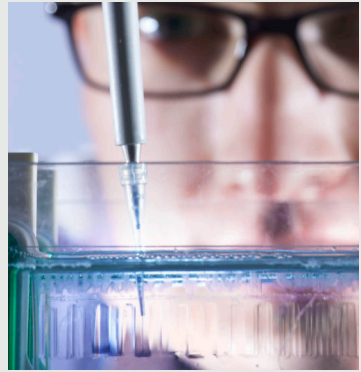


LMU

LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN



BIOMEDICAL CENTER MUNICH
BIOMEDIZINISCHES CENTRUM MÜNCHEN

CORE FACILITIES



Core Facilities in general provide access to high-end instrumentation and associated services. But the Core Facilities of the Biomedical Center Munich do so much more. They can be considered knowledge hubs, where technical proficiency of dedicated researchers with a wealth of first-hand experience are blended with creativity to find the best solution to a problem and the ambition to 'make it work'. Due to the many interactions with users these hubs serve as relay stations for information about and around methodology and thus indirectly generate synergies.

'Core Facility' – the term suggests a hidden place at the core of an institute. The opposite is true for the BMC facilities. They are accessible and open – open to be used by researchers on the LMU Life Science Campus and beyond, open for networking with similar facilities in other research institutes and open for discussion about best-practice procedures and new ways of expanding their analytical capacities.



Acting Chair
of the BMC board

Get in contact!

