

A positive evaluation for Oldenburg's School of Medicine

"An impressive range of courses that have been convincingly implemented." This was how the German Council of Science and Humanities rated the model degree programme "Human Medicine" of the "European Medical School Oldenburg-Groningen" (EMS) in a report published in mid-July. According to the experts of the council, which is Germany's most important scientific advisory body, the excellent standards in the areas of neurosensory science and hearing research have been fully maintained in recent years and have become the distinguishing feature of the University's medical school. They also concluded that focussing on the nascent field of health services research is strategically worthwhile and should be expanded. In the opinion of the Council, Oldenburg's School of

Medicine has built on the strengths of its founding concept and established itself as an attractive location for medical studies. The experts also welcomed the faculty's plans to expand its cooperation with the Rijksuniversiteit Groningen and the Universitair Medisch Centrum Groningen (UMCG) in the areas of research, the promotion of young scientists, specialist training, and health care. In a joint statement, University President Prof. Dr. Dr. Hans Michael Piper and the Dean of the Faculty of Medicine and Health Sciences, Prof. Dr. Hans Gerd Nothwang, welcomed this praise. However, they stressed that the critical remarks on the current situation at the faculty were equally constructive. These would contribute to further strengthening and improving cooperation with the

Oldenburg hospitals and the University of Groningen. Prior to the evaluation, the Universities of Oldenburg and Groningen and the UMCG already renewed their commitment to close cooperation in medical education and cross-border medical research. The corresponding cooperation agreement was signed in Groningen on 1 July. The renewal of the agreement originally signed in 2012 was also necessary because from the winter semester 2019/20 onwards, the number of students enrolling in the human medicine programme in Oldenburg will double from forty to eighty. The aim of the interregional cooperation is to establish cross-border networks and infrastructure for medical care services and to promote medical research, public health and the regional economy.



The medical school at the University of Oldenburg has built on the strengths of its founding concept and established itself as an attractive location for medical studies, the German Council of Science and Humanities said in its report.

DFKI Laboratory Lower Saxony up and running

In April the German Research Centre for Artificial Intelligence (DFKI) and the state of Lower Saxony expanded the DFKI branch office in Osnabrück, relaunching it as the DFKI Laboratory Lower Saxony with branches in Oldenburg and Osnabrück. The laboratory's primary research topic is environmental perception of autonomous systems. Two of the DFKI research groups are based at the University of Oldenburg: The "Industry and Production" group, run by the future occupant of the endowed professorship "Applied Artificial Intelligence", will focus on production and transport systems. Its objective is to develop automated assessment and analysis of digitalised systems using AI. Informatics professor Dr. Axel Hahn is helping with the expansion of the re-

search group, which cooperates closely with the Centre for Digital Innovations Lower Saxony (Zentrum Digitale Innovationen Niedersachsen – ZDIN) and the OFFIS - Institute for Information Technology. The focus of the second Oldenburg group is AI in marine sensor systems. Marine scientist Prof. Dr. Oliver Zielinski runs the new group "Marine Environmental Perception". Its research is geared towards developing flexible observation systems that can act autonomously in various situations and be used for tasks such as identifying damage to marine installations or controlling water pollution. The goal is to develop AI methods for the automated collection and classification of data from different sensors deployed in the marine environment.

When the North Sea's circulation is reversed

Persistent easterly winds in the spring of 2018 reversed the normal pattern of circulation in the North Sea for more than six weeks. This is the finding of a paper published jointly by the University of Oldenburg's Institute for Chemistry and Biology of the Marine Environment and the Helmholtz-Zentrum Geesthacht in the scientific journal *Continental Shelf Research*. The researchers used data from the project "Macroplastics Pollution in the Southern North Sea – Sources, Pathways and Abatement Strategies", in which residents living on the east coast of Great Britain reported to a website the locations of wooden drifters they had found. Oldenburg scientists had previously launched the drifters off the coast of the German islands of Borkum and Sylt in February 2018. Using additional data and model calculations, the researchers were able to establish that the North Sea water circulated clockwise during this period instead of its usual anti-clockwise pattern. The results contribute to a better understanding of how plastic waste is distributed in the sea.

Blockchain for freight papers

Plans are in the pipeline to introduce digital documents in the commercial shipping sector. A joint project coordinated by the University's Centre for Law in the Information Society (Zentrum für Recht der Informationsgesellschaft – ZRI) is seeking to replace load-specific transport documents on paper with electronic ones. The initiative entitled "Tradability of Physical Goods through Digital Tokens in Consortium Networks" ("Handelbarkeit physikalischer Güter durch digitale Token in Konsortialnetzwerken" – HAPTİK) will receive 1.4 million euros in funding from the German Federal Ministry for Economic Affairs and Energy. The project is run by jurist and ZRI director Prof. Dr. Jürgen Taeger. It started in January 2019 and runs over a three-year period. The team of Oldenburg researchers is using blockchain technology to produce documents whose contents cannot be tampered with – even when several parties have access to them. The use of digital freight papers based on this technology could speed up document transfer considerably and slash costs.

Learning for Teachers

In the second funding phase of the Federal and Länder government programme "Quality Initiative for Teacher Training" (Qualitätsoffensive Lehrerbildung), the University of Oldenburg received around four million euros for its project "Biographically-Oriented and Multi-Phase Teacher Training in Oldenburg" (Biographieorientierte und Phasenübergreifende Lehrerbildung in Oldenburg – OLE+). The initiative aims to establish new digital communication and information structures for improving teacher training and develop customised specialist training to refine the professional skills of undergraduates and teachers, in particular regarding media literacy. A further focus of the programme is to establish formats for research-based learning. OLE+ also reinforces practical orientation in teacher training, for example through "theory-practice spaces" in learning spaces outside the classroom. A newly established research academy is to put together an accompanying research programme. In addition, the university-wide advisory concept developed for the teacher-training degree programme in the first funding phase is to be implemented.

