TWINCORE

CORE*news*

DECEMBER 2025

Dear Colleagues,

Congratulations to the HZI on its 60th anniversary! At the recent celebratory event, key milestones of HZI on its path to becoming a major infection research center were highlighted - an evolution that was significantly shaped by the MHH, which also celebrated its 60th anniversary this year. HZI and MHH developed complementary research programmes and jointly founded TWINCORE and CiiM as collaborative institutions. This created optimal conditions for meeting current and future challenges in infection medicine.

Therefore, I am particularly pleased to announce the appointment of Marco Galardini as a W2 professor to TWINCORE! In addition to his research activities, he will support the implementation of AI systems across all areas of work as an expert in artificial intelligence. This will continue to open up new opportunities for how we can help ensure that infection research between HZI and MHH develops in promising ways in the years to come.

Yours,

Ulrich Kalinke

50 YEARS OLD AND STILL UP TO DATE

Monoclonal antibodies have been used for various purposes in research, diagnostics and therapy for 50 years. TWINCORE scientist Matthias Bruhn looks back on this development.

Our antibodies roll the dice: they change their sequence in a stochastic manner to prepare for future virus variants. But what does the future actually look like for antibodies?

by Matthias Bruhn

In my generation, it is common practice to order antibodies from various catalogues for Western blots, ELISA and flow cytometry. Over 3.1 million Research Resource Identifiers (RRIDs) have already been assigned to antibodies, so the right reagents are usually available for a wide variety of applications. To understand where all these antibodies come from, it is worth taking a look back at the past.

Half a century ago, in 1975, Georges Köhler and César Milstein heralded the era of monoclonal antibodies with the development of the hybridoma technology. By fusing B cells from immunised mice with myeloma cells, they created cell lines that produced a single, defined antibody and could be propagated indefinitely. This opened the door to the unlimited production of antibodies against almost any target protein. Before the publication of their Nature paper, monoclonal antibodies were still considered a medical curiosity, and their benefits were not yet apparent. Today, they are an indispensable part of science and medicine. They are used as versatile tools in all areas of biomedical research. Their true value is particularly evident in clinical applications: more than 200 antibody preparations have already been approved for use in humans, and millions of patients have been successfully treated for a wide variety of diseases. This has saved many lives. Six Nobel Prizes have already gone to the 'antibody camp', most recently in 2018 to James P. Allison and Tasuku Honjo for the development of checkpoint inhibition in cancer therapy.

Monoclonal antibodies are a subject close to the hearts of many researchers at TWINCORE.

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>> CONTINUATION FROM PAGE 1

The Translational Virology research group has discovered new antibodies against hepatitis E virus (HEV). The Institute of Experimental Infection Research is working on antibodies against SARS-CoV-2, hepatitis B virus (HBV) and the Nipah virus. The junior research group Antiviral Antibody Omics focuses on how antibodies interact with the corresponding receptors. In addition, a new research project is currently underway to develop antibodies against tick-borne encephalitis virus (TBEV), a tick-borne pathogen that causes meningitis.

During my PhD thesis, I was amazed when the antibodies I was studying began to predict the future of virus evolution. But where does the future of antibodies lie? While the number of publications on antibodies is exploding, the costs of single-cell sequencing and gene synthesis are falling dramatically. When generative AI designs new antibody sequences within seconds and automated laboratory processes transfer them directly into practice, one thing is certain: we will not be short of antibodies in the future.

THIS & THAT

60 HZI 1965 – 2025

We congratulate our parent institution, the HZI, on its 60th birthday. Since its foundation as the Institute of Molecular Biology, Biochemistry and Biophysics (IMB) in 1965, the HZI has developed into a world-class infection research centre.

40th anniversary

Andreas Riechel, TWINCORE's in-house technician from the very beginning, celebrated his 40th anniversary at the MHH this year. Although he is now enjoying his well-deserved retirement, he continues to be part of the facility management team as a substitute.

FOCUS ON MENTAL HEALTH

by Natascha Sievers

Mental health is a crucial topic – especially in scientific and academic circles. Studies show that around 40 percent of PhD students in natural and life sciences show symptoms of depression or anxiety disorders. A 2024 survey by the Max Planck Society found that 28 percent of the postdoctoral researchers surveyed showed signs of moderate to severe depression, and one in four showed symptoms of anxiety disorders – three times higher than the national average.

Such figures were reason enough for TWINCORE to take a closer look at mental health already years ago. Since then, our (working) world has continued to change and has become even more complex, fast-paced and demanding. In line with International Mental Health Day on 10 October, the Sustainability Working Group has therefore organised a theme week from 6 to 10 October to raise awareness of mental health and provide new impetus at TWINCORE.

The week was opened at the Lunch Club with a personal address by Managing Director Ulrich Kalinke and Administrative Director Albrecht Goez. Both emphasised the importance of the topic and announced that the theme week was the start of an intensive focus on the issue. They were supported by mental health first aider Mohamed Elbalkini, who dispelled common myths, pointed out ways to access help and announced regular, confidential consultation hours.

