Universität Basel

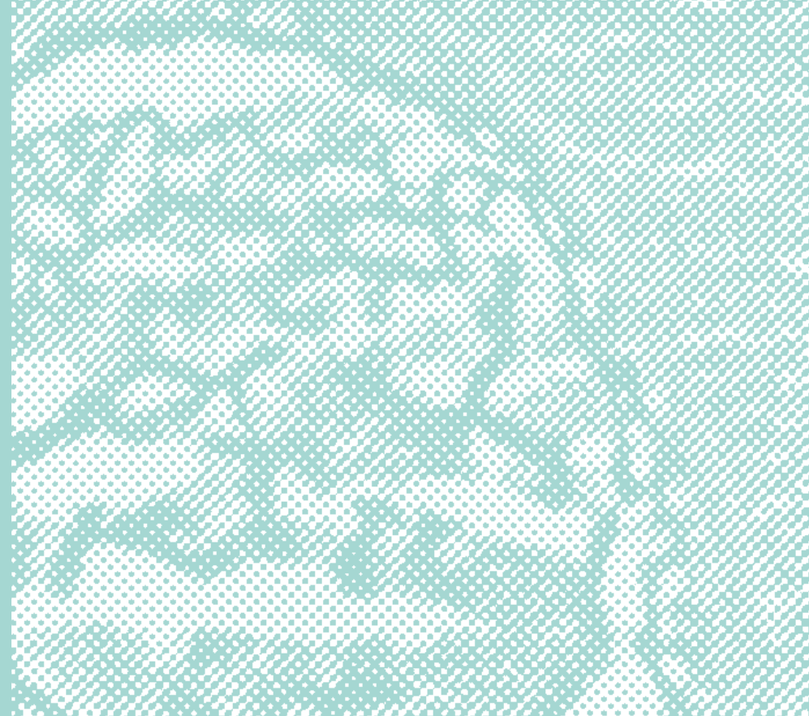
Department of Biomedicine

DBM Basel

Newsletter

January 2025

DBM
Basel
Department of
Biomedicine



Intro

Happy New Year! 2025 is a special year for our institute as we celebrate an important anniversary. This is a great opportunity to reflect on what we have accomplished together and to look ahead to what comes next.

In this issue, we catch up with three of our alumni who now lead their own labs. They shared their stories about their time here — one as a PhD student and two as postdocs — and how it helped shape their careers.

We also celebrate a recent major publication from Tomás Martins in Gregor Hutter's lab. It's just one example of the impressive work being done in our institute.

You will also meet the Allergy and Immunity Research Group led by Karin Hartmann and the Pulmonary Infection Biology Research Group of Lucas Boeck. Both groups are doing exciting research, and we are delighted to be able to shine a light on their efforts.

Our core facilities have also been hard at work! They recently met to discuss ways to improve user management and strengthen collaboration across facilities, and to keep activities running smoothly behind the scenes. Many thanks for all their efforts — without them, our laboratories would have a hard time.

We have also once again included a roundup of all the publications from the past few months and would like to give a big shout out to everyone who received grants, prizes, or completed their PhDs — congratulations to you all!

Finally, we are looking back on the success of our DBM Research Day. Groups led by Dominique de Quervain, Christoph Hess, Diego Kyburz, Matthias Mehling, Jan Niess, Andreas Papassotiropoulos, Verdon Taylor, and Mattia Zampieri shared their cutting-edge research on topics ranging from stem cells and cognitive neuroscience to immunity and metabolism. The event was packed with exciting presentations, lively discussions, and plenty of inspiration for future collaborations. Thanks to everyone who made it happen!

Here's to a successful 2025 for all of us. Let's make it a year to remember!

Best wishes,

The Communications Team

Cover Story

Success Story

Research Groups at a Glance

Cover Story
Alumni Goes Own Lab

by Martina Konantz

Over the years, the DBM has prepared countless researchers for leadership roles in science and beyond. As we celebrate the 25th anniversary of our institute this year, the first newsletter of 2025 features stories from three former members, who share insights about their current work, their career journeys, and the influence our institute has had on their development. We spoke with Chiara Borsari, former PostDoc in Mathias Wymann's Cancer- and Immunobiology lab, Maria Balmer, who also did a PostDoc at the DBM in Christoph Hess's Immunobiology lab, and Paul Bourgine, who performed his PhD in Tissue Engineering with Ivan Martin.

Chiara, Maria and Paul all agree that their experience at the institute has been characterised by a strong culture of collaboration, dedicated mentorship, and, for some, the opportunities for skills development. Their careers now span translational research with direct clinical applications, ranging from cancer therapeutics to metabolic health and bone regeneration. Their stories illustrate the DBM's lasting impact on preparing scientists for leadership and advancing biomedical research—and many more to come!

Chiara Borsari

Chiara Borsari

Chiara Borsari holds a Tenure-Track Assistant Professor of Medicinal Chemistry at the Department of Pharmaceutical Sciences, **University of Milan, Italy**.
Her research focuses on developing innovative chemical tools to address cancer and other significant medical challenges. Currently, she is working on reversible and covalent kinase inhibitors as novel anticancer agents, with a particular emphasis on pancreatic cancer. Additionally, she is investigating nature-inspired covalent inhibitors targeting parasitic enzymes to combat malaria and other protozoan infections. Her time in the Wymann Lab at the Department of Biomedicine sparked her interest in designing molecular tools to manipulate biological targets, particularly for oncology applications.

Chiara, how did your time at the DBM shape your career and prepare you for your current role?

My experience in Basel played a pivotal role in my professional development and in my path toward scientific independence. I'm a chemist by training and in the Wymann lab, I had the opportunity to work at the interface between chemistry and biology. This equipped me with all the knowledge required to lead projects in the field of medicinal chemistry and drug discovery. Matthias trained me on grant writing, which allowed me to secure funding for my lab. In addition, the mentoring and training provided by the **antelope Career Program from the University of Basel** has been an excellent support for grant applications and interviews. In the Wymann Lab, I also had the unparalleled opportunity to train Master students and develop leadership skills essential for a successful group leader.

https://mfc.unimi.it/team/kinase-group/

Thus, a huge thank goes to my mentor, Matthias, my friends and colleagues from the Wymann Lab, and the whole Department for all the support received during my five years at the University of Basel and for preparing me for the next step in my career.

> **"Therefore, finding a good mentor during PhD and PostDoc is essential to guide you towards professorship."**

What stands out as one of the most memorable challenges or achievements from your time at the institute?

The most memorable achievement was developing the first-in-class metabolically stable covalent inhibitors of PI3Ka, which led to a publication in the *Journal of the American Chemical Society*. This has been a great team effort resulting from the tireless work of chemists and biologists. Additionally, securing multiple international patents for the compounds and successfully managing intellectual property were major achievements during my postdoctoral work.

What advice would you offer to current PhD students and PostDocs who aim to lead their own research groups?

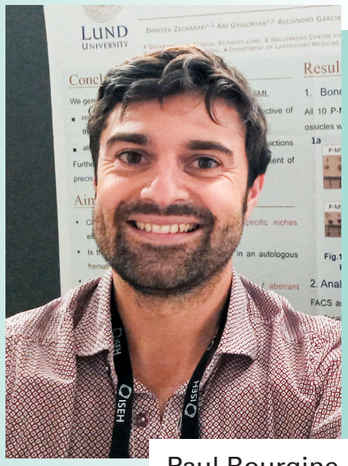
First, I would suggest them to follow their dreams and never give up. Often the path to independence is full of obstacles, particularly in securing funding and building of your own team. Thus, persistence, self-confidence and flexibility are essential skills to be successful. I strongly believe that working in multidisciplinary and multicultural environments is pivotal to widen professional and personal horizons. Finally, to quote Rita Levi Montalcini "The choice of a young person depends on his/her inclination, but also on the luck of meeting a great teacher". Therefore, finding a good mentor during PhD and PostDoc is essential to guide you towards professorship.

What are your future aspirations and objectives for your research group and the field?

I hope my research group will be able to contribute with innovative tools to address unmet medical need and fight human diseases.

https://www.wcmm.lu.se/paul-bourgine

Paul Bourgine



Paul Bourgine

Paul Bourgine is an Associate Professor at the Wallenberg Center for Molecular Medicine, Lund University, Sweden.
His research explores how bones form, act as hematopoietic centers, and regenerate using human(-ized) models. His work ranges from designing tissue grafts for skeletal repair to advanced *in vivo* leukemia modeling. During his PhD with Ivan Martin, he developed cellular tools for bone graft engineering, a collaboration that continues today. Later, as a postdoc at ETH Zurich with Timm Schroeder, he focused on engineering *in vitro* and *in vivo* human bone marrow systems, now integral to his leukemia research.

Paul, how did your experience at the DBM influence your career and help prepare you for your current role?

At the DBM, beyond becoming a decent kicker player, I could discover a research microenvironment based on trust, free exchange of resources and ideas across labs without a competitive spirit. This was largely set by Michael Heberer (the regretted head of the former Institut für Chirurgische Forschung und Spitalmanagement (ICFS)), together with participating PIs. Back then, I had the opportunity to explore my own ideas in a certain framework, raising my interest. Beyond that, I was also inspired by the pioneering connection between the labs and the clinic, where surgeons came to the DBM to perform research internships. This is a model clearly fostering translational outcomes, now widely adopted across many University Hospital campuses.

As for the DBM's influence on my career path, I must confess that from my first day as a PhD student, I never aimed to become a PI. In addition, to be honest, not many initiatives existed at the time to support career development. I feel that this has changed significantly, with PhD/PostDoc clubs, retreats, mentoring programs, and other initiatives that I might not be aware of. At the end, what drove me towards becoming a PI was my curiosity, my ambition to discover, and my desire for a mutli-tasking role. Being a PI is 100 jobs in one; usually you don't get bored.

What was one of the most memorable challenges or achievements during your time at the institute?

