



UNIVERSITÄT
LEIPZIG



**RESEARCH AT
LEIPZIG UNIVERSITY**

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LEIPZIG UNIVERSITY'S EXCELLENCE STRATEGY

In its excellence strategy, Leipzig University acknowledges its tradition as a classical comprehensive university with an outstanding research profile across the entire spectrum of the natural sciences and humanities. The strategy is based primarily on four excellent initiatives, all of which involve artificial intelligence as an essential interdisciplinary theme.

BREATHING NATURE

This initiative combines research into biodiversity, climate and sustainable economics with remote sensing of atmospheric and soil properties. This will unlock a new understanding of the interaction of biodiversity, climate and society, from individual weather events and organisms to the global level.

PRECISION MEDICINE

Led by Alexander von Humboldt Professor Jens Meiler, this initiative aims to develop innovative computer-aided methods for personalising biomedical research and patient care. Precision medicine involves combining the simultaneous interpretation of a patient's genetic variance using innovative in silico analyses with experimental validation and transfer to clinical application.

NEW GLOBAL DYNAMICS

What global configurations and new dynamics characterise our present? For global cohesion, is it possible to develop a normative vision for the interaction of a large number of political, economic and cultural stakeholders worldwide? Empirical research is devoted to processes of spatialization in the emergence of new world orders, social cohesion in different world regions, the role of religions and alternative value systems, and the transnational governance of health, climate and resource consumption.

SPIN FOR LIFE: QUANTUM TECHNOLOGY IN BIOMEDICINE

Spin-based technologies such as magnetic resonance imaging have already revolutionised medicine. However, many new developments in physics, chemistry and molecular biology have not yet found their way into medicine and the life sciences. Spin for Life will enable high-precision analysis technologies and therapy methods for future-oriented, precise and individualised medicine.

LEIPZIG UNIVERSITY'S TRANSFER STRATEGY

Leipzig University promotes the transfer of knowledge to society, business, politics and culture with the aim of making academic knowledge socially effective and assuming responsibility – in the region and beyond.

Members of the University community generate the knowledge required to meet the major challenges of our time – from climate change to global health. They bring innovation to business and society, and contribute to the provision of public goods. They train professionals for education, law, healthcare, and other important areas of public life, and engage in continuing education. Through consulting and expert opinions and by working in external committees, members of Leipzig University contribute their expertise and ideas to social discourses and processes.

We are on hand as a point of contact and partner for those outside the University. As a knowledge centre, we also want to motivate people outside the University to actively participate in the transfer of knowledge. At Leipzig, another of our strengths is our successful track record in the field of inventions and patents as well as our pronounced start-up mentality.

Our transfer strategy describes the vision, but also the challenges of knowledge and technology transfer. In essence, the strategy aims to promote the spirit of transfer, to increase the scope and quality of transfer services and thus also to raise the University's profile. For us at Leipzig University, knowledge transfer – or simply transfer – means using dialogue to impart and transfer academic insights from all fields of research between the University and society, in particular between the University and the worlds of business, politics and culture. Transfer is thus a participatory process of exchange from which all those involved benefit.

RESEARCH SERVICE

In the Department of Research Services, Leipzig University offers its academics wide-ranging support:

RESEARCH FUNDING ADVICE

Supporting researchers, from the idea and the application process to contract conclusion, funding newsletters and training courses, initial funding for DFG collaborative projects through the Leipzig Seed and Review Fund

FINANCIAL MANAGEMENT OF EXTERNAL FUNDING

Monitoring and handling externally funded projects

RESEARCH DATA MANAGEMENT

Consulting, training and support throughout the research data life cycle

LEURIS RESEARCH INFORMATION SYSTEM

Input and maintenance of information on curricula vitae and focal points in research and teaching

ADVICE ON BASIC PRINCIPLES OF ACADEMIC INTEGRITY

by the Ethics Advisory Board Office and Office of Ombudspersons

RESEARCH ACADEMY LEIPZIG

Supporting skills development in doctoral researchers and postdocs

PRE-DOC AWARD

Preparation for doctoral research in tandem; see Pre-Doc tandem featured on p. 9

FLEXIBLE FUND

Initial funding for applications for external funding by postdocs

LEIPZIG TENURE TRACK PROGRAMME

Advising excellent early career academics on independent career paths on the way to a tenured professorship

LEIPZIG RESEARCHER DEVELOPMENT PROGRAMME

Support and advice for postdocs

TRANSFER SERVICE

Business meets academia! True to this philosophy, the Technology Transfer Office provides professional support for transfer projects in medicine and the natural sciences, humanities and social sciences, and in particular provides the best possible support for innovation processes. This makes it easier for partners in research and practice to tap the University's scientific potential.

