

# DEPARTMENT OF BIOMEDICINE

#### NEWSLETTER SPECIAL EDITION MAY 2025



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#### Basel, May 23, 2025

Dear all,

We are delighted to welcome you to this *golden* edition of the DBM Newsletter! What makes this issue special is its release in conjunction with the foundation stone ceremony for our new building – and the inclusion of a printed copy in the time capsule that will be sealed within its walls.

This newsletter has been created to offer a snapshot of the DBM, which should be of interest not only to our regular readers, but also to the esteemed guests at today's celebration, and even to a future reader in the year 2075 – someone who might not yet be born!

This edition of our newsletter goes beyond our usual updates on new team members, recent grants, and accepted publications. In this edition, we share broader reflections on our science, our vision, our programs, and our culture. Representatives from our various research areas have contributed insights that illustrate where we stand today in the biomedical sciences and where we might be in 50 years from now. [To our future readers, please forgive us if our predictions are way off – with your advanced Al tools, we're sure you'll do much better!]

This year also marks the 25<sup>th</sup> anniversary of the DBM. We invite you to read this newsletter and experience this ceremony as a celebration of our mission: to promote scientific excellence, to drive translational innovation, and to inspire new generations of talent – including you, dear reader, in 2075!

With warmest regards,

Andrea Ottolini-Voellmy Managing Director Ivan Martin Head of Department

# THE DEPARTMENT OF BIOMEDICINE

### FOUR PILLARS OF EXCELLENCE

#### **Translational Research from Bench to Bedside**

At the DBM, basic, preclinical, and clinical scientists from all fields of biomedical research work closely together to understand biological mechanisms of health and disease and to translate cutting-edge discoveries into pioneering diagnostics and therapies.

#### **Diverse Minds, Shared Curiosity**

Researchers from different nationalities, along with technical and administrative staff, work together in a vibrant and respectful environment to advance interdisciplinary science. While fostering collaboration and translational progress, the DBM remains firmly committed to scientific integrity and academic independence.

#### **Strong Science, Clinical Impact**

Within a structured partnership between the University of Basel and the University Hospitals in Basel, we are committed to integrating the rigor of fundamental research with the drive to address relevant clinical questions and challenges.

#### **Position in the Basel Life Sciences Cluster**

The DBM is a key player in the Basel Life Sciences Cluster – one of Europe's top biomedical hubs. It connects the academic, healthcare, and industrial sectors through a legacy of innovation. It contributes with distinct competencies, translational perspectives, and state-of-the-art scientific core facilities.



# 780 Publications (Ø/year)

1 83 Employees

# 48

Nationalities

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**36** Million CHF Third Party Funding

> Founded in **20000** 25 Years



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172 PhD and MD PhD Students

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**45** Structural Professors

# CURRENT SNSF ADVANCED GRANTS

4, including two newly awarded in 2025:

Immune-neuro-metabolic regulation of the distribution of cellular nutrients and its functional consequences Marc Donath Start: 01.01.2025 | End: 31.12.2029

From Dormancy to Metastasis: unveiling hidden mechanisms and preventing the fatal switch in breast cancer Mohamed Bentires-Alj Start: 01.01.2025 | End: 30.06.2029

# NEW SNSF PROJECT FUNDING

More than 50, of which 6 were newly awarded in 2025:

Defining the metabolic and non-metabolic roles of OPRT in EBV-driven B cell lymphoma Christoph Hess Start: 01.04.2026 | End: 31.03.2030

**RBM3 in microglia: target of therapeutic hypothermia after brain ischemia** Raphael Guzman Start: 01.05.2025 | End: 30.04.2029 Odour-based volatile compounds for metabolism control – The OLFAMED project Katharina Timper Start: 01.04.2025 | End: 31.03.2029

Performance-Optimized Macrophages to Circumvent Immunosuppression in BrainTumors Gregor Hutter and Roberto Speck Start: 01.04.2025 | End: 31.03.2029

Quantification of bone marrow niche plasticity and its functional consequences on stem cell differentiation in humans Judith Zaugg Start: 01.04.2025 | End: 31.03.2029

SOX2/Ribosome-interactions: A new chemical space for targeted intervention in reprogramming and cancer stemness Thorsten Schäfer Start: 01.04.2025 | End: 31.03.2027

# OTHER SNSF FUNDED PROJECTS

More than 10 (Starting Grants, Ambizione, Eccellenza, etc.)

# LAYING THE FOUNDATION FOR THE FUTURE

#### THE DEPARTMENT OF BIOMEDICINE RESEARCH BUILDING 2031

#### Our Vision for 2031

With the new building on the Schällemätteli campus, the DBM will enter a new chapter. For the first time, all research groups, core facilities, and administrative units will come together under one roof. This physical proximity will foster more direct and spontaneous interaction between teams and disciplines, establishing the conditions for interdisciplinary collaboration to flourish even further.

While the DBM has long operated successfully across multiple sites, many of the department's current buildings were not originally designed to meet today's experimental requirements. As a result, key technical standards cannot always be reliably met. In contrast, the new building will support high-precision experiments under optimal conditions, with reduced vibrations and improved climate control. These enhancements—along with many other aspects of the new building's design—will benefit a wide range of experimental approaches across the DBM, including sensitive techniques such as high-end microscopy.

To support long-term research development, flexibility was a central principle in the building's design. The building is intended to accommodate evolving research needs and emerging technologies—an essential factor in sustaining scientific excellence over time.

At the same time, the building's location will strengthen connections with partner institutions. Situated next to the Biozentrum, ETH Zurich, and the University Children's



Hospital, and connected by a tunnel to the University Hospital Basel, it will open new opportunities for collaboration within the Basel Life Sciences Cluster.

