Drug Discovery and Chemical Biology (DDCB)

Core Details

The Chemical Biology unit maintains many collections of chemical libraries and houses instruments needed to process large amounts of samples in high-throughput fashion. Our platforms include plate-based screening of cells and biochemical screens. We support both plate reader assays and high-content imaging. We also provide expertise in assay development and optimization. Our chemical database is maintained and the generated data analyzed in specialized Dotmatics-software. The High Throughput Chemical Biology Unit provides researchers with access to high throughput screening of chemical libraries (including chemical diversity, natural compound, known bioactive and approved drug collections), and other screening collections. We also provide research groups assay-ready chemicals on plates for their experiments. From the 300 oncology set drugs we provide larger amounts of chemicals (5 ul of 1000 x concentration) for proof-of-principle experiments with information of the recommended concentration of usage. The chemicals can be cherry-picked from our libraries using acoustic dispensing. The unit maintains a chemical collection of 140 000 compounds that is ready to use for screening. The chemical collections can be divided into two major classes: drugs & known bioactives and chemical diversity libraries. The drugs and known bioactives are ideal for biological profiling, drug repositioning, and personalized medicine-type screens while the larger chemical diversity collections are best suited for molecular probe discovery screening.

Services

FIMM HTB Chemical biology services

- Chemical screening
 - High throughput screening
 - Assay development guidance
 - Assay miniaturization
 - Virtual screening (available via collaborators)
- FIMM HTB Robotics and Lab automation

- Automated equipment for bioassays and miniaturized assays (nl scale assays)
FIMM HTB High throughput microscopy
- ScanR
- Incucyte
- Acumen high content imager
FIMM HTB Chemical distribution
- Chemical distribution
- 140000 screening-ready chemicals available for research groups in Finland
- user will be able to request pre-determined or cherry-picked chemical collection in assay-ready format (analogs of a compound of interest, hits from a virtual screen, compounds inhibiting specific pathway(s))
- chemical repository publicly searchable through web interface
- Distribution of inhibitors from a national chemical library to the bench scientist
- systematic, best-in-class, 300 oncology drugs available
- information: what concentration to use, where to order
- affordable
- 5-10 ul of a 1000-10000 fold stock
FIMM HTB Drug sensitivity testing
- Refractory leukemia drug profiling
- drug sensitivity and resistance testing in cell lines
FIMM HTS1
- Self service unit in Biomedicum 1

Equipment

- BeckmanCoulter integrated robotic system including e.g. Motoman (robotic arm), Biomek FXP (pipetting robot), Paradigm (plate reader), and Cytomat 24 MPH (cell incubator)
 - BMG Pherastar FS -plate reader (FP, FI, a-screen, HTRF, Lanthascreen, BRET2+, luminescence, absorbance)
 - Labcyte Echo 550 (acoustic dispenser) integrated into Labcyte Access robotic system
 - BioTek EL406 (plate washer/dispenser)
 - Multidrop Combi (dispenser (*3))
 - Multidrop Combi nl (dispenser)
 - Plateloc Velocity 11 (plate sealer)
 - Nexus XPeel (plate peeler)
 - Agilent VSpin (centrifuge)
 - Roylan Developments StoragePod (chemical storage system)
 - Olympus ScanR (high content screening system)
 - Incucyte FLR and Incucyte HD (live cell imaging)
- Other small equipment (plate shaker, cell incubators, centrifuges, etc) Located in Biomedicum 1 self-service facility: BD Biosciences FACSArray (flow cytometry), PerkinElmer Topcount (plate reader), BMG Fluostar Optima (plate reader), TTP Labtech Acumen eX3 (high content imager)

Libraries: Approved and investigational drugs, known bioactives, natural products:

- 300 FIMM oncology collection: approved and emerging investigational cancer drugs
 - 2 000+640 Microsource and ENZO, including FDA approved drug collection and natural products
 - 446 NIH Clinical collection
 - 2 440 NCI (National Cancer Institute) collections
 - 1 280 Sigma LOPAC1280 drug-like molecules
 - 1 120 Tocriscreen Mini bioactives
- Combinatorial chemistry:
- 30 000 ChemBridge DiverSet and CNS-Set
 - 6 000 Tripos Structures
 - 2* 25 000 ChemDiv diversity

- 30 000 Specs Consortium Collection
- 15 614 ChemDiv Peptidomimetics

FIMM High Throughput Biomedicine Unit (RNAi)



