



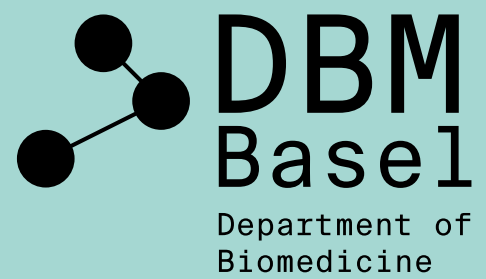
Universität  
Basel

Department of Biomedicine



# Newsletter

## January 2025



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**Success Story**

**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



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# Cover Story

## Alumni Goes Own Lab

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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 Bourguine, 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.



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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.

## Paul Bourguine

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Paul Bourguine

Paul Bourguine 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 multi-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!





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#### **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 CART 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

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Maria Balmer

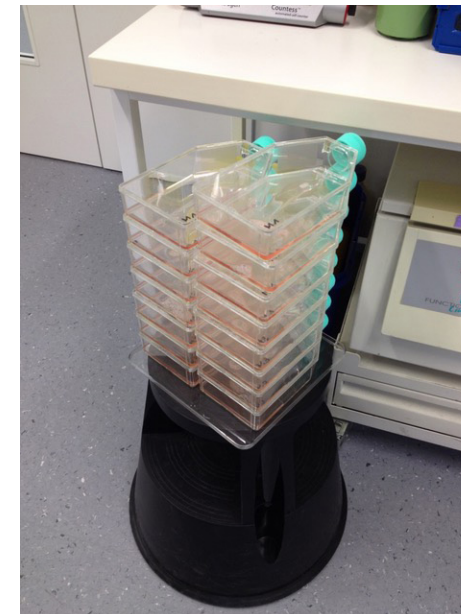
Maria Balmer is an SNSF-Eccellenza professor at the Department of Biomedical Research of the University of Bern.

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.



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#### 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.”**

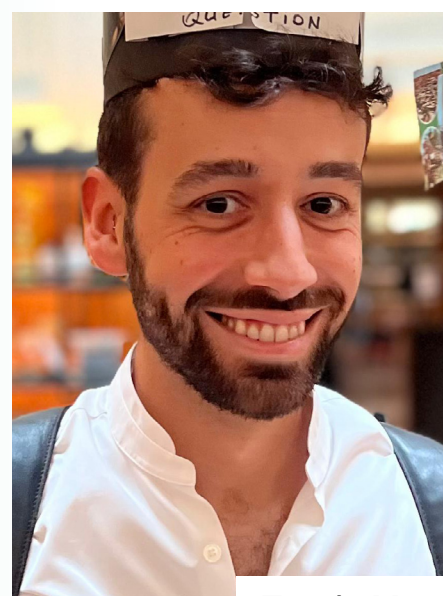
Chiara, Maria and Paul’s stories illustrate the lasting impact the DBM has had on their careers. Their experiences show how collaboration, mentorship and interdisciplinary research have shaped their paths in science. As we celebrate the 25th anniversary of the DBM, we’re excited and proud to continue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



# DBM Success Story

Engineering CART 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 SIRPy-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.

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## 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