Our range of advisory services includes the following specialisations:

INVENTIONS AND PATENTS: FROM INITIAL IDEA TO EXPLOITATION

COOPERATION WITH EXTERNAL PARTNERS (RESEARCH CONTRACTS, RESEARCH-RELATED SERVICES AND PARTNERSHIPS) INCLUDING ASSISTANCE WITH PROJECT COSTING AND CONTRACT NEGOTIATION

ATTRACTING AND ASSISTING RESEARCH AND EXPLOITATION PARTNERS

MAINTAINING CONTACTS WITH CHAMBERS, ASSOCIATIONS AND NETWORKS

SUPPORT FOR PARTICIPATION IN TRADE FAIRS AND ORGANISING TRANSFER-RELATED EVENTS

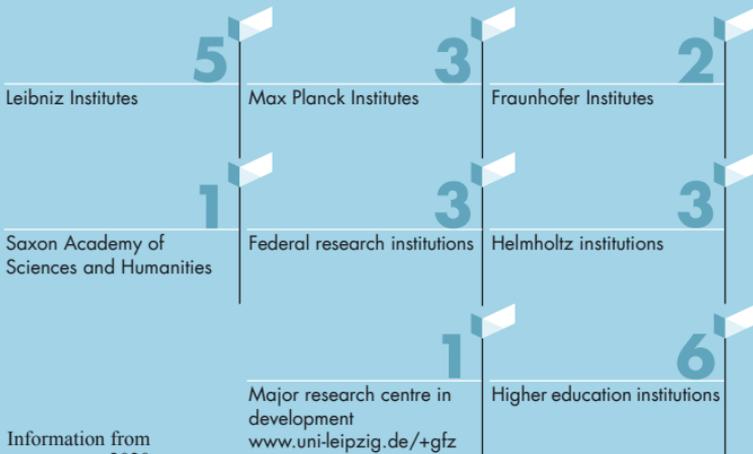
INITIAL ADVICE IN CONNECTION WITH BUSINESS START-UPS

As the central interface between Leipzig University and companies, the Technology Transfer Office ensures a steady transfer of knowledge and technology with the business world, both regionally and further afield.

PART OF A HIGHLY PRODUCTIVE NETWORK

Figures – Data – Facts

LEIPZIG UNIVERSITY



Information from 2020

RESEARCH IN THE LEIPZIG REGION

STRATEGIC RESEARCH FIELDS

SUSTAINABLE PRINCIPLES FOR LIFE AND HEALTH



This strategic research field unites research into the foundations of life and health in humans, nature and the environment. Researchers from the life sciences, natural sciences, economics, humanities, social sciences and computer science work in close cooperation to conduct basic and applied research as well as to promote transfer into society.

CHANGED ORDER IN A GLOBALISED WORLD



This strategic research field is dedicated to the study of globalisation processes such as global connections and the exchange between world religions and the development of human orders. Scholars from regional, cultural, social and historical sciences conduct research in cooperation with the Leibniz Institute for Regional Geography (IfL) and the Leibniz Institute for the History and Culture of Eastern Europe (GWZO).

INTELLIGENT METHODS AND MATERIALS



In this strategic research area, researchers investigate the properties of molecules up to complex nanostructures and cell mechanics, work on topics related to language and communication in the digital age, and deal with questions of physics, earth sciences, chemistry, mineralogy, the life sciences, mathematics, computer science and medicine.