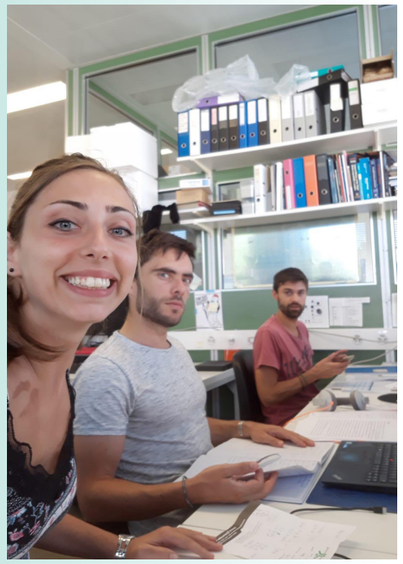
One memorable challenge was keeping pace with the current DBM director during mountain biking — especially the very first time, when I almost left my breakfast on the way up. At the DBM itself it was perhaps not that easy to connect with other groups in Basel, especially from other institutes (I don't think this is an issue anymore). Finding a desk was also a weekly challenge; the institute was so crowded that finding a spot often depended on someone's absence. Now, my group complains about having too little sunlight in their office!
One of my most rewarding achievements was generating new human mesenchymal lines, which formed the core of my PhD work. It involved many ups and downs — cells dying, failing to differentiate, and repeated troubleshooting — until we finally isolated clones with promising properties. Now these cells have been shared with over 30 labs worldwide. If someone had told me in my third PhD year that this would happen, I would never have believed it!

What advice would you give current PhD students and postdocs who aspire to lead their own groups?

Beyond the typical advice (e.g., go abroad, diversify your research topics/skills, keep in mind the 7-year post PhD threshold for many starting grants), I would say be patient. Have faith in the potential of your research, you are never too far from a great discovery and those often come out of the blue. Don't be intimidated by other people, build your own confidence by mastering your project topic and contextualize its importance for the field development. Strive for creativity, don't follow the trend, but try to find the angle making your project unique. Don't make hasty career choices; a difficult PhD does not mean it closes the door. Opportunities will always come.

Looking ahead, what are your hopes or goals for your research group and your field?

I would personally love to see our bone graft advance to clinical phase-1 trial. We are not far from this goal, supported by tremendous preclinical results. Given that this work originates from my PhD, achieving this milestone would hold special significance for me. Additionally, I am currently very excited about advancing cellular immunotherapy models and enhancing their efficacy. While CAR T cell therapies have achieved remarkable success, many treatments still fail in patients. Our work focuses on developing tools to uncover the reasons behind these inefficiencies and to optimize therapies by modulating the cancer microenvironment.



"A difficult PhD does not mean it closes the door. Opportunities will always come."

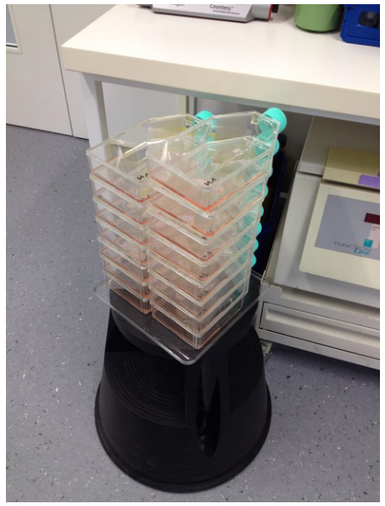
Maria Balmer

Maria Balmer

Maria Balmer is an SNSF-Eccellenza professor at the Department of Biomedical Research of the University of Bern.
Currently, she there leads the Translational Immunometabolism Lab. Her research explores the interplay between the gut microbiota, host immunity, and metabolism, with a focus on metabolic communication in obesity and related complications. One key project involves identifying obesity-driving bacteria and characterizing their metabolites using gnotobiotic models. Another involves clinical trials, such as testing a fiber-supplemented chewing gum for weight management in children. Her motivation stems from a deep interest in understanding complex host-microbe interactions and their implications for human health. This passion was sparked during her MD-PhD, where she studied immune responses to commensal bacteria, and further reinforced during her postdoctoral work at the DBM on stress-induced metabolites and immune cell metabolism and function.

Maria, how did your experience at our institute influence your career path and help prepare you for the role as a group leader?

My time at the University of Basel was instrumental in my development as a researcher and leader. The mentorship of Christoph Hess played a crucial role — not only as a scientific guide but also as a source of personal support and inspiration. His ability to blend rigorous science with empathy and collaboration has shaped the way I approach my own mentorship and research leadership. The collaborative culture in Basel and the opportunities to work on cutting-edge projects, supported by grants like the SNSF Marie-Heim Vögtlin prize, provided me with the skills and confidence to establish my independent research group.



What was one of the most memorable challenges or achievements during your time at the institute?

One of my proudest achievements was identifying how acetate enhances glycolysis in CD8+ T cells, boosting immune responses — a discovery published in Immunity. This project was particularly challenging, requiring innovative approaches to track metabolic fluxes, but it was immensely rewarding and continues to influence my current research.
Beyond the scientific accomplishments, my time in Basel was marked by the incredible friendships and professional connections I made, many of which remain vital to me today. It was truly fun doing science in Basel, surrounded by inspiring colleagues and a vibrant academic environment. The combination of rigorous research and a supportive, collaborative atmosphere made it an unforgettable chapter in my career.

What advice would you give current PhD students and postdocs who aspire to lead their own groups?

- **Develop a unique scientific niche:** Identify a research question that excites you and carve out your expertise in it.
- **Embrace collaboration:** Building networks and collaborating across disciplines can open doors to new opportunities and perspectives.
- **Resilience is key:** Research often involves setbacks. Persevere and learn from challenges.
- **Choose your team wisely:** Surround yourself with people you genuinely enjoy working with. A supportive and collegial environment is critical for success and well-being in academia.
- **Work-life balance is achievable:** It is possible to combine family and career. Planning, resilience, and prioritizing your values can help you navigate both worlds successfully.

Looking ahead, what are your hopes or goals for your research group and your field?

I aim to advance our understanding of how specific bacterial metabolites influence host immunity and metabolism, with the ultimate goal of translating these findings into therapeutic strategies for obesity and related diseases. On a broader scale, I hope for a more collaborative and supportive environment in academic institutions. Science thrives on teamwork and shared success, and I aspire to contribute to a culture where researchers uplift and inspire one another. For my group, I want to foster an innovative, inclusive, and nurturing atmosphere where we can collectively tackle meaningful health challenges.

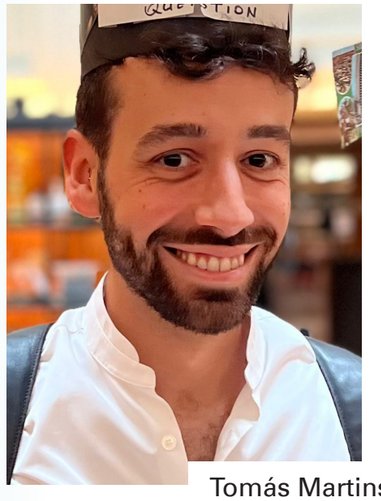
"It was truly fun doing science in Basel, surrounded by inspiring colleagues and a vibrant academic environment."

Chiara, Maria and Paul's stories illustrate the lasting impact the DBM has had on their careers. Their experiences show how collaboration, mentorship and interdisciplinary research have shaped their paths in science. As we celebrate the 25th anniversary of the DBM, we're excited and proud to continue supporting future scientists and help them make important contributions to research and human health.

DBM Success Story

Engineering CAR T Cells to Overcome GBM Resistance: A Dual Approach Targeting EGFRvIII and CD47

Tomás Martins



Tomás Martins

Background and Research Question

Glioblastoma (GBM) is one of the most aggressive and deadly primary brain tumors in adults, with a median survival of only 15 months. Standard treatments, including surgery, chemotherapy, and radiotherapy, are not curative, highlighting an urgent need for improved therapies. Chimeric antigen receptor (CAR) T cell therapy has shown promising results in hematological cancers, but faces significant challenges in solid tumors like GBM due to its immunosuppressive microenvironment and antigen heterogeneity. Our research aimed to address these issues by developing a novel CAR T cell targeting EGFRvIII, a tumor-specific antigen, coupled with paracrine CD47 blockade to enhance innate immune responses and overcome resistance mechanisms.

Study Method

To tackle the challenges of myeloid immune suppression and antigen escape observed in prior GBM-targeted CAR T cell therapies, we engineered a fourth-generation anti-EGFRvIII CAR T cell that constitutively secretes a high-affinity SIRPγ-derived protein (SGRP) that blocks CD47, a key "don't eat me" signal exploited by tumor cells to evade immune clearance.
The study employed a combination of molecular biology techniques and advanced preclinical models including:

- **CAR Design and Validation:** Lentiviral constructs encoding anti-EGFRvIII or -CD19 CARs with or without SGRP secretion were created. The secretion of SGRP was confirmed using mass spectrometry and immunological assays.

- ***In Vitro* Experiments:** The anti-tumor activity of CAR T cells was assessed using co-culture systems with GBM cell lines, focusing on cytotoxicity and phagocytosis enhancement. Surface markers and cytokine production were analyzed by flow cytometry and ELISA.

- ***In Vivo* Models:**

  An orthotopic mouse model of GBM was used to evaluate the efficacy of the engineered CAR T cells. Tumors with heterogeneous expression of EGFRvIII were implanted to mimic clinical scenarios of antigen escape.

  A subcutaneous lymphoma xenograft model was included to test the broader applicability of the SGRP-secreting CAR T cells. In this model, anti-CD19 CAR T cells secreting SGRP demonstrated superior efficacy compared to conventional anti-CD19 CAR T cells.

- **Immune Profiling:** Immune cell dynamics, including tumor-associated macrophages and T cell infiltration, were analyzed using flow cytometry, histology, and proteomic assays of plasma samples.