Director: Krister Wennerberg, FIMM-EMBL group leader, head of High Throughput Biomedicine

Contact: Carina von Schantz-Fant, PhD

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Web: <http://www.fimm.fi/en/technologycentre/htb/>

Location

Institute for Molecular Medicine Finland FIMM

Biomedicum Helsinki 2U (D201a), Tukholmankatu 8, FIN-00290 Helsinki, Finland

Core summary

FIMM High Throughput RNAi facility is a high-throughput screening unit dedicated to genome-wide or targeted siRNA screening. The core provides expertise in robotics, automation, cell-based and biochemical assay development plus the instrumentation, liquid handling systems, and siRNA libraries necessary for screening. Access to the instrumentation – including liquid handling systems, plate readers, and the high content imager/automated microscope – is also available to investigators for non-screening purposes.

The facility is staffed with a team of highly trained scientists with extensive experience in robotic assays and high throughput screening.

Access

All entities

When considering a new project, please fill out and submit the following [web-form](#)

Affiliation

FIMM Technology Centre, High Throughput Biomedicine, University of Helsinki
High Throughput Biomedicine, University of Helsinki

Core Details

The core supports automated screening of cells cultured in 384- or 96-plate formats and can be applied to multiple investigator-initiated applications throughout the academic community.

The core maintains a genome-wide collection of siRNAs and houses instruments needed to process a large amount of samples in high-throughput fashion. Our platforms include both plate-based and cell microarray-based screening, enabling genome-wide, sub-library or candidate gene screens. We support both plate reader assays (luminescence, fluorescence, absorbance) and high-content microscopy. We also provide expertise in assay development and optimization.

In addition to plate-based screening, we perform and develop various screening techniques in microarray format and provide a variety of printing services, such as serum, oligo and plasmid printing.

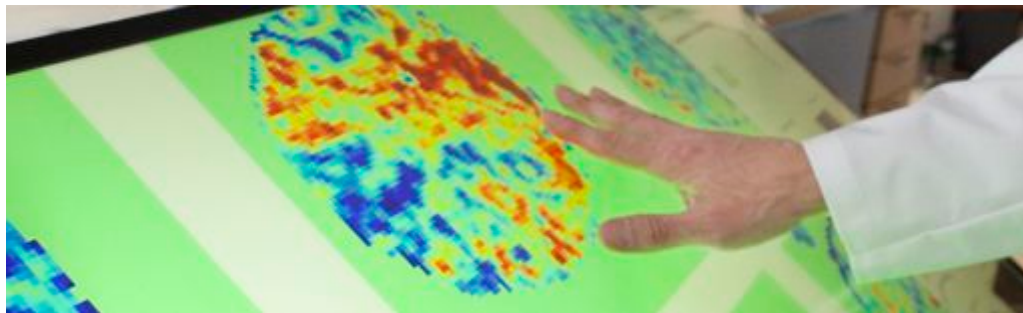
Services

- Assay development
- siRNA library screens in human cells
- miRNA screens in human cells
- Protein lysate microarray (PLA) screens
- Microarray printing (including serum, oligo, plasmid)
- High content microscopy

Equipment

- BeckmanCoulter intergrated robotic system including e.g. Motoman robotic arm, Biomek FXp pipetting robot, Paradigm plate reader, and Cytomat 24 MPH -cell incubator
- Labcyte Echo 550 acoustic dispenser integrated into Labcyte Access robotic system
- BMG Pherastar FS plate reader
- BioTek EL406 plate washer/dispenser
- Multidrop Combi dispenser (*3)
- Multidrop Combi nl dispenser
- Plateloc Velocity 11 -plate sealer
- Nexus XPeel -plate peeler
- Agilent V-spin -centrifuge
- Roylan developments StoragePod –chemical storage system
- Olympus ScanR high content screening microscope and analysis software
- Incucyte FLR, Incucyte HD (live cell imaging)
- The Aushon Biosystems 2470 Arrayer
- Other small equipment (plate shaker, cell incubators, centrifuges, etc)
- the Ambion Silencer® Select Human siRNA Library V4

FIMM Metabolomics Unit



Director: Dr.Vidya Velagapudi, Adjunct Professor

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Email: Vidya.velagapudi (at) fimm.fi

Web: <http://www.fimm.fi/en/technologycentre/metabolomics/>

Location

Institute for Molecular Medicine Finland FIMM

Biomedicum 2U, Room 204E

Core summary

Metabolomics systematically studies the metabolome, i.e., small molecules in cells, tissues and biofluids. The mission is to identify metabolite biomarkers in several complex human diseases, which will help to predict and prevent the disease at an early stage. We aim to conduct quantitative and high-throughput targeted metabolite profiling of any biological sample. Our services and technologies can be applied to research projects in many ways and we will work with you to fit them to your needs.

