

LSN MAGAZINE

THE BUSINESS JOURNAL OF HAMBURG & SCHLESWIG-HOLSTEIN

LIFE
SCIENCE
NORD



NEW STEPS IN NEURO- SCIENCE

How clinicians and industry study neurodegenerative diseases and translate their findings into innovative drugs



X-RAY LASER FIRES UP

The gigantic European XFEL helps biologists to make molecular movies

ALGAE-BASED COSMETICS

Award-winning biologist Inez Linke uses resources from the Baltic Sea

KNOW-HOW MOLECULAR MOVIE MAKERS

PAGE 06



SPECIAL NEW ERA OF PRECISION BRAIN MEDICINE

PAGE 08



PORTRAIT A MARINE PIONEER

PAGE 16



NEWS

NEWS FROM BUSINESS AND SCIENCE

04–Showcase of Northern medtech competence

More than a dozen companies take part in the joint booth of Northern Germany during this year's MEDICA in Düsseldorf. Partners of the HIHeal network will be presented in a new network guide.

05–Rendezvous in Tours

The partners of the ELISE consortium will meet in November in the French city of Tours, where the Centre-Val de Loire region is hosting the third meeting.

05–Digital Health Innovation Hub

The University Medical Center Schleswig-Holstein and the US-based information technology giant IBM have founded the "Digital Health Innovation Hub" with offices in Hamburg, Kiel and Lübeck.

KNOW-HOW

THE TECHNOLOGY STORY

06–07 –Molecular movie factory starts shooting

The gigantic research facility European XFEL – a high-speed camera to capture pictures at atomic resolution – has started firing X-rays on to biomolecules.

SPECIAL

TACKLING NEURODEGENERATION

08–11–New steps in neuroscience

Translating findings in neuroscience to the clinic has been notoriously difficult. But new technologies, such as stem cell culture and artificial intelligence, offer new windows into the brain and help scientists to develop novel treatments for neurodegenerative diseases. This Special highlights how academic and industrial players in Northern Germany are closing in on neurodegeneration.

BUSINESS NORD

NEWS FROM THE COMPANIES

12–How high-tech wearables change rehabilitation

With their robotic exoskeletons the medtech company Ekso Bionics is revolutionizing clinical gait training in rehabilitation. Now, it has moved its European headquarters to Hamburg.

13–Economy meets ecology

The pharma company medac has decided to voluntarily participate in an eco-audit for the first time.

13–Improved imaging for unborn hearts during pregnancy

The Hamburg-based startup northh medical has developed a true game changer for fetal cardiac imaging.

14–Focus on Vietnam

The life science market in Vietnam is growing. This offers huge potential for companies to enter the Southasian country.

PORTRAIT

LEADING LIGHTS IN THE NORTH

16–A marine pioneer

Award-winning biologist and businesswoman Inez Linke grows algae in the Baltic Sea to produce new ingredients for cosmetics.

TALENTS

EXCELLENCE IN THE NORTH

18–Making refugees fit for lab jobs

The first refugee has started educational training to become a biological technical assistant (BTA).

18–What's your research all about?

Pediatric diabetologist Simone von Sengbusch on a telemedicine project that helps children with glucose monitoring.

19–New chief executive officer

Frank Schröder-Oeynhausen joins the Technology Center Lübeck (TZL) as its new head.

19–New member of the management board

Eva van Pelt joins the Management Board of Eppendorf AG.

TRANSLATIONAL NEUROSCIENCE

NEW WAYS TO APPROACH
NEURODEGENERATION

Visit us at Facebook:
www.facebook.com/LifeScienceNord



Dr Hinrich Habeck,
 Managing Director
 Life Science Nord Management GmbH

Dear Readers, the hunt for new drugs to combat neurodegenerative diseases such as Alzheimer's disease or multiple sclerosis has led to huge disappointment for scientists and the pharma industry over the recent decades. It is evident that researchers still do not know enough about the biology of neurodegeneration to identify the right targets for new drugs that can modify the roots of the disease. Yet, there are signs that the industry is in the midst of a dramatic reversal: Scientific advances and new research tools are opening new windows to the healthy and the diseased brain.

It's the beginning of a new era of translational neuroscience and a considerable number of players in northern Germany are actively part of this new precision brain medicine. In this issue, we will present some of the most promising routes scientists and companies

from the North aim to follow to bring new drugs from the lab to the market. Competence in stem cell research is one area that plays a major role in this context.

Furthermore, we take a sneak peek at the European X-ray Free Electron Laser (XFEL) in Hamburg. This gigantic machine designed to capture images of molecules at atomic resolution is ready to deliver – and we describe the competition scientists face now in getting beamtime. In our portrait section, the editorial team visited Inez Linke, co-founder of oceanBASIS GmbH and expert for marine algae. Last June, she received the IB.SH-Unternehmerinnenpreis, a regional award for businesswomen, granted by the Investitionsbank Schleswig-Holstein. In addition, this issue sheds some light on our activities during this year's MEDICA which takes place from 13 to 16 November in Düsseldorf. Meet us and more than a dozen companies from the North at our joint booth and discover our new competency atlas involving all partners of the HIHeal Innovation Network.

This edition also looks at the growing life science market in Vietnam and the potential it offers for Northern companies.

Enjoy reading this issue packed with further exciting news from companies and researchers from the Life Science Nord Cluster.

Hinrich Habeck

MEDICA 2017

SHOWCASE OF NORTHERN MEDTECH COMPETENCE

More than a dozen medtech companies take part in the joint Northern booth at MEDICA 2017 to present their portfolio of products and services. The Life Science Nord Management GmbH shed lights on its infectious disease innovation network HIHeal.



During MEDICA, Northern companies from the medical technology sector are represented on the joint booth of Hamburg and Schleswig-Holstein.

MEET US AT MEDICA 2017

Life Science Nord Management GmbH

WTSH – Business Development and Technology Transfer Corporation of Schleswig-Holstein

HIHeal – Network for Innovation in the field of hygiene and infections

Companies:

altona Diagnostics GmbH
 Aqua Free GmbH
 Behnk Elektronik GmbH & Co. KG
 Devicor Medical Europe GmbH
 Dr. Brill + Partner GmbH | Institut für Hygiene und Mikrobiologie
 G. Heinemann Medizintechnik GmbH
 GHC German Health Care GmbH
 IHK zu Lübeck
 ILO electronic GmbH
 Institute proDERM
 Maschinenfabrik HARRY LUCAS GmbH & Co. KG
 MediTech Electronic GmbH
 MMID Nord GmbH
 Qualitätsplan 24 GmbH
 Spiegelberg GmbH & Co. KG
 UNIRENT EDV-Systemtechnik GmbH

With more than 120.000 visitors and 5.000 exhibitors, MEDICA in Düsseldorf is one of the biggest international trade fairs in the medical technology sector. As was the case in previous years, the Business Development and Technology Transfer Corporation of Schleswig-Holstein WTSH and the Life Science Nord Management GmbH will also organize a joint booth together in 2017. From 13-16 of November, a total of 17 companies (see right) will showcase their newest products and services. The expertise offered ranges from diagnostics in different application settings to optical systems and hearing therapies. In addition, the HIHeal network provides information at the booth on the North's extensive expertise in the field of infectious diseases and hygiene, which encompasses research institutes, clinics and key market players. „With the presence of HIHeal at this year's Northern booth, we present to an international audience the key skills that our Life

Science Nord cluster members have to offer,” says Hinrich Habeck, Managing Director of Life Science Nord Management GmbH.

The main goal of the HIHeal network is to establish an infrastructure and act as a catalyzer to improve cooperation. “We want to provide our cluster members with the opportunity to find suitable contacts and start new projects in an easy and expedite manner,” emphasizes Friederike Saathoff, Project Manager at Life Science Nord Management GmbH. The network is funded with the support from the European Fund for Regional Development as well as from the Hanseatic city of Hamburg. During MEDICA 2017 a network guide with all of the relevant stakeholders within the network will be published and distributed. SW

More Information:

www.lifesciencenord.de
www.wtsh.de

ELISE

RENDEZVOUS IN TOURS

Improving policies and fostering innovation in eight European Life Science Ecosystems is at the heart of the ELISE consortium that kicked off with a meeting in North Germany this March. As part of the Europe Interreg programme supported by the European Union, ELISE brings life science clusters from northern Germany (Life Science Nord and BioConValley) together with partner regions in France, Italy, Poland, Slovakia and Lithuania. From November 22–23, all partners will come together in the French city of Tours: the Centre-Val de Loire region located one hour's drive south of Paris is hosting the third meeting of the consortium.