Relevance for Patients and Significance of the Study

This research offers a promising approach for treating GBM by addressing two critical limitations of CAR T cell therapies: increased post-therapy immunosuppression and tumor antigen heterogeneity leading to antigen escape. The combination of EGFRvIII-targeting CAR T cells with SGRP-mediated CD47 blockade resulted in remarkable tumor clearance in preclinical GBM models. Importantly, the lymphoma xenograft experiments demonstrated that this strategy could enhance CAR T cell efficacy in other solid tumors, broadening its therapeutic potential. By eliminating both targeted and bystander tumor cells, this approach shows promise for overcoming key resistance mechanisms in GBM and other highly myeloid cell-infiltrated cancers. Our findings will soon be tested in a clinical trial for patients with recurrent GBM.

Outlook

Our study lays a strong foundation for advancing this therapeutic strategy toward clinical trials. The observed efficacy in both GBM and lymphoma models suggests that paracrine CD47 blockade could be a valuable combination partner for CAR T cell therapy in GBM and other solid tumors.

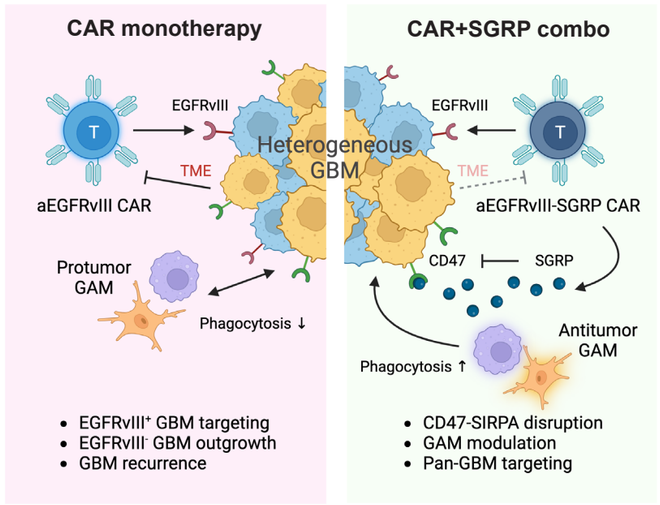
In the upcoming clinical study, we will carefully monitor the following aspects:

- **Translational Challenges:** While the preclinical models used were robust, they do not replicate the complexity of human GBM, including clonal evolution and the full scope of interactions within the tumor microenvironment.

- **Potential Toxicity:** Although no significant systemic or local toxicity was observed in our study, the high affinity of SGRP for CD47 requires careful monitoring for off-tumor systemic side effects.

Contributors

This research was the result of the PhD work of Tomás Martins, conducted under the supervision of Prof. Gregor Hutter. The study was supported by a large group of researchers from the DBM, including many members of the Brain Tumor Immunotherapy and Biology lab, and through collaborations with the Cancer Immunology and Experimental Immunology labs. Close collaboration with neurosurgeons from the Neurosurgery Department of the University Hospital Basel also played a key role. Specific analyses and methods, such as pharmacoscopy and CD47 knockouts, were carried out in collaboration with Prof. Berend Snijder (ETH Zurich), Prof. Tobias Weiss (University of Zurich and University Hospital Zurich), and Prof. Yasuyuki Saito (Kobe University Graduate School of Medicine). A special thank you to the Animal Facility and Core Facilities at the DBM for their excellent technical expertise, which was crucial to the success of this work.



Comparison of conventional CAR T cell monotherapy (left) and the newly developed combination (right).

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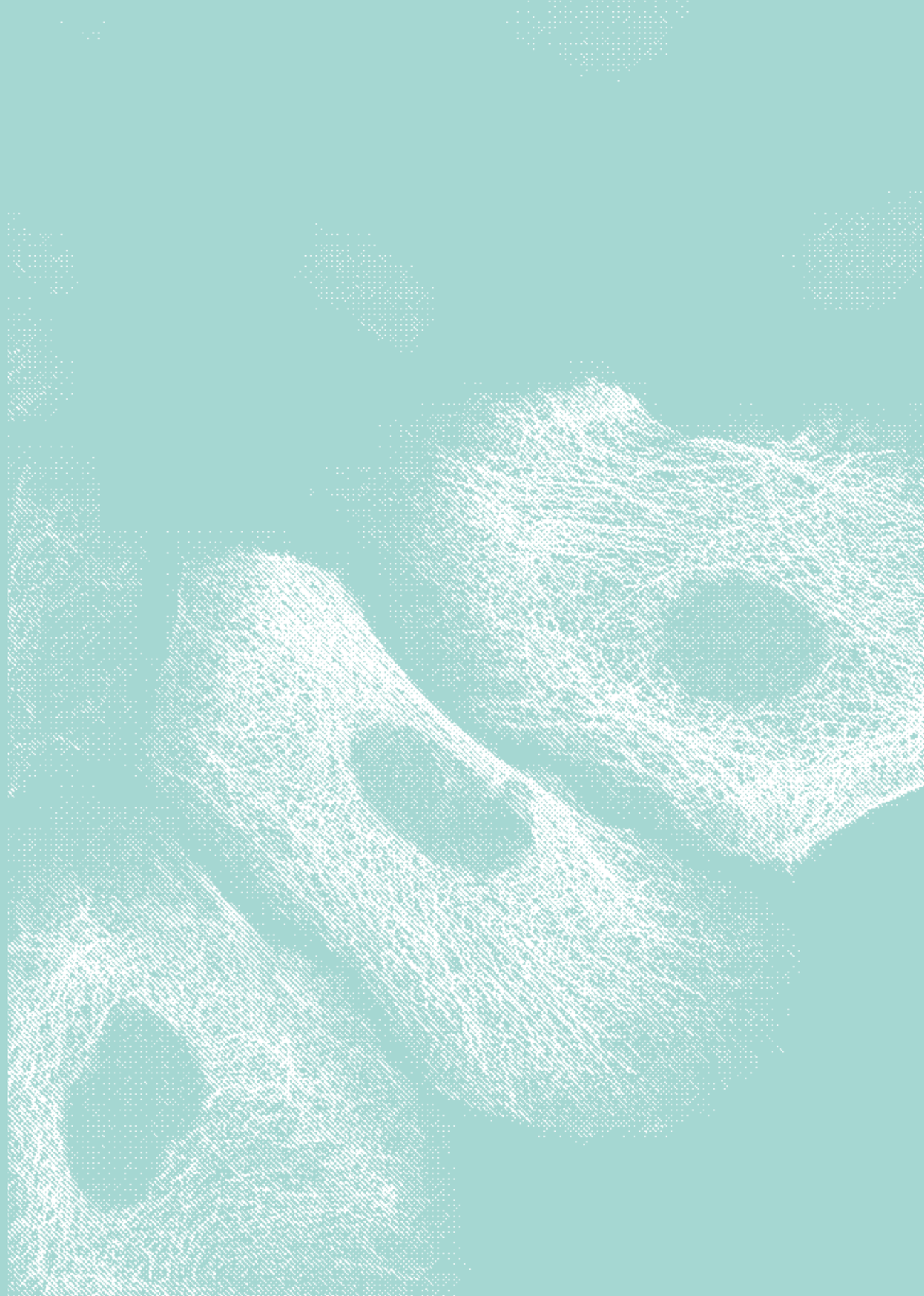


Research Group at a Glance
Core Facility Workshop
Publications

Research Group at a Glance
Allergy and Immunity
Hartmann Lab

A Quick Overview of our Research:

Our Research Group "Allergy and Immunity" has a long-standing interest in mast cells and mast cell-related diseases including mastocytosis, anaphylaxis, urticaria and atopic dermatitis. Mast cells are key effector cells in allergic diseases. Mastocytosis is a rare and clinically heterogeneous disorder with significant health burden. It is characterized by the abnormal growth of mast cells in multiple organs, particularly the skin and bone marrow. The condition is mainly caused by an activating mutation in the KIT gene, KIT-D816V, which is carried by more than 90% of patients. This mutation promotes the survival and cell-autonomous expansion of abnormal mast cells and, to a different extent, other hematopoietic cells by constitutive, ligand-independent activation of the KIT receptor and respective downstream signaling pathways. In patients, mast cells release excessive amounts of inflammatory mediators, leading to a variety of symptoms, including anaphylaxis, flushing, pruritus, gastrointestinal problems, and osteoporosis. These symptoms typically lead to compromised daily functionality, work capacity, and a diminished quality of life. Current treatment options include antihistamines, omalizumab, and new KIT-targeting tyrosine kinase inhibitors like avapritinib and midostaurin, but are often not sufficient to control symptoms.

Highlights, Breakthroughs and Current Projects:

During the past years, we were able to identify novel biomarkers and therapeutic targets (1-4), we detected new KIT mutations in familial mastocytosis (5), neoplastic mast cells in ascites in advanced systemic mastocytosis (6) and developed new classifications and diagnostic criteria for various mast cell-driven diseases (7-14). We have also explored patient outcomes, such as in the study of COVID-19 vaccination in patients with clonal and non-clonal mast cell activation disorders, shedding light on vaccine safety and efficacy in this population (15), and in a pilot study of 2485 adult patients with mastocytosis from the ECNM (European competence network on mastocytosis) registry, which examined the prevalence of hypersensitivity reactions across different forms of mastocytosis (16). Moreover, our group generated novel Cre-transgenic mouse models for preclinical research on mastocytosis and mast cells (17-20).

In the Interdisciplinary Mastocytosis Clinic at the University Hospital Basel, established in 2019, we regularly see mastocytosis patients from Basel and across Switzerland. The clinic collaborates with experts in Hematology, Hematopathology, and the University Children's Hospital (UKBB) for comprehensive care of both adult and pediatric patients. This also allows us to establish a patient registry and a biobank of patient samples for our laboratory research. We are also actively involved in clinical trials for new KIT-targeting tyrosine kinase inhibitors, such as avapritinib and bezuclastinib (21-23). These translational studies are conducted within our DKF Research Group, which is supported by a skilled and experienced clinical research team (UNIverse - Hartmann Lab).

To enhance patient care in Switzerland, the clinic's team furthermore co-founded the Swiss Competence Network on Mastocytosis (swiss-mastocytosis.ch), encompassing centers in Basel, Zurich, Bern, Lucerne, and Aarau. This expert network facilitates regular exchanges of information and knowledge among specialists and plans to expand further.

