

# InFact

The Magazine of the Helmholtz Centre for Infection Research | Autumn 2022

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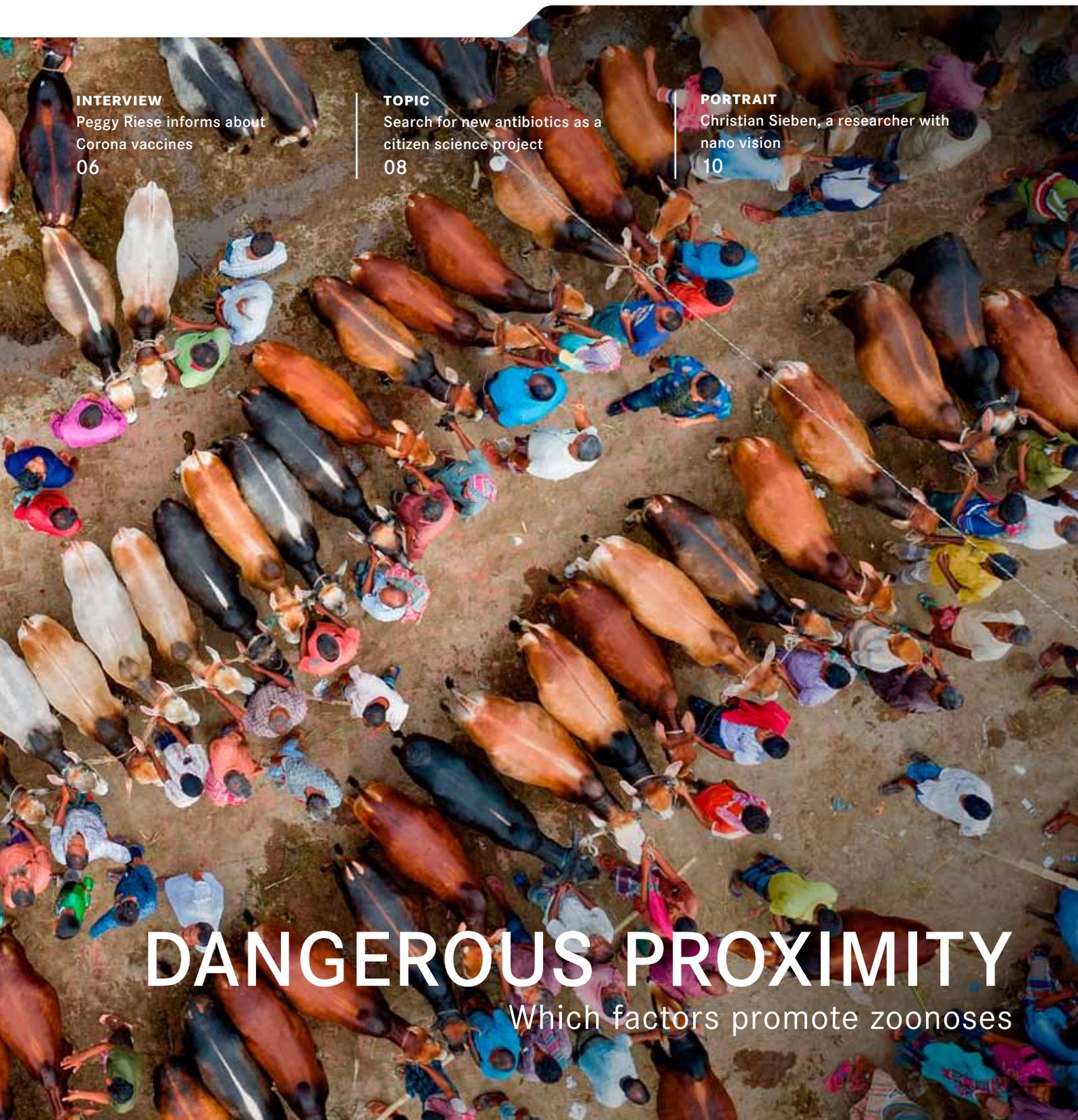
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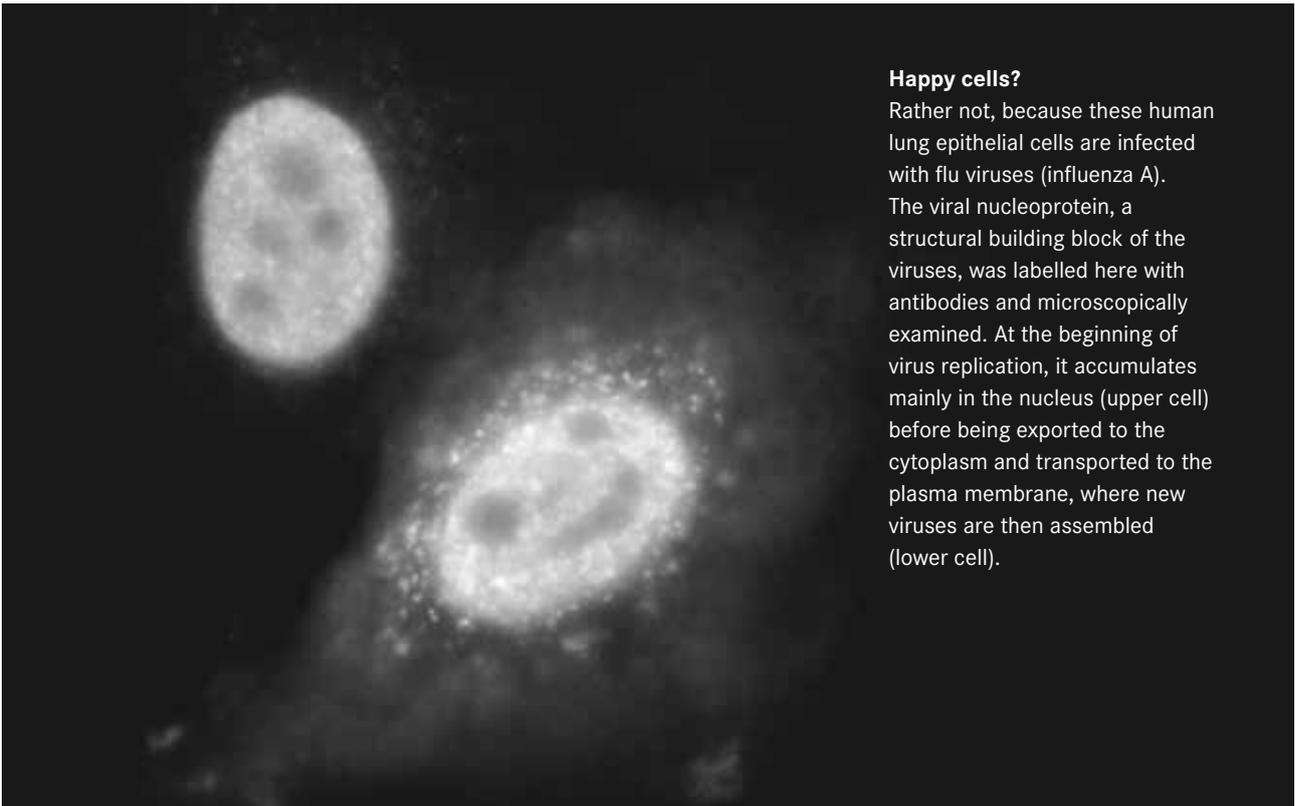
Which factors promote zoonoses