BIOIMAGING

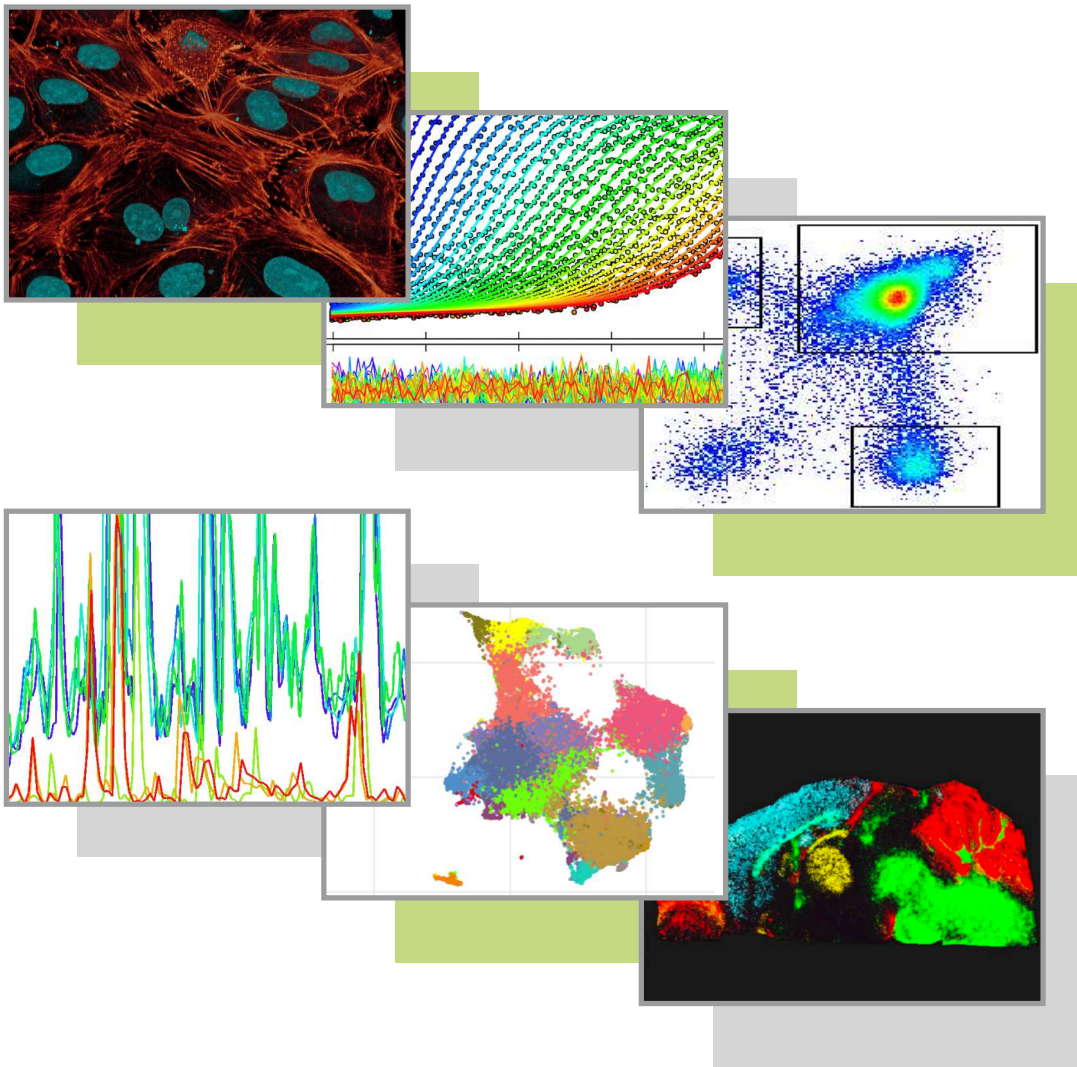
BIOPHYSICS

FLOW CYTOMETRY

PROTEOMICS

BIOINFORMATICS

ANIMAL MODELS



CORE FACILITY BIOIMAGING

LICHTMIKROSKOPIE

OUR MISSION

The Core Facility Bioimaging provides consulting about, training on and access to state-of-the-art light microscopy to scientists from the LMU and other institutions.



**Core
Facility
Bioimaging
@BMC**



OUR TEAM

Head
PD Dr. Steffen Dietzel

Scientists
Mariano Gonzalez Pisfil
Dr. Andreas Thomae

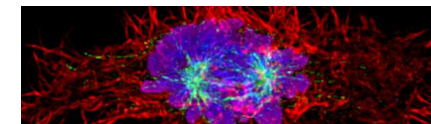
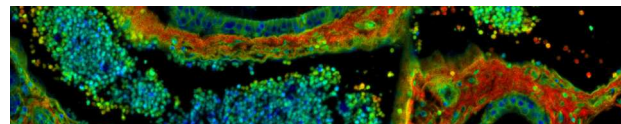
Technicians
Brigitte Bergner
Sonja Rottmeier

OUR FEATURED INSTRUMENTS

- Inverted Leica SP8 WLL STED 3D FALCON with DLS
- Upright Leica SP8 WLL MP FALCON
- Upright Leica SP8 MP with excitation from 700 – 1300 nm
- Leica Thunder TIRF

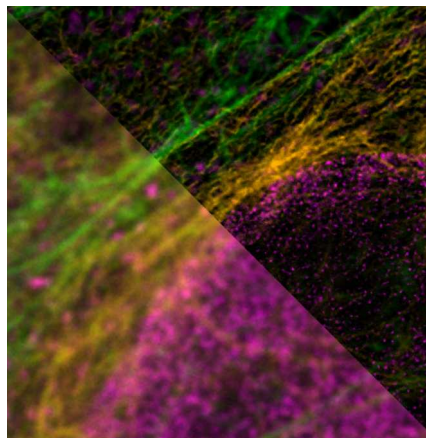
OUR NETWORK

We are listed in the Research Infrastructure data base *RIsources* of the DFG and with *German Bioimaging*.



OUR KEY SERVICES

- Confocal microscopy
- Multi-photon microscopy
- Fluorescence lifetime imaging (FLIM)
- Superresolution microscopy (STED and FLIM-STED)
- Light Sheet microscopy (DLS)
- Total internal reflection fluorescence microscopy (TIRF)
- Simple and automated bright field and fluorescence microscopy
- Stereo microscopy



SOME OF OUR HIGHLIGHTS

The team makes the difference between a cluster of instruments and a core facility. We help to select the right microscope and support users to operate it efficiently for their specific research question. Our excellent infrastructure allows to provide individual solutions by tailoring the microscopic approach, from simple bright field microscopy to a variety of laser scanning techniques. We have >100 active users per year with a high fluctuation expected for a research environment, resulting in >100 training sessions each year.