Alongside state-of-the-art research spaces, the new building also improves everyday working conditions. A central Science Lounge, kitchenettes with water dispensers, and optimized lighting and acoustics all contribute to a comfortable and efficient work environment.

Together, these features support focused research and collaboration. The building is therefore not only an important milestone for the DBM, but also a clear signal of commitment to the future of biomedical science in Basel.



#### A Building that Redefines Collaboration

The workspaces in the new building are designed to support both collaboration and focused work. Open desk areas close to the laboratories will promote daily interaction within research teams, while kitchenettes on each floor and a central Science Lounge will offer opportunities for informal discussion and short breaks. Each research floor has a dedicated meeting room suitable for smaller meetings. In addition, six larger meeting rooms and a seminar room for approximately 100 people will be available on the first floor, all equipped with modern technology for hybrid and digital meetings. As essential pillars of the department's daily research activities, our core facilities will be spatially clustered in a layout tailored to their specific needs and designed to support integrated, cross-platform workflows. Together with the animal facility, another key infrastructure, they will be easily accessible to researchers throughout the building.

Taken together, these elements will create an environment that promotes collaboration within and across research groups and disciplinary boundaries.

#### **Innovations in Construction**

The new DBM building was planned as a research environment that combines modern infrastructure with responsible energy use. To support this goal, the building relies on energy-efficient systems: laboratories will be cooled using chilled ceiling panels, providing stable conditions through low-energy radiant cooling. In the office areas, the building's concrete structure is actively used to store and release heat, providing stable indoor conditions with minimal energy input. These core systems are com-







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plemented by a rooftop photovoltaic installation and intelligent LED lighting that automatically adjusts to daylight and occupancy, further reducing energy consumption.

The flexible room layout supports long-term conservation of resources by allowing future modifications with minimal structural intervention. In addition to energy efficiency, user comfort was a central consideration: the acoustic concept minimizes noise levels, while an electrochromic façade dynamically responds to sunlight without obstructing the view, enhancing both well-being and energy efficiency.

#### **Closing Remarks**

The laying of the foundation stone marks a visible milestone in a journey shaped by years of careful planning and collaboration. It is deeply rewarding to now see the results of these efforts taking shape and to witness the building become a physical reality. A sincere thank you goes to everyone who contributed their expertise, dedication, and persistence to this project, from the scientific planning teams and project management to those involved in the technical and architectural realization. We are also grateful to the University of Basel and the cantons of Basel-Stadt and Basel-Landschaft for their continued support throughout the process.

The new building provides the spatial framework for the DBM to continue its successful research and to strengthen its profile as a center for biomedical excellence.

**Christophe Kunz** Coordinator New Building

# RESEARCH AREAS

Our department conducts research in all areas of biomedical science, structured around four principal domains: Cancer Research, Immunology & Infectious Diseases, Neuroscience, and Tissue Development & Regeneration. In Cancer Research, we investigate the mechanisms of tumor development and explore novel therapeutic strategies. Our Immunology research focuses on understanding the complexity of the immune system and its role in health and disease. In the field of Neuroscience, we study brain function and neurological disorders to uncover the biological basis of cognition and behavior. Tissue Development & Regeneration investigates stem cells in both health and disease, and explores innovative strategies for tissue repair and regeneration. Together, these research areas reflect our commitment to advancing biomedical knowledge and translating scientific findings into medical progress.

To mark the laying of the foundation stone for our new building, we asked each of our four research areas to reflect on their journey and aspirations. They were invited to look back at the most significant achievements of the past decade and to share their vision for the future of their field in the year 2075. These reflections connect our scientific past, present, and future, and celebrate the ongoing contribution of biomedical research to society.

# **NEUROSCIENCE**

Have you ever wondered why music moves you, why some memories linger, or how you sense a loved one's mood from their footsteps? These experiences reveal the complexity of how the brain perceives and responds to the world. Recent advances in circuit dynamics, plasticity, neurotechnology, and molecular tools—like systemic modulation of cell types, spatial molecular techniques, and 3D brain organoids—have deepened our understanding of brain function. Researchers have also gained deeper insight into how both neuronal and non-neuronal cell types contribute to brain activity. Together, these developments are reshaping our understanding of how our sensory world is constructed and pave the way for more targeted, personalized interventions for neurological and psychiatric disorders.

According to Prof. Dr. Tania Rinaldi Barkat, one of the two chairs of this research area, two major challenges in the field may be—at least partially—overcome by 2075. The first is the continuing difficulty of translating findings from animal models to human cognition. Bridging this gap will require innovative cross-species paradigms and computational tools to extrapolate across different brain architectures. Future discoveries in animal models may more reliably inform our understanding of the human mind. The second challenge is the immense complexity of the brain. Even with today's advanced tools, it is still difficult to determine whether changes in neural activity reflect external stimuli or internal states such as attention, motivation, or expectation. Massively parallel

recording, next-generation imaging, and context-aware Al models are expected to disentangle these signals and shed new light on the brain-behavior dynamics. Prof. Dr. Gregor Hutter, the other chair of this research area, emphasizes that a key element of future progress will be the ability not only to observe, but also to precisely manipulate neuronal and non-neuronal cell types. The advent of sophisticated brain organoid technology, coupled with high-throughput molecular tools such as CRISPR-based genome editing and advanced drug screening platforms, will allow us to dissect the specific contributions of cell types like microglia to circuit development, function, and dysfunction. This capability will be particularly transformative in understanding and potentially treating neurodegenerative diseases, brain cancers, and other neurological disorders, where the role of non-neuronal cells is increasingly recognized as critical.