"The Centre region is one of France's leading areas for pharmaceutical and cosmetics production," explains Nicolas Dubouloz, the Director for Research and Technology Transfer at the Regional Council. "We will focus particularly on biopharmaceuticals and their great potential for innovation for the Centre region," Dubouloz says. That is why the two-day meeting will involve various presenta-

tions on biopharma R&D projects and visits to relevant public and private research laboratories and institutes. The program also includes a visit to the Tours-based "Institut des Métiers et des Technologies" (IMT), which represents one of the main training pools for the national pharmaceutical and healthcare industry. Here, the ELISE delegates will be introduced to the Bio³ institute (BioCube), a modern centre which serves as an innovation platform for teaching and research in the field of biotechnology and the production of biologics and bioactive cosmetics. The institute is also supported by the universities of Tours and Orléans as well as by pharma companies active in the region.

Members from the Life Science Nord cluster are cordially invited to join the ELISE meeting in Tours. Interested parties are asked to please contact Thomas Frahm (frahm@lifesciencenord.de). **pg**

Further information:
www.interregeurope.eu/elise/

UKSH & IBM

DIGITAL HEALTH INNOVATION HUB

The success story of the "Healthcare Hackathon" continues: The University Medical Center Schleswig-Holstein (UKSH) and the information technology giant IBM have founded the "Digital Health Innovation Hub" with offices in Hamburg, Kiel and Lübeck. Starting from October, the hub aims at serving as a novel source of ideas and solutions that help to tackle the challenges that modern healthcare faces. It will be a market place for digital innovation, with developers in place that have the potential to get projects off the ground. A partner in the initiative is the new co-working space, Fleet 7.

"The Innovation Hub is the centre of digital healthcare transformation at the University Medical Center," said Deputy Chairman of the Board and Medical Director at UKSH, Jens Scholz. "We want to benefit from digitalization, artificial intelligence and robotics to treat our patients better. Now is the time to provide solutions in order to make use of big data, apps and virtual reality."

"IBM seeks collaboration with UKSH, other partners, incubators, startups and research institutes to work on new cognitive technologies and solutions for healthcare. This open and interdisciplinary collaboration will be at the heart of a new ecosystem for innovation that we hope to form in the state of Schleswig-Holstein," said Bart De Witte, Director Digital Health DACH at IBM Deutschland.

The Digital Innovation Hub is a result of the "Healthcare Hackathon" initiated by UKSH, IBM, Cisco and the Northern daily newspaper Kieler Nachrichten. The event that took place in Kiel from September 21–23 included a two-day software programming competition with 18 international teams. The award went to an Austrian hacker team and their project "Drotain" – an emergency drone system. **pg**

Further information:
www.healthhackhub.de

STARTUP PORTAL PLANNED

According to a recent study, Hamburg is the new German capital of startups. To boost this development even further, the Senate of Hamburg has initiated a new communication and interaction platform "beyourpilot – Startup Port Hamburg". It aims to support founders that come from universities and research institutes in Hamburg. Behind the interactive online platform is "Hamburg Innovation GmbH" (HI), a joint technology transfer organization incorporating all universities in Hamburg. Parties interested in setting-up an enterprise will find digital support concerning financing, relevant know-how and competent partners. The platform is scheduled to go live in the second half of 2018.

Further information: www.hamburg.de

#UKE

69.5

million Euro has been invested in the construction of the new clinic for pediatrics at the University Medical Center Hamburg-Eppendorf (Kinder-UKE).

EXCELLENT OUTLOOK

The Cluster of Excellence "Inflammation at Interfaces" at the Christian-Albrechts-Universität zu Kiel (CAU) received the green light from the German Research Foundation (DFG) to apply for a third funding period within the framework of the German Excellence Strategy: after two successful funding periods, the 300+ member research network may apply for further funding in the final round as of 2019. The cluster will be renamed as "Precision Medicine in Chronic Inflammation".

Further information:
www.inflammation-at-interfaces.de

EUROPEAN XFEL

MOLECULAR MOVIE FACTORY STARTS SHOOTING



A gigantic machine to capture images of molecules at atomic resolution is ready to deliver – the European X-ray Free Electron Laser is online. The facility near Hamburg produces extremely bright X-ray flashes that reveal the 3D structure of biomolecules in motion.

It's just a few days before the first shootings start in September. Adrian Mancuso and his crew are busy checking the instrumental setup in the so-called hutch, the molecular film studio at the European XFEL headquarters at the research campus Schenefeld near Hamburg.

"The European XFEL is the world's most powerful X-ray source and with its extremely bright and ultrashort laser flashes, we want to explore the 3D structure of biomolecules in action," says Mancuso, an Australian physicist. For seven years, he has been responsible for setting up the biomolecules and single particle imaging unit at the European XFEL.

He is noticeably proud of his team. Good teamwork is crucial in order to control and fine-tune the gigantic machine: The European XFEL is an international research facility of superlatives. It is housed in a series of tunnels up to 38 metres underground and has a total length of 3.4 kilometres, comprising three large sites. Total costs amounted 1.22 billion Euro, Germany covered more than half of the construction costs, Russia a quarter. Currently, twelve European countries contribute to the facility which employs more than 300 people. The centerpiece of the European XFEL is the world's longest superconducting linear electron accelerator, designed to provide the

energy needed to generate X-ray flashes a billion times brighter than the best conventional radiation sources. The main tunnel starts with an electron gun at the DESY campus in Hamburg-Bahrenfeld. After moving about two kilometres at high-speed, the electrons are then beamed between a series of magnets (undulators) that sends them on slalom-like path, where at each wiggle they emit X-rays, which coalesce into an intense laser beam.

Up to 27,000 flashes per second

The X-ray laser beam is then directed into five tunnels that eventually stop just below the European XFEL headquarters in Schenefeld in Schleswig-Holstein. It is like a dead-end underground railway station. What makes the European X-ray laser so powerful is its brightness and its firing frequency. Like an ultrafast strobe light the laser can rattle off 27,000 pulses every second – 200 times more than the next-fastest facility in the United

DESY
Bahrenfeld

electron beam

Osdrorfer Born

undulators

States. This matters because to study chemical reactions or dynamic biological processes, the X-ray strobe is used to capture flickering snapshots of the same system at different time-points that can be stitched together into a film sequence. Structural biologists want to find out, how specialized enzymes catalyze their substrate or how molecules in green leaves capture light and store it as chemical energy during photosynthesis.

In their hutch in Schenefeld, the researchers have just passed a jet of biomolecules in solution past the X-ray beam. The scattered radiation is picked up by huge detectors just before the sample is destroyed. Since the scientists are able to collect data at a far quicker rate, they miss less of the molecular action between shots. In a single second, scientists should be able to collect more than 3,000 snaps of the X-ray camera, compared with 100 or so at other facilities, Mancuso estimates. Such short experiments produce massive amounts of data. Researchers estimate the European XFEL will produce up to 10 million gigabytes of data per year which will be archived in a large storage system.

