Compiled by:

Reseach Group Catalogue

For Biology and Biochemistry students at Leipzig University

2026

Overview of research groups at Leipzig University that offer thesis positions and student helper jobs.

This catalogue is based on self-provided information of the research groups and does not represent the entire research environment in Leipzig.

Table of Contents

Table of Contents

Preface

Dear reader,

Are you looking for a matching topic for your upcoming thesis or are you just curious what the research landscape in Leipzig has to offer?

The choice of an appropriate working environment that matches one's scientific interests is an important aspect for the development of an academic career. Opportunities are vast, and information is key. However, the abundance of institutes and research organizations can be daunting, while research groups not involved in study programs are sometimes overlooked. This catalogue was created to give an overview of different possibilities for students finding thesis positions or student helper jobs (SHK/WHK). The submitted profiles of the groups are arranged according to their affiliation, which are represented by the color of the corresponding chapter. At the end of every chapter, all remaining research groups of the respective institution are listed (note that some groups of external institutes, e.g. Helmholtz Center for Environment Research or the Max Planck Institute have an affiliation with Leipzig University, while others do not).

Finding a group for a thesis is in principle possible for all institutions, also the ones that are not directly associated with the university. However, from our experience, additional administrative steps could be necessary when writing a thesis at an external institution. Please contact your office for study affairs for further information if you wish to write your thesis at an external group.
We hope that the catalogue can help finding the perfect group for you!

The junior-GBM Leipzig and bts Leipzig

The Junior-GBM Leipzig

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Instagram

Website

Are you interested in becoming part of a Germany-wide scientific organization, connecting with fellow students in the life sciences, and getting a foothold in the world of science?

The Junior-GBM Leipzig is the perfect place for you! We are the local young members' organization of the German Society for Biochemistry and Molecular Biology (GBM), the largest professional association for life sciences in Germany. Our members range from bachelor's and master's students to PhD candidates, mostly from the life sciences. As part of the Federation of European Biochemical Societies (FEBS), we are also connected to a Europe-wide network of scientists.
Throughout the year, we attend various conferences, where you can gain insights into current research topics and connect directly with professors, companies and students from other universities. Along the way, you might even find a future employer, make lifelong friends, or simply have a place to stay when you find yourself stranded in some other German city. Overall, this gives you the opportunity to build a broad scientific network already during your studies.
In addition to scientific networking, we are committed to making academic life easier for the students at our university. That's why we regularly organize informative events, workshops, company visits and are involved in other activities like the faculties' summer party.
If this sounds interesting to you, we'd love to get in touch with you! Feel free to send us a message, and maybe we meet then at our next monthly meeting?

Your Junior-GBM Leipzig

btS – Life Science Studierendeninitiative e.V.

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Instagram: bts_leipzig

Website

We, the btS- Life Sciences Student Initiative e.V., are the largest student organization in the life sciences in Germany, with over 1,100 students and PhD candidates. Across 23 locations- including Leipzig- we organize numerous events each year, such as application trainings, workshops, lectures, and excursions.
Our goal is to build a bridge between students, academia, research, and industry, and to support you in starting your professional career.
The best part: you don't have to be a member to participate in or benefit from our events. Our offerings are open to everyone- whether you're simply curious, looking for orientation, or already have specific career plans. Through free lecture series, company excursions, and seminars, you gain valuable insights that help you better evaluate your own path. At the same time, you get an overview of local research groups and career opportunities already during your studies.
If you'd like to take it a step further, you can also get actively involved with us.
This allows you to gain valuable experience in areas such as project management, marketing, or graphic design, while also making your first contacts with potential employers.
If you're interested in getting to know us or simply want to drop by and check out one of our events, feel free to join us anytime with no obligation. You can find up-to-date information on upcoming events and our next meetings on our website as well as on Instagram. If you have any questions, don't hesitate to contact us via email.
We are always happy to welcome new faces- whether as participants in our events or as active members-so come by and get to know us!
Your btS Leipzig

Biochemistry and Bioorganic Chemistry

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Research focus

- Investigation of the activation and modulation of G protein-coupled receptors by peptide ligands and allosteric modulators
- Development of shuttling systems for the cell-specific transport of peptide-drug conjugates
- Synthesis and biological characterization of therapeutic peptides and proteins
- Modification of peptides and proteins for bioactive biomaterials

Requirements for working in the group

- Background in biochemistry, biology, or chemistry
- Ability to work independently
- Ability to teamwork
- Passion for research
- Proficiency in English

Positions offered

- Bachelor thesis
- Master thesis
- Student helpers

Biochemistry and Bioorganic Chemistry

Methods used in the group

- Solid-phase peptide synthesis and analytical methods
- Cellular assays for investigating receptor activation (IP-One, calcium, cAMP), arrestin recruitment (BRET), and ligand binding
- Fluorescence microscopy (e.g., membrane localization, receptor internalization)
- Protein expression and crosslinking
- Molecular biology techniques (PCR, cloning, mutagenesis)

Collaborations with other groups

We collaborate with various research groups in Leipzig (e.g., Prof. Meiler, Prof. Huster, Prof. Coin, Prof. Klöting, Prof. Blüher, Prof. Bechmann), as well as other national and international research groups and the industry.

Miscellaneous information

- We are an open-minded working group with diverse academic backgrounds that also enjoys organizing group activities, such as barbecues in the courtyard and Christmas parties.
- Annual group trip to Krummenhennersdorf, where we engage in academic discussions but also have plenty of time for group activities (canoeing, rock climbing, campfires, and much more)

Biophysical Chemistry

Prof. Dr. Tilo Pompe

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website

Johannisallee 21-23, Raum 133

Research focus

- Biomaterials, biomimetic cell culture scaffolds
- Biomedical cell processes in dermal wound healing and tumor progression
- Microbial cell interaction in biofilms for biotechnology
- Particle-based biosensors for anthropogenic analytes in environment and food

The Biophysical Chemistry group at the Institute of Biochemistry of Leipzig University focuses on biomaterial approaches for engineering cellular microenvironments and new microparticle-based biosensors. We design new biomimetic cellular microenvironments based on synthetic and naturally derived polymers to vary topology and mechanics of 3D networks and the mode of soluble signal presentation and transport.

Based on biophysical, biochemical and cellular analyses, we support a systemic understanding of exogenous cell signals and the application of the engineered materials in *in vitro* assays for biomedical studies and for fundamental studies of biofilm design in biotechnology. Furthermore, we develop hydrogel microparticle based biosensors for the detection of anthropogenic analytes (e.g. pesticides, xenohormones, antibiotics) in aqueous environments to be applied in on-site monitoring of environment and food.

Biophysical Chemistry

Current projects

- https://home.uni-leipzig.de/biophysicalchemistry/research/grants/

Methods used in the group

- wet-lab chemistry for preparation of (bio)polymer networks and hydrogels
- physicochemial and biochemical surface functionalization
- protein expression and synthesis
- optical microscopy and scanning force microscopy
- quantitative image analysis of biopolymer networks and cell dynamics (e.g. single cell tracking)

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Requirements for working in the group

- interest in interdisciplinary work
- background in biochemistry, biotechnology and / or biophysics
- attitude to work independently in the lab

Collaborations with other groups

- The majority of research projects are carried out in third-party funded projects in collaboration with local, national, and in some cases international partners from academia and industry

Biophysical Chemistry

Miscellaneous information

We are a highly interdisciplinary team with a wide range of projects in the field of biomaterial development. The broad range of topics creates a challenging working atmosphere with innovative insights into related fields. Biochemistry students with interests beyond classical biochemistry can gain insights into biomaterials, biophysics, and cell biology, and have the opportunity to test their own ideas in a variety of projects, some of which are application-oriented.