Access

All entities

First-come, first-served basis

Affiliation

FIMM Technology Centre,

Metabolomics Unit,

University of Helsinki

Core Details

Currently we are offering services in high-throughput targeted quantitative metabolite profiling in biological samples.

Our developed method includes fast and single chromatographic conditions (15 min including equilibration time), requires minimal sample amount (50-100 μ L), offers high sensitivity for trace level applications (pmol), and a wide coverage of individual metabolite concentrations in three orders of magnitude.

High degree of selectivity provided by multiple reaction monitoring (MRM), quantifies 94 polar metabolites from 15 different classes (neurotransmitters, sugars, organic compounds, nucleotides, bile acids, amino acids, central carbon metabolites, TCA cycle intermediates, urea cycle intermediates, steroid metabolic intermediates etc) with high quality of data analysis by using labeled internal standards.

Our developed method has an ability to detect large number of polar metabolites in wide range of concentrations in a single analysis.

This targeted metabolite profiling method has high potential for the discovery of the biomarkers for the disease risk, to meet the clinical demands.

The list of metabolites

Services

Currently we are offering the following services to our customers,

High-throughput targeted quantitative metabolomics analysis of

- human serum/plasma
- mouse serum/plasma
- cell culture supernatants
- cell lysates etc
- tissues (mrain, adipose, muscle, liver, heart, kidney etc)
- C.elegans

Equipment

Robot:Hamilton's Microlab StarLine liquid handling system is used for automatic sample preparation, to increase the throughput and decrease the inter-assay variations.

Mass spectrometry: The extracted metabolites are separated using Waters Acquity ultra high-pressure liquid chromatography (UPLC) by utilizing hydrophilic interaction liquid chromatography (HILIC) column for better separation of polar metabolites. Metabolites are analysed using Waters XEVO-TQ-S triple quadrupole mass spectrometry with electrospray ionization (ESI) by employing multiple reaction monitoring (MRM) strategy in both positive and negative polarities. The raw data is imported and processed using TargetLynx software. Metabolite quantification is done using both labeled internal and external calibration curves.

FIMM TMA Facility



Director: Johan Lundin, Research Director

Contact: Tiina Vesterinen

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Email: [tiina.vesterinen \(at\) fimm.fi](mailto:tiina.vesterinen@fimm.fi)

Web: http://www.fimm.fi/en/biobanking/tma_image_analysis/

Location

FIMM

Biomedicum Helsinki 2, 3rd floor, G-wing

Core summary

Tissue microarray technology (TMA) allows simultaneous analysis of large number of cases under standardized laboratory and evaluation conditions without significant damage to the original tissue block. FIMM TMA facility offers designing and preparation of TMA blocks from paraffin embedded tissues, sectioning of TMA and other paraffin embedded tissue blocks, and staining of the sectioned slides histochemically and/or by using immunohistochemical techniques.

Access

All

Affiliation

FIMM

Core Details

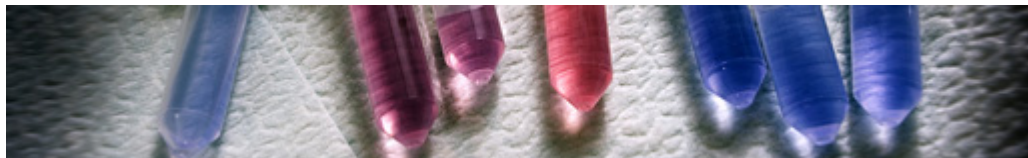
Services

- Designing and preparing TMA blocks from paraffin embedded tissues collected by the customer
- Sectioning of TMA and other paraffin embedded tissue blocks
- Staining the sectioned slides histochemically and/or by immunohistochemical techniques

Equipment

Tissue microarrays are designed and punched with a Minicore instrument and further processed with motorized microtome (Microm HM 355S + STS system). Thermo Autostainer is used for immunohistochemical stainings.