FROM FRANCE'S COLONIAL PAST: INDOCHINA



The Respatialisation of the French Empire in the 19th Century: The Case of Indochina

Funding periods: Pre-Doc Award: 1 March 2019–31 December 2019,
DFG CRC 1199: 1 January 2020–31 December 2023

Institution: Leipzig university, Global and European Studies Institute

Project head: Professor Matthias Middell, Research Centre Global
Dynamics (ReCentGlobe)

In recent years, the question of France's colonial past and its postcolonial legacies has regularly come to the fore of public debate. It is in this light that this research project aims at exploring the complexities and the silences of the transformation of the French colonial empire throughout the 19th century and contributing to a new understanding of France's colonial "past".

Historical research on empire in the 19th century, including from new imperial history perspectives, has essentially focused on the British Empire and largely dispensed with a comprehensive study of the French Empire. Within the considerably smaller field of French imperial history, researchers have focused on North and sub-Saharan Africa, but not on Asia. Thanks to the support provided through the Pre-Doc Award that I received in 2019 together with my supervisor Dr Megan Maruschke and led by Professor Matthias Middell, I was able to initiate this research project and later continue it as part of the DFG-funded CRC 1199.

To address the lack of recent research on the French Empire in Indochina, my doctoral project will study first-hand archival material from the French colonial archival centres to retrace the process of the actors participating in the spatial transformation of the French Empire into a nation state with imperial extensions throughout the 19th century. A special focus will be given to the role official publications played in the (re)making of both the empire and the nation state, highlighting the tensions between the metropole and the domestic periphery on the one hand and the imperial periphery in Southeast Asia on the other.

**// The study of spatialisation processes under
the global condition in the 19th century allows us to
uncover power structures that continue to shape our
world today."**



Yasmine Najm

AWARDING EXCELLENCE IN TRANSFER

In order to ensure that the practical transfer of scientific knowledge and academic experience receives the public attention it deserves, Leipzig University and the University Society for Friends and Supporters of Leipzig University jointly award prizes every year to honour outstanding contributions in this field. Not only do they cover the entire spectrum of subjects at the University, they also extend across all educational and career levels. The award winners are thus representative of Leipzig University's diverse achievements in knowledge and technology transfer.

TRANSFER PRIZES FROM LEIPZIG UNIVERSITY IN 2020

University

Professor Almuth Einspanier, Faculty of Veterinary Medicine

University, special prize

Professor Ulrich Schneider, University Library

Faculty of Medicine

Professor Thomas Arendt and Dr Jens Stieler

Paul Flechsig Institute for Brain Research

TRANSFER PRIZES FROM THE UNIVERSITY SOCIETY IN 2020

Young talent award for employees

Franziska Wehlmann, Denise Heyder and Susanne Haase

Centre for Teacher Training and School Research

Nico Max Lindenberg

Institute of Educational Sciences

Young talent award for students

Cedric Jürgensen

Faculty of Social Sciences and Philosophy

Johannes Brandau

Faculty of Economics and Management Science

Special awards for MINT transfer "Jugend forscht"

Alexandra Helbig, school pupil, Gymnasium Brandis

Willy Steinhart, school pupil, Wilhelm-Ostwald-Gymnasium Leipzig

Further information:

www.gesellschaft.uni-leipzig.de/auszeichnungen/#transfer



The flagship of German polar research, the research icebreaker Polarstern ended its greatest adventure – the MOSAiC expedition – in October 2020: more than 300 researchers investigated the influence of the Arctic climate on global weather. Scientists from the Institute for Meteorology at Leipzig University carried out extensive measurements, including with a tethered balloon, to study the Arctic atmosphere.

See p. 13





Biologist Crispus Mbaluto infects tomato plants with butterfly caterpillars to study the plant's chemical defence mechanisms against pests. See p. 14

MOSAiC EXPEDITION



MOSAiC expedition: “Multidisciplinary Drifting Observatory for the Study of Arctic Climate”

Funding period: 1 January 2020–31 December 2023

Participating institutions: Leipzig University together with 82 research institutes and state-owned companies from 20 countries

Project head at Leipzig: Junior Professor Heike Kalesse-Los, Institute for Meteorology