OUR CONTACT

Core Facility Bioimaging
Biomedical Center
LMU Munich
Großhaderner Str. 9
82152 Planegg-Martinsried

Phone:
0049 89 2180 71518/71535

Email: bioimaging@med.lmu.de

Website:
www.bioimaging.bmc.med.uni-muenchen.de



CORE FACILITY BIOPHYSICS

BIOPHYSIK

OUR MISSION

Characterizing the structure and dynamics of biological molecules is crucial to understanding their function. The Core Facility Biophysics provides training, collaborations and access to state-of-the-art biophysical equipment to researchers from LMU and beyond. We offer a wide variety of instruments and the expertise to help you characterize your favorite molecules and their interactions.

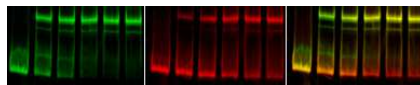


OUR FEATURED INSTRUMENTS

- Multi-function plate readers: Tecan Infinite M1000 PRO, Pherastar FSX
- Typhoon FLA9500 multi-mode imager (GE)
- Nano-DSF: Nanotemper Tycho
- Isothermal titration calorimetry: PEAQ-ITC, iTC-200 (Malvern Panalytical)
- Microscale thermophoresis (label-free and fluorescent, Nanotemper)
- Analytical ultracentrifuge: Beckman-Coulter ProteomeLab XLI
- Static light scattering coupled to size exclusion chromatography (SLS-SEC): ÄKTA-OMNISEC
- Nanostring nCounter SPRINT

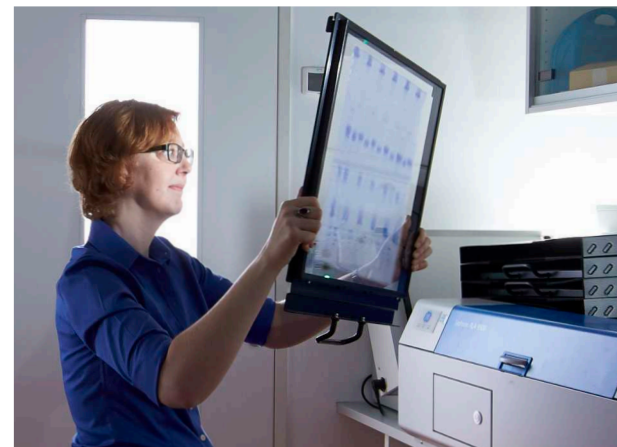
OUR KEY SERVICES

- Characterization of proteins and complexes: folding, stability, (self-)association, monodispersity
- Characterization of molecular interactions between macromolecules or with small molecules: stoichiometry, K_d measurements, conformational changes
- Gene expression analysis



SOME OF OUR HIGHLIGHTS

We provide expert advice to find the optimal experimental approach to answering your biological questions, using a wide range of methods. Many of these are aimed at the *in vitro* characterization of purified macromolecules and their complexes, however, some methods are also suited for analyses *in vivo*. For our users we organize regular training sessions as well as workshops.



OUR NETWORK

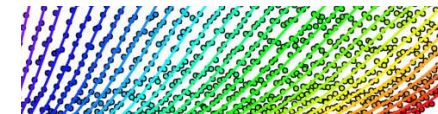
We are listed in the Research Infrastructure data base *RISources* of the DFG.

OUR TEAM

Head
Prof. Andreas Ladurner, PhD

Technical director
PD Dr. Anton Eberharter

Technician
Christiane Kotthoff



OUR CONTACT

Core Facility Biophysics
Biomedical Center
LMU Munich
Großhaderner Str. 9
82152 Planegg-Martinsried

Phone:
0049 89 2180-77096

Email: anton.eberharter@bmc.med.lmu.de

Website:
www.ladurnerlab.de/biophysics

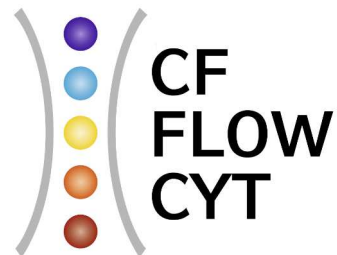


CORE FACILITY FLOW CYTOMETRY

DURCHFLUSSZYTOMETRIE

OUR MISSION

The Core Facility Flow Cytometry provides training and cutting edge instruments (including service operation) for flow cytometry analysis, cell sorting and imaging cytometry, enhancing the research of both the academic and industrial biomedical research community.



