

Excellent Training in Translational Biomedicine









TRANSMED



Mainz Research School of Translational Biomedicine

Dear Colleagues, Dear TRANSMED Fellows,



On the occasion of the 10th anniversary of TRANSMED, it is a special pleasure for me to give you a retrospective of the origins and development of TRANSMED and to present you with an outlook on the contents that will characterize the future work and direction of TRANSMED.

TRANSMED started with the establishment of a core program, which aimed to support PhD candidates in the natural sciences (medical scientists) and clinician scientists to achieve their PhD or MD/PhD in a structured program. For this purpose, an own doctoral program was established under the umbrella of TRANSMED in 2012.

In the following years, the portfolio of TRANSMED could be further strengthened by the acquisition of various clinician scientist programs as well as by the cooperation with third-party funded doctoral programs so that we can now look back on an impressive number of more than 240 fellows and a steadily growing number of alumni. The structured doctoral program for students of human and dental medicine, which was launched in the troubled waters of the pandemic, is also slowly gaining momentum with currently more than 300 participants.

We are pleased to have been able to expand further successful collaborations with the biomedical focal areas of the Johannes Gutenberg University (CTVB, FTN, FZI), with the participating departments, the Institute of Molecular Biology, TRON, HiTRON and the Centre for Healthy Ageing, just to name a few. We are particularly pleased that, together with TRON and Özlem Türeci, we have recently been able to promote the networking of medical and clinician scientists in a medical scientist proposal funded by the Else Kröner Fresenius Foundation. In the future, the networking of natural scientists with clinicians will play an increasingly important role in the optimal care and treatment of our patients in individualized precision medicine.

I would like to thank all supporters and especially the medical and clinician scientists who have made TRANSMED what it is and represents today. In the past years, there have been many hurdles and imponderables to overcome, and due to the high level of commitment, it has been possible to successfully realize many third-party funding acquisitions that have made the program so successful.

Special thanks go to the Chief Scientific Officer and Dean of the Faculty of Medicine for his continuous support of the promotion of young scientists and thus TRANSMED as well as to the Ministry of Science and Health of the State of Rhineland-Palatinate for supporting TRANSMED from the funds of the Rhineland-Palatinate Research Initiative.

Finally, I hope you enjoy reading the anniversary brochure, which will give you an insight into many interesting and successful moments of the past ten years. We look forward to many new ideas and developments for the coming ten years and to a successful cooperation with all of you.

With warmest regards,

Hileinan Reule

Univ.-Prof. Julia Weinmann-Menke Academic Director TRANSMED

Dear Readers, Dear Colleagues,



As Chief Scientific Officer and Dean of the Faculty of Medicine of the Johannes Gutenberg University Mainz, I am very happy that we can celebrate the 10th anniversary of the Mainz Research School of Translational Medicine (TRANSMED) this year.

TRANSMED was founded in 2013 to fill the existing gap in biomedical research in Germany between the internationally competitive basic

research and the rather weakly developed patient-oriented and clinical research. Thus, there was and is a critical need for postgraduate programs, which train young medical and natural science graduates in basic and translational research to enable them to become future leaders in the fields of biomedicine and translational research, in academia, the public sector, as well as in pharmaceutical industry. TRANSMED addresses this need by providing an integrated, multidisciplinary training curriculum in all aspects of translational medicine.

TRANSMED is run jointly by four Faculties of the Johannes Gutenberg University Mainz: The University Medical Center, Biology, Chemistry/Pharmaceutical Sciences/Geography/ Geosciences, and Social Sciences/Media/Sports. TRANSMED plays a multifaceted role. It serves as the graduate school of the Research Center "Translational Medicine" with its three research areas "Immunotherapy", "Translational Neurosciences", and "Translational Vascular Biology". Beyond this, TRANSMED is the umbrella organization for all training groups within the area of biomedicine at JGU. It is also worth mentioning that TRANSMED has established its own PhD and MD/PhD graduation regulations.

In the past 10 years, TRANSMED has developed successfully and, in addition to the expansion of the training program, acquired various third-party funded clinician and medical scientist programs. Most recently, there was the successful acquisition of a School for Medical Scientists funded by the Else Kröner Fresenius Foundation, which promotes a tandem structure of clinician and medical scientists. Besides the support of the clinician and medical scientists after graduation, TRANSMED also supports students of human and dental medicine by offering a structured doctorate. This includes an interdisciplinary training program as well as the possibility of receiving a scholarship.

75 doctoral candidates have already accomplished a PhD, MD/PhD, Dr. rer. nat. or Dr. rer. physiol. degree within TRANSMED. More than 40 clinician scientists are granted or had been granted with protected time to develop an independent research profile in parallel with a clinical career. Currently over 240 fellows are actively enrolled in TRANSMED.

An outstanding feature of TRANSMED is the support from clinicians and medical scientists as well as the interaction of the two groups of scientists. Compared to many other universities that have set up clinician scientist programs in recent years, Mainz has focused on the interaction and networking of clinician and medical scientists from the very beginning. This is also reflected in the interdisciplinary training program as well as the MD/PhD doctoral program and combined programs.

We are pleased to see that many TRANSMED fellows have been able to pursue their careers successfully. Many are now in leadership positions - at universities, in research institutions and in companies, and they are helping to support the next generation of scientists.

I wish TRANSMED all the best and continued success in the future.

Intenan

Univ.-Prof. Dr. Ulrich Förstermann Chief Scientific Officer and Dean of the Faculty of Medicine

Dear Colleagues, Dear TRANSMED Fellows,



Since its foundation 10 years ago, the Johannes Gutenberg University Mainz has supported the Mainz Research School of Translational Medicine (TransMed). With its own PhD and MD/PhD doctoral degree regulations, TransMed offers doctoral candidates the

opportunity to obtain these internationally recognized degrees.

TransMed also promotes interdisciplinary cooperation and networking between the departments and research areas, in particular by encouraging interaction between the clinician scientists at Mainz University Medical Center and the natural scientists. To this end, TransMed has successfully acquired third-party funding for clinician and medical scientist programs in recent years.

The central goal of TransMed is to structure both doctoral and postdoctoral training with a framework program of technical and transferable skills while at the same time supporting and accompanying the fellows with mentors. In this context, TransMed cooperates with the International PhD Program of the Institute of Molecular Biology and the Max Planck Graduate Center. Under the umbrella structure of the Gutenberg Academy, which is currently being established, these cooperations will be expanded more intensively.

TransMed has become an established and valued institution for national and international participants. This is shown by the continuously increasing number of fellows as well as the successful acquisition of third-party funding.

To its 10th anniversary I wish TransMed all the best and continued success in the future.

Stefen Hutter by

Prof. Dr. Stefan Müller-Stach Vice-President for Research and Early Career Academics of the Johannes Gutenberg University Mainz







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About TransMed

1.1 TRANSMED – a Long Way from the Original Concept to the Current Structure



Prof. Dr. Stephan Grabbe Department of Dermatology, UMC Mainz, JGU

The idea for a graduate school for translational biomedicine (TRANSMED), which was initially developed in 2010, was based on the one hand on the fact that structured scientific training for physicians that could be completed in parallel with clinical training hardly existed at the time. On the other hand, medicine and the natural sciences were drifting further and further apart, partly due to the increasingly focused research funding by research associations and large research institutions, which made access to medical research for natural scientists and thus efficient translational research more and more difficult. By establishing structured, integrated and multidisciplinary training curricula for both clinician and medical scientists, TRANSMED aimed to break new ground. A clear focus on translational medicine, close interaction of students with medical and natural science backgrounds, a core curriculum that teaches management skills and career-relevant transferable skills, but also continuous career support after completion of the training program were characteristics of the original TRANSMED application, which was submitted as part of the Excellence Strategy of the German state and federal governments.

Unfortunately, the application was not funded at the time, but it received such good reviews that JGU's authorities decided to fund the concept from internal resources. This then led to the founding of TRANSMED, although at the beginning only part of the facets originally planned could be implemented, which was due to the naturally relatively modest funding from internal resources alone. In the beginning, regulatory hurdles such as the previously non-existent option of an MD/PhD degree program for physicians had to be implemented. In the following years, additional and also new facets were successively integrated into TRANSMED. The inclusion of the PhD curriculum for physicians in all phases of their training, which begins already in the study (Pre-TRANSMED) and extends over the entire period of residency training (Post-TRANSMED), a research and teaching exchange program with foreign partner universities, governmental institutions, and industry partners, or even a TRANSMED building that would host scientific and social gatherings and provide classrooms and guest rooms, were visions at the time that have still not been fully realized.