**EDITORIAL****Dear readers,**

*The COVID-19 pandemic and this year's monkeypox outbreak may give the impression that diseases are increasingly spreading from animals to humans. But is this true? What is certain is that humans are increasingly making this step easier for pathogens – through deep invasion of natural habitats, intensive agriculture and animal farming, as well as globalisation. The researchers led by Fabian Leendertz at the Helmholtz Institute for One Health in Greifswald are investigating how these and other factors are connected. Our cover story takes you all the way to the African tropics, where the research team is looking for risks of infection and possible solutions. In addition to mRNA vaccines, classical vaccines are now also in use against SARS-CoV-2. In our interview, Peggy Riese explains the differences and reports on current vaccine research. From soil samples sent by citizens to the Helmholtz Institute for Pharmaceutical Research Saarland, about 1000 new strains of soil bacteria could be isolated. These bacteria produce substances, some of which have antibiotic effects. Now the research team has expanded its project from Saarland to the whole of Germany and hopes for lively participation.*

*I wish you a pleasant read!*

**Andreas Fischer**, Editor-in-chief

**EYE-CATCHER****Happy cells?**

Rather not, because these human lung epithelial cells are infected with flu viruses (influenza A).

The viral nucleoprotein, a structural building block of the viruses, was labelled here with antibodies and microscopically examined. At the beginning of virus replication, it accumulates mainly in the nucleus (upper cell) before being exported to the cytoplasm and transported to the plasma membrane, where new viruses are then assembled (lower cell).

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Helmholtz Centre for Infection Research GmbH  
Press and Communication  
Inhoffenstraße 7 | D-38124 Braunschweig  
Phone: +49 531 6181-1404  
presse@helmholtz-hzi.de | www.helmholtz-hzi.de/en

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**Editorial staff:** Susanne Thiele (V.i.S.d.P),  
Andreas Fischer (afi, Editor-in-chief), Paul Grumer,  
Sabine Kirchhoff, Daniel Krug, Luisa Macharowsky  
(lum), Nicole Silbermann

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# ONE HEALTH TRIAD OF ENVIRONMENTAL, ANIMAL AND HUMAN HEALTH

by Nicole Silbermann

Founded in April 2022, the Helmholtz Institute for One Health (HIOH) in Greifswald is a new location of the HZI. What exactly does One Health mean? And why is this research approach particularly important today?

Infectious diseases have always posed a threat to human health. But perhaps never *more* than today? “That is a difficult question to answer. But there is a whole range of risk factors that favour infections with previously unknown pathogens and make them more likely to spread today,” says Prof Fabian Leendertz, the founding director of the HIOH. “Increasing human encroachment into wildlife habitats, loss of biodiversity, ongoing climate change and globalisation all play an important role here.”