OUR FEATURED INSTRUMENTS

- A range of high-end cell sorters with up to 5 lasers
- BD LSRFortessa 5-laser
- Cytek Aurora 5-laser (full spectrum cytometer)
- ImageStream MarkII Imaging Flow Cytometer 5-laser

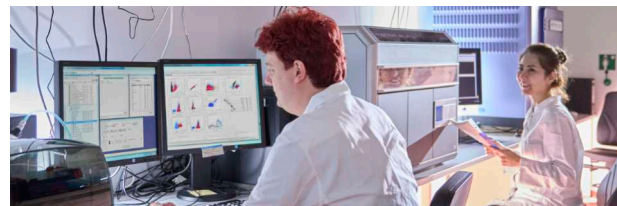
OUR KEY SERVICES

- Flow cytometric analyses (including 'exotic' applications)
- Cell sorting (including biosafety option)
- Imaging cytometry
- Instrument usage training
- Workshops & classroom courses in flow cytometry and data analysis



SOME OF OUR HIGHLIGHTS

Besides a strong focus on robust routine workflows we have implemented and continue to develop cutting edge applications such as high-parameter flow cytometry, sorting of highly sensitive/fragile cells (e.g. adipocytes), high-throughput screening and 'niche' applications such as bacterial analysis and virometry. Our Imaging Cytometry equipment combines the analysis abilities of flow cytometry with spatial resolution and automated image analysis.



OUR NETWORK

We are

- Member of the *International Society for the Advancement of Cytometry* (ISAC)
- ISAC Recognized Shared Resource Laboratory
- Member of *Deutsche Gesellschaft für Zytometrie*
- Member of the national platform *Cytometry.de*
- Listed in the Research Infrastructure data base *RIsources* of the DFG

OUR TEAM

Head

Prof. Dr. Ludger Klein

Technical director

Dr. Benjamin Tast

Scientist

Pardis Khosravani, M.Sc.



OUR CONTACT

Core Facility Flow Cytometry
Biomedical Center
LMU Munich
Großhaderner Str. 9
82152 Planegg-Martinsried

Phone:

0049 89 2180 71856 or -71228

Email:

Benjamin.Tast@med.uni-muenchen.de

Website: www.flowcytometry.bmc.med.uni-muenchen.de



CORE FACILITY PROTEOMICS

ZENTRALLABOR FÜR PROTEINANALYTIK

OUR MISSION

The three fundamental missions of the Core Facility Proteomics (ZfP) are to provide a state-of-the-art service in protein identification, characterization and quantification, to develop and establish key methodology and to do original research in the areas defined by the clients and our personnel.



OUR FEATURED INSTRUMENTS

- timsTOF Pro LC MS System
- Exploris480 LC MS System with Dionex LC and with Evosep One
- QExactive HF LC MS System
- RapiFlex
- Triple TOF 6600 CESI-MS System
- Agilent Bravo Sample Roboter



OUR KEY SERVICES

- Stoichiometry of non-covalent complexes
- Separation and identification of complex peptide mixtures (immunoprecipitation, affinity purification, organelles) by LC-MS/MS
- *de novo* sequencing of proteins
- Analysis of post-translational modifications
- Analysis of crosslinked samples
- Spatial MS analysis by MALDI imaging
- Measurement of clinical sample cohorts like human plasma, serum, tissue (fixed or fresh), laser-dissected tissue or sorted cells

OUR NETWORK

We are:

- Member of the *Munich Cluster of Clinical Mass Spectrometry*
- Member of the *Core Facility Interest Group of the Deutsche Gesellschaft für Massenspektrometrie*
- Member of the *European Society of Core Technologies for Life Sciences* (<https://ctls-org.eu/>)
- Listed in the Research Infrastructure data base *RIsources* of the DFG



SOME OF OUR HIGHLIGHTS

The ZfP was established at the Medical Faculty in 2002 and is based in the BMC since 2015. Our methods range from characterizing and quantifying specific proteins, modifications, or complexes to performing deep analyses of entire proteomes, phospho-proteomes and acetylomes. We belong to the world's leading laboratories in the quantitative investigation of histone modifications.