Ultimately, the central goal of TRANSMED is still to redefine the research and teaching culture at UM Mainz and the life sciences at JGU by structuring, networking, and promoting interdisciplinary education, to produce first-class medical and clinician scientists, and thus to contribute to increasing the national and international perception of JGU and UM Mainz.

Milestones



1.2 The TRANSMED Umbrella

Dr. Petra Schwarz

Managing Director TransMed, UMC Mainz, JGU



The Mainz Research School of Translational Biomedicine (TRANSMED) is the umbrella organization for the promotion of young life scientists at Johannes Gutenberg University Mainz (JGU). TRANSMED coordinates a structured, interfaculty, and mentor-based training program with maximum flexibility for all participants.

TRANSMED is jointly run by four Faculties of JGU: University Medical Center, Biology, Chemistry/Pharmaceutical Sciences/Geography/Geosciences, and Social Sciences/Media/Sports. TRANSMED covers all career stages from doctoral candidates of human and dental medicine and master students (Pre-TRANSMED), over clinician scientists and doctoral candidates in biomedicine (Core-TRANSMED), to advanced clinician scientists and postdoctoral researchers (Post-TRANSMED).

In the following chapters, we describe the wide range of collaborations, qualification programs, training offers and the scientific success of our $\mathsf{T}_{\mathsf{RANS}\mathsf{MED}}$ Fellows.

1.3 Doctoral Degree Regulations PhD-MD/PhD in Translational Biomedicine

Prof. Dr. Thomas Mittmann



Chairperson of the Joint Committee for the Conferral of the PhD-MD/PhD Degrees, Institute of Physiology, UMC Mainz, JGU

Dr. Petra Schwarz

Head of the Office for Doctoral Affairs, TRANSMED, UMC Mainz, JGU

In 2010, Prof. Stefan Grabbe, Prof. Heiko Luhmann, and Prof. Robert Nitsch of UM Mainz developed the idea of a new state-of-the art PhD-MD/ PhD program at JGU. The final official regulations of this PhD-MD/PhD program "Translational Biomedicine" were published in 2012. Importantly, as an interfaculty program it includes besides UM Mainz the Faculty of Biology, the Faculty of Chemistry, Pharmaceutical Sciences, Geography, and Geosciences as well as the Faculty of Social Sciences, Media, and Sports. With the parallel initiation of the strategic Rhine-Main Neuroscience Network (rmn2) it also allowed principle investigators and candidates from Goethe University Frankfurt to participate in the TRANSMED Program, Prof. Thomas Mittmann (Institute of Physiology, UM) is chairing the joint committee of the TRANSMED regulations (Gemeinsamer Ausschuss). Here, representatives of all participating faculties of JGU regularly meet to organize all educational and academic aspects of the TRANSMED regulations. The TRANSMED office is run by Dr. Petra Schwarz and Sabine Tensing and deals with all administrative aspects of teaching and PhD-MD/PhD paper work. TRANSMED offers a structured curriculum with lectures, seminars, practical courses and also transferable skills courses, all allowing the candidates to receive a broad level education based on a credit point system.

Currently, TRANSMED has 131 active members as principal investigators, and a total of 237 active PhD or MD/PhD candidates. As of June 2023, 61 PhD candidates and two MD/PhD candidates have successfully obtained their degrees in Translational Biomedicine.

Many recent group research initiatives at JGU and even at Goethe University Frankfurt have benefited from the offers of the TRANSMED education program for young scientists. Together, this shows the tremendous success of our PhD-MD/PhD program.

Being with TRANSMED has been a transformative journey for me. As a fellow of the Else Kröner Research College Mainz, I had the opportunity to start my career as a clinician scientist right from the beginning. The support of TRANSMED coupled with the good structure and organization of the program made it possible to get dedicated research time and to advance my own research. In addition, I was able to fulfill my desire for more in-depth scientific training by participating in the very well-structured MD/PhD program. Being



part of these TRANSMED programs has not only enriched my academic experience but also my personal development. I am very thankful for those opportunities and their continuous support.

Dr. med. Lukas Müller, MD/PhD

Department of Diagnostic and Interventional Radiology, UMC EKFK Fellow since 2021, MD/PhD Degree in 2023

Staatsanzeiger

Amtliche Bekanntmachungen

STAATSANZEIGER

MONTAG DEN 20 EEBBIJAR 2012

NR. 6 / SEITE 449

Ordnung für die Verleihung des Akademischen Grades eines "Doctor of Philosophy" (Ph.D.) oder "Medical Doctor / Doctor of Philosophy" (MD/Ph.D.) der Fachbereiche 04 - Universitätsmedizin, 02 - Sozialwissenschaften, Medien und Sport, 09 - Chemie, Pharmazie und Geowissenschaften, 10 - Biologie im Rahmen des Promotionsprogramms Translationale Biomedizin

Vom 4. Januar 2012

Aufgrund des § 8 Abs. 1 des Universitätsmedizingesetzes vom 10. September 2008 (GVBl. S. 2005, BS 223-42), geändert durch Artikel 10 des Gesetzes vom 9. Juli 2010 (GVBl. S. 167, BS 223-42) sowie § 7 Abs. 2 Nr. 2 und § 86 Abs. 2 Nr. 3 des Hochschulgesetzes in der Fassung vom 19. November 2010 (GVBl. S. 463), geändert durch Gesetz vom 9. März 2011 (GVBl. S. 47, BS 223-41), haben die Fachbereichsräte des Fachbereichs 04 am 5. Mai 2011, des Fachbereichs 02 am 26. Januar 2011, des Fachbereichs 09 am 26. Januar 2011 und des Fachbereichs 10 am 3. März 2011 die folgende Ordnung beschlossen. Diese Ordnung hat das Ministeri-um für Bildung, Wissenschaft, Weiterbildung und Kultur Rheinland-Pfalz mit Schreiben vom 14. November 2011, Az.: 9525 Tgb. Nr. 184/11, genehmigt. Sie wird hiermit bekannt gemacht.

Vierter Abschnitt: Verleihung und Führung des Akademischen Grades

§ 19 Verleihung des Akademischen Grades, vorläufige Bescheinigung und Urkunde

§ 20 Versagung und Entziehung des Akademischen Grades

Fünfter Abschnitt: Schlussbestimmungen

§ 21 Akteneinsicht

§ 22 Inkrafttreten

Ziel und Umfang des Promotionsprogramms Translationale Biomedizin, Akademische Grade

Die Fachbereiche

- 04 - Universitätsmedizin,

 - 02 - Sozialwissenschaften, Medien und Sport,

 - 09 - Chemie, Pharmazie und Geowissenschaften,

- 10 - Biologie

der Johannes Gutenberg-Universität Mainz führen für besonders qualifizierte Absolventinnen und Absolventen insbesondere des Master-Studienganges Biomedizin und des Master-Studienganges Biomedizinische Chemie an der Johannes Gutenberg-Universität Mainz oder eines nah verwandten Studiengangs an einer deutschen oder ausländischen Hochschule und für besonders qualifizierte

Being a member of TRANSMED has really helped me feel as though I am part of something that is bigger than myself throughout my PhD journey. Since the very beginning, it was clear to me that TRANSMED cultivates an environment whereby the research that we carry out daily may one day make a real-life impact on the clinical, biomedical and pharmaceutical fields. The translational nature of TRANSMED's mission is central to the motivations of its members, myself very much included. What we are doing matters, and not only for ourselves.

> Celine Gallagher Institute of Physiology, UMC TRANSMED PhD candidate since 2023



1.4 Facts & Figures



TRANSMED is jointly run by **four faculties** of the Johannes Gutenberg University Mainz:

University Medical Center (FB 04), Social Sciences, Media, and Sports (FB 02), Chemistry, Pharmaceutical Sciences, Geography, and Geosciences (FB 09), and Biology (FB 10).



More than 240 fellows from about 40 countries are currently participating in the different TRANSMED training programs.











Within these faculties, TRANSMED cooperates with more than 130 principle investigators and about 70 institutes and clinical departments conducting cutting-edge research.



Since November 2019, more than 300 medical doctoral candidates have registered for the "MAInz-DOC-Promotionskolleg", 37 of them completed the program successfully.



of the University Medical Center Mainz participate in Malnz-DOC.



Main Research Areas and Cooperation Partners

2.1 Focus Program Translational Neurosciences – FTN



Prof. Dr. Jakob von Engelhardt Institute of Pathophysiology, UMC Mainz, JGU

Speaker:

Neurosciences enjoy an excellent reputation in the international and national research landscape. The goal of the Focus Program Translational Neurosciences (FTN) is to bundle together the strengths of JGU to rigorously promote support for the scientists of tomorrow. In order to achieve these goals, the FTN pursues a variety of connected activities in their own research facilities, which have been built or refurbished in the course of the last 13 years.