## LEAP FROM ANIMALS TO HUMANS

The transmission of pathogens from animals to humans is called zoonosis, and unfortunately, we have recently seen some pertinent examples of this: Like the SARS-CoV-2 virus, the pathogen of COVID-19, which presumably leaped to humans via a bat. And the MPXV virus (monkeypox virus), the causative agent of monkeypox, whose outbreak was recently declared an emergency of international concern by the World Health Organisation. “Zoonoses are always volatile and can

have far-reaching consequences. In fact, most of the infectious diseases we deal with today have a zoonotic origin,” Leendertz explains. For example, one of the oldest known zoonoses is the transmission of the measles virus from cattle to humans around 500 BC, as suggested by new genetic mutation analyses of measles viruses. Once a pathogen has found a new host, i.e. humans, that ensures its further spread, it is usually there to stay. “Sometimes it takes only a single transmission event for this to happen. In the worst case,

▽ Fabian Leendertz catching bats in Ebokon (Guinea) in search of the reservoir of the 2014/2015 Ebola outbreak



an infection scenario can develop so rapidly due to globalisation that it can become a world-wide pandemic. Which is what we have seen in the last 2.5 years with the Corona pandemic.“

Because he has always had a particular interest in the diseases of wild animals, Leendertz specialised in microbiology as a veterinarian. His doctoral thesis took him to the rainforest of Côte d'Ivoire in the early 2000s - and straight into zoonosis research. At that time, chimpanzees were dying inexplicably in the Taï National Park. Leendertz wanted to find out why. He was able to show that a new type of anthrax was behind it. The pathogen, a bacterium that infects the skin, lungs or intestines, is highly infectious. Humans can easily become infected just through skin contact with diseased or even dead animals, sometimes with a fatal outcome if antibiotics are not given at an early time. "That was when I realised how important zoonosis research is and that I definitely wanted to continue my research in this area," Leendertz recalls. Today he is one of the world's leading experts in the field. In 2020, he was awarded the "Champions of the Earth Award", the United Nations' most prestigious environmental prize.

### WHAT ONE HEALTH MEANS

But under what conditions do pathogens make the leap from animals to humans in the first place? And how can it be prevented? These are precisely the questions addressed by the One Health



◁ Lorenzo Lagostina is out and about for the BIODIV-AFREID project in the rainforest of the Taï National Park, Côte d'Ivoire

research approach. Based on the triad of healthy environment, healthy animals, healthy humans. "The key point is: We cannot look at human health in isolation. It is closely intertwined with the environment and the animal world, everything is interrelated," says Leendertz. "If we preserve a healthy environment, or try to restore it as best we can, we can ensure that animals stay as healthy as possible and protect human health at the same time."

But any disturbance has an impact on the system as a whole. Intensive land use and climate change throw ecosystems out of balance, leading to changes in the communities of species and weakened wildlife populations - thereby providing ideal conditions for pathogens. "Specifically regions with very high natural biodiversity, such as the tropics, also have a high diversity of microorganisms and that includes pathogens," Leendertz explains. "And they can spread quite readily if the biodiversity decreases and individual species multiply massively. Mostly these are so-called synanthropic species, which have been able to adapt well to the landscape changes made by humans." In addition, humans are encroaching more and more on wild animal habitats, for example to gain new land for agricultural use or the mining of raw materials. This, in turn, increases the likelihood of human-animal contact along with the risk of transmission. "Human behaviour also plays an important role," says Leendertz. "Game hunting has changed a lot in the tropics. It used to be common to hunt antelopes, monkeys, pigs or other large game. Since many of these species are locally extinct or severely depleted, people are starting to hunt smaller species as well. For example, larger rodents or fruit bats - and this increases the risk enormously of coming into contact with new, possibly dangerous pathogens."

### RESEARCH AT THE HIOH

One Health calls for a holistic approach, which the scientists at the HIOH want to pursue together with their founding partners: the University of Greifswald, the Greifswald University Medicine and the Friedrich-Loeffler-Institut (Federal Research Institute for Animal Health) - and in close cooperation with their colleagues at the HZI. A wide variety of disciplines will join forces in future research projects: human and veterinary medicine, microbiology, virology, epidemiology, drug research, biodiversity research, ecology, evolutionary biology, anthropology and sociology. "In order to keep the big picture in focus, we have to merge expertise and know-how from a wide variety of fields," says Leendertz. "This is an exciting challenge that I am very much looking forward to."

In a large-scale One Health long-term observational study, the HIOH researchers will take a close look at two different model regions, in each of which intensive agriculture and hunting play an important role. One study area is located in the African tropics, the other in Mecklenburg-Western Pomerania. In both regions, they want to study, among other aspects, climatic conditions, biodiversity, wildlife populations as well as microorganisms present, and set up a cohort from the local population, which will include farmers and hunters in particular. "My most important goal here is to make sure we design and establish the observational study in such a well thought-out way that it still produces useful data 30 or 40 years from now and we get good results during this time," says Leendertz. "I will long be retired by then, but I already can't wait to see the One Health long-term results, because they are unprecedented."

Fabian Leendertz worked at the Robert Koch Institute (RKI) for 22 years. Working with six other cooperation partners, he has conducted research



△ The researchers use traps to catch rodents to characterise the biodiversity of small mammals



◀ Blood collection from a bat captured in Taï National Park

since 2020 on the so-called BIODIV-AFREID project, which is coordinated by the University of Antwerp. Leendertz is continuing this three-year research project at the HIOH. Dr Lorenzo Lagostina, a former RKI scientist now at the HIOH, explains what their research is all about: “We aim to find out how changes in biodiversity in African forests affect the communities and health of potential vectors - primarily small rodents or bats. In addition to recording the biodiversity of the small mammal populations using molecular methods, we are testing the animals for various pathogens. The main focus here is on the pathogens of Ebola, Corona and monkeypox.”