Key publications

- J. Friedrichs, R. Helbig, J. Hilsenbeck, P. R. Pandey, J. U. Sommer, L. D. Renner, T. Pompe, and C. Werner. Entropic repulsion of cholesterol-containing layers counteracts bioadhesion. Nature 618:733-39 (2023). https://dx.doi.org/10.1038/s41586-023-06033-4
- D. Rettke, J. Doring, S. Martin, T. Venus, I. Estrela-Lopis, S. Schmidt, K. Ostermann, and T. Pompe. Picomolar glyphosate sensitivity of an optical particle-based sensor utilizing biomimetic interaction principles. Biosens Bioelectron 165:112262 (2020). http://dx.doi.org/10.1016/j.bios.2020.112262
- J. Sapudom, L. Kalbitzer, X. Wu, S. Martin, K. Kroy, and T. Pompe. Fibril bending stiffness of 3D collagen matrices instructs spreading and clustering of invasive and non-invasive breast cancer cells. Biomaterials 193:47-57 (2019). https://dx.doi.org/10.1016/j.biomaterials.2018.12.010

Microbial Metabolic Biochemistry

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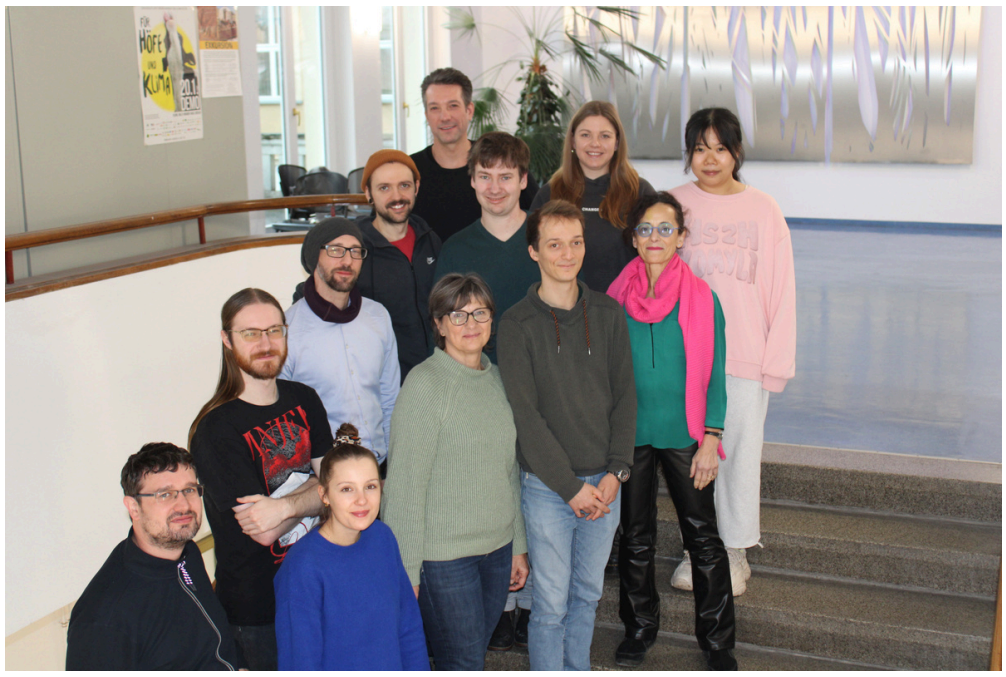

Research focus

- Microbial genetics and physiology
- Synthetic biology
- Anaerobic gas fermentation

The Molitor Lab is mainly interested in microbes that thrive in the complete absence of oxygen (anaerobes), and that feed on gases such as hydrogen and carbon dioxide as substrates for growth. These microbes can be found in many natural and man-made environments, in the digestive tract of animals and humans, as well as in anaerobic digesters, where they encounter interactions with other microbes and get infected by microbial viruses.
One focus of our group is to study the conversion of carbon dioxide from industrial off gases or from anaerobic digesters as a resource for a circular economy.
Another focus is to investigate the interactions of microbes (e.g., methanogenic archaea with their viruses, and pathogenic clostridia with other microbes) in the human microbiome, for example in the gut.

Microbial Metabolic Biochemistry

Current projects

We study bacteria that can convert carbon dioxide into acetic acid or ethanol (acetogenic bacteria), and a group of ancient microbes called archaea that can produce methane gas from carbon dioxide (methanogenic archaea), in short, for the production of green chemicals and synthetic fuels. To increase the value of this biotechnology, we develop and utilize tools that allow to change the genetic outfit of these microbes as biocatalysts to produce higher-value chemicals. Furthermore, we study the interplay of specific microbes with other microbes, and for methanogenic archaea, the infection by specific viruses.

Methods used in the group

- (Anaerobic) microbial cultivation techniques
- Genetic engineering (e.g., CRISPR/Cas)
- Fermentation (bioreactors)

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Requirements for working in the group

An interest in applied microbiology and microbial physiology.

Collaborations with other groups

Several national (e.g., MPI and Uni Tübingen, Ruhr Uni Bochum, Evonik) and international (e.g., in the US, New Zealand, Australia, The Netherlands, Belgium, Finland, Switzerland) collaborations

Microbial Metabolic Biochemistry

Key literature

1. Fink C, Beblawy S, Enkerlin AM, Mühling L, Angenent LT, Molitor B, 2021. A Shuttle-Vector System Allows Heterologous Gene Expression in the Thermophilic Methanogen Methanothermobacter thermautotrophicus ΔH. mBio 12:e02766-21., https://doi.org/10.1128/mBio.02766-21
2. Saskia T. Baur, Sarah Schulz, Joshua B. MCluskey, José Antonio Velázquez Gómez, Largus T. Angenent, Bastian Molitor, 2025, Deletion of aldehyde:ferredoxin oxidoreductase-encoding genes in Clostridium ljungdahlii results in changes in product spectrum with various carbon sources. Bioresource Technology 431:132596. https://doi.org/10.1016/j.biortech.2025.132596.
3. Schumacher, J., Müller, P., Sulzer, J., Faber, F., Molitor, B., & Maier, L. (2025). Proton-pump inhibitors increase C. difficile infection risk by altering pH rather than by affecting the gut microbiome based on a bioreactor model. Gut Microbes, 17(1). https://doi.org/10.1080/19490976.2025.2519697

Molecular Obesity Research (MORe)

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What is the focus of the research group?

Discovering new pathways that control how thermogenic (heat-producing) fat cells burn energy and regulate body weight.
Exploring how proteases affect fat tissue function and how their imbalance contributes to obesity, inflammation, and insulin resistance.
Understanding how proteases and their inhibitors (serpins) work – including their inhibition mechanisms, cofactor interactions, structural properties, and roles in intracellular signaling networks.
We investigate molecular regulators of thermogenic adipocytes and energy expenditure, and how their dysregulation contributes to obesity, inflammation, and insulin resistance. We combine protein expression, molecular biology and structural analyses with studies in isolated cells, human patient-derived tissues and primary cells, as well as complementary animal models to translate molecular mechanisms into physiological relevance.

Molecular Obesity Research (MORe)

Requirements for working in the research group?

We want you to actively contribute to the lab's progress and success, even as an early-career researcher. After thorough initial training, we like you to take ownership of your project, work independently, and thrive within our collaborative and supportive research environment.

What are the most essential methods and techniques in the lab?

- Recombinant protein expression and purification for biochemical and structural analyses.
- Cell culture models of human and mouse adipocytes.
- Molecular biology and biochemical methods to assess proteolysis, lipolysis, mitochondrial respiration, and intracellular signaling.
- In vivo metabolic phenotyping.

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Are there any collaborations with other groups?

