

December 2021

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△ Model of "B cell baiting": The antigen is the bait to fish the fitting B cells.

Antibody research at TWINCORE

by Jan Grabowski

They are produced during infections and after vaccinations and are of central importance in the immune system: antibodies. Numerous projects at TWINCORE deal with these immune molecules, three of which we present here.

In the MEMUMAB project at the Institute for Experimental Infection Research, cells that produce specific antibodies are isolated from the sera of vaccinated or recovered individuals. "This technique is called „B cell baiting," says Matthias Bruhn „We then use the contained genetic blueprint of the desired antibodies to replicate them in the lab." The doctoral student has just received a GO-Bio initial grant from the German Federal Ministry of Education and Research (BMBF) to explore the commercial potential of this method for producing therapeutic antibodies against infections.

A similar technique is used in the junior research group "Translational Virology" led by Patrick Behrendt, a medical scientist. Together with his team and partners from the University of Lübeck, he is searching blood samples from patients infected with the hepatitis E virus (HEV) for specific antibodies that are simultaneously effective against several groups of the

virus. "These should form the basis for a drug against HEV," Behrendt says. The pathogen has its natural reservoir in pigs, among others, and can be transmitted to humans as a zoonotic infection through the consumption of contaminated meat, which may cause severe liver inflammation.

Protective antibody responses in natural hepatitis C virus (HCV) infections and vaccine-induced antibody responses are being studied at the Institute of Experimental Virology. "We have been able to identify a selection of HCV reference viruses and have thus established a crucial tool with which we can map the high diversity of HCV envelope proteins and take it into account in our studies," says postdoctoral researcher Dorothea Bankwitz.

"The clear translational focus of these projects highlights how we are working with our partners to further develop research results towards clinical application," says Ulrich Kalinke, Executive Director of TWINCORE.



Dear colleagues,

One year ago, the pandemic situation presented itself rather complicated, however, the forthcoming licensing of the first COVID-19 vaccine appeared as the light at the end of the tunnel. Today, the situation is still complicated, even though we have had access to effective vaccines for almost an entire year. Only approximately 70 % of the German population took the opportunity and are now vaccinated at least once.

The situation here at TWINCORE is different. Basically 100 % of the people are vaccinated and close to 50 % have received their booster vaccination so far - an ideal basis to organize safe working conditions at TWINCORE. Thank you for your active contribution!

During these times, good science communication is essential, which is well reflected by our working group "Science Communication". Beside several other activities, members of the working group developed the current issue of the CoreNews. Well done!

Yours, *Ulrich Kalinke*

The triad of sustainability: ecology, economy and social aspects

by Silke Hartmann

The concepts for the careful and long-term use of resources are diverse and individual. Two members of the Sustainability Work Group report on their approach to the topic, their ideas and first steps towards the practical implementation of sustainable developments at TWINCORE.

Three strategies are often pursued for sustainable development:

(1) reduction of consumption (sufficiency), (2) more productive use of materials and energy (efficiency), and (3) nature-friendly material cycles, recycling, waste avoidance (consistency). In which areas is TWINCORE planning to do something?

approaches, for example in improving waste separation or the use of reusable or recycled materials, both in the laboratory and in the infrastructure and sanitary areas.



Annett Ziegler (AZ): We want to do something at all levels, but not everything can be implemented in the short term.

Are there any initial approaches or specific measures that have already been implemented?

AG: A number of measures have already been set in motion: for example, the nature-oriented design of the campus through a flowering meadow, the procurement of an e-vehicle, which will be delivered at the beginning of next year, or the successive conversion to LED technology, where we have already equipped a first laboratory not only with appropriate lamps but also with smart technology as part of a pilot project in order to reduce energy consumption as much as possible.

AZ: In order to achieve something in the short term, we have also addressed the issue of waste. In order to recycle more of the valuable packaging materials, we want to place additional recycling bins in the laboratories as well as in the offices and common rooms.

Where do you see the most important starting points for sustainable improvements in your respective areas of work?

AG: In administration, this is primarily the area of facility management, since the operation of a research building naturally requires a relatively large amount of energy and materials. Another important starting point is procurement, as there are as yet no structured processes for taking sustainability into account when placing orders - price is often the only decisive criterion.