Recently, we also established a branch dedicated to the high-throughput analysis of clinical specimens for diagnostic purposes (ClinZfP).

OUR TEAM

Head

Prof. Dr. Axel Imhof

Technical director

Dr. Ignasi Forne

Scientists

Dr. Teresa Barth

Dr. Marco Borso

Dr. Shibojoyoti Lahiri

Technicians

Mikhail Gromadskiy

Aileen Preuß

Marc Wirth

OUR CONTACT

Zentrallabor für Proteinanalytik
Biomedical Center
LMU Munich
Großhaderner Str. 9
82152 Planegg-Martinsried

Phone:

0049 89 2180-75420/-75775

Email: imhof@lmu.de

Website:

www.proteinanalytik.abi.med.uni-muenchen.de



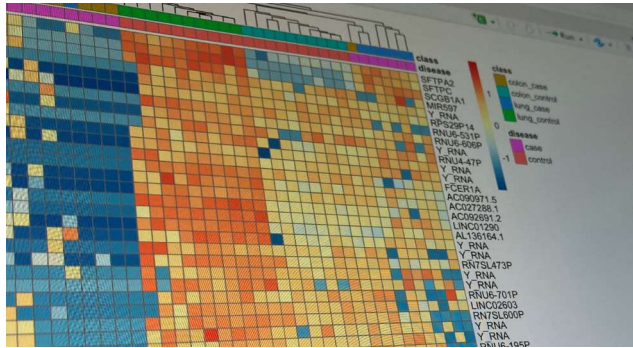
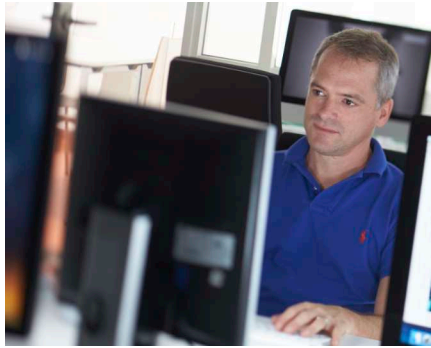
CORE FACILITY BIOINFORMATICS

BIOINFORMATIK



OUR MISSION

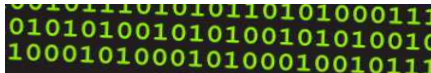
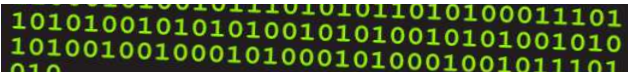
The Core Facility Bioinformatics provides computational data analysis support to BMC-associated as well as external research groups. We have long-standing experience in a wide area of bioinformatics including functional genomics, proteomics, image analysis and biostatistics.



OUR TEAM

Head
Dr. Tobias Straub

Scientists
Dr. Wasim Aftab
Dr. Pawel Smialowski

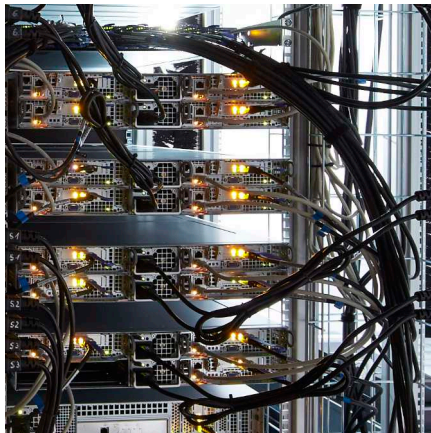


OUR KEY SERVICES

- **Consultation** - We advise research groups in experimental design and data analysis strategies.
- **Collaboration** - The facility provides bioinformatic support to another research group.
- **Research network integration** - The facility serves all members within a research network.
- **Scientist embedding** - A research project with heavy bioinformatic needs assigns a member to the facility. The embedded researcher will be conducting the analyses under supervision.
- **Training** - The facility offers biostatistics courses to institutes, networks, PhD programs. Provided there is free space we are happy to host students/postdocs/PIs for individual short-term training and small bioinformatic projects.