We are highly connected in Leipzig, collaborating with groups of HI-MAG, the University Hospital (Endocrinology), the BBZ, the Paul-Flechsig Institute for Brain Research, and the Helmholtz Centre for Environmental Research (UFZ), and maintain national and international partnerships, including with BTU Cottbus - Senftenberg, Helmholtz Munich, TUM, MHH Hannover, UK Eppendorf, and other research groups, integrating diverse expertise and resources to foster a collaborative and interdisciplinary approach.

Synthetic Protein Biochemistry

Irene Coin

website

What is the focus of the research group?

• In-cell Structural Biology, In-cell Structural Dynamics, Genetic Code Expansion

Our research group develops chemical biology approaches to study the structure and dynamics of G protein-coupled receptor (GPCR) signaling complexes directly in living cells. By combining genetic code expansion, in-cell crosslinking, advanced fluorescence reporters, and computational modeling, we reveal how receptor conformations control cellular signaling in their native environment.

What are current projects?

- Mapping protein-protein interaction interfaces of GPCR signaling complexes in living cells using large-scale in-cell crosslinking and integrative structural modeling.
- Visualizing GPCR conformational changes in real time with high spatial and millisecond temporal resolution using genetically encoded fluorescence reporters.
- Expanding and optimizing genetic code expansion technologies to enable site-specific protein labeling and engineering in diverse cellular systems.

Synthetic Protein Biochemistry

Requirements for working in the research group?

Background in biochemistry or molecular biology and passion for science

What are the most essential methods and techniques in the lab?

Cloning, DNA isolation, protein expression in mammalian cells and E. coli, protein purification and analysis, enzyme activity assays, signal transduction assays, ELISA, western blot, fluorescence microscopy

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Are there any collaborations with other groups?

Our main colaborators are:
- Prof. Vsevolod Katritch, USC, Los Angeles, USA
- Prof. Andreas Bock, Universitätsmedizin Mainz
- All group leaders of SFB1423 and TRR386

What else is nice to know about the research group?

We are an open-minded, young, and international group with diverse scientific and linguistic backgrounds, and we welcome like-minded individuals. The group has a size of 10-15 people, including Bachelor and master students.

Other research groups in the Institute of Biochemistry

Biochemical Cell Technology (at the BBZ)

website

Biochemistry and Molecular Biology

website

Biomimetic Nanotechnology

website

Electrobiotechnology (see profile in corresponding chapter)

website

Environmental Microbiology (at the UFZ)

website

Functional Proteomics (Dep.of Molecular Toxicology, UFZ)

website

Productive Biofilm Technologies

website

Behavioural Ecology

Prof. Anja Widdig

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website

Research focus

- Primate Behavioural Ecology
- Genetics/Genomics
- Chemical Ecology
- Fitness

Broadly, our research is focused on the evolution of social behaviour. In particular, we study the interplay between genetics, ecology, behaviour and fitness across different primate species, for more see: https://www.eva.mpg.de/pbe/research/research-interest/.

For current projects see: https://www.eva.mpg.de/pbe/research/current-projects/

Are there any collaborations with other groups?

Andreas Thum, Janelia Research Campus, Gregory Jefferis

Positions offered

- Master, PhD, Student helpers (SHK/WHK)

Requirements

For requirements see: https://www.eva.mpg.de/pbe/prospective-students/

Behavioural Ecology

Most essential methods used in the group:

- behavioural/demographic analysis
- genetics/genomics
- chemical ecology

Key publications:

- Freudiger, A., Jovanovic, V. M., Huang, Y., Snyder-Mackler, N., Conrad, D. F., Miller, B., Montague, M. J., Westphal, H., Stadler, P. F., Bley, S., Horvath, J. E., Brent, L. J. N., Platt, M. L., Ruiz-Lambides, A., Tung, J., Nowick, K., Ringbauer, H., & Widdig, A. (2025). Estimating realized relatedness in free-ranging macaques by inferring identity-by-descent segments. Proceedings of the National Academy of Sciences of the United States of America, 122(3): e2401106122. https://www.pnas.org/doi/10.1073/pnas.2401106122
- Holzner, A., Rameli, N. I. A. M., Ruppert, N., & Widdig, A. (2024). Agricultural habitat use affects infant survivorship in an endangered macaque species. Current Biology, 34, 410-416. https://www.sciencedirect.com/science/article/pii/S0960982223016573
- Zetzsche, M., Kücklich, M., Weiß, B. M., Stern, J., Marcillo Lara, A. C., Birkemeyer, C., Penke, L., & Widdig, A. (2025). Understanding olfactory fertility cues in humans: chemical analysis of women's vulvar odour and perceptual detection of these cues by men. Evolution and Human Behavior, 46(6): 106742. https://www.sciencedirect.com/science/article/pii/S1090513825000911

Connectomics

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website

Research focus

- Drosophila
- Connectomics
- Behavior
- Systems Neuroscience

We use connectomic reconstruction in multiple different datasets of Drosophila melanogaster and other insects to investigate how sensorimotor signaling and control is executed by the brain. We study evolutionary and developmental aspects of circuits using comparative connectomics.

Are there any collaborations with other groups?

Andreas Thum, Janelia Research Campus, Gregory Jefferis

Positions offered

- Bachelor, Master, PhD

Connectomics

Key publications:

- Stürner, T., Brooks, P., Capdevila, L. S., Morris, B. J., Javier, A., Fang, S., Gkantia, M., Cachero, S., Beckett, I. R., Marin, E. C., Schlegel, P., Champion, A. S., Moitra, I., Richards, A., Klemm, F., Kugel, L., Namiki, S., Cheong, H. S. J., Kovalyak, J., Tenshaw, E., Parekh, R., Phelps, J. S., Mark, B., Dorkenwald, S., Bates, A. S., Matsliah, A., Yu, S., McKellar, C. E., Sterling, A., Seung, S., Murthy, M., Tuthill, J., Lee, W.-C. A., Card, G. M., Costa, M., Jefferis, G. S. X. E., & Eichler, K. Comparative connectomics of Drosophila descending and ascending neurons. Nature (2025). https://doi.org/10.1038/s41586-025-08925-z
- Cheong, H. S.*, Eichler, K.*, Stürner, T.*, Asinof, S. K., Champion, A. S., Marin, E. C., Oram, T. B., Sumathipala, M., Venkatasubramanian, L., Namiki, S., Siwanowicz, I., Costa, M., Berg, S., Team, J. F. P., Jefferis, G. S., & Card, G. M. (2024). Transforming descending input into behavior: The organization of premotor circuits in the Drosophila Male Adult Nerve Cord connectome. eLife, 13. https://doi.org/10.7554/eLife.96084.1
- Eichler, K., Hampel, S., Alejandro-García, A., Calle-Schuler, S. A., Santana-Cruz, A., Kmecova, L., Blagburn, J. M., Hoopfer, E. D., & Seeds, A. M. (2024). Somatotopic organization among parallel sensory pathways that promote a grooming sequence in Drosophila. eLife, 12, RP87602. https://doi.org/10.7554/eLife.87602

Developmental & Cell Biology

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Research focus

- Genetic control of extracellular matrix morphogenesis
- Multifunctionality of extracellular matrix surfaces

The apical extracellular matrix (aECM; cuticle) of an arthropod's exoskeleton is multifunctional. It serves both as a protective “skin” and as a skeleton, which is equipped with a variety of tools and sensors. This inherent multifunctionality is enabled by an incredible versatility in materials, architecture, and properties. It fascinates us.