Currently, our group pursues three main research lines:

1) Characterization of pre-clinical mouse models for mastocytosis

We use mouse models based on the Cre-loxP system for research on mast cells and mastocytosis. These mice are analyzed for disease development using multiple methods (blood counts, flow cytometry, ELISA, immohistochemistry), and typical symptoms of mastocytosis (mast cell accumulation and proliferation, altered blood counts, anaphylaxis) are evaluated. Additionally, we also investigate downstream signaling pathways and use these mice as a pre-clinical treatment platform.

2) Characterization of the tumor microenvironment in mastocytosis

The phenotypes of tumors, including both solid tumors and hematologic neoplasms, are shaped by the interplay between neoplastic cells and the tumor microenvironment. Recently, the tumor microenvironment has been recognized as a crucial factor in disease pathogenesis and a source of new therapeutic targets. Promising results have been seen

with immunotherapies, bispecific antibodies, and immune checkpoint inhibitors targeting specific receptors in the treatment of various hematologic malignancies. These new therapies are also being explored in combination with tyrosine kinase inihibtors and other targeted drugs that inhibit activated signaling pathways in neoplastic cells. Since the tumor microenvironment in mastocytosis is not well-studied, our goal is to investigate its composition and function using RNA sequencing, multicolor flow cytometry, imaging CyTOF, and immunohistochemistry techniques.

3) Identification of novel biomarkers and therapeutic targets in mastocytosis

Despite recent advances in the treatment of mastocytosis, most patients still do not receive adequate therapy. The development of new therapeutic compounds for mastocytosis has been slow, with only a few clinical trials available so far. Therefore, identifying highly effective novel therapeutic strategies, either alone or in combination with KIT-targeting tyrosine kinase inhibitors, is crucial for improving patient outcomes. Our research focuses on utilizing multiplexed immunoassays on patient samples from the Mastocytosis Clinic to identify novel biomarkers for targeted treatment strategies. These biomarkers are analyzed in both serum and tissue samples from patients, as well as in mastocytosis cell lines. We then aim to conduct treatment studies using patient material, mast cell lines, and murine models of mastocytosis.

Allergy and Immunity Lab:
Back row (from left to right): Etnik Sheremeti, Laetitia Clauss, Alina Makeeva,Tiago Almeida
Front row (from left to right): Martina Konantz, Simona Stivala, Karin Hartmann, Elena Ratti
Additional members not pictured: Mirjam Müller, Dagmar Horn, Emil Hammer, Marc Usart, Luca Bonifacio

Our Group Members:

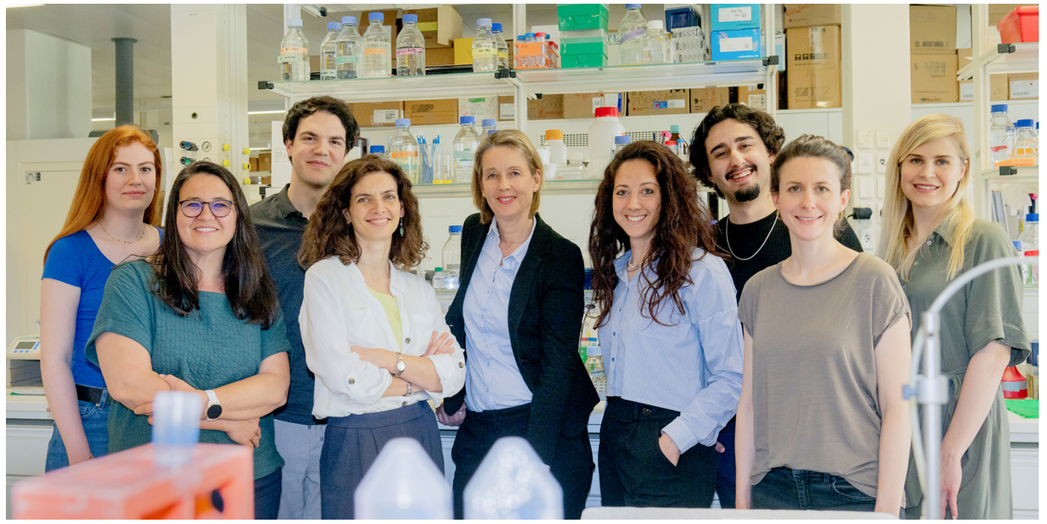
Karin Hartmann	Research Group Leader
Tiago Almeida	Lab Technician
Luca Bonifacio	Student Assistant
Laetitia Clauss	PhD student
Emil Hammer	Student Assistant
Dagmar Horn	Assistant
Martina Konantz	Senior Scientist
Alina Makeeva	PhD student
Mirjam Müller	Assistant
Elena Ratti	PhD student
Etnik Sheremeti	MD PhD student
Simona Stivala	Senior Scientist
Marc Usart	Guest Scientist

Our Vision for the Future

The future of mastocytosis treatment holds immense promise. While recent advancements such as the tyrosine kinase inhibitors avapritinib and midostaurin have emerged, many patients still lack effective treatment. Our vision focuses on developing novel therapeutic strategies, e.g. targeting KIT downstream signaling with specific inhibitors or antibodies, to significantly improve patient care. Establishing well-characterized pre-clinical mouse models is essential to capture the disease's complexity, enabling deeper insights into molecular mechanisms and identifying new therapeutic targets. Additionally, mapping immune cells in the tumor microenvironment will reveal insights into disease progression, potentially offering new treatment and prognosis strategies. Through rigorous research and collaboration, we aim to revolutionize mastocytosis treatment, making comprehensive data accessible to the medical community and significantly enhancing patient outcomes. In this effort, we also greatly benefit from the expertise of our DKF Research Group.

Team Spirit

In our lab, collaboration and teamwork are at the core of everything we do. Our diverse group of scientists from Switzerland, Germany, Italy, France, Spain, Kosovo, Portugal and Russia, and the medical doctors in the clinic work closely together, combining our skills and perspectives to address research challenges. We believe that sharing ideas and supporting each other leads to better outcomes and more innovative solutions. We are a dedicated team, driven by a shared passion for science and medicine, working together to making meaningful progress. Our goal is to deepen our understanding and develop solutions that improve patient care.



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19. A. Förster et al., Dicer is indispensable for the development of murine mast cells. J Allergy Clin Immunol 135, 1077-1080.e1074 (2015).

20. A. Rabenhorst et al., Mast cells play a protumorigenic role in primary cutaneous lymphoma. Blood 120, 2042-2054 (2012).

21. J. Gotlib et al., Efficacy and Safety of Midostaurin in Advanced Systemic Mastocytosis. N Engl J Med 374, 2530-2541 (2016).

22. K. Hartmann et al., Midostaurin improves quality of life and mediator-related symptoms in advanced systemic mastocytosis. J Allergy Clin Immunol 146, 356-366.e354 (2020).

23. J. Gotlib et al., Avapritinib versus Placebo in Indolent Systemic Mastocytosis. NEJM Evidence 2, (2023).

Research Group at a Glance
Pulmonary Infection Biology
Boeck Lab

A Quick Overview of our Research:

Antibiotics typically cure bacterial infections within days, yet some infections require much longer treatments or remain nearly impossible to clear. This paradox persists despite *in vitro* drug activity, raising the question: *Why do some infections respond quickly while others fail despite months of multi-drug treatments?* For example drug-susceptible tuberculosis, the number one infectious killer, still requires a 4-month multi-drug regimen and claims over a million lives annually. Non-tuberculous mycobacteria and chronic Pseudomonas aeruginosa infections of the lung pose even greater treatment challenges.

Our team is dedicated to uncover the bacterial mechanisms that lead to these treatment failures. We apply assays that mimic treatment failures *in vitro* to facilitate drug discovery and development. By tailoring antibiotic treatment regimens to individual bacterial genotypes we strive to enhance treatment efficacy and reduce the burden of ineffective therapies. To achieve these goals we integrate multiple disciplines: We develop innovative *in vitro* strategies to assess bacterial behaviours at large scale. We apply computational strategies, together with genomics/proteomics and gene editing to understand the molecular mechanisms underlying distinct bacterial behaviours. In addition, we couple this information with clinical studies and data to reveal their impact on clinical outcomes. Our efforts are strengthened by close partnerships with academic and industry collaborators in Basel and internationally. Specifically within the NCCR-Antiresist, which is an exceptional platform of more than 20 research groups, we join efforts to tackle antibiotic resistance through knowledge exchange and patient-orientied innovation.

Highlights, Breakthroughs and Current Projects:

Drug combinations are often assumed to be more effective than single drugs. To systematically assess drug combinations in Mycobacterium abscessus, an increasingly problematic respiratory pathogen, we tested over one million conditions *in vitro*. Our findings revealed that interactions, particularly antagonistic ones, are remarkably common and are driven by distinct chemical characteristics. By studying hundreds of clinical strains with diverse genetic backgrounds, we demonstrated that bacterial genetics substantially influence drug interactions and therefore their overall effect.

A major focus of our lab is bacterial killing, a crucial yet overlooked factor in treatment failures. To overcome existing technological limitations, we developed Antimicrobial Single-Cell Testing (ASCT), a live-cell imaging strategy that measures antibiotic killing dynamics at the single-cell level across hundreds of conditions simultaneously. Using ASCT, we have tracked over 200 million individual bacteria for up to seven days. When applied to Mycobacterium tuberculosis, ASCT accurately predicts *in vivo* outcomes of different drug combinations in mice and humans. In M. abscessus, we also revealed that bacterial strain-specific characteristics modulate antibiotic killing, ultimately affecting clinical infection outcomes.

Our work highlights the importance of understanding clinically relevant bacterial traits. Once identified, we aim to uncover their underlying mechanisms. A key approach in our lab involves leveraging the extensive phenotypic and genotypic diversity that bacteria have evolved over time and during patient infections. To achieve this, we use large collections of bacterial patient samples and employ and further refine genome-wide association study (GWAS) strategies, for example by integrating structural protein data and proteomics. With such approaches, we identified molecular mechanisms driving drug interactions and bacterial killing. These mechanisms provide important insights into bacterial biology and could have far-reaching implications. They offer potential targets for novel treatments and inform the development of molecular diagnostics to predict bacterial phenotypes, analogous to drug resistance testing.

