NEWS letter

Medizinische Hochschule Hannover

HBRS
Graduate School of Excellence

OKTOBER
2022
Alumni

NEWSletter

Medizinische Hochschule Hannover

Dear HBRS Alumni students,

*We proudly present our **17th HBRS Alumni newsletter**.*

The early death of Prof. Reinhold Schmidt has deeply shocked all of us and leaves a deep caesura. This is the first alumni newsletter not written by him. Reinhold pioneered the inauguration of structured doctoral programmes in Germany that served as role models for many other universities. I would therefore like to thank him and his team for their fundamental work during the last 22 years they committed to our HBRS.

In this newsletter, we report our current activities as well as news from your fellow Alumni. Thanks for your warm support and interest!

Reinhold Förster, Acting Dean of HBRS

Current status of HBRS and news

HBRS currently comprises six international (MD)/PhD programs ("Molecular Medicine", "Infection Biology / DEWIN", "Regenerative Sciences", "Auditory Sciences", "Epidemiology" and the new "Biomedical Data Science"). There are meanwhile altogether three structured doctoral programs for medical students to receive the Dr.med. degree (StrucMed; KlinStrucMed and the new DigiStrucMed). Three HBRS-associated Master programs "Biomedicine", "Biochemistry" and "Biomedical Data Science" are established. The young faculty also belongs to HBRS. Young medical doctors are able to rotate for 6 months/ year out of the clinics to research labs. We offer the young academy programs TITUS, PRACTIS and CORE 100 Pilot

Currently, the various programs of HBRS host ~250 PhD students. In addition, 45 medical students were accepted for StrucMed and 12 for KlinStrucMed and 10 for DigiStrucMed this year. About 80 new Master students (in three programs) are enrolled. Of the PhD students, about 60% are international and around 10% have a medical background. About 50% are women.

Dedicated to the memory of Prof. Schmidt: a giant who left far too early.

By Henoch Hong (Alumni MD/PhD program, batch 2005)

When I first met Prof. Schmidt, two features immediately caught my attention: his moustache and his big smile. The first one is obvious. I would not have been surprised if someone had told me that he was born with his impressive facial hair display. The second feature is the one that may require a bit more explanation. It was not just a smile. Maybe more of an infectious, cheerful grin. Though I may be mistaken, I think, I saw a bit of mischievousness in his smile that was more like an infectious, cheerful grin. It was spring 2005 and I had just presented by diploma work in front of the selection committee of the MD/PhD program Molecular Medicine. Prof. Schmidt asked me whether I was content with the state of my diploma work and the potential novel research avenues the data seemed to lead to. Of course, I was very "content" because that is what you say under such circumstances. His immediate response: "Then why do you want to come to Hannover?" And there it was: the mischievous smile.

Fortunately for me, I was admitted into the MD/PhD program. Since I had concomitantly joined the Clinical Immunology group for the thesis work, Prof. Schmidt was not "just" the Dean of the Graduate School for me. As chief of medicine leading the Clinical Immunology department, he was the boss of my PhD advisors. The usual way we referred to him in our team was "the-big-boss". In a way, he was therefore one of my supervisors. Or to put it in other words, he was one of the important stakeholders who had a vested interest in my PhD work.

There is no need to idealize his supervision or to make more of it than it was: he was way too busy and way too high up in the food chain to be genuinely involved. In fact, his mentoring pretty much consisted of annual update meetings alongside the usual department meetings, which he occasionally attended.

However, these department appointments soon became sacred in my calendar: the journal clubs on Tuesdays and the lab meeting on Fridays.

Being the-big-boss inevitably meant, that Prof. Schmidt was frequently subject of the kind of stories and jokes employees tell behind their boss' back. One of those highly entertaining stories involved a trip to the Himalayan Mountains in India where a monkey stole his medicine. When he was annoyed with something, his temper could flare up. Being a straight shooter, he knew how to express his displeasure. I managed to be on the receiving end of his angry outbursts, at least on 2 or 3 occasions, either via e-mail or on phone. (I have no problems admitting that it was usually well deserved). Moreover, one could count on the fact that once the storm had passed, it would not take too long for the sun to come back. As a person, he was far too positive to be perpetually angry.

Prof. Dr. Reinhold E. Schmidt passed away on January 23rd, 2022.

