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EINBLICKE 63



Medicine in Focus:
**Teaching and Researching
on a European Level**

[Anzeige]

Editorial

Dear Readers,

With its vote of approval in 2010, the German Council of Science and Humanities, Germany's top advisory body on science policy, paved the way for a unique project: the medical school at the University of Oldenburg. Two years later the Faculty VI School of Medicine and Health Sciences was founded – the first new medical faculty to be established in Germany in twenty years. A concept first proposed by the University's founding committee in 1971 had thus finally become a reality.

Over the last six years the School of Medicine has grown and thrived, thanks in no small part to unparalleled planning and financial support from the city of Oldenburg and the entire region. One main objective has already been achieved – the establishment of a first-class medical training programme. With its transnational structure the European Medical School

Oldenburg-Groningen (EMS) is one of a kind in Europe.

Oldenburg's School of Medicine is also well on the way to achieving a second major objective – that of extending its research across borders and disciplines. You can find out more about its progress in this issue.

In an interview the Dean Hans Gerd Nothwang and Dean of Academic Affairs Klaus P. Kohse provide a comprehensive overview. We also introduce you to anatomist Anja Bräuer. She wants to gain a better understanding of how the brain works so that for example diseases like Alzheimer's can be diagnosed at an earlier stage. We take a look at the work of urologists Friedhelm Wawroschek and Alexander Winter at the Klinikum Oldenburg, where they are conducting successful research in the field of prostate cancer.

And from experts Lena Ansmann and Alexander Friedrich we learn about the activities of healthcare researchers in Oldenburg and Groningen.

Alongside the medical focus this issue also offers answers to other socially and scientifically relevant questions – such as how plant cultivation can be socially sustainable, how science is portrayed in contemporary literature, what trace elements can tell us about the oceans, why almost a third of students in Germany are dropping out of college, and what influence the philosophers Theodor Adorno and Jürgen Habermas had on the 1968 movement.

We wish you a most enjoyable read!

Yours,
the EINBLICKE editors.



List of Contents



Stefanie Sievers-Glotzbach is researching seeds as a common good



Anglicist Anton Kirchhofer is exploring how science is depicted in literature

3	EDITORIAL
7	IN NUMBERS What's the Buzz? Protecting bees: A cross-border project with schoolchildren
8	PORTRAIT Seeds for the Future Ecologist Stefanie Sievers-Glotzbach is researching a commons-based approach in agriculture
10	RESEARCH UPDATE
14	BACKGROUND Stories about Science Anton Kirchhofer is investigating how scientific topics are dealt with in literature

Main Topic

16	INTERVIEW Space for Research and Teaching Oldenburg's School of Medicine is setting new standards in medical education, and also making its mark in medical research. An interview with Dean Hans Gerd Nothwang and Dean of Academic Affairs Klaus P. Kohse
20	PORTRAIT Unpicking the Brain Anja Bräuer is examining the processes that lead to the formation of complex structures of the brain. Her research could also shed light on diseases like Alzheimer's
24	BACKGROUND Expanding the Horizon The research of urologists Friedhelm Wawroschek and Alexander Winter on improved diagnostic procedures for lymph node surgery is attracting international attention



Oldenburg's young School of Medicine:
an overview



What trace metals can tell us
about the sea

- 27 **REPORTAGE**
Well-Organized Healthcare
 The success of medical procedures rests on more than doctors' skills. For Lena Ansmann and Alexander Friedrich organizational aspects play a critical role

- 32 **IN PICTURES**
Research: Learning by Doing
 Correct methodology, patience and rigour: young marine researchers learn how to work meticulously in the field

- 36 **BACKGROUND**
Real University Life
 Why are so many students dropping out of college? Michael Feldhaus and Karsten Speck taking an innovative approach to find answers

- 39 **GUEST ARTICLE**
For and Against Protest
 Stefan Müller-Doohm on the myth of 1968 and how Adorno and Habermas influenced the student movement

- 42 **PORTRAIT**
The Essence of the Oceans
 Katharina Pahnke-May uses trace elements to coax secrets out of the sea

- 45 **UGO NEWS**

- 46 **NEW APPOINTMENTS**

- 52 **DOCTORATES**

- 55 **HABILITATIONS / IMPRINT**

What's the Buzz?

Schoolchildren as bee researchers. Their task: to observe the nest and surrounding area. How many bees fly in and out? Do they bring pollen into the nest? Which plants grow nearby? As "citizen scientists" they will supply data for B-R(H)APSODIE, a German-Dutch research project in which the University of Oldenburg is participating under the aegis of its Botanical Garden. "Our goal is to boost cross-border cooperation on bee initiatives and raise public awareness of the precarious situation of these insects," explains Prof. Dr. Dirk Albach, director of the Botanical Garden.

The concept of citizen scientists has been around for some time: until well into the nineteenth century research was often done by amateurs – including famous ones such as Charles Darwin and Gregor Mendel. What these amateur researchers all have in common is their enthusiasm and interest in nature. Today the participation of interested citizens plays a key role above all for biodiversity research, stresses Albach, who is an expert in this area. "Studying the distribution of different species requires the kind of large-scale observation that individual scientists cannot provide." Thanks to digital technologies people all over the world can now document their field observations and make them accessible – thus creating a gigantic stock of data.

1.450

bumblebees
... were distributed by
researchers from the
University of Oldenburg
and a Dutch university
among 29 schools
located in the
Dutch-German
border region



Portrait

Seeds for the Future

Stefanie Sievers-Glotzbach
researches how commons-based
rights on seeds and plant varieties can
make plant cultivation more socially
and ecologically sustainable – and
help to future-proof agriculture



Even in school Stefanie Sievers-Glotzbach was already interested in scientific and social issues. As a student she became involved in a food cooperative and other volunteer groups. Her personal interest soon turned into a scientific one. After studying Environmental Sciences in Lüneburg she wrote her PhD on how to use natural resources to improve both global justice and intergenerational justice. But in the long run the young scientist found the research approach too theoretical; she wanted to get out of the ivory tower. In 2012, while still writing her doctorate, she was offered an exciting opportunity in the Oldenburg working group Ecological Economics. Here, she worked alongside natural scientists while coordinating a master's programme in sustainability and supervising a number of seminars.

A few years later she responded to a call for proposals from the Federal Ministry of Education and Research that corresponded with her desire to make a difference in society through research. Her application was successful. At the end of 2016 the 35-year-old and her junior research group "Right Seeds" began investigating the question of whether commons-based rights on seeds and plant varieties can inspire ecological and social change in plant production. The junior professorship for "Economy of the Commons" which she has held ever since is unique in Germany. "Commons research touches on many disciplines, from environmental economics to political science. We are trying to bring them all together," says Prof. Dr. Stefanie Sievers-Glotzbach.

What constitutes the commons and how they should be defined is a much-discussed topic. The term was originally used to refer to scarce natural resources such as pastureland or fish stocks and the rules drawn up for their collective use. "Until the start of the twentieth century seeds, too, were kept by farmers as a common

good, swapped and developed further on the fields," Sievers-Glotzbach explains. Nowadays plant cultivation is largely a commercial system based on biotechnological methods, non-reproducible seeds and patenting, she says. As a result the diversity of cultivated crops is diminishing, farmers become dependent on seed companies and there are very few species adapted to adverse growing conditions and organic farming.

Improving the resilience of agricultural systems

"In reaction to these developments a growing number of initiatives have been launched that return to the commons approach," Sievers-Glotzbach explains. This means that all involved share their knowledge with one another, establish a set of common rules on seed use and forgo protectionism of their own varieties. The participating actors are organised into associations and networks, and there are also food retailers who are interested in the issue, and of course NGOs and advocacy groups. This is where the RightSeeds scientists come in, connecting ecological, political, economic and ethical analyses and working together with practice partners – including a network in the Philippines. The international exchange that takes place here – also with fellow researchers – is something Sievers-Glotzbach values greatly.

She herself is primarily responsible for the conceptual framework of the project. In her research she examines the resilience of agricultural systems – how resistant they are to problems such as climate change, disease or price changes. Sievers-Glotzbach is working on the assumption that commons-based plant breeding has an advantage over private enterprises: "Breeders and seed producers work

together more closely and also include farmers in the process. The plant varieties are primarily cultivated in their natural environment." As a result, the actors are more flexible and independent and the plants are better adapted and therefore more resistant. Since farmers can cut down on the use of plant protection products or fertilizer, this approach is particularly attractive for organic farming.

The second question that Sievers-Glotzbach is looking into is whether these initiatives can promote a wider shift towards sustainability that encompasses society as a whole. "On the one hand I want to find out whether they have a transformative character," she says. This is the case when actors question societal paradigms by deciding not to follow the imperative of economic growth, for example, or develop new varieties in the field instead of in the laboratory, she explains. "We are also investigating the concrete transformative impact. For this we look at how the initiatives influence political processes," the expert says, pointing out that there are a number of NGOs that are campaigning for EU seed regulations to be changed in order to facilitate registration procedures for organic varieties. In the EGON project, funded by the Volkswagen Foundation's "Niedersächsisches Vorab" research initiative, Sievers-Glotzbach is working on similar issues. Together with colleagues from various working groups she is researching the development of organically grown fruit varieties in commons-based initiatives.

When she has the time the researcher actively supports projects like book-swapping cupboards or food sharing. In Oldenburg, she says, it's easy to shop sustainably: "We have boxes of vegetables delivered by the organic shop for instance," she explains. But there's no point being too strict about this, she adds. "I'm not always entirely consistent either," she admits. (nc)

Renewed funding for “Hearing4all” Excellence Cluster

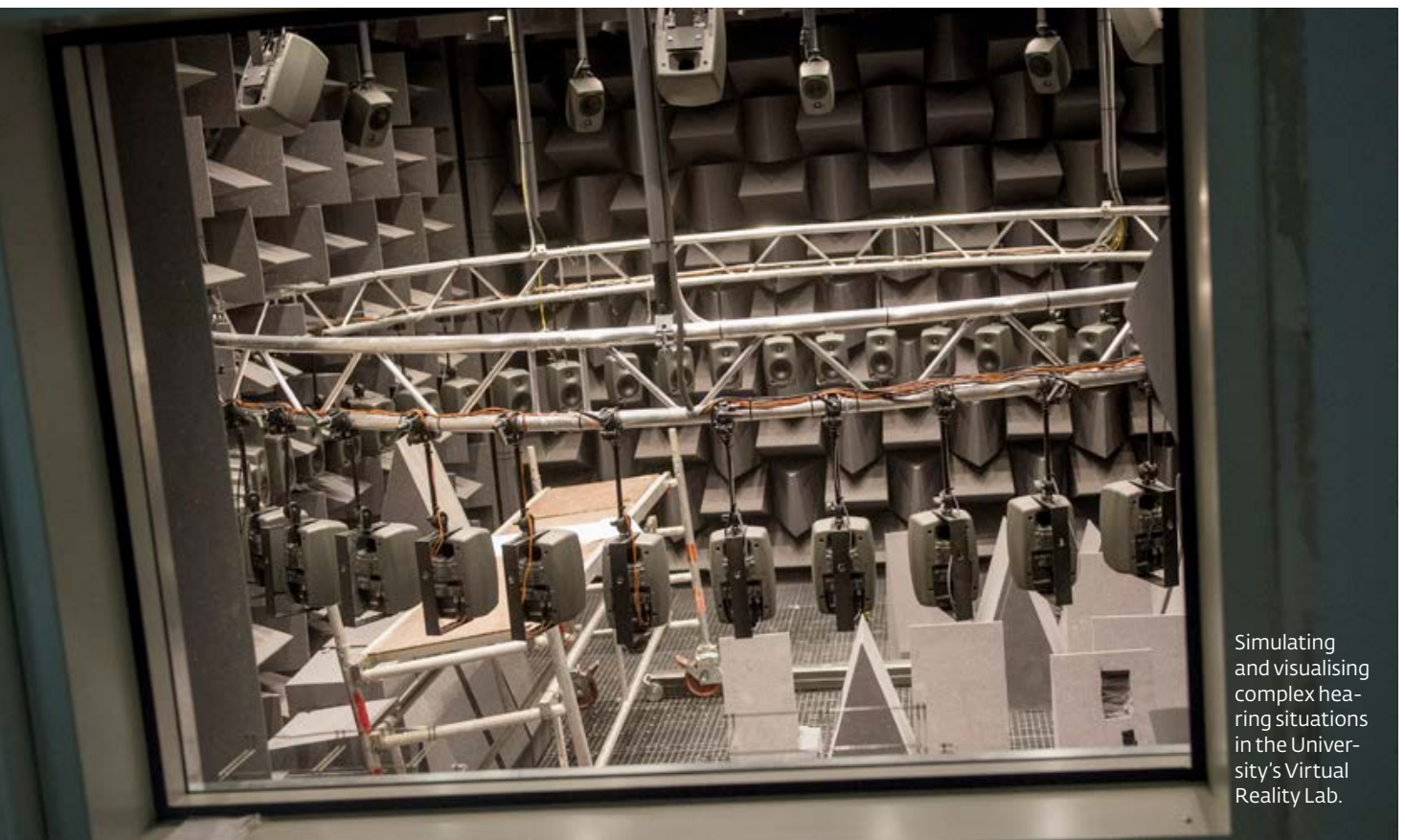
The University of Oldenburg has been successful with its application for the Excellence Strategy funding line: the Cluster of Excellence “Hearing4all: Medicine, Basic Research and Engineering Solutions for Personalized Hearing Care” has been awarded funding for the next seven years. Basing their proposal on the results of their research so far, the Oldenburg scientists, together with hearing researchers from Hannover, applied for 55 million euros to finance the project. Across Germany a total of 57 Clusters of Excellence have been awarded funding through the Excellence Strategy programme. Hearing loss is the most frequent chronic ailment to affect the human senses. The goal of the team of researchers led by Oldenburg physicist and physician Prof. Dr. Dr. Birger Kollmeier is to develop solutions tailored to the requirements of individual patients – from diagnostic procedures to hearing aid technology and other treatment options. Over the past few

years the scientists working on the project have developed key building blocks for such solutions, for example multilingual speech tests and implants for the section of the midbrain which processes acoustic signals.

In future, the team’s activities will be divided into four lines of research reflecting the chain of development from basic research to hearing technology as well as the degree of hearing loss. In the first line of research the scientists will use neuroscientific methods to investigate the complex interaction between hearing, perception and processing in the brain. The second research line aims to construct a multilingual virtual hearing clinic. In the third, the researchers will develop personalised diagnosis and treatment procedures for patients with moderate to severe hearing loss and complete deafness. Based on the findings of these activities, the fourth will create a brand new system technology for the hearing aids of the future. “Hearing4all” is one of

the world’s leading centres in medical technology, hearing research, audiology, and medical diagnostics and therapy. The team comprises twenty-five neuroscientists, physicians, psychologists, linguists, physicists and engineers from the universities of Oldenburg and Hannover and also Hannover Medical School. The Jade University of Applied Sciences, HörTech GmbH, the Hörzentrum research institutes in Oldenburg and Hannover, two Fraunhofer institutes and the Hanse-Wissenschaftskolleg (HWK) are also partners in the project.

Prof. Dr. Thorsten Dittmar und Prof. Dr. Helmut Hillebrand of Oldenburg University’s Institute for Chemistry and Biology of the Marine Environment will also receive funding within the framework of the Excellence Strategy. The two scientists were co-applicants for the Excellence Cluster “The Ocean Floor: Earth’s Uncharted Interface”, which is based at the University of Bremen.



Simulating and visualising complex hearing situations in the University’s Virtual Reality Lab.

Versatile bacteria

The Collaborative Research Centre “Roseobacter” will receive 9.7 million euros from the German Research Foundation (DFG) for its final funding phase ending in 2021. A team of scientists from Oldenburg, Braunschweig, Göttingen and Bonn led by microbiologist Prof. Dr. Meinhard Simon of the Institute for Chemistry and Biology of the Marine Environment is conducting research on one of the most important groups of marine microorganisms – the roseobacter bacteria. The team is studying

the evolutionary, genetic, physiological, and adaptive traits of the bacteria. The results from five expeditions to the Atlantic and Pacific have supplied information on the geographic distribution of the different groups of bacteria and the differences in their metabolism and ecology. On the basis of this data and using mathematical models the researchers want to analyse the role the bacteria play in the global carbon cycle and the impact climate change is having on microbe communities.

Better access to the world of work

Most youths with mental disabilities and limited communication skills move on to sheltered workshops for people with disabilities or day care centres once they finish school. In many cases they are not asked what kind of job they would like to have. The research project “Inclusion in the Transition Process” (Teilhabe im Transitionsprozess – TiT) run by the University of Oldenburg and 13 other partner institutions hopes to change this: a team led by Prof. Dr. Andrea Erdélyi and Prof. Dr. Ingeborg Thümmel of the Department of Special Needs Education and Rehabilitation aims among other things to develop communication formats through which these youths will

be able to express their needs in this area. The Federal Ministry of Labour and Social Affairs (BMAS) is providing approximately 450,000 euros in funding for the project over three years. To gather material for their study the research team is accompanying pupils and their teachers over a period of three years. As part of the project the youths complete internships in the occupational field of their choice. In a second project led by Oldenburg-based software company Targis, special needs teachers from the University are working to improve the chances of youths with mental disabilities finding work on the regular job market – for example using assistive technologies.

Stable electricity grids

How does the electricity grid have to change in the course of the energy transition? A group of computer scientists from the University of Oldenburg are investigating this question in a German Research Foundation (DFG) priority programme. Led by Prof. Dr. Sebastian Lehnhoff of the Energy Informatics division, the team is involved in three of the projects in the interdisciplinary programme, with each of these projects receiving approximately 300,000 euros in funding. Because more and more electricity

comes from renewable sources, power generation is fluctuating more than it used to. Lehnhoff and his colleagues are researching how to keep the grid stable despite these fluctuations. One of the solutions they are studying is local control that acts independently and therefore makes the system more robust. In addition, the Oldenburg researchers are analysing the risk of large-scale power failures and developing strategies for bringing the grid back into operation in a coordinated manner after such failures.