The key of FTN is to consolidate neuroscientific research at JGU – FTN is also involved in the superordinate Rhine-Main Neuroscience Network (rmn²).

FTN always gives equal priority to basic research and clinical practice. In order to create a situation in which translationality is more than just an empty term, we concentrate our efforts partly on the exchange of knowledge – one example being the regular FTN Seminar Series. At the same time, FTN operates a number of scholarship programs with the goal of supporting neuroscientists of the future. However, FTN is also a forum, a knowledge database, and the Who's Who of neuroscientists based in Mainz.

FTN constitutes innovative research structures through the following synergistic strategies:

• Implementation of a strategic appointments policy



- Flexible support of the scientists of tomorrow within translational projects
- Support in filing applications for joint projects (e.g. special research fields, research training groups, researcher groups)

Since its establishment in 2010, FTN has built a strategy for sharing methodological platforms. These platforms are led by specifically qualified scientists who employ and further develop the respective methodology. Projects on the platforms are supported by these scientists and their groups to make sure there is a transfer of know-how into the groups making use of these platforms.

FTN is operating these three platforms: Mouse Behaviour Unit (MBU), Mainz Animal Imaging Center (MAIC) and Clinical Investigation Center (CIC)/ Gutenberg Brain Study (GBS). The members of FTN cooperate with these platforms and also with the Leibniz Institute for Resilience Research (LIR) which is operating the Initiative for Systems Analysis (ISyN). The complete list of FTN facilities also includes: Human Neuroimaging Center (NIC), Lipidomics Unit (LiPiD), Initiative for Systems Analysis in Neuroscience (ISyN).



2.2 Research Center for Immunotherapy – FZI



Speakers:

Prof. Dr. Tobias Bopp Institute for Immunology, UMC Mainz, JGU

Prof. Dr. Stephan Grabbe Department of Dermatology, UMC Mainz, JGU

The immune system of the body is tightly regulated to keep internal and external disruptive factors in check. It prevents harmful dissemination and replication of infectious agents and malignant cells. On the other hand, excessive immune reactions to harmless agents, such as allergens and endogenous molecular structures, potentially result in allergies and autoimmune diseases. Understanding the inflammatory and regulatory mechanisms of the immune system is essential to understand disease progression and additionally provides the basis for identification of potential drug targets for the development of innovative therapeutic approaches. Scientists from different disciplines are working together in the Research Center for Immunotherapy (FZI) to investigate inflammatory immune processes and regulatory mechanisms that are required to reach and maintain a balanced immune status.

In 2008, the FZI was initiated as one out of five excellent research focuses at the JGU. It links translational immunological research scientists from the fields of medicine, biology and chemistry. The close link between clinical and basic research has led to the successful establishment of numerous competitively acquired, third-party funded research consortia. Based on a better understanding of immunological diseases, new therapeutic options for infections, autoimmune diseases, allergies and cancer are to be developed.

Examples are:

- CRC/TRR 355: Heterogeneity and functional specialization of regulatory T cells in distinct microenvironments (2023)
- CRC 1292: Targeting convergent mechanisms of inefficient immunity in tumors and chronic infections (2018)
- CRC/TRR 156: The skin as sensor and effector organ orchestrating local and systemic immune responses (2015)
- CRC 1066: Nanodimensional polymer therapeutics from tumor therapy (2013)
- CRC/TRR 128: Initiating/effector versus regulatory mechanisms in Multiple Sclerosis – progress towards tackling the disease (2012)
- BMBF Cluster4Future: *Cluster for atherothrombosis and individualized medicine* (CurATime, 2023)

FZI FZI FZI FZI FOrschungs-Zentrum für Immuntherapie

- BMBF Research Core: Data-independent acquisition-based systems medicine (DIASyM, 2020)
- BMBF Innovation Cluster: *Cluster for individualized immune intervention* (Cl3, 2012)
- DFG-funded construction of a research building: Paul Klein Center for Immune Intervention (PKZI, 2017)
- DKFZ institute: Helmholtz Institute for Translational Oncology Mainz (HI-TRON, 2018)

The translational orientation of the FZI paves the way for close networking with other research focuses at the JGU, as evidenced by the establishment of BMBF-funded consortia such as DiaSyM and CuraTime (CTVB) and the CRC/TRR 128 (together with FTN). In addition, the FZI contributed to the successful application for the HI-TRON, thus further expanding its close cooperation with the research institute Translational Oncology at the University Medical Center of the JGU Mainz (TRON gGmbH). The FZI supported the initiation and development of several spin-off companies such as BioNTech SE, ActiTrexx GmbH and KHR Biotech GmbH, which underlines its translational strategy. In cooperation for the Excellence Initiative of the German Federal Government and the Federal States dealing with Emerging therapeutic strategies against infections, inflammation, and immune-mediated diseases (EMTHERA).

The FZI has been affiliated with TRANSMED since its establishment back in 2013. In this context, it is an important goal of the FZI to train early career researchers on their way towards independence and to promote excellence in science. In recent years, it has supported and educated doctoral students from basic sciences and medicine as well as clinician scientists by establishing and performing translational research projects and awarding fellowships. Currently, the research consortia initiated by the FZI offer structured training programs for their doctoral students. These are closely networked with TRANSMED or are coordinated by TRANSMED. In addition, the FZI promotes and establishes a variety of professorships. The integration of different research areas within the FZI enables newly appointed professors to access existing networks and to establish new collaborations within the scope of FZI. The equipment and know-how provided by the FZI core technology platforms is available to all FZI members at reduced user fees.

2.3 Center for Translational Vascular Biology – CTVB



Speaker:

Prof. Dr. Philipp Wild Department of Cardiology – Cardiology I, UMC Mainz, JGU

The Center for Translational Vascular Biology (CTVB) is one of the three research centers in the life sciences at JGU. The CTVB is located at the UMC Mainz and builds on a strong translational link between basic and clinical research. The research center aims to develop new therapeutic approaches and effective preventive measures. A special focus is on cardiovascular diseases and here in particular

- Thrombotic and haemostatic diseases,
- Myocardial infarction, sudden cardiac death and heart failure,
- Vascular dysfunction and inflammation,
- Common risk factors and interactions with of cardiovascular and tumour diseases.

Most cardiovascular diseases have a multi-causal background. Therefore, gaining new insights for daily medical practice requires a multidisciplinary approach and interactive systems medicine to understand the complex mechanisms of disease development and progression. The high interindividual variability in the development and course of cardiovascular diseases requires individualised solutions for the single individual for further progress in medicine.

Since 2007, the center has been active as an interdisciplinary network of researchers from various medical institutions. The CTVB comprises three scientific research platforms that form a basis for interdisciplinary, translational networking: The Gutenberg Health Study (GHS), the Centre for Thrombosis and Haemostasis (CTH) and the German Centre for Cardiovascular Research (DZHK).

A recent successful development was the acquisition of the BMBF Future Cluster curATime with a funding period of up to 9 years. In curATime, the aim is to use artificial intelligence to identify disease-relevant factors related to the causes of the development and emergence of atherothrombosis. In a collaboration between JGU, the UMC Mainz, TRON gGmbH and the German Research Center for Artificial Intelligence (DFKI), molecularly defined precision interventions – in particular based on RNA technology – are being developed. The aim is to significantly reduce the frequency and impact of cardiovascular diseases and thus mortality in the population. Other collaborative projects of the CTVB are funded by the DFG, the European Union, and the BMBF.