FIMM Sequencing Unit



Director: Pekka Ellonen, Head of laboratory
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Email: pekka.ellonen (at) fimm.fi
Web: <http://www.fimm.fi/en/technologycentre/sequencing/>

Location

Institute for Molecular Medicine Finland, FIMM
Biomedicum Helsinki 2U, 2nd floor, Tukholmankatu 8, FIN-00290 Helsinki, Finland

Core summary

We are serving scientific community with capillary (Sanger) and next generation sequencing (NGS) expertise. Our service portfolio includes whole genome sequencing (WGS), exome sequencing, custom targeted re-sequencing and ultra-deep amplicon sequencing. Established services are available also for transcriptomes and smallRNA profiling. We-lab services are complemented with bioinformatic pipelines to support your science. Detailed bioinformatics support is available from *TC Bioinformatics Unit*.

Access

All entities

Affiliation

FIMM Technology Centre, Sequencing unit, University of Helsinki

Core Details

FIMM sequencing unit provides state-of-the-art DNA and RNA sequencing services for scientific community.

Virtually any nucleic acid specimen can be converted into a sequencing library and analyzed using our platforms. For the next generation sequencing we utilize currently Illumina's massively parallel sequencing platforms (Illumina HiSeq2000, Illumina HiSeq1000, Illumina MiSeq). Illumina's technology provides paired-end sequencing of the samples which play a key role in detecting genomic level structural variation or fusion genes in the transcriptome. The multi-read technology also enables powerful multiplexing scenarios further optimizing the feasibility of NGS sequencing.

HiSeq2000 platform enables feasible human genome-scale sequencing efforts for your research. Provides ~300 Gigabases per a two week run.

HiSeq1000 platform will enable human genome-scale sequencing in 24h.

Illumina MiSeq is a fully integrated personal sequencer with lighter capacity of ~2 Gigabases. It provides automated data analysis workflows and higher speed. MiSeq enables targeted mutation panels, ultra deep amplicon sequencing as well as smallRNA sequencing experiments

For classic capillary sequencing the servicesly on ABI3730xl DNA Analyzer capable of analyzing >1600 reactions per day.

Services

Our NGS service portfolio includes project planning, assay design, quality control of samples, preparation of sequencing libraries, quality control of libraries, sequencing with suitable platform, quality control of the data and primary bioinformatic analysis of the data.

Capillary sequencing services are provided for various validation purposes. Two service modes are available for capillary sequencing: Full Service Sequencing and Ready-to-Run sequencing depending on the the service level.

Equipment

- Capillary sequencing: ABI3730xl DNA Analyzer, Applied Biosystems
- Next generation sequencing: Illumina HiSeq2000, Illumina HiSeq1000, Illumina MiSeq
- Library QC: Agilent Bioanalyzer, Caliper GX, Caliper XT, Qubit

Genome Biology Unit



Director: Tea Vallenius MD, PhD, Academy Research Fellow

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Web: <http://www.biocenter.helsinki.fi/bi/gbu/>

Location

Research Programs Unit

Biomedicum Helsinki 1 (B319b), Haartmaninkatu 8, 00290 Helsinki, Finland

Core summary

Genome Biology Unit (GBU) provides genome-scale expression constructs and scanning services. The reagent collection contains full-length cDNAs (MGC collection) consisting of approximately 29 000 clones and a library of open reading frames (ORFeome collaboration) consisting of approximately 18 600 fully verified clones. The ORF library clones are available in Gateway-based entry vectors and we provide cloning service into various Gateway destination vectors. The unit is located in Biomedicum Helsinki 1. GBU operates under the national Biocenter Finland infrastructure network (Genome wide methods GWM) and these services are available for Biocenter Finland researchers. Scanning service involves automated digital imaging of immunohistochemistry and fluorescence slides using 3D HISTECH Panoramic 250 Flash II scanner.

Access

Clones and cloning for Biocenter Finland researchers, Slide scanning service for all entities (priority for Faculty of Medicine)

Affiliation

Research Programs Unit/Faculty of Medicine, Biocenter Finland (BF), Biocentrum Helsinki (BCH)

Core Details

For core details please visit <http://www.biocenter.helsinki.fi/bi/gbu>

Main services available: ORF/cDNA clones, ORF cloning service, digital slide scanning.

Keywords: ORF, cDNA, Gateway, cloning, slide scanning

Haartman Institute Sequencing Unit



Director: Paula Kristo, Head of the Laboratory

Contact: Paula Kristo

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Email: paula.kristo (at) helsinki.fi

Web: <http://www.hi.helsinki.fi/english/>

Location

Haartman Institute
BK 132

Core summary

Provide DNA Sequencing with ABI Big Dye 3.1 Chemistry on ABI 3130 xl capillary machine.