The energy transition as a social process

What happens in a social perspective if a region undergoes fundamental change – if for example it commits itself to the energy transition to renewable energies? How do the involved parties negotiate with each other, and what do they learn in the process? These and other questions are the main focus of the new junior research group “Regional Energy Transition: The Social Processes of Negotiating, Norming and Learning in the Wind Energy Sector”, which is led by Oldenburg sociologist Prof. Dr. Jannika Mattes. The DFG is financing the project with more than 1.2 million euros over five years within the framework of the Emmy Noether Programme. The project’s inclusion in this prestigious programme has enabled Mattes to employ three co-researchers. The team is based at the University’s Institute of Social Sciences and is developing a theoretical concept that aims to advance understanding of the energy transition. In addition, the scientists are analysing six regions in Germany and investigate how their activities in the wind energy sector are evolving. The analysis places special emphasis on the interaction between the actors from different societal fields: science, economics, politics and civil society. On the basis of interviews with experts, the researchers want to study how these actors negotiate agreements with each other on decisive processes, how their understanding of their role develops in the process, and what learning processes this involves. The research will also take account of citizens affected by the transition – and indeed everyone whose behaviour affects the process of change. The scientists plan to present their findings to those who play a key role in designing the energy transition and thus make a valuable contribution to its realisation. The results could for example be used to ensure that political instruments are better adapted to the main actors and the specific characteristics of a region.

New Collaborative Research Centre for hearing acoustics

Background noise like clattering crockery or a ringing phone make it difficult for people with impaired hearing to follow a conversation – even if they possess modern hearing aids. A new Collaborative Research Centre (CRC) at the University of Oldenburg has the mission to create the basis for improved hearing aids and assistive listening systems over the next four years. The German Research Foundation (DFG) will provide just under nine million euros in funding for the CRC titled “Hearing Acoustics: Perceptive Principles, Algorithms and Applications (HAPPAA)” and led by psychoacoustics expert Prof. Dr. Volker Hohmann. At the centre of the CRC’s activities is

the interaction between people with impaired hearing and their acoustic environment. Up to now hearing acoustics had not taken into account that people react to voices and sounds by turning their heads – with the result that many hearing aids don’t work as well in real-life situations as they do in the laboratory.

Hohmann and his colleagues plan to develop an intelligent earpiece that offers high sound quality and at the same time reduces noise interference. In the long term the CRC’s findings are also to be used for other applications, for example in entertainment electronics, for speech recognition or for man-machine communication.

Understanding populist culture

What role is music playing in the rise of populist ideologies in Europe? An international team of researchers led by Oldenburg University music education expert Prof. Dr. Mario Dunkel is investigating this question over a three-year period. The Volkswagen Foundation is providing just under a million euros in funding for the project. The researchers are studying commercially successful musicians and bands whose songs pick up on populist ideas and images. The researchers’ theory is that there is a connection between these musicians’ success and the spread of populist ideologies. To confirm its theory, the team is investigating the links between lyrics and music videos and musical parameters such as form, rhythm, melody and harmonics in music from different countries. They analyse how the songs are received by the public and examine the differences and similarities between them. They also aim to develop ideas for didactic methods that promote critical awareness vis-à-vis populist cultures.

Digitalisation and legal issues

How the legal system reacts to the advancing digitalisation is the main focus of the University’s new “Interdisciplinary Centre for the Rights of the Information Society (ZRI)”. The cross-faculty centre was established to carry out research and teaching and provide counselling on legal issues arising from the rapid development of modern information and communication technology. Intelligent or self-learning systems, for example for personalised marketing in online commerce, for energy efficiency in the smart home or an optimised personal mobility, pose new legal requirements in terms of data protection, IT security and consumer protection. The use of self-driving vehicles and robots raises new questions of liability, among others. Prof. Dr. Jürgen Taeger, a law professor, has been elected as director of the centre. Prof. Dr. Sebastian Lehnhoff, a computer scientist specialised in energy issues, and Prof. Dr. Rainer Röhrig, an expert on medical computer science, are also on the board of directors. Jurist Dr. Edgar Rose is in charge of managing the centre.

Islands of diversity

Food webs and biodiversity in landscapes that are subject to constant change are the focus of the new research group „DynaCom“ led by biodiversity expert Prof. Dr. Helmut Hillebrand of the Institute for Chemistry and Biology of the Marine Environment. The German Research Foundation (DFG) has approved three million euros in funding for the project for an initial period of three years. In addition to the Oldenburg scientists, researchers from the Senckenberg Institutes in Wilhelmshaven and Frankfurt, the universities of Göttingen and Münster, the German Centre for Integrative Biodiversity Research Halle-Jena-Leipzig and the Administration of the Lower Saxon Wadden Sea National Park are also participating in the project. At the centre of the project is the ecological theory of island biogeography, which analyses the interplay between immigration and extinction for all the species on an island using mathematical models. This is an important aspect for practical nature conservation because urban sprawl has created many island-like, isolated habitats. In order to assess how environmental changes like those resulting from climate change will affect ecosystems, researchers need to be able to predict not just how different species numbers will develop, but also which species will colonise island habitats and how they will interact with each other. To do this the team is now studying the typical traits and functions of different species and how these factors determine the role of individual organisms within an ecosystem. This trait-based approach makes it easier for scientists to generalise research findings and apply them to ecosystems across the globe. Observations and targeted experiments are to be carried out on 12 artificial islands which were built especially for this purpose in the Wadden Sea near Spiekeroog in 2014. The researchers will also use mathematical models and data gathered from studies of island ecosystems performed all over the world.



Millions of unsorted letters, records and documents from the time of the naval wars are stored in the British National Archives. Over the next two decades a team of researchers from Oldenburg will sort through them and make them accessible to the public.

The world in mailbags

A treasure trove of historical papers held by the National Archives in London was left virtually untouched over several centuries: the “Prize Papers” – a collection of more than 4,000 boxes and sacks full of letters, diaries, journals, ship cargo lists and other documents dating back to the Early Modern Period. Over the next 20 years an international team of researchers led by Oldenburg historian Prof. Dr. Dagmar Freist will view, catalogue and digitise this unique archive and make it accessible to the public. In autumn 2017 the project “Prize Papers. Analysis – Digitisation – Presentation” (“Prize Papers. Erschließung – Digitalisierung – Präsentation”) was incorporated into the Academies’ Programme under the sponsorship of the Göttingen Academy of Sciences and Humanities. The Academies’ Programme is jointly funded by German federal and state governments. A total of 9.7 million euros has

been earmarked for the project. Freist and other researchers first began examining the documents held at the National Archives in 2012. Until that point the papers had gone largely unnoticed. The incorporation of the project into the Academies’ Programme means that they can now be subject to systematic analysis.

The Prize Papers date back to the period of naval wars between 1664 and 1817 during which England, the Netherlands and other nations were locked in a battle for dominance of Europe and the world. During these wars, privateers captured more than 30,000 vessels and, in accordance with the laws of that time, confiscated not only the cargo, but also all the papers they found on board these ships because they had to be able to prove in court that the ship in question and its cargo belonged to the enemy. Once the trials of the High Court of Admiralty in London

had come to an end, all the evidence together with the court documents was stored in the Tower of London – and over time forgotten.

For the researchers this was a fortuitous occurrence because this unsorted collection of papers puts them in the unusual position of being able to explore an “unarchived archive”. It contains sources that under normal circumstances would never have been preserved for posterity: documents written by women, children or people who were barely able to write; scraps of paper with brief but important notes that would normally never have been kept because they would have seemed so trivial and irrelevant, and also letters, records and documents on highly important historiographic topics such as slavery. The scientists hope that the Prize Papers will provide new insights into the history of the Europeans and their responsibility in a globalising world.

Background

Stories about Science

Literary fiction can open up new perspectives on scientific research. The Anglicist Anton Kirchofer examines how novels are overriding stereotypes and prejudices and thus elucidating the role of science in society



Climate science, genetics, quantum mechanics – when Prof. Dr. Anton Kirchhofer, an expert in English literature, started engaging with these kinds of research fields some years ago it was like “leaping into cold water”. In the meantime, however, he has come to see his work on science-related novels as “highly rewarding”. The 55-year-old is one of the directors in the Fiction Meets Science programme. Together with literary and social science scholars from Oldenburg, Bremen and Hamburg, as well as international partners, Kirchhofer researches how novels address scientific topics and reflect the lives of scientists and their impacts on society – at a time when scientific knowledge is playing an ever-greater role in society. “The novels offer the public an entirely new perspective on the sciences,” he says. They show, for example, what a researcher’s everyday life in the lab looks like, or how gender might play a role in the way science gets done.

In a project funded by the Volkswagen Foundation the Fiction Meets Science scholars work together with novelists and scientists, discussing individual novels in workshops from their different disciplinary perspectives. For example, the unpublished manuscript of a science novel by British writer Pippa Goldschmidt, who recently spent nine months as writer-in-residence at the Hanse-Wissenschaftskolleg (Institute for Advanced Study) in Delmenhorst. “In this way we want to create a real dialogue between natural scientists, authors, literary scholars and social scientists,” explains Kirchhofer. It is precisely this interrelationship between academic research and practical work with the novels that makes this project so unique, Goldschmidt adds.

This desire for a dialogue is by no means a given. In the 1990s, natural scientists, humanities scholars, and

social scientists argued bitterly about the extent to which “hard” scientific knowledge is socially constructed. Though these “science wars” are considered a thing of the past, Kirchhofer says the rift between the academic disciplines has not fully healed. On the other hand, the science novels written since that time have refused to join the inter-disciplinary wars. Instead they have overcome the differences creatively, the literary scholar says. It is this creativity in the novels that the researchers want to tap into.

“Research and doubt are two sides of the same coin.”

Since the start of the project in 2014, Kirchhofer and his colleagues have investigated dozens of contemporary Anglo-American science novels from various perspectives. They draw on a body of more than 250 books – and more are being added all the time. Kirchhofer’s analysis includes a study of the characters in the novels – for example how they are embedded in the structure of the novel, and the constellations within which they act. The literary scholars found few traces of mad scientists or Dr. No types hell-bent on world domination.

Instead, Kirchhofer explains, “what the novels all have in common is that they provide a realistic image that sets itself apart from the stereotypes.” The characters are often complex individuals, he says, with personal relationships and conflicts. For the literary scholar, this is a plus: “Readers are better able to identify with characters when they are depicted as believably human instead of just as clichés.” In particular, readers with a background in the sciences are able to identify with the books because they are written from perspectives

which are familiar to them, he adds.

The researchers were also able to identify typical characters for specific scientific disciplines, such as genetics, neuroscience or climate science. Stories about geneticists, for example, often feature scientists who want to solve personal or social problems with genetic discoveries. “But it all goes wrong in the end,” Kirchhofer says. The takeaway message, he says, is worth taking note of: “We must solve social problems with social means and not expect genetics to come to the rescue.”

Kirchhofer and his team have also studied how literary works are received by critics, including both classical literary critics and those who review novels for scientific journals such as “Nature”. It turns out that they all pose similar questions, such as whether or not the plot is plausible. “But,” the Anglicist explains, “the critics with a scientific background also want to know: Is our science portrayed accurately?” In addition they are sensitive to aspects of the novel that deal with the specifics of the scientific community, such as the degree to which investors are shown as determining the dominant research choices in particular disciplines, which theories are pitted against one another, or which results are inconsistent.

“These issues are highly pertinent for scientists,” Kirchhofer says. “But the public often knows nothing about them.” Unlike the communication that takes place within the scientific community – in scientific journals, for example, or during coffee breaks at conferences – where non-scientists are excluded, these novels provide a glimpse into “the black box”, the unknown world of science. And, he emphasises, this is where fictional stories can show something very important: “That science primarily produces questions and intermediate results rather than truths, and that research and doubt are two sides of the same coin.” (cb)

Space for Research and Teaching



Transnational, practical, interdisciplinary – the medical degree programme at the European Medical School Oldenburg-Groningen (EMS) is setting new standards. The new Medical School also has great potential in the field of medical research. Founded in 2012 and bolstered by the success of the Cluster of Excellence Hearing4all, a number of new professorships have been added in the last few years. In an interview Dean Hans Gerd Nothwang and Dean of Academic Affairs Klaus P. Kohse talk about the progress made thus far and future developments in teaching and research

How far on is the Oldenburg School of Medicine today? How much progress has been made with its development?

Nothwang: The first students have now passed the second state examination, all at the first attempt and many of them with above average performances. This positive outcome was in evidence across all cohorts, as the Charité's nationwide comparison "Progress Test Medizin" shows. As regards the further development of the faculty, we have appointed thirteen new colleagues in the area of clinical practice and clinical theory, five in healthcare research and two in the natural sciences. By the end of 2019, we will establish as many as fourteen more professorships.

The faculty's original objective was to rethink and redesign medical education, adding a European dimension. Has this been achieved?

Kohse: We're certainly at too early a



Klaus P. Kohse (left) and Hans Gerd Nothwang: A curriculum with a European dimension is still one of its kind.

stage to draw conclusions; after all, the first cohort in our programme is only just completing its studies now. We can, however, say that we have created an innovative medical degree programme. Together with our colleagues in Groningen, we have established a cross-border curriculum in which students get to know both the German and the Dutch healthcare systems. This European dimension is so far unique.

As you said yourself, the Human Medicine programme in Oldenburg is seen as a pioneering model. What makes it so special?

Kohse: The main distinctive feature is the early interaction with patients. The very first course for medical students in Oldenburg is a so called “Patientenkolleg” in which they interact with real patients. Another special feature is of course the mandatory year of study at the internationally renowned University Medical Center Groningen. Outpa-

tient care also plays a major role in our training programme. From the outset, internships at one of the University’s more than 120 cooperating doctors’ offices are part of the programme.

“We have created an innovative medical degree programme.”

Klaus P. Kohse

The government of Lower Saxony is planning to considerably increase the number of students on the course: there’s talk of 200 instead of 40 per year. What challenges does this pose for a study programme that has been “small and select” until now?

Kohse: We plan to remain select – but that doesn’t mean we have to remain small. It doesn’t make economic sense either. One of the most urgent tasks will be to improve the amount of space

we have at the University. We’ll also need additional teaching capacities. **Nothwang:** And naturally we’ll need to expand our cooperation with Groningen. Our intermediate goal is to increase the number of students who complete part of their medical studies in the Netherlands to up to 80 per year.

The hope is that Oldenburg’s School of Medicine will improve medical care in the region – the familiar phrase here being the shortage of doctors in rural areas. Is this going to happen?

Kohse: In my view, the Oldenburg School of Medicine can make an important contribution here – although naturally the overall quality of the location is the main criterion for keeping young doctors in the region. With our programme, students get a good insight into outpatient care at a very early stage of their career in the coope-



Prof. Dr. Hans Gerd Nothwang

Hans Gerd Nothwang has been Professor of Neurogenetics at the University since 2007. He built up the Neurogenetics research group and from 2014 to 2016 he was the founding director of the Department of Neuroscience. In 2018 Nothwang was appointed Dean of the School of Medicine after having played a key role in its development as a founding member, member of the Faculty Council, Vice Dean for Groningen Affairs and Structure and as Acting Dean.

rating doctors' offices, and also into general medical practice in a rural area. This will no doubt prompt a number of them to remain in the region as general practitioners.

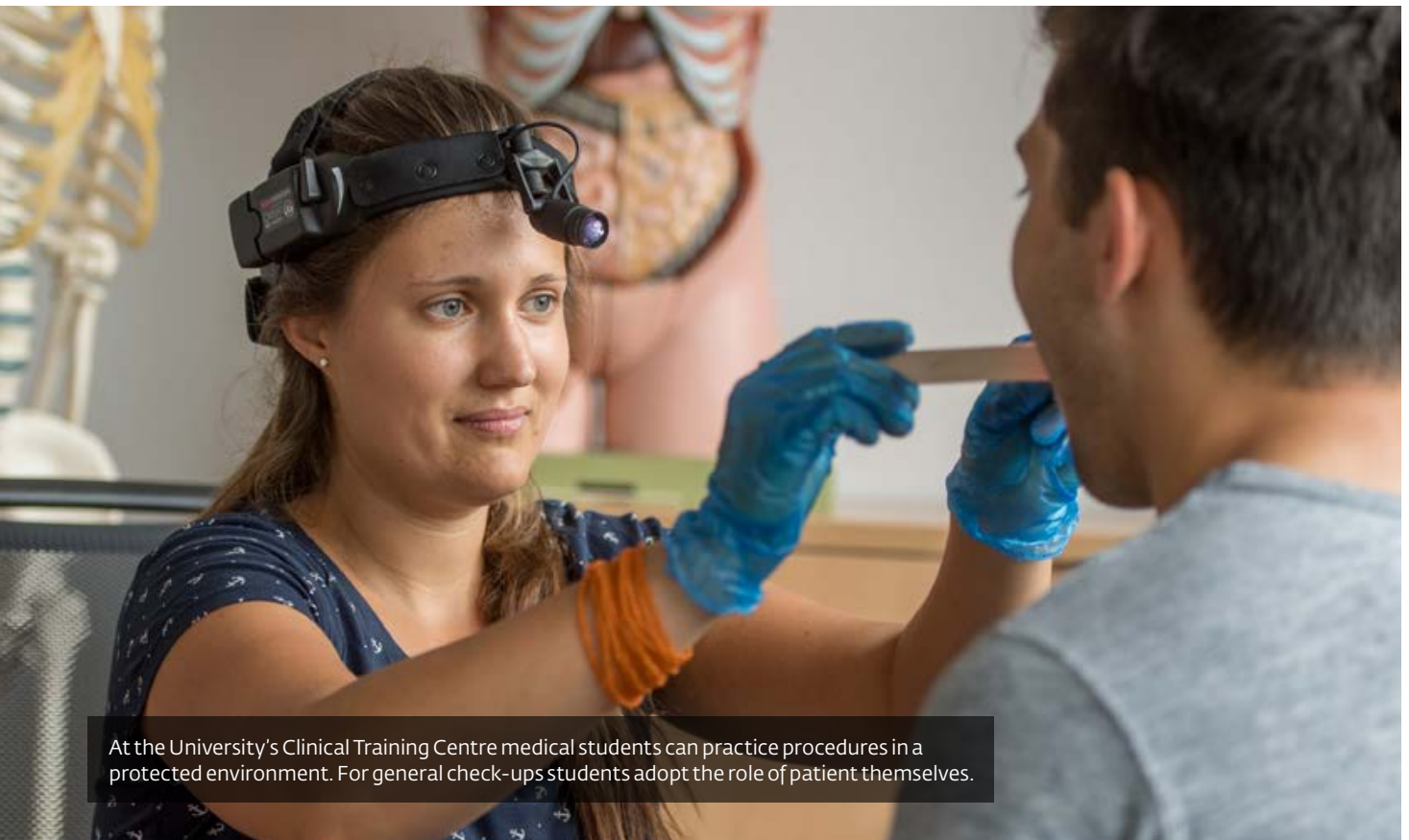
The German Council of Science and Humanities' decision to establish a medical school in Oldenburg was also based on the prospect of building on the excellent research conducted here. What is the situation in these areas?