Central tasks of the CTVB:

- Supporting the establishment and expansion of research projects in the field of cardiovascular disease
- Promoting interdisciplinary scientific interaction and collaboration
- Shaping the profile of the UMC Mainz as a leading institution for research and treatment
- Attracting new projects (third-party or industry-funded) and scientists
- Establishing translational research and treatment



2.4 University Cancer Center Mainz – UCT Mainz



Speaker: **Prof. Dr. Thomas Kindler** UCT Mainz, UMC Mainz, JGU

An important aim of the UCT Mainz is to provide a platform to transfer innovative findings in basic research into clinical cancer programs resulting in improved clinical care of cancer patients at the UCT Mainz and its network partners. To achieve this, the UCT Mainz has established four core research programs: Oncogenic Pathways, Molecular Diagnostics & Early Detection, Cancer Immunotherapy and Cancer Epidemiology and Outcome Research covering the whole spectrum from tumorigenesis to quality-of-life. Wellstructured liquid and tissue tumor banks, a comprehensive clinical cancer registry and a central clinical trials unit represent integral and shared facilities within the UCT Mainz in order to establish an efficient nexus between scientific research programs and entity-specific clinical cancer programs (hepatocellular carcinoma, melanoma, sarcoma, leukemia & cellular therapy and pancreatic cancer). New programs like the Immunooncology Board (IOB) or the Center of Personalized Oncology support the collaboration between medical and clinician scientists. UNIVERSITĀTS**medizin.** uct | Universitäres Centrum für Tumorerkrankungen MAINZ

To increase the numbers of clinician scientists, a UCT Mainz research training program, embedded into the TRANSMEDProgram, has been established. Since 2016, 14 clinician scientists were funded by the UCT Mainz and participated in the TRANSMED Mainz training programs. The interaction of medical and clinician scientists as well as clinical trial investigators is further supported by several disease management groups (DMGs), which develop translational research projects and provide a unique career perspective for advanced scientists at the UCT Mainz.

UCT Mainz Research Progams Forward Translation Molecular Dia & Early De Melanoma Clinica Trials Incogenic Pathy Immunooncology and Molecular Tumor Board natologic Malignan Core Facilities & Upper Gl Tumon iternal grants Clinical Pediatric Oncolog Digital Dat **Core Research Programs Shared Resources Clinical Cancer Programs Reverse Translation**



2.5 Research Focus **Bioma**terials, **Ti**ssues and **C**ells in **S**cience – BiomaTiCS



Speaker:

Prof. Dr. Bilal Al-Nawas Department of Oral and Maxillofacial Surgery – Plastic Surgery, UMC Mainz, JGU

BiomaTiCS is a research focus of UMC Mainz that coordinates the research on innovative biomaterials for medical purposes. Due to demographic change, surgery is confronted with a growing need for materials for the reconstruction of hard and soft tissues. The interaction of tissues with such foreign surfaces represents a common clinical problem for all surgical disciplines, since both a lack of biocompatibility as well as excessive wound healing, encapsulation or thrombogenicity can limit the success of modern implant surgery and tissue reconstruction.

Our group consists of clinically and scientifically active colleagues from the surgical disciplines as well as basic researchers from UMC Mainz, from the Max Planck Institute for Polymer Research, the Department of Chemistry, and the Institute of Physiological Chemistry, among others. Furthermore, we stay in contact with the network of the universities in the Rhine-Main area for example with the TU Darmstadt.







Our common goal is to advance the research on new biocompatible materials and surfaces. In this context we study the interaction of cells and tissues in intra- and interfaculty cooperation projects. Medical 3D bioprinting, which offers unique opportunities to combine support elements made of different materials with cells, cellular components, and growth factors, is also an important area of our research.



2.6 Translational Oncology at the University Medical Center of the Johannes Gutenberg University Mainz gGmbH – TRON gGmbH



Dr. Andrée Rothermel Scientific Managing Director, TRON GmbH

The TRON gGmbH, an initial spin-off of the UMC Mainz, was founded in 2010 by Ugur Sahin, Özlem Türeci and Christoph Huber. We are a non-profit translational research organization that develops innovative technologies to address diseases with high unmet medical needs such as cancer and cardiovascular, autoimmunity and infectious diseases. The close collaboration with academic and industrial partners enables us to perform our research at a high-end international level and to support clinical trials with our diverse expertise as soon as we are needed. For example, TRON technologies were integrated into the development of BioNTech's Comirnaty vaccine[®].

Together with the UMC Mainz and HI-TRON, we are working on a project funded by the Else-Kröner Fresenius Foundation as part of TheRNAtik "RNAbased therapeutic strategies in tumor immunology and immune-mediated diseases". What makes this cooperation special is that one scientist from basic research and one from clinical research work closely together in order to develop new RNA-based therapy approaches and to translate these guickly and appropriately into patient care.

However, the academic promotion of young talents, especially young scientists, is important to us. That is why, together with our collaboration partner BioNTech, we have established the international doctoral program ATLAS - Talent Academy for TransLAtional Science. This program is aimed to promote scientific excellence in an international research community.











Qualification Programs



3.1 Overview



TransMed covers all career stages from doctoral candidates of human and dental medicine and master students (PRE-TRANSMED), over clinician scientists and doctoral candidates in biomedicine (Core-TRANSMED), to advanced clinician scientists and postdoctoral researchers (Post-TRANSMED). In the last few years, we have succeeded, also through third-party funding, in expanding the portfolio at all three levels. On the following pages, we describe in more detail those qualification programs, which are administered by us.

3.2 FTN/TRANSMED Fellowships (Since 2011)

Speakers: Prof. Dr. Thomas Mittmann & Prof. Dr. Jakob von Engelhardt



FTN in cooperation with TRANSMED supports young postgraduates of natural sciences with a four-year scholarship. An essential requirement to receive the FTN/TRANSMED Fellowship is the participation in the TRANSMED training program. The FTN/TRANSMED PhD Fellowship holders aim for the academic title "PhD". Consequently, each FTN/TRANSMED Fellow is responsible to collect the required number of 30 credit points by attending an appropriate number of workshops, lectures, transferable skills courses, etc. In addition, participation in the FTN Seminar Series Lectures is mandatory.

Since 2011, 108 FTN/TRANSMED Fellowships have been awarded to PhD candidates and 10 FTN/TRANSMED Fellowships to MD/PhD candidates.





https://www.unimedizin-mainz.de/transmed/ qualification-programs/ftntransmed-fellowships.html

3.3 Integrated Research Training Group (IRTG)/CRC 1292 (Since 2018)

Speakers: Prof. Dr. Tobias Bopp & Prof. Dr. Björn Clausen





The Integrated Research Training Group (IRTG) of the Collaborative Research Center (CRC) 1292 provides a structured, interdisciplinary and mentor-based training program for all doctoral candidates funded by this CRC. Under the auspices of TransMed, the doctoral candidates are offered to obtain a Dr. rer. nat., a PhD or a MD/PhD degree. The IRTG is also open for medical students and clinician scientists of the CRC 1292 in order to connect basic research with medicine.

The IRTG program comprises mandatory elements such as a weekly colloquium, a monthly literature seminar and a yearly retreat. Among several optional training elements, the members are free to choose and create their own training agenda. Scientific training elements in molecular and cellular immunology, imaging techniques, histology and immunohistochemistry, advanced cell sorting, mass spectrometry etc. are offered in the frame of the TRANSMED training program.

Further, the doctoral candidates are strongly encouraged to engage in the IRTG to develop their multidisciplinary skills. One of the main goals of the IRTG is to provide an individual training for the members to allow for development of strong scientific and personal independence and to prepare them for a scientific career later on.





https://www.unimedizin-mainz.de/transmed/ qualification-programs/irtg-crc-1292.html

3.4 MAInz-DOC Research College (Since 2019)





Since November 2019, TRANSMED manages the MAInz-DOC Research College, a structured qualification program for students of human and dental medicine. This program allows to participate in a scientific curriculum along with a reliable supervision.

Since its launch, more than 300 students have enrolled, 37 of them have successfully completed the program. 50 research groups of UMC Mainz participate in MAInz-DOC. The MAInz-DOC *Basic* Module offers the following workshops:

- Writing Workshops Part I-IV: Reading strategies, Time Management, Texting, Revising
- Literature Research and Management
- Introduction to Clinical Studies
- Laboratory Animal Science Courses
- Practice Workshop "Systematic Review"
- Abstract Writing in English

The MAInz-DOC *Excellence* Module awards six-month fellowships once a year for outstanding doctoral students in human and dental medicine. The fellowship allows to participate in the entire TRANSMED training program.