# **CANCER BIOLOGY**

In the past decade, cancer research and care have changed dramatically-not only in terms of new therapies, but also in the way cancer is approached as a disease. Interdisciplinary care in comprehensive cancer centers, where all involved disciplines (oncology, surgery, radiology, pathology, etc.) contribute to treatment decisions, has become the standard of care. This has only been possible through years of structural development and investment. Perioperative systemic treatment has become increasingly important and now often increases cure rates by targeting cancer beyond the visible tumor. Immunotherapy, which just a few years ago was considered a niche approach, has become the standard therapy for many types of cancer. Our view of the tumor has also fundamentally changed: we no longer see it as just a mass of malignant cells, but as a complex tissue in which different cells interact with each other and the immune system. This shift in perspective has opened up new possibilities for therapeutic intervention.

Looking ahead to the next 50 years, the hope is that cancer will become a manageable disease. Tumors will be detected earlier, and treated with greater precision. According to the two chairs of the research area, Prof. Dr. Mascha Binder and Prof. Dr. Mohamed Bentires-Aji, Al and better use of data will enable treatments to be more precisely tailored to individual patients. Liquid biopsies may become a routine method to detect cancer at very early stages. Treatments will hopefully be affordable for patients in low-income countries, ensuring that advances in care benefit people globally. The greatest hope, however, lies in finally finding a breakthrough in the treatment of metastasis.

# TISSUE DEVELOPMENT AND REGENERATION

The Tissue Development and Regeneration focus has seen major breakthroughs over the past decade. Organoid technologies have advanced rapidly, including the development of human epidermal organoids for modeling skin diseases and new insights into neural stem cell function. Basic research has led to clinical applications, such as trials using engineered nasal-cartilage grafts for knee repair. Researchers have also made progress in restoring tissues—ranging from controlled angiogenesis and bone regeneration to kidney repair and inner-ear hair-cell protection. Other key areas include cardiovascular, musculoskeletal, and oral-tissue regeneration. Foundational studies in developmental genetics and cellular neurophysiology continue to support the development of future regenerative therapies.

Looking ahead to 2075, the work in tissue development and regeneration is expected to usher in a new era of routine, personalized regenerative medicine-where organ shortages and age-related tissue degeneration are a thing of the past. Researchers envision "organ factories"-automated bioengineering facilities within or connected to hospitals-producing on-demand, patient-matched tissues and organs, guided by advanced bioprinting, bioreactor technology, and Al. This future goes beyond replacement: by building on decades of research in developmental genetics and cellular plasticity, scientists aim to stimulate the body's own ability to repair damaged tissues using drugs or gene therapies. According to Prof. Alexander Navarini, one of the chairs of the research area at the DBM, the future also foresees the development of advanced "human avatars"-complex, multi-organoid systems linked by microfluidics and equipped with integrated sensing and computational capabilities. These avatars would serve as personalized platforms for disease modeling, drug discovery, and pre-clinical testing of complex therapies, greatly accelerating innovation while reducing the need for animal models. This future will also prompt important ethical and societal discussions about fair access to regenerative technologies and how we define human health and lifespan—conversations that will be shaped by the foundational principles and commitment to responsible innovation championed at the DBM.

# IMMUNOLOGY AND INFECTIOUS DISEASES

For Prof. Dr. Carolyn King and Prof. Dr. Christoph Hess, chairs of the research area Immunology and Infectious Diseases, two of the most important achievements in immunology in the past decade have been the application of mRNA vaccines and immunotherapies such as checkpoint blockade and CAR-T cells. Although these technologies are relatively recent, the basic scientific principles underlying their development were decades in the making. For example, mRNA vaccines required knowledge about how to deliver stable mRNA (lipid nanoparticles) and how to prevent an excessive immune response against synthetic mRNA (nucleotide modification). Checkpoint blockade is based on fundamental principles of immune regulation including how to make a lymphocyte "stop" and "go".

Looking to the future of healthcare, the two believe that in the next 50 years AI is likely to be at the forefront, particularly in the use of 'omic' data for disease prediction and tailored therapies. They also envision major advances in our understanding of aging and the microbiome - knowledge which could be applied to dementia, depression, cancer, metabolic diseases, and more. On the other hand, there are clear ethical risks associated with AI, including its massive carbon footprint and the likelihood that it will primarily benefit people in wealthier countries. Considering that a large proportion of the world suffers from diseases which are preventable / treatable, it will be important to weigh the cost of new and exciting AI-driven discoveries with the fair dissemination of knowledge and resources.

# CORE FACILITIES

# CORE FACILITIES AT THE DBM

As we mark the laying of the foundation stone for our new building, we also reflect on the cornerstones that already support our successful research environment — our scientific core facilities.

Scientific core facilities are more than just shared technologies and instruments; they are hubs of expertise, innovation, and collaboration. They play a crucial role in advancing biomedical research — not only through efficiency and cost-effectiveness, but as centers of competence and customized scientific services. Operated by highly trained specialists who stay at the forefront of emerging technologies, these facilities ensure that DBM researchers have seamless access to innovative instrumentation and expert support.

At the DBM, our in-house core facilities include:

BIOINFORMATICS FLOW CYTOMETRY & CELL SORTING MICROSCOPY GOOD MANUFACTURING PRACTICES HISTOLOGY Beyond these, DBM members benefit from access to joint facilities including the Quantitative Genomics Facility, Center for (Electron) Microscopy, Transgenic Mouse Core Facility, and the Small Animal Facility for Nuclear Molecular Imaging – each expanding our research capabilities even further.