Our aim is to establish a direct correlation between the morphology and composition of organs, their molecular gene functions, and the arrangement of the apical extracellular matrix, including fiber alignment, microstructure, and the spatial arrangement of different microstructural motifs within functional organs. Our research focuses on the relationships between structure, properties, and function in this biological material. Our goal is to understand the underlying molecular mechanisms by which this biomaterial is formed and to develop it as a source of new bio-inspired material design. On the one hand, studying the aECM at epidermal cells helps us to understand how it protects insects from the invasion of xenobiotics.

Developmental & Cell Biology

Thus, identifying new targets of new insecticide compounds. On the other hand, studying conserved factors of the aECM in the trachea led to the identification of molecular mechanisms that helped us understand biomedical aspects of unwanted Aneurysm formation and airway liquid clearance defects in newborns.

Current projects

- Xenobiotics control ininsect legs
- Genetic control of insect locomotion
- Genetic control of tube formation

Methods used in the group

- Cell culture techniques (insects, human)
- Drosophila genetics (gene knockout, knockdown, overexpression)
- Animal physiology techniques
- DNA cloning (plasmids, CRISPR/Cas9, etc.)
- Protein expression and purification
- Western immunoblots / co-immunoprecipitation (Co-IP)
- RNA purification / RT-qPCR
- Histological staining techniques
- Immunofluorescence staining techniques (fixed / in vivo)
- Confocal / Airyscan laser scanning microscope techniques
- Fluorescence microscopy (spinning disk/structured illumination)

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Developmental & Cell Biology

Requirements for working in the group

Basic understanding of biology and enthusiasm for research

Collaborations with other groups

at the Universities of Leipzig, Freiberg, Dresden, and Bonn, the Max Planck Institute for Multidisciplinary Sciences in Göttingen, INRAE in Sophia Antipolis, and the University of Côte d'Azur

Miscellaneous information

We are a small team of technical staff, doctoral candidates, and students, which enables us to provide excellent, personalized support.

Key literature

1. Exoskeletal cuticle proteins enable Drosophila locomotion. Göpfert M, Yang J, Rabadiya D, Riedel D, Moussian B, Behr M. Acta Biomater. 2025 Aug;202:377-393. doi: 10.1016/j.actbio.2025.05.046
2. The biology of insect chitinases and their roles at chitinous cuticles. Rabadiya D, Behr M. Insect Biochem Mol Biol. 2024 Feb;165:104071. doi: 10.1016/j.ibmb.2024.104071
3. The proteolysis of ZP proteins is essential to control cell membrane structure and integrity of developing tracheal tubes in Drosophila. Drees L, Schneider S, Riedel D, Schuh R, Behr M. Elife. 2023 Oct 24;12:e91079. doi: 10.7554/eLife.91079

Microbial Interaction Ecology

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Research focus

- Diversity /functional diversity of microbes (bacteria, protists) and viruses (phages) under anthropogenic pressures
- Microbial networks and predator-prey interactions
- Plant-microbe interactions
- Climate change and pollution

Ecosystems (incl. polluted ones) consist of several trophic levels that interact with each other. While bacteria are the main players for many functions, viruses (phage) and other micro-predators (protists, bacterial predators; nematodes) control those communities and thus their functions on multiple levels. Microbial predation or infection by viruses (phage) not only affect community composition and the genetic landscape, but also biogeochemical turnover and nutrient recycling.
Our aim is to understand the diversity of microbes and viruses (phage), their genomic composition, functional potential, interactions and assembly rules, and the resulting consequences for ecosystems under increasing anthropogenic pressure by using theory, computational approaches and

Microbial Interaction Ecology

data mining, lab experiments and field surveys.
With this knowledge we aim to provide solutions for the management of (microbial) ecosystems and the application of viruses/predators in natural, engineered or host-associated systems.

Current projects

- Microbial Bio-Pesticides und risk assessment of new low-risk pesticides (EU Project)
- Contribution of soil protists to carbon cycles through microbe predation and necromass (DFG-SPP project)
- Impacts of land use and climate change on soil viromes, viral lifestyles and nutrient cycling (iDiv project)
- The role of protist predators in the positive effects of crop rotation on key plant-beneficial bacteria (UFZ funded)

Methods used in the group

Controlled laboratory experiments, field surveys, computational/bioinformatic methods, genomics, metagenomics, amplicon sequencing, molecular biological methods, stable isotope probing, metabolomics, isolation and cultivation, database mining

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Microbial Interaction Ecology

Requirements for working in the group

- Interest in microbial ecology in the context of global changes
- Ability to work in an international team and commitment to group work
- Willingness to learn new methods and to adapt to the routines and rules in the lab
- Lab experience is a plus (unless only computational work is required)
- Interest in/application of statistics is essential for data analysis
- Be motivated, learn as much as you can, interact and take ownership of your project

Collaborations with other groups

Yes - UFZ, Leipzig University, iDiv, other German or European research groups

Miscellaneous information

- We are a very international and multilingual group, which also enjoys social interactions like BBQ, going out for dinner or cakes during our bi-weekly group meetings
- Our group welcomes applications, students and collaborators regardless of nationality, religion, gender identification, sexual orientation, age, or disability status. We believe in diverse perspectives and experiences.
- The group and the UFZ offers training in soft and hard skills.
- We also have strong links to the German Centre for Integrative Biodiversity Research (iDiv), as the PI is an iDiv member

Molecular Evolution and Animal Systematics

Prof. Dr. Sebastian Steinfartz

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website

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Research focus

- Evolutionary processes and Molecular Evolution
- Ecology and conservation biology of organismic zoology
- Focus on amphibians, reptiles and arthropods

Our research focuses on evolutionary processes and molecular evolution within the field of organismic zoology, with an emphasis on ecology, population genetics, systematics and conservation biology. Our work mainly investigates amphibians, reptiles, and arthropods to better understand their evolutionary dynamics, ecological interactions, and conservational status. By combining molecular approaches with field-based studies, we aims to contribute to the understanding and protection of biodiversity.
The most key methods used in our group include molecular laboratory techniques such as DNA isolation, PCR, qPCR and Next Gen Sequencing library preparation. Additionally, field work plays a key role and involves monitoring populations of amphibians, reptiles, and arthropods as well as monitoring ecological and morphological measurements.

Molecular Evolution and Animal Systematics

Current projects

- Spatial and temporal structuring of the diversity of arthropods in the canopy of the Leipzig Auwaldes
- Monitoring of Salamander plaque and use of population genetics and genomics for the protection of the fire salamander
- Amphibian conservation
- Foraging Ecology/Speciation and hybridization in the genomes/location and population size of the Marine Iguanas of the Galápagos Islands

What are the essential methods used in the group?

- Wet lab: DNA isolation, PCR, qPCR, library prep, Next Gen Sequencing
- field work: monitoring of amphibians, reptiles and arthropods, measurements

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Requirements

- High interest in zoology and evolution
- Interest in field work or molecular lab techniques
- Team work

Are there any collaborations with other groups?

to name a few: MPI EVA, CMMC, iDiv, other work groups at Universities, e.g. Potsdam, Cologne, Dresden

Molecular Evolution and Animal Systematics

Key publications:

- Citizen scientists reliably count endangered Galápagos marine iguanas from drone images; Varela-Jaramillo A, Winkelmann C, Mármol-Guijarro A, Guayasamin JM, Rivas-Torres G, Steinfartz S, MacLeod A, Scientific Reports. 2025 Jul;15:16884., DOI: 10.1038/S41598-025-08381-9
- Context-dependent dispersal determines relatedness and genetic structure in a patchy amphibian population; Unglaub B, Cayuela H, Schmidt B, Preißler K, Glos J, Steinfartz S, Molecular Ecology. 2021 Sep;30(20):5009-2028.,DOI: 10.1111/MEC.16114
- More yellow more toxic? Sex rather than alkaloid content is correlated with yellow colouration in the fire salamander; Preißler K, Gippner S, Lüddecke T, Krause ET, Schulz S., Vences M, Steinfartz, S, Journal of Zoology. 2019 Apr;308:293-300. DOI: 10.1111/JZO.12676