MAInz-DOC Excellence Fellows (all UMC Mainz, JGU):

2022/23

- Helena Albrecht, née Britz, Department of Oral and Maxillofacial Surgery – Plastic Surgery
- Fiona Antonia Forth, Department of Pediatrics
- Tim Hankeln, Center for Thrombosis and Hemostasis
- Sophie Luise Hartleb, Center for Thrombosis and Hemostasis
- Alena Sophie Landau, Department of Neurology
- Ulrike Regina Schmits, Department of Internal Medicine III
- Pascal Dominik Siegert, Department of Anesthesiology

2021/22

- Claire-Louise Hahn, Institute of Physiological Chemistry
- Katharina Nees, Department of Obstetrics and Gynecology
- Victor Sabo, Department of Internal Medicine I
- Elisa Schneider, Department of General, Visceral and Transplantation Surgery
- Jannis Patrik Trier, Department of Obstetrics and Gynecology
- Elias Wolf, Department of Radiology
- Dilan Yesilyurt-Gerhards, Institute of Pathology

2020/21

- Juliane Adam, Department of Oral and Maxillofacial Surgery Plastic Surgery
- Dr. Jan-Sebastian Boegel, Department of Internal Medicine I
- Fabiana Fehrer, Department of General, Visceral and Transplantation Surgery
- Annabel Hartl, Center for Thrombosis and Hemostasis
- Stefanie Holm, Institute of Toxicology
- Philipp Kugler, Department of Otorhinolaryngology, Head and Neck Surgery
- Lea Philine Märker, Department of Internal Medicine III
- Rachel Tanner, Department of Otorhinolaryngology, Head and Neck Surgery
- Katharina Weber, Department of General, Visceral and Transplantation Surgery



http://www.unimedizin-mainz.de/transmed/qualificationprograms/mainz-doc-promotionskolleg.html

3.5 TRANSMED Jumpstart Program (2019-2022)

Speaker: Prof. Dr. Stephan Grabbe





The TRANSMED Jumpstart Program for young medical graduates aimed at generating the preliminary data and skills required to apply for external early career support. Therefore, the program provided financial support for young academics to focus entirely on research without clinical obligations for a limited period of time. The program was funded by the Else Kröner Fresenius Foundation for research in the areas of immune-mediated diseases and immunotherapy.

From 2019 to 2022, the program offered three long-term grants with 18 months of protected research time and six short-term grants with six months of protected research time without clinical obligations. Under the auspices of TRANSMED, the program comprised an individualized structured curriculum combining clinical training and research experience; courses in state-of-the-art research technologies and in transferable skills as well as a comprehensive mentoring program with supervision by a team of advisors.

Alumni with a long-term fellowship (all UMC Mainz, JGU):

- Dr. med. Maximilian Haist, Department of Dermatology: *Relevance of B2 integrins for the function of regulatory T cells and myeloid suppressor cells within tumors*
- Dr. med. Kevin Jan Legscha, Department of Internal Medicine III: Understanding the mechanism of action of Δ133p53 -isoform as a potential novel molecular enhancer of T-cell effector function to improve T-cell based cancer
- Dr. med. Vanessa Yvonne Tomalla, Department of Internal Medicine I: Anti-N-Methyl-D-Aspartic Acid Receptor 2 antibody (anti-NR2) and its pathomechanistic role in fatigue in neuropsychiatric systemic lupus erythematosus (NPSLE)

Alumni with a short-term fellowship (all UMC Mainz, JGU):

- Muriel Schraad, Department of Neurology: Interactions of human lymphocytes in human neuronal cultures: a platform for testing neuroprotective drugs
- Dr. med. Simone Boedecker-Lips, Department of Internal Medicine I: *Effect of physical activity on the disease activity of systemic lupus erythematosus in patients and in the lupus mouse model of MRL Faslpr Mice / SARS-CoV-2 Antigen-Specific Cellular and Humoral Immune Responses in Hemodialysis Patients and Kidney Transplant Recipients*
- Dr. med. Johannes Piepgras, Department of Neurology: Neurofilament and glial fibrillary acid protein as emerging biomarkers for autoimmune encephalitis
- Dr. med. sci. Tobias Brummer, Department of Neurology: Investigation of spatio-temporal neuroaxonal damage marker release from multiple sclerosis- and experimental autoimmune encephalitis lesions
- Dr. med. Pascal Alexander Klimpke, Department of Internal Medicine I: *ADVOS-ACLF-study – extracorporeal ADVance Organ Support (ADVOS) in patients with Acute-on-chronic liver failure (ACLF)*
- Dr. med. Marco Stortz, Department of Internal Medicine I: OPTIMAINZ-AKI: A concept for optimizing the care of patients with acute renal failure at the UMC



https://www.unimedizin-mainz.de/transmed/ qualification-programs/transmed-jumpstart-program.html

rams/transmed-jumpstart-program.html

3.6 Else Kröner Research College Mainz (Since 2019)

Speaker: Prof. Dr. Peter R. Galle (until 2019: Prof. Dr. Jens Marquardt)



Under the auspices of TRANSMED, the Else Kröner Research College "The importance of chronic inflammation in carcinogenesis: From microenvironment to effective therapy of liver tumors" offers a training program for young clinician scientists with a strong focus on translational research. The program is intended to provide a comprehensive platform for advanced training of highly motivated physicians dedicated to oncology. It comprises courses in state-of-the-art research technologies and in transferable skills in the frame of the TRANSMED training program and a comprehensive mentoring program with supervision by a team of advisors.

From 2019 to 2025, in two funding periods, 20 fellowships are awarded with a flexible 24-month release for research within a time-period of 3 years. Until now, 13 clinician scientists have been included in the Research College, four of them have already finished their fellowship:





https://www.unimedizin-mainz.de/transmed/qualificationprograms/else-kroener-forschungskolleg-mainz.html

Current Fellows (all UMC Mainz, JGU):

Since 2021

- Dr. med. Simon J. Gairing, Department of Internal Medicine I: Identification of immunological biomarkers for the prediction of response to immunotherapy and overall prognosis of patients with unresectable hepatocellular carcinoma
- Dr. med. Tiemo Gerber, Institute of Pathology: *Relevance of E- and N-cadherin heterodimers in hepatocarcinogenesis and differential diagnosis of liver tumors*
- Dr. med. Maurice Michel, Department of Internal Medicine I: Identifying Glyoxalase-I, Sirtuin-6 and CD73 as novel biomarkers in patients with cholangiocarcinoma, and their significance in treatment response to systemic therapy
- Dr. med. Lukas Müller, Department of Radiology: *Fully automated* assessment of body composition parameters: The next step towards implementation in daily clinical routine
- Dr. med Eva Maria Schleicher, Department of Internal Medicine I: Evaluation of the mechanisms of impaired prognosis of patients with impaired liver function – impact of the liver kidney crosstalk
- Dr. med. Kateryna Shmanko, Department of Internal Medicine I: Evaluation of the mechanisms of impaired prognosis of portal vein tumor thrombosis in patients with hepatocellular carcinoma

Since 2023

- Dr. med. Andreas Kommer, Department of Internal Medicine I: Investigation of risk factors, prognosis and mechanisms of injury in patients with primary liver tumors and cancers with liver metastases and immune checkpoint inhibitor therapy associated acute kidney injury (ICPi-AKI) and treatment options for severe acute kidney injury in patients with chronic liver disease who require initiation of renal replacement therapy
- Dr. med. Wolfgang Maximilian Kremer, Department of Internal Medicine I: *Evaluation of the influence of sarcopenia and low muscle mass on the progression of hepatobiliary carcinoma*
- Dr. med. Paul Steiner, Department of Internal Medicine I: *Reverse immune aging in survivors of colorectal cancer with liver metastases. Biomarker analysis and preparation of a clinical trial*

Alumni (all UMC Mainz, JGU):

- Dr. med. Michael Kloth, Institute of Pathology: *Characterization of the hepatic immune environment and therapeutic resistance in patients with colorectal liver metastases*
- Dr. med. Lea Penzkofer, Department of General, Visceral and Transplantation Surgery: *Prediction of microvascular invasion in HCC by biopsy*
- Dr. med. Dirk Ridder, Institute of Pathology: *The role of the Tak1-NF B pathway in hepatocellular carcinoma*
- Dr. med. Fabian Stöhr, Department of Radiology: *From liver cirrhosis* to *HCC-development and -treatment: Identifying patients at risk and assessing tumor dynamics using a novel radiomics approach*

3.7 UCT/TRANSMED Fellowships (Since 2016)

Speaker: Prof. Dr. Thomas Kindler





The UCT Mainz Clinician Scientist Program to support motivated physicians dedicated to cancer research was established in 2016 in close collaboration with TRANSMED. Specialized oncology training sessions (oncology class, oncology lab seminar, interdisciplinary molecular-pathology-oncology seminar) have been set up. All fellowships consist of a 2-3 year program (depending on the training level). The hosting institutions commit themselves to allow the fellows to dedicate at least 12 months protected time solely to research. Since 2016, 14 clinician scientists have been funded.