Access

All entities including for-profit organizations.

Core Details

Customer templates (plasmid/PCR fragments) sequenced with ABI Big Dye 3.1 chemistry run on ABI 3130 xl machine. Exo/Sap purification is possible. Service is fast, the 'same day' service possible when needed.

Services

- Sequencing plamid/PCR templates with customer primers
- Commercial primers provided: M13F, M13R, T7, T3, Sp6

Equipment

ABI 3130 xl

The Helsinki Zebrafish Facility



Director: Pertti Panula professor
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Web: http://www.helsinki.fi/neurosci/research/zebra_fish_unit.html

Location

Institute of Biomedicine and Neuroscience Center
Biomedicum 2, basement floor

Core summary

Fast embryonic development, transparent embryos, and the availability of a large number of mutants have rendered zebrafish one of the favorite models in developmental biology. Rapidly increasing knowledge of the zebrafish genome has also enabled efficient identification of important genes in this species. Whereas most studies thus far have concentrated on identifying early developmental phenotypes from mutation screens and development of transgenic models, the research carried out at the Neuroscience Center focuses on new methods utilizing high-resolution confocal and two-photon imaging of developing neuronal networks, and automated quantitative behavioural analysis. One of the goals is to extend efficient phenotype analysis to a phase in which the CNS produces complex behaviours. Current projects aim at identifying the roles of newly identified genes, the mutations of which produce severe human diseases. Models of human diseases related to disorders of the aminergic neuronal systems are also being developed. The methods used include gene cloning and expression analysis, translation inhibition, developmental analysis using microscopy and gene arrays, high-resolution imaging, and automated behavioural techniques. Recent addition of aquarium space allows genetic studies and maintenance of mutant fish strains.

Access

All groups within the University of Helsinki, according to agreement to outside organisations

Affiliation

Institute of Biomedicine

Neuroscience Center

Core Details

Service available

Courses arranged on a regular basis

Services

Fast embryonic development, transparent embryos, and the availability of a large number of mutants have rendered zebrafish one of the favorite models in developmental biology. Rapidly increasing knowledge of the zebrafish genome has also enabled efficient identification of important genes in this species. Whereas most studies thus far have concentrated on identifying early developmental phenotypes from mutation screens and development of transgenic models, the research carried out at the Neuroscience Center focuses on new methods utilizing high-resolution confocal and two-photon imaging of developing neuronal networks, and automated quantitative behavioural analysis. One of the goals is to extend efficient phenotype analysis to a phase in which the CNS produces complex behaviours. Current projects aim at identifying the roles of newly identified genes, the mutations of which produce severe human diseases. Models of human diseases related to disorders of the aminergic neuronal systems are also being developed. The methods used include gene cloning and expression analysis, translation inhibition, developmental analysis using

microscopy and gene arrays, high-resolution imaging, and automated behavioural techniques. Recent addition of aquarium space allows genetic studies and maintenance of mutant fish strains.

Equipment

- Fish racks for 40 000 adult fish
- 3 injection stations
- Automated behavioral analysis
- Fast cameras (2) for motor analysis

Meilahti Clinical Proteomics Core Facility



Director: Marc Baumann, Laboratory director
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Phone: +358 9 191 25200
Email: marc.baumann (at) helsinki.fi
Web: <http://research.med.helsinki.fi/corefacilities/proteinchem/courses.htm>

Location

Institute of Biomedicine
Biomedicum Helsinki

Core summary

Proteomics is an essential technology for biosciences and underpins strategically important areas in academia and biotechnology, enabling characterisation and temporal and spatial quantitation of proteins at various locations in different biological systems. It also affords measurement and discovery of post-translational protein modifications, protein-protein interactions and protein properties, which are amongst the most sought after applications. The Meilahti Clinical Proteomics Center includes a Basic Unit for Proteomics studies (headed by Adj. Prof. Marc Baumann), a Unit for Glycoproteomics (Headed by Prof. Risto Renkonen).

Access

Our Services are available to all national and international research communities and industry. Services are based on pay-for-services and scientific collaborative projects.

The Unit hosts national and international visiting scientists who can work on their own proteomic projects for a few days to several months (laboratory hotel).

Affiliation

The Unit is part of the national ProtMetNet (protmet.net) consortium and several international EU and ESF guided research consortia.