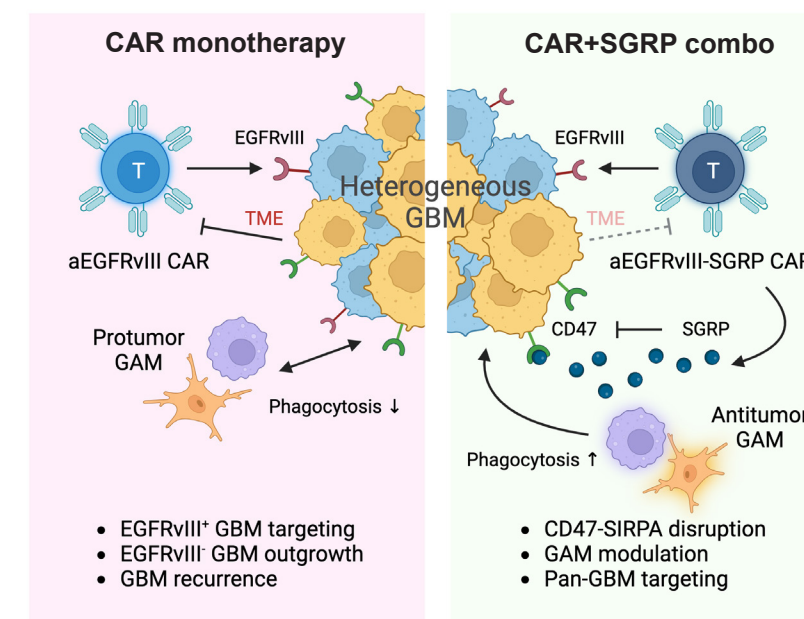
Our study lays a strong foundation for advancing this therapeutic strategy toward clinical trials. The observed efficacy in both GBM and lymphoma models suggests that paracrine CD47 blockade could be a valuable combination partner for CAR T cell therapy in GBM and other solid tumors.

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

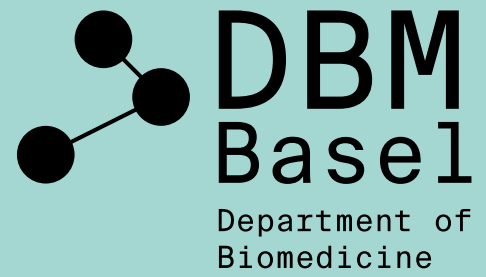
- Translational Challenges:** While the preclinical models used were robust, they do not replicate the complexity of human GBM, including clonal evolution and the full scope of interactions within the tumor microenvironment.
- Potential Toxicity:** Although no significant systemic or local toxicity was 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

## Allergy and Immunity

### Hartmann Lab

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#### 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, immunohistochemistry), 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 inhibitors 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       |