Small protein crystals and viruses

“Another big advantage is that we can broaden the spectrum of biomolecules that we can look at,” says Mancuso. To study proteins at atomic resolution with conventional X-ray sources, molecules must be packed into relatively large crystals to scatter enough photons to deduce their structure. But the X-rays from the European XFEL are so bright that researchers can gather diffraction patterns from crystals just a few nanometers in size or even from viruses and other individual bioparticles. “It allows us to study proteins that are hard to crystallize – such as mem-



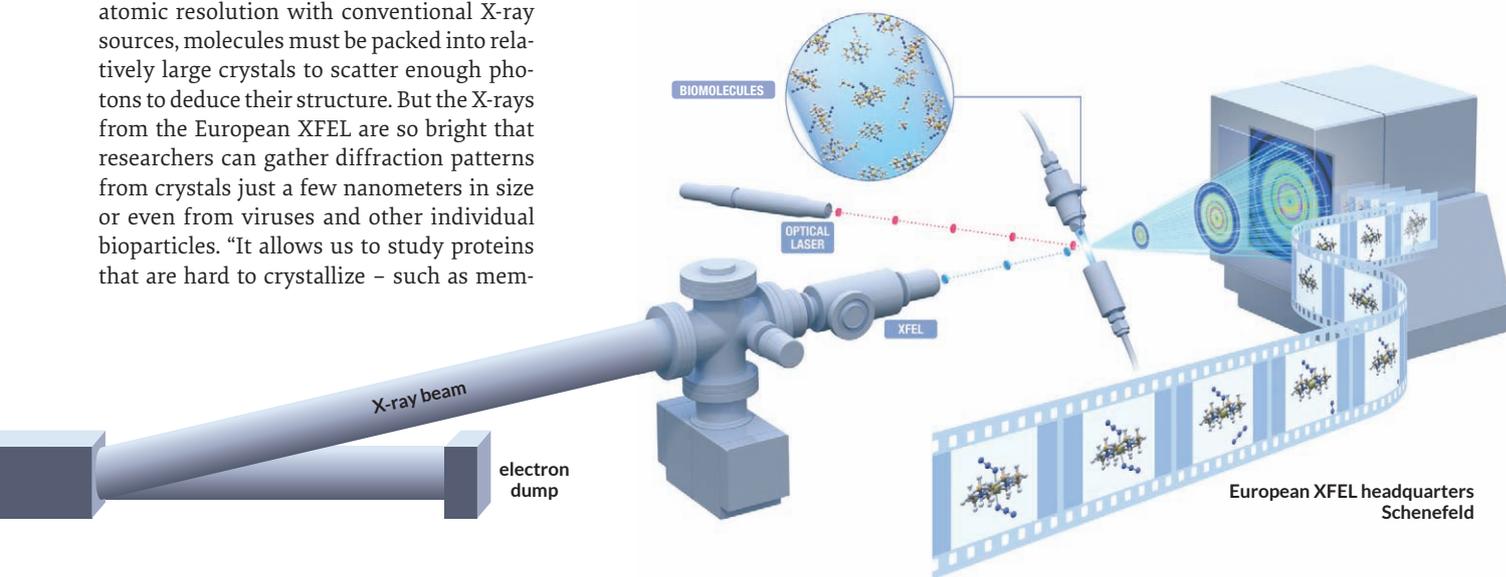
Physicist Adrian Mancuso and his team fine-tune the biomolecules imaging facility at the XFEL.

brane proteins, that often are pharmacologically relevant,” says Mancuso. One of the first users in September was Lars Redecke, a biochemist at the University of Lübeck. He wants to use the superlaser to study tiny crystals of proteins that are involved in Alzheimer’s disease, a neurodegenerative disorder. Together with Mancuso’s crew, Redecke and his team spent day and night in the laboratories and at the control room adjacent to the hutch, waiting for the right moment to apply their samples. In the end, they

succeeded in ensuring the series of complex pieces of equipment work together optimally – although the laser still has not reached its full capacity in this early phase.

Much sought-after beamtime

Getting beamtime at the European XFEL is free for researchers – but it’s highly competitive. A complete experimental run for one research group is typically scheduled five days with 12-hour-shifts per day. “Collecting data sets can be a matter of minutes, but setting up all instruments, optimizing the use of the beam and finding out how to best apply the sample takes time,” says Mancuso. To get beamtime, researchers have to apply and write proposals that are reviewed and prioritized by an independent committee of experts. “Researchers interested can apply via the European XFEL website. And in January 2018, we will have our next user meeting, with an update on the facility’s status and an exchange of information for potential applicants,” says press officer Bernd Ebeling. Companies may also get access to beamtime in the future, but will have to pay a substantial fee. One thing is certain: the biomolecular movie factory in Schenefeld will soon deliver brilliant insights into the nanocosmos. **pg**





TACKLING NEURODEGENERATION

NEW STEPS IN NEURO- SCIENCE

Translating findings in neuroscience to the clinic has been notoriously difficult. But new technologies, such as stem cell culture and artificial intelligence, offer new windows into the brain and help scientists to develop novel treatments for neurodegenerative diseases.

Alzheimer's, vascular dementia, Parkinson's and multiple sclerosis: being faced with a neurodegenerative disease has always been a matter of frustration. Patients have to cope with a failing brain and yet have very limited therapeutic options. Neurodegeneration has also been a matter of huge disappointment for scientists and the pharmaceutical industry who are hunting for drugs to stop these diseases in their tracks.

Translational research in Alzheimer's disease is symptomatic of the difficult situation in the field. Alzheimer's disease is a complex disorder that comes with the formation of amyloid- β -plaques which cause massive loss of neurons in the brain and lead to the mental and physical decline of patients. Progress in the basic science over the last few decades has identified a variety of relevant mechanisms but so far all promising drug candidates have failed in late-stage clinical trials. It has become clear that researchers still do not know enough about Alzheimer's biology to identify the right targets for new drugs which can modify the roots of the disease.

As a result of these setbacks, Big Pharma has become very reluctant or even turned its back on drug development for central nervous system (CNS) disorders in general. However, there are signs that the industry is in the midst of a dramatic reversal: scientific advances

and new research tools have opened new windows into the healthy and the diseased brain. We are on the brink of a new era of translational neuroscience which comes with the promise of developing more effective and specific approaches. A considerable number of players in Northern Germany are taking neuroscience from the lab into the clinic. With a mixture of cutting-edge technologies and new collaborative efforts, they are closing in on neurodegeneration.

Better disease models for stroke and vascular dementia

Johannes Boltze is both a physician and neuroscientist. He is a professor at the University of Lübeck and at the same time heads the Department of Translational Medicine at the Fraunhofer Research Institution for Marine Biotechnology and Cell Technology (EMB). His research focus is on neurovascular diseases, such as stroke and vascular dementia, where acute bleeds or occlusions of brain vessels lead to a massive loss of nerve cells. So far in the past, similarly to the experience with Alzheimer's, clinical trials with so-called neuroprotective agents have all failed in the treatment of stroke. New medical technology has sparked huge optimism in the field, Boltze reports. "By applying a sophisticated technique called mechanical thrombectomy, the blood flow can be rapidly restored and the therapeutic window has almost doubled," Boltze says. This is a new dimension in a world where "time is brain", although the majority of patients still does not benefit from these improvements.

In his current research, he focuses on the role of chronic inflammation and immunological processes in vascular dementia, the second most common form of dementia after Alzheimer's. According to Boltze, the models the industry and neuroscientists have previously used in the lab do not translate very well. "Our general aim is to make preclinical studies more reliable and predictive for the situation in the clinic." This also applies to more specialized animal models. For example, Boltze has introduced sheep as a large-animal model for studying stroke and a new rodent model of vascular dementia.

He is also a strong advocate of international collaboration with excellent players in translational neuroscience. This is why, together with his Japanese colleague Akihiko Taguchi, Boltze has initiated the "German-Japanese Center for Collaborative Research in Neuroscience" (C-CNS). This networking activity, supported by the German Federal Ministry

NEUROSCIENTISTS RECONNECT AT THE G20 SUMMIT

The G20 summit in Hamburg last July also set the stage for a gathering of renowned neuroscientists and scientific delegations across the member states. The "G20 World Brain Mapping & Therapeutic Scientific Summit" was already the 4th come-together of its kind. The conference aims to contribute to former US president Barack Obama's BRAIN initiative and to expand action on current and upcoming initiatives across the G20 nations. It brings together scientists, engineers, physicians and surgeons from across the globe in order to rapidly introduce clinical solutions for neurological disorders. One of the leading organizers of the event was the Fraunhofer Institute for Molecular Biology and Applied Ecology IME. The meeting covered all aspects of brain mapping and therapeutics from imaging, connectomics, modeling and artificial intelligence to nanoneuroscience, neurophotonics and genomics.

More information: www.worldbrainmapping.org

of Education and Research (BMBF), will create a research presence at the Biomedical Innovation Cluster in Kobe. "We will address the role of chronic inflammation in acute and chronic neurodegenerative diseases and aim at developing new diagnostic and therapeutic approaches," he says. He has built on the existing relationship with the biotech cluster in Kobe following a cooperation started up by the Life Science Nord cluster in 2014. The C-CNS will be supported by a number of academic and private partners from North Germany as well as Japan. Boltze is convinced that, "This will enhance the visibility of neuroscience in Japan, one of the most dynamic places for biomedical translational research."