Building on our discoveries, we are exploring further projects that push the boundaries of current knowledge. For instance, we are mimicking drug activity through genome-wide gene editing to construct combination regimens based on double- or triple-mutant strains. This approach allows us to reimagine drug combination therapies at an unprecedented scale. In another project, we track gene expression of every bacterial gene in response to antibiotic exposure using thousands of reporter strains. This strategy enables us to decipher regulatory networks that drive bacterial survival and inspire and be further pursued by many other research groups. By envisioning what might come next, we aim to anticipate future challenges and opportunities, aiming to develop solutions that go far beyond our current capabilities.

Our Vision for the Future:

We are living in one of the most exciting times in science and medicine, driven by transformative technologies such as genome editing, artificial intelligence and stem cell therapies. While we are fortunate to be in the middle of this revolution, we also face global health threats, like antimicrobial resistance, that demand urgent scientific progress. Our research addresses a very fundamental question of life, that has persisted for millions of years: *How do bacteria survive otherwise toxic exposures?* This question remains critically relevant today, as the same principles underly antibiotic treatment failures. Surprisingly, despite its importance, little is known about how bacteria die or survive, largely due to technical limitations to study bacterial death. With our work, which includes establishing new technologies, we have already uncovered new characteristics of treatment failures and the mechanisms that drive them. By getting a deeper understanding of these bacterial behaviours we aim to redefine the concept of antibiotic activity which could have profound implications.

For example, identifying mechanisms of treatment failures can pinpoint targets for rational drug design; uncovering new phenotypes of antibiotic activity can guide antibiotic drug development; whereas tailoring infection treatments to distinct bacterial genotypes can revolutionise infection management. So far, our primary focus has been on mycobacteria, which cause over one million deaths annually. Now we are expanding our approaches to tackle other respiratory pathogens, such as Pseudomonas aeruginosa. What if we could shorten tuberculosis treatment from months to just weeks, or clear chronic Pseudomonas infections, which is deemed impossible? We believe these goals (along with many others) are achievable, and we are driven to prove it. Through our approach and by addressing one of the greatest health challenges in modern medicine, we aim to improve patient health.

Pulmonary Infection Biology Lab:
Back row (from left to right): Basil Wicki, Alex Jovanovic
Front row (from left to right): Lucas Boeck, Santiago Muniz, Sara Toprak, Michelle Roulier

Our Group Members:

Sara Toprak	Master student
Michelle Roulier	PhD student
Alexander Jovanovic	PhD student
Basil Wicki	Postdoc
Santiago Muniz	Postdoc
Lucas Boeck	PI

Team Spirit – Introduction of us:

Our research entirely focuses on progress, innovation and collaboration. We aim for a highly supportive environment full of ideas, facilitating our growth. The projects, skills and personalities within our team are diverse, which we consider essential in pushing the boundaries of technology, science and medicine.

Sara is a master's student in our lab with a passion for microbiology. She grew up in northern Germany and earned her Bachelor's degree in Molecular Biology at the University of Basel. She is fascinated by her project on drug combinations and loves discovering new and exciting biology - always with curiosity, creativity, and a touch of northern charm.

Michelle earned her MSc in Biology at ETH Zurich before returning to Basel, where she grew up. Within the NCCR AntiResist initiative and under the co-supervision of Urs Jenal she focuses on the pathogen Pseudomonas aeruginosa. Michelle is fascinated by the strategies microbes use to survive most adverse conditions and is committed to advancing treatments for Pseudomonas aeruginosa infections.

Alex was the lab's first Master's student and is now working towards the completion of his PhD. He demonstrates himself to be a hardworking and open-minded scientist, focusing on the bioinformatics aspects of various projects. Raised in the Seychelles, Alex brings a splash of island spirit to the lab, which is evident in his commitment to teamwork and his active social involvement in the group. As a connoisseur of good food, Alex regularly finds himself at the center of lively culinary discussions.

Basil grew up in Basel, which explains his fondness for Magenbrot at the Herbstmesse. He excels at performing assays at a massive scale on a daily base, has a keen eye for detail, and is an organisational talent, which made him our lab manager. As a pro-pizzaiolo PostDoc (after defending his PhD), Basil brings a perfect mix of quality research, friendship, and fun to our lab.

Santiago is a modern-day Erasmus of Rotterdam. Originally from Spain, he obtained his PhD from the University of Cambridge, focusing on bacterial dormancy and persistence. He is the lab's go-to expert in image and data analysis. As a true Renaissance man, he loves to connect diverse fields and ideas. When he's not immersed in research, Santiago loves hiking in the breathtaking Swiss nature with his family.

Lucas is a scientist and specialist in pulmonary and internal medicine. He grew up in Austria, completed his clinical training in Switzerland and gained expertise in basic research during a fellowship in Cambridge (UK). Lucas loves data (not noise), enjoys troubleshooting, has a passion for simple solutions and embraces bold and unconventional ideas.

Core Facility Workshop 2024

On November 28, members of our DBM core facility gathered for a workshop that combined team-building activities with productive discussions on how to improve our operations. With 23 people in attendance, almost everyone was present except for a few who were absent due to illness. We were also fortunate to have the support of our managing director, which was greatly appreciated by all.

During the workshop each facility introduced themselves and their services before we focused on two important topics:

1. Improve user management

Participants shared ideas on ensuring equitable access to resources, including strategies for better user training and the creation of standardized guidelines across facilities. We also emphasized the importance of ensuring that our facilities are properly recognized in publications. This recognition is critical to highlighting the contributions of our teams and the resources we provide.

2. Enhance collaboration between Core Facilities

Recognizing that some projects require input from multiple facilities, we explored ways to improve coordination. We proposed establishing a common communication channel to facilitate better communication and collaboration. In addition, we suggested holding regular meetings to discuss ongoing projects and ensure that all relevant facilities are aligned and can contribute effectively. These steps aim to foster closer collaboration and streamline project management across our facilities, ultimately leading to more successful outcomes.

We are excited about the opportunities that lie ahead and look forward to future collaborations with the DBM community. By continuing to enhance our operations and communication, we are confident that together we can achieve even greater success in advancing research and innovation.

Publications

All publications we have received from the period between September 2024 and January 2025. The publications are listed by date.

Neutrophil Extracellular Traps Affect Human Inner Ear Vascular Permeability

Sekulic M, Giaglis S, Chatelain N, Bodmer D, Petkovic V.

Int J Mol Sci. 2024 Sep 10;25(18):9766. doi: 10.3390/i

Targeting Cytokine Networks in Neuroinflammatory Diseases

Becher B, Derfuss T, Liblau R.

Nat Rev Drug Discov. 2024 Nov;23(11):862-879. doi: 10.1038/s41573-024-01026-y. Epub 2024 Sep 11.

IL-1β Promotes Adipogenesis by Directly Targeting Adipocyte Precursors

Hofwimmer K, de Paula Souza J, Subramanian N, Vujičić M, Rachid L, Méreau H, Zhao C, Dror E, Barreby E, Björkström N K, Wernstedt Asterholm I, Böni-Schnetzler M, Meier D T, Donath M Y, Laurencikiene J.

Nat Commun. 2024 Sep 11;15(1):7957. doi: 10.1038/s41467-024-51938-x.

MR1 Gene and Protein Expression Are Enhanced by Inhibition of the Extracellular Signal-Regulated Kinase ERK

Constantin D, Nosi V, Kehrer N, Vacchini A, Chancellor A, Contassot E, Beshirova A, Prota G, Navarini A, Mori L, De Libero G.

Cancer Immunol Res. 2024 Oct 1;12(10):1452-1467. doi: 10.1158/2326-6066.CIR-24-0110.

Ablation of PC1/3 in POMC-Expressing Tissues but Not in Immune Cells Induces Sepsis Hypersensitivity

Moeller J, Meier D T.

J Endocr Soc. 2024 Oct 3;8(11):bvae171. doi: 10.1210/jendso/bvae171. eCollection 2024 Sep 26.

Multidimensional Analysis of Matched Primary and Recurrent Glioblastoma Identifies Contributors to Tumor Recurrence Influencing Time to Relapse

Shekarian T, Ritz M-F, 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. 2024 Oct 18:nlae108. doi: 10.1093/jnen/nlae108. Online ahead of print.

Mitochondrial-Derived Peptides, HNG and SHLP3, Protect Cochlear Hair Cells Against Gentamicin

Levano S, Yu L, Bartoszek E, Cortada M, Bodmer D.

Cell Death Discov. 2024 Oct 21;10(1):445. doi: 10.1038/s41420-024-02215-9.

The Effect of Fampridine on Working Memory: a Randomized Controlled Trial Based on a Genome-Guided Repurposing Approach

Papassotiropoulos A, Freytag V, Schicktanz N, Gerhards Ch, Aerni A, Faludi T, Amini E, Müggler E, Harings-Kaim A, Schlitt T, de Quervain D J-F.

Mol Psychiatry. 2024 Nov 8. doi: 10.1038/s41380-024-02820-1. Online ahead of print.

Publications

Single-Cell RNA-Sequencing of BK Polyomavirus Replication in Primary Human Renal Proximal Tubular Epithelial Cells Identifies Specific Transcriptome Signatures and a Novel Mitochondrial Stress Pattern

Weissbach FH, Follonier OM, Schmid S, Leuzinger K, Schmid M, Hirsch HH.

J Virol. 2024 Nov 8:e0138224. doi: 10.1128/jvi.01382-24. Online ahead of print.

Enhancing Anti-EGFRvIII CAR T Cell Therapy Against Glioblastoma With a Paracrine SIRPγ-Derived CD47 Blocker

Martins T A, Kaymak D, Tatari N, Gerster F, Hogan S, Ritz M-F, Sabatino V, Wieboldt R, Bartoszek E M, McDaid M, Gerber A, Buck A, Beshirova A, Heider A , Shekarian T, Mohamed H, Etter M M, Schmassmann P, Abel I, Boulay J-B, Saito Y, Mariani L, Guzman R, Snijder B, Weiss T, Läubli H, Hutter G.