AZ: In the lab area, we should make sure to turn off computers overnight, close fume hoods, turn off lights in restrooms in the evening. Saving waste, on the other hand, is difficult. You can't simply replace plastic materials with recyclable materials, especially in cell culture and when working with infectious agents. However, to save plastic, one can consider which steps can be combined, e.g., pipetting with the same pipette.

AG: Sustainability goes far beyond ecological and economic aspects, however. The career development of employees and a sustainable recruitment strategy are also important elements.

Ideally, sustainability refers to ecological, economic and social aspects. Do you have an example of how to simultaneously protect the environment, save money and improve workplace quality at TWINCORE?

AG: Switching to controllable LED lighting in the lab significantly reduces power consumption, thereby lowering electricity costs, but also contributes to a more pleasant working environment. And cycling, which we are making more attractive through various measures at TWINCORE, is not only environmentally friendly but also cost-effective and good for the body.

AZ: A possible idea for the future would be greening the facade: It's good for the environment and it could cool the building naturally so that there are more comfortable temperatures in the offices and laboratories.



Albrecht Goetz (AG): In my eyes, sufficiency is already being lived at TWINCORE, as we are very targeted in using exactly the resources we need for research.

Efficiency, however, is a major topic on which many suggestions for improvement are being discussed or are already being implemented; for example, better use of the available space through the newly created flexible working islands in the foyer and at the staircases.

Consistency is also the subject of many

New trainee at TWINCORE

by Olivia Luise Gern

Since August, Annika Borsum supports the administration of TWINCORE as a new trainee for office management. Her tasks include handing out keys, generating email addresses and parking passes, and much more: Annika also creates the intranet access as well as website entries for new employees and announces events on the intranet. What she particularly likes about TWINCORE is the atmosphere and the mix of different research areas.



'Innovative Workplace' - An interdisciplinary project to improve the workplace

by Antonia Gunesch



The pandemic makes everyone take another close look at their own homes to see what could be improved. Since summer 2020, TWINCORE has also been taking advantage of the opportunity and founded an initiative to improve our workplace and make it more flexible.

„Even though we were already aware of the increased need for office space, the initiative was born out of the pandemic situation. More workplaces were needed due to distance regulations and person-number restrictions in offices and labs. That was the starting point of the project,“ says Katharina Schulz, TWINCORE's executive and safety management assistant, who coordinates the project, moderates and records the meetings.

First, a wish list was created to which all TWINCORE employees could submit their

suggestions. The project found great interest and a wide variety of ideas was collected in the areas of nutrition, health, IT, workplaces and leisure. Now, representatives from all institutes as well as occupational safety department, the company doctor and the company technology department meet regularly in hybrid format and discuss in a structured way what can be implemented.

All suggestions are taken seriously. „The idea of hammocks in the garden sounded tempting, but unfortunately that can't be made possible.“ But there will be a ping-pong table that can be used for active breaks in the summer. Those who look closely will already discover numerous changes, whether it's additional seating areas for flexible work in the foyer, a universally popular water dispenser, new garden furniture and seat cushions for distance-compliant lunch breaks, or covered and illuminated bicycle parking. Laptops with docking stations and video conference accessories can also be borrowed from Katharina Schulz.

And one thing perhaps not everyone knew: A rentable cargo bicycle for transport on the MHH campus was even available before the pandemic.

The campaign has been so well received by employees that the project is by no means over yet. Suggestions of all kinds are still very welcome.

LISA Summer School takes place virtually for the first time

by Olivia Luise Gern

After a Corona break, this year's LISA Summer School took place online and was a great success - despite or perhaps because of the virtual format.

This year, 33 people from different backgrounds from 20 countries took part. Thus, for some participants (from North or South America) the programme started at 5 am, and for others (for example in India) it ended at 11 pm. The excellent presentations by international speakers made a lasting impression on the LISA students.

One of the highlights for participant Aparna Shandheep was the interactive poster session. The feedback was consistently encouraging and thus the participants were able to gain an insight into completely different research areas. There was also a virtual room where people could meet informally in groups during breaks and plan meetings with lecturers. Aparna is still in contact with many of the participants and will soon come to TWINCORE for an internship.