Drug screening based on stem cells

One key driver of innovation in translational neuroscience is stem cell research. A technology known as reprogramming has revolutionized the field in the last decade. Here, adult human cells are converted using a cocktail of transcription factors into induced pluripotent stem cells (iPS cells). iPS cells are an indefinite source for the generation of any cell type, including neurons.

"The iPS technology gives us access to relevant human cell material that allows us to study a neurodegenerative disease in a dish, or at least aspects of it," says Rainer Kuhn, who leads the neuroscience unit at Evotec AG in Hamburg. The biotech company is one of the few that have ventured their neuroscience efforts on stem cell-based drug screening. Over the last five years, Evotec has invested in establishing a stem cell-based drug screening platform, run by 60 people, which focuses purely on searching for neurodegenerative drugs. "Enabled by a collaboration with the Harvard Stem Cell Institute, our stem cell platform has grown to



Stem cell technologies provide neuroscientists with cell material that makes it easier to study disease mechanisms in a dish.

become one of the largest of its kind in the industry worldwide,” says Kuhn. “Another big advantage is that we can generate patient-specific cells, so we can personalize our assays. Such cells can be tested as to whether they respond to a new drug.” It means placing the testing of human disease relevance at the front end of the drug discovery process. This will lead, the scientists hope, to the discovery of more disease-relevant drug candidates but also to more focused clinical development paths.

Last year, Evotec and the US-based biopharma company Celgene entered into an exclusive strategic drug discovery and development collaboration to identify disease-modifying therapeutics for a broad range of neurodegenerative diseases, such as amyotrophic lateral sclerosis, Alzheimer’s disease, Parkinson’s disease, and Huntington’s. Evotec received an upfront payment of US\$ 45 million. In the hunt for new drugs, the Evotec researchers test their cells with thousands of compounds, in the hope that some substances can ameliorate mutant cellular phenotypes. “We have found some really interesting hits which we are following up. There’s still a long way to go to new drugs,” Kuhn says. One of his team’s major goals is to further industrialize iPS cell-based drug screening to the highest industrial standards in terms of throughput, reproducibility and robustness.

Organ systems meet machine learning

Using stem cell technologies to study neurodegenerative diseases has also become a crucial tool at the Fraunhofer Institute for Molecular Biology and Applied Ecology IME ScreeningPort. The translational medicine research centre, based in Hamburg, specializes in searching through its huge collections of small molecules for those compounds with the potential to be further developed into drugs. “Stem cells help us to build better and more realistic disease models for preclinical research,” explains Carsten Claussen, director of Fraunhofer IME-SP. Two recently launched stem cell projects mirror some major trends in translational neuroscience:

Trend one aims at engineering miniature organs in the lab and combining them to create multi-organ-systems: in the interdisciplinary research project called HiPSTAR, the Fraunhofer researchers use cells from patients to decipher the molecular mechanisms leading to Alzheimer’s disease. They construct a model of the human blood-brain-barrier which serves as a protective barricade between the sensitive brain and the blood circulation. “We assume that an altered blood-brain-barrier plays an essential role in the development of Alzheimer’s disease,” Claussen says. The *in vitro* model will serve as a research tool for developing improved diagnostic methods and identifying suitable target structures for treatment. The researchers use iPS cell lines from healthy individuals and Alzheimer’s patients as the cell source for their experiments. By using fluid-filled micro-channels, the blood flow at the blood-brain-barrier will be emulated and therefore the laboratory setting will be customized towards the physiological situation within the patient’s brain. Once functioning, the disease models will be validated with approved and marketed drugs and compared to conventional models. The BMBF is funding this ambitious project, coordinated by the University of Würzburg, with 1.7 million Euro. A second major trend is combining stem cell technologies with pow-

erful computer simulations and intelligent algorithms as in the joint Fraunhofer project “Human Brain Pharmacome” (HBP). It aims to generate new pharmacological models of neurodegenerative diseases, taking into account approved drugs and a combination of innovative iPS-based assays and IT models. “The problem is that dementia research has not been model-driven up till now, but is essentially still in a preliminary data collection phase,” explains Claussen. For example, there is a lack of comprehensive models of Alzheimer’s which can be used for the identification of new targets. “Only with powerful IT tools and artificial intelligence can we get closer to models that are suitable for target hunting,” he says.

The HBP concept was set up by the Fraunhofer Institutes SCAI and IAIS, which are among the leading institutes in the field of information extraction and machine learning. They have developed a system that extracts valuable information on Alzheimer’s from unstructured sources of knowledge such as scientific publications, patient files and patents. The Fraunhofer IME ScreeningPort will feed the Human Brain Pharmacome with the experimental data from their neuronal cell culture systems. “We can test the potential of already approved drugs for functional interference with pathomechanisms,” says Claussen.

New application forms for drugs already approved

Taking a more classical approach to treating neurodegenerative disorders is Hamburg-based Desitin Arzneimittel GmbH. The medium-sized speciality pharmaceutical company with 300 employees is well known in Germany for its product portfolio in central nervous system drugs for epilepsy and Parkinson’s disease. “Our strength lies in improving active ingredients as well as in-licensing of innovations,” says Martin Zentgraf, CEO of Desitin. Research and development activities at Desitin are mostly based on galenic innovations, new formulations and application strategies for well-known and approved drugs. Zentgraf cites the example of the only approved drug for amyotrophic lateral sclerosis (ALS), a neurodegenerative disorder that affects the motor neurons, resulting in progressive muscle weakness and paralysis.

“The agent Riluzole was only available as a tablet which made it hard to take for the many patients with swallowing problems,” he explains. “That is why we have developed a suspension which is much easier to



Regular physical exercise protects the brain from multiple sclerosis. Clinicians want to understand why.

take.” The product has been marketed in Germany since October 2016.

Neuroprotectors to treat MS

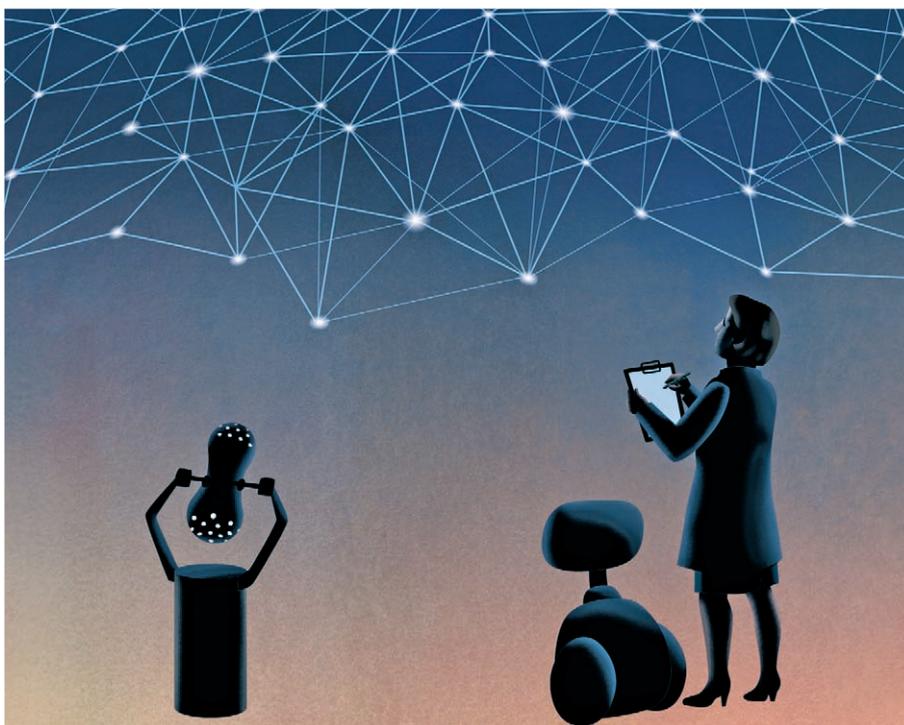
Neurologist Manuel Friese is director of the Institute of Neuroimmunology and Multiple Sclerosis (INIMS), a translational research institute at the University Medical Center Hamburg-Eppendorf. His team focuses on inflammatory and neurodegenerative aspects of multiple sclerosis (MS). MS is an incurable illness in which the body's own immune system destroys tissues in the central nervous system. Misdirected T cells and other inflammatory drivers destroy the protective coating called myelin that wraps around nerve fibres in the brain and the spinal cord leading to symptoms such as vision problems, weakness and impaired motor skills.