Nat Commun. 2024 Nov 9;15(1):9718. doi: 10.1038/s41467-024-54129-w.

Rapid, Potent, and Persistent Covalent Chemical Probes to Deconvolute PI3Kα Signaling

Bissegger L, Constantin Th A, Keles E, Raguž L, Barlow-Busch I, Orbegozo C, Schaefer T, Borlandelli V, Bohnacker T, Sriramaratnam R, Schäfer A, Gstaiger M, Burke J E, Borsari C, Wymann M P.

Chem Sci. 2024 Nov 12. doi: 10.1039/d4sc05459h. Online ahead of print.

Inhibition of Cbl-b Restores Effector Functions of Human Intratumoral NK Cells

Tundo S, Trefny M, Rodić A, Grueninger O, Brodmann N, Börsch A , Serger C, Fürst J, Buchi M, Buczak K, Müller A T, Sach-Peltason L, Don L, Herzig P, Lardinois D, Heinzelmann-Schwarz V, Mertz K D, Hojski A, Schaeuble K, Laubli H, Natoli M, Toso A, Luu T T, Zippelius A, Romagnani A.

J Immunother Cancer. 2024 Nov 17;12(11):e009860. doi: 10.1136/jitc-2024-009860.

Optimized Full-Spectrum Flow Cytometry Panel for Deep Immuno Phenotyping of Murine Lungs

Baumann Z, Wiethe C, Vecchi CM, Richina V, Lopes T, Bentires-Alj M.

Cell Rep Methods. 2024 Nov 18;4(11):100885. doi: 10.1016/j.crmeth.2024.100885. Epub 2024 Oct 30.

BK Polyomavirus (BKPyV) Serotype-Specific Antibody Responses in Blood Donors and Kidney Transplant Recipients With and Without New-Onset BKPyV-DNAemia: A Swiss Transplant Cohort Study

Hillenbrand CA, Bani DA, Follonier O, Kaur A, Weissbach FH, Wernli M, Wilhelm M, Leuzinger K, Binet I, Bochud PY, Golshayan D, Hirzel C, Manuel O, Mueller NJ, Schaub S, Schachtner T, Van Delden C, Hirsch HH; Swiss Transplant Cohort Study.

Am J Transplant. 2024 Nov 21:S1600-6135(24)00707-X. doi: 10.1016/j.ajt.2024.11.019. Online ahead of print.

Publications

Significant Nocturnal Wakefulness After Sleep Onset in Metabolic Dysfunction–Associated Steatotic Liver Disease

Schaeffer S, Bogdanovic A, Hildebrandt T, Flint E, Geng A, Pecenko S, Lussier P, Strumberger M A, Meyer M, Weber J, Heim M, Cajochen C, Bernsmeier C.

Front Netw Physiol. 2024 Dec 4:4:1458665. doi: 10.3389/fnetp.2024.1458665. eCollection 2024

The Carbonyl Nucleobase Adduct M3Ade Is a Potent Antigen for Adaptive Polyclonal MR1-Restricted T Cells

Chancellor A, Constantin D, Berloffa G, Yang Q , Nosi V, Loureiro J P, Colombo R, Jakob R P, Joss D, Pfeffer M, De Simone G, Morabito A, Schaefer V, Vacchini A, Brunelli L, Montagna D, Heim M, Zippelius A, Davoli E, Häussinger D, Maier T, Mori L, De Libero G.

Immunity. 2024 Dec 11:S1074-7613(24)00534-X. doi: 10.1016/j.immuni.2024.11.019. Online ahead of print

Circulating Monocytes Upregulate CD52 and Sustain Innate Immune Function in Cirrhosis Unless Acute Decompensation Emerges

Geng A, Brenig R G, Roux J, Lütge M, Cheng H-W, Flint E E, Lussier P O G, Meier M-A, Pop O T, Künzler-Heule P, Matter M S, Wendon J, McPhail M J W, Soysal S, Semela D, Heim M, Weston C J, Ludewig B, Bernsmeier C.

J Hepatol. 2025 Jan 10:S0168-8278(24)02818-6. doi: 10.1016/j.jhep.2024.12.031. Online ahead of print.

As a reminder, to ensure that our newsletter represents the impactful research conducted at the DBM, we have established the following criteria for including publications:

1. The first author, last author or corresponding author (at least one of them) is a member of the DBM.
2. Department of Biomedicine affiliation must be mentioned in authors list as published by the journal.
3. The final version of the article must be available (online pre-publications will be included when their doi. in a peer-reviewed journal becomes available).

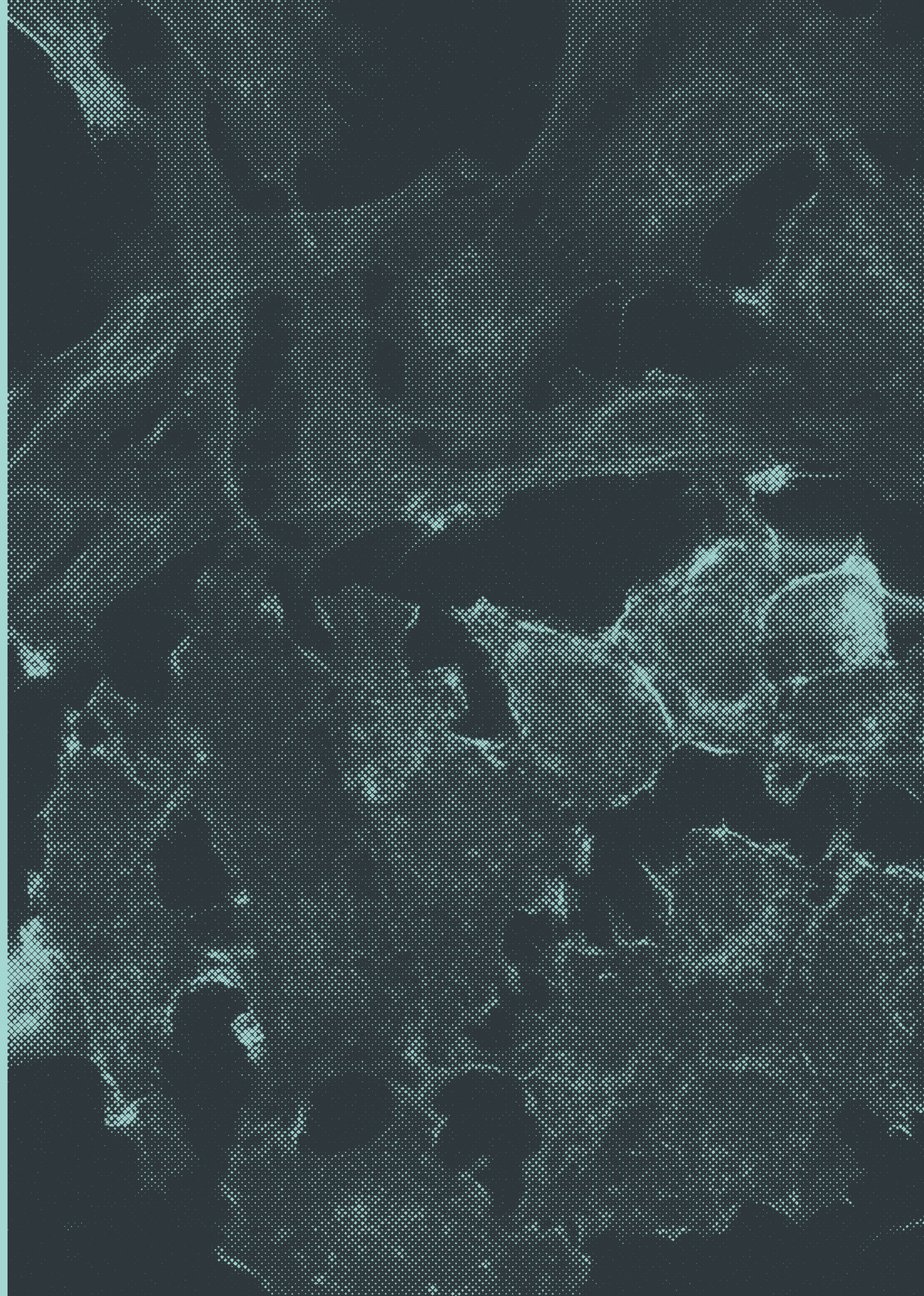
We are focusing on original publications. Review articles and guidelines are generally not considered, unless they appeared in the very top journals of broad readership beyond specific specialties (e.g. Cell, Science, Nature, NEJM, etc.).

We encourage all members to keep us informed of their latest publications so we can continue to celebrate and share the outstanding research conducted at the DBM.

We would like to take this opportunity to express our gratitude to Andrea Banfi for his contribution and his dedication to the editing of the publication list.

DBM
Basel
Department of
Biomedicine

Congratulations
Events



The DBM Congratulates

Awards since September 2024

We extend our heartfelt congratulations to the following DBM members for their remarkable awards and achievements since September 2024.

Congratulations to **Hans Hellmuth Hirsch** for receiving the Gardner Lectureship Award 2024 during the 26th Annual Conference of the European Society for Clinical Virology. In recognition of his outstanding contribution to the field of viral infections in immunocompromised patients, it was held from the 17th to the 21st of September 2024 in Frankfurt, Germany.

Benjamin Thiele for receiving the Poster Prize in the T-cell lymphoma session at the DGHO Annual Conference 2024 for his presentation.

Congratulations to **Zora Baumann** for receiving the Patient Advocate Award, **Evrim Ceren Kabak** for receiving the Nancy Hynes Award, and **Carolina Hager** for receiving the Gerhard Christofori Award at the BBC annual meeting in October 2024.

Michele Garioni for winning the SAKK/Astellas Pharma & AstraZeneca GU-Oncology Research Award.

Lena Keller on her award for best oral presentation, "Jahrestagung Schweizerische Arbeitsgemeinschaft für Metabolismus und Obesitas."