A few memories will always stay with me. Prof. Schmidt was a data junkie and a passionate scientist par excellence. I had no insights into how he was as a medical practitioner but as a researcher, he could be brilliant (that is, time permitting). He loved and lived for the science. Whenever he became aware of publishable datasets in his department, he could not stand the fact when we were not 100% behind our writing to push the manuscripts out. Needless to say, it was for our own benefit. He was blessed with an exceptionally quick grasp. I had mentioned that the journal clubs were sacred. He tried to attend those meetings as best as he could. More often than not, he was late. I remember how he was once walking into the meeting while the final (summary) slide was being presented. Which of course did not deter him from asking critical questions nonetheless.

Unfortunately, he seemed to become even busier towards the end of my PhD studies. He did not attend my PhD defense. Soon after my PhD, I was allowed to experience his extremely generous and supportive side when I started sending out applications for postdoctoral grants.

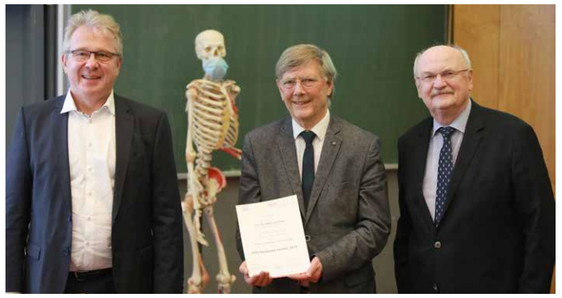
In one of the support letters, the advisor had to indicate to which percentile the applicant belonged to (in terms of talent etc.). I presumptuously counted myself among the top 10%, if I remember correctly. He crossed it out and put me in the top 5%. He really wanted to make sure that his former PhD student succeeded. In fact, and this is another fond memory of mine, when he encountered or spoke of former students of "his" graduate school, a sense of fatherly pride was always palpable. Once I told him how my final months at MHH had become the most fruitful ones with tons of novel data (we continued publishing a number of manuscripts together in the years to come). You could see his pride in his eyes accompanied by his signature smile. That is why, after initially being intimidated by the-big-boss, after years of just respecting him, our relationship became genuinely affectionate and friendly.

My final e-mail conversation with Prof. Schmidt already dates a few years back. I congratulated him for becoming an honorary member of the Germany Society of Immunology. He replied with a short but warm e-mail full of apparent joy to hear from his former student. His last words addressed to me were: "Maybe we can meet again at an alumni meeting?" I would not have missed it for the world. I wanted to tell him how the PhD training in his department had prepared me to continuously pursue a career in science; to let him know that I was still doing exciting research, in industry, in collaboration with great academic PIs all over the world; to show him that his passion for immunology had been successfully passed on to the next generation. We were supposed to meet in fall of 2020 at the 20th anniversary celebrations of the HBRS. We did not.

I hate the SARS-CoV-2 pandemic even more for having prevented this from happening.

Fritz Hartmann Lecture

Opening of study year, October 2021



From left to right: Reinhold Förster, HBRS; Albert Osterhaus, Stiftung Tierärztliche Hochschule Hannover; Prof Michael P. Manns, president of MHH

from professors and supervisors:

- Prof. Dr. Kai Schmidt-Ott is the new head of the Nephrology department. He is the successor of prof. Hermann Haller who recently retired.
- Prof. Heiner Wedemeyer and Prof. Markus Cornberg (Gastroenterology) receive 6,75 million Euro for their multicentric EU project towards treating Hepatitis D
- Prof. Thomas Thum (IMTTS and Fraunhofer ITEM) receives 2.5 million Euro till 2027 from the EU - ERC Advanced Grant - for his research on influences of cancer therapy on heart functions.
- Prof. Thum received an additional grant of 2.5 million by the European Innovation Council EIC for his research on heart fibrosis.
- Prof. Waldo Nogueira (Hearing4all) was awarded the 2 million Euro ERC prize for his research on hearing loss.
- Prof. Constanca Figueiredo and Prof. Blasczyk (Transfusion Medicine) were successful in applying for 3 million Euro of federal funds for their research on artificial blood cells.
- Dr. Laura Hinze (Pediatric Hematology) received the prestigious Paul Ehrlich and Ludwig Darmstaedter Talent Award (60.000 Euro). I addition, she was awarded the Max-Eder Nachwuchsgruppen support of Deutsche Krebshilfe which amounts to 743.000 Euro.
- Prof. Axel Schambach/ Dr. Dr. Adrian Schwarzer (Experimental Hematology) and Prof. Armin Braun (ITEM) will be supported with 700.000 Euro for the iGUARD Project on Parainfluenza Virus therapy using RNAi
- Dr. James Thackeray (Radiology) has been appointed "Heisenberg Professor" for 5 years.