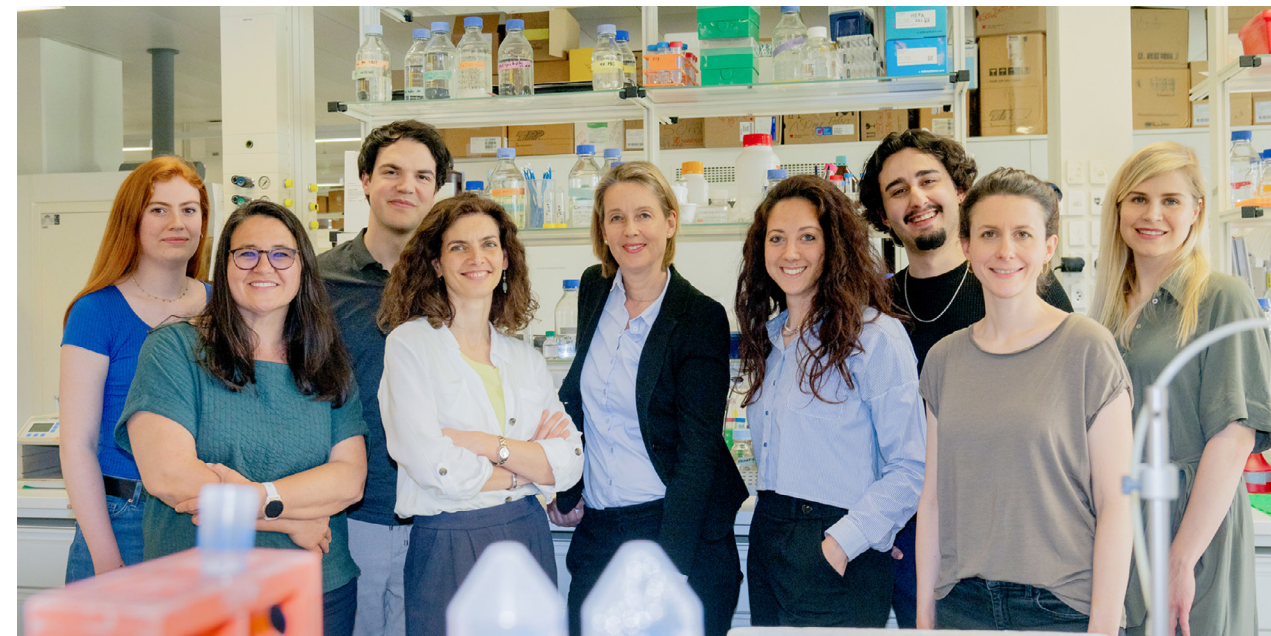


## Our Vision for the Future

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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17. J. Scholten et al., Mast cell-specific Cre/loxP-mediated recombination in vivo. *Transgenic Res* 17, 307-315 (2008).
18. A. Gerbault et al., Mast cell hyperplasia, B-cell malignancy, and intestinal inflammation in mice with conditional expression of a constitutively active kit. *Blood* 117, 2012-2021 (2011).
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

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#### 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-oriented 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 character-

istics. 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             |



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#### 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-pizzaio-lo 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

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**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.

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[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

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[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.

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[IL-1 \$\beta\$  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 DT, Donath MY, Laurencikiene J.

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

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[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, Contasot 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.

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[Ablation of PC1/3 in POMC-Expressing Tissues but Not in Immune Cells Induces Sepsis Hypersensitivity](#)

Moeller J, Meier DT.

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

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[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.

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[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.

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[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.

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[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.

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[Enhancing Anti-EGFRvIII CART Cell Therapy Against Glioblastoma With a Paracrine SIRPy-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.

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[Rapid, Potent, and Persistent Covalent Chemical Probes to Deconvolute PI3K \$\alpha\$  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.

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[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 AT, 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 TT, Zippelius A, Romagnani A.

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

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[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.

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[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, Hirtzel 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.

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## [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, Berloff 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:

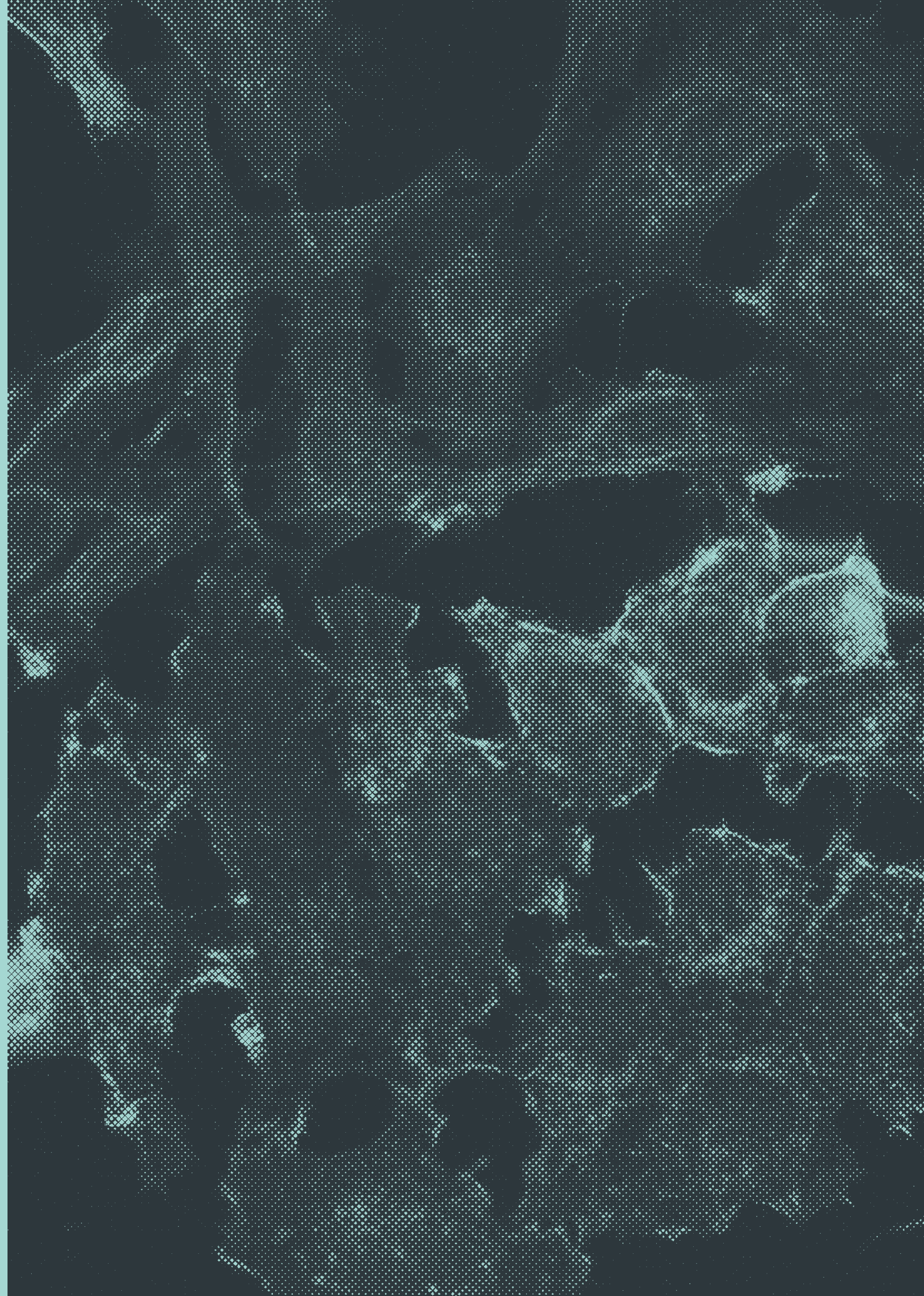
1. The first author, last author or corresponding author (at least one of them) is a member of the DBM.
2. Department of Biomedicine affiliation must be mentioned in authors list as published by the journal.
3. The final version of the article must be available (online pre-publications will be included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

## **Congratulations Events**





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## 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, **Evrin 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 Trimiglozzi** 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.

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## New SNF Projects 2024 / 2025

|   |   |
|---|---|
| Petya Apostolova<br>07.24 – 07.28       | Leveraging acute myeloid leukemia metabolism to enhance the graft-versus-leukemia immunity          |
| Andrea Banfi<br>04.24 – 04.28           | Decoding angiocrine signaling for therapeutic bone regeneration                                     |
| Andrea Barbero<br>05.24 – 05.28         | Laser-Assisted Robot-guided Cartilage Regeneration (LAROCARE)                                       |
| Mohamed Bentires-Alj<br>01.24 - 10.28   | Targeting heterotypic cell-cell communication to prevent breast cancer brain metastasis             |
| Jean-Christophe Beltra<br>03.24 – 02.29 | Uncovering innovative strategies to reverse CD8T cell exhaustion and improve cancer Immunotherapies |
| Christine Bernsmeier<br>10.24. - 09.28  | Reciprocal effects of bacterial infection and immune responses in liver cirrhosis                   |
| Mascha Binder<br>04.24 – 04.28          | Synthetic immunity for precision targeting of oncogenic antigen receptors in lymphoma (IMMORTAL)    |
| Mariana Borsa<br>02.25 – 02.30          | Dealing with DamAGE: The role of organelle inheritance in immune cell fate decision                 |
| Tobias Derfuss<br>06.24 – 05.28         | B cells and antibodies in autoimmune CNS diseases   |
| Tobias Derfuss<br>01.24 – 12.26         | Characterization and optimization of myasthenia gravis care   |
| Karen Dixon<br>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 troponinT and I: bridging the gap by integrating clinical phenotyping and engineered models