What makes our core facilities truly unique is their commitment to accessibility. Services are offered at no or minimal cost, ensuring equal access to all research groups. Their continuous evolution ensures that our scientists remain competitive, creative, and collaborative.

# **BIOINFORMATICS**

#### DATA-DRIVEN INSIGHT AND COMPUTATIONAL TOOLS FOR COMPLEX BIOLOGICAL QUESTIONS.

The Bioinformatics Core Facility, which is part of the Swiss Institute of Bioinformatics, is a central resource for expertise in computational biology and statistics. It supports the analysis, visualization, management, and interpretation of large-scale biological data, primarily from high-throughput genomics experiments. In addition to standard workflows, it offers tailored solutions for specific research needs. The facility also provides individual training and consultation to DBM researchers and organizes courses in collaboration with the Friedrich Miescher Institute for Biomedical Research, such as practical courses in R basics and analysis of genomics data in R and Bioconductor. The facility's mission is to support a strong bioinformatics infrastructure that advances biomedical research at our department.



# FLOW CYTOMETRY & CELL SORTING

#### HIGH-RESOLUTION ANALYSIS AND ISOLATION OF CELLS IN MOTION.

The Flow Cytometry Core Facility is a modern platform that supports DBM researchers with advanced instrumentation and both technical and scientific expertise. This enables the use of a wide range of current flow cytometry techniques. The facility offers training on instrument use, assistance with user-operated cell sorting, guidance on experimental design, and help with data analysis. The DBM Flow Core operates across two locations. At Hebelstrasse 20, trained users have 24/7 access to three BC CytoFLEX analyzers, three BD Fortessas, three Cytek® Aurora spectral analyzers, an AMNIS® ImageStreamX Mk II imaging cytometer, a user-operated BD FACSMelody<sup>™</sup>, and user-operated BC CytoFLEX SRT cell sorters. Specialist-assisted sorting is available on two BD FACSAria<sup>™</sup> sorters, a spectral BD FACSDiscover S8 and an additional Cytek Aurora CS spectral sorter. At the Mattenstrasse site, specialist-assisted sorting is performed using one BD FACSAria<sup>™</sup> III sorter and a spectral Cytek Aurora CS sorter. Self-service instruments include two BC CytoFLEX analyzers, two Cytek® Aurora, and one BD Fortessa. Five experienced specialists ensure the facility's smooth operation and provide guidance throughout all stages of flow cytometry experiments.



# **MICROSCOPY**

#### FROM CONFOCAL TO LIVE-CELL IMAGING, VISUALIZING BIOLOGY WITH CLARITY AND PRECISION.

The DBM Microscopy Facility, a Nikon Center of Excellence since 2022, operates across two sites: Hebelstrasse and Mattenstrasse. As of 2024, a team of five scientists and engineers guides the facility, offering specializations in advanced techniques such as high-content drug screening, smart/self-driving microscopy, tissue clearing and light sheet imaging, image analysis, deep learning, and spatialomics. Over 300 researchers have free access to more than 30 state-of-the-art microscopes, including widefield, confocal, two-photon, and slide-scanning systems, spread across two buildings.

As an active member of the Microscopy Network Basel (MNB), an internationally recognized collaboration among the DBM, Biozentrum, D-BSSE (ETH Zurich), and FMI (Novartis Biomedical Research), the platform contributes to training courses, scientific meetings, and technology innovation. This helps cement Basel's status as a global hub for advanced microscopy.

With a strong foundation in both collaboration and innovation, the DBM Microscopy Facility continues to evolve alongside revolutions in optics, spatialomics, and Al. We are advancing science today while laying the groundwork for the discoveries of tomorrow.



# **GOOD MANUFACTURING PRACTICES (GMP)**

ENABLING TRANSLATIONAL RESEARCH UNDER THE HIGHEST STANDARDS OF QUALITY AND SAFETY.

The Good Manufacturing Practices Facility for Advanced Therapies (GMP-FAT) holds a Swissmedic license for the production of Advanced Therapy Medicinal Products (ATMPs) for clinical trials, supporting cell-, tissue-, and gene-based therapies. It operates two GMP-compliant manufacturing sites-one at the DBM and one at the Labormedizin of the University Hospital Basel (USB)under a shared Pharmaceutical Quality System (PQS) managed by a dedicated Quality Assurance. In the near future, a third manufacturing site at the D-BSSE ETH in Basel will follow. The facility offers expertise in quality management, regulatory affairs, and GMP training for both core staff and users from the DBM and the USB. Created in 2021 by merging two existing GMP clean rooms, the GMP-FAT supports a variety of clinical projects, from phase I to phase II clinical studies on engineered cartilage grafts, tumor-infiltrating lymphocytes (TILs), and virus-specific T cells. Future developments include in-house CAR-T cells and tissue-engineered bone grafts. The facility also contributes to the DBM's Innovation Focii in Cell Therapy and Regenerative Surgery. As one of the few academic GMP facilities in Switzerland, GMP-FAT provides a rare opportunity for research groups to translate findings into clinical applications.



# **HISTOLOGY**

#### TISSUE PROCESSING AND STAINING WITH EXPERT GUIDANCE FOR MORPHOLOGICAL AND MOLECULAR ANALYSIS.

The Department of Biomedicine Histology Core Facility, located at the Anatomy Institute on Pestalozzistrasse, offers researchers state-of-the-art infrastructure and expert support to explore the structure and composition of various tissues. Our goal is to enable a deeper understanding of tissue organization across all levels, from subcellular structures to organ-level complexity.

We provide hands-on training and support for tissue preparation, including paraffin embedding, sectioning, cryosectioning, and routine staining. Our facility is equipped with the latest technology, empowering researchers to expand their technical expertise.