Guided tour through Hannover, October 2021

Weekend workshop in Berlin

Susanne Kruse and 20 international HBRS students travelled to Berlin from July 8th–10th, 2022. Students were coming from 17 different countries. In the mornings, the trainer Grit Kümmele discussed various aspects of integration into the German thinking and way of life as well as conflict management. The cultural program in the afternoons and evenings included a guided bus tour, the visit of Tränenpalast a guided tour through Reichstag. As well as a walking tour to Eastside Gallery. The DAAD kindly supported a weekend workshop for specialists from

third world countries on the topic "Understanding the Germans – Intercultural aspects". Students said that they now understand more of the German history and culture, and even would like to learn more. The weekend was a success. The workshop will certainly be repeated :-).

News from MHH

MHH has organized a lot of support for Ukrainian refugees/citizens. Amongst others donations were collected and a special information web platform was created https://www.mhh.de/ukraine-fluechtlinge-mhh-hilft

The new Institute of Biomedical Translation was founded in February 2022. It is a joint initiative of MHH, Medical faculty of Göttingen as well as HZI in Braunschweig and is supported with 25 million Euro by Lower Saxony and Volkswagenstiftung till 2026.

News in Research

In this section, we will regularly publish short reviews of important and recent achievements in selected research fields, or useful tips! Everybody is welcome to contribute.

Novel therapeutic strategies for the treatment of cardiovascular disorders by uc RNA

by Shambhabi Chatterjee and Dongchao Lu, IMTTS, MHH

Alumni of PhD program Regenerative Sciences: Dr. Chatterjee, Dr. Lu

Hello everyone, my name is Shambhabi Chatterjee and I graduated in January 2020 from the Regenerative Sciences PhD programme. A year later, my colleague Dongchao Lu also enrolled in the same PhD programme, and defended his thesis in January 2021. Both of us carried out our graduate research in the lab of Prof. Thomas Thum at the Institute of Molecular and Translational Therapeutic Strategies (IMTTS). The research work at IMTTS primarily aims at finding novel therapeutic strategies for the treatment of cardiovascular disorders with a special focus towards non-coding RNA (ncRNA) molecules. Unfortunately, very limited is known about these fascinating ncRNA molecules, even though such ncRNA transcripts are highly abundant within the human transcriptome. In the recent years, ncRNAs have emerged as key regulators of gene expression thereby modulating several biological processes. Thus, exploring the functions and underlying mechanisms of novel ncRNAs can help to find potential therapeutic targets for a variety of diseases. In this context, Circular RNAs (CircRNAs) are a unique subtype of ncRNAs that primarily originate from pre-mRNA with a covalently closed structure.

In a recent work published by us in the European Heart Journal (doi:10.1093/eurheartj/ehac337) we worked with a highly conserved, CircRNA derived from the insulin receptor locus (Circ-INSR). Circ-INSR appeared significantly downregulated in our data set after performing a Circ-RNA sequencing, from various human and mouse heart failure samples. We also observed that Circ-INSR expression was reduced during various heart failure conditions. Majority of cancer survivors also suffer from heart failure as a consequence of undergoing chemotherapy. For eg., doxorubicin, a highly potent chemotherapeutic agent is also known to have severe cardiotoxic effects when administered to cancer patients. Through performing a series of in vivo (mouse model) and in vitro (translational human induced pluripotent stem cell derived cardiomyocyte (hiPSC-CM) model) experiments, we validated Circ-INSR as a novel candidate to treat heart failure caused by doxorubicin (the anti-cancer medication). Furthermore, we applied adeno-associated viruses (AAVs) to overexpress Circ-INSR, which conferred protection against doxorubicin-induced cardiotoxicity (Figure 1). With detailed downstream analysis we proved that the physical interaction between Circ-INSR and the single stranded DNA binding protein 1 (SSBP1), a gene involved in mitochondrial biology, is crucial to achieve these cardioprotective effects. To establish a more clinically relevant strategy for CircRNA overexpression we produced Circ-INSR mimic molecules using in vitro transcription and an innovative circularization technology, which also rescued the cardiomyocytes from doxorubicin-mediated cardiotoxicity (Figure 2). With this publication, we not only provided a better mechanistic understanding of the Circ-RNA mechanisms but also a novel strategy to overexpress CircRNAs as therapeutic molecules.