To obtain sample material, the scientists have systematically set up traps in parallel in two different study areas, one in the Democratic Republic of Congo and one in Côte d'Ivoire. “There are traps within a village, also in houses, at the edge of the settlement, as well as five and eight kilometres away, in the latter case within a national park,” says Lagostina. “Using this gradient, we can map the human impact on the

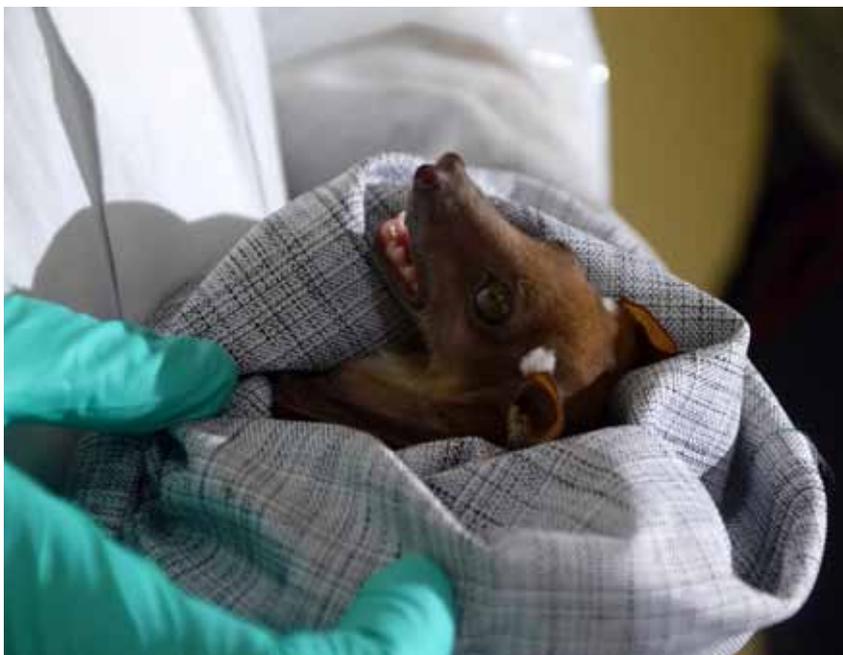
different habitats of the animals and correlate it to the respective presence of pathogens.” Swabs are taken from the animals' mouth and anus and a few drops of blood are drawn before they are released. “We are working very closely with our partners in both African countries. We want to continue this in future projects and strengthen applied research and surveillance on site,” adds Leendertz. The samples are then tested in detail by the HIOH research group both in the African partner laboratories and in Greifswald using various molecular diagnostic methods. “We search for viral RNA or DNA of potential candidate pathogens,” says Lagostina. “Beyond distinguishing whether they are Ebola or monkeypox viruses, we can also identify different variants of the individual viruses and determine their distribution over the different study areas.”

#### HOW ONE HEALTH CAN HELP

The major goal pursued by One Health is prevention and preparedness for future pandemics. For that, we need to know exactly where the dangers

lie. Which pathogens are we dealing with? How do they change over time? Which animals are potential vectors? Where and how can transmissions take place? “We want to get to the bottom of these questions so that reasonable preventive measures can be taken and implemented efficiently,” says Leendertz. This includes environmental protection, establishing food security, improving medical care, educating the local population on where possible risks of infection lie and advising them on how to manage them. “At the same time, of course, we have to prepare for an emergency: constantly monitoring dangerous candidate pathogens, tracking down as-of-yet unknown pathogens, advancing vaccine and drug research and addressing the issue of resistance. All this is also part of One Health,” says Leendertz.

The environment, animals and humans always resonate together, just like the notes in a triad. Fabian Leendertz and his HIOH team are propelling One Health research at full tilt to identify dissonances as early as possible and resolve them optimally - for healthy coexistence of the environment, animals and humans.



◀ Fruit bat during examination



## “THE CORONA VACCINES WERE MEANT TO PROTECT AGAINST SEVERE DISEASE. AND THAT IS WHAT THEY DO”

*by Nicole Silbermann*

Dr Peggy Riese is a scientist in the Department of Vaccinology and Applied Microbiology at the Helmholtz Centre for Infection Research (HZI) in Braunschweig, Germany. Her research focuses on the special features of the immune system in its interaction with vaccines. In this interview, she talks about current developments in SARS-CoV-2 vaccine research

**T**he mRNA vaccines are currently considered the gold standard among Corona vaccines. Since the beginning of the year, a protein vaccine has been in use, which some people who were sceptical about mRNA technology have been waiting for. How does it work, and how should it be viewed in terms of its effectiveness?

Protein vaccines belong to the classic types of vaccine, like those we

are familiar with from flu vaccines, for example. The new protein vaccine Nu-vaxovid contains the spike protein of SARS-CoV-2 and an additional immune modulator promoting the activation of the immune response. The results of the clinical trials are quite promising: They show that vaccinated people are very well protected against developing a severe course of the disease. Unfortunately, the initial expectations of significantly increasing the vaccination rate with a “traditional” vaccine have not been fulfilled. This may be due,

among other things, to the fact that this vaccine has not yet been adapted to the currently circulating Omicron variant. However, much like its mRNA counterparts, this vaccine does not protect against infection. Only time will tell whether or not the immune response will last over an extended period of time.

**Do we already know more about this for the mRNA vaccines?**

What we do know about the efficacy of mRNA vaccines is that

they provide good protection against severe disease for about three to six months. After that, they should receive a booster. This is the case because these vaccines primarily address the so-called humoral immune response. This is the part of our immune system that is responsible for rapid production of precision-fit antibodies. Although, of course, this is enormously important in the fight against a pathogen, it sadly is not enough to build up long-term immunity. This requires the activation of the so-called cellular immune response: Memory cells that remember unwelcome invaders even years after an infection and can quickly produce antibodies when they re-encounter the same pathogen. This immunological memory seems to be only weakly activated by the mRNA vaccines. We do not yet understand why this is the case. But let me stress the following: The Corona vaccines developed so far were primarily intended to protect against severe disease. And they do – they have achieved their original goal.