OUR FEATURED INSTRUMENTS

We provide access to a high performance computational cluster (HPC)



SOME OF OUR HIGHLIGHTS

Our bioinformatic expertise extends far beyond standardized preprocessing of high-throughput data. Each team member has wet-lab background and we consider ourselves experts in biological data mining ('making sense of data'). We advocate and implement Open Science & Reproducible Research practices ('creating sustainable results'). We consider dissemination of computational expertise into labs a major task ('empowering researchers').

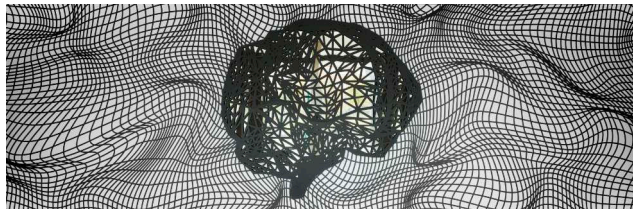
OUR CONTACT

Core Facility Bioinformatics
Biomedical Center
LMU Munich
Großhaderner Str. 9
82152 Planegg-Martinsried

Phone:
0049 89 2180-75439

Email: tstraub@bmc.med.lmu.de

Website: www.compbio.bmc.med.uni-muenchen.de



CORE FACILITY ANIMAL MODELS

TIERMODELLE

OUR MISSION

The Core Facility Animal Models (CAM) provides scientists a state-of-the-art platform to conduct animal experimentation. Core responsibility of the CAM is to care for all on-site animals subject to animal research experimentation (mice, rats, hamsters, rabbits, frogs, fish). In addition, the CAM team supports scientists in the planning and realization of experiments as well as in providing expert advice and counseling toward legal authorities and government offices.



OUR FEATURED INSTRUMENTS

- CBC germ-free Isolator system
- Biocontainment system IsoCage N
- Mobile-R(abbit)-pen
- Multirad 225 irradiation system



OUR KEY SERVICES

- High quality SOPF breeding services
- Cryopreservation and storage
- Rederivation and colony expansion
- Histopathological sample processing and evaluation
- Scientific training for laboratory animal science
- *In vivo* studies (e.g. PK/PD)
- Experimentation under BSL 2 conditions



SOME OF OUR HIGHLIGHTS

We help to conduct animal experimentation in accordance with the legal requirements of the European and national (German) law. Above all, we are keen to implement new strategies according to the '3R' principle (reduce, replace, refine) in laboratory animal science.

Further, the CAM is conducting preclinical studies in the field of drug metabolism and drug safety in different experimental settings.

We provide basic as well as specialized trainings to our >300 active users and all interested. We also take on animal technician trainees.



OUR NETWORK

We are member of:

- *Society of Laboratory Animal Science* (GV-SOLAS)
- *Deutsche Veterinärmedizinische Gesellschaft* (DVG)
- *Interessengemeinschaft Tierpfleger* (IGTP)

OUR TEAM

Head

PD Dr. Bastian Popper

Animal welfare officer
Dr. Dr. Thomas Brill

Scientists
Lena Amberger

Dr. Linda Böswald

Technicians
Dana Matzek
Sonja Höflinger

and our growing team of animal technicians

OUR CONTACT

Core Facility Animal Models
Biomedical Center
LMU Munich
Großhaderner Str. 9
82152 Planegg-Martinsried

Phone:
0049 89 2180-71862/71996

Email: cam@bmc.med.lmu.de

Website:
www.cam.bmc.med.uni-muenchen.de



IMPRINT



Editor: Biomedical Center (BMC)
Faculty of Medicine
LMU Munich
Großhaderner Str. 9
82152 Planegg-Martinsried

Acting Chair BMC: Peter Becker

Coordination, Layout: Henrike Klinker (BMC)

Contributions: Responsible for the contents are Peter Becker and
the Heads of the Core Facilities at the BMC

Photos: J. Greune/LMU (if not otherwise indicated below)
LMU (front page bottom)
B. Nitz (Flow Cytometry: fourth column)
T. Straub (Bioinformatics: third column top)

Further images: BMC Core Facilities

Acknowledgements: We thank Elizabeth Schröder-Reiter for language editing.