Current Fellows (all UMC Mainz, JGU):

- Dr. med. Stephanie Reichert, Department of Internal Medicine III: Improving cancer immunotherapy by neutrophil granulocytemediated T cell hyperactivation
- Dr. med. Stephanie Strobl, Institute of Pathology: Using pathological routine diagnostics to identify populations at risk for gastrointestinal cancers – a spatial ecological study
- Dr. med. Jonas Wißkirchen, Department of Internal Medicine III: Investigation on the cross talk between NK cells and T cells in cellular immunotherapies

Alumni (all UMC Mainz, JGU):

- Dr. med. Astrid Alflen, Department of Internal Medicine III: PI3Kδ isoform in TREM21 mediated neutrophil inflammatory responses
- Dr. med. Carolin Czauderna, Department of Internal Medicine I: Characterization of (epi)genetic alterations during sequential evolution of liver cancer
- Dr. med. Khalifa El Malki, Department of Pediatrics: Preclinical evaluation of checkpoint protein expression and checkpoint inhibitors in malignant pediatric brain tumors and extracranial solid tumors
- Dr. med. Sebastian Försch, Institute of Pathology: *Fate of senescent cells in colorectal cancer*



https://www.unimedizin-mainz.de/transmed/qualificationprograms/ucttransmed-fellowships.html

- Dr. med. Felix Hahn, Department of Radiology: Developing automated tools to detect vascular tumor infiltration in patients with hepatocellular carcinoma
- Dr. rer. nat. Dr. med. Leonard Kaps: Department of Internal Medicine I: In vivo modulation of M2-type macrophages for antitumor therapy in the liver using cell-specific nanoparticles
- Dr. med. Korbinian Nepomuk Kropp, Department of Internal Medicine III: Insertion of an HLA-independent TRP2-specific T-cell receptor into the TRAC locus using CRISPR/Cas9
- Dr. med. Johanna Rausch, Department of Internal Medicine III: Characterizing the combination of therapeutic Menin-MLL1 complex disruption and pharmacological BCL2 inhibition in Acute Myeloid Leukemia
- Dr. med. Sophia Wilden, Department of Dermatology: *Evaluation of newly identified predictive and prognostic marker molecules in melanoma patients under immunotherapeutic strategies*
- Dr. med. Johannes Windschmitt, Department of Internal Medicine III: *L-arginine depletion in combination with L-canavanine supplementation: a novel treatment strategy for multiple myeloma*
- Dr. med. Dr. med. univ. Pascal Wölfinger, Department of Internal Medicine III:

Investigation on regulatory T-cells as a therapeutic target in prevention and treatment of acute and chronic GVHD in patients after hematopoietic allogeneic stem cell transplantation





3.8 Centre for Healthy Ageing Program for Clinician Scientist – CHANCE (Since 2023)

Speakers: Prof. Dr. Wolfram Ruf, Prof. Dr. Klaus Lieb, Prof. Dr. Christof Niehrs





The goal of CHANCE, which started in July 2023, is to strengthen translational aging research in Mainz and to foster collaborations between the research centers at UMC Mainz and IMB. CHANCE supports clinician scientists in the fields of molecular and translational aging research for 3 years with protected time and research funds. This protected time allows clinician scientists (CS) and advanced clinician scientists (ACS) to establish or expand an independent research profile. CHANCE is managed by TRANSMED, which allows the fellows to take advantage of the complete TRANSMED training program. CHANCE is funded by the Ministry of Science and Health of the State of Rhineland-Palatinate.

Current Fellows (all UMC Mainz, JGU):

- Dr. med. Astrid Alflen, Department of Internal Medicine III: Characterization of age-related functional alterations in healthy T cells that are essential for efficient CAR T cell products (ACS)
- Dr. med. Moritz Brandt, Department of Cardiology: *A novel axis driving myocardial senescence, "inflammaging/ metaflammation" and heart failure – the role of (impaired) RNASEH2B, accumulating ribonucleotide insertions and TERRA* (ACS)
- Dr. med. Michael Molitor, Department of Cardiology: *The role of Protease-activated Receptor 2 (PAR-2) signaling in cardiac aging and inflammation in heart failure* (CS)
- Dr. med. Katrin Pape, Department of Neurology: Unraveling the role of cellular immunosenescence for the inflamm-aging brain (CS)
- Dr. med. Johannes Piepgras, Department of Psychiatry and Psychotherapy: Enteric glia cells and gut functionality – A prerequisite for healthy aging? (CS)



https://www.unimedizin-mainz.de/transmed/qualificationprograms/chance.html

3.9 CONNECT – Early Career Support Program of the Mainz Research Center for Mental Health (2020-2023)

Speaker: Prof. Dr. Manfred E. Beutel





CONNECT was funded by the Ministry of Science and Health of the State of Rhineland-Palatinate within the Mainz Research Center for Mental Health (MZPG). The program within in the MZPG research focus "Resilience and Prevention in Mental Illness" was open to both clinical and basic research.

In two funding tracks, CONNECT addressed young scientists at the MZPG in clinical training and scientists who are not clinically active. In Track A, clinician scientists have been funded. The funding allowed them to be released from clinical work, which was combined with partial crediting of the research time towards their further training (in accordance with the regulations of the LÄK RLP). According to the applied project, a 50% exemption have been granted over the funding period and the possibility of applying for additional project-specific funding. In Track B, medical scientists have been provided with funding for their own position and project-specific funds.

The goals had been the development of an independent scientific profile within the MZPG and the qualification for the acquisition of further third-party funding for the establishment of an own research group.

Fellows:

- Dr. rer. nat. Alexandra Brahmer, Institute of Sports Science, JGU: The role of extracellular vesicles and other systemic factors in the positive effects of regular physical activity on stress resilience
- Dr. phil. Mareike Ernst, Department of Psychosomatic Medicine and Psychotherapy, UMC Mainz, JGU: *Temporal variability of risk and resilience factors in suicidality. A transdiagnostic, multimodal EMA study (Acronym: TempRes)*
- Dr. rer. nat. Carla Filosa, Department of Psychiatry and Psychotherapy, UMC Mainz, JGU: Predicting social stress resilience from complex social interactions
- Dr. med. Jasmin Ghaemi Kerahrodi, Department of Psychosomatic Medicine and Psychotherapy, UMC Mainz, JGU: *Mental stress and autonomic dysfunction*
- Dr. med. David Herzog, MD/PhD, Department of Psychiatry and Psychotherapy, UMC Mainz, JGU: *Temporal profiling of ketamine-induced chromatin accessibility changes*
- Dr. rer. nat. Tobias Ruff, Institute of Anatomy, UMC Mainz, JGU: Investigation of neuronal cell activity in freely moving mice with gene alterations in selected mental disorders
- Dr. rer. biol. hum. Dr. med. Daniel Turner, Department of Psychiatry and Psychotherapy, UMC Mainz, JGU: *Emotion dysregulation and stress proneness as neurobiological mechanisms underlying impulsive aggression in individuals with ADHD*







3.10 Else Kröner School for Medical Scientists "RNA-based therapeutic strategies in tumor immunology and immune-mediated diseases, TheRNAtik" (Since 2023)

Speakers: Prof. Dr. Özlem Türeci & Prof. Dr. Tobias Bopp

The NAtik ELSE KRÖNER SCHOOL FOR MEDICAL SCIENTISTS



The Else Kröner School for Medical Scientists "RNA-based therapeutic strategies in tumor immunology and immune-mediated diseases, TheRNAtik" builds a bridge between (basic) scientific and clinically active researchers with a view to modern RNA-based immune and cancer therapies. Unique to TheRNAtik are the close ties between medical scientists and clinician scientists through the establishment of tandems in independent research projects. The Else Kröner School for Medical Scientists will be embedded in the comprehensive training environment, which TRANSMED has developed to meet the needs of its fellows.

A solid foundation for the work of the fellows is provided by established structures of basic, translational and clinical research at UMC Mainz. FZI, TRON, HI-TRON as well as IZKS offer an immense amount of know-how and a range of state-of-the-art technologies. In this optimal research environment, the fellows can contribute significantly to the basic scientific investigation of clinical questions. TheRNAtik is intended to set new qualitative and quantitative standards in the collaboration between medical scientists and clinician scientists, with the aim of opening up new therapeutic options for patients.