Other research groups of the Institute of Biology

Algae Biotechnology

website

Animal Physiology

website

Biology Education

website

General and Applied Botany

website

General Zoology and Neurobiology

website

Genetics

website

Human Biology & Primate Cognition

website

Molecular Evolution and Plant Systematics

website

Plant Physiology

website

Systematic Botany and Functional Biodiversity

website

Elgetilab

Matthias Elgeti

elgeti@medizin.uni-leipzig.de

website

Institut für Wirkstoffentwicklung
Medizinische Fakultät der Universität Leipzig

Research focus

- Membrane protein structure, dynamics and function
- G protein coupled receptors
- EPR spectroscopy
- integrative modeling, development

Current projects

GPCR subtype specificity, biased signaling, allosteric modulation, intra-transducer bias, arrestin structural dynamics, hemagglutinin breathing, assay development, machine learning methods

Methods used in the group

EPR spectroscopy, cloning, expression of target protein in bacterial and mammalian cells, SDS PAGE, Western blot, AlphaFold, MD simulations

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Elgetilab

Requirements for working in the group

Excitement and motivation for interdisciplinary approaches to study signaling across membranes.

Collaborations with other groups

Coin, Meiler, Schöder, Lamers, Matysik (Leipzig), Wingler, Lefkowitz (Duke), Kobilka (Stanford), Abramson (UCLA) and many others

Miscellaneous information

We are an international team of interdisciplinary scientist. In Summer, we like to have BBQs in the Clarapark. In Winter, we prefer the Beyerhaus.

Key literature

- Elgeti M, Belyaeva J, Helabad MB, Staus DP, Wingler LM (2026). Angiotensin receptor conformations stabilized by biased ligands differentially modulate β-arrestin interactions. Journal of Biological Chemistry 302, 111117.
- Belyaeva J, Elgeti M (2024) Exploring protein structural ensembles: Integration of sparse experimental data from electron paramagnetic resonance spectroscopy with molecular modeling methods. eLife 13:e99770.
- Zhao J, Elgeti M, O'Brien ES, Sár CP, El Daibani A, Heng J, Sun X, White E, Che T, Hubbell WL, Kobilka BK, Chen C (2024) Ligand Efficacy Modulates Conformational Dynamics of the μ-Opioid Receptor. Nature 629, 474-480.

AG Lamers

Christina Lamers

website

Research focus

- Cyclic peptides as therapeutics
- Solid-phase peptide synthesis and in vitro testing
- Complement system and innate immunesystem as therapeutic targets

We do medicinal chemistry with cyclic peptides from hit identification by phage display and computational methods, towards structure-activity-investigations and optimization

Current projects

- Development of CR3-modulators for inflammatory diseases
- Identification of novel C5aR-antagonists for neurodegenerative diseases

Methods used in the group

Solid-phase peptide synthesis, LCMS, phage display

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Requirements for working in the group

High intrinsic motivation, excitment for peptide synthesis and drug discovery; experience in synthesis or in assay development is helpful, experience with peptide synthesis is a plus

AG Lamers

Collaborations with other groups

AG Meiler, AG Schoeder, AG Isermann, AG Coin, AG Matysik

Miscellaneous information

We are an international group with backgrounds from pharmacy, chemistry, biochemistry and bioinformatics, which communicates mostly in English. We enjoy our friday cake time together.

Key literature

- C. Lamers, X. Xue, M. Smieško, H. van Son, B. Wagner, N. Berger, G. Sfyroera, P. Gros, J.D. Lambris, D. Ricklin. Insight into mode-of-action and structural determinants of the compstatin family of clinical complement inhibitors. Nat Commun. 2022;13(1):5519. https://doi.org/10.1038/s41467-022-33003-7
- C. Bechtler, C. Lamers. Macrocyclization strategies for cyclic peptides and peptidomimetics. RSC Medicinal Chemistry 2021. RSC Med Chem. 2021 Jun 29;12(8):1325-1351. https://doi.org/10.1039/D1MD00083G;
- Sommer-Plüss CJ, Leiggener C, Nikci E, Mancuso RV, Rabbani S, Lamers C, Ricklin D.Determining Ligand Binding and Specificity Within the β2-Integrin Family with a Novel Assay Platform. Biomolecules. 2025 Feb 7;15(2):238. doi: 10.3390/biom15020238.

AG Schoeder

Clara Schoeder

clara.schoeder@
medizin.uni-leipzig.de

website

What is the focus of the research group?

- Design of computational proteins, vaccines, antibodies and membrane proteins

Computational protein design has had its coming of age with artificial intelligence surpassing the performance of biophysical methods. We use these methods to design protein therapeutics and subsequently express and characterize these proteins. Dependent on the performance of our algorithms we optimize or rewrite these methods to overcome limitations we observe.

What are the current projects?

Many of our projects focus about vaccine design or design of immunotherapeutic drugs such as antibodies or CAR T cells. We design vaccine candidates for pandemic preparedness and we optimize cancer therapies. Around these topics, we typically have some open topics.

AG Schoeder

Requirements for working in the research group?

Curiosity, eagerness to explore beyond what you already know and willigness to work interdisciplinary.

What are the most essential methods and techniques in the lab?

Computational protein design, structure-based design, protein expression, protein biochemistry, chromatography, structural biology

Positions offered

- Master, PhD, Student helpers (SHK/WHK)

Are there any collaborations with other groups?

We have collaborations in Leipzig with the ScaDs.AI, with the AG Beck-Sickinger, with the AG Kaysser, with groups at the Fraunhofer IZI, and many more. In Europe, we work very closely with partners at Oxford University (AG Bowden) and with partners at Copenhagen University (AG Bertelsen-Sander).

What else is nice to know about the research group?

The team (around 25 people) consists of very diverse backgrounds, ranging from biology, biochemistry, pharmacy, chemistry to bioinformatics and informatics.

Other research groups of the Institute for Drug Discovery

Meiler Lab

website

Künze Lab

website

Tretbar Lab

website

AG Blanco-Redondo

Beatriz Blanco-Redondo

Beatriz.Blanco-Redondo@medizin.uni-leipzig.de

+49 341 - 97 22117

website

What is the focus of the research group?

→ aGPCRS, Neurodegenerative diseases, Neuro, Signalling pathways

My research focuses on precise genome engineering in Drosophila melanogaster to investigate gene function and molecular mechanisms underlying nervous system development and disease. Using CRISPR/Cas9 and recombinase-based tools, I generate targeted knock-outs, knock-ins, and transgenic lines to dissect structure–function relationships in vivo. I study Remoulade (Remo), a recently identified adhesion GPCR, and model rare neurodevelopmental and neurodegenerative disorders such as NEDCAM, leveraging Drosophila's powerful genetics to uncover mechanisms with potential therapeutic relevance.

What are current projects?

- Cell biological and molecular analyses on GAIN domain cleavability of adhesion GPCRs
- Remoulade signaling pathways
- Study of the NEDCAM disease

AG Blanco-Redondo

Requirements for working in the research group?

We look for curious, motivated students who enjoy problem-solving, careful experimentation, and teamwork. Experience is a plus, but enthusiasm, reliability, and a strong desire to learn matter most.

What are the most essential methods and techniques in the lab?

- CRISPR/Cas9
- Protein biochemistry
- Immunohistochemistry

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Are there any collaborations with other groups?

Yes, we collaborate with groups with the University of Leipzig, China and the US

What else is nice to know about the research group?