Every day of the week, there were small activities that encouraged people to engage with mental health. A bilingual quiz in the lobby provided facts – such as that chronic stress causes the hippocampus to shrink or that regular counselling sessions have been proven to reduce stress among doctoral students. During a joint lunch, employees discussed what TWINCORE can do to promote well-being.

The highlight of the week was Cake Day: numerous homemade cakes, pies and cookies invited everyone present to take a short, sweet break. At the same time, the Sustainability Working Group collected donations and was ultimately able to purchase two badminton sets with the total of €154 donated, which everyone at TWINCORE can now borrow for an active break in the garden. The remaining money went to the German Depression Aid and Suicide Prevention Foundation, which is dedicated to improving care for people suffering from depression.

The theme week was a perfect opportunity to take a closer look at mental health again. It provided initial impulses and enabled wonderful and important exchanges. The focus on mental health is to be permanently anchored in everyday working life in the future. For the coming year, TWINCORE plans to continue the theme structurally and systematically and to put the insights and suggestions gained into practice in a sustainable manner.

We mourn the loss of Michael P. Manns

Prof. Dr. med. Michael P. Manns passed away on 15 August 2025 after suffering from cancer. Since its foundation in 2008, he supported TWINCORE and promoted young physicians in carrying out their research projects at TWINCORE. This has resulted in the emergence of important research personalities such as Sandra Ciesek, who now heads the Institute for Medical Virology in Frankfurt. We have lost a committed friend who played a decisive role in shaping the development of TWINCORE.

NUMEROUS AWARDS AND GRANTS FOR TWINCORE RESEARCHERS

▲ **Dr. Inken Waltl,** scientist at the Institute for Experimental Infection Research and head of the animal facility at TWINCORE, has received a grant of €100,000 from the German Society for Parkinson's Disease and Movement Disorders for her research project 'Virus-Induced Neuroinflammation and its Impact on Parkinson's Disease Onset and Progression (VIN-PD)'. In this project, she aims to investigate the role of viral infections in the development and progression of Parkinson's disease.

◀ **Dr. med. Katja Dinkelborg,** PhD, a clinician scientist in the Translational Virology Research Group, has received the PhD Award from the Hannover Biomedical Research School (HBRS). The HBRS thus honoured Dinkelborg's doctoral thesis 'Identification and characterisation of human monoclonal antibodies neutralising the hepatitis E virus' in the 'Molecular Medicine' programme, which she completed in June 2025 with a summa cum laude grade.

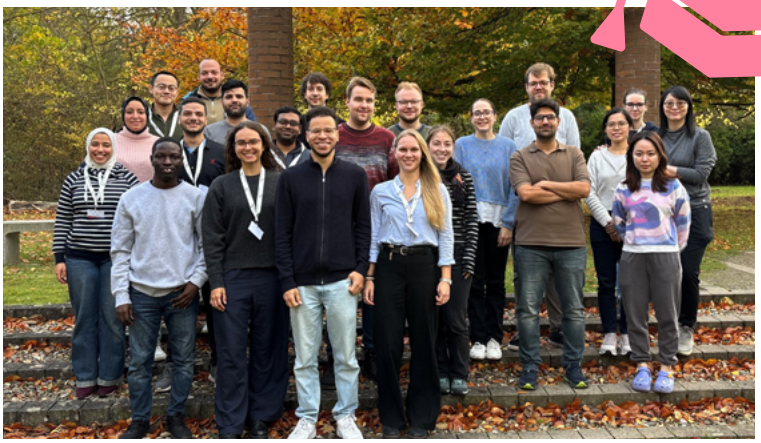
Dr. Andreas Pavlou won the poster prize at the ZSN Neuroscience Symposium in September 2025 with his poster 'Mitochondrial antiviral signalling (MAVS) in brain-resident myeloid cells is essential for antigen cross-presentation and the relicensing of protective, infiltrating CD8⁺ T cells'.

Citrapeutics, the spin-off company founded by **Prof. Frank Pessler**, head of the Biomarkers in Infectious Diseases working group, is receiving €1.4 million from the Institute for Biomedical Translation (IBT). The funds will be used to further develop and optimise the active ingredient Citra01 as a novel oral immunotherapy against cancer.

4th ANNUAL PHD ASSEMBLY

27.-29. October 2025 at Twincore

by Anna Engelhardt



The annual PhD Assembly of HZI aims to connect doctoral researchers from all HZI sites across Germany. By presenting their work, projects and technical powers this event helps to establish new collaborations among institutes of the different centers. Starting in 2022, the first assembly was organized in Braunschweig at the HZI main site. Thereafter, the second and third PhD Assembly took place in 2023 at HIPS in Saarbrücken and 2024 at HIRI in Würzburg. Rotating event locations allow the participants to get to know the other centers favoring the One Lab spirit.