The Else Kröner Fresenius Foundation, UMC Mainz, and TRON provide funding for four medical scientist-clinician scientist-tandems.



https://www.unimedizin-mainz.de/transmed/qualificationprograms/else-kroener-school-for-medical-scientists.html





Achievements

4.1 Awards & Grants (Selection, 2017-2022)

2017 -



Leonardo Righesso (Doctoral Candidate) Admission to the Gutenberg Academy for Young Researchers



Dr. med. Alexander Ziebart (Clinician Scientist) DFG Research Grant



Dr. (Cli

Dr. med. Johannes Windschmitt (Clinician Scientist) Prize of the Boehringer Ingelheim Foundation for his MD thesis



Erika Diehl (Doctoral Candidate)

Fulbright Doctoral Scholarship for research stay at the Johns Hopkins University in Baltimore, Maryland, USA



Dr. med. Astrid Alflen (Clinician Scientist)

Cambridge, UK

DFG Research Fellowship for research stay at The Netherlands Cancer Institute, Amsterdam, The Netherlands



Katja Schüler (Doctoral Candidate) Visiting Scholarship at Lucy Cavendish College, University of

2019



Hanane Lahnif (Doctoral Candidate) Scholarship from the Avicenna Studienwerk





Emily Trzeciak (Doctoral Candidate) DAAD One Year Grant for Doctoral Candidates



Leonardo Nardi (Doctoral Candidate) Life Sciences Research Prize "Premio Angeletti-Mortari"



2022



Dr. med. Maurice Michel (Clinician Scientist) Intramural startup funding for research projects



Anna Mavromanoli (Doctoral Candidate) Admission to the Gutenberg Academy for Young Researchers



Dr. med. Korbinian Nepomuk Kropp (Clinician Scientist)

DFG Walter-Benjamin Fellowship for research stay at Memorial Sloan Kettering Cancer Center, New York, USA



Dr. med. Maximilian Haist (Clinician Scientist)

DFG Walter-Benjamin Fellowship for research stay at the Nolan Lab of the Stanford University, USA



Dr. med. Lukas Müller (Clinician Scientist)

DFG Research Grant in the framework of the 10th Young Scientists Academy Medical Technology "Artificial Intelligence in Radiology"

4.2 Publications (Selection of First Authorships, 2018-2022)

2018

Vogelaar CF*, **Mandal S***, Lerch S*, Birkner K, Birkenstock J, Bühler U, **Schnatz A**, Raine CS, Bittner S, Vogt J, Kipnis J, Nitsch R, Zipp F. Fast direct neuronal signaling via the IL-4 receptor as therapeutic target in neuroinflammation. Sci Transl Med. 2018 Feb 28;10(430):eaao2304.

*shared first-authorship

Alflen A, Stadler N, Aranda Lopez P, **Teschner D**, Theobald M, Heß G, Radsak MP. Idelalisib impairs TREM-1 mediated neutrophil inflammatory responses. Sci Rep. 2018 Apr 3;8(1):5558.

Herzog DP, Beckmann H, Lieb K, Ryu S, Müller MB. Understanding and Predicting Antidepressant Response: Using Animal Models to Move Toward Precision Psychiatry. Front Psychiatry. 2018 Oct 22;9:512.

2019

Sharma A, Steven S, Bosmann M. The pituitary gland prevents shockassociated death by controlling multiple inflammatory mediators. Biochem Biophys Res Commun. 2019 Jan 29;509(1):188-193.

Czauderna C, Castven D, Mahn FL, Marquardt JU. Context-Dependent Role of NF-κB Signaling in Primary Liver Cancer-from Tumor Development to Therapeutic Implications. Cancers (Basel). 2019 Jul 25;11(8):1053.

Farassat N, Costa KM, Stojanovic S, Albert S, **Kovacheva L**, Shin J, Egger R, Somayaji M, Duvarci S, Schneider G, Roeper J. In vivo functional diversity of midbrain dopamine neurons within identified axonal projections. Elife. 2019 Oct 3;8:e48408.

2020

Helmstädter J, Frenis K, Filippou K, Grill A, Dib M, **Kalinovic S**, Pawelke F, Kus K, Kröller-Schön S, Oelze M, Chlopicki S, Schuppan D, Wenzel P, Ruf W, Drucker DJ, Münzel T, Daiber A, Steven S. Endothelial GLP-1 (Glucagon-Like Peptide-1) Receptor Mediates Cardiovascular Protection by Liraglutide In Mice With Experimental Arterial Hypertension. Arterioscler Thromb Vasc Biol. 2020 Jan;40(1):145-158. doi: 10.1161/atv.0000615456.97862.30. Epub 2019 Nov 21. PMID: 31747801; PMCID: PMC6946108.

Kuntic M, Oelze M, Steven S, Kröller-Schön S, Stamm P, Kalinovic S, Frenis K, Vujacic-Mirski K, Bayo Jimenez MT, Kvandova M, Filippou K, Al Zuabi A, Brückl V, Hahad O, Daub S, Varveri F, Gori T, Huesmann R, Hoffmann T, Schmidt FP, Keaney JF, Daiber A, Münzel T. Short-term e-cigarette vapour exposure causes vascular oxidative stress and dysfunction: evidence for a close connection to brain damage and a key role of the phagocytic NADPH oxidase (NOX-2). Eur Heart J. 2020 Jul 7;41(26):2472-2483.

Astrid Alflen



Carolin Czauderna



Davin Herzog

Simon Gairing

Reindl LM, Albinger N, Bexte T, Müller S, Hartmann J, Ullrich E. Immunotherapy with NK cells: recent developments in gene modification open up new avenues. Oncoimmunology. 2020 Sep 2;9(1):1777651.

Hummel R, Ulbrich S, Appel D, Li S, Hirnet T, Zander S, Bobkiewicz W, Gölz C, Schäfer MKE. Administration of all-trans retinoic acid after experimental traumatic brain injury is brain protective. Br J Pharmacol. 2020 Nov;177(22):5208-5223.

2021

Herzog DP, Pascual Cuadrado D, Treccani G, Jene T, Opitz V, Hasch A, Lutz B, Lieb K, Sillaber I, van der Kooij MA, Tiwari VK, Müller MB. A distinct transcriptional signature of antidepressant response in hippocampal dentate gyrus granule cells. Transl Psychiatry. 2021 Jan 5;11(1):4.

Bayo Jimenez MT, Frenis K, Kröller-Schön S, **Kuntic M**, Stamm P, Kvandová M, Oelze M, Li H, Steven S, Münzel T, Daiber A. Noise-Induced Vascular Dysfunction, Oxidative Stress, and Inflammation Are Improved by Pharmacological Modulation of the NRF2/HO-1 Axis. Antioxidants (Basel). 2021 Apr 19;10(4):625.

Legscha KJ, Antunes Ferreira E, Chamoun A, **Lang A**, Awwad MHS, Ton GNHQ, Galetzka D, Guezguez B, Hundemer M, Bourdon JC, Munder M, Theobald M, Echchannaoui H. $\Delta 133p53\alpha$ enhances metabolic and cellular fitness of TCR-engineered T cells and promotes superior antitumor immunity. J Immunother Cancer. 2021 Jun;9(6):e001846.

Sharma A, Kontodimas K, Bosmann M. The MAVS Immune Recognition Pathway in Viral Infection and Sepsis. Antioxid Redox Signal. 2021 Dec;35(16):1376-1392.

2022

Hassan U, Pillen S, Zrenner C, Bergmann TO. The Brain Electrophysiological recording & STimulation (BEST) toolbox. Brain Stimul. 2022 Jan-Feb;15(1):109-115.

Foerster F*, **Gairing SJ***, **Müller L**, Galle PR. NAFLD-driven HCC: Safety and efficacy of current and emerging treatment options. J Hepatol. 2022 Feb;76(2):446-457.

Albinger N, Pfeifer R, Nitsche M, Mertlitz S, **Campe J**, Stein K, Kreyenberg H, Schubert R, Quadflieg M, Schneider D, Kühn MWM, Penack O, Zhang C, Möker N, Ullrich E. Primary CD33-targeting CAR-NK cells for the treatment of acute myeloid leukemia. Blood Cancer J. 2022 Apr 13;12(4):61.

Foerster F*, **Gairing SJ***, Ilyas SI, Galle PR. Emerging immunotherapy for HCC: A guide for hepatologists. Hepatology. 2022 Jun;75(6):1604-1626.



Regina Hummel





Kevin-Jan Legscha





Training Program

5.1 Overview TRANSMED Training Program

TRANSMED offers a structured, multidisciplinary training with a wide range of scientific and transferable skills courses. The comprehensive training program is highly flexible and free of charge for TRANSMED members. Every fellow can choose the appropriate courses that suit its individual needs. Workshops are given by experts from the respective fields including the TRANSMED Principle Investigators.