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| Ivan Martin<br>01.24 – 12.27          | Engineered human bone marrow niches to investigate leukemic cell chemo-resistance and to support normal hematopoiesis  |
| Albert Neutzner<br>06.24 – 05.28      | Studying the neuroprotective roles of meningotheial cells in a bioprinted model of the sub-arachnoid space   |
| Tania Rinaldi Barkat<br>07.24 – 06.28 | The developmental basis of cate-gorization   |
| Elisabeth Roider<br>08.24 – 07.28     | Investigating sunfilter-based re-dox perturbations and their im-pact on skin cancer formation  |
| Susan Treves<br>10.24 – 09.26         | Epigenetic enzymes inhibitors as therapeutic agents for RYR1-relat-ed myopathies: from a pre-clini-cal study to the implementation of a phase 1/2 clinical trial |
| Matthias Wymann<br>10.24 – 07.27      | Phosphoinositide 3-kinase $\gamma$ (PI3K $\gamma$ ) complexes in Allergy, Hypersensitivity Reactions and Metabolic Disease                                       |
| Mattia Zampieri<br>08.24 – 07.28      | NCCR AntiResist (phase II)   |
| Mattia Zampieri<br>04.24 – 08.28      | MycoMem – Integrated under-standing of M. tuberculosis outer membrane biology and its roles in pathogenesis  |
| Alfred Zippelius<br>10.24 – 09.28     | Spatial Determinants of Immuno-therapy Resistance in Cancer  |
| Aimée Zuniga<br>02.25 – 01.29         | The developmental and cellular basis of digit formation and alter-ations in congenital malforma-tions and limb evolution   |

## SNSF Advanced Grants 2023

|  |  |
|--|--|
| Mohamed Bentires-Alj<br>01.25. - 06.29 | From Dormancy to Metastasis: unveiling hidden mechanisms and preventing the fatal switch in breast cancer      |
| Marc Donath<br>01.25. - 12.29          | Immune-neuro-metabolic regula-tion of the distribution of cellular nutrients and its functional con-sequences. |

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| Swiss Cancer Research - New Research Projects<br>2024  |  |  |
| Christoph Hess<br>36 months<br>Co-investigator:<br>Glenn Bantug<br>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<br>24 months<br>Co-investigators:<br>Karin Schäubli and<br>Matthias Matter<br>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<br>36 months<br>Co-investigator:<br>Seraina Schmid<br>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,<br>Arnaud Scherberich,<br>Alexandre Kaempfen<br>05.24. - 01.25 | Pro Patient Forschungsstiftung USB, Title: Fingerknochen   |
| Andrea Barbero<br>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<br>12.24 - 12.25                                       | Novartis Foundation for Medical-Biological Research, Title: Engineering patient-specific bone marrow avatars for personalized medicine in blood cancers  |



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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