As the climate warms, how is the interplay of atmosphere, sea ice, ocean and biosphere changing in the High Arctic? What is the impact of Arctic warming on weather and climate in the mid-latitudes? These two questions were the starting point for MOSAiC, the largest Arctic expedition ever: the research icebreaker Polarstern got frozen in the Arctic sea ice from autumn 2019, drifting across the northern polar ice cap for a year. The 300 scientists from 20 nations spent the winter in a region that is difficult to reach during the polar night and of which only a few observations had previously been made. They set up a research camp on an ice floe and operated a dense network of monitoring stations. Leipzig University is particularly involved in projects that investigate the formation processes of precipitation and the interactions between clouds and sea ice. For this purpose, meteorological measurements were carried out with a tethered balloon during the complex melting phase, which is particularly important for understanding the interaction between sea ice and the atmosphere. Although the coronavirus pandemic posed logistical problems and scuppered the original plans for supplying the icebreaker, the mission was a big success. The next step is to analyse the unique, 150-terabyte data set and the countless samples of components of the earth’s atmosphere, snow, sea ice and ocean water.

“To better understand climate change, comprehensive long-term data sets in the Arctic – the region of the world experiencing the most warming – are essential. The extensive data from the year-long MOSAiC field measurement campaign will help greatly improve our understanding of climate component processes in the Arctic.”



Video interview with Professor Heike Kalesse-Los at:
www.uni-leipzig.de/+driftingobservatory

BOTANICAL GARDEN



Botanical Garden teaching and research centre

Participating institutions: Leipzig University, Botanical Garden; German Centre for Integrative Biodiversity (iDiv)

Director of the Botanical Garden at Leipzig University:

Professor Christian Wirth

What types of plants attract butterflies to my garden? My lawn needs too much water – what can I replace it with in the future? Questions like these from visitors to the Botanical Garden show that the biodiversity and climate crisis has arrived in Germany. The Botanical Garden is the ideal place to answer them and discuss new ways forward.

The Botanical Garden has existed since 1542, since which time it has been an integral part of the scientific and cultural identity of the University and the city of Leipzig. Over 7000 species of plant from all over the world are cultivated on 3.4 hectares. This valuable collection serves research and teaching, but also as a colourful window to the public. The plant shows, markets, and the butterfly house attract 35,000 visitors a year. In addition, some 90,000 guests explore the grounds. Over 100 school classes visit the botany school each year.

It is important to use this potential to strengthen the social dialogue on species loss and climate change. The time for change is now! By establishing a transfer team, we are expanding existing formats and developing new ones. Citizens of all ages are increasingly involved in science and education activities: “Viel-FalterGarten” for butterflies, “Auengarten”, “Gartenkinder” kindergarten, educational trails, “Botanischer Salon” and much more. Key partners here are the Botanical Garden’s non-profit society, the City of Leipzig, environmental associations, and the DFG Research Centre iDiv.



**We humans need biodiversity to survive.
Our garden makes this something everyone
can experience and understand.”**



Video interview with Professor Christian Wirth at:
www.uni-leipzig.de/+botanischergarten

ECOSYSTEMS OF THE WORLD: REMOTE SENSING



Remote Sensing Center for Earth System Research (RSC4Earth)

Participating institutions: Leipzig University, Helmholtz Centre for Environmental Research (UFZ)

Professorships involved: Professor Hannes Feilhauer, Professor Miguel Mahecha, Professor Jian Peng, Professor Michael Vohland

How do extreme events such as periods of heat and drought affect our forests? Many people in Germany have been asking this question over the past two years. But in order to be able to answer questions of this kind at all, we first need suitable observational data, such as that obtained by means of remote sensing. Thanks to satellites, drones and ground-based sensors, researchers can now track changes in our environment at all scales in near real time. This lets them effectively monitor how the world's ecosystems are changing. Together with the Helmholtz Centre for Environmental Research (UFZ), Leipzig University established the new Remote Sensing Centre for Earth System Research (RSC4Earth) in 2020, strengthening this research area with three new professorships. The Centre's research lines complement the University's already world-renowned expertise in the fields of biodiversity and climate. The work of RSC4Earth is thus directly integrated into the Breathing Nature excellence initiative, which bundles and expands research on these topics in Leipzig. In this context, it will now be much more feasible to take a fresh look at fundamental scientific questions, such as how biodiversity affects interactions between terrestrial ecosystems and the climate system, and how to effectively detect changes in these interactions.