**With its new mutations, doesn't the virus also outrun the effectiveness of the vaccination?**

Yes, unfortunately this is true. The vaccines available today are based on the spike protein of the original virus strain from 2019. And both, the Delta variant and the new Omicron variants, include a considerable number of mutations in the spike protein. This causes the antibodies produced in the course of a vaccination to no longer fit optimally. It was a surprise to scientists that SARS-CoV-2 was able to change so quickly because the coronaviruses we know from harmless colds do not do this to the same extent. I don't like to compare Corona and influenza, but the challenge of having to adapt vaccines on a regular basis because the pathogen changes so quickly now seems to be evident with SARS-CoV-2 as well. Currently, clinical trials on both mRNA and protein vaccines adapted to the Omicron variant are underway. The first mRNA vaccines have just been approved by the European Medicines Agency (EMA) and are now being used for booster vaccinations.

**Recently, Valneva's vaccine was approved as the first whole-virus vaccine against SARS-CoV-2. What are its features?**

Valneva's vaccine VLA2001 is an inactivated whole virus vaccine, also called a dead vaccine. The core of the vaccine is a complete, inactivated SARS-CoV-2 virus, which should trigger a broader immune response due to its multiple attack surfaces. The supplementary addition of immune stimulants, known as adjuvants, also gives hope for a stronger and longer-lasting immune response. However, Valneva has also developed its dead vaccine on the basis of the original Corona variant. By confronting the immune system not only with the spike protein but also with all other viral components, the virus has a much harder time evading the immune response.

**Are there any other promising candidate vaccines currently under development?**

As far as the development of second generation Corona vaccines is concerned, there are two different main approaches. On the one hand, research focuses on the development of vaccines that contain different variants of the spike protein. On the other hand, there are promising approaches to include other viral components in the vaccine formulation besides the spike protein. Initial results show that vaccines containing more than one variant of the spike protein may also provide better protection against other variants, even if they are not included in the vaccine. Another interesting approach is the development of mucosal vaccines that can be administered through the nose, for example. Here, the hope is not only to protect against severe disease, but also to prevent the transmission of infection. However, this research is still relatively in its infancy and needs time before approval.

**SARS-CoV-2 has taken the research labs virtually by storm in the past two years – has it found a place in your research as well?**

Yes, of course. We aim to understand why the immune response after vaccination is better in some people than in others. As part of this work, we

are also looking for differences between different vaccines and vaccine combinations after the first, second or third vaccination. We are particularly interested in the immune mechanisms in humans that might explain why the vaccine response can vary so strongly. We have been investigating this for some time using the influenza vaccine as an example and are now including Corona in our studies. In addition, we are doing research on the development of next-generation Corona vaccines. In this context, we are focusing primarily on vaccinations via the mucous membranes – for example as a spray acting on the nasal mucosa – aiming to perhaps get a future vaccine that protects against infection as well.

**In your view, has the Corona pandemic been a booster for vaccine research?**

Oh yes, I would fully support that. But that is also the only good thing to emerge from the pandemic. The sudden appearance of a previously unknown and dangerous pathogen has shown: We need forward-looking research. We can't just start when the pandemic is in full swing already. In order to be able to counteract pathogens, basic research in the literal sense is fundamental. The more we know about viruses, bacteria and how our immune system works, the faster and more efficiently we can produce vaccines. Of course, another important component is good interdisciplinary and international cooperation. And this has indeed been evident during the past two years of the pandemic: The scientific community has moved closer together and is exchanging ideas better than ever before.

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# SOIL BACTERIA - A MICROBIAL TREASURE CHEST *by Daniel Krug*