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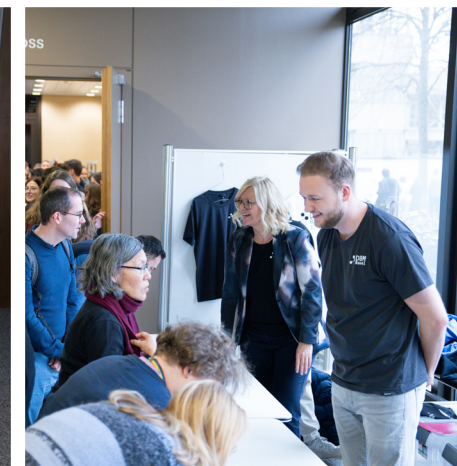
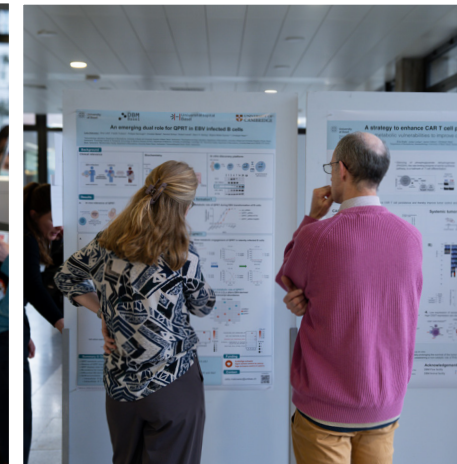
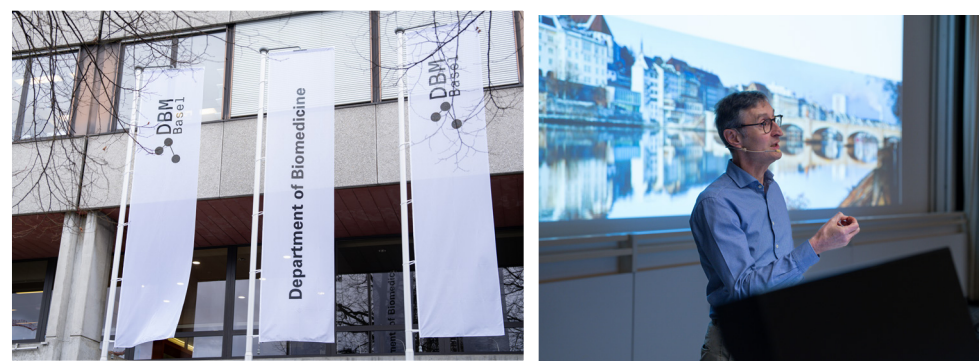
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The DBM Research Day 2025 took place on January 23th and marked another important milestone for the DBM. The DBM research groups led by Dominique de Quervain, Christoph Hess, Diego Kyburz, Matthias Mehling, Jan Niess, Andreas Papassotiropoulos, Verdon 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.





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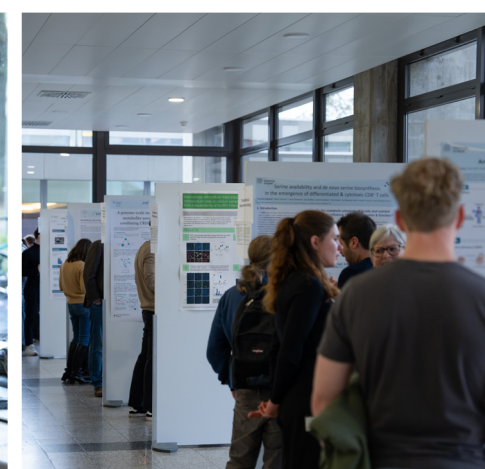
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# Upcoming Events

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

14.02.2025

**DBM Plenary Assembly**

03.04.2025



## 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!



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Annandasundaram Renia  
Barucka Karolina Maria  
Bauersachs Hanke Gwendolyn

Baumann Lucy  
Beetschen Anna  
Bentin Cantor  
Berest Ivan

Berna Pascual  
Bernasconi Martino Francesco

Berve Kristina  
Besemer Brenda  
Buoli Comani Valeria  
Carlos Paulino Amanda  
Cereghetti Siria  
Christ Delia Lluisa  
Cittadini Tecla  
Czech Marie  
Darraji Lydia  
De Vaan Joëlle  
Debatin Teresa  
Son Do

Eich Caroline  
Enderle Carole  
Eugster Anne  
Frank Emma  
Franz Natascha  
Fritzius Thorsten  
Giannini Greta Carola  
Goetzinger Felix  
Grassi Thierry  
Herrenschmidt Simon