// The potential to use big data streams to understand changes in our ecosystems is immense. In particular, new artificial intelligence methods are opening up new opportunities for us to learn from remote sensing data to understand complex earth system processes."



Professor Miguel Mahecha

SPECTROMETER THE SIZE OF AN ANT



Ultracompact spectrometer UltraSPEC2

Funding period: 1 June 2020–31 May 2023

Participating institutions: Leipzig University, Faculty of Physics and Earth Sciences

Project head: Professor Marius Grundmann, Felix Bloch Institute for Solid State Physics

Spectrometers can be used for a wide range of chemical analyses, for example of foodstuffs, in ecosystems or in medicine. Currently, spectrometers mainly serve applications in science and industry. As part of the 1.5-million-euro BMBF-funded project at the Felix Bloch Institute for Solid State Physics, an ultracompact spectrometer is being developed based on a new principle developed in the previous research phase. This tiny spectrometer, which will be no bigger than an ant, could be built cheaply using the planar process, which is common in the semiconductor industry, thus making it available to consumers. Such a component could be built into mobile devices such as smartphones in particular, and would help spectral analysis to become more widespread in everyday life. For example, it would be possible to check the authenticity of banknotes; or whether wool sold in a shop has been fully dyed, or whether toxins were used in its manufacture. The small spectrometer could be used to check pigment spots on the skin to see if they are harmless or dangerous anomalies. More new applications could result in the spectrometer becoming a universal tool.

To begin with, the first prototypes are being built in the lab. It is then planned to exploit the results through a start-up and by partnering with companies. Cost-effective mass production is one goal of this project.



Our spectrometer will be as small as an ant when we've finished developing it. It may then cost a euro."



Video interview with Professor Marius Grundmann at:
www.uni-leipzig.de/+ultraspec2



Spin for Life: Quantum Technology in Biomedicine

Participating institutions: Leipzig University; Max Planck Institute for Human Cognitive and Brain Sciences; Fraunhofer Institute for Electronic Nano Systems; further partners in Germany and abroad

Project heads at Leipzig: Professor Tanja Gulder, Institute of Organic Chemistry; Professor Michael Stumvoll, Faculty of Medicine

Imagine everybody's health status could be easily determined at home using an all-in-one device as small as a mobile phone. Even detecting serious diseases, such as cancer or Alzheimer's disease, at an early stage, would be possible, enabling new therapies with a much higher chance of cure. Or pandemics such as COVID-19 would become history, since infections could easily be handled through early detection and thus prevention. Science fiction? Although still a long way off, these ideas can become reality! Based on quantum mechanical spin as a sensor for anatomy, function and biochemistry, a universal approach to analyse and to manipulate biological matter may be established.

To this end, it is necessary to decipher and understand the basic principles of complex matter beyond a molecular approach, and develop precise analytical and therapeutic tools and methods. Only such novel (bio)medical technologies can realise new directions in medical care, such as precision medicine or routine employment of universal theranostic methods and devices, which are much needed to address the challenges of our changing society. Spin4Life rises to these challenges by establishing new concepts to integrate basic research, medical needs and industrial applications. Along these lines, Spin4Life is shaping the medical technology future of the entire region and promises solutions for a longer and better life worldwide.

“ Spin forms a significant basis of all matter and thus of our lives. The more we know about it, the more fundamentally we can change and characterise things. We want to tap into this potential with S4L and make it available to society.”