Organizer of the annual PhD Assembly is the Doctoral Initiative (DOIT) consisting of seven elected doctoral representatives (DOITs) from HZI, TWINCORE, HIRI and HIPS. As representatives, the DOITs are committed to advocating the interests of doctoral researchers, aiming to provide platforms for exchange and collaboration as well as to promote communication to build a vibrant and connected community within and among both, the individual institutes and HZI research centers. The current DOIT at TWINCORE is Anna Engelhardt, a second year PhD student in the Institute for Experimental Virology. The DOIT term of office is one year, however reelecting a DOIT is possible once.

At this year's PhD Assembly here at TWINCORE we welcomed participants from HIPS, HZI, CSSB and TWINCORE. Some PhD students got the chance to give an oral project presentation, meanwhile the poster session was designed to demonstrate technical expertise and power of the individual research groups, creating a ground for discussion and developing ideas for project collaborations. Two highlights were the Alphafold Workshop by Dr. Timothy Soh from CSSB in Hamburg and the seminar about the usage of AI services in science by Prof. Dr. Marco Galardini from TWINCORE. The assembly offered lively scientific discussions in a familial environment and a connection platform for all HZI doctoral researchers.

WELCOME AT TWINCORE!
NEW EMPLOYEES:

JOBS
AT TWINCORE

Institute for Experimental Infection Research
Emmanuel Akowuah, PhD Student

Clinical Junior Research Group Translational Immunology
Julian Soika, StrucMed MD Student

Helmholtz Junior Research Group Antiviral Antibody Omics
Laura Fernandez Carrera, StrucMed MD Student

Institute for Experimental Virology
Nour Ahmed Elajiry, PhD Student
Adelind Herbig, StrucMed MD Student
Jona Kosmalski, intern
Emmanuel Oyinloye, PhD Student
Souhardya Saha, PhD Student

Clinical Junior Research Group Translational Virology
Paula-Marie Bosch, StrucMed MD Student

Administration
Natascha Sievers, Strategic Advisor to the Head of Administration

CiiM Group Immunology of Viral Hepatitis and Infection in Liver Cirrhosis
Celine Beyer, Technician
Kareem Haal, PhD Student
Clara Lanfermann, KlinStrucMed MD Student

BEWARE OF PHISHING EMAILS!

Cybersecurity awareness campaign at TWINCORE

'Your DHL parcel will arrive tomorrow. Track the shipment status at this link.' Or: *'Click here to install an update for the VPN client.'* We constantly receive emails like these at TWINCORE. The link contained in the email leads to a malicious website that either asks you to enter your login details or initiates the download of manipulated files or malware. This type of phishing is a nuisance that all internet users should be aware of by now.

In order to determine the level of awareness among TWINCORE staff and at the same time increase vigilance, we carried out a campaign with phishing emails in late summer in collaboration with the cyber security company Trufflepig IT Forensics GmbH. A series of emails, which appeared to originate from internal senders at TWINCORE and were very similar in style to our own announcements, asked recipients to click on a link. The 'success' was documented by the company and evaluated anonymously. The results showed that awareness of this issue still needs to be raised, as the click rate was alarmingly high.

TWINCORE's Head of Administration, Albrecht Goez, presented these results at the Lunch Club and emphasised that vigilant and sceptical employees are one of the most effective protective measures against computer sabotage and data theft.

Some important precautions when dealing with emails are:

- Verify the sender: Does the sender's address match the supposed sender?
- Check plausibility: Am I expecting an email like this about the described process?
- Check links: Use the mouse pointer to display the full address of links without clicking on them.
- Ask colleagues for advice: If necessary, assess emails together.

If in doubt, especially if you have clicked on a phishing link, do not hesitate to ask IT support for help. (JG)

AI IN SCIENCE – OPPORTUNITIES AND CHALLENGES

Artificial intelligence (AI) is bringing about lasting change to everyday research. Whether analysing large amounts of data, supporting literature searches or automatically visualising complex results, AI-based systems open up a whole range of new possibilities and relieve researchers of many routine tasks. Large language models are also increasingly being used: they suggest hypotheses, help to create protocols and generate graphics at the touch of a button.

However, these opportunities also come with new challenges. In particular, the handling of sensitive research data places high demands on data protection and transparency. Ethical and legal issues must be considered, such as the disclosure of AI-generated content and the handling of possible biases in the algorithms. At the same time, it remains essential to ensure the independence and authorship of scientific work and to strengthen the role of humans as critically reflective actors.

To ensure that efficiency gains through AI do not lead to blind automation, clear guidelines and rules for the responsible use of AI are being developed at our institution. These form the framework within which innovation is promoted and the trust of employees, supervisory bodies and society in research is secured. AI does not replace scientific judgement, but serves as a supportive tool that can enrich the research process in many ways – if it is used transparently and prudently.

(This text was written by ChatGPT. The prompts for it were developed in the Science Communication Working Group after intensive discussion of the topic.)

IMPRINT

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It always refers to people of all genders, even if generic forms are occasionally used