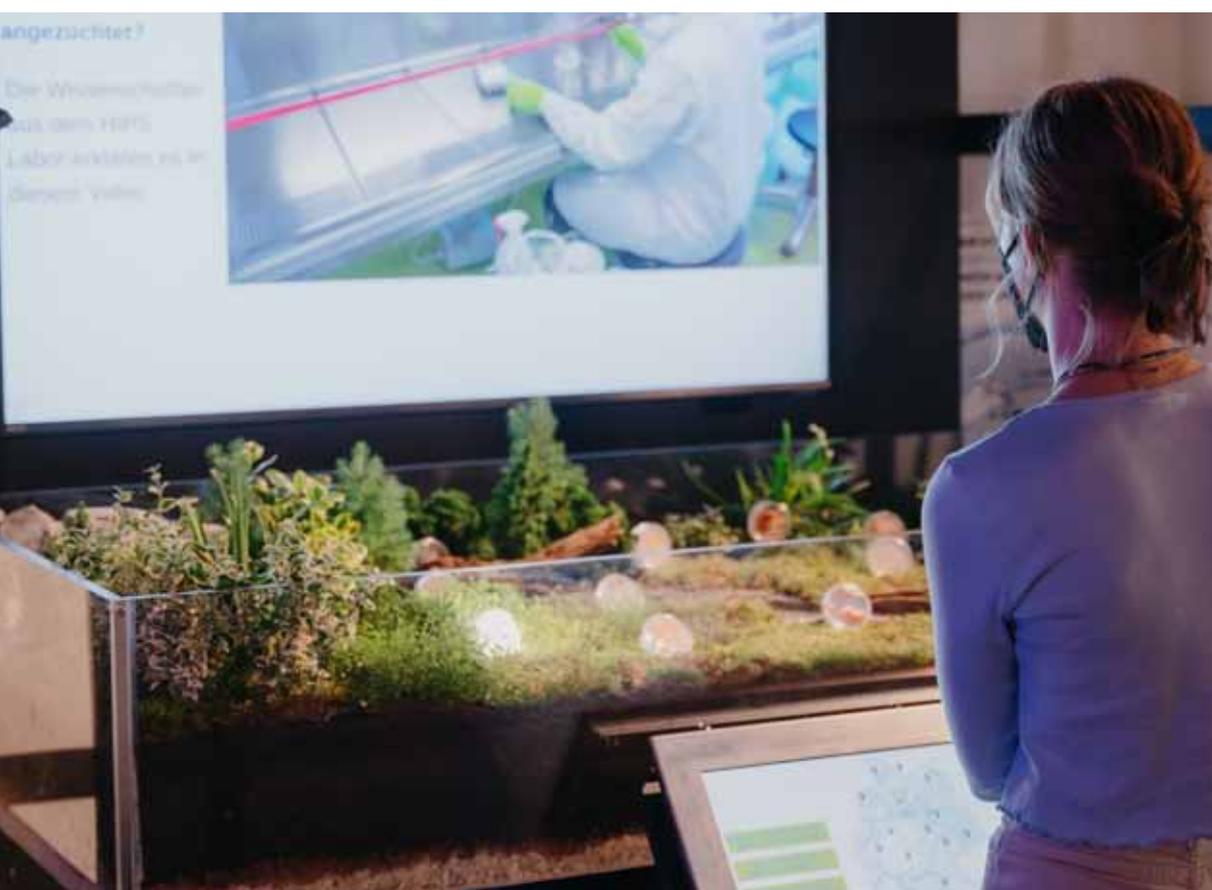
In their search for new substances that are effective against infectious diseases, researchers at the Helmholtz Institute for Pharmaceutical Research Saarland (HIPS) are extracting natural substances from soil bacteria. They are getting help from the public in the course of a citizen science project, which this year recruited citizen scientists from all over Germany on board the exhibition ship “MS Wissenschaft”

In the summer of 2017, Dr Ronald Garcia and Dr Daniel Krug, microbiologist and chemist at the HIPS in Saarbrücken, respectively, discussed how the upcoming Open House Day could be enriched by a hands-on activity. The idea that finally emerged was actually quite simple: Could the visitors act as citizen scientists and support the HIPS' research by sending in soil samples? Without further ado, free returnable sample collection envelopes were equipped with basic

tools for taking soil samples and a website with an interactive map of the Saarland was put online - and the citizen science project “Sample the Saarland” was underway. “The sampling by citizens was quite straightforward from the very beginning, and the samples sent in had no scientific disadvantages compared to the samples we took ourselves,” says Garcia in retrospect. “This is also due to the fact that the myxobacteria we were looking for are good at prevailing over other

bacteria. So some minor contamination with common germs does not adversely affect the chances of success.”

Daniel Krug adds: “Even in the temperate climate zone, in which Germany is located, there are many biotopes with microbial communities that show high diversity. This means that even with local samples there is a good chance of finding new and rare myxobacteria.” With these strains, the probability is quite high that they can produce a drug



◀ The HIPS  
exhibit on the  
MS Wissenschaft

molecule with an as yet unknown basic chemical structure. In the meantime, Prof Rolf Müller's "Microbial Natural Products" department at the HIPS has managed to isolate more than 1,000 new myxobacterial strains from over 700 soil samples taken by citizen scientists in Saarland. The researchers unanimously agreed: The search for these valuable producers of active substances should not be limited to the Saarland, but should ideally be extended to all of Germany.

A unique opportunity to expand the project finally presented itself at the beginning of 2022 through participation in the science exhibition on board the "MS Wissenschaft" - a cargo ship converted into a floating science centre that travels through Germany every year on behalf of the Federal Ministry of Education and Research. It offers an opportunity to experience research first-hand with more than 30 exhibits from a wide range of institutes. Every year, several tens of thousands of people visit the exhibition, including many school classes.

This year's motto of the MS Wissenschaft is "Participate!", and in early May the HIPS went on board with its home-made exhibit "Soil bacteria - a microbial treasure chest". The MS Wissenschaft's voyage started in Berlin and went on several rivers and canals to a total of 32 stops throughout Germany. The ship also made a stop in Braunschweig. "Scientists from the HZI familiarised the visitors with our exhibit and the search for new active substances at the "Meet the scientist" events," says Dr Alwin Hartman from the HIPS. "HIPS scientists were also present in several other cities and took questions."

Daniel Krug explains the HIPS exhibit: "It is an alive terrarium that presents the different biotopes of Germany: ranging from a mountain landscape to a river, a forest, meadows and wetlands, and to the sea. For each region, a Petri dish shows an exemplary image of which myxobacteria dwell there. After selecting a region on the touch screen, the corresponding Petri dish lights up with an LED light and the screen shows a portrait of the selected bacterium." Afterwards, the visitors have the opportunity to watch videos in which, for example, background