Core Details

The Unit provides Proteomic Services nationally and also internationally (incl. Medical Companies) in protein/peptide/carbohydrate identification, characterization and analysis by 1- and 2DE, 1- and 2D-LC; nano- and micro-LC (Shotgun, MudPit); preparative and analytical electrophoresis (IEF, Blue-native, SDS-PAGE); protein complex analysis and interactome; high-throughput peptide array synthesis and analysis; protein epitope mapping by Pep-Map; ICAT, ITRAQ, SILAC, Dimethys, DIGE analyses; data mining and data-base search; *in-silico* protein modelling with molecular docking; tissue Imaging by MS; nano- and microstructured protein/peptide chip analysis and development incl. microfluidistic chips and automated 2-DE; high-throughput protein analysis by robotics for large-scale clinical sample analysis; PTM analysis; Clin-Prot technology (magnetic affinity tag analysis). The Unit is specialized in Clinical Proteomics.

The Unit has a strong background in teaching. It hosts every year several national and international courses on proteomics (hands-on and lecture courses). The Unit is also in charge of the TransMed Proteomics - Metabolomics education at the Medical Faculty of University of Helsinki. Every year the Unit organizes a special seminar on hot-topics in Proteomics with invited international and national top speakers.

Services

Services include:

- gel-based and gel-free proteome analysis (proteomics)
- protein identification

- protein & peptide sequencing by MS
- protein characterization
- label free and multiplex quantification
- PTM analysis by MS
- MALDI Tissue, Cell, Bacteria and Viral Imaging (IMS, Imaging Mass Spectrometry)
- glycoproteomics and carbohydrate analysis
- Laser Capture Microdissection MS (LCM-MS)
- peptide arrays
- pepspot epitope mapping
- structural 3D modeling services
- training by lab courses, lectures and seminars

In addition, we help you to plan clinical proteomics projects, sample collection (e.g. from tissue specimens, blood, urine, CSF, or any other body fluids), statistical analyses and data validation.

Equipment

Available Instrumentation: two Waters Synapt G2-S Q-ToF High Resolution mass spectrometers equipped with CID/ETD fragmentation, Ionmobility and MALDI Ion Source (1000 Hz); High Resolution and High Speed MALDI-MS (Bruker UltraFleXtreme (2000Hz); Ion-Trap MS (Bruker Esquire 6000); Proteineer DP high-throughput protein screening robot (Gilson/Bruker); several 1- and 2D gel electrophoresis instruments; nano-LC (Bruker/Proxeon), Waters Aquity 2D nano-LC, several micro-LC systems (Dionex/GE Healthcare/Waters); preparative GE instruments (BioRad); micro-Rotaphor preparative IEF instrument (BioRad); preparative LC instruments (BioRad); 3-D molecular modelling station (HP/Accelrys); Multi-Pep (Intavis) and ABI 433 large scale peptide synthesizers; Pep-Spot Array spotter (Intavis).

MIBI Cell Biobanking



Director: Aija Kyttälä
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Location

THL & FIMM
Biomedicum 2, FP11b

Core summary

In 2011, Institute for Molecular Medicine Finland (FIMM) and National Institute for Health and Welfare (THL) joined forces and created a state-of-the-art biobanking facility, the Meilahti Integrated Biobank Infrastructure. MIBI offers wide variety of biobanking services: assistance in biobank project planning, centralized sample storage service, biobank informatics, high-quality DNA and RNA extraction and handling together with cell and tissue biobanking and molecular pathology facilities.

Access

All

Affiliation

THL & FIMM

Core Details

MIBI provides services for collection and storage of cell samples and develops methods for their use in research. Current services include establishment of fibroblasts cultures from skin biopsies, production of immortalized B-lymphocyte lines from blood and extraction of peripheral blood mononuclear cells. Cell lines are also established and stored from tumors to aid clinical research and personalized medicine.

Services

- Establishment of fibroblasts cultures from skin biopsies
- Production of immortalized B-lymphocyte lines from blood
- Extraction of peripheral blood mononuclear cells

Equipment

MIBI DNA Biobanking



Director: Päivi Laiho
Contact: Päivi Laiho
Phone: 029 524 6995
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Web: <http://www.fimm.fi/en/biobanking/MIBI/>

Location

THL & FIMM
Biomedicum 2, FP11b

Core summary

In 2011, Institute for Molecular Medicine Finland (FIMM) and National Institute for Health and Welfare (THL) joined forces and created a state-of-the-art biobanking facility, the Meilahti Integrated Biobank Infrastructure. MIBI offers wide variety of biobanking services: assistance in biobank project planning, centralized sample storage service, biobank informatics, high-quality DNA and RNA extraction and handling together with cell and tissue biobanking and molecular pathology facilities.