Nothwang: At the time the neurosensory science research, with its close ties to medicine, was a strong argument for setting up a medical faculty here. In this area we had already proven that top-level research in the field of

medicine was being conducted in Oldenburg. And this research excellence continues: in 2018 our Cluster of Excellence Hearing4all was once again approved for funding; the Cluster has already developed key building blocks for improving diagnostics, hearing systems and assistive technologies. Our DFG Research Training Group "Molecular Basis of Sensory Biology" has also entered its second funding phase after receiving an outstanding rating. A new addition and another major success is the Collaborative Research Centre "Hearing Acoustics", which started its activities in July, is to receive just under nine million euros in funding and offers research perspectives for the next 12 years.

Unlike the neurosensory science and hearing research, the health services research has had to start from scratch. What are the focus points in this area?

Nothwang: Our health services research is making very good progress, mostly thanks to the newly appointed colleagues. We now have Germany's sole Professorship of Organizational Health Services Research and we will continue to systematically develop the spectrum of professorships in this area in the future. Key topics will be the health and care of older people, emergency and intensive care medicine, prevention, rehabilitation and after-care. We also want to make the most of the opportunities offered by



At the University's Clinical Training Centre medical students can practice procedures in a protected environment. For general check-ups students adopt the role of patient themselves.

Prof. Dr. Dr. Klaus P. Kohse

Klaus P. Kohse has been the Director of the Institute for Laboratory Diagnostics and Microbiology at the Klinikum Oldenburg since 1992 and Professor of Clinical Chemistry and Pathochemistry at the medical faculty since 2013. Since 2016 Kohse, who studied medicine and chemistry, has also held the post of Dean of Academic Affairs. He has made a valuable contribution to the advancement of the European Medical School for several years and continues to do so in the teaching of biochemistry and laboratory medicine.



our close cooperation with our Dutch partners – and in particular with the newly founded Aletta Jacobs School of Public Health in Groningen. This gives us the unique possibility to compare two world-leading healthcare systems which are nonetheless very different in key structural aspects, and to gain important insights from this analysis.

The clinical research activities are also being expanded. What are the focuses here?

Nothwang: We have defined four areas with huge potential for future research. One is the immunology of chronic diseases – we want to study the biological and biochemical foundations of the body’s defence mechanisms against the pathogens that lead to chronic conditions. A second area of potential is oncology, with an emphasis on innovative diagnostics and therapy. Several of our university clinics are highly specialized in cancer medicine. In the third focus area we are studying rare diseases; this includes genetically determined neurosensory disorders such as blindness or deafness, and also certain allergies. The fourth area concentrates on IT-based mobile health applications that for example aim to provide access to screening, self-diagnosis or recommendations for diagnostic and therapeutic measures via smartphones.

The University of Oldenburg has a tradition of implementing interdisciplinarity. What potential do you see for this at the School of Medicine?

Nothwang: The potential is enormous. An excellent interlocking of clinical and basic research is currently developing within our faculty. This will enable

us to increasingly pursue translational research strategies in the future, or in other words to efficiently translate basic research findings into potential clinical applications – taking them from the lab to the patient’s bed, so to speak. Individual fields such as internal medicine or neurology have long since ceased to be regarded in isolation. The keyword here is integrative medicine. The treatment of complex diseases with multiple symptoms and various underlying pathologies requires an interdisciplinary approach.

“Oldenburg’s School of Medicine is growing and needs more space for research and teaching.”

Hans Gerd Nothwang

Early career scientists are also essential for a faculty. In Oldenburg they are already participating in OLTECH – the Graduate School Science, Medicine and Technology. Are there also cross-border initiatives here?

Nothwang: Yes, in 2018 together with Groningen we set up the Joint Graduate Research Training Group “Translational Research: From Pathological Mechanisms to Therapy”. In seven projects in total, one faculty member from Oldenburg and another one from Groningen jointly supervise a PhD candidate. These candidates do research at both locations and in the end earn a “joint PhD degree”. This gives our early career scientists excellent opportunities to benefit from the complementary courses of a large medical school.

Kohse: And besides that, the study

programme itself offers a fine basis for doctoral studies and research. We pursue a research-based teaching approach – our longitudinal research curriculum. Students learn right from the start how to conduct research independently and how to write scientific papers and take a critical approach to other publications. In the fifth year of their studies, they must write their own research paper, comparable with the Master’s thesis in Groningen.

What goals do you want to set for the future?

Nothwang: We need to continue the consolidation process. In addition to appointing new colleagues as professors, this primarily involves creating the necessary infrastructure. Oldenburg’s School of Medicine is growing and needs more space for research and teaching, and the corresponding equipment. As dean, I will also work to ensure that our faculty makes even more effective use of the unique potential offered by the interaction between medicine, health services research and the natural sciences. I also consider it vital to give early career researchers the best possible support. And in the area of clinical practice, where patient care is naturally the main priority, we want to create more space for research and teaching.

Kohse: And naturally we will also further expand and develop our Human Medicine programme. We want to maintain the excellent reputation we have acquired with our curriculum in the last few years. Even when the number of students quadruples as envisaged over the next few years.

*Interview: Volker Sandmann,
Petra Wilts*

Unpicking the Brain

A female scientist with blonde hair, wearing a white lab coat, is smiling and looking towards the camera. She is holding a blue and white pipette in her right hand and a clear glass vial with a red cap in her left hand. The background shows a laboratory setting with shelves and other people working.

For anatomist Anja Bräuer the way brain cells grow and connect with each other is a source of endless fascination. With her research she aims not just to gain a better understanding of the fundamentals of brain development but also to find ways to improve the diagnosis and treatment of diseases like Alzheimer's

A ripple goes through the audience at the University's Audimax auditorium as the children thrust their hands in the air. Prof. Dr. Anja Bräuer has just finished enthusiastically explaining to at least 450 eight to twelve-year-olds how the brain is structured and how nerve cells connect with each other. Now the children are allowed to ask questions: What happens when you suffer a concussion? Which living beings have the largest brains? This Kids' University ("KinderUniversität") lecture was definitely a challenge, Bräuer notes afterwards. "I've never done anything with that many children," she laughs.

Bräuer loves a challenge. Since March 2017 the 48-year-old academic has led the Anatomy division at the University's School of Medicine and Health Sciences and is a member of the Directorate of the Human Medicine Department. She studied biotechnology and fulfilled her dream of a career in medical research early on, when she was a doctoral candidate at the Institute of Cell- and Neurobiology at the Medical School Charité in Berlin. As Junior Professor of Molecular Neurobiology she became the acting director of the university's anatomy chair in 2006. Today, Bräuer represents the entire spectrum of anatomy in her research and teaching. Building up her own team and putting new ideas into practice is what makes her work at the young medical faculty in Oldenburg particularly exciting, she says.

The main focus of her research is the brain – and the processes that give rise to its complex structures: "We still haven't understood how this organ develops," says Bräuer. Her goal is to understand which molecular mechanisms stimulate nerve cells to grow and differentiate, in other words, take on their subsequent form and function. How does a nerve fibre, an axon, find its way to exactly the right cell in the other half of the brain? Which molecules steer this process? How do functioning neuronal networks form? In her quest

for answers the neuroanatomist also wants to find out how nerves and brain tissue recover from injuries.

„We know that regeneration takes place in the brain and we want to study which molecules play a role here and how we can aid this process," she says. Bräuer and her team are interested in a broad spectrum of diseases, from dementia disorders and spinal cord injuries to rare diseases like Niemann-Pick Type C (NPC). There are only 500 to 700 known NPC cases in Germany. The disease is due to a single genetic defect, a so-called point mutation. This defect causes cholesterol and other lipids, also known as fatty acids, to build up in the body's cells and above all in certain regions of the brain. "People with this disease have dysfunctions in all their organs and die young," Bräuer explains.

How do nerve cells develop their form and function?

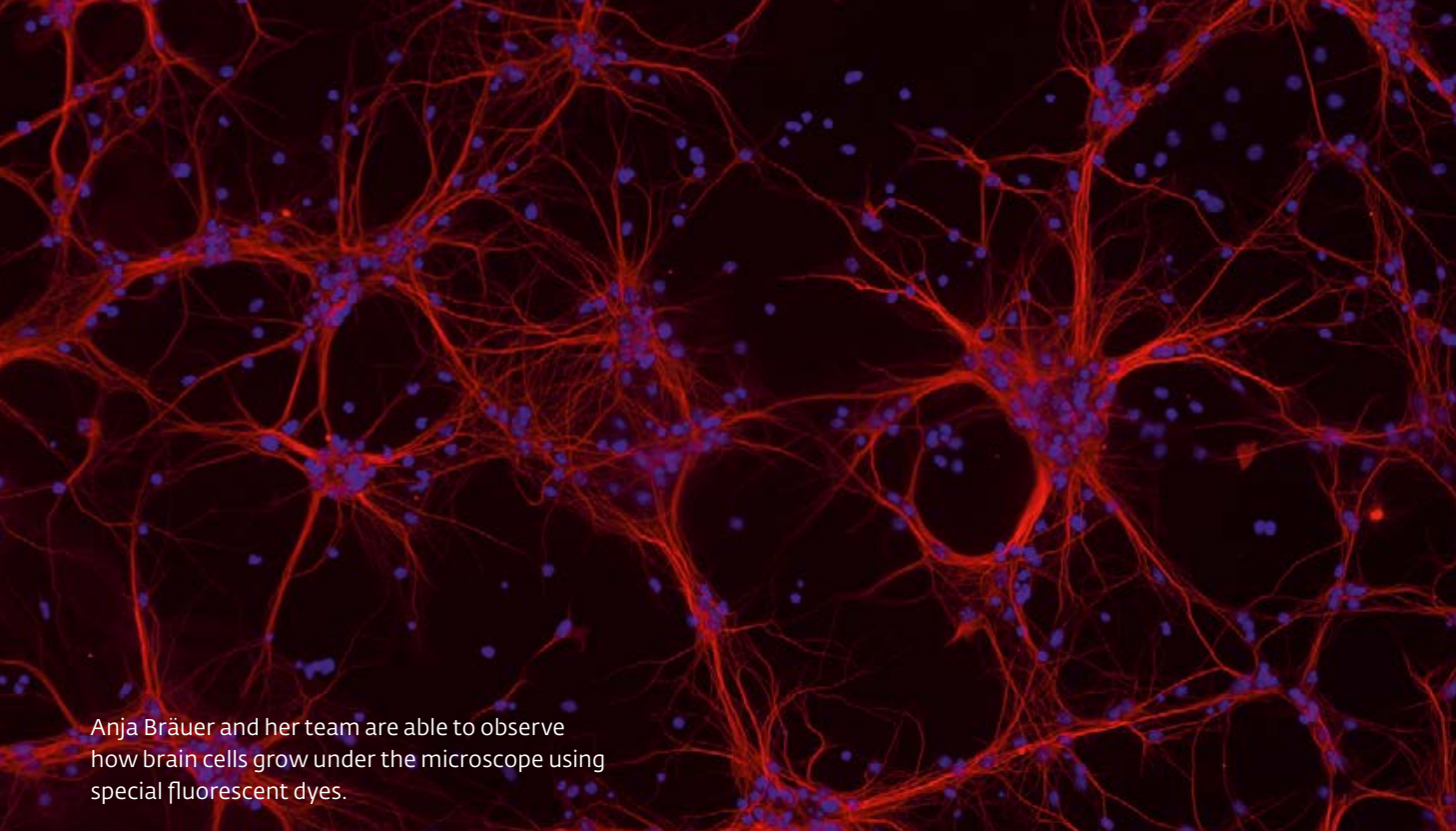
By gaining a better understanding of how NPC develops and how it can be treated Bräuer and her team hope to acquire fundamental insights into other neurodegenerative diseases. Because as with NPC, in Alzheimer's too, for example, cholesterol accumulates inside cells in vesicles called lysosomes. With Alzheimer's, it is not just a single gene that is responsible for this symptom. Yet the consequences are similar: instead of helping neurons to grow and regenerate the cholesterol in the cells eventually causes them to burst. "We want to find out how a cell regulates its lipid content in order to function properly – and in this way discover new therapy options," Bräuer explains.

For a long time scientists were unaware of the key role lipids play in nerve growth. Fatty acids such as phospholipids are a major component of all cell membranes – the layers surrounding the cell and its subunits. They have a barrier function here. In 1996, however, scientists discovered that lipids

also have another important function: they transmit messages between cells. Phospholipids bind to certain molecules called, for example, LPA receptors which are attached to the outside of a cell and transmit signals to the inside. "Ever since then we have known that these molecules regulate and influence cellular processes," Bräuer says. This is one of the reasons why research is now focussing on the role of lipids in nerve cell growth and diseases of the brain.

As is often the case in science, it was quite by chance that Bräuer came upon this topic which she has been researching for several years. In 2003 she and a group of colleagues at the Charité found through experiments on rats a group of molecules that belong to the phosphatase groups of enzymes. The researchers were able to demonstrate that these proteins can modify certain phospholipids in brain tissue. These lipids, in turn, inhibited nerve fibre growth. Bräuer and her colleagues were also able to identify a previously unknown gene that contains the blueprint for one of the proteins. They called it the "plasticity related gene" (PRG) because it is mainly active in the phase during which the brain forms and matures, or when brain tissue is injured. With this discovery the scientists had found important information about the influence of lipids and the interactions between the various molecules.

„We had discovered something entirely new that had not even occurred to anyone before then," says Bräuer. "We did know there are attracting and repelling factors that regulate nerve growth." But they hadn't been looking for lipids, Bräuer explains – so this opened up a whole new field of research. One problem the scientists encountered at the time was that very few laboratory methods had been designed for examining the role of phospholipids. "Lipids are not easy to work with. They clog the membranes of analytical instruments for instance," says Bauer: "This meant that scientists and the



Anja Bräuer and her team are able to observe how brain cells grow under the microscope using special fluorescent dyes.

laboratory industry first had to develop new methods.”

Today Bräuer’s labs on the University’s Wechloy Campus are equipped with all the devices she needs for her research. In addition to the PRG1 discovered years ago, she and other scientists have now identified several other PRGs. To gain further insights into their role in brain development, nerve fibre growth and repair mechanisms, the researchers are carrying out various experiments, some of them on mice. Through the microscope they monitor changes in brain tissue. They are also investigating the role played by PRGs in the development of dendritic spines in brain cells. These small protrusions are vital for communication between nerve cells via the synapses. Experts even believe abnormalities in spine development are associated with diseases such as autism or schizophrenia. Bräuer also sees potential for PRGs to be used in the treatment of long-term quadriplegia. Spinal cord injuries leave a scar that nerve fibres are unable to repair, she explains. “Our idea is to build small bridges into which we could insert factors such as PRGs so that axons would be able to grow again.”

But the neuroanatomist’s research doesn’t end in the laboratory: “For me,

working with clinical practitioners is immensely important,” Bräuer stresses. Together with Prof. Dr. Stefan Teipel of the German Center for Neurodegenerative Diseases (DZNE) in Rostock she is investigating whether it may be possible to detect certain degenerative processes or inflammation in the brain on the basis of the presence of phospholipids in a patient’s blood, for example. These molecules could potentially help to diagnose diseases like Alzheimer’s at an early stage. This is because whenever something in the brain degenerates, or in other words is destroyed, the lipid membranes are also destroyed. The researchers hope to track down the fragments of these membranes.

Digital learning as an important task for the future

One aspect Bräuer values about her work at the University’s medical faculty is the freedom to develop new research focuses. She wants to work with the neurologists to gain a better understanding of the underlying cellular processes in chronic diseases like multiple sclerosis. And she is pursuing yet another idea with colleagues from

the natural sciences faculty. Physical chemists there are developing a 3D printer which they hope will be able to print live cells – a distant goal that will require close collaboration between physicians, chemists, psychologists, computer scientists and engineers, the researcher notes.