Ten new professorships for early career researchers

The Tenure Track Programme, a funding programme for early career researchers set up jointly by the German federal states and the Federal Ministry of Education and Research, has approved all ten tenure-track professorships applied for by the University of Oldenburg. The funding scheme aims to open up a consistent and transparent pathway to professorship for young academics. The programme gives the university new opportunities to provide individual and high-quality support

for the transition to a lifetime professorship, stressed Prof. Dr. Esther Ruijgndijk, Vice President for Early Career Researchers and International Affairs. The ten new professorships complement the university's existing focus topics of digitalisation, sustainability and diversity. The topics they incorporate range from the ethics of digitalisation, gender medicine and German as a foreign language to environmental and sustainability-related business informatics. In the area of "Digitalisation", four new

tenure-track professorships will expand the existing focus on "Cooperative Critical Systems" in the direction of the social sciences and humanities. The university's key research area of "Environment and Sustainability" will be bolstered by two new professorships. Four tenure-track professorships will be established in the focus area of "Diversity and Participation". They will address globalisation processes and cultural mobility as well as new research approaches in gender studies.

Designing digitalisation responsibly

In all areas where applied – language assistant applications, smart home systems, intelligent energy networks or autonomous cars – digitalisation is merging the physical and virtual worlds ever more closely. In a number of projects, scientists at the University of Oldenburg are working together with partner institutions to investigate the technical and social challenges these "hu-

man-cyber-physical systems" pose. They also look at how to design them responsibly. In order to bundle activities and create synergies the university has set up an interdisciplinary research centre called "Human-Cyber-Physical Systems: Safety, Acceptance, Social and Cultural Embeddedness". It brings together professors and junior researchers from each of the university's six faculties as

well as the Jade University of Applied Sciences, the OFFIS Institute for Information Technology, the German Aerospace Centre and the Fraunhofer Institute for Digital Media Technology IDMT. The director of the research centre is computer scientist Prof. Dr. Werner Damm; the acting director is psychologist Prof. Dr. Christoph Herrmann (both from the University of Oldenburg).

How sugar and opium changed Europe

Tobacco, tea, caffeine, sugar, chocolate, and opium first arrived in Europe in the seventeenth century. In a project titled "Intoxicating Spaces", historians at the universities of Oldenburg, Sheffield (UK), Utrecht (NL) and Stockholm (SWE) are investigating how intoxicants and stimulants changed life in northern European port cities. The researchers are using the cities of Hamburg, Amsterdam, London and

Stockholm as case studies. The Oldenburg subproject, which is headed by historian Prof. Dr. Dagmar Freist, focuses on the city of Hamburg, during the early modern period already one of Europe's busiest port cities. On the basis of historical documents, the researchers are investigating the extent to which intoxicants contributed to the emergence of new types of public spaces, such as coffee houses.

The goal is to find out what other "intoxicating spaces" were created during this period, and assess the impact this had on society and politics. The team is also investigating how intoxicant use has changed over time. In all four participating countries the scientists are working closely with museums and schools. The research project is funded by the research network Humanities in the European Research Area (HERA).



The larvae of coral reef fish – in this case Yellowstriped Cardinalfish – find their way back to their reef after weeks of roaming the ocean. In a newly approved Collaborative Research Centre, Oldenburg researchers are studying the mechanisms underlying this behaviour.

How animals navigate

In a new Collaborative Research Centre (CRC), a multidisciplinary team led by biologist Prof. Dr. Henrik Mouritsen is investigating magnetoreception in vertebrates - from the molecular basis of this magnetic sense to the behavioural mechanisms it involves. The German Research Foundation (DFG) began funding the CRC "Magnetoreception and navigation in vertebrates: from biophysics to brain and behaviour" at the beginning of 2019 with an initial budget of ten million euros. Scientists from the Institutes of Biology and Environmental Sciences, Physics, Chemistry and Biology of the Marine Environment and the Department of Neuroscience at the University of Oldenburg are all working together on the project. Researchers from the Universities of Bochum and Cologne, the Institute for Bird Research "Vogelwarte Helgoland" in Wilhelmshaven,

the Max Planck Institute for Evolutionary Biology in Plön and the Weizmann Institute of Science in Rehovot (Israel) are also participating. Scientists and laypeople alike have long been fascinated by the migratory behaviour of animals. Butterflies, fish and birds use different combinations of sensory input to find their way to their breeding grounds. For birds that migrate at night, celestial bodies and the Earth's magnetic field are important navigation aids. But there is still no detailed understanding of how vertebrates sense the magnetic field and how they process the information in their brains. The multidisciplinary team therefore plans to investigate magnetoreception in fish, birds and bats, and combine findings from quantum mechanics, neurobiology and genetics with studies on sensory perception and animal behaviour. They hope that

their research will provide answers to some of the key questions in biology, such as how magnetoreception works and how the brain stores spatial information. Mouritsen and Prof. Dr. Peter Hore of the Department of Chemistry at Oxford University are also investigating the particulars of magnetoreception in the project "QuantumBirds". The aim of this project is to determine whether highly sensitive quantum processes are the decisive component of the magnetic compass in the eyes of migratory birds, as these quantum chemical effects have yet to be conclusively proven. The European Research Council (ERC) is funding the prestigious project with a Synergy Grant of 8.6 million euros. The results of these two projects could potentially be used in bird protection and also in quantum computer technology and innovative biological sensors.