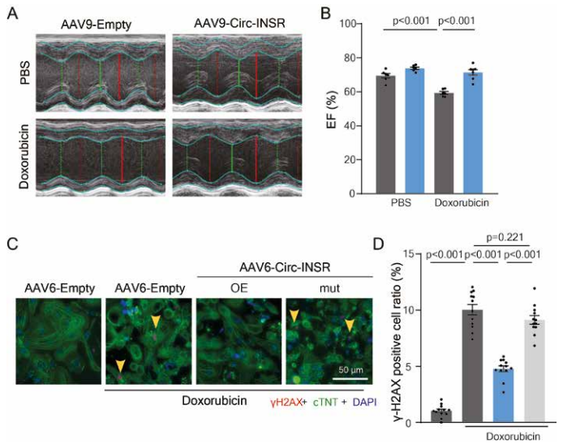


Figure 1. Circ-INSR therapy protects from doxorubicin-induced cardiotoxicity in vivo and in vitro. *(A) Representative figures of echocardiography after AAV9-Circ-INSR therapy in presence or absence of doxorubicin cardiotoxicity; (B) Ejection fraction (EF), in AAV9-Circ-INSR and AAV9-Empty treated mice with or without doxorubicin (n=6/6/6/7 mice). (C-D) DNA damage (yellow arrows) measured by γ-H2AX (red) staining in nuclei (DAPI, blue) of human induced pluripotent stem cell derived cardiomyocytes (cTNT, green) transduced with either AAV6-Empty control, AAV6-Circ-INSROE or AAV6-Circ-INSRmut in the presence or absence of doxorubicin (1 µM 48 h, n=12 per group, from 3 independent experiments, scale bar 50 µm, Representative images left; quantification right. One-way ANOVA was performed.*

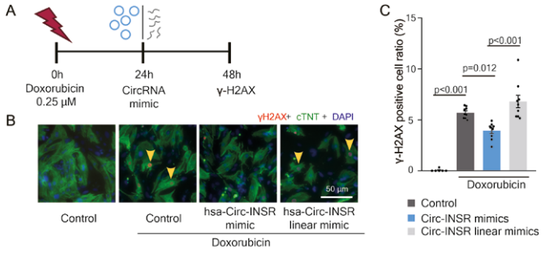


Figure 2. In vitro transcribed Circ-INSR mimics-mediated therapy in cardiomyocytes against doxorubicin cardiotoxicity. *(A) Schematic representation of therapeutic strategy using Circ-INSR mimics; (B-C) DNA damage (yellow arrows) measured by γ-H2AX (red) staining in nuclei (DAPI, blue) of neonatal rat cardiomyocytes (cTNT, green) transfected with Circ-INSR mimics and Circ-INSR linear mimics compared to control, in the presence or absence of doxorubicin (0.25 µM 48 h, n=6-9 per group, from 3 independent experiments). Scale bar 50 µm, Representative images left; quantification right, One-way ANOVA was performed.*

Currently, we are focusing on improving the purity and upscaling of in vitro transcribed CircRNAs, which we aim to test in small but also large animal models in future. This will have major implications in the context of pre-clinical and clinical therapeutic applications as larger quantities of the CircRNA mimics are needed and which will potentially induce low/no-immunogenic reaction after being administered to the patient. Furthermore, novel methods of cardiac specific delivery of these CircRNA mimics need to be developed. We also aim to investigate and extend the functional role of Circ-INSR to other heart failure models, particularly ischemic cardiomyopathy. To summarize, our research has added to the knowledge in the context of mechanistic functions of CircRNA molecules and even validated a novel strategy to produce and overexpress in vitro transcribed CircRNAs as treatment for heart failure.

Lower Saxony International Summer Academy in Immunology (LISA)

We were happy that the eleventh Lower Saxony International Summer Academy (LISA) in Immunology (Inflammation, Regeneration and Immunity) could take place in presence in August/September 2022. About 30 students from 17 different countries were selected to attend one week of intensive lectures and workshops followed by one week of participating in the congress of the German Society of Immunology (DGfI) at MHH and then one week of lab rotations. Faculty was recruited from MHH, TwinCore, ITEM as well as HZI Braunschweig. In addition, outstanding international key lecturers like Helen Su and Alexander Flügel discussed with LISA students. And social activities like a guided tour through Hannover city, BBQ, illumination in the Herrenhausen gardens, GOP theatre were organized. The German Academic Exchange Office (DAAD), EFIS as well as several Biotech companies, kindly supported the academy. The feedback was excellent and many of the students said that they would apply for PhD at MHH within the next years.