Additionally, we specialize in developing custom staining protocols for advanced techniques such as immunofluorescence, immunohistochemistry, and in-situ hybridization.

Key services include:

Immunostaining using the Ventana System Tissue microarray design and creation Laser capture microdissection Tissue clearing Spatial omics slide preparation



# CAREER OPPORTUNITIES AT THE DBM

With the foundation stone of our new building now laid, the Department of Biomedicine is not only creating a new home for biomedical research—we are shaping the future of science. The DBM currently offers a wide range of opportunities for students, researchers, and professionals to advance their academic and professional development in a dynamic and interdisciplinary environment.



#### FOR ASPIRING RESEARCHERS

#### 1. Master's (for Science and Medical Students) and Doctoral Theses (for MD Students)

Students can conduct master's or doctoral theses within various DBM research groups. These projects are typically offered in collaboration with the Biozentrum or the Medical Faculty of the University of Basel and the University Hospital Basel, providing valuable hands-on experience in translational research.

#### 2. International PhD Program in Biomedicine

Doctoral candidates benefit from an interdisciplinary PhD program closely connected to the PhD in Molecular and Cellular Biology at the Faculty of Science of the University of Basel. Research activities take place at the DBM, while the doctoral degree (Dr. phil.) is awarded by the Faculty of Science.

#### 3. PhD Theses at the Medical Faculty of the University of Basel

For medical students and graduates in the life sciences, the DBM enables PhD theses in Clinical Research or Biomedical Engineering in collaboration with clinical and academic partners, awarded by the Medical Faculty.

#### 4. MD-PhD Program

The MD-PhD program offers a second-line graduate education in Biomedicine for talented medical students with an interest in experimental research. Every MD-PhD student at the DBM enrolls their PhD within the International PhD Program in Biomedicine and the Faculty of Science.

## 5. Academic Rotation Scheme for Early-Career Physicians (Alfred Gasche Stipendium)

Junior physicians (MD or MD-PhD) with at least two years of clinical training may participate in this rotation scheme, allowing them to dedicate one year full-time (or two years at 50%) to research. The program provides Postdoc-level salary funding and is available to applicants affiliated with clinical institutions of the Medical Faculty, enabling research in a DBM group of their choice.

#### FOR POSTDOCTORAL RESEARCHERS

**The DBM Postdoc Club** provides a platform for postdoctoral researchers across disciplines to connect, exchange knowledge, and explore professional development opportunities. Regular seminars and events support networking and career planning within and beyond academia.

#### For Early-Career Scientists – Junior Faculty Program

The Junior Faculty Program supports early-career researchers in establishing their independent scientific profiles. Participants are integrated into the DBM's collaborative environment, with access to research infrastructure and mentoring

#### FOR PROFESSIONALS & SUPPORT STAFF – OPPORTUNITIES IN CORE FACILITIES, HR, IT & COMMUNICATIONS

In addition to research roles, the DBM relies on a wide range of expertise in core facilities, administration, HR, IT, and communications. These positions contribute significantly to the department's operations and scientific output, with internal career development options available across many functions.

# PUBLICATIONS/ AWARDS/ PHD DEFENSES

# **EVENTS**

# NEW COLLEAGUES





# PUBLICATIONS JANUARY – APRIL 2025

The publications are listed by date. We extend our sincere gratitude to Andrea Banfi for his dedicated contribution to editing the publication list.

## Nuclear and cytosolic fractions of SOX2 synergize as transcriptional and translational co-regulators of cell fate

Schaefer T, Mittal N, Wang H, Ataman M, Candido S, Lötscher J, Velychko S, Tintignac L, Bock T, Börsch A, Bassler J, Rao TN, Zmajkovic J, Roffeis S, Löliger J, Jacob F, Dumlin A, Schürch C, Schmidt A, Skoda RC, Wymann MP, Hess C, Schöler HR, Zaehres H, Hurt E, Zavolan M, Lengerke C.

Cell Rep. 2024 Oct 22;43(10):114807. doi: 10.1016/j.celrep.2024.114807. Epub 2024 Oct 3.

## Multidimensional analysis of matched primary and recurrent glioblastoma identifies contributors to tumor recurrence influencing time to relapse

Shekarian T, Ritz MF, Hogan S, Martins T A, Schmassmann P, Gerber A, Roux J, Kaymak D, Durano C, Burger B, Matter M, Hutter G.

J Neuropathol Exp Neurol. 2025 Jan 1;84(1):45-58. doi: 10.1093/jnen/nlae108.

## Neurofilament Light Chain as a Discriminator of Disease Activity Status in MOG Antibody-Associated Disease

Gomes ABAGR, Kim SH, Pretzsch R, Kulsvehagen L, Schaedelin S, Lerner J, Wetzel NS, Benkert P, Maleska Maceski A, Hyun JW, Lecourt AC, Lipps P, Schoeps VA, Matos AMB, Mendes NT, Apóstolos-Pereira SL, Mehling M, Derfuss T, Kappos L, Callegaro D, Kuhle J, Kim HJ, Pröbstel AK.

Neurol Neuroimmunol Neuroinflamm. 2025 Jan;12(1):e200347. doi: 10.1212/NXI.000000000200347. Epub 2024 Dec 20.

# Fedratinib and gandotinib induce apoptosis and enhance the efficacy of tyrosine kinase inhibitors in human mast cells

Makeeva A, Stivala S, Ratti E, Clauss L, Sheremeti E, Arock M, Konantz M, Hartmann K.

Am J Cancer Res. 2025 Jan 15;15(1):84-98. doi: 10.62347/TYTU4465. eCollection 2025.