Bräuer is also an enthusiastic lecturer and is passionate about teaching: “When I stand in front of the students I can explain how fascinating the brain and the entire human body is – how it develops and has the potential to defend itself against stress or diseases.” Bräuer sees the digitalisation of teaching as an important task for the future. She believes that although digital dissection labs or operating theatres cannot replace classic anatomy training, they can be a useful supplement – for instance in training paediatricians. For this reason Bräuer and her colleague Prof. Dr. Janniko Georgiadis of the University Medical Center Groningen are planning to set up an Anatomy and Surgical Academy. Their goal is to establish a European training centre where physicians can practice surgical operations on donated body parts in the traditional way, but also using the latest 3D technologies such as augmented and virtual Reality. (cb)

[Anzeige]

Expanding the Horizon

Urologists from the Klinikum Oldenburg and scientists from the School of Medicine are attracting international attention with their joint research in the field of prostate cancer. Friedhelm Wawroschek, senior consultant at the Klinikum Oldenburg and Associate Dean for Clinical Affairs, is leading the way

“If you see a urologist run for your life!” The physician and surgeon Julius Hackethal made headlines with this piece of advice in 1978, sparking a medical controversy and causing huge anxiety among sufferers. He died in 1997 – from the effects of prostate cancer. His arguments about over-treatment, mutilation and “pet cancer” resonate to this day and are still discussed in expert circles. “Nobody dies of prostate cancer anymore”, is a statement Prof. Dr. Friedhelm Wawroschek still hears when he has to confront patients with a cancer diagnosis. But the numbers tell a different story. According to estimates by the Robert-Koch Institute in Berlin every year 65,000 men in Germany develop a malignant tumour of the prostate gland – and 12,000 of them die. The annual road death statistics, some 3,100 women, men and chil-

dren, are significantly lower, although much more present in the collective consciousness. In fact, prostate cancer continues to be the most common form of cancer and the second most common cause of death from cancer for men in Germany.

Catch it early and nip it in the bud

“The prognosis is very good if the disease is detected early enough,” says Wawroschek, who has been the director of the University Hospital for Urology at the Klinikum Oldenburg since 2004. Since 2009 the senior consultant has run the German Cancer Society-certified Prostate Cancer Center Oldenburg at the Klinikum; he has been Professor of Urology at



the University of Oldenburg School of Medicine and Health Sciences since June 2017, and Associate Dean for Medical Affairs since 2018. “What I like about my job is the variety,” the 54-year-old says, commenting on his extensive clinical and university activities. Even after over twenty-five years of professional experience he still enjoys working regularly in the operating room, although as head of the clinic he also has to deal with a lot of administration. For years now he has continued to develop prostate carcinoma research and the closely associated lymph node surgery at the Klinikum: “Diagnosis and therapy would not be where they are today otherwise.”

Wawroschek welcomes the interlinking of university-driven basic research and clinical research in Oldenburg: “Thanks to the research



Sharing knowledge: experts in urological surgery and drug treatment for tumours Friedhelm Wawroschek (centre) and Alexander Winter with research assistant Svenja Engels.

possibilities at the University we have been able to significantly professionalise in particular our clinical role in the field of lymph node surgery.” Additional funding and staff have helped establish good quality basic research with a high level of applicability, he adds.

Internationally visible research – in action

Since Wawroschek’s work amounts to more than a full-time job, he has handed over the supervision of research activities to his colleague PD Dr. Alexander Winter. The two physicians have known one another for almost two decades and already worked closely together during their time at the Klinikum Augsburg. Winter is a consultant, the acting head of the Prostate

Cancer Center Oldenburg, and teaches at the University. The research findings he presents at national and international congresses stem from collaboration with the University, the associated OFFIS - Institute for Information Technology, the Klinikum Oldenburg and the Cancer Registry of Lower Saxony. In addition to improving diagnostics for lymph node surgery, Winter’s and Wawroschek’s speciality, these findings also address the realities of care – such as the current situation in the area of early detection – as well as future care needs.

In the meantime Winter’s research has garnered much international attention and recognition. One example is a new technology that makes it possible to mark sentinel lymph nodes in prostate cancer using superparamagnetic iron oxide nanoparticles. “These

are minute particles that we use as an alternative to the usual radioactive labelling,” Winter explains. Why? An organ’s lymphatic fluid flows through the lymph nodes. If there is a malignant tumour in the prostate, sentinel lymph nodes are the first filter station for the cancer cells. So surgeons need to know the exact location of these lymph nodes if they are to remove them or detect metastases. “This is why we have to mark them – either with a radioactively marked material or using our nanoparticles,” Winter continues.

“By implication I can surmise from the absence of tumours in the sentinel lymph node that lymphogenic metastasis is very unlikely to have occurred up to this point. In terms of therapy this makes it unnecessary to remove any further lymph nodes,” adds Wawroschek. The advantage of the new



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1/2 Teamwork: After Alexander Winter has removed a patient's sentinel lymph nodes Svenja Engels documents its magnetic activity and measures and cuts the tissue for further tests.

3 Friedhelm Wawroschek and Alexander Winter have begun using a new procedure in prostate cancer which detects lymph node metastases at the molecular genetic level during operations.



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procedure, he says, is that the lymph drainage area of each individual patient can be taken into account, which results in comparatively few lymph nodes having to be removed – and thus in fewer complications. “The level of precision of our new magnetic method is comparable with the already established method, but magnetic marking does not involve exposing patients or staff to radiation,” Wawroschek says. Another advantage is that there is no longer any need for the expensive nuclear medicine infrastructure and its strict legal regulations. “This means magnetic marking is simple and uncomplicated for all urologists to use, which makes this method also interesting for countries with less sophisticated medical technology.

Once the surgeons have removed the marked lymph nodes, the work of the pathologist begins. They examine the lymphatic tissue for metastases, fixing, colouring and dissecting it. “There is no standardisation for this procedure though,” Wawroschek explains. In simplified terms this means that if you don't look closely enough or you take too few sections from the lymph nodes you could overlook small or micrometastases. “However thorough the pathologist's work, there is always a minimal, residual risk of missing something,” Wawroschek says. The only way around this would be to come up with a method that examines the lymph node right down to the level of its molecular genetic components. “That's our next project, and we have already carried out a promising pilot study for it at the Klinikum,” Winter explains.

An innovative molecular detection method

In the summer of 2018 Winter presented this project involving a new molecular procedure for detecting lymph node metastases in prostate cancer - the first of its kind worldwide - at the annual meeting of the American Urological Association in San

Francisco. Developed in collaboration with pathologists, the so-called “OSNA analysis” (one-step nucleic acid amplification) attracted a high level of interest among urological experts and was named the best contribution in this subject area. “This novel method has significant clinical relevance. And unlike many other good approaches, its implementation is within reach,” Winter explains.

The idea behind it: A largely automated molecular genetic procedure seeks out the RNA messenger of a particular protein in the lymph node, Cytokeratin 19 (CK19), which is present in the prostate but normally not in the lymph nodes. “We can even determine the amount of CK19 in the lymph nodes – and this all could take place in the operating room” Winter emphasises. The lymph node can be completely analysed within 30 to 40 minutes – the result is unambiguous, with no risk of human misdiagnosis. “We can get the results during the operation and if necessary extend the lymph node dissection or adapt the subsequent therapy,” Wawroschek adds. This saves the patient from having to wait for results after their operation and could even spare them further operations or additional radiation treatment.

The Oldenburg researchers are convinced that the method can be established as a standard procedure for lymph nodes. “OSNA analysis still needs to be validated, and we're working on that,” Wawroschek says. Both the magnetic marking of sentinel lymph nodes and the detection of lymph node metastases are examples of how the still very fresh collaboration between clinical and university research is already yielding important fruits. Wawroschek and Winter see enormous potential in this joint research for future developments in their field. “Each person brings their own expertise to the table, and together we expand our horizons – all in the name of providing better treatment for patients.” (kl)



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Lena Ansmann holds Germany's first Professorship of Organizational Health Services Research.

Well-Organized Healthcare

The results of a medical procedure do not only depend on the doctors' skills, but also on the organization of their working environment. Oldenburg University health services researcher Lena Ansmann and Dutch medical microbiologist Alexander Friedrich are both examining this factor – using very different approaches

On 13 December 1973 a highly controversial study appeared in Science magazine. Entitled “Small Area Variations in Health Care Delivery”, US epidemiologists made the astonishing observation that in a community of Vermont in the east of the US, 15 percent of all children up to 15 years of age had their tonsils removed, whereas

in a neighbouring community that figure was four times higher. With other types of procedures, too, there were conspicuous variations in the per capita number of days spent in hospital and the cost of hospital stays. It appeared that the more hospital beds were available in a community, the more procedures were performed.

This result put paid to a number of popular notions about medical care, for instance that doctors make their decisions based solely on the current state of knowledge and the wellbeing of the patient. One conclusion from the study was that certain variations in the provision of healthcare services cannot be explained by medical factors

alone but are clearly based on other factors, for example differences in the way individual hospitals are organized.

But it is only in recent years that researchers have begun to focus more on these organizational differences. For there are still drastic regional variations in the frequency of certain types of surgeries today – and the causes for these and other, similar variations remain unclear. “The complication rates or mortality rates after a certain type of procedure can also vary from hospital to hospital,” says Prof. Dr. Lena Ansmann of the University of Oldenburg’s Department for Health Services Research. The professor is one of the few researchers in Germany who is systematically investigating how differences between organizations affect patient care. Ansmann’s Professorship of Organizational Health Services Research was created in 2017 and is the first to be explicitly dedicated to this area of research.

„We want to step up research activities.“

Ansmann is particularly interested in the relations between employees within an organization. In some cases her research projects even extend into the areas of special education and social work. Another focus of her research is oncological care. In the PINTU study (Patient involvement in multidisciplinary tumor conferences in breast cancer care), funded by the NGO German Cancer Aid and led by Ansmann and her colleague Nicole Ernstmann of the University Hospital Bonn, the focus is on so-called “tumour conferences”. These meetings are case reviews conducted either before or after a cancer surgery where doctors with different specialities discuss the patient’s prognosis and further treatment – for instance whether radiotherapy or chemotherapy is necessary. Normally the experts do this behind closed doors, but at certain hospitals that are spe-

cialised in breast cancer patients also take part in these meetings. “However, we don’t yet know whether this is a good idea,” says Ansmann. After all, the doctors use medical language when they talk to each other, and this can make patients who are often already very nervous even more anxious and stressed, she explains. And it is also unclear whether involving the patients in these conversations makes sense from the doctors’ point of view. An argument in favour of patients attending these meetings, however, is that they are better informed about the pros and cons of all the various options, and thus in a better position to decide which therapy to choose, she says.

In order to examine open questions like these, Ansmann and her colleagues interviewed doctors at various breast cancer centres. They want to find out which advantages and disadvantages the doctors see here and how they integrate patients into the discussions. “There are doctors who say: It’s a great idea, it should be done like this everywhere. The patients are totally happy with it,” Ansmann reports. Others, she says, focus more on the disadvantages – for example that the patient’s presence means that the situation can’t be discussed as openly, or that the tumour conferences are thus prolonged unnecessarily. “When we discuss this with clinical practitioners the topic is always highly contentious, which I find very exciting,” the researcher says. In the next step Ansmann and her team plan to interview patients before and after the conferences. With video recordings of the meetings, they want to find out how patients behave during the tumour conferences and how they feel afterwards.

In her new field of research Ansmann is trying to bring together scientists with a similar focus and connect them with each other. In the German Network for Healthcare Research (Deutsches Netzwerk Versorgungsforschung) she leads the working group “Organizational Health Services Research” and over the past two years

has helped revise the standards for key methods in her field of research. A memorandum with the results will soon appear. She is also involved in the project “Organizational Behaviour in Health Care Institutions in Germany” (NWOB), which is funded by the German Research Foundation (DFG). In this project twenty researchers from different disciplines – from general medicine to economics – have produced a book that provides a systematic overview of the current state of organizational health services research in Germany. “We want to further consolidate this new field and step up research activities,” Ansmann explains.

A look across the border to the Netherlands confirms that organizational issues are critical for the medical care of patients. “The two countries differ in many respects when it comes to patient care,” says Prof. Dr. Alexander Friedrich, director of the Department of Medical Microbiology and Infection Prevention at the University Medical Center Groningen. This is particularly true in Friedrich’s area of expertise, medical microbiology and hospital hygiene. Germany has a problem with so-called hospital bugs, including the multidrug-resistant *Staphylococcus aureus* (MRSA). This is a variant of a widespread species of microbes that is resistant to most antibiotics. In Germany, MRSA infections are ten times as frequent as in the Netherlands. “One might expect to see such immense microbiological variations between northern and southern Europe, but not between Germany and the Netherlands,” says Friedrich, who was a long-time member of the Scientific Advisory Board of the European Medical School Groningen-Oldenburg and works closely with Oldenburg’s School of Medicine. The higher prevalence of MRSA bacteria is not so much a result of insufficient awareness about the importance of disinfection or how to use antibiotics. “Of course German doctors know all about hygiene or how to do a screening. This means that factors beyond medical knowledge



In the Netherlands almost every hospital has its own laboratories and clinical microbiologists. Alexander Friedrich is the director of the Department of Medical Microbiology and Infection Prevention at the University Medical Center Groningen (UMCG).

must be in play,” Friedrich concludes.

Friedrich is heading a German-Dutch EU-programme called Eur-Health-1Health to focus on pinpointing those factors and bringing German hospitals in line with Dutch standards. The University of Oldenburg is also on board. A number of organizational differences between the two countries are immediately apparent. For example, in the Netherlands almost every hospital has one or more own medical microbiologists who quickly determine the right antibiotic for patients with bacterial infections. In order to prevent the spread of germs, this doctor has the authority to initiate preventative microbiological screenings. In Germany, by contrast, such specialists are rare in acute care hospitals. Although in both countries high-risk patients – for example farmers or travellers who have been to a hospital abroad – are tested upon admission for resistant germs, in the Netherlands all patients who are admitted to a high-risk ward such as intensive care are also screened. “Particularly if a patient comes from

another hospital or a nursing home that is known to have an outbreak, patients are screened, in some cases on a weekly basis,” Friedrich reports.

Learning from the Dutch

Until the swabs are negative, patients in the Netherlands are kept isolated in single rooms. “This prophylactic isolation is rarely used in German hospitals,” says Friedrich. This, he explains, is because in most cases as many beds as possible need to be used primarily for economic reasons. Hence it’s not easy to keep patients isolated. The Dutch healthcare system, by contrast, is organized in such a way that on average only 60 percent of the beds need to be occupied. “This means there’s enough space for isolation care,” Friedrich says. “So whether a patient can be isolated or not seems to be influenced to a large extent by the remuneration system in a country and not so much by medical reasons.”

At the healthcare system level there

are many other differences: in Germany the number of hospitals per inhabitants is three to four times higher than in the Netherlands, where at the same time there are no specialists in own practice. “To date, no one has made a careful analysis of whether and how these differences affect the use of antibiotics and the spread of resistant germs,” Friedrich says. Researchers at the Crossborder Institute for Health-Care and Prevention, a joint facility of the University of Oldenburg and the University of Groningen’s Aletta Jacobs School of Public Health, plan to carry out a structured comparison of the two healthcare systems – with the goal of identifying the best means to control the germ problem. This cross-border research has been given high priority by the government of Lower Saxony.

But simply applying the Dutch strategies to Germany wouldn’t make sense in Friedrich’s opinion. “There are too many country-specific differences which first need to be understood. Not all measures can be replicated one to one but have to be implemented in the

Reportage

right places of the respective system,” he explains. In a region where there is a lot of farming, livestock can be a source of resistant germs, whereas in another region the transfer of patients from a certain clinic to other hospitals might be the main route of infection.

Hubs for resistant germs

Indeed, in 2015 Friedrich and colleagues were able to demonstrate in a study that antibiotic-resistant germs often follow patient flows. If there is an outbreak in one hospital in a region the resistant germs spread rapidly through

the transfer of patients to other clinics in the area. The study showed that these transfers do not occur randomly in all directions, but that individual hospitals – and in some cases even individual wards, for example the intensive care ward – become a kind of hub, distributing pathogens across the entire hospital and region. “We want to track down these hubs. If treatment with antibiotics and hospital hygiene are properly implemented at these hubs, all parties benefit – in our opinion even the facilities where things are not going well,” Friedrich stresses.

For researchers in Groningen and in Oldenburg there are numerous approaches for studying and comparing

the healthcare systems and their organization in Germany and the Netherlands. The EurHealth-1Health project has already initiated changes: training programmes for hygiene specialists are to be harmonised in the long term and mutually recognised in the short term – in a subproject run jointly by the University of Oldenburg and the Oldenburg Klinikum. Together with employees of the University of Oldenburg, Alexander Friedrich will also begin to study the infection routes of multidrug-resistant bacteria in Germany in more detail. Because, as he says, one thing is clear: “These bacteria don’t just spread at random.” (uk)



Many antibiotics are powerless against multidrug-resistant *Staphylococcus aureus* (MRSA) bacteria. Targeted screening procedures have been successful in preventing the spread of these hospital bugs in the Netherlands.

[Anzeige]

Research: Learning by Doing

Which exchange processes occur between groundwater and seawater on the beach? This was one of the major questions addressed in the Wadden Sea World Heritage Summer School 2018 held by the Institute for Chemistry and Biology of the Marine Environment (ICBM), the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) and the Royal Netherlands Institute for Sea Research (NIOZ). In the course, fourteen international Master's and PhD students learned about pore water analysis, a method for investigating the biological and chemical characteristics of sediments.

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2

1 Under the guidance of marine physicist Prof. Dr. Oliver Zielinski the students gather samples of the pore water that has accumulated in the tiny spaces in the ground on the northern beach of Spiekeroog island. Along two transects – lines that run vertically from the high tide line to the dunes – they plot out thirteen measuring points with spaces of five and ten metres between them.

2 In order to reach the water, so-called pore water lances are inserted into the ground at each measuring point to a depth of one metre and two metres. The bottom end of the lance has small slits through which the water can flow.

3 A syringe is used to create pressure, forcing the water up through the lance and into the flask.

4 To make sure that the measurements are accurately assigned to the various locations later on, the points are mapped to within a few centimetres using GPS.