The good news is that there has been enormous progress concerning MS drugs in the past five years. “There are several immunomodulatory drugs now available on the market that damp down the immune response,” Friese says. In 2017 alone, two new immunotherapeutic MS drugs will enter the German market, providing patients and doctors with new treatment options although they all come at the price of side effects. These drugs all modulate the inflammatory response in MS patients but it becomes more and more clear that this is not enough, Friese stresses. “The problem is that the nervous system still degenerates.” He suspects a smouldering inflammation in the central nervous system that continues to act as a stressor for nerve cells.

A novel strategy that MS researchers worldwide and the pharmaceutical industry are increasingly pursuing is to make nerve cells in the brain more resilient to stressors: they are keen to find drugs with neuroprotective properties. Friese and his team consider themselves well positioned in this hunt: one potential drug target they identified years ago is TRPM4, an ion channel that sits on the surface of nerve cells. Chronic inflammation causes the ion channel to be hyperactive and a permanent sodium influx eventually harms and kills the neurons. Together with the Fraunhofer IME ScreeningPort and Evotec, Friese's team is now aiming at developing a neuroprotective drug that can be taken orally. They have identified small molecules that function as effective TRPM4 inhibitors. The compounds are now further validated in cell culture and animal models, supported by the BMBF until 2019 as part of its VIP+ initiative.

“When it comes to neuroprotection, we can learn a lot from nature,” Friese says. It has been known for some time that sport is one of the best neuroprotective agents. “The more you exercise, the better your brain is protected,” Friese points out, “we want to find out why.” At INIMS' clinical research arm, his team has started a series of studies investigating MS patients who undergo a special training program. The researchers also use MRI imaging to find out how the connections in the brains of MS patients change.

Another aspect the researchers address is that MS often strikes between the ages of 20 and 40 when people are raising families. Expectant mothers often experience temporary disappearance of the disease symptoms. “Pregnancy is a highly efficient immunomodulator,” he says. In a study, his team wants to decipher the mechanisms behind



Using the artificial intelligence approach helps scientists to understand the complex structure of the brain and to develop better disease models.

this phenomenon. Understanding this fascinating immunological tolerance might be the key to a novel and highly efficient MS drug.

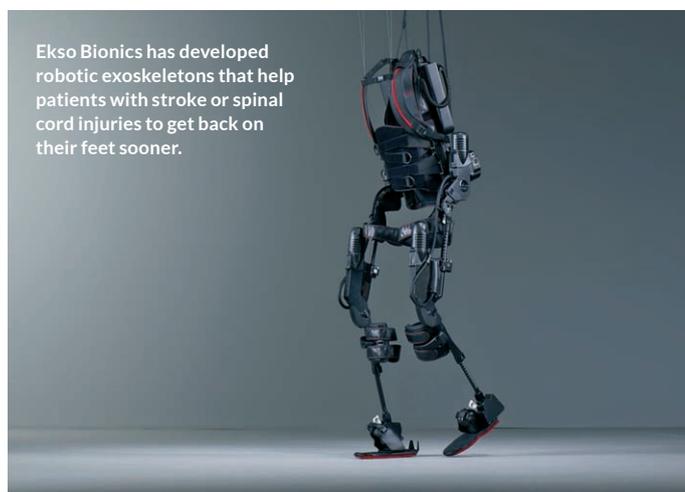
Also on the immune regulatory path for treating multiple sclerosis is Hamburg-based TOPAS Therapeutics GmbH. The biotech company was spun out of Evotec in March 2016. The frontrunner in its preclinical pipeline is an agent to treat multiple sclerosis. “It builds on an asset identified in the NEU² consortium,” says CEO Timm Jessen. Launched in 2007 as part of the BMBF's “BioPharma Initiative”, the consortium NEU² has created a public-private framework to identify and progress treatments for MS. The NEU² parties have attracted more than 28 million Euro of public funds by 2017. Being just one of several promising candidates, TOPAS now focuses on a targeted immunotherapy approach that makes use of nanoparticles which carry specific neuroantigens on their surface. “Thereby we generate antigen-specific regulatory T cells in the body. These immune cells counterbalance the T cells that are driving the harmful inflammation process in MS patients,” Jessen explains. In a mouse model for MS, a single intravenous injection of nanoparticles loaded with neuroantigen peptides potently protected against disease development and ameliorated established disease. Based on these promising results, TOPAS has invested a lot of effort in translating the academic protocol to the product space, Jessen says. Soon, the company with just under ten employees will start the toxicology program for its lead candidate. Clinical trials could start at the end of 2018. He underlines that the still-hesitant pharma industry has signaled strong interest if the immunotherapeutic agent should prove efficient in MS.

One emerging theme in translational biomedicine: stopping the course of a neurodegenerative disease such as MS will involve a mixture of approaches, namely a combination of therapeutic agents that regulate the patient's immune system and make his or her brain cells more robust. The era of precision brain medicine is still in its infancy but it has already generated several reasons for optimism. pg

EKSO BIONICS

HOW HIGH-TECH WEARABLES CHANGE REHABILITATION

With their robotic exoskeletons the medtech company Ekso Bionics is revolutionizing clinical gait training in rehabilitation and stroke centers all over the world. In September, the US-based company moved its European headquarters from Freiburg to Hamburg.



Robotic-assisted health is the new major trend in clinical rehabilitation. Over the last number of years, researchers worldwide have been working on different innovative solutions – and exoskeletons are the ones that could radically change rehabilitation therapies in the future. One of the pioneers in this field is US-based Ekso Bionics. Since September this year, the official European headquarters of the NASDAQ listed Californian company has been located in Hamburg. “This city is offering, from a geographical and international perspective, convenience and improved infrastructure to our partners and retailers,” explains Matthias Stief, Managing Director of EMEA region.

To date, his team has consisted of around 10 people. In total, the company has 85 employees worldwide. “Hamburg plays an important role, contributing about 40% to the overall turnover,” says Stief who’s task is to bring the exoskeletons into routine clinical rehabilitation in Europe, Africa and the

Middle East. “Our robotic exoskeleton is the only one that is approved for the rehabilitation of patients with stroke and of patients with complete or incomplete spinal cord injuries,” emphasises Stief.

In Germany, a total of 14 organizations already work with EksoGT, among them specialized centers for spinal cord injuries as well as for clinical rehabilitation. In Northern Germany, the BG Klinikum Hamburg is among those partnering with Ekso Bionics. However, market entry remains a challenge, Stief says. “Within the German healthcare system, no difference is made in the kind of gait training patients receive. The clinics are paid according to the so-called ‘DRG system’, whether they use traditional gait training or whether they work with our hightech approach.” Yet the company which was founded in 2008 by researchers at the University of Berkeley in the USA profits from the global shift towards robotic assisted rehabilitation. In Vodafone, they found a prominent IT part-

ner. „Vodafone’s network and global Internet of Things SIM will ensure reliable communications for diagnostics and better access to patient data, helping to improve the user experience with the suit,” he says. “With the technology, it is possible to monitor how the robotic exoskeletons are performing in real time, providing therapists with data on how the patients’ rehabilitation is progressing.” And new products are also in the pipeline. “During this year’s MEDICA we will present a product that combines our robotic exoskeleton with electrostimulation which further broadens the therapeutic spectrum for clinical rehabilitation,” Stief says.

In addition, the company also provides products for workers. “Using innovative exoskeleton technology the EksoZeroG and EksoVest offer protection and support against fatigue and injury at construction sites and factories,” Stief says. sw

More information: www.ekso-bionics.com

PHARMA

ECONOMY MEETS ECOLOGY

Sustainability is becoming increasingly important for entrepreneurs and companies in the life science sector. The pharma company medac has decided to voluntarily participate in an eco-audit for the first time.

“As a responsible, forward-looking pharmaceutical company we are aware that the economy and technological advances may impact nature and the environment. For this reason, we have developed an environment-friendly concept for our company,” says Jörg Hans, CEO at the medac Gesellschaft für klinische Spezialpräparate mbH.