Pia Neubert on her award for best oral presentation, "Annual Meeting of Schweizerische Gesellschaft für Endokrinologie und Diabetologie (SGED)."

Kelly Trimigliozzi on obtaining a student prize for best oral presentation, "Annual Meeting of Schweizerische Gesellschaft für Endokrinologie und Diabetologie (SGED)."

Philip Schmassmann on his Dirk Schaefer Wissenschaftspreis, Department of Surgery.

Robin Dolgos on winning the best poster at the ARTP (Association pour la recherche sur les tumeurs de la prostate) annual meeting in Paris.

Anna Marsano on getting appointed to the position of Adjunct Professor of Experimental Medicine at The University Council.

Nicholas Sanderson on getting awarded the Venia docendi for experimental medicine by the Senate.

Romuald Parmentier on winning a Research Fund for Excellent Junior Researchers from the University of Basel.

Congratulations to Prof. Dr. **Jens Kuhle** for the Sobek Research Prize 2024.

Romina Matter-Marone on receiving a Bruno Speck award at the Basel Cell Therapy Symposium.

Simon Garaudé on obtaining the best oral & best poster presentation award at the 22nd Annual Meeting of the Swiss Transplantation Society in Thun.

Federica Valigi on obtaining an Abstract Achieving Award at the American Society of Hematology Annual Meeting.

Quentin Kimmerlin on obtaining an Abstract Achieving Award at the American Society of Hematology Annual Meeting.

The DBM Congratulates

New SNF Projects 2024 / 2025

Petya Apostolova 07.24 – 07.28	Leveraging acute myeloid leukemia metabolism to enhance the graft-versus-leukemia immunity
Andrea Banfi 04.24 – 04.28	Decoding angiocrine signaling for therapeutic bone regeneration
Andrea Barbero 05.24 – 05.28	Laser-Assisted Robot-guided Cartilage Regeneration (LAROCARE)
Mohamed Bentires-Alj 01.24 - 10.28	Targeting heterotypic cell-cell communication to prevent breast cancer brain metastasis
Jean-Christophe Beltra 03.24 – 02.29	Uncovering innovative strategies to reverse CD8T cell exhaustion and improve cancer Immunotherapies
Christine Bernsmeier 10.24. - 09.28	Reciprocal effects of bacterial infection and immune responses in liver cirrhosis
Mascha Binder 04.24 – 04.28	Synthetic immunity for precision targeting of oncogenic antigen receptors in lymphoma (IMMORTAL)
Mariana Borsa 02.25 – 02.30	Dealing with DamAGE: The role of organelle inheritance in immune cell fate decision
Tobias Derfuss 06.24 – 05.28	B cells and antibodies in autoimmune CNS diseases
Tobias Derfuss 01.24 – 12.26	Characterization and optimization of myasthenia gravis care
Karen Dixon 07.24 – 06.29	Dissecting neuro-immune interactions in the initiation and progression of cancer
Magdalena Filipowicz Sinnreich 01.24 – 12.27	MAIT cells as immunomodulators within the gut-liver axis in human liver homeostasis and disease
Raphael Guzman 01.24 – 12.28	Early minimally invasive image-guided endoscopic evacuation of intracerebral haemorrhage (EMINENT-ICH): a randomized controlled trial
Christoph Hess 04.24 – 04.29	Ultrastructure–function relationship in CD8T cells: interrogation of HSPA9-dependent MERCS across scales
Lukas Jeker 11.24 – 11.28	Investigating Molecular and Cellular Principles for optimal CD33-Epitope Engineered Hematopoietic Stem Cell Transplantation
Andreas Keller 08.24 – 07.25	Combinatorial neuromodulatory regulation of cortical function
Matthias E Liechti 11.24 – 10.28	Investigating the role of the psychedelic experience in the antidepressant response in patients with major depression: a placebo-controlled factorial trial with DMT masked with propofol (DMT4D-study)
Gabriela Kuster Pfister 05.24 – 04.28	Mechanisms of tyrosine kinase inhibitor cardiotoxicity
Anna Marsano 11.24 – 10.28	Sex- and pathology-related differences in the vulnerability of cardiomyocytes to different stressors and the release of cardiac troponin T and I: bridging the gap by integrating clinical phenotyping and engineered models

The DBM Congratulates

Ivan Martin 01.24 – 12.27	Engineered human bone marrow niches to investigate leukemic cell chemo-resistance and to support normal hematopoiesis
Albert Neutzner 06.24 – 05.28	Studying the neuroprotective roles of meningothelial cells in a bioprinted model of the subarachnoid space
Tania Rinaldi Barkat 07.24 – 06.28	The developmental basis of categorization
Elisabeth Roider 08.24 – 07.28	Investigating sunfilter-based redox perturbations and their impact on skin cancer formation
Susan Treves 10.24 – 09.26	Epigenetic enzymes inhibitors as therapeutic agents for RYR1-related myopathies: from a pre-clinical study to the implementation of a phase 1/2 clinical trial
Matthias Wymann 10.24 – 07.27	Phosphoinositide 3-kinase γ (PI3Kγ) complexes in Allergy, Hypersensitivity Reactions and Metabolic Disease
Mattia Zampieri 08.24 – 07.28	NCCR AntiResist (phase II)
Mattia Zampieri 04.24 – 08.28	MycoMem – Integrated understanding of M. tuberculosis outer membrane biology and its roles in pathogenesis
Alfred Zippelius 10.24 – 09.28	Spatial Determinants of Immunotherapy Resistance in Cancer
Aimée Zuniga 02.25 – 01.29	The developmental and cellular basis of digit formation and alterations in congenital malformations and limb evolution

SNSF Advanced Grants 2023

Mohamed Bentires-Alj 01.25. - 06.29	From Dormancy to Metastasis: unveiling hidden mechanisms and preventing the fatal switch in breast cancer
Marc Donath 01.25. - 12.29	Immune-neuro-metabolic regulation of the distribution of cellular nutrients and its functional consequences.

The DBM Congratulates

Swiss Cancer Research - New Research Projects 2024

Christoph Hess 36 months Co-investigator: Glenn Bantug 04.25 - 03.28	Defining the metabolic and non-metabolic roles of QPRT in EBV-driven B cell lymphoma

Clinical Research – laboratory-oriented

Alfred Zippelius 24 months Co-investigators: Karin Schäubli and Matthias Matter 03.25 - 02.27	Unravelling the relevance of intratumoral NK cell subtypes in lung cancer using multimodal single cell and spatial analysis

Clinical Research – patient-oriented

Viola Heinzelmann-Schwarz 36 months Co-investigator: Seraina Schmid 08.24 - 07.27	Continuation of MATAO-Trial “Maintenance therapy with aromatase inhibitor in epithelial ovarian cancer: a phase III randomized double-blind placebo- controlled trial”

Other Funded Projects

Adrien Moya, Arnaud Scherberich, Alexandre Kaempfen 05.24. - 01.25	Pro Patient Forschungsstiftung USB, Title: Fingerknochen
Andrea Barbero 12.24 - 11.28	HORIZON, European Health and Digital Executive Agency, Title: A bioprinting platform for the rapid, reliable, controlled and quantifiable patterning of cellular aggregates and microtissues into macroscale regenerative grafts with programmable architectures
Andres Garcia Garcia 12.24 - 12.25	Novartis Foundation for Medical-Biological Research, Title: Engineering patient-specific bone marrow avatars for personalized medicine in blood cancers

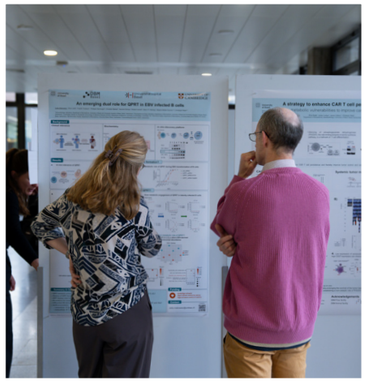
The DBM Congratulates

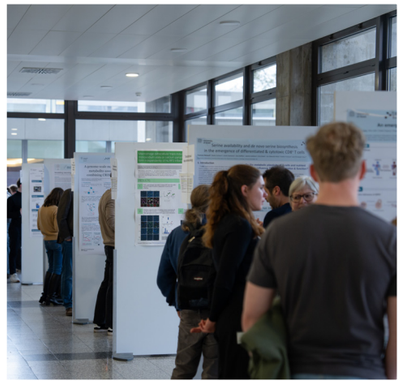
PhD Defenses since September 2024

24.09.2024	Microbiology	Basil Wicki
25.09.2024	Medical-Biological Research	Daniele Reggio
26.09.2024	Medical-Biological Research	Riccardo Bernasconi
24.10.2024	Medical-Biological Research	Michael Sandholzer
25.10.2024	Medical-Biological Research	Adrian Baldrich
04.11.2024	Medical-Biological Research	Anne Geng
22.11.2024	Cell Biology	Federica Valigi
04.12.2024	Medical-Biological Research	Anna Lena Kastner
10.12.2024	Medical-Biological Research	Laura Steiger
15.01.2025	Molecular Biology	Mattia Marinucci

DBM Research Day 2025

The DBM Research Day 2025 took place on January 23th and marked another important milestone for the DBM. The DBM research groups led by Dominique de Quervain, Christoph Hess, Diego Kyburz, Matthias Mehling, Jan Niess, Andreas Papassotiropoulos, Verdon Taylor, and Mattia Zampieri presented their groundbreaking work. Their presentations covered a wide range of innovative topics, from stem cell regulation to cutting-edge advances in cognitive neuroscience, immune-mediated functions, and metabolic profiling. The event was a resounding success, with stimulating presentations and lively scientific discussions that fostered collaboration and inspiration.