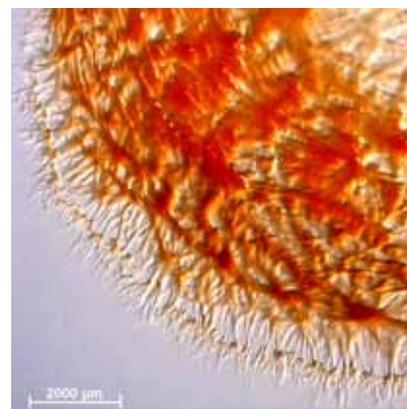
info about antibiotic resistance, some laboratory procedures or research approaches are explained. The videos were produced at the HIPS and provide answers to questions such as "Where do you find myxobacteria?", "How is it tested in the lab whether a molecule is effective?" and "What is antibiotic resistance?". Moreover, next to the terrarium a stereomicroscope has been set up and can be used to look at living myxobacteria. In addition, this is where the sample kits are available. They are a later generation of the sample collection envelopes from the Saarland project, designed by Wanda Bleckmann, a designer from Berlin. The handy blue folding boxes contain everything the citizen scientists need to take a soil sample and send it to the laboratory: including a magnifying glass, gloves, sampling spoons, plastic bags with bar codes into which to fill the soil, and illustrated instructions. The sturdy cardboard box also secures the soil samples during their transport to the HIPS.

Time and again, visitors of all ages on board the MS Wissenschaft gaze in amazement at the lush green miniature landscape and observe the diverse shapes and colours of the myxobacteria that live hidden in the soil in their own gardens or around the picnic area on their favourite hike. Alwin Hartman is glad to see that the HIPS project is well received and helps to get people excited about science: "We are delighted when visitors can take away insights into the world of soil bacteria from our exhibit. And, of course, even more so when they send us interesting soil samples later on."

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#### **PARTICIPATE HERE:**

<http://www.hips.saarland/sample/?lang=en>



△ Swarms and fruiting bodies of various new myxobacteria isolated at HIPS from Saarland samples

# A BIOLOGIST WITH NANO VISION *by Paul Grumer*

Christian Sieben investigates the initial interactions of viruses and cells at single-virus level



◀ Dr Christian Sieben heads the junior research group “Nano Infection Biology”

example - the first collaborations in this direction are already ongoing. “Our main concern, however, is to understand the biology underlying the interaction between virus and host cell,” says Sieben.

One challenge for Christian Sieben arises from some missing expertise in special fields of cell biology or virology, which he has only touched on in his career to date. “That’s where the interactive environment here at the centre, the willingness to cooperate and the infrastructure come in handy. There is an enormous amount of expertise in areas in which I am not well versed. I can just meet with an expert on a very specific topic during the lunch break - that’s very cool.”

His role as group leader also presents Sieben with new challenges: management and administration. There is a learning curve and it takes time. At the same time, Christian Sieben needs and wants to stay in the lab. He wants to pass on his special know-how to his doctoral students - and the scientist in Sieben really enjoys his time in the lab anyway, especially as it is becoming increasingly scarce: “Unfortunately, office work is keeping me from focussing fully on science to an increasing degree.”

With all the new and old commitments, Christian Sieben nevertheless takes as much time for his family as he can. The biologist likes to take trips with his son and wife. On his 40th birthday just a few months ago, he completed his first marathon - so Christian Sieben can impress with drive and stamina.

Christian Sieben decided in favour of biology thanks to his older sister, also a biologist, who gave him an early glimpse behind the scenes of this field of study. But the 40-year-old’s career path was anything but classical. After completing his diploma in Darmstadt, he went to Berlin to do his doctorate - in the biophysics department of the Humboldt University. Although he had never been concerned with virology or microbiology during his studies, his research now focussed on influenza viruses and their initial cell contact using super-resolution microscopes for his doctoral thesis. A far-reaching decision: “It was at this time that the foundation for my research today was laid.”

His post-doctoral work took Christian Sieben to Switzerland. With a scholarship and his own project in hand, he moved to the physics department of the EPFL in Lausanne. There, Sieben remained true to virus research, but also worked on projects with a technical focus: “For example, we developed a method allowing us to visualise large multi-protein complexes. To this end, we combined

concepts from electron microscopy with super-resolution imaging - I still do that today!”

## **BETWEEN SUPER-MICROSCOPE AND PILES OF FILES**

Christian Sieben joined the Helmholtz Centre for Infection Research (HZI) in Braunschweig in 2020 via the Helmholtz Association’s Young Investigator Group Programme: “I don’t fit into any pigeon-hole thematically, I’m neither a virologist nor a classical biophysicist. This made the independent fellowship ideal.” In terms of topic, Sieben picked up where he left off with his research from his doctoral days. While the issue then was how a virus enters the cell, it is now all about the functional aspects: How does the virus transmit signals into the cell? How does the cell interpret these signals? Does the cell already send signals to the immune system? These questions are to be answered at the level of molecular mechanisms, through microscopy and the quantitative analysis of the data it obtains. In the future, this basic research may lead to antiviral agents, as just one



◀ Speed dating at this year's retreat of the HZI Graduate School

# PEFIRE: HUMAN RESOURCES DEVELOPMENT FOR INFECTION RESEARCH

by Sabine Kirchhoff

New Work, VUCA\*, Artificial Intelligence, Big Data, Digital Transformation: These are buzzwords for a changing world of work. The working environment is constantly evolving and we are all invited on this journey

**A**iming to remain fit for the future so that we can master the ever-changing conditions with ease and joy. In this endeavour, we in the (PE) Department of human resources development at the HZI aim to support all employees even better in the future and take them along on this journey. However, we can only achieve this lofty goal if we are all in constant exchange and communicate our needs at an early stage. Let's embark on this journey together.