3





5 At each measuring point pore water samples are taken for analysis in the lab later on. A filter is used to sift out any particles larger than 0.2 micrometres so that only dissolved organic matter, or DOM, is left in the water.

6/7/8 The students measure temperature, conductivity, oxygen and iron content, and the amount of dissolved organic matter on site. At the first measuring points they carefully observe every step of the procedure, familiarising themselves with the methods. Later on each of them concentrates on one particular step. Learning to work as a team and developing a routine is vital for field measurement campaigns, Oliver Zielinski explains.



9 *Patience and rigour are key to achieving good, accurate results in the field. To make measurements of DOM using UV light, for example, containers must be completely free of fingerprints, dust particles and water.*

10 *At the end of the project the students prepare a presentation. Some members of the group perform statistical analyses of the data; others work on the methodological background. Summing up their experiences in the project, participants note that the interaction with other young researchers from different disciplines is particularly valuable.*





Real University Life

Why do nearly one in three students in Germany drop out of higher education? The reasons can be manifold but there has been little systematic research on the subject to date. In order to change this Michael Feldhaus and Karsten Speck are embarking on new paths in their research project LAST. Their aim is to get a picture of the real life of students

Memories are deceptive. Was the difficult statistics exam really the reason for dropping out of college? Or had the doubts set in long before that? Perhaps when the father smugly asked whether a degree in sociology was really going to pay the bills? Or when a former classmate drove up in a fancy car?

According to recent statistics released by the German Centre for High-

er Education (DZHW), in Germany around 30 percent of undergraduates leave university without a degree. Just under half of them leave in the first or second semester and the remaining 29 percent in the following year. There are some science subjects where drop-out numbers are especially high. For example, according to the DZHW, approximately one in two maths students

throw in the towel, and the numbers are only slightly lower for informatics and chemistry students. Hardly any research has been conducted into the reasons behind this phenomenon, and the consequences are also unclear. A study conducted by the Stifterverband for German Science in 2007 showed that the negative impact should not be underestimated – either for those

who drop out and have to overcome the sense of having failed to find new ways into professional life, or for society, which depends on young people with a university education especially in times where the workforce is short of qualified individuals. The study estimates the economic damage at 2.2 billion euros a year.

Social and educational contexts

But why do young people turn their backs on lecture halls? And what can universities do to stop them? These are the questions sociologist Prof. Dr. Michael Feldhaus and educationalist Prof. Dr. Karsten Speck hope to find answers to. For their research project “Life Course Perspective and Dropout from Higher Education (LAST) – a multicontextual analysis of the causes and consequences of dropout from higher education” they have been conducting a survey among Oldenburg University students since April 2017. The Federal Ministry of Education and Research is financing the three-year project as part of the funding line “Academic Success and Dropout Phenomena”. In order to ensure data compatibility with nationwide studies such as the DZHW, the Oldenburg researchers have also developed their instruments in line with previous work on the subject.

As the project name suggests, Feldhaus and Speck aim to take into account as many different living situations – or sociological and educational “contexts” – as possible. “One could also say that we are trying to put together a picture of real life,” Feldhaus says. The team of researchers is therefore not only inquiring into how satisfied students are with the course structure or the quality of the teaching, but also into social factors such as their relationships with their parents, the education levels of their closest friends, relationships with fellow students and what their partners think about the subject they are studying.

Then they are also looking into all the things that influence everyday life, such as how far they have to travel to college, whether they have to work to support themselves or whether they have children. Above all factors that lie beyond the university’s sphere of influence have gone largely ignored in previous studies on college dropout phenomena. “We are convinced that their role should not be underestimated,” Feldhaus states.

When developing their catalogue of questions Feldhaus and Speck deliberately chose to cooperate with Oldenburg school teachers and special needs educationalists who research so-called absenteeism, or in other words why children and teenagers choose to skip school. Although the living situations of schoolchildren and those of students differ greatly simply because of the age difference, the researchers nonetheless believe their work benefits from this expertise. “Through our exchange with these colleagues we happened upon important influencing factors and connections of which we were previously unaware,” Speck says. He notes that for example there are children and teenagers who skip school to look after mentally ill parents at home. Family problems such as these can also be factors for young adults, so at least they should be asked about it, he explains.

In cooperation with Dr. Nicola Albrecht and Lisa Preller from the Department for Study Programmes and Teaching the LAST team wants above all to find out where the university can intervene to prevent students from dropping out, and in which cases the reasons lie beyond its sphere of influence. “If my partner gets a job in southern Germany and I really don’t want a long-distance relationship, it doesn’t matter how good the teaching is, I will still leave Oldenburg,” says Speck. In other cases improved social integration could be helpful. The evaluation of the first phase of the survey has already confirmed their approach. “As we suspected, we found direct correlations between the students’ envi-

ronment and success in their studies,” Feldhaus says. For example, students who have lots of friends at university and feel well integrated are more motivated at lectures. A stable relationship with shared plans for the future also increases the motivation to learn. Further surveys will build on these initial results.

One Tuesday in June we witnessed a survey in action. In auditorium G the economist Prof. Dr. Jörg Prokop was talking about standard deviations, seventy or so students were sitting on the benches in the auditorium, industriously taking notes. Rouven Teichmann and Ana Brömmelhaus entered the room carrying cardboard boxes filled with questionnaires. The two research assistants in the LAST project nodded at Prokop, who promptly announced a break in his lecture. While Teichmann walked along the benches distributing the questionnaires, Brömmelhaus picked up the microphone and explained what the LAST study was about and why it was important that as many students as possible take part.

Response rate of almost 50 percent

“We handed out almost four thousand questionnaires and our response rate has been over 45 percent. We were totally surprised,” the research assistant explains later. Many similar surveys have had to struggle with diminishing participation rates for years now. Oldenburg students, however, have been quite happy to complete the LAST questionnaire during courses – in spite of its substantial length of 84 questions. “We did however offer incentives,” Brömmelhaus admits. Anyone who fills out the form gets a book voucher and can take part in a raffle to win a tablet.

The researchers are particularly keen to gather data from the students over a longer time period, which is why LAST has been designed as a longitudinal analysis, questioning the same

Background

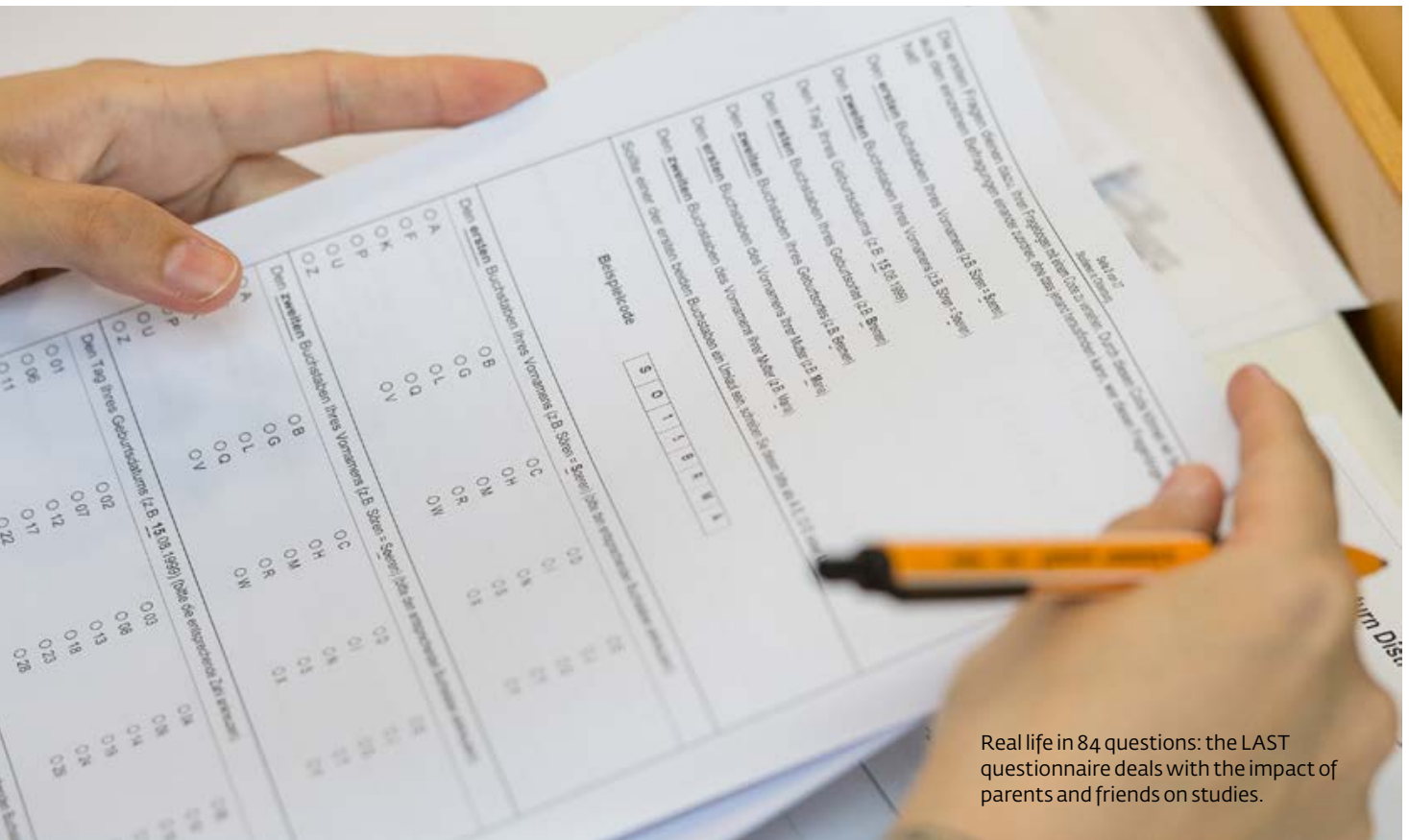
people four times in total over a period of two years. A few markers are deliberately hidden in the questionnaires. For example, anyone who says they often seriously consider changing their main subject or have done so in the past attracts attention. “We will then look at how that person answers future questionnaires, or how they answered them in the past,” Speck explains. It could be, for instance, that they were already finding the exams difficult back then. Or that soon after meeting a new partner the partner expressed doubts about their choice of subject: “What, you really want to become a teacher?”. The longitudinal perspective makes it easy for the researchers to retrace these causal relationships. This precludes memory errors which, the researchers suspect, occur in studies that attempt to pinpoint reasons for dropouts in retrospect.

Another key part of the process are qualitative interviews – funded by the Department for Study Programmes and Teaching – which aim to build on

the knowledge gained through the questionnaires. Here the researchers randomly select about forty students who have completed a questionnaire. “We know from the questionnaires for example that someone has to work in order to pay for their studies, but we don’t know how stressful this is for them. This is something we can find out in the interview,” Feldhaus explains. The focus of the interviews, which to inspire more trust are carried out by the research assistants, is primarily on students who are showing signs that they might drop out. “Their motives and assessments are particularly interesting for us because ultimately we want to find out how and if the University can help them,” Speck explains. It might help them to change subjects, he says, pointing out that the first round of surveys showed that this can increase motivation. “We need to relativize the spectre of dropping out. It’s not automatically a catastrophe, not every change is bad,” Feldhaus says. If by changing somebody ends

up studying a subject that is closer to their heart, then the supposed failure of the first time round could actually turn out to be a good life choice. Even dropping out entirely can pay off for some people, he explains. “Especially if it happens early on, it can be a conscious decision that makes sense for that person in particular, also from an economic point of view,” Speck says. It is certainly better to look for alternatives than to prolong extreme and long-term dissatisfaction with one’s studies, he adds.

What can the university do to support students with doubts? Previous studies have shown that it can make sense to be clearer about course requirements, to restructure the study plan, to be more transparent about how exam performance is assessed or to expand support services for students. In the summer of 2020, Michael Feldhaus and Karsten Speck will no doubt be able to point to other areas where those in charge can make adjustments – approved by real life. (bb)



Real life in 84 questions: the LAST questionnaire deals with the impact of parents and friends on studies.

For and Against Protest

Guest Article from Stefan Müller-Doohm

In the flood of retrospectives of the '68 movement that in this anniversary year are competing for our attention in the form of books, articles, documentaries, films and discussion panels featuring the ever same group of people who witnessed that period of time, one aspect is often conspicuous for its absence. During those wild years it was not only happenings and so-called "Sponti-Sprüche" (old sayings and slogans that were altered to be provocative) that were fashionable with the students; the extra-parliamentary opposition was driven by profoundly political motives. The specific causes of outrage and civil unrest included the escalation of the Vietnam war, which was backed diplomatically by the West German government as a US ally; the activities of the American secret service, the CIA, in South America; the Six-Day War in the Middle East; and the military coup in Greece. Domestic factors had an even more provocative impact: there was the inflexible education system, the ossified university structures riddled with authoritarian interdependencies, and crucially, the plans to impose emergency laws, as well as the power cartel of the grand coalition of Christian and Social Democrats, and finally the fact that a far-right party had won seats in a number of regional parliaments,

for example in Hessen and Bavaria.

In response to the global and domestic situation, youth culture and student protest movements bloomed and, fuelled by state sanctions, gradually developed radical tendencies. The protests also attracted more and more public attention as the opposition groups became increasingly media-savvy. Direct actions, sit-ins, and the like now reached the masses thanks to broad newspaper and television coverage.

Against the strategy of violence

In the summer of 1967, a year before the wave of protests in 1968, a demonstration was held outside the Deutsche Oper in Berlin in protest against the state visit of the Shah of Persia. In clashes with the police, who violently pursued the fleeing demonstrators, a student named Benno Ohnesorg was shot from behind by a police officer. This event received coverage in a campaign pitted against the students by Springer Media, which had not been involved until this point, prompting Adorno to open a lecture with the eyebrow-raising observation: "The students have, to a certain extent, taken on the role of the Jews". Soon afterwards he stated: "I under-

stand how difficult it is to form a just and responsible opinion of even the simplest fates, since all news that reaches us is already manipulated. But that cannot prevent me from expressing my sympathy for the student whose fate, no matter what is reported, stands in no relation to his participation in a political demonstration. [...] I bid you, in memory of the our dead fellow Berlin student Benno Ohnesorg, to please stand."

Although Adorno tried to take account of the political students' need to discuss issues in his lectures and seminars, he also clearly voiced his concerns about the strategy of deliberate violation of the law, violence against property and the provocation of individuals. Adorno's scepticism regarding the political consequences of this actionism is expressed in a series of letters to Herbert Marcuse. In one of his letters to the "holy animal" of the student movement he wrote that some representatives of the protest movement tended "to synthesize their form of praxis with a non-existent theory, revealing glimpses of a decisionism that harks back to the horrors."

It became clear that Jürgen Habermas shared Adorno's opinion – expressed not only in letter form – at the legendary congress "Hochschule in der Demokratie – Bedingungen und

Organisation des Widerstandes” (the university under democracy – the conditions and organisation of resistance), which took place on 9 July in Hannover after the funeral of Benno Ohnesorg. In his speech “On the political role of the students in the Federal Republic of Germany” he described the state-sanctioned police operation against the demonstrators in Berlin as an act of terrorism in the sense of targeted intimidation. For him the student protest was a legitimate and desperately needed expression of democratic consciousness and political engagement. On the podium he explained: “The task of the student opposition in the Federal Republic of Germany was and is to compensate for omissions: for the lack of theoretical perspectives; the lack of sensitivity with regard to deceptions and denouncements; the lack of radicalness in the interpretation and practice of the constitution of our social welfare state and democracy; the lack

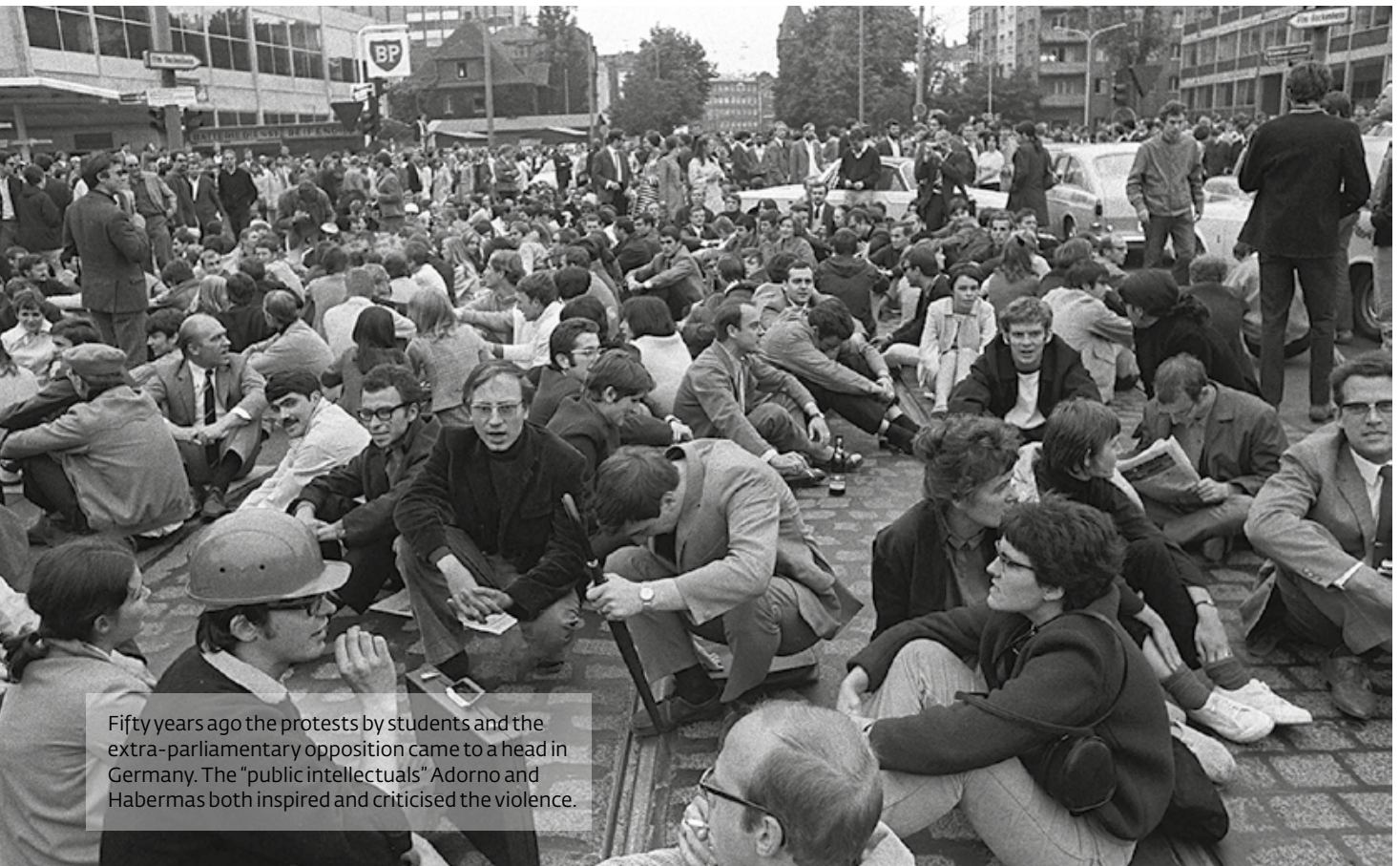
of foresight and a vivid imagination.” But Habermas also warned against actionism at any price and spoke out firmly against “converting the sublime violence of institutions into manifest violence through provocation.” When Rudi Dutschke, by that time the leading figure of the student movement, spoke out in favour of actions that did not preclude violence, Habermas countered with a speech in which he accused Dutschke of adhering to a voluntaristic ideology that he described as ‘left-wing fascism’.