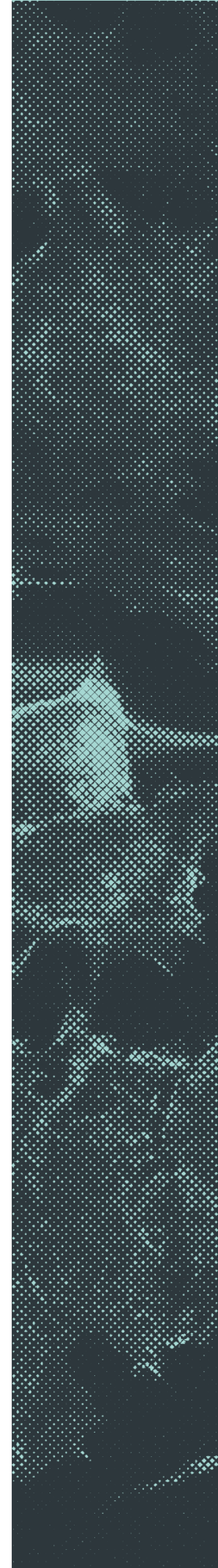
Upcoming Events

International Day of Women and Girls in Science – Workshop Mental Health Awareness

14.02.2025

DBM Plenary Assembly

03.04.2025



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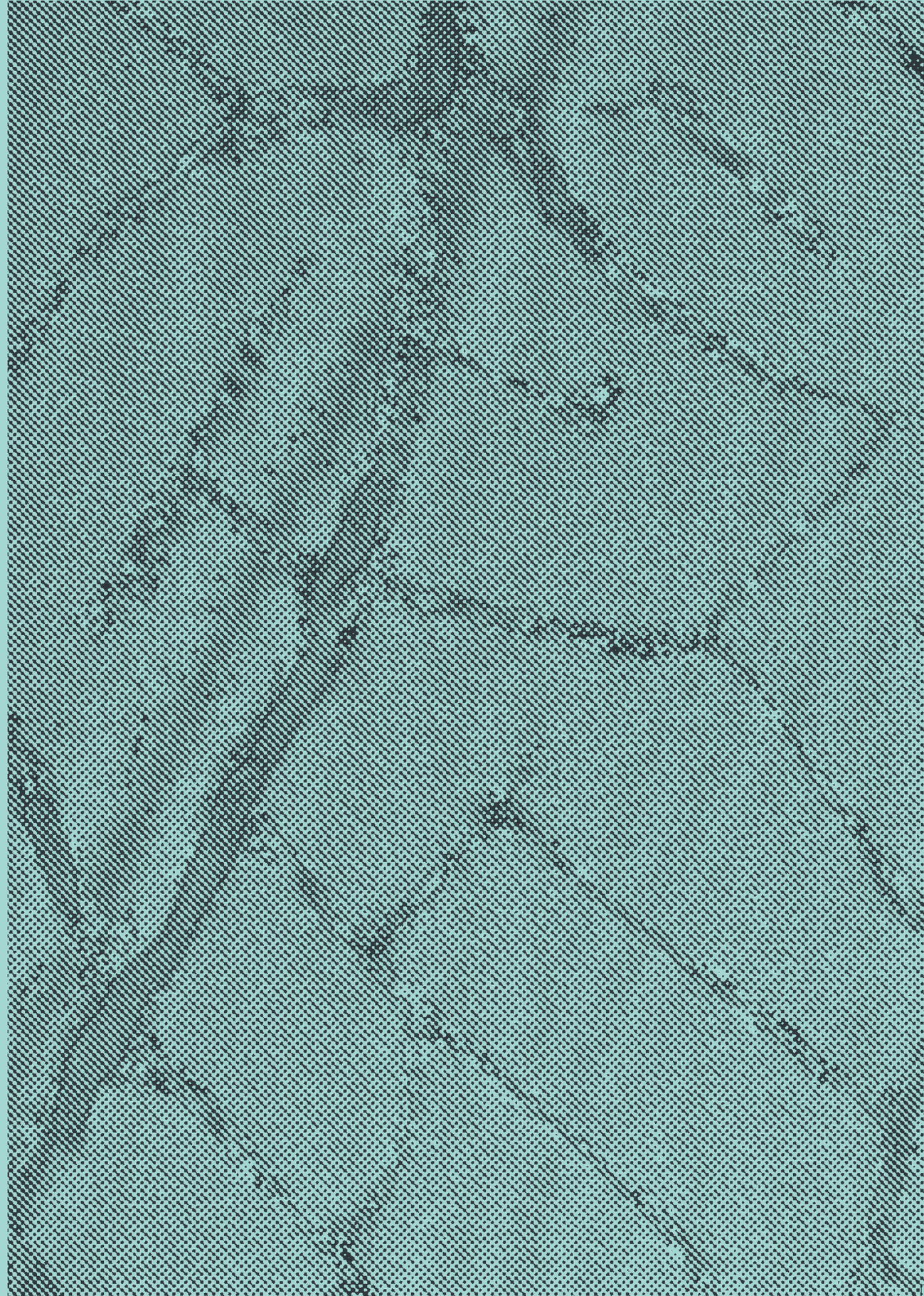

New Colleagues

New Colleagues from September 2024 to January 2025

We are delighted to have you among us. We would like to express our warmest welcome and good wishes!

Annandasundaram Renia	Developmental Immunology
Barucka Karolina Maria	Translation Cardiology
Bauersachs Hanke Gwendolyn	Molecular and computational hematology-immunology
Baumann Lucy	DBM-Flow Cytometry
Beetschen Anna	Infection Biology
Bentin Cantor	DBM Finance
Berest Ivan	Molecular and computational hematology-immunology
Berna Pascual	David Cancer Neuroimmunology
Bernasconi Martino Francesco	Tumor Heterogeneity Metastasis and Resistance
Berve Kristina	Experimental Neuroimmunology
Besemer Brenda	Translational Immuno-Oncology
Buoli Comani Valeria	Systems Pharmacology
Carlos Paulino Amanda	Cancer Immunotherapy
Cereghetti Siria	Genome Plasticity
Christ Delia Lluisa	Cognitive Neuroscience
Cittadini Tecla	Infection Immunology
Czech Marie	Immunobiology and Immunotherapy
Darraji Lydia	Translational Hepatology
De Vaan Joëlle	Cancer Immunology
Debatin Teresa	Tissue Engineering
Son Do	DBM Communications
Eich Caroline	Clinical Immunology
Enderle Carole	DBM Administration
Eugster Anne	Translational Immuno-Oncology
Frank Emma	Infection Immunology
Franz Natascha	Translational Immuno-Oncology
Fritzius Thorsten	Neuromuscular Research
Giannini Greta Carola	Pulmonary infection biology
Goetzinger Felix	Translation Cardiology
Grassi Thierry	Brain Ischemia and Regeneration
Herrenschmidt Simon	Blood Cancer Biology and Immunotherapy
Heuzeroth Frederick	Translational Genitourinary Cancer Research
Hosch Salome	Pathology of infectious and immunologic diseases
Jauregui Lozano Juan Pablo	Molecular and computational hematology-immunology
Kadel Maja	Translational Immuno-Oncology
Kamal Aryan	Molecular and computational hematology-immunology

Kessler Sandra	Molecular and computational hematology-immunology
Knoernschild Niklas	DBM Finance
Koren Jerneja	Blood Cancer Biology and Immunotherapy
Kraus Selina	Psychopharmacology Research
Kunz Michael	Translation Cardiology
Lauder Lucas	Translation Cardiology
Le Gall Victor	Cancer Immunology
Lehmann Julia Katharina	Cancer Immunotherapy
Leone Luca	DBM HR
Lerch Romane	Immunobiology and Immunotherapy
Lhospice Emilien	Bone Regeneration
Loidl Anja Cristina	Childhood Leukemia
Lüthy Alyssa	Infection Biology
Mancuso Maria Teresa	Pathology of infectious and immunologic diseases
Martinazzi Sara	Cardiac Surgery and Engineering
Mebelli Kristiana	Transplantation and Clinical Virology
Meier Rahel	Immunobiology
Montalbetti Emma	Inner Ear Research
Montella Elena	Cartilage Engineering
Müller Jennifer	Cancer- and Immunobiology
Nadišauskaitė Rūta	Clinical Neuroimmunology
Nguyen Claudia	Infection Biology
Norbäck Hanna Katarina	Molecular and computational hematology-immunology
Philippe Caloba	Cancer Immunotherapy
Pareja Roman Javier	Cancer Neuroimmunology
Passera Nina Jacqueline	Cognitive Neuroscience
Periyasamy Radhakrishnan	Human Genomics
Piccinni Erica	Tissue Engineering
Puvaneswaran Rajin	Inner Ear Research
Rauchhaus Jonas	Molecular and computational hematology-immunology

New Colleagues from September 2024 to January 2025

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Reisch Anna	Childhood Leukemia
Remen Michal	Blood Cancer Biology and Immunotherapy
Rippstein Patrick	DBM Infrastructure
Roig Merino Sara	DBM-Microscopy
Roulier Michelle Sarah	Pulmonary infection biology
Samard Amelie	Cancer- and Immunobiology
Schade Ingo	Embryology and Stem Cell Biology
Schmid Valentine	Ovarian Cancer Research
Schmitz Vivien Charlotte	Bone Regeneration
Seger Alina	Tumor Heterogeneity Metastasis and Resistance
Spera Irene	Ocular Pharmacology and Physiology
Sterk Katja	Hepatology
Stojanovska Frosina	Molecular and computational hematology-immunology
Therre Markus	Translation Cardiology
Trenta Federica	Tissue Engineering
Tufilli Lowell	DBM-IT
Übelin Silvia	Cancer- and Immunobiology
Verspecht Lore	Embryology and Stem Cell Biology
Vigano Maria Alessandra	Genome Plasticity
Vlachou Efstathiou Paraskevi Maria	Molecular and computational hematology-immunology
Waldvogel Janine Agnes	Genome Plasticity
Zeis Patrice	Brain Tumor Immunotherapy and Biology
Zhong Shan	Developmental Neurobiology and Regeneration
Zindel Selina	Tumor Heterogeneity Metastasis and Resistance

Thank you!

The DBM newsletter team would like to thank all the contributors for their work. We hope you enjoyed reading the newsletter.

Please feel free to submit your ideas and input for our next issue.

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Universität Basel

Department of Biomedicine

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Newsletter

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