Access

All

Affiliation

FIMM & THL

Core Details

MIBI is a joint sample management laboratory of FIMM and THL. It provides projects and researchers with professional sample management services, logistics and storage facilities.

Services

MIBI offers automated DNA extraction service from different starting materials, as well as automated DNA aliquoting including normalization and quality control.

Equipment

MIBI has two nucleic acid extraction robots (Chemagic MSM1 instruments) and some smaller instruments for DNA quantity and quality checking (NanoDrop, PicoGreen). Liquid handling is performed with Tecan Genesis and Freedom EVO instruments.

MIBI Sample Storage



Director: Kimmo Pitkänen, Head of Development
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Email: [tiina.vesterinen \(at\) fimm.fi](mailto:tiina.vesterinen@fimm.fi)
Web: <http://www.fimm.fi/en/biobanking/MIBI/>

Location

FIMM and THL
Biomedicum Helsinki 2, basement and P-floor

Core summary

In 2011, Institute for Molecular Medicine Finland (FIMM) and National Institute for Health and Welfare (THL) joined forces and created a state-of-the-art biobanking facility, the Meilahti Integrated Biobank Infrastructure. MIBI offers full-service biobanking capabilities, including sample storage and retrieval service.

Access

All

Affiliation

FIMM and THL

Core Details

MIBI has a liquid nitrogen vapor phase based sample storage facility which provides low-cost, secure and controlled storage of samples. In addition to LN₂, samples can be stored at -20°C, -80°C or at room temperature when appropriate. To manage all the sample data, MIBI uses in-house developed LIMS system called SamWise which governs all the steps of the sample flow.

Services

Sample storage at different temperatures.

Equipment

Sample storage is based on five liquid nitrogen based freezers that can store over 350 000 cryovials (2 ml). MIBI has also traditional freezers (-20°C and -80°C) and RT storage space which can be used when appropriate.

Rodent phenotyping and in vivo experimentation unit – Rofe



Director: Professor Esa Korpi, MD, PhD
Contact: Anni-Maija Linden, PhD
Phone: +358-9-191-25335
Email: rofe-manager (at) helsinki.fi
Web: <http://www.biomed.helsinki.fi/research/services/rofe/>

Location

Biomedicum Helsinki, University of Helsinki
Haartmaninkatu 8, 00290 Helsinki

Core summary

The rodent phenotyping and in vivo experimentation unit (Rofe) offers services for research related to various disease models and rodent phenotyping.

Access

Service is available for academic and industrial users.

Affiliation

Institute of Biomedicine, Laboratory Animal Centre

Core Details

Rofe offers services for research related to disease models of psychiatric disorders, integrative neurophysiology, cardiovascular and metabolic testing. In addition, Rofe has equipment and methodology for analysis of locomotor activity and motor coordination as well as sensory, emotional and cognitive functions.

Services

Please see our website for the list of services. Contact the core for more detailed descriptions of the methods available. The researcher can choose to use the equipment independently after training offered by the core or to obtain service through negotiations.

Updated price list is available on the website.

Equipment

Please see our website for the list of equipment and methodology.

Systems Biology Unit



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Web: <http://www.ltdk.helsinki.fi/sysbio/>

Location

Research Programs Unit
Biomedicum Helsinki, B524a,b

Core summary

Systems Biology Unit (SBU) provides enabling technologies for large-scale, genome-scale biological experiments. The SBU services include experimental design, data analysis and visualization of biological data, as well as bioinformatics infrastructure and method development, deployment, consultation and training.

Access

Most of the SBU services (experimental design, analysis, consultation) are directed to biogroups with little computational skills. Some services (software) are for professional bioinformaticians.

SBU prioritizes, if necessary, Finnish customers.

Affiliation

SBU is located at Biomedicum Helsinki and belongs to the Research Programs Unit.

Core Details

With the advent of high-throughput measurement technologies, such as deep sequencing methodologies, microarrays and automated imaging techniques, computational methods have become an integral part of biomedical research. Furthermore, comprehensive and reliable characterization of complex diseases, such as cancers, require genome-scale measurements from several levels including DNA, transcriptome, proteomics, epigenetics and clinical. Translation of these data into knowledge and medical benefits requires systems biology, which is an interdisciplinary effort to gain understanding of the function and control of biological processes using mathematical methods and statistical experimental design principles.