Habermas enters the fray

A decade later Habermas admitted that with this remark about left-wing fascism he had reacted “a nuance too much in the mould of the bourgeois intellectual” and that it had been “somewhat out of place”, although it had not been intended as anything other than

“internal criticism of the methods of the protest movement.”

Adorno and Habermas played a central role in the protest movement in a number of ways. Firstly, there was their influence as academic instructors. As such they addressed the philosophical and socio-theoretical issues that lay entirely within the interest horizon of the non-dogmatic Left, which would otherwise hardly have encountered discourse partners of this intellectual calibre at the universities. Secondly, Adorno and Habermas, as non-conformist public intellectuals, served as role models, prepared to take the risk of intervening politically on a regular basis, not least to campaign for the demands of the protest movement to extend democracy as a way of life to pre-political spheres such as the family, the workplace, schools, the media and universities. Thirdly, Adorno and Habermas, each in their own way and with their own particular emphases, provided the diagnostic interpreta-



Fifty years ago the protests by students and the extra-parliamentary opposition came to a head in Germany. The “public intellectuals” Adorno and Habermas both inspired and criticised the violence.

Prof. Dr. Stefan Müller-Doohm

Stefan Müller-Doohm studied sociology, political science and psychology in Frankfurt, Marburg and Gießen. He earned his PhD at the University of Giessen in 1972. Müller-Doohm was appointed Professor of Sociology at Oldenburg University in 1974, and is still active there as Professor Emeritus. He is Director of the Research Centre for the Sociology of Intellectuals, founder of the Adorno Research Centre and has published numerous books including two biographies on T.W. Adorno and J. Habermas which have been translated into several languages.



tions and analytical categories of the time, wrapped up in a neo-Marxist vocabulary which the New Left referenced in its critiques levelled at the very foundations of late-capitalism society and its crisis phenomena.

There were four main thematic complexes which had a special significance for the socio-critical thinking of the New Left. One was the discourse on the past and guilt, another was the traditional or revised concepts of the critique of capitalism, then came the critique of the cultural industry, or rather of the structural and functional shift in the public sphere, and finally, the critique of the education system.

It was Adorno in particular who, shortly after re-emigrating to Germany, warned against the afterlife of Nazism under democracy and, as early as 1951, provoked the public by declaring that it would be barbaric to write a poem after Auschwitz. In so doing Adorno positioned himself as the prototypical taboo-breaker.

Intellectual engagement

In his statements on “Late Capitalism or Industrial Society?” at the colourful annual conference of sociologists in Frankfurt in 1968, which was repeatedly interrupted by the distribution of various leaflets, Adorno identified society as a negative totality that manifested itself as a closed system whose stability resulted from the increasing productivity of an ever-more comprehensive mastery over nature. However, Habermas pinpointed in his publications three far more nuanced developmental tendencies in late capitalism. First off, an increase in state activity

as a regulating factor for preserving order; secondly, the growing function of science as the primary productive force; and finally, a depoliticisation of the public aimed at preventing the manifestation of latent conflicts.

From the outset, a driving force behind the protest movement was the core demand for universities to be democratized, neatly summed up in the scathingly ironic statement: “under the gowns is the musty odour of a thousand years”. This catalyst for protest, which is often overlooked today, was undoubtedly inspired by Adorno’s call to dismantle the authoritarian structures and hierarchies within the universities.

Habermas was no less critical than Adorno, but his objections focussed more specifically on the “chronic affliction of university reform”, namely the specialisation of individual fields of study that were increasingly sealing themselves off from one another, the bureaucratisation of the universities, and methods of instruction which were too school-like. A democratised university, he believed, was the prerequisite for criticism of science which must find expression within academia since the unthinking application of scientific information was too risky in the context of social praxis.

These analyses and initiatives regarding education policies for which university and secondary school students took to the streets did have an impact. Part of that impact was that in the course of the 1970s a growing number of reform universities were founded. The founding of the Carl von Ossietzky University in Oldenburg at the end of 1973 on the basis of the reform models of interdisciplinary project-based studies and one-phase

teacher training was a shining example whose flame has long since been extinguished – like other liberalising achievements of that experimental ground-breaking period.

Looking back, if we were to sum up the position occupied by Adorno and Habermas in the period of time commonly referred to as ‘68, it is clear that on the one hand they showed solidarity with the ‘68 movement as a democratising movement and, on a higher, theoretical level, delivered reasons for radically reforming universities and society alike. On the other hand, they unreservedly criticised the nascent extremism and violent tendencies expressed in the actionist practices of the protest movement. Habermas was more aggressive than Adorno in his intellectual interventions, and in his analyses he clearly opposed the protest movement’s interpretation of the historical situation as a revolutionary situation.

In retrospect, one salient feature of the public debates between the New Left on the one side and Adorno and Habermas on the other is the dynamic that developed in the wake of increasing intellectual polarisation. This dynamic manifested itself in an escalation that followed the typical progression from the first phase of collaboration on an objective level, to the second phase of provocatively expressed competing interpretations, to the third phase of conflict, to the fourth phase of the battle between opposing camps. Looking back therefore, the controversies of 1967/68 demonstrate very clearly that when intellectuals form opposing camps, the opponents end up blocking one another, making it hard to find a consensus, a consensus that is dependent upon allowing oneself to be persuaded by argumentation.

Portrait

The Essence of the Oceans

Tiny amounts of various metals are dissolved in the waters of the world's oceans. Oldenburg geochemist Katharina Pahnke-May is studying the precise distribution of a group of these substances which can serve as markers for ocean currents – and reveal many things about their origins



Katharina Pahnke-May and her colleagues in the cleanroom laboratory have to wear special clothing to prevent their samples from being contaminated by dust particles.

Seawater is often talked about as a source of raw materials: all together the world's oceans contain an estimated 20 million tonnes of gold. This gold is worth around ten times the global gross domestic product. The precious metal cannot be extracted for economic purposes, however, as each litre of seawater contains only homeopathic amounts, somewhere in the range of a few billionths of a gram per litre. "To give an idea of how tiny these concentrations are, I like to use Olympic swimming pools for comparison," says Dr. Katharina Pahnke-May. The geochemist explains that a pool that is 50 metres long, 25 metres wide and 2 metres deep holds 2,500 cubic metres of water. If you were to dissolve a drop of cough syrup with a volume of 0.05 millimetres into twenty times the amount of water in that pool, you would end up with a ratio of one to one billion – a 1 followed by twelve zeros. "That's the order of magnitude we're dealing with," says Pahnke-May.

Pahnke-May's area of expertise is marine isotope geochemistry. The researcher and her colleagues from the Max Planck research group of the same name at the University of Oldenburg are studying concentrations of trace metals in different marine regions and measuring the ratios of their isotopes – variants of these elements with different atomic masses. Gold is not among the substances that the group is tracking, but many other metals are distributed in the oceans in similarly tiny concentrations. Neodymium, for instance, an element from the rare earth family, as well as lead, strontium, iron and silicon. These substances are dissolved in seawater or contained in tiny particles of dust that are blown by the wind or washed down rivers from the continents into the sea.

Pahnke-May and her colleagues can infer astonishing stories from the seemingly trivial variations in the composition of these seawater substances. On the basis of these trace elements they can, for example, determine the extent to which the different water

masses in the oceans mix with each other, the effect of continental influences on the chemical composition of seawater, or where the nutrients come from that cause algae to bloom in the middle of the Pacific. These extremely fine admixtures can even reveal the paths an ocean current has taken in the past – information that plays an important role in climate studies.

As Pahnke-May points out, marine isotope geochemistry is still a relatively young field. But thanks to improved measuring techniques it is attracting more and more attention. "It is becoming increasingly clear how useful trace elements are for gaining a better understanding of the geochemistry of the sea," she says. For their studies she and her team primarily use substances that are not integrated into biological cycles, because with these substances the isotope ratios change only when different water masses mix with each other. They act as a "fingerprint" of an ocean current, so to speak.

Dust-free work in the cleanroom laboratory

Pahnke-May and her team have to go to extraordinary lengths to coax secrets from the oceans. Even more complicated than extracting the minute quantities of trace elements from seawater is the process of measuring their isotope ratios. "For neodymium isotope measurements, we need up to 20 litres of water for a single measurement," she explains. Another problem is that the samples can be contaminated by rust from ships or dust particles in the air. To prevent this from happening, the Oldenburg geochemists use special equipment for sample taking – for example large Teflon-coated water bottles that have no metal springs in their closing mechanism and are attached to a plastic-coated steel cable.

The researchers also work with extreme care when preparing the samples. Since 2015 they have the use of a metal-free ultra-clean laboratory

where there are no unprotected metal surfaces that can release rust particles and the air is practically dust-free. A sophisticated air conditioning system sucks up every single particle that strays into any of the work stations protected by special Plexiglas panes.

It was in 2006, during her time as a postdoctoral researcher at Columbia University in New York, that Pahnke-May started to take an interest in trace metals. After completing her geology degree in Kiel, Germany, and her PhD at Cardiff University in Wales she transferred to the US, working first at the Massachusetts Institute of Technology in Cambridge and then at the renowned Lamont Doherty Earth Observatory, which belongs to Columbia University. At the time, a new research programme was being launched to chart the concentrations of various trace substances in the oceans. Under the name of "Geotraces", this international project began its first research trips in 2009, with the aim of measuring the distribution of micronutrients such as iron and other trace elements in the ocean. The element neodymium and its isotopes are also on the list as markers for ocean currents. The modern distribution of this substance forms the basis for drawing conclusions about the past. Pahnke-May, who up to that point had focused on paleo-oceanographic topics, coordinated the preliminary work for the neodymium measurements. "My main area of interest is still trace metals and their isotopes in the sea because so much research remains to be done in this field and we can address so many interesting questions using these markers," she explains.

The researcher spent a total of eleven years abroad. "Oldenburg is so attractive that in 2011 I was quite happy to return to northern Germany from the tropical paradise of Hawaii," she says with a chuckle. She then took charge of the newly established Max Planck Research Group Marine Isotope Geochemistry, which is part of the Max Planck Institute for Marine Microbio-

Portrait

logy in Bremen and Oldenburg's Institute for Chemistry and Biology of the Marine Environment (ICBM).

Since then she and her team of nine researchers have had considerable success. Pahnke-May and her colleague Dr. Henning Fröllje discovered that the islands of Hawaii are an important source of trace substances in the Central Pacific – and that dust from the Asian continent is less important than previously thought. Other volcanic islands also leave what could be described as a trail of dirt in the Pacific, as a study by Melanie Behrens, a member of Pahnke-May's group, shows. Behrens, now a post-doctoral researcher, discovered that the island of New Guinea apparently leaves its own chemical imprint on the currents in the tropical Pacific.

The current measurements also serve as a basis for tracking future changes, for instance the impact of climate change on the Arctic. Three researchers from Pahnke-May's group are currently analysing water samples from the central Arctic Ocean for traces of neodymium, other rare earth elements and silicon. They want to determine where and how exactly these elements are entering the Arctic region and what factors influence their geochemical cycles. In the future, scientists will be able to use this information

to determine the impact of the melting of marine ice and permafrost areas on the input of substances. Other projects focus on the pathways of trace elements into the sea. Here, for example, the Oldenburg scientists analyse water samples taken from the River Weser estuary or ground water that flows below sea level into the North Sea, as on Spiekeroog Island.

Prehistoric evidence on the seafloor

Through comparisons with present-day conditions, scientists can also determine whether particular ocean currents took a different route in the past. This look back at prehistoric times requires detective work that is almost more complicated than the analysis of the present. The members of Pahnke-May's research team have to track down pieces of evidence in drill cores taken from the seafloor. For example, the sediment contains the shells of single-cell organisms covered by an iron-manganese coating, or the tiny teeth of fossilised fish. These remnants that have formed in the ocean contain the isotope ratio of seawater from the time of their formation.

On the basis of fish teeth found in the South Pacific, Pahnke-May's team

and several of their colleagues were able to prove that during the last ice age, the stratification of the Southern Ocean was considerably more pronounced than it is today. This discovery, which was published in the renowned journal *Science* in February 2018, is a key piece of the puzzle posed by the mysterious rise in temperatures towards the end of the last ice age. The researchers concluded from their measurements that during the last ice age the deep ocean was able to store large amounts of CO₂. The scientists' measurements show that as temperatures began to rise, water masses increasingly mixed with each other, releasing the greenhouse gases stored in the deep Southern Ocean into the atmosphere and increasing the rise in temperatures.

The Oldenburg geochemists are doing important pioneering work: piece by piece they are filling in the picture of how trace metals are distributed in the oceans, determining their geochemical cycling in the ocean and where they come from. Katharina Pahnke-May will spend several more years working on this fundamental task. One thing she knows for sure: "If we close the critical gaps in knowledge, we will have a better understanding of how the oceans have changed in the past and be better equipped to predict the future." (uk)



Sediment cores from the seabed (here from the South Pacific) contain fish teeth. The trace metals they contain reveal the paths ocean currents have taken in the past.

UGO awards for outstanding researchers



The "Award for Outstanding Doctoral Thesis Research" went to Stefanie Mallon (left); physicist Antonietta De Sio (second from left) and biologist Dr. Maren Striebel were delighted to receive the "Prize for Excellence in Research". UGO Chairman Werner Brinker presented the awards.

This year the University Society Oldenburg e.V. (UGO) awarded its 5,000 euro "Prize for Excellence in Research" twice: to physicist Dr. Antonietta De Sio and to biologist Dr. Maren Striebel. The "Award for Outstanding Doctoral Thesis Research", which includes 2,000 euros in prize money, went to cultural studies scholar Dr. Stefanie Mallon.

Dr. Antonietta De Sio is investigating how electricity is generated in certain materials using light. The Italian-born researcher completed her doctorate at the University of Oldenburg's Institute for Physics and, in a working group led by Prof. Dr. Christoph Lienau, set up a unique laboratory for two-dimensional laser spectroscopy. In this procedure light pulses with a time duration of just ten billionths of a millionth of a second are used to capture the light-to-current conver-

sion process on film. The films reveal the quantum mechanical processes underpinning energy conversion in nanomaterials. One of the chief objectives of De Sio's research is to increase the efficiency of organic solar cells and solar cells made from other materials.

Dr. Maren Striebel is studying the impact of environmental changes on plankton communities in seas and lakes. The biologist studied at the universities of Ulm and Munich and completed her doctorate at the latter in 2008. After research stays in Norway and Austria she began working in 2012 at the Wilhelmshaven site of Oldenburg University's Institute for Chemistry and Biology of the Marine Environment (ICBM). There Striebel helped to set up the unique test facilities known as the "Planktotrons". Environmental researchers use these 600-litre con-

tainers to test under realistic conditions how communities of algae, tiny crabs and bacteria react to increased temperatures, lack of nutrients and storms.

Dr. Stefanie Mallon wrote her doctoral thesis on "The Order of Things" under Prof. Dr. Karen Ellwanger at Oldenburg University's Institute for Material Culture. The practice of putting things in order or "tidying up" is a field that has been neglected in scientific study. The processes by which the disorder that continually arises in the domestic environment is tidied up again are not as self-evident or automatic as they may seem. The cultural studies scholar used this everyday issue to trace how social processes organise themselves and determine the scope of our practices. Mallon's research also focuses on materiality and knowledge as well as order.

New Appointments



Lena Ansmann

Health Services Research

Prof. Dr. Lena Ansmann has been appointed Professor of Organisational Health Services Research. Previously, she was Junior Professor of Methods of Implementation and Evaluation in Special Education and Health Services Research at the University of Cologne. She was also deputy head of the Department of Rehabilitation Sciences at the Institute of Medical Sociology, Health Services Research, and Rehabilitation Science there. Ansmann studied Public Health at the universities of Bremen, Malmö and Bielefeld. She then went on to conduct research and teach at the University of Cologne, where she also obtained her PhD in 2014. In the field of organisational health services research Ansmann investigated connections between specific characteristics of health care organisations – such as hospitals and private practices – and the quality of health care for patients. Other research areas include evaluation and implementation in health care organisations as well as patient orientation in healthcare, in particular in oncology.