Medac as a pharmaceutical company shows that economic interests and environmental responsibility need not be mutually exclusive for a pharmaceutical company. In 2016, medac Germany opted to participate in

an ecological auditing procedure according to the “Eco-Management and Audit Scheme” (EMAS) – also known as the EU eco-audit. Additionally, all of the company’s German and European sites successfully passed the inspection according to DIN EN ISO 14001. The latter is an internationally acknowledged and applied standard for operational environmental management. The voluntary environmental management instrument EMAS also covers all the requirements of ISO 14001.

Having achieved both accreditations, medac is now not only able to officially establish an up-to-date environment-friendly policy, but also to continuously improve it. All initiatives and guidelines are summarized in an eco-declaration published on the company’s website. This includes regulations on the use of waste in industrial processes as well

as administration. Other steps taken by medac include committing to the use of e-cars as company cars in order to reduce its carbon footprint. In addition, an annual “car-free day” has been implemented for its employees.

Moreover, since the inspections by independent specialists are repeated annually, medac also demonstrates continuous improvement of its environment-friendly performance. “With the voluntary audit we also promote environmental awareness and responsibility among our employees. They are encouraged to make their own contributions to the environment, whenever they have an idea,” states Hans. Both, the environmental declaration and the registration in the EMAS register, are available to the public for viewing. bp

More information: www.medac.de

CARDIAC IMAGING

IMPROVED IMAGING OF UNBORN HEARTS DURING PREGNANCY

The Hamburg-based startup northh medical has developed a true game changer for fetal cardiac imaging: The new technology enables magnetic resonance imaging (MRI) of fetal hearts.

“One in ten babies in Europe is diagnosed with a congenital heart defect after birth. Unfortunately, pre- and postnatal diagnoses for certain heart defects currently differ by up to 30 percent,” says Fabian Kording as he summarizes the need for new medical imaging tools. After years of research and development, the medical engineer and six of his colleagues from the University Medical Center Hamburg-Eppendorf (UKE) officially founded the spin-off north medical in July 2017.

One of the co-founders was Jin Yamamura, an attending radiologist at UKE. He first noticed the discrepancy between diagnostic possibilities for adults and fetuses, which motivated Kording’s research team at the UKE to

develop a new medical imaging tool. Following initial work, Kording and Yamamura received an EXIST funding grant from the German Federal Ministry for Economic Affairs and Energy, which encompasses almost 1 million Euro over two tranches. Joined by their colleagues they began to develop sMaRT-sync, a new device, which enables the diagnosis of congenital heart defects using MR images.

“We have developed the world’s first MRI compatible Doppler-ultrasound device,” says Kording and adds: “Until now, it was not possible to image fetal hearts in such high resolution.” As envisioned by Kording, the final device will be no bigger than a smart phone coupled to an ultrasound head. Since early 2017, the team has cooperated with the



University Medical Center in Lund, Sweden, and the Boston Children’s Hospital in the US. “We are proud to finally have equipped each of our partners with one of our devices, and are excited to see further innovative medical applications evolving,” says Kording. “Many more major clinics across Europe and

North America have already voiced their interest. Our goal is to equip every major medical institution with the ability to diagnose fetal heart defects via MR imaging.” The team aims to launch sMaRT-sync as a certified medical product by the end of 2018 and is currently looking for investors to support their business endeavour. jmr

More information: www.northh.de

LIFE SCIENCES IN VIETNAM

A GROWING MARKET

Data & Facts

- Revenues of the healthcare market (2015):**
US\$ 14.4bn (Source: World Bank)
- Revenues of the medical devices market (2015):**
US\$ 10.2bn (Source: Global Data)
- Total investments in public hospitals (2016-2020):**
US\$ 430m (Source: MOH)
- Regulatory body:**
The Ministry of Health (MOH) is the regulatory authority for management of drugs, biologicals, and medical devices
- High market demands in:**
Medical devices for imaging and diagnostic purposes, orthopedic and dental techniques, basic reagents and consumables
- Further information:**
www.moh.gov.vn

The Vietnamese life science market is growing. Demands for new technologies across the healthcare and biotechnology industry are huge. The government is eager to invest. With larger companies already established in the market, now is the time for small and medium-sized businesses to explore the vast opportunities.

Vietnam, a country slightly smaller than Germany, but with population density nearly 20% higher and a – on average – much younger population, has a growing and thriving economy. Even though the country is still under a centralized socialist leadership, it is also pursuing the western way of economy and modern living standards. Accordingly, there is huge demand for high-quality products across all industries.

Healthcare, life sciences, and biotechnology play an essential part in this development because the people are looking for high quality healthcare and professional treatments – and the government is willing to invest in it. In addition to public hospitals a large number of private hospitals and clinics are currently being built or planned. At the same time, many new medical practices are being set up from scratch in rural areas.

To meet this rising demand, the market depends on importing medical technologies – whether for imaging or diagnostics purposes, orthopedic and dental techniques, basic reagents, and consumables. Economists estimate a double-digit growth rate for the medical technology supply market by 2019.

Labs with German standards

In addition to the medical segment, the biotechnology research sector is also in high demand. One reason for this is historical: About one million unidentified victims of the Vietnam War are still scattered in mass graves around the country. Wolfgang Höppner, founder of the Hamburg-based Bioglobe company took on the task of bringing modern genome analysis techniques to Vietnam,

in order to help identify the many victims. After his first visit in 2014 and in cooperation with the Institute for Biotechnology in Hanoi, which is part of the Vietnam Academy of Science and Technology, he arranged for new machines and technologies to be delivered to the South-east-Asian country. In early 2016, he also trained Vietnamese scientists in Hamburg to ensure that the new technologies were properly implemented.

Recently, however, the project has stalled. "In April 2016, a new Prime Minister was elected in Vietnam, who was not present during our initial set-up," says Höppner and adds: "Around the same time, there was a massive environmental disaster off the central coast of Vietnam that caused mass fish death and ruined countless fishers." These events drew the focus away from the genome identification endeavour and money was prioritised elsewhere. It appears, that now the focus has returned, and the finishing touches are currently being put on new genome labs in the Hanoi Institute. These were built in line with Höppner's suggestions and global clean-room requirements. He expects that they will be ready for use by the end of the year. Most of the supplies and machines originate from German companies and have already been delivered to Vietnam.

Political support is essential

While German technical support, expertise, and machines are more than welcome in the country, Höppner also admits that political support is crucial for all activities, particularly when it comes to small and medium-sized enterprises (SMEs). To help these companies to enter the market, Kolja Harders from the Ministry for Economy, Transport and Innovation in Hamburg (see *interview on the right*), is offering support and knowledge of the country.

The goal is to improve market access for Northern companies and to establish a German-Vietnamese business network. Harders also stresses that although "Made in Germany" is held in great esteem in Vietnam, smaller companies still face difficulties when trying to establish their businesses.

To date, several larger corporations such as Siemens, Eppendorf, Philips or Qiagen are already active in the region, but the Hanseatic government aims at opening the doors for SMEs. In addition, the EU and Vietnam have only recently agreed upon a free-trade treaty, which will most likely come into effect in 2018. Harders expects, that this will significantly foster trade relations in the future.

jmr

HOW TO ENTER THE MARKET

"THE DOOR IS WIDE OPEN"



Kolja Harders is the Director of the Foreign Trade Division at the Ministry for Economy, Transport and Innovation of the Free and Hanseatic City of Hamburg (BWVI). The expert paints an optimistic picture of opportunities for the life science sector in the country because the market has a very high demand for technologies "Made in Germany".

How would you describe the current life science market in Vietnam?

Harders: Vietnam offers a thriving economy and the life science market in particular is growing dynamically. Living conditions in Vietnam have improved significantly and as a result people are looking for better and higher quality health care. The Vietnamese government is willing to meet these demands and has started ambitious programmes, for instance to build new hospitals and procure new technologies. Experts estimate that healthcare-related expenses could more than double by the year 2020.

What future developments and opportunities do you foresee?