Junior professor Sarina Ravens' hands-on training analysing immune cells was also

THIS AND THAT

by Dorothea Bankwitz

TWINCORE Symposium 2021

On 9 September 2021, the 13th TWINCORE Symposium with the topic "COVID-19 vaccination and vaccine responses" took place online. The keynote lecture by BioNTech co-founder Özlem Türeci was met with great interest by the approximately 200 participants and gave rise to lively discussion. Also the other presentations were given by first-class speakers.

StrucMed doctoral students at TWINCORE

A special feature of the MHH is the structured doctoral training programme StrucMed for obtaining a medical doctorate. The programme provides impetus for the close interlinking of research and patient care. This year, nine doctoral students from TWINCORE are taking part in the StrucMed programme, three of whom are receiving scholarships from the German Centre for Infection Research.

TWINCORE employees participate in TRAIN Academy



The TRAIN Academy is this year again very popular with TWINCORE researchers. On October 14, 2021, the successful graduates Inken Waltl, Davide Faggiolato, Maurice Labuhn and Patrick Blank were discharged. At the same time, Matthias Bruhn, Martin Kohn, Adrian Kordes and Andreas Pavlou started the 2-year continuing education program.

particularly well received. „This intensive programme could have been extended,“ says Aparna, „to deepen what we learned.“ Scientific Director Ulrich Kalinke agrees: if the next LISA Summer School has to be held online again, the focus should be more on hands-on, as this is how active participation is highest and the learning effect is greatest. „However,“ says Kalinke, „a virtual summer school will probably never be able to replace a real one.“ So hopefully the DAAD funded LISA will be able to take place again next year in presence.

New working groups at TWINCORE

In recent months, three new non-scientific working groups have become firmly established at TWINCORE. Staff members from all areas regularly address the topics of Science Communication, Sustainability and Innovative Workplace. We report on progress in the CoreNews. Just like in this issue, with an interview on sustainability and an article on improving our workplaces. These and all other texts were written by members of the Science Communication Group.

Photo contest "Nature at TWINCORE"

These are the submissions to our photo contest "Nature at TWINCORE". Currently the voting for the best picture is ongoing in the intranet.



New employees at TWINCORE

Administration

Annika Borsum, *Apprentice*

Institute for Experimental Infection Research

Julia Grupa, *StrucMed student*

Lara-Jasmin Schröder, *PhD student*

Institute for Experimental Virology

Frithjof Zeiß, *StrucMed student*

Jonathan Garn, *StrucMed student*

Junior Research Group

Translational Virology

Pia Maria Nörenberg, *StrucMed student*

Tanja Klause, *Medical student*

Junior Research Group

Translational Immunology

Christine Jänke, *Technician*

RESIST Research Group

Computational Virology

Nicolai Böker, *PhD student*

Isra Nurhassen, *PhD student*

RESIST Research Group

Systems Biology of Microbial Communities

Judit Burgaya Ventura, *PhD student*

Dr. Adam Mulkern, *PostDoc*

Hannes Neubauer, *PhD student*

CiiM Group Computational Biology

for Individualised Medicine

Ahmed Alaswad, *PhD student*

Francisco Javier Botey Bataller, *PhD student*

CiiM Group Bioinformatics

and Computational Genomics

Dr. Xuan Liu, *PostDoc*

Well networked

TWINCORE launches alumni network

Keeping in touch with our numerous former staff members, doctoral candidates, students and guests is the main goal of our newly founded alumni network. In this way, we want to keep everyone up to date with news from the centre.

At the same time, we are also very interested in what has become of our alumni. What career steps have they taken and how have they benefited from their time at TWINCORE? It is particularly exciting for our young researchers to see what career opportunities are potentially open to them after their time at TWINCORE.

As is usual in academic research, the centre is merely a stopover for the researchers. The doctoral student goes

abroad as a postdoc after the doctorate, the junior research group leader is appointed to a chair at a university. Postdocs move on to industry or governmental agencies. In the coming issues of CoreNews, we will present various careers of former staff members and then also collect them on our website.

At the same time, all alumni will have the opportunity to register for our alumni network. Because networking among each other is becoming increasingly important, we also offer alumni the opportunity to get in touch with each other. Incidentally, this is very easy to do on the LinkedIn platform, where TWINCORE has recently been represented.



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