We’re a friendly, supportive group that values open communication and teamwork. We regularly discuss ideas, troubleshoot experiments together, and help each other out at the bench. We aim to create an environment where everyone feels comfortable asking questions, sharing thoughts, and learning from mistakes.

AG Fast/Horn

Luisa Fast, Susanne Horn

Luise.Fast@medizin.uni-leipzig.de
Susanne.Horn@medizin.uni-leipzig.de

www.Hornlab.org

What is the focus of the research group?

- Bioinformatics, Genome, Transcriptome
- Genomics, Transcriptomics, Medical Genetics, CRISPR
- Advanced transcript variant analytics, genetic signatures of adaptations in signaling components

Requirements for working in the research group?

Some basics in programming, database work, advanced understanding of molecular biology/genetics

Positions offered

- Bachelor, Master, Student helpers (SHK/WHK)

Key publications for insight into the work:

Boeschen M, Le Duc D, Stiller M, von Laffert M, Schöneberg T, Horn S. Interactive webtool for analyzing drug sensitivity and resistance associated with genetic signatures of cancer cell lines. J Cancer Res Clin Oncol. 2023 Aug;149(9):5539-5545.

Langenhan Lab

Prof. Dr. med. Tobias Langenhan, M.Sc., D.Phil. (Oxon)

tobias.langenhan@uni-leipzig.de

Johannisallee 30, 04103 Leipzig

website

What are the main research topics?

- Adhesion GPCRs
- Toll-like receptors
- T cell receptors
- Neurobiology of the synapses
- Synthetic biosensors
- Mechanobiology
- Biophysics of signalling pathways
- Genetics

What are current projects?

- Elucidation of adhesion GPCR signalling pathways
- Biophysics of transmembrane receptor modules (adhesion GPCRs, Toll like receptors, T cell receptors)
- Engineering of novel chimeric antigen receptors

Requirements for working in the research group?

Good command of biochemical methods and/or molecular cloning. English is the working language of the lab and proficiency in spoken and written English is required.

Langenhan Lab

What is the focus of the research group?

Our research group investigates how cells sense, process, and translate signals into physiological and pathological responses, with a particular focus on adhesion GPCRs, synapse biology, and oncology. We are interested in the molecular logic of signal transduction across different biological scales, from receptors and signalling complexes to cells, tissues, and whole organisms, which we also engineer for human disease models in collaboration with clinical scientists and clinicians.

We offer Master's and PhD projects at the interface of biochemistry, neurobiology, genetics, biophysics, physiology, and pathophysiology. Current research areas include the development of synthetic biosensors, mechanobiology, the biophysics of signal transduction, receptor engineering, and genetics-based approaches to dissect cellular communication in health and disease. We are also exploring translational concepts such as CAR-based strategies and disease-relevant models for neuropsychiatric diseases and cancer biology.

Our projects are suitable for students who are motivated to work in an interdisciplinary environment and who want to combine mechanistic thinking with experimental innovation. Depending on the project, students can engage with molecular and cellular biology, advanced genetics, quantitative physiology, imaging, and functional analysis of signalling systems.

The lab provides a collaborative and concept-driven environment for students who want to address fundamental biological questions while contributing to medically relevant research.

Langenhan Lab

What are the most essential methods and techniques in the lab?

- Drosophila melanogaster
- cell culture
- in vivo and in vitro microscopy (confocal, FRT, dSTORM, FLIM);
- protein biochemistry
- genomic engineering
- RNAi screens

Positions offered

- Master, PhD, Student helpers (SHK/WHK)

Are there any collaborations with other groups?

My lab hosts members that hail from an international background (currently this includes people from Spain, South Africa, Hongkong, Czech Republic). We strive to allocate students' projects that each are important to the solving of a wider scientific problem so that every lab member works on cutting edge questions.

Importantly, this way also junior members share in the responsibility for the lab's success. Applicants should thus be self-dependent in their project after thorough initial training and enjoy this working mode. A unique aspect of the lab's scientific scope is the interaction with medical disciplines (human genetics, neurology, pathology, internal medicine) for some projects. In collaborations we develop Drosophila models for human diseases to establish causality for genetic aberrations found in patients with their clinical symptoms. We also maintain international collaborations with labs in the US, UK, the Netherlands, Poland, Sweden, France, and Switzerland ranging from academic groups to partners in the industry.

Ljaschenko Lab

Dmitrij Ljaschenko

Dmitrij.Ljaschenko@medizin.uni-leipzig.de

website

Research focus

- Neursoscience
- Receptors
- aGPCR
- Hydra
- Neurobiology

Current projects

- see Website

Methods used in the group

- Electrophysiology
- Imaging

Positions offered

- Bachelor, Master

Requirements for working in the group

- Interest in Neurosciences

Collaborations with other groups

- Yes, see Website

AG Liebscher

Prof. Dr. Dr. Ines Liebscher
Dr. Sandra Berndt
Dr. Juliane Lehmann

bbzlisek@bbz.uni-leipzig.de

website

Research focus

- Structure–function relationships in adhesion G protein–coupled receptor (aGPCR) signaling
- Molecular mechanisms of aGPCR activation, including ligand-dependent and mechanical activation
- G protein–dependent and G protein–independent intracellular signaling pathways
- Non-canonical signaling mechanisms of adhesion GPCRs
- Identification and characterization of adaptor proteins involved in receptor signaling
- Physiological roles of aGPCRs in tissue function and metabolism, particularly in adipose tissue
- Role of adhesion GPCRs in bone homeostasis and skeletal biology

Our research focuses on the molecular mechanisms of adhesion G protein–coupled receptor (aGPCR) signaling. Adhesion GPCRs represent a large and still incompletely understood subgroup of GPCRs that play important roles in cell–cell communication, tissue organization, and physiological regulation. We investigate the structural and functional properties of these receptors,

AG Liebscher

their activation mechanisms, and their downstream intracellular signaling pathways, including both G protein-dependent and independent signaling mechanisms.
Using biochemical, structural, and cellular approaches, our group aims to understand how adhesion GPCRs respond to extracellular stimuli such as ligand binding or mechanical signals. In addition, we study the physiological roles of these receptors in tissue function and metabolism as well as their involvement in bone homeostasis and skeletal biology.

Current projects

- Structure-function analysis of adhesion GPCRs and identification of key domains involved in receptor activation
- Investigation of ligand-dependent and mechanical activation mechanisms of aGPCRs
- Characterization of G protein-dependent and independent signaling pathways
- Functional analysis of adaptor proteins involved in receptor signaling
- Investigation of aGPCR functions in tissue physiology, including adipose tissue biology
- Functional characterization of specific aGPCRs in mouse and zebrafish models
- Studies on the role of adhesion GPCR signaling in bone homeostasis and skeletal development

AG Liebscher

Methods used in the group

- GPCR signaling and second messenger assays (e.g. BRET, accumulation assays, phosphorylation assays, Western blot)
- Protein-protein interaction studies (pull-down assays, co-immunoprecipitation)
- Structural analysis of signaling proteins (protein crystallography)
- Mammalian cell culture, including primary cells
- Gene expression analysis (qPCR, in situ hybridization)
- Animal models to study physiological receptor functions

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Collaborations with other groups

We have a lot of national and international collaborations.

Miscellaneous information

We are a positive, inclusive team with exciting topics and diverse techniques. We look forward to welcoming motivated and dedicated team members.