Harders: The country's high demand for new technologies, knowledge and basic consumables has to be met by the global markets, because Vietnam itself has not yet established its own production facilities in this industry. This dependency on foreign suppliers is a great opportunity for German companies since "Made in Germany" still plays a pivotal and very convincing role in Vietnam. It may seem like a cliché, but this label represents high quality and reliability to Vietnamese customers. Some of the larger pharmaceutical companies are already active in the country. However, small and medium sized enterprises (SME) have not yet accessed the market to the full extent possible. This is what we would like to achieve with our support.

How can such companies enter the Vietnamese life science market?

Harders: Life science is a market that is dominated by public bodies. The government is the legislator, regulates imports, issues certifications, and approves individual deals. It is also by far the most important purchaser in the world of health care. Moreover, Vietnam's political system plays a vital role for the government in economic questions. For this reason, we try to open the doors for our companies, connect them to public and private decision makers as well as customers, and thus pave our companies' way into these promising Vietnamese markets. Once the first contacts have been established, our companies can take the next steps on their own. Although it would also be possible without political support, this way is certainly more efficient. We invite anyone from the Hamburg region interested in the Vietnamese market to contact us. We will help where we can.

Contacts of Vietnam market experts available for questions:

Ministry for Economy, Transport and Innovation, Hamburg (BWVI)
Foreign Trade Division
Kolja Harders
kolja.harders@bwvi.hamburg.de

WTSH – Business Development and Technology Transfer Organization Schleswig-Holstein – Foreign Trade Division
Bernd Schlegel
schlegel@wtsh.de

INEZ LINKE

A MARINE PIONEER

Inez Linke demonstrates how to successfully combine research, wellness, ecology, economy and social engagement. As co-founder and manager of the oceanBASIS company, the biologist is responsible for product development and marketing of Germany's first certified natural cosmetics based purely on marine algae.



Inez Linke combines economic success with ecology: as a company founder she develops business strategies, as a biologist she supports initiatives to protect the marine ecosystem.

FACTS & FIGURES

Place of work: oceanBASIS GmbH, Kiel

Position: co-founder, Head of R&D and marketing for algae-based natural cosmetics

Career path: born in 1963 in Kiel, study and PhD in biology in Hamburg, PostDoc in Roskilde (DK), co-foundation of oceanBASIS GmbH in Kiel (in 2001)

Business idea: to use marine macroalgae for pharmaceutical products, cosmetics and food

Further information:

www.oceanbasis.de, www.oceanwell.de

Inez Linke is the co-founder of the oceanBASIS GmbH and a marine biologist with heart and soul. "Using the ocean and its natural resources for human benefit and at the same time protecting the fragile marine ecosystem – that's my vision," says Linke, beaming with joy. As a company leader in her field, she has translated her vision into reality and become an inspiring example for others. In June 2017, she received the IB.SH-Unternehmerinnenpreis, a regional award for businesswomen, granted by the Investitionsbank Schleswig-Holstein (IS.BH) and endowed with 5,000 euros. The prize is in recognition of work that started several years ago.

Merging economy and ecology

Following her studies in biology and a PhD in Hamburg, Inez Linke went as a postdoctoral research fellow in marine biology to Roskilde in Denmark. Back in Germany, married and with two children, she conducted a market survey on algae-based pharmaceutical products and cosmetics for the Costal Research & Management (CRM) company in Kiel. Linke says, "This survey was very important and we found our niche." Then in 2001, she founded oceanBASIS together with Levent Piker and Christian Koch, as a sister company to CRM.

Today, some 15 years later, the company has built up a broad product portfolio, which extends from ecologically sustainably produced cosmetics and the development of innovative pharmaceutical actives to novel food products. "The research of CRM still influences our work at oceanBASIS, and there is a high level of cooperation between the two sister companies even from an admin-



istrative point of view,” says Linke. For her, however, using the marine resources successfully is one aspect and protecting the diverse ecosystem the other. For this reason, the biologist launched the “Protect the Ocean” campaign in 2015: proceeds of Oceanwell cosmetics are invested in the protection of marine and coastal habitats. In doing so, the businesswoman found her own way of combining entrepreneurial spirit and environmental awareness with her family life.

Natural cosmetics on a high

Within the company, Linke is responsible for the development of new algae-based natural cosmetics and marketing of the Oceanwell product line. These are the first certified natural cosmetics in Germany, which are exclusively based on pure algae extract. Linke believes, “We are completely on trend with these characteristics. That’s why we are successful.” When a German drugstore chain spotted the Oceanwell natural cosmetic products at a trade fair in 2009 and added them to its range of goods, the demand increased significantly. In the meantime, Oceanwell has accumulated a long list of trading partners in the hotel, wellness and cosmetic sectors. “This year, after obtaining the IB.SH award,



Sugar kelp is cultivated on ropes for research and as a resource for cosmetics.

and following reports in the media, a huge chatter became aware of us. In future, our Oceanwell products will be sold on a number of ocean liners,” Linke says proudly.

Collaboration with partners and companies from different sectors is an established basis for the medium-sized enterprise and its 15 employees. Linke not only values them as production and trade partners, but also as a continuous resource for new scientific developments. This is also the reason why Inez Linke regularly joins the “Algenstammtisch”, an informal supraregional meeting on all matters relating to algae research and the

business sector. “I’m fascinated by the various opportunities of using algae for so many different purposes,” she points out.

Supporting entrepreneurship in others

Apart from working for her own company, Linke also supports entrepreneurship initiatives that are aimed at motivating others, and lobbies for young people who want to set up their own company. The enthusiastic businesswoman is delighted to give presentations when invited and she also enjoys being a member of the jury, which assesses applicants for the founding grant (“Gründungsstipendium”), which is awarded by the Business Development and Technology Transfer Corporation WT.SH together with the IS.BH.

And how did Linke use the prize money from the IB.SH award? Two thirds of the money she has invested in the company. The last third will be used for a journey to the Côte d’Ivoire in Africa, where her company is engaged in the protection of marine and coastal habitats. “We hope, that part of the coast, where we collaborate with the indigenous people, will soon be designated as nature conservation area,” she says and smiles. **bp**

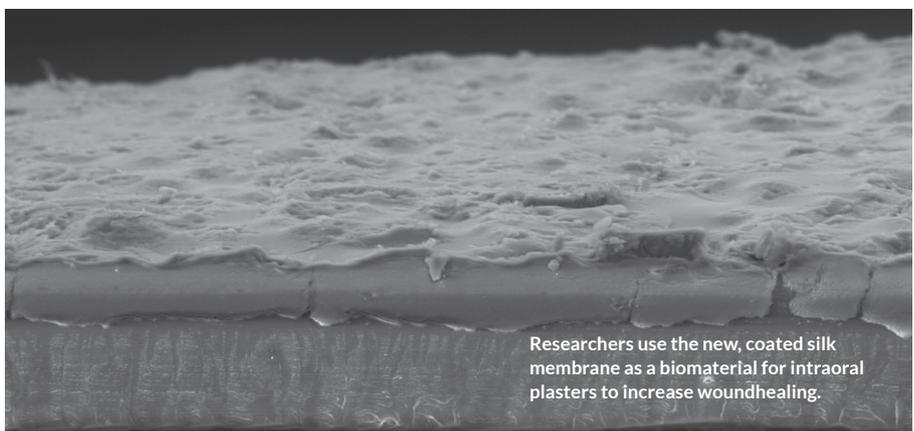
NEW APPLICATIONS FOR SILK AND MAGNESIUM

BIOCOMPATIBLE MATERIALS FOR IMPLANTOLOGY

Biocompatible materials are some of the most desirable inventions for improving oral and maxillofacial surgery as well as implantology and tissue engineering. Ralf Smeets, professor at the University Medical Center Hamburg-Eppendorf, and his team are focusing on new technologies which use silk and magnesium.

The team is investigating how the two natural resources could be used for either tissue engineering or implantology. Silk, for instance, offers promising characteristics because its fibers are made of the protein fibroin. “Silk has an excellent cytocompatibility, a low immunogenicity and is proteolytically as well as pH-neutrally absorbable,” emphasises Smeets.

The Hamburg-based researchers are currently running a three-year project funded by the European Commission, focusing on silk plasters, which increase wound healing, especially in the buccal cavity. “These new coated



Researchers use the new, coated silk membrane as a biomaterial for intraoral plasters to increase woundhealing.

membranes can be fixed intraorally using a special laser technology. In addition, they will be sutureless and will dissolve completely. This promotes healing and has many advantages for the patients”, explains Smeets.