# A human metabolic map of pharmacological perturbations reveals drug modes of action

Schuhknecht L, Ortmayr K, Jänes J, Bläsi M, Panoussis E, Bors S, Dorčáková T, Fuhrer T, Beltrao P, Zampieri M.

Nat Biotechnol. 2025 Jan 28. doi: 10.1038/s41587-024-02524-5. Online ahead of print.

# Single-cell profiling of penta- and tetradactyl mouse limb buds identifies mesenchymal progenitors controlling digit numbers and identities

Palacio V, Pancho A, Morabito A, Malkmus J, He Z, Soussi G, Zeller R, Treutlein B, Zuniga A.

Nat Commun. 2025 Jan 31;16(1):1226. doi: 10.1038/s41467-025-56221-1.

# PUBLICATIONS JANUARY – APRIL 2025

#### mTORC2 Regulates Actin Polymerization in Auditory Cells

Lanz M, Cortada M, Yu L, Levano S, Bodmer D.

J Neurochem. 2025 Feb;169(2):e70012. doi: 10.1111/jnc.70012.

# Blood-Based Biomarkers for Identifying Disease Activity in AQP4-IgG-Positive Neuromyelitis Optica Spectrum Disorder

Kim SH, Gomes ABAGR, Schindler P, Hyun JW, Kim KH, Lee DE, Schoeps VA, Matos AMB, Mendes NT, Apóstolos-Pereira SLD, Callegaro D, Lerner J, Benkert P, Kuhle J, Ruprecht K, Paul F, Pröbstel AK, Kim HJ.

JAMA Neurol. 2025 Feb 1;82(2):168-175. doi: 10.1001/jamaneurol.2024.4400.

# Deficiency of adenosine deaminase 2 skews adaptive immune repertoires toward specific sets of T- and B-cell receptors

Schultheiss C, Schmidt-Barbo P, Paschold L, Esperanzate C, Behn A, Mikolajczyk R, Kastner DL , Aksentijevich I, Binder M.

J Allergy Clin Immunol. 2025 Feb 7:S0091-6749(25)00124-1. doi: 10.1016/j.jaci.2025.01.032. Online ahead of print.

# Adiponectin reduces immune checkpoint inhibitor-induced inflammation without blocking anti-tumor immunity

Braun LM, Giesler S, Andrieux G, Riemer R, Talvard-Balland N, Duquesne S, Rückert T, Unger S, Kreutmair S, Zwick M, Follo M, Hartmann A, Osswald N, Melchinger W, Chapman S, Hutchinson JA, Haferkamp S, Torster L, Kött J, Gebhardt C, Hellwig D, Karantzelis N, Wallrabenstein T, Lowinus T, Yücel M, Brehm N, Rawluk J, Pfeifer D, Bronsert P, Rogg M, Mattern S, Heikenwälder M, Fusco S, Malek NP, Singer S, Schmitt-Graeff A, Ceteci F, Greten FR, Blazar BR, Boerries M, Köhler N, Duyster J, Ihorst G, Lassmann S, Keye P, Minguet S, Schadendorf D, Ugurel S, Rafei-Shamsabadi D, Thimme R, Hasselblatt P, Bengsch B, Schell C, Pearce EL, Meiss F, Becher B, Funke-Lorenz C, Placke JM, Apostolova P, Zeiser R.

Cancer Cell. 2025 Feb 10;43(2):269-291.e19. doi: 10.1016/j.ccell.2025.01.004.

# Durable lymphocyte subset elimination upon a single dose of AAV-delivered depletion antibody dissects immune control of chronic viral infection

Kastner AL, Marx A-F, Dimitrova M, Abreu-Mota T, Ertuna YI, Bonilla WV, Stauffer K, Künzli M, Wagner I, Kreutzfeldt M, Merkler D, Pinschewer DD.

Immunity. 2025 Feb 11;58(2):481-498.e10. doi: 10.1016/j.immuni.2024.11.021. Epub 2024 Dec 23.

# 5-aza-2-deoxycytidine improves skeletal muscle function in a mouse model for recessive RYR1-related congenital myopathy

Ruiz A, Noreen F, Meier H, Buczak K, Zorzato F, Treves S.

Hum Mol Genet. 2025 Feb 13:ddaf021. doi: 10.1093/hmg/ddaf021. Online ahead of print.

# PUBLICATIONS JANUARY – APRIL 2025

Occurrence of cellular senescence in chronic human shoulder tendinopathies and its attenuation ex vivo by inhibition of Enhancer of Zeste 2

Bühler D, Hilpert M, Barbero A, Müller SA, Martin I, Pelttari K.

Bone Joint Res. 2025 Feb 25;14(2):143-154. doi: 10.1302/2046-3758.142.BJR-2023-0378.R2

Background white noise increases neuronal activity by reducing membrane fluctuations and slow-wave oscillations in auditory cortex

Christensen RK, Studer F, Barkat TR.

Prog Neurobiol. 2025 Mar:246:102720. doi: 10.1016/j.pneurobio.2025.102720. Epub 2025 Jan 24.

Active repression of cell fate plasticity by PROX1 safeguards hepatocyte identity and prevents liver tumorigenesis

Lim B, Kamal A, Gomez Ramos B, Segarra JMA., Ibarra IL, Dignas L, Kindinger T, Volz K, Rahbari M, Rahbari N, Poisel E, Kafetzopoulou K, Böse L, Breinig M, Heide D, Gallage S, Avila JEB, Wiethoff H, Berest I, Schnabellehner S, Schneider M, Becker J, Helm D, Grimm D, Mäkinen T, Tschaharganeh DF, Heikenwalder M, Zaugg JB, Mall M.