Heuzeroth Frederick

Hosch Salome

Jauregui Lozano Juan Pablo

Kadel Maja  
Kamal Aryan

Developmental Immunology  
Translation Cardiology  
Molecular and computational  
hematology-immunology  
DBM-Flow Cytometry  
Infection Biology  
DBM Finance  
Molecular and computational  
hematology-immunology  
David Cancer Neuroimmunology  
Tumor Heterogeneity Metastasis  
and Resistance  
Experimental Neuroimmunology  
Translational Immuno-Oncology  
Systems Pharmacology  
Cancer Immunotherapy  
Genome Plasticity  
Cognitive Neuroscience  
Infection Immunology  
Immunobiology and Immunotherapy  
Translational Hepatology  
Cancer Immunology  
Tissue Engineering  
DBM Communications  
Clinical Immunology  
DBM Administration  
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Translational Immuno-Oncology  
Neuromuscular Research  
Pulmonary infection biology  
Translation Cardiology  
Brain Ischemia and Regeneration  
Blood Cancer Biology and  
Immunotherapy  
Translational Genitourinary Cancer  
Research  
Pathology of infectious and  
immunologic diseases  
Molecular and computational  
hematology-immunology  
Translational Immuno-Oncology  
Molecular and computational  
hematology-immunology

Kessler Sandra  
Knoernschild Niklas  
Koren Jerneja  
Kraus Selina  
Kunz Michael  
Lauder Lucas  
Le Gall Victor  
Lehmann Julia Katharina  
Leone Luca  
Lerch Romane  
Lhospice Emilien  
Loidl Anja Cristina  
Lüthy Alyssa  
Mancuso Maria Teresa  
Martinazzi Sara  
Mebelli Kristiana  
Meier Rahel  
Montalbetti Emma  
Montella Elena  
Müller Jennifer  
Nadišauskaitė Rūta  
Nguyen Claudia  
Norbäck Hanna Katarina  
Philippe Caloba  
Pareja Roman Javier  
Passera Nina Jacqueline  
Periyasamy Radhakrishnan  
Piccinini Erica  
Puvaneswaran Rajin  
Rauchhaus Jonas

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Blood Cancer Biology and Immunotherapy  
Psychopharmacology Research  
Translation Cardiology  
Translation Cardiology  
Cancer Immunology  
Cancer Immunotherapy  
DBM HR  
Immunobiology and Immunotherapy  
Bone Regeneration  
Childhood Leukemia  
Infection Biology  
Pathology of infectious and immunologic diseases  
Cardiac Surgery and Engineering  
Transplantation and Clinical Virology  
Immunobiology  
Inner Ear Research  
Cartilage Engineering  
Cancer- and Immunobiology  
Clinical Neuroimmunology  
Infection Biology  
Molecular and computational hematology-immunology  
Cancer Immunotherapy  
Cancer Neuroimmunology  
Cognitive Neuroscience  
Human Genomics  
Tissue Engineering  
Inner Ear Research  
Molecular and computational hematology-immunology



# 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!

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

WELCOME

# 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.

[communications-dbm@unibas.ch](mailto:communications-dbm@unibas.ch)

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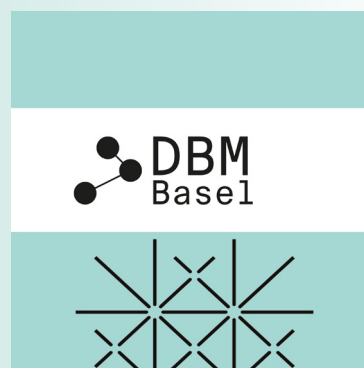
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**Publisher:**

Department of Biomedicine  
University of Basel  
Hebelstrasse 20  
4031 Basel  
Switzerland

**Concept:** Martina Konantz and Xiomara Banholzer

**Editorial team:** Martina Konantz and Xiomara Banholzer

**Layout, Photography and Design:**

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January 2025



Universität  
Basel

Department of Biomedicine



# Newsletter

## January 2025