The scientists are also investigating several material combinations: To modify the texture of silk membranes absorbable magnesium

can be added. Moreover, combining hydroxylapatite with the silk membrane could support bone regeneration. Another application of silk scaffolds are stents that increase cell growth, differentiation and angiogenesis. **bp**

Further information:
www.uke.de

EDUCATIONAL INITIATIVE

MAKING REFUGEES FIT FOR LAB JOBS

In August, the first refugee started educational training to become a biological technical assistant (BTA) at the School of Life Science of the University Medical Center Hamburg-Eppendorf in Hamburg. The initiative is centered on apprenticeships with diagnostics companies.

Mustafa Abdulrazak Jadaa is currently getting a general education at the School of Life Science, the state-accredited vocational school of the University Medical Center Hamburg Eppendorf (UKE), but from next spring on the student will spend twelve months obtaining practical training through apprenticeships spent at Hamburg-based in vitro diagnostics specialists “Labor Dr. Fenner und Kollegen” and altona Diagnostics GmbH. Mustafa Abdulrazak Jadaa is a refugee from Iraq who has lived in Germany since he and his family were forced to leave their home in 2012. Now, he is one of the first students in a new trainee program that enables refugees to become biological technical assistants

(BTA). Setting up the new training program and bringing school, companies and students together proved rather challenging but succeeded thanks to close collaboration between the partners involved. In order to find the right candidates, specialists from Mikro Partner Service GmbH carried out profiling which aimed to match the requirements for educational training with the relevant qualifications of the refugees. Where school reports and certificates are unavailable, the refugees have to submit a formal declaration regarding their school-leaving qualifications in their home countries. The BTA educational program is aimed at people who have completed an apprenticeship or have graduated from

high school (German Abitur). Mastering the German language is another major challenge for the refugees but it is crucial if they are to understand and comply with the rules that apply to those working in the laboratory and also if they are to take written or oral exams. Refugees interested in the BTA program at the School of Life Science must have achieved level B2 in German. Of course, they should also be very interested in working as a biological technical assistant. Oliver Zschenker, Director of the School of Life Science, says, “The apprenticeships in private laboratories are a unique feature which is at the very heart of our professional training.” Ulrich Spengler, CEO of altona Diagnostics, says: “We are pleased to contribute towards the integration of refugees in Germany by offering them professional training which provides them with long-term career prospects.” pg

Further information:
www.altona-diagnostics.com

MS VON SENGBUSCH, WHAT'S YOUR RESEARCH ALL ABOUT?



Dr. Simone von Sengbusch is a pediatric diabetologist at the University Hospital Schleswig-Holstein. She is responsible for several research projects covering diabetes education as well as guiding and helping children, teenagers, and their parents through diabetes-related issues. She is also leading the project “telemedicine for children and youths using a system for continuous glucose monitoring”.

“My group’s aim is to improve diabetes therapy for children. Since 2016, the German statutory health insurance schemes are open to reimburse a continuous glucose monitoring (CGM) system for type 1 diabetes patients. Instead of painful finger pricks, a tiny sensor that measures glucose in the fat tissue every 5 minutes is placed under the skin of the abdomen, buttocks or upper arm every 6–14 days. The glucose data is sent to the display of an insulin pump, a special monitor, smartphone or smartwatch. These CGM systems provide information about blood glucose trends and have multiple alarm settings to protect the user from any severe drop in blood glucose (hypoglycemia). CGM-data is currently stored in an online cloud facility offered by the manufacturer where it is immediately pre-analysed. In order to improve metabolic control, the insulin settings should be adjusted regularly but this requires frequent contact with the diabetes team. In summer 2017, we started a 2.5 year study to analyze the use of telemedicine (e-mail, phone contact or video chat) so that families no longer have to come into the clinic to discuss the glucose values.”



TECHNOLOGY CENTER LÜBECK

NEW CHIEF EXECUTIVE OFFICER

From November 1st, Dr. Frank Schröder-Oeynhausen joins the Technology Center Lübeck (TZL) as its new head. In his previous role, the physicist managed the Center for Applied Nanotechnology GmbH in Hamburg for 11 years. At the TZL he follows Raimund Mildner who will retire after a short transition period. "Frank Schröder-Oeynhausen has extensive experience as a leader of several companies as well as in the field of technology transfer," says Hans Georg Rieckmann, Chairman of the TZL supervisory board. At the same time, Rieckmann recognized the outstanding performance of Mildner and his team which es-

tablished the TZL as a well-positioned location factor over the last 30 years. The TZL is a joint venture of Lübeck-based industry and was set up to promote innovation, knowledge transfer and business startups. Since its foundation in 1986, the TZL has been providing flexible, scalable offices, laboratories and production facilities for innovative companies. Today, approximately 50,000 square meters of professional business premises are available in 20 buildings at three locations in the Hanseatic city of Lübeck. **SW**

Further information: www.tzl.de



EPPENDORF AG

NEW MEMBER OF THE MANAGEMENT BOARD

From October 1st, Eva van Pelt is to become a new member of the Management Board and will work in the area of Commercial Organisation, assuming worldwide responsibility for sales, marketing and service in the Eppendorf Group. This Management Board mandate was newly created at the end of 2016, and has been under the interim management of CEO Thomas Bachmann ever since. In June, the Supervisory Board appointed Van Pelt to the Management Board.

"Eva van Pelt has extensive expertise in sales, service, business development and product management," says Philipp von Loeper, Chairman of the Supervisory Board

of Eppendorf AG. "Currently, we are repositioning the Eppendorf Group to make it fit for the future. With the addition of Eva van Pelt, the company's Management Board is now complete and ready to successfully implement the changes and developments we have already begun to initiate," added Bachmann.

Before joining Eppendorf, van Pelt served as Managing Director for the EMEA region of Leica Microsystems at the Danaher Corporation. Prior to that, she headed Healthcare and Life Sciences for the EME region at Hitachi Data Systems. **SW**

Further information: www.eppendorf.com

JOINING FORCES FOR SUCCESS: WE WANT YOUR INPUT!

Please send information and views to: hauck@lifesciencenord.de

Would you like to receive the magazine regularly free of charge? For information on subscription, please contact: info@lifesciencenord.de

IMPRINT

PUBLISHER



Life Science Nord Management GmbH
Managing Director: Dr. Hinrich Habeck

Falkenried 88, 20251 Hamburg

Phone: +49.40.471 96 400,
Fax: +49.40.471 96 444
info@lifesciencenord.de
www.lifesciencenord.de

SUPPORTED BY:



EDITORIAL BOARD

Simone Hauck (responsible under press law)
Life Science Nord Management GmbH

REALIZATION

BIOCOM AG, Berlin

PROJECT MANAGEMENT:
Sandra Wirsching

EDITORS OF THIS ISSUE:
Dr. Philipp Graf, Dr. Britta Pollmann, Dr. Judith Reichel, Sandra Wirsching

PROOFREADING: Jacqui Birnie, Andrea Murphy

ART DIRECTION: Oliver-Sven Reblin

PRODUCTION: Benjamin Röbbig

ILLUSTRATIONS: Miriam Barton

PHOTOS: WTSH GmbH/Maike Schwarz (p. 4); European XFEL (p.1, 6), Philipp Graf (p.7); European XFEL / Rey,Hori (p.7), Ekso Bionics (p. 12); northh medical (p. 13), Harders (p.15), Britta Pollmann (p.1, 16, 17); Smeets (p.17, bottom); von Sengbusch (p. 18); TZL (p. 19, top); Eppendorf AG (p. 19, bottom)

PRINT: Druckerei Siepmann GmbH, Hamburg

Life Science Nord Magazine for Medtech, Biotech and Pharma is published three times a year.



An Easy Choice

Are your pipettes compliant to the IVD directive? Do they need to be?

Eppendorf offers all its manual air cushion pipettes in two versions now. An IVD compliant CE marked version according to IVD directive 98/79/EC and a »General Lab Product« version for research. It is an easy choice, because both versions follow the same extremely

high quality standards at Eppendorf. We are not making any compromises when it comes to precision, accuracy, robustness, safety and ergonomics.

Find out more at www.eppendorf.com/easy-choice

www.eppendorf.com