Nat Genet. 2025 Mar;57(3):668-679. doi: 10.1038/s41588-025-02081-w. Epub 2025 Feb 13.

# Clinical relevance of engineered cartilage maturation in a randomized multicenter trial for articular cartilage repair

Mumme M, Wixmerten A, Ivkovic A, Peretti GM, Yilmaz T, Reppenhagen S, Pullig O, Miot S, Izadpanah K, Jakob M, Mangiavini L, Sosio C, Vuletić F, Bieri O, Biguzzi S, Gahl B, Lehoczky G, Vukojevic R, Häusner S, Gryadunova A, Haug M, Barbero A, Martin I.

Sci Transl Med. 2025 Mar 5;17(788):eads0848. doi: 10.1126/scitranslmed.ads0848. Epub 2025 Mar 5.

#### **Toward Origami-Inspired In Vitro Cardiac Tissue Models**

Sileo A, Montrone F, Rouchon A, Trueb D, Selvi J, Schmid M, Graef J, Züger F, Serino G, Massai D, Di Maggio N, Rodriguez G M, Köser J, Schoelkopf J, Banfi A, Marsano A, Gullo M.

ACS Biomater Sci Eng. 2025 Mar 10;11(3):1583-1597. doi: 10.1021/acsbiomaterials.4c01594. Epub 2025 Feb 20.

## Safety and Efficacy of Repeated Low-Dose LSD for ADHD Treatment in Adults: A Randomized Clinical Trial

Mueller L, Santos de Jesus J, Schmid Y, Müller F, Becker A, Klaiber A, Straumann I, Luethi D, Haijen ECHM, Hurks PPM, Kuypers KPC, Liechti ME.

JAMA Psychiatry. 2025 Mar 19:e250044. doi: 10.1001/jamapsychiatry.2025.0044. Online ahead of print.

# AWARDS JANUARY – APRIL 2025

We extend our heartfelt congratulations to the following DBM members for their remarkable awards and achievements since January 2025.

**Petya Apostolova** for receiving a grant from the Novartis Foundation for Medical-Biological Research for her project: "Targeting creatine metabolism to enhance the graft-versus-leukemia immunity".

**Lisa Krattiger** on obtaining the 2nd place in the Rapid Fire Presentation at the Young Scientist Symposium of the Swiss Society of Biomaterials and Regenerative Medicine (SSB+RM), for her work entitled: "Controlling cell spreading and differentiation by yttria content and heat treatment of zirconia".

Valiantsin Darafeyeu has been awarded the Hirnliga 2025 research grant for his work on amblyopia, a developmental vision disorder in which the brain does not properly process visual stimuli from one eye. The goal of his project is to find out which areas of the brain are responsible, an important step toward new treatments.

**Marko Hasiuk** for winning the "Best Presentation of the Day Prize", sponsored by Nature Immunology, for his poster presented in the session "Regulatory and effector T cell subsets and cytokines: from bench to bedside" at the World Immune Regulation Meeting in Davos.

**Robin Dolgos** on securing the first prize for the Best Oncology Abstract at the European Association of Urology (EAU) annual meeting in Madrid. **Adrien Moya** for receiving a grant from the ProPatient Forschungsstiftung University Hospital Basel for his follow-up project "Fingerknochen".

**Arnaud Scherberich** and **Ivan Martin** for acquiring a grant from Breakthrough T1D (formerly JDRF) for their project: "Combining arteriovenous bundle and ECM-Based biomaterial technologies to induce potent neovascularization following islet transplantation".

**Tomás A Martins** on obtaining the Best Paper Award at the Swiss Society of Neuro-Oncology Meeting 2025, for his paper "Enhancing anti-EGFRvIII CAR T cell therapy against glioblastoma with a paracrine SIRPγ-derived CD47 blocker".

**Olga Krupkova** on her SNF Bridge Discovery project: "iMODICel – Stemcell therapy for the treatment of low back pain".

**Stavros Giaglis, André Nicki Tiaden,** and **Diego Kyburz** received Innosuisse funding for their project: "SynovIO - a Proof-of-Concept of a novel human *in vitro* organoid arthritis model for drug assessment in precision medicine".

**Christoph Hess** received a prestigious grant from the Claudine und Hans-Heiner Zaeslin-Bustany-Stiftung to support his binational research platform in Basel and Cambridge on the topic of "Improving CAR T cell function through immuno-metabolic and ultrastructural bioengineering".

# **PHD DEFENSES**

17.01.2025	Molecular Biology	José Pedro Loureiro
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- 19.03.2025 Medical-Biological Mali Cristina Coray Research
- 31.03.2025 Medical-Biological Kelly Trimigliozzi Research
- 26.03.2025 Molecular Biology Lukas Bissegger
- 04.04.2025 Molecular Biology Elisabeth Pössnecker
- 07.04.2025 Medical-Biological Andreas Zingg Research
- 07.04.2025 Neurobiology Pascal R. Forcella
- 08.04.2025 Cell Biology Michele Garioni
- 29.04.2025 Medical-Biological Clara Serger Research
- 29.04.2025 Medical-Biological Sarah Hallenberger Research
- 29.04.2025 Medical-Biological Asli Akin Research



# MENTAL HEALTH AWARENESS WORKSHOP

On February 14, 2025, the DBM and Athena's Journey hosted a special workshop to celebrate the International Day of Women and Girls in Science. Psychologist and author Silvia Mancini Gasparini led an insightful session on mental health awareness, focusing on resilience in today's high-pressure world. Through guided exercises and open discussion, participants learned practical strategies to manage stress and improve well-being. The event provided a warm and inspiring atmosphere that encouraged personal reflection and empowerment.