At present, our high-spirited PE team consists of seven motivated people. The tasks of human resources development are manifold, but as a whole they form a service-oriented package. In addition to planning and implementing measures for doctoral researchers in the HZI Graduate School, the tasks include offers for postdocs and supervisors and all other groups of professionals in engineering, science and administration. The provision of support during the implementation of individual human resources development measures is just one topic to be mentioned, as are the services of job advertising, application management via an online application portal and the digital recruitment of doctoral researchers. Guests, Master's and

Bachelor's students as well as compulsory interns can also gain access to the HZI via PE. We started our digital journey here a few years ago and are still a long way from reaching our destination. Arne Schönbrunn was successfully appointed to the Welcome Office. He is working tirelessly to support our foreign employees with the preparation of important documents for visa applications as early as the onboarding process. As the guesthouse in Wolfenbüttel has just closed its doors, we ask you to inform us of any short-term accommodation opportunities.

PE also keeps an eye on the mental well-being of the staff: The Family Office provides support with the challenge of combining work and family by offering digital childcare and holiday childcare. With the company disability management (BEM) and the first point of contact for mental health (MHFA), PE also supports employees in more difficult situations. The offer of an active break complements these measures.

One highlight in the summer of 2022 was the retreat of the HZI Graduate School. After two years of virtual exchange, the doctoral researchers were finally able to get to know each other in person. The event kicked off with speed dating followed by

scientific exchange during the symposium and poster session.

In the area of digital services, we were able to set up access to the Career Check platform for the HZI as part of a cooperation agreement with the German Cancer Research Center (DKFZ) to support young scientists. In addition, all HZI employees have access to the „HZI Mystery Coffee“ online platform, which allows them to get to know each other better even across the sites. In addition, various e-learning formats have been and are being tested. For example, since mid-August all employees have been given access to the Bookboon platform for two months in recognition of the work they have done.

**We look forward to questions, suggestions and requests from throughout the HZI.**

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## MORE INFORMATION:

### Career Check platform:

<https://careercheck.dkfz.de/>

### HZI Chat:

<https://helmholtz-hzi.mysterycoffee.com/>

*\*Volatility, Uncertainty, Complexity and Ambiguity (description of a specific economic situation)*

# NEWS

## FIVE YEARS OF HIRI



In 2017, the world's first institution of its kind combining research on ribonucleic acids (RNA) with infection biology was founded in Würzburg: the Helmholtz Institute for RNA-based Infection Research (HIRI). Since then, the site of the HZI in cooperation with the Julius-Maximilians-Universität Würzburg (JMU) has gained a global reputation. This is reflected in awards and research successes: In 2017, director **Prof Jörg Vogel** (above) received the Gottfried Wilhelm Leibniz Prize. In addition, four of eight group leaders have been given grants from the ERC (European Research Council). Furthermore, the HIRI has published numerous papers, including some in the world's best journals such as *Cell*, *Nature*, and *Science*.



To mark its fifth anniversary, the HIRI invited guests from science, politics, ministries, and authorities to the Würzburg Residence in May 2022. Among the guests congratulating the institute were **Ilse Aigner**, President of the Bavarian State Parliament (3rd from left), Helmholtz President **Otmar D. Wiestler**, HZI Director **Dirk Heinz** (left), and JMU President **Paul Pauli** (2nd from left). "Since the institute was founded, we have secured a place at the top of the world in our field of research. We want to expand this position and are focusing on future fields of basic research and its translation: first and foremost, personalised medicine, but also programmable antibiotics," Vogel said. (lum)

## SORMAS FOUNDATION ESTABLISHED



**Dr Pilar Hernández** and **Jan Böhme** have taken over the management of the newly established SORMAS Foundation. The pandemic management system SORMAS was developed as open source software by the HZI Department of Epidemiology under the leadership of Prof Gérard Krause. It has already been in use in Africa since 2014/2015 and was expanded to countries in Europe and the Asia-Pacific region in the context of the SARS-CoV-2 pandemic. SORMAS is currently designed for more than 40 diseases. The SORMAS Foundation has now been established to better support authorities and public health professionals worldwide in their work with SORMAS and other digital solutions for the early detection and management of epidemics. The non-profit foundation is based in Braunschweig. Its mission is the sustainable international promotion of public health, especially in the field of prevention and control of infectious diseases, cooperative development work as well as science and research for the benefit of the general public. To this end, it develops and implements digital systems for the early detection and containment of epidemics in local and international contexts.

## 25 MILLION EURO FOR RESEARCH TRANSFER

The State of Lower Saxony bundles top biomedical research in the new "Institute for Biomedical Translation" (IBT) and provides a budget of 25 million euro for the new biomedical network for the years 2022 to 2026 via the "Niedersächsisches Vorab" initiative of the Volkswagen Foundation. The aim of the IBT is to accelerate the transfer of biomedical innovations. Although the Hannover-Braunschweig-Göttingen-Wolfsburg Metropolitan Region is one of Germany's leading locations for biomedical research, the knowledge gained in the three clinically highly relevant areas of infection medicine, organ repair or replacement and neuroscience still finds its way into medical application too rarely or too slowly. In addition to the HZI, the founding institutions of the IBT are the Hannover Medical School and the University Medical Center Göttingen. (afi)

## SCHEDULE

### October 2022 - February 2023:

RNA seminar, focus on RNA-based research and technologies, structure and function of RNA in eukaryotic, prokaryotic and viral systems;

*Tuesdays, HIRI*

### 24-28 October:

Class „RNA Biology“;

*HIRI*

### 23 November:

Foundation stone laid for the building of the Centre for Individualised Infection Medicine (CiIM);

*Hannover, next to TWINCORE*