Katharina Block

Social Theory

Dr. Katharina Block has been appointed Junior Professor of Social Theory at the Institute of Social Sciences. Previously, she worked as a research associate for the Chair of Sociological Theory at the University of Hannover. Block studied Sociology at the University of Bremen and Social Theory at the University of Jena, where she subsequently participated in the interdisciplinary Graduate School “Laboratorium Enlightenment” under the direction of Prof. Dr. Hartmut Rosa. In 2015 she completed her PhD in Philosophy at the University of Koblenz-Laundau with a thesis on the significance of the concept of world for ecological sociology. She also held a position as a research fellow at the Human Dynamics Centre of the University of Würzburg. Besides social theory, Block’s research also focuses on philosophical anthropology, cultural sociology, the sociology of knowledge and the philosophy of science. She is a member of the DFG research network “Sociology of Sustainability”.



Maja Brückmann

Elementary Social Studies
and Science Education

Prof. Dr. Maja Brückmann has been appointed Professor of Elementary Social Studies and Science Education at the Department of Educational Sciences. Prior to this position she conducted research and lectured as a professor of natural science didactics at the Zurich University of Teacher Education (PH Zurich). Brückmann studied for her teaching qualification in Mathematics and Physics at primary and secondary-school level at the University of Oldenburg. From 2004 to 2008 she conducted research at the Leibniz Institute for Science and Mathematics Education at the University of Kiel (IPN), where she also completed her postgraduate traineeship for the subjects Mathematics and Physics. In parallel she earned her PhD at the University of Potsdam with a thesis on the structuring of content in physics classes. During her postdoc period at the IPN from 2010 to 2013, she was co-applicant for the German Research Fund (DFG) project “Vikom – Investigating the development of content and complexity in science classrooms”. Brückmann’s key areas of research are video-based classroom research and education for sustainable development.



Albrecht Elsässer

Cardiology

Prof. Dr. Albrecht Elsässer has been appointed Professor of Cardiology at the School of Medicine and Health Sciences. Elsässer has been director of the University Clinic for Cardiology at the Klinikum Oldenburg since 2008. He studied Medicine at the universities of Heidelberg and Mainz before working at the University Medical Center Freiburg and the Max Planck Institute for Heart and Lung Research in Bad Nauheim. He is on the board of directors of the German Society of Cardiology (DGK), where he is the spokesperson for the research programme “Interventional Cardiology” and manages the DGK Academy’s continuing education programme. He also works as an evaluator for the German Federal Ministry of Education and Research (BMBF). Elsässer’s clinical focal points include the treatment of heart attacks and heart failure. In addition, he treats vascular and valvular heart disease. His research also centres on vascular and cardiac muscle diseases with the aim of developing new therapeutic approaches.



Thomas Etzemüller

Cultural History
of the Modern Age

Prof. Dr. Thomas Etzemüller has been appointed for a five-year period as Professor of Cultural History of the Modern Age with Special Focus on Northern Europe at the Institute of History. Prior to this he was a research fellow at the University. Etzemüller studied Modern History, Empirical Cultural Science, History of Art and Film Science at the universities of Tübingen and Stockholm. In 2000 he received his doctorate from the University of Tübingen, where he subsequently conducted research with the Collaborative Research Centre “Experiences of War. War and Society in the Modern Era.” From 2003 to 2009 he was Junior Professor of Contemporary History at the University of Oldenburg, where he earned his Habilitation in Modern and Recent History in 2010. He held a DFG Heisenberg Fellowship from 2009 to 2015 and was interim Professor of Recent and Contemporary History at the Ludwig Maximilian University of Munich in 2014/2015. Etzemüller’s main areas of research are the cultural history of the modern age and the theory and history of historiography. He also conducts research on the history and sociology of science.



Juliana Goschler

German as a Foreign Language /
German as a Second Language

Prof. Dr. Juliana Goschler has been appointed Professor of German as a Foreign Language / German as a Second Language. Prior to this the linguist had taught and conducted research as a junior professor at the University of Oldenburg. Goschler studied German Linguistics and Modern and Contemporary History at the Humboldt Universität zu Berlin. From 2003 to 2006 she was a junior research fellow in the “Technology and Society” Research Training Group at the Technische Universität Darmstadt. She received her PhD from the Humboldt Universität zu Berlin with a thesis on “Brain Metaphors: The Conceptualisation of the Brain in Popular Science” and then held postdoctoral research positions at the University of Bremen and University of Hamburg. Goschler is the coordinator of the research group “Language-Sensitive Subject Teaching” at the University’s Didactic Centre (DIZ). Her main research interests include multilingualism, language acquisition research, academic and educational language and linguistic heterogeneity at educational institutions, as well as cognitive linguistics and construction grammar.

New Appointments



Frank Griesinger

Oncology

Prof. Dr. Frank Griesinger has been appointed Professor of Internal Medicine – Oncology at the School of Medicine and Health Sciences, which he has supervised since 2013. Griesinger is the director of the University Clinic for Internal Medicine – Oncology at the Pius-Hospital Oldenburg and co-ordinator of the Pius-Hospital’s Cancer Center. In 2006 Griesinger came to the Pius-Hospital as the leading physician of the Department of Internal Oncology. Previously he was consultant at the Department of Haematology and Oncology at the University Medical Center Göttingen. There he headed the Haematology laboratory as well as the interdisciplinary lung cancer outpatient clinic. Griesinger studied Medicine at the University of Frankfurt, where he also obtained his licence to practise medicine. He is a specialist for internal medicine, haematology and internal oncology. His clinical focus areas include therapy for lung cancer, breast cancer and lymphomas. His main areas of research include molecular diagnostics and translational research non-small cell lung cancer.



Andrea Hildebrandt

Psychological Methods
and Statistics

Prof. Dr. Andrea Hildebrandt has been appointed Professor of Psychological Methods and Statistics at Faculty IV School of Medicine and Health Sciences at the University of Oldenburg. Previously she had been Junior Professor of Psychological Assessment and Personality Psychology at the University of Greifswald since 2013. Hildebrandt studied Psychology at the West University of Timișoara (Romania) and the Humboldt University of Berlin. Here she completed her doctorate in 2010 with a thesis on individual and age-related differences in face recognition. Following that Hildebrandt conducted research and lectured at the universities of Duisburg-Essen, Berlin and Greifswald. The psychologist studies individual and age-related differences in social cognition, with a focus on face recognition. She also develops statistical methods that are widely used in behavioural and neuroscience, as well as biometrics. Andrea Hildebrandt has received several awards, most recently a British Academy Visiting Fellowship Award.



Anna-Maria Hintz

Pedagogy and Didactics in the
Context of Learning Difficulties

Prof. Dr. Anna-Maria Hintz has been appointed Professor of Pedagogy and Didactics in the Context of Learning Difficulties and Particular Focus on Inclusive Educational Processes. Previously, she was Professor of “Educational Science with a Focus on Special Needs Education” at the University of Siegen. She studied special education in Oldenburg, obtaining a teaching degree and a diploma in pedagogy. After her postgraduate traineeship she conducted research and taught at the University of Cologne, where she received her doctorate in 2012. Scholarships from the Robert Bosch Stiftung and the German Academic Exchange Service (DAAD) as well as related research stays took her, among others, to Texas A&M University (USA). Her research focuses on the possibilities of preventing difficulties in learning and social-emotional development as well as of supporting those with difficulties. She investigates, e.g., which opportunities and challenges educational approaches offer to support positive behaviour through multi-tiered prevention models, and how these can be implemented and optimised by educators in different educational settings.



Almut Höfert

History of the Middle Ages

Prof. Dr. Almut Höfert has been appointed Professor of History of the Middle Ages. Before coming to Oldenburg she had held the Swiss National Science Foundation Professorship for Transcultural History of the Arab and Latin Middle Ages at the History Department of the University of Zürich (Switzerland) since 2011. Höfert studied History and Islamic studies in Bonn, Freiburg and Cairo. After completing her Master degree she worked on projects on local history in South-Western Germany and was a research assistant at the University of Würzburg. In 2001 she earned her doctorate from the European University Institute in Florence with a thesis on European travel reports on the Ottoman empire in the 15th and 16th centuries. At the History Department in Basel she earned her Habilitation with a thesis on a comparison between emperors and caliphates in the Early and High Middle Ages in 2014. Her primary research topics are history of religion and empire, gender history, urban history, methods of transcultural and global history, travel reports and Christian-Muslim relations.



Laura Lukassen

Numerical Fluid Dynamics

Dr. Laura Lukassen has been appointed Junior Professor of Numerical Fluid Dynamics with Special Emphasis on Wind Physics at the University of Oldenburg's Institute of Physics. Previously, she was a member of the "Theory of Turbulent Flows" research group at the Max Planck Institute for Dynamics and Self-Organisation in Göttingen. Lukassen studied Computational Engineering at the Technische Universität Darmstadt and completed her PhD there in 2015. In her dissertation, the engineer dealt with the stochastic description of flows. In particular, she studied how small particles in a flow influence each other. During this period Lukassen spent a research semester at the Johns Hopkins University in Baltimore, Maryland. As a post-doctoral researcher at the Max Planck Institute in Göttingen she began studying turbulent wind flows at wind farms. Her research focuses on deducing physical models for wind flows in wind farms and the numerical simulation of these processes.



Malte Rolf

Modern History of Europe

Prof. Dr. Malte Rolf has been appointed Professor of Modern History of Europe with a Special Emphasis on Eastern Europe at the University of Oldenburg's Institute of History. Prior to his appointment in Oldenburg he was Professor of Central and Eastern European History at the University of Bamberg. From 1992 to 2000 Rolf studied history, German Studies and Russian in Tübingen and Berlin. After completing his degree, he took a post as a research assistant at the Humboldt University of Berlin's Chair for the History of Eastern Europe. He received his doctorate from the University of Tübingen in 2004. From 2007 to 2012 he held a junior professorship of Eastern European history at the University of Hannover. He earned his Habilitation at the Humboldt University of Berlin in 2012 and has made several study trips to Russia. His main areas of research include the multi-ethnic empires of Eastern Europe in the nineteenth century, the nation states of Central and Eastern Europe in the interwar period and during the Second World War, and the Soviet Union during the Cold War era and the revolutions from 1988 to 1991.

New Appointments



Christa Runtenberg

Philosophy Didactics

Prof. Dr. Christa Runtenberg has been appointed Professor of Philosophy Didactics at the Institute of Philosophy. She previously held the position as interim professor. Before coming to Oldenburg, Runtenberg was a research associate at the University of Münster's Department of Philosophy for twelve years. After qualifying as a teacher in Philosophy and German Studies at the University of Münster she taught and conducted research as a research assistant and there and then obtained her doctorate in 1998. After her PhD she transferred to the Institute of Philosophy at the University of Rostock, where she held a research associate position for five years. In 2005 Runtenberg returned to the Institute of Philosophy in Münster. Her research focuses on practical philosophy, applied ethics, anthropology and the philosophy of education. Other focus areas are didactics of philosophy and philosophy-related subjects in lower secondary education as well as philosophising with primary school children.



Marc René Schädler

Speech Processing
and Perception Models

Dr. Marc René Schädler has been appointed Junior Professor of Speech Processing and Perception Models at the University of Oldenburg's Department of Medical Physics and Acoustics. He was previously a post-doctoral researcher with the University's Cluster of Excellence "Hearing4All". Schädler studied physics at the University of Oldenburg and became a research fellow with the DFG Collaborative Research Centre "Active Hearing". Study and research visits took him to Zaragoza and Barcelona (Spain). In 2015 Schädler completed his doctorate Kollmeier on automatic speech recognition in the working group led by physicist and physician Prof. Dr. Dr. Birger Kollmeier. In the same year he became a post-doctoral researcher with the Cluster of Excellence "Hearing4All". Schädler's research activities focus on the hearing and perception of spoken language. Moreover, the physicist develops algorithms aimed at improving machine-based hearing – for application for example in automatic speech recognition.



Sascha Schäfer

Nanophysics

Prof. Dr. Sascha Schäfer has taken up a Volkswagen Foundation Lichtenberg Professorship at the University. Schäfer studied Chemistry at the Technische Universität Darmstadt and earned his PhD in Physical Chemistry in 2008 with a thesis on the properties of isolated nanoparticles in molecular beams. He then performed research at the California Institute of Technology in Pasadena (California) in the group of the late Prof. Dr. Ahmed H. Zewail, who was the recipient of the Nobel Prize Chemistry in 1999. From 2012 to 2017, Schäfer worked as a senior scientist at the University of Göttingen, where he played a key role in the development of an innovative technique, ultrafast transmission electron microscopy (UTEM), which enables the imaging of rapid processes in the nano world. Since September 2017 he has led the group "Ultrafast Nanoscale Dynamics" in Oldenburg. His main research topics are in the field of experimental solid-state physics and involve fundamental energy transport and conversion processes, which play a major role, for example, in computer chips or solar cells.



Annett Thiele

Pedagogy

Prof. Dr. Annett Thiele has been appointed Professor of Pedagogy and Didactics for Cases of Impaired Physical and Motor Development and Chronic and Progressive Diseases. Previously, she was Professor of Pedagogy with Special Emphasis on Physical and Motor development at the University of Leipzig. After training to be a paediatric nurse Thiele studied Special Needs Education at the University of Bremen and then held post-graduate research positions at the universities of Oldenburg, Dortmund and Halle. In 2007 she earned her PhD with a thesis on written language acquisition for pupils with severely impaired motor and communication skills. Before taking up the professorship in Leipzig, she was a visiting professor for a year at the Humboldt University zu Berlin. Her research activities focus on the integration of pupils with physical disabilities or chronic or life-threatening diseases through the inclusion process. The main focus here is on children and youths with paralysis caused by neurological factors or with oncological diseases.



Tilo Wesche

Practical Philosophy

Prof. Dr. Tilo Wesche has been appointed Professor of Practical Philosophy. Previously, he was a research fellow at the Max Weber Center for Advanced Cultural and Social Studies at the University of Erfurt. Wesche studied Philosophy, Political Sciences and Modern German Literature at the Freie Universität Berlin. In 2003 he completed his PhD at the University of Tübingen with a thesis on the Danish philosopher Søren Kierkegaard. He earned his Habilitation in 2008 at the University of Basel, where he held a post as a senior scientific assistant, with a thesis on rationality. He then held interim professor posts at the universities of Freiburg, Basel, Jena, Frankfurt on the Main and Gießen. His systematic and historical research activities focus on democracy and justice topics, philosophical anthropology and good life theory as well as indifference and rationality research. In his socio-philosophical research on modern ownership societies, Wesche studies questions pertaining to collective ownership, non-profit ownership and sustainable ownership.



Rudy Leon De Wilde

Gynaecology

Prof. Dr. Rudy Leon De Wilde has been appointed Professor of Gynaecology at the School of Medicine and Health Sciences, which he has supervised since 2013. The medical director of the Pius-Hospital Oldenburg has run the clinic for Gynaecology, Obstetrics and Gynaecological Oncology/University Clinic for Gynaecology since 1992. Previously, he was the consultant at the Frauenklinik in Wuppertal. He is a specialist in gynaecology and obstetrics as well as microsurgery, special operative obstetrics and gynaecological oncology. He is a certified specialist in gynaecological endocrinology and reproductive and sexual medicine. De Wilde has received numerous awards from national and international societies and has contributed decisively to German and European certification criteria in the field of minimally invasive surgery. He has published more than 200 articles in scientific journals and is regarded as a pioneer in the field of minimally invasive surgery.