Key literature

- Lehmann J, Lin H, Zhang Z, Wiermann M, Ricken AM, Brinkmann F, Brendler J, Ullmann C, Bayer L, Berndt S, Penk A, Winkler N, Hirsch FW, Fuhs T, Käs J, Xiao P, Schöneberg T, Rauner M, Sun JP, Liebscher I. The mechanosensitive adhesion G protein-coupled receptor 133 (GPR133/ADGRD1) enhances bone formation. Signal Transduct Target Ther. 2025 Jun 30;10(1):199. doi: 10.1038/s41392-025-02291-y

AG Liebscher

- Sun JP, Xiao P, Liebscher I. The therapeutic potential of orphan adhesion G-protein-coupled receptors. Nat Rev Drug Discov. 2026 Feb 26. doi: 10.1038/s41573-025-01371-6
- Mitgau J, Franke J, Schinner C, Stephan G, Berndt S, Placantonakis DG, Kalwa H, Spindler V, Wilde C, Liebscher I. The N Terminus of Adhesion G Protein-Coupled Receptor GPR126/ADGRG6 as Allosteric Force Integrator. Front Cell Dev Biol. 2022 Jun 23;10:873278. doi: 10.3389/fcell.2022.873278

Scholz lab

Nicole Scholz

scholzlab@gmail.com

website

Rudolf Schönheimer Institute of Biochemistry, Division of General Biochemistry

Research focus

- Neural Mechanobiology
- Brain metabolism
- Aging
- Learning and Memory
- Adhesion GPCR biology and compound identification

Current projects

See research focus

Methods used in the group

Drosophila genetics, IHC, signaling assays, microscopy, electrophysiology, functional imaging (FRET, Ca2+ imaging), Drosophila and mammalian cell cultures, molecular biology, protein biochemistry (Western blots, IP, CoIP)

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Scholz lab

Requirements for working in the group

This central requirement is curiosity and motivation to understand fundamental cell biological concepts.

Miscellaneous information

We are a fun and supportive group that works hard and values a strong team spirit, where everyone looks out for one another. For a creative break between experiments, we sometimes enjoy playing table tennis or foosball.

Key literature

- Bormann A*, Körner MB*, Dahse A-K*, Gläser MS, Irmer J, Lede V, Alenfelder J, Lehmann J, Hall DCN, Thane M, Schleyer M, Kostenis E, Schöneberg T, Bigl M, Langenhan T, Ljaschenko D#, Scholz N# (2025). Intron retention of an adhesion GPCR generates 1TM isoforms required for 7TM-GPCR function. Cell Rep. 44(1):115078. Doi: 10.1016/j.celrep.2024.115078.

AG Stäubert

PD Dr. rer. nat. Claudia Stäubert

claudia.staeubert@medizin.uni-leipzig.de

website

Research focus

- How does activation of G protein-coupled receptors by (bacterial) metabolites influence the human immune system and energy metabolism?
- Are metabolite-sensing G protein-coupled receptors localized intracellularly and signal from there?
- What is the role of metabolite-sensing G protein-coupled receptors in cancer cell metabolism and proliferation?

Methods used in the group

- high-throughput signal-transduction analyses
- label-free and BRET-based technologies
- evolutionary analyses
- high-throughput live cell imaging
- Live-cell metabolic assays

Positions offered

- Bachelor Master PhD HiWi/SHK

Miscellaneous information

We are a fun and supportive group that works hard and values a strong team spirit, where everyone looks out for one another. For a creative break between experiments, we sometimes enjoy playing table tennis or foosball.

Other research groups of the Rudolph-Schönheimer Insitute

Berndt Lab

website

Schöneberg Lab

website

Schulz Lab (only on German website)

website

Thor Lab

website

ChemFate

Annika Jahnke

annika.jahnke@ufz.de

website

Helmholtz Centre for Environmental Research – UFZ

Research focus

- The factors governing the environmental fate of chemicals, including partitioning, reactivity, biotransformation, bioaccumulation and models to predict chemical behavior in organisms and abiotic environmental compartments
- The methodological tool box covering innovative formats of passive samplers to extract chemicals from abiotic and biotic media and conceptual approaches for novel target analytics and reactivity assays,
- The investigation of environmental chemicals in abiotic, natural and anthropogenic media incl. plastics and the determination of the exposure of environmental biota (amongst others marine and terrestrial mammals) and humans to mixtures of organic chemicals, and
- The target group-focused outreach of the obtained research outcomes to stakeholders and the public.

Current projects

- www.ufz.de/p-leach www.ufz.de/exposo-meter
- www.ufz.de/nanoinhale

Methods used in the group

passive sampling GC-MS(MS), GC-HRMS, LC-MS(MS), LC-HRMS modeling

ChemFate

Positions offered

- Bachelor/Master
- Student helpers (SHK/WHK)

Requirements for working in the group

experimental skills, lab work, modeling

Collaborations with other groups

numerous, see our website and the project websites for more details

Miscellaneous information

innovative, international, integrative

Key literature

- https://doi.org/10.1039/D2CC06882F
- https://doi.org/10.1016/j.jhazmat.2025.138511
- https://doi.org/10.1038/d41586-026-00314-4

Electrobiotechnology

Falk Harnisch

falk.harnisch@ufz.de

website

Research focus

- Development and engineering of electrobiorefineries
- Interfacing microbial and electrochemical synthesis for sustainble chemistry
- Energetics of electroactive microorganisms and microbial electrochemical systems
- Study of the microbial ecology of electroactive microbial cultures
- Development of electrobioreactors as well as new methods and protocols in the field
- Fancy ad hoc projects (related to microbiology and/ or electrochemistry)

We are active in the highly vibrant field field of electrobiotechnology focussing on application-driven fundamental research at the interfaces of electrochemistry | microbiology | engineering.

Methods used in the group

Microbiology, electrochemistry, analytical chemistry, many more that depend on project needs and personal preferenes and tinkering

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Electrobiotechnology

Current projects

See webpage

Requirements for working in the group

Curiosity & Passion: We want people who geek out over microbes, electricity, or saving the planet (or all three!).
Team Spirit: We're all about collaboration. No lone wolves.
Hands-On Mentality: If you like tinkering, building stuff, or figuring things out as you go, you'll fit right in.
Basic Lab Skills: Know your way around a lab? Great! If not, no stress—we'll teach you.
Open Mind: Science is messy. So we are and you should be okay with failing, learning, and trying again.
Not English or German, at least a little of both.

Collaborations with other groups

See webpage

Miscellaneous information

Our most cute member is "Mr. Electron".
Reach out, if you do not mind the way to our labs.

Electrobiotechnology

Key literature

- Schröder, U., Harnisch, F., Heidrich, E., Ieropoulos, I.A., Logan, B.E., Nath, D., Pant, D., Patil, S.A., Puig, S., Ren, J., Rossi, R., Rotaru, A.-E., ter Heijne, A. (2026): Waste to value: microbial electrochemical technologies for sustainable water, material, and energy cycles, Frontiers in Science 4 , art. 1688727 10.3389/fsci.2026.1688727
- Kuchenbuch, A., Al-Sbei, S., Rosa, L.F.M., Boto, S.T., Westermann, M., Rosenbaum, M.A., Harnisch, F. (2025): Reducing oxygen stress and improving hydrogen availability boosts microbial electrosynthesis by Clostridium ljungdahlii, ChemSusChem 18 (21), e202501118 10.1002/cssc.202501118
- ter Heijne, A., Harnisch, F. (2024): Microbial electrodes, Nat. Rev. Method. Prim. 4 , art. 60 10.1038/s43586-024-00332-4

Integrative Toxicology (iTox)