# **PLENARY ASSEMBLY**

On April 3rd, 2025, the Department of Biomedicine held its annual Plenary Assembly. The program featured updates from key areas of the DBM, including the Core Facilities and the PhD and Postdoc Clubs, with contributions from Andrea Ottolini, Simon Schwarz and Valerie Huhle. Participants had the opportunity to learn about ongoing projects, participate in open discussions, and network with colleagues from different units. The event concluded with an aperitif, providing an opportunity for informal exchange and networking.





# NEW COLLEAGUES JANUARY – APRIL 2025

Adamo, Sarah Translational Immuno-Oncology (Binder)

**Aksu, Öykü** Gastroenterology (Niess)

Aytemür, Mazlum DBM-IT

Banholzer, Steven-Ernst DBM-HR

Bauer, Yasmina Respiratory Research (Prasse)

Besomi, Maëlys Developmental Genetics (Zuniga)

**Bolliger, Tanja Sabrina** Gastroenterology (Niess)

**Carvalho, Cyril Bruno** Nephrology (Cippa)

Cheront, Thibaut Cancer- and Immunobiology (Wymann)

**Corbetta, Matilde Anna** Tumor Heterogeneity Metastasis and Resistance (Bentires)

Crivelli, Kira Molecular Neuroscience (Papassotiropoulos)

**Cusimano, Fabiana** Brain and Sound (Rinaldi)

Da Costa Gonçalves, Raquel Maria Regenerative Angiogenesis (Banfi) **De Luise, Monica** Cartilage Engineering (Barbero)

**De Pace, Samuele Mattia** Regenerative Angiogenesis (Banfi)

de Sousa Rodrigues, Cláudia Manuela Liver Immunology (Filipowicz)

**Deblieck, Chloë Audrey Nadine** Brain Ischemia and Regeneration (Guzman)

**Desvignes, Kitana** Brain and Sound (Rinaldi)

**Dieste Trillo, Keltia** Ovarian Cancer Research (Heinzelmann)

**Dietler, Maybel Lena** Gastroenterology (Niess)

Dri Burkert, Giuliana Sophia Blood Cancer Biology and Immunotherapy (Apostolova)

**Facchini, Igea Demetra Lucia** Translational Hepatology (Bernsmeier)

**Grieder, Tanja** Cancer Immunotherapy (Läubli)

**Grulla, Matteo** Regenerative Angiogenesis (Banfi)

Iseppi, Lorenzo Infection Immunology (King)

Jaenicke, Johannes Immunobiology (Hess) **Jordana Urriza, Lorea** Tissue Engineering (Martin)

Jutzi, Lukas Translational Hepatology (Bernsmeier)

Kholmatov, Maksim Molecular and Computational Hematology-Immunology (Zaugg)

Kormari, Eftychia Chrysoula Molecular and Computational Hematology-Immunology (Zaugg)

Kos, Pavel Molecular and Computational Hematology-Immunology (Zaugg)

Kremer, Amandine Molecular and Computational Hematology-Immunology (Zaugg)

Liossatos, Peleas DBM-Flow Cytometry

Lüscher, Seraphine Jasmin Cancer- and Immunobiology (Wymann), Mattenstrasse, 01.03.2025

Mayor, Mélanie Cognitive Neuroscience (Quervain)

Menon, Anna Pulmonary Infection Biology (Boeck)

Merklen, Julianne Pediatric Immunology (Holländer) Monti, Elisa Cartilage Engineering (Barbero)

Moser, Cedric Patrice Ovarian Cancer Research (Heinzelmann)

Mroczek, Magdalena Human Genomics (Cichon)

**Ostertag, Sara** Psychopharmacology Research (Liechti)

**Paris Guerrero, Ignacio** Tumor Heterogeneity Metastasis and Resistance (Bentires)

Passali, Moschoula Experimental Neuroimmunology (Pröbstel)

**Pintea, Elena** Systems Pharmacology (Zampieri)

**Qasem Jeiroshi, Amal** Cancer Neuroimmunology (Dixon)

Reddmann, Dana Systems Pharmacology (Zampieri)

**Ridder, Magdalena** Cognitive Neuroscience (Quervain)

**Rietmann, Fabienne Yamina** Infection Biology (Khanna)

Rietveld, Lars Cancer- and Immunobiology (Wymann)

Rinaldi, Anna Nephrology (Cippa) **Rosenberg, Nadia Alice** Neuroplasticity (Keller)

**Rymbalovych, Anastasiia** Neuromuscular Research (Sinnreich)

Salamero Boix, Anna Cancer Neuroimmunology (Dixon)

**Sanga, Annalisa** Translational Hepatology (Bernsmeier)

Scanga, Elia Alain Cardiac Surgery and Engineering (Marsano)

**Setz Urrutia, Cristian Ignacio** Inner Ear Research (Bodmer)

Shweta, Saini DBM-Microscopy

**Soiunov, Ruslan** Cartilage Engineering (Barbero)

Sousso, Geoffrey Obesity Research (Timper)

**Tran, Nadine** Tissue Engineering (Martin)

**Tschan, Nadja Caroline** Cognitive Neuroscience (Quervain)

Van Breda, Shane Vontelin DBM-Microscopy

Van den Berg, Eloy Diabetes Research (Donath) Veljancic, Nikolina Molecular Immune Regulation (Jeker)

Visentin, Floriane Human Genomics (Cichon)

Yang, Yumeng Cancer Neuroimmunology (Dixon)

Yazicioglu, Yavuz Furkan Immunobiology (Hess)

Yildiz, Burcu DBM-Finance

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Email: communications-dbm@unibas.ch

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