Workshops for Training in Scientific Skills (Selection):

- Basics of Epidemiology
- Confocal Microscopy
- Essential Statistics
- FELASA EU Function A and FELASA EU Function B adequate
- FlowJo[™] Advanced Workshop
- Good Research Practice
- Introduction to Clinical Research and Clinical Trials
- Introduction to CRISPR/Cas Genome Editing
- Introduction to Mass Spectrometry-based Proteomics
- Introduction to RNA-Seq and NGS
- Molecular Tumor Board: Translating Biology into Therapy
- Quantifying the Synaptic Proteome
- Research Data Management
- Statistical Analysis of Clinical Pathological Data
- Statistics for Experimental Life Scientists
- Traumatic Brain Injury
- True Data how to Produce High Quality Research Results
- Workshop Series Statistics

Workshops for Training in Transferable Skills (Selection):

Scientific Working:

- Effective Visual Communication of Science
- Graphic Design for Scientists
- Presenting Research Results Scientific English
- Scientific Writing I + II: The Basics + Advanced
- Scientific Writing Online "Shorties":
 - Abstract Writing
 - The Introduction
 - The Discussion Section
 - The Results Section
 - Writing a Strong Cover Letter
 - Proposal Writing
- Responding to Reviews
- To Perish or to Publish Tales of the Close Proximity of Frustration & Joy

Management Skills:

- Basic Training Project Management in Research
- Feedback and Communications
- Project Management for Scientists
- Protecting your Ideas Patents for Scientists (TBA)

Career Development Skills:

- From Career Choice to Career Goal with a Convincing Application
- Hands-On Strategies in Career Crafting
- Leadership Essentials
- Profiling and Positioning in Networks
- Beyond Research: Career in Management Consulting

5.2 Annual TRANSMED Science Day

The Science Day showcases interdisciplinary research in both basic and translational medicine conducted at JGU. The event serves as a platform for young scientists to get exposed to some of the thought leaders from the academia, industry, and the publishing world. In a "meet the speaker" session, participants have the chance to informally interact with the invitees to learn, gain inspiration, and to explore collaborations.

TRANSMED clinician and medical scientists have the opportunity to present their current research in form of a short talk or a poster presentation and to receive one of the following awards:

- frei f
 ür forschung neue Wege in der Medizin e.V. Award for the Best Short Talk of a Female Doctoral Candidate
- TRANSMED Best Presentation Awards (for short talks and poster presentations)

Award Winners:

2014- Best Presentation Awards _

Melanie Flach | Department of Medical Microbiology and Hygiene Martin Heller | Department of Oto-Rhino-Laryngology – Head and Neck Surgery Maximilian Kopp | Department of Cardiology I Radhika Menon | Institute of Physiological Chemistry

2015 - Best Presentation Awards _

Lisa Eggebrecht | Department of Cardiology I/Center for Thrombosis and Hemostasis Leonard Kaps | Institute of Translational Immunology Florie Le Prieult | Institute of Physiology Federico Marini | Institute for Medical Biostatistics, Epidemiology and Informatics Julia Teister | Department of Ophtalmology Dr. Daniel Teschner | Department of Internal Medicine III Florian Wanke | Institute of Molecular Medicine

2016 - Best Presentation Awards _

Sarah Dietzen | Institute of Immunology Anna Gerlicher | Neuroimaging Center Victoria Petermann | Center for Thrombosis and Hemostasis Verica Vasic | Institute of Anatomy Joanna Wegner | Department of Dermatology

2017 - Best Presentation Awards _

Carolin Czauderna | Department of Internal Medicine I Caroline Fischer | Institute for Clinical Pharmacology, Goethe University Frankfurt Andrea Schnatz | Institute of Anatomy Margaryta Tevosian | Institute of Physiological Chemistry

2018 - Best Presentation Awards _

Sarah Ayash | Department of Psychiatry and Psychotherapy Katarzyna Bogucka | Cell Biology Unit Wenqiang Fan | Institute of Physiological Chemistry Aswini Krishnan | Cell Biology Unit

2019 - "frei für forschung - neue Wege in der Medizin e.V. Award" _____

Erika Diehl | Institute of Pharmacy and Biochemistry, JGU

2019 - Best Presentation Awards _

Dr. Jonas Eckrich | Department of Oto-Rhino-Laryngology – Head and Neck Surgery
Johanna Helmstädter | Department of Cardiology |
Dr. Regina Hummel | Department of Anaesthesiology
Johanna Kurzawa (née Meichsner) | Institute of Pathophysiology

2021 – "frei für forschung – neue Wege in der Medizin e.V. Award" _____

Felicia Dietsche (née Maull) | Institute of Molecular Medicine

2021 - TRANSMED Best Presentation Awards _

David Andruszewski | Institute for Molecular Medicine Charlotte Guhl | Institute of Pharmacy and Biochemistry, JGU Dr. Rebecca Knoll | Department of Pediatrics

2022 - "frei für forschung - neue Wege in der Medizin e.V. Award" ____

Lea Philine Märker | Department of Internal Medicine III

2022 - TRANSMED Best Presentation Awards:

Melania Aluia | Center for Thrombosis and Hemostasis Kathrin Braband | Institute of Immunology Lea Sophie Strohm | Department of Cardiology I

People

6.1 TRANSMED Executive Board

The Executive Board meets regularly to decide upon elements of the program, financial issues, and future directions. The Board consists of representatives of all main research foci of the University Medical Center in addition to representatives of the group of TRANSMED Principal Investigators and TRANSMED Fellows. Additionally, each participating JGU Faculty (Biology, Chemistry, and Sports) is represented by one member each.

Univ.-Prof. Dr. med. Julia Weinmann-Menke Department of Internal Medicine I, University Medical Center – Academic Director TRANSMED

Univ.-Prof. Dr. rer. nat. Tobias Bopp Institute of Immunology, University Medical Center – Representative of the Principal Investigators

Univ.-Prof. Dr. Tommaso Gori Department of Cardiology – Cardiology I, University Medical Center – Head of Teaching Translational Vascular Biology

Univ.-Prof. Dr. med. Thomas Kindler University Cancer Center Mainz, University Medical Center – Head of Teaching Immunology

Prof. Dr. Helen May-Simera Institute of Molecular Physiology - Cilia Cell Biology -Representative of the Faculty of Biology

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Univ.-Prof. Dr. rer. nat. Dirk Schneider Institute of Pharmacy and Biochemistry - Therapeutical Life Sciences - Representative of the Faculty of Chemistry, Pharmaceutical Sciences, Geography, and Geosciences

Dr. rer. nat. Petra M. Schwarz Managing Director TransMed

Univ.-Prof. Dr. med. Dr. rer. nat. Perikles Simon Institute of Sports Science - Representative of the Faculty of Social Sciences, Media, and Sport

6.2 Supervisory Board

The Supervisory Board, consisting of the President of JGU Mainz, the Deans of all participating Faculties, and the Speakers of the Research Centers, meets annually to discuss the content and progress of the TRANSMED Program and to decide on future directions.

Univ.-Prof. Dr. Gregor Daschmann Dean of the Faculty of Social Sciences, Media, and Sports

Univ.-Prof. Dr. Ulrich Förstermann Chief Scientific Officer and Dean of the University Medical Center

Univ.-Prof. Dr. Stephan Grabbe Speaker of the Research Center Immunotherapy

Univ.-Prof. Dr. Georg Krausch President of the Johannes Gutenberg University Mainz

Univ.-Prof. Dr. Eva Rentschler Dean of the Faculty of Chemistry, Pharmaceutical Sciences, Geography, and Geosciences

Univ.-Prof. Dr. Eckhard Thines Dean of the Faculty of Biology

Univ.-Prof. Dr. Jakob von Engelhardt Speaker of the Research Center Translational Neurosciences

Univ.-Prof. Dr. Julia Weinmann-Menke TRANSMED Academic Director

Univ.-Prof. Dr. Philipp Wild Speaker of the Research Center Translational Vascular Biology

6.3 Principal Investigators

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Christian Institute of Pathobiochemistry, UMC Mainz, JGU

Prof. Dr. Behl,

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Ernesto Institute of Translational Immunology, UMC Mainz, JGU

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Prof. Dr. Bopp, **Tobias** Institute for Immunology, UMC Mainz, JGU

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Translational Animal Research

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6.4 Management

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- Strategic Planning and Development
- Cooperations and Networking
- Head of the Office for Doctoral Affairs
- Data Protection Coordinator TransMed

Ivonne Dietzel

Program Coordinator Responsibilities:

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- IRTG / CRC 1292
- Training Program

Sabine Tensing

Program Coordinator **Responsibilities:**

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- MAInz-DOC Research College
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- Clinical Research Fellowship Program

Magdalena Bogatzki

Research Assistant **Responsibilities:**

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- Assistance Training Program

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