Fakultät I Bildungs- und Sozialwissenschaften

Mahmut Murat Ardağ, Thema: „National Identity: Conceptualization and Measurement, Antecedents and Consequences - An Exploration of the Sources of Heterogeneity.“

Sozialwissenschaften

Annett Aurig, Thema: „Kooperation zwischen Lehrkräften an Schulen und außerschulischen Mitarbeitern der kulturellen Bildung. Eine empirische Fallstudie an der Sächsischen Staatsoper Dresden.“ **Pädagogik**

Steffen Bandlow-Raffalski, Thema: „Compulsory Voting: Turnout, Information Acquisition and Processing.“

Sozialwissenschaften

Dorthe Behrens, Thema: „Konzeption, Entwicklung und Evaluation von Lernmaterialien (KEEL).“ **Pädagogik**

Maria Bergner, Thema: „Analyse und Förderung wissenschaftlichen Denkens bei Lehramtsstudierenden.“

Pädagogik

Kolja Briedis, Thema: „Stabilität trotz Wandel. Studien und Erkenntnisse aus der Absolventenforschung.“

Pädagogik

Karen Geipel, Thema: „Das werdende Subjekt. Geschlechtsbezogene Positionierungen junger Frauen im Sprechen über Zukunft.“ **Pädagogik**

Arezou Ghasemzadeh, Thema: „The Same, but Different: A Transcultural Analysis of Young Protagonists and their Space of Possibilities as portrayed in Turkish-German Migration Literature.“ **Pädagogik**

Birte Klinger, Thema: „Hilfplangespräche und die Arbeit am Subjekt. Eine anerkennungs-theoretische Perspektive auf die Positionierung von Kindern und Jugendlichen in Differenzordnungen“ **Pädagogik**

Stefanie Kretschmer, Thema: „Planung und Entwicklung von grundständigen und weiterbildenden Studienangeboten an öffentlichen Hochschulen. Eine organisations-theoretische Analyse auf der Basis von Fallstudien.“ **Pädagogik**

Pia Lehmkuhl, Thema: „Die temporäre Expertenorganisation – Voraussetzungen, Gelingensbedingungen und Hemmnisfaktoren von Projekten im Bereich Studium und Lehre an deutschen Hochschulen.“ **Pädagogik**

Jörg Makalowski, Thema: „Erzieherinnen mit Migrationsbiografie. Eine empirische Untersuchung über den Einfluss von Migrationserfahrungen auf die Interaktion zwischen Erzieherinnen mit Migrationsbiografie und Kindern in der deutschen Elementar- und Vorschulpädagogik aus der Perspektive der reflektierenden Praktikerinnen.“ **Pädagogik**

Julia Pitters, Thema: „Faktoren der Entwicklung mathematischer Basis-kompetenzen; Eine Untersuchung mit Schülerinnen und Schülern der fünften Jahrgangsstufe der Integrierten Gesamtschulen und Oberschulen.“

Sonderpädagogik

David Schünemann, Thema: „GitHub Revolution. Masseninteraktion in der kollaborativen Softwareentwicklung.“

Sozialwissenschaften

Joachim Stöter, Thema: „Mediennutzung heterogener Studierender im Kontext von Digitalisierung und Öffnung der Hochschulen.“ **Pädagogik**

Petra von Gablenz, Thema: „Prävalenz von Schwerhörigkeit und Tonhörvermögen nach Alter, Geschlecht und sozialer Schichtung; Ergebnisse der epidemiologischen Studie HÖRSTAT, 2010-2012.“ **Sozialwissenschaften**

Jelena Zumbach, Thema: „Psychische Störungen bei Kindern und Jugendlichen in familienrechtlichen Verfahren – Empirische Analysen psychologischer Sachverständigen-gutachten.“

Sonderpädagogik

Fakultät II Informatik, Wirtschafts- und Rechtswissenschaften

Emmanuel Asane-Otoo, Thema: „Energy and Climate Policies. Emissions, Incidence, and Innovation Impacts.“ **Volkswirtschaftslehre**

Martin Barde, Thema: „Re-Naturierung als unternehmensstrategische Perspektive.“

Betriebswirtschaftslehre

Henrik Bramlage, Thema: „Bedingungen und Möglichkeiten der Transformation industrieller Fleischwirtschaft.“ **Betriebswirtschaftslehre**

Meike Bukowski, Thema: „Environmental Conflicts and Conservation Justice (CJC) in Marine Protection: A CJC-Analysis.“

Betriebswirtschaftslehre

Matthias Kalverkamp, Thema: „Open-Loop Supply Chains in Circular Marketing Systems. A grounded-theory based approach addressing shortages in automotive remanufacturing.“

Betriebswirtschaftslehre

Benno Kammann, Thema: „The impact of the Markets in Financial Instruments Directive on conflicts of interest in analyst research.“

Betriebswirtschaftslehre

Charlotte von Möllendorff, Thema: „Valuing Energy-Related Externalities and Their Influence on Public Attitudes towards the German Energy Transition.“ **Volkswirtschaftslehre**

Marius Paschen, Thema: „Economic aspects of renewable energies. An empirical and theoretical analysis of effects on electricity prices and investments in transmission grids.“

Volkswirtschaftslehre

Tanja Rudnik, Thema: „Die Gesetzesumgehung in der Rechtsprechung des Bundesarbeitsgerichts. Vom Sachgrunderfordernis zum Rechtsmissbrauchsverbot.“

Rechtswissenschaften

Sascha Samadi, Thema: „The Social Costs of Electricity Supply. Types of Costs, their Dynamics over Time and how Energy Models take these Costs into Account.“ **Volkswirtschaftslehre**

Sören Sundermann, Thema: „Strategisches Markenportfoliomanagement im Lebensmitteleinzelhandel.“

Betriebswirtschaftslehre

Magdalena Tchikov, Thema: „Corporate Governance & Credit Risk.“

Betriebswirtschaftslehre

Patrick Wesp, Thema: „Nachhaltigkeitsdeklarierung von Konsumgütern – Bezugsrahmen, Gestaltungsempfehlungen und operationale Maßnahmen.“ **Betriebswirtschaftslehre**

Fakultät III Sprach- und Kulturwissenschaften

Samuel Campos, Thema: „Praktiken der Subjektivierung. Zur musikpädagogischen Relevanz praktiken- und subjekttheoretischer Ansätze.“ **Musik**

Vera Freytag, Thema: „Politeness in computer-mediated business communication. A contrastive study of English and Spanish email directives.“

Anglistik

Alexander Henschel, Thema: „Was heißt hier ‚Vermittlung‘? Begriffliche Untersuchungen und logische Überlegungen zu einer Kunstvermittlung der Differenz.“ **Kunst und Medien**

Dennis Herrmann, Thema: „Umkämpfte Räume – Neue Heimatmuseen.“ **Materielle Kultur**

Stefanie Mallon, Thema: „Das Ordnen der Dinge. Regulation einer sozialen Praktik.“ **Materielle Kultur**

Katja Molis, Thema: „Was machen/macht KuratorInnen? Subjektivierungsformen in neuen Programmen kuratorischer Aus- und Weiterbildung in Deutschland.“ **Kunst und Medien**

Roberto Reale, Thema: „Elemente der Klage in George Enescus Oper *Œdipe*.“ **Musik**

Angelika Richter, Thema: „Perspektiven künstlerischer Genderkritik. Performance Art und zweite Öffentlichkeit in der späten DDR.“

Kunst und Medien

Atty Schouwenaars, Thema: „The processing of morphosyntactic cues.“

Niederlandistik

Niklas Schreiber, Thema: „Interpunktionszeichen in der Oberflächensyntax am Beispiel des Semikolons.“

Germanistik

Susanne Stamm, Thema: „Klassenmusizieren im Praktikum. Kompetenzselbsteinschätzungen von Musiklehramtsstudierenden während eines fünfwöchigen Fachpraktikums.“ **Musik**

Henning Stockmann, Thema: „Zum Schreibunterricht angehender Deutschlehrer in der Praxisphase. Eine explorative Fallstudie zu den Veränderungen des fachwissenschaftlichen und fachdidaktischen Wissens.“

Germanistik

Fakultät IV Human- und Gesellschaftswissenschaften

Anna Bohlen, Thema: „Fluch und Religion: Lateinische Fluchtafeln als Ausdruck privater Religiosität?“

Geschichte

Karin Förster, Thema: „Das reformatorische Täuferturn in Oldenburg und Umgebung (1535-1540) unter der besonderen Berücksichtigung des Täufertheologen David Joris.“

Ev. Religion/ Religionspädagogik

Christine Schröter, Thema: „Wer ist der Andere? Erfahrungen von Freiheit und Ethik bei Angehörigen von Menschen im Wachkoma im Spiegel der Philosophie Emmanuel Lévinas.“

Philosophie

Velten E. Schäfer, Thema: „Dogtown und X-Games. Körper, Räume, Zeichen: Zur wirklichen Geschichte des Skateboardfahrens.“ **Sportwissenschaft**

Stefan Senne, Alexander Hesse, Gemeinschaftsarbeit, Thema: „Genealogie der Selbstführung. Zur Historizität von Selbsttechniken in Lebensratgebern (1916-2005).“ **Geschichte**

Fakultät V Mathematik und Naturwissenschaften

Joceline Sydela-Lya Avomo Ngomo, Thema: „Entwicklung und Implementierung eines Verfahrens zur Optimierung des Speicheraufwands bei Bernstein- und verwandten Copulas.“

Mathematik

Siouxie Maddy Correa Moya, Thema: „Vascular Epiphytes as bioindicators of Climate change and their own Vulnerability.“

Biologie u. Umweltwissenschaften

Keno Eilers, Thema: „Explicit formulae for higher genera hyperelliptic curves.“ **Mathematik**

Michael Fackler, Thema: „Experience rating of (re)insurance premiums under uncertainty about past inflation.“

Mathematik

Pascal Fieth, Thema: „Selected statistical mechanics approaches in sequence alignment, gene regulatory networks, and mouse brain histology.“

Physik

Irina Geibel, Thema: „Cer-katalysierte Synthese von 1,4 Diketonen und δ -Lactonen als Scaffolds für die kombinatorische Chemie.“ **Chemie**

Jana Greubel, Thema: „Arbeitszeitbedingte Risikofaktoren und ihre Abschätzbarkeit im Rahmen der Gefährdungsbeurteilung.“ **Psychologie**

Florian Grimsmann, Thema: „Elektrische und strukturelle Charakterisierung der Graphitanode von automobilen Lithium-Ionen-Zellen.“ **Physik**

Diana Carolina Gómez González, Thema: „Climate-Change Effects on Epiphyte Vegetation in a Tropical Montane Forest.“

Biologie u. Umweltwissenschaften

Ali Hadjihosseini, Thema: „Stochastic Analysis on Extreme Ocean Gravity Waves.“ **Physik**

Nils Sören Häfker, Thema: „The molecular basis of diel and seasonal rhythmicity in the copepod *Calanus finmarchicus*.” **Meereswissenschaften**

Nur Ili Hamizah Binti Mustaffa, Thema: „Biogeochemical properties of the sea surface microlayer and its effect on the air-sea CO₂ exchange.”

Meereswissenschaften

Benjamin Jacob, Thema: „On the Sensitivity of the Tidal Circulation in the North Sea to Morphodynamics and Atmospheric Forcing.”

Meereswissenschaften

Gerald Lohmann, Thema: „Solar irradiance variability on small spatial and temporal scales.” **Physik**

Markus Manssen, Thema: „Simulation of Spin Systems using GPUs and Transformation Algorithms.” **Physik**

Hanna Ruppertsberg, Thema: „Anpassung von *Phaeobacter inhibens* DSM 17395 an unterschiedliche N:P-Verhältnisse.” **Meereswissenschaften**

Kai Michael Röhrdanz, Thema: „Hydrothermale Carbonisierung (HTC) – Untersuchungen zur Herstellung von Kohle aus Landschaftspflegematerial – sowie zu deren pflanzenbaulichem Einsatz.”

Biologie u. Umweltwissenschaften

Thomas Schmidt, Thema: „High resolution solar irradiance forecasts based on sky images.” **Physik**

Maren Seibt, Thema: „The molecular geography of dissolved organic matter in the Atlantic and Southern Ocean.”

Meereswissenschaften

Jörg Stöver, Thema: „Platin-Nanopartikel für die heterogene Katalyse: Synthese und Charakterisierung durch die Röntgenphotoelektronenspektroskopie.” **Chemie**

Jan Vogelsang, Thema: „Ultrafast Point-Projection Electron Microscopy.”

Physik

Benjamin Wahl, Thema: „Granger causality of diffusion processes – effects of non-linearity and non-trivial noise.” **Meereswissenschaften**

Melanie Wallisch, Thema: „Diaminoterephthalate – Neue Fluoreszenzsonden für Anwendungen in der Biochemie und Biologie.” **Chemie**

Tobias Wiemer, Thema: „Technisches Wissen – Kategorienbildung für die allgemeine technische Bildung.” **Physik**

Gerrit Wienhausen, Thema: „Linking the exometabolome of selected organisms of the *Roseobacter* group to marine dissolved organic matter – a microbiological perspective.”

Meereswissenschaften

Atef Zekri, Thema: „Microstructural analysis of the degradation on solid oxide fuel cells.” **Physik**

Fakultät VI Medizin und Gesundheitswissenschaften

Anna-Katharina Bauer, Thema: „Temporal Dynamics of Uni-Modal And Cross-Modal Entrainment in the Human Auditory Cortex.” **Psychologie**

Thomas Biberger, Thema: „A joint auditory model for predicting psychoacoustic masking, speech intelligibility and audio quality.” **Physik**

Matthias Brandt, Thema: „Automatic Restoration of Audio Signals in Media Archives.” **Physik**

Elham Fathiazar, Thema: „e-Sensitive Dye Imaging of Tactile Processing in the Leech Neuronal Network.”

Biologie u. Umweltwissenschaften

Eske Gertje, Thema: „Medial Temporal Lobe Subregional Volumetry in Prodromal and Dementia-Level Alzheimer’s Disease Tested in a Clinical Population.” **Humanmedizin**

Onur Güralp, Thema: „Die Uterus schonenden chirurgischen Methoden bei Therapie resistenter postpartaler Hämorrhagie (PPH) in einem Zentrum mit begrenzten Ressourcen.”

Humanmedizin

Julia Habicht, Thema: „Effects of hearing aid experience on speech comprehension using objective performance tests.” **Physik**

Ante Jukic, Thema: „Sparse multi-channel linear prediction for blind speech dereverberation.” **Physik**

Genevieve Laumen, Thema: „Measures of Directional Hearing in the Mongolian Gerbil in Relation to Deteriorated Physiological Processes.”

Biologie u. Umweltwissenschaften

Arne Oetjen, Thema: „Threshold and Suprathreshold Phenomena in Auditory Modulation Perception.” **Physik**

Daniela Poppinga, Thema: „Methods for the characterization of the performance of detectors in small field dosimetry.” **Physik**

Lars Rölker-Denker, Thema: „Organisationales Lernen in der geriatrischen Versorgung. Ein organisationales Phänomen aus versorgungsforschender und informationswissenschaftlicher Perspektive am Beispiel des Geriatrischen Zentrums Oldenburg.”

Informatik

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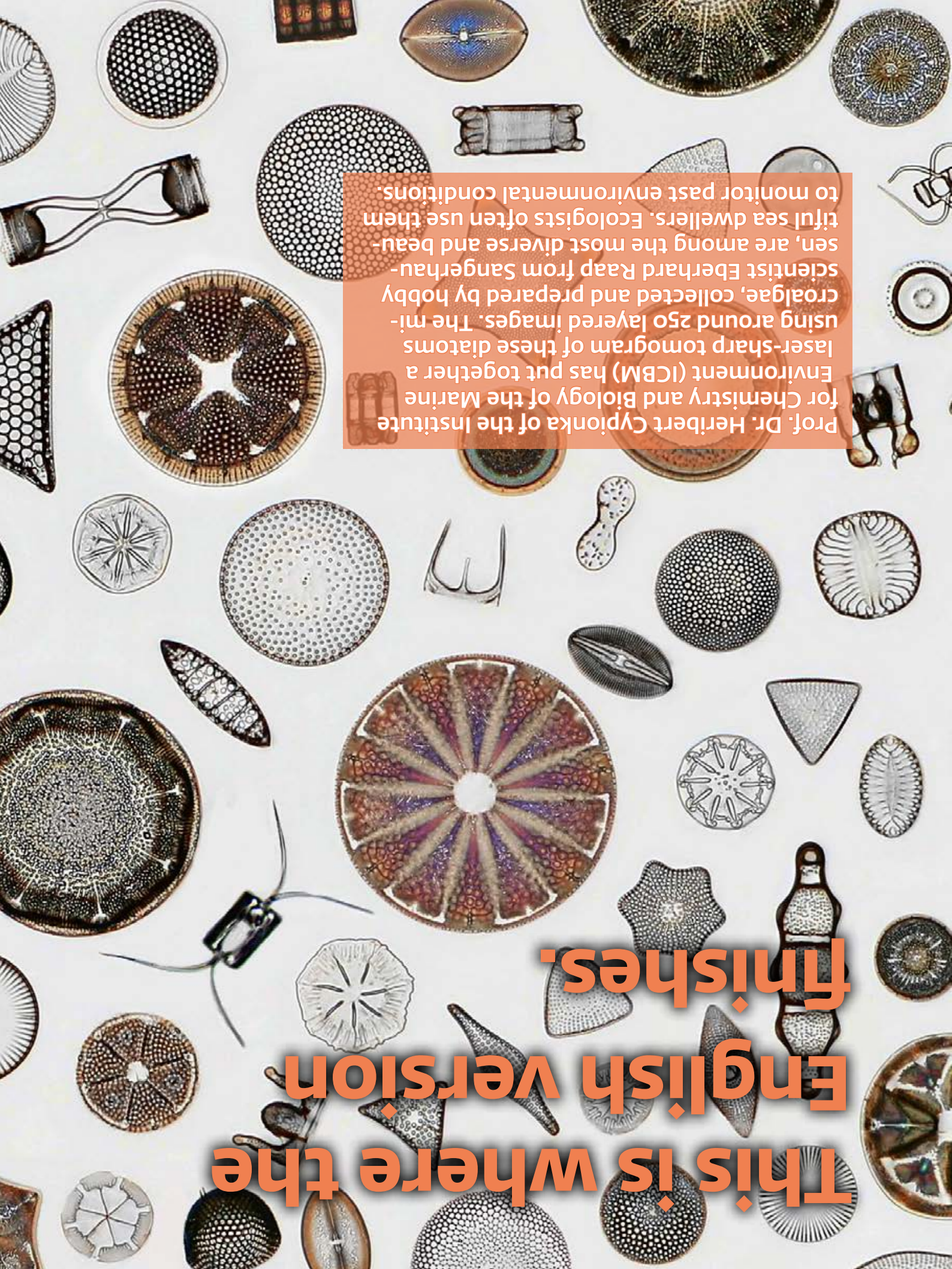
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Hier endet die deutschsprachige Ausgabe.

Aus rund 250 Schichtaufnahmen hat Prof. Dr. Heribert Cypionka vom Institut für Chemie und Biologie des Meeres (ICBM) ein gestochenes scharfes Bild dieser Diatomeen zusammengesetzt. Die vielfältigen Kieselalgen, gesammelt und präpariert vom Hobby-Wissenschaftler Eberhard Raap aus Sangerhausen, dienen Umweltforschern häufig als Anzeiger für das Klima der Vergangenheit.



This is where the English version finishes.

Prof. Dr. Herbert Cypionka of the Institute for Chemistry and Biology of the Marine Environment (ICBM) has put together a laser-sharp tomogram of these diatoms using around 250 layered images. The microalgae, collected and prepared by hobby scientist Eberhard Raap from Sangerhausen, are among the most diverse and beautiful sea dwellers. Ecologists often use them to monitor past environmental conditions.