Final exams

In November 2021, January and June 2022, twelve students of the MD/PhD program "**Molecular Medicine**" successfully passed their final exams (Bernardus Aldrige Allister, Janin Bublitz, Anne Bührke, Saskia Carstensen, Luis Miguel Ferreira de Almeida, Johannes Greve, Jovana Markovic, Daniela Paasch, Frederic Schwäbe, Florian Stieglitz, Anna Vatselia). The next exams are expected for November 11th, 2022.

The final exams in the PhD programs "**Infection Biology**" and "**DEWIN**" took place on January 28th, 2022 (Ryan Adriawan, Malte Deseke, Sarah Elsheikh, Anika Freise, Christopher Kesthely, Rebecca Möller, Gwendolyn Patzer, Marie-Madlen Pust, George Liam Ssabyatika and Barbora Veselkova), followed by the next ones on July 8th, 2022 (Angela Cornelius, Jasper Götting, Carina Jürgens, Laura Ospina, Miguel Ángel Palacios Pedrero, Guorong Sun, Nahuel Villarreal and Razieh Zargari). The next final exams are scheduled for January 20th, 2023.

Award of HBRS PhD prize

October 2021

Lika Drakhlis and Stevan Dušan Stojanovic (both PhD program Regenerative Sciences)

NEWSletter

Medizinische Hochschule Hannover

Award of PhD Prizes

PhD Infection Biology/DEWIN, January 2022

Marie-Madlen Pust, Paediatric Pneumology, Allergology and Neonatology, MHH

PhD Infection Biology/DEWIN, July 2022

Jasper Götting, Institute of Virology, MHH

On January 14th, 2022, nine students of the PhD Program "Regenerative Sciences" successfully passed their final exam: Antonella Lucia Bastone, Julia Dahlke, Ann-Christin Franke, Maren Heimerl geb. Cors, Nele Hermanns, Ariana Monica Silva Peredo, Fatemeh Rostami, Sanja Sladic & Abdulai Usman.

On June 24th, 2022, six students successfully defended their PhD theses: Alessia Costa, Veronika Fricke, Praeploy Pongpamorn, Ekaterina Takmakova geb. Koniaeva, Alice Rovai & Xuekun Wu.

Daniela Gornyk, Bernard Silenou, Amani Al-Mekhlafi, Pearl Kwabla and Justine Umutesi recently passed their final exams in the PhD program "Epidemiology".

Ziwen Zhao from the PhD program "Auditory Sciences" successfully passed his final exam.

„Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less"

Marie Curie (1867-1934), physicist and chemist

Announcements

Marriages: Many of our students have married recently. We know of. Alexandra Bahr (nee Maroz), Janin Klein (nee Bublitz), Amrendra Mishra, Karan Kholi & Shihong Zhang. Congratulations!!

Children: There are new "HBRS babies" by Alexandra Bahr (nee Maroz), Laura Rode (nee Santer) and Nadine (née Eckert) & Hristo Georgiev *Congratulations!*

Prizes and grants

Some Alumni students were awarded important prizes for their research achievements or received grants:

Prof. Dr. Susanne Grylka, alumna of PhD Program "Epidemiology", working at the Research Institute of Midwifery at the Zurich University of Applied Sciences ZHAW, Winthertur / Switzerland, was able to acquire a Practice-to-Science Project from the Swiss National Science Foundation at the end of 2020 (career development project). This grant was linked to the award of the title of Professor of Zurich University of Applied Sciences, which she received in July 2021. From 01.10.2022, she will take on the position of Head of Research Institute of Midwifery.

Krishna Vallabhaneni (MD/PhD Molecular Medicine): received the Trailblazer award 2021 for Field Science in Jan 2022 for his contributions to MaxCyte

Shuyong Zhu (PhD Infection Biology) was awarded the Chinese Government Award for Outstanding Self-financed Students Abroad (type B). The type B award, with 10,000 U.S dollars, was given to 50 postdocs selected from 34 countries including Germany.

If you would like to get in touch with anybody from the huge Alumni list, please contact the HBRS office. We will be happy to assist you!

There is also a HBRS LinkedIn group:
https://www.linkedin.com/groups/2354739

and a LinkedIn ZIB Alumni group:
https://www.linkedin.com/in/alumni-zib-46756a16b/

As well as a PhD RegSci LinkedIn group:
https://www.linkedin.com/groups/9084167/

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