Wibke Busch

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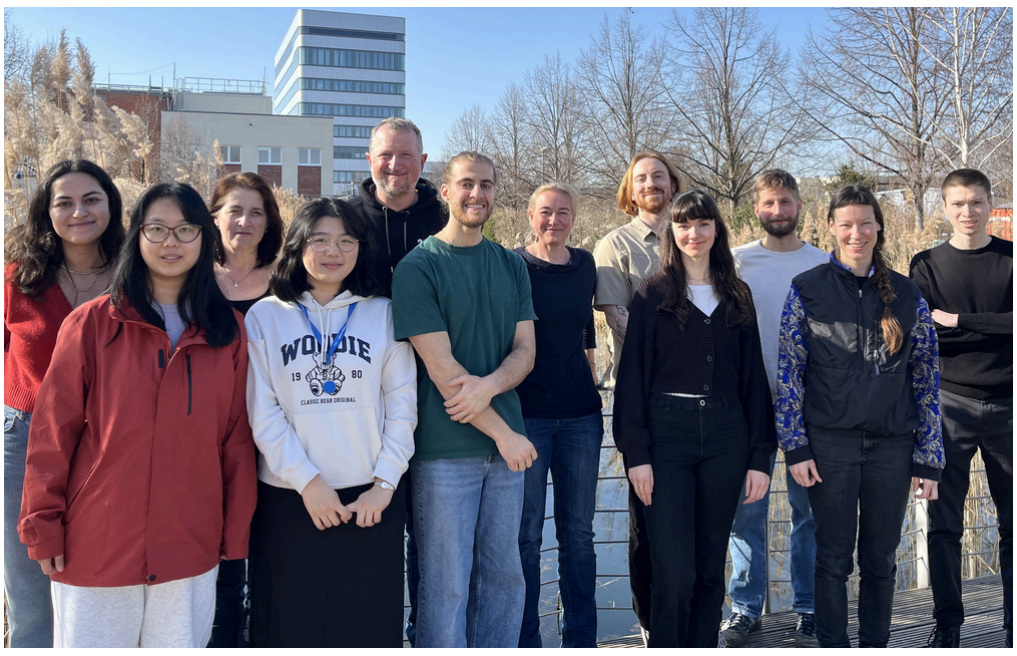
website

Helmholtz-Centre for
Environmental Research - UFZ



Research focus

- Molecular toxicology
- Toxicogenomics
- Data-driven approaches and bioinformatics in toxicology
- Hazard and risk assessment
- Chemical mixtures and combined effect
- Systems toxicology

Methods used in the group

Toxicity tests, mixture modelling, RNA sequensing, zebrafish embryo tests, meta-analyses

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Requirements for working in the group

Interest in toxicology, interest in data-driven analyses and effect patterns, interrest in mixture effects, interest in risk assessment, some knowledge in chemistry, basics in R

Integrative Toxicology (iTox)

Collaborations with other groups

many collaborations with chemists, cell biologists, and chemical regulators

Miscellaneous information

interdisciplinary group with students and scientists with different backgrounds

Key literature

- see homepage

Other research groups at the UFZ

Grouped by the following departments:

Ecosystems of the Future

website

Water, Resources and Environment

website

Chemicals in the Environment

website

Sustainable Ecotechnologies

website

Smart Models/Monitoring

website

Environment and Society

website

AG Statistical Physics of Evolution

Ralf Steuer

ralf.steuer@uni-leipzig.de

website

Research focus

- Computations Systems Biology
- Metabolic Network Analysis (Network Reconstruction, FBA)
- Principles of Microbial Growth
- Microbial Ecology
- Cellular Economy / Cellular Resource Allocation
- Systems Biotechnology
- Green Biotechnology (Cyanobacteria)
- Systems Biology of the Liver

We seek to understand the organization and functioning of living cells using methods from statistical physics and quantitative systems biology. We primarily work computationally and develop models of cellular processes. Applications range from metabolic network reconstructions for selected organisms to the emergence of metabolic interactions in microbial ecosystems. One of our model systems are cyanobacteria, phototrophic microbes that are primary producers in many ecosystems.

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Requirements

Basic skills in programming (Python, Matlab)and an interest in Computational Systems Biology.

AG Statistical Physics of Evolution

What are the essential methods and techniques in the lab?

- Simulations
- Model Development
- Data Analysis
- Linear Programming
- Optimization.

Are there any collaborations with other groups?

We have many collaboration, internationally as well as within the Leipizg/Halle region.

Key publications:

- [Teusink B, Grigaitis P, Remeijer M, Bruggeman F, Steuer R. Resource allocation models: theory and applications in microbial biotechnology. Curr Opin Biotechnol. 2026 Feb;97:103391. doi: 10.1016/j.copbio.2025.103391
- R Höper, D Komkova, T Zavřel, R Steuer (2024) A quantitative description of light-limited cyanobacterial growth using flux balance analysis. PLOS Computational Biology 20 (8), e1012280
- FJ Bruggeman, B Teusink, R Steuer (2023) Trade-offs between the instantaneous growth rate and long-term fitness: consequences for microbial physiology and predictive computational models. Bioessays 45 (10), 2300015

Structure Analysis

Norbert Sträter

strater@bbz.uni-leipzig.de

website

Helmholtz Centre for Environmental Research - UFZ

Research focus

- Protein structure analysisStructural biology
- Molecular recognition
- Enzyme catalysis/Enzyme design
- Structure-assisted drug development
- Extracellular signalling

Current projects

- Autocleavage mechanism of GAIN domains in adhesion GPCRs
- PET hydrolases for efficient plastic recycling
- Structure, function and inhibition of extracellular nucleotidases in purinergic signalling
- Peptides and peptidomimetics as antiviral and antiinfective agents targetting viral proteases and the ribosome
- Enzymes in the synthesis of natural products with biological activity and therapeutic potential

Methods used in the group

- Protein crystallography
- Protein preparation
- Enzyme assays
- Protein bioanalytics
- Binding assays

Structure Analysis

Positions offered

- Bachelor, Master, PhD, Student helpers (SHK/WHK)

Requirements for working in the group

- Knowledge of biochemical techniques, in particular in gene technology

Interest in lab work and computational work
High motivation

Collaborations with other groups

We cooperate with many other research groups in understanding the protein structure and function

Key literature

- Richter et al. Structure and function of the metagenomic plastic-degrading polyester hydrolase PHL7 bound to its product. doi: 10.1038/s41467-023-37415-x
- Kratky et al. Structural and Mechanistic Studies on Substrate and Stereoselectivity of the Indole Monooxygenase VpIndA1: New Avenues for Biocatalytic Epoxidations and Sulfoxidations. doi: 10.1002/anie.202300657
- Bhattarai et al. 2-Substituted α,β-Methylene-ADP Derivatives: Potent Competitive Ecto-5'-nucleotidase (CD73) Inhibitors with Variable Binding Modes. doi: 10.1021/acs.jmedchem.9b01611

Molecular Cell Therapy

Prof. Dr. Peter Seibel

sekretariat-mzt@bbz.uni-leipzig.de

website

Research focus

Mitochondrial and Cellular Biology: To understand the molecular basis of mitochondrial function, the crosstalk between nucleus and mitochondria as well as the fate of mitochondria during embryogenesis, tissue development and disease.

Methods used in the group

Cell culture, qPCR, cloning, fluorescence and confocal microscopy

Positions offered

- Bachelor, Master

Other research groups

Further life-science related possibilities at other intitutions:

Insitute of Immunology (at the BBZ, Faculty of Vetenary Medicine)

website

Bioanalytics group (at the BBZ, Faculty of Chemistry)

website

Insitute for Bioanalytical Chemistry (Faculty of Chemistry)

website

Insitute for Organic Chemistry (Faculty of Chemistry)

website

Peter Debye Institute for Soft Matter Physics (Faculty of Physics)

website

Medical research groups (Faculty of Medicine)

website

Fraunhofer Institute for Cell Therapy and Immunology

website

Max-Planck Institute for Evolutionary Anthropology

website

Max-Planck Institute for Cognitive and Brain Sciences

website