Systems biology unit (SBU) offers a wide variety of bioinformatics and computational analysis related services. These include high-throughput data analysis services (e.g., gene, exon, SNP, array-CGH, protein microarrays, mass spectrometry, high-throughput imaging, ChIP-seq and RNA-seq) and a data analysis infrastructure ([Anduril](#)). The Anduril infrastructure is freely available for the Finnish research community (with training). The SBU also conducts customized projects such as identifying motifs, building web services and consultation.

SBU is coordinated by Dr. Sampsa Hautaniemi who is the coordinator for Biocenter Finland bioinformatics technology platform, which provides a large variety of bioinformatics services to the bioscience community in Finland. Full list of services provided by SBU and bioinformatics network is available at <http://www.biocenter.fi/index.php?page=bioinformatics>. SBU also maintains and coordinates the [bioinformatics helpdesk](#), which is the contact point for the Finnish research community in all matters concerning bioinformatics services.

Services

The SBU has strong expertise in processing data from a number of high-throughput platforms such as gene microarray, exon microarray, SNP microarray, array-CGH, protein microarrays, mass spectrometry, live cell imaging and ChIP-seq. The SBU offers data analysis infrastructure (Anduril) for the research community as well as training for installation and use. Anduril offers a scalable platform for systematic data analysis and integration and is available freely.

Please see full list of services at the [SBU homepage](#) and [Biocenter Finland Bioinformatics network page](#) .

Equipment

The SBU hosts and has access to computing facilities that allow executing computationally heavy analyses.

Tissue processing and histochemistry unit



Director: Matti Airaksinen, Professor
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Email: tissue-service@helsinki.fi
Web: <http://www.biomed.helsinki.fi/research/services/tissue-processing>

Location

Faculty of Medicine BM1, 1st Floor,
Anatomy Rooms A129a & B117b

Core summary

We embed tissue samples to paraffin, make sections and stain the sections. For this, the tissues should be delivered to us fixed and in 70 % ethanol.

Cryosectioning is also available, and according to agreement also processing of the samples for in situ hybridization or immunocytochemistry.

A selection of proprietary high-quality mouse monoclonal antibodies are also available at reasonable cost. [The list of antibodies.](#)

Access

The service is available to all. Service might be limited during the holiday season.

Affiliation

Faculty of Medicine, Anatomy BM1, 1st Floor, Anatomy Rooms A129a & B117b

Core Details

The anatomy department has long provided services in tissue processing to researchers. The service now includes cryosectioning, immuno-histochemical staining, and in-situ hybridization, in addition to the earlier established paraffin sectioning and histological staining services.

The service is tailored according to the user's needs. The technicians can help to determine the right specifications for each sample.

The immunohistochemical stains and in-situ hybridization are performed by the automated system InsituPro VSi (Intavis, Germany). The system can process up to 60 slides or 32-60 whole-mount samples per run. One run takes about 24-52 h depending on the protocol. The user only needs to provide samples and antibodies or probes.

Using the system makes the staining process highly repeatable and convenient for large numbers of samples. A test run to determine the appropriate dilution of new probes or antibodies is recommended before a full-scale experiment.

The hematoxylin-eosin staining is made in the automated system Tissue-Tek DRS that can process multiple slides in one go.

A number of antibodies against intermediate filaments, such as neurofilament, snail, and several laminins and keratins, are also available from the service unit. The antibodies were originally developed by Prof. Ismo Virtanen and his group. The antibodies are produced in mouse cell lines and are supplied as a supernatant. [See our website for the complete list.](#)

Services

- Tissue dehydration, embedding in paraffin.
- Sectioning of samples on glass slides.
- Cryosectioning of fixed tissue samples on glass slides or as free-floating sections.
- Custom staining service for sections and whole-mount samples: histological stains, immunohistochemistry, in-situ hybridization.
- A range of monoclonal antibodies against intermediate filaments are available as cell culture supernatants. See our website for the complete list.
[The prices are attached.](#)

Equipment

- Automated processing system for paraffin embedding
- Automated staining system Tissue-Tek DRS for Hematoxylin-Eosin staining
- Microtome
- Cryostats
- Vibratome
- Intavis InSituPro VSi automated staining system for sections and whole-mount specimen