Professor Tanja Gulder

GLYPHOSATE DETECTION



On-site holographic analysis for detecting glyphosate traces in aqueous systems and food

Funding period: 1 January 2019–31 December 2021

Institution: Leipzig University, Faculty of Life Sciences

Project head: Professor Tilo Pompe, Institute of Biochemistry

In recent years, a working group at the Institute of Biochemistry, together with the Institute of Genetics at the TU Dresden and industry partners, has developed the basic principle of a fast and simple biosensory detection method for various trace substances in aqueous systems. The aim is to achieve readout times in the range of minutes in handheld devices. The initial work focused on detecting glyphosate, a controversial herbicide, and hormonally active substances such as oestrogen derivatives in the field of environmental analysis. Using biochemical binding principles between corresponding enzymes and the molecules being detected, along with the coupling of the two binding partners to soft polymer microparticles and chip surfaces, very specific and highly accurate detections can be established, with accuracies in the range of drinking water quality. Currently, work is underway to extend the patented technology for other analytes such as antibiotics, but also analytes in the field of technical laboratory analysis and the pharmaceutical industry. It could also conceivably be used in biomedical diagnostics. Due to the wide range of possible applications, companies are currently being sought to exploit the project commercially and users are needed to validate it. The idea of a spin-off has also been mooted.

“ We see the astonishing sensitivity and specificity of this new and very simple detection principle for the smallest analytes in aqueous environmental samples as an excellent opportunity to establish inexpensive and widespread monitoring of critical pollutants and trace substances in environmental and food analysis.”



Video interview with Professor Tilo Pompe at:
www.uni-leipzig.de/+glyphosat

NEW ORDER: SUPERGENOME



Center for Scalable Data Analytics and Artificial Intelligence (ScaDS.AI) Dresden/Leipzig

Sub-project: Knowledge Extraction and Visualisation for Supergenomes

Funding period: 2014–2022

Participating institutions: Leipzig University; TU Dresden

Sub-project head: Professor Gerik Scheuermann and Professor Peter F. Stadler, Institute of Computer Science

How can genomes of different organisms be compared at the genetic and chromosome levels for differences and similarities? How can we identify and visualise changes in genomes through evolution? The ScaDS.AI “Supergenome” sub-project deals with the development of new methods for calculating what are known as genome-wide alignments, where all base pairs of different genomes are compared with each other and brought into an order, the so-called supergenome. Due to the size and complexity of individual genomes, this process requires considerable computing power. When these supergenomes are created, areas of high similarity between the different species are grouped together in blocks and, by means of interconnection, arranged for examination in later analyses.

Based on this data structure, the similarities and differences between different species can be visualised more efficiently, delivering answers to questions about how different species evolved, for example. Another field of application is personalised medicine, where the supergenome can be used to search for suitable model organisms to study at the genome level in clinical trials.

“Through collaborative research on bioinformatics algorithms and visualisation, we are developing new methods to compare genomes to better understand how different species evolved.”



Professor Peter F. Stadler

QUANTUM THEORY FOR EVERYDAY THINGS



BMBF collaborative project DiaQuantFab: NV colour centres in diamond for the realization of a high-precision ammeter based on quantum effects

Funding period: 15 May 2019–14 May 2022

Participating institutions: Leipzig University; CIS GmbH; Balluff GmbH; Diamant Materials GmbH; EcoDiamond GmbH; Nano-Analytik GmbH; University of Stuttgart; Ulm University

Sub-project head: Professor Jan Berend Meijer, Faculty of Physics and Earth Sciences, Felix Bloch Institute for Solid State Physics

Max Planck just didn't believe it: in his own words, he introduced quanta "in an act of desperation". Albert Einstein rejected this theory until his death, and Erwin Schrödinger – one of the discoverers of quantum mechanics – switched to a different subject entirely because he wanted nothing more to do with this "quantum hogwash". But researchers like Werner Heisenberg in Göttingen and Leipzig would eventually be shown to have been right: on atomic scales, nature behaves completely differently from our usual understanding, it makes jumps, and atomic particles can even appear at several places at the same time. For a long time, this finding was considered to be of little importance for everyday life and more of a philosophical question, since it was only ever possible to investigate the collective effects on a large number of quantum systems, such as in magnets. This has changed in recent years. New methods in nanotechnology allow individual atoms to be precisely placed and controlled. These quantum systems are now revealing themselves and their true nature, proving that Heisenberg's quantum theories also work for individual quantum systems. In diamonds, quantum systems can be observed even at room temperature because the diamond functions like a thermos. This makes it possible to build sensors that are superior to conventional techniques by several orders of magnitude, for example for use as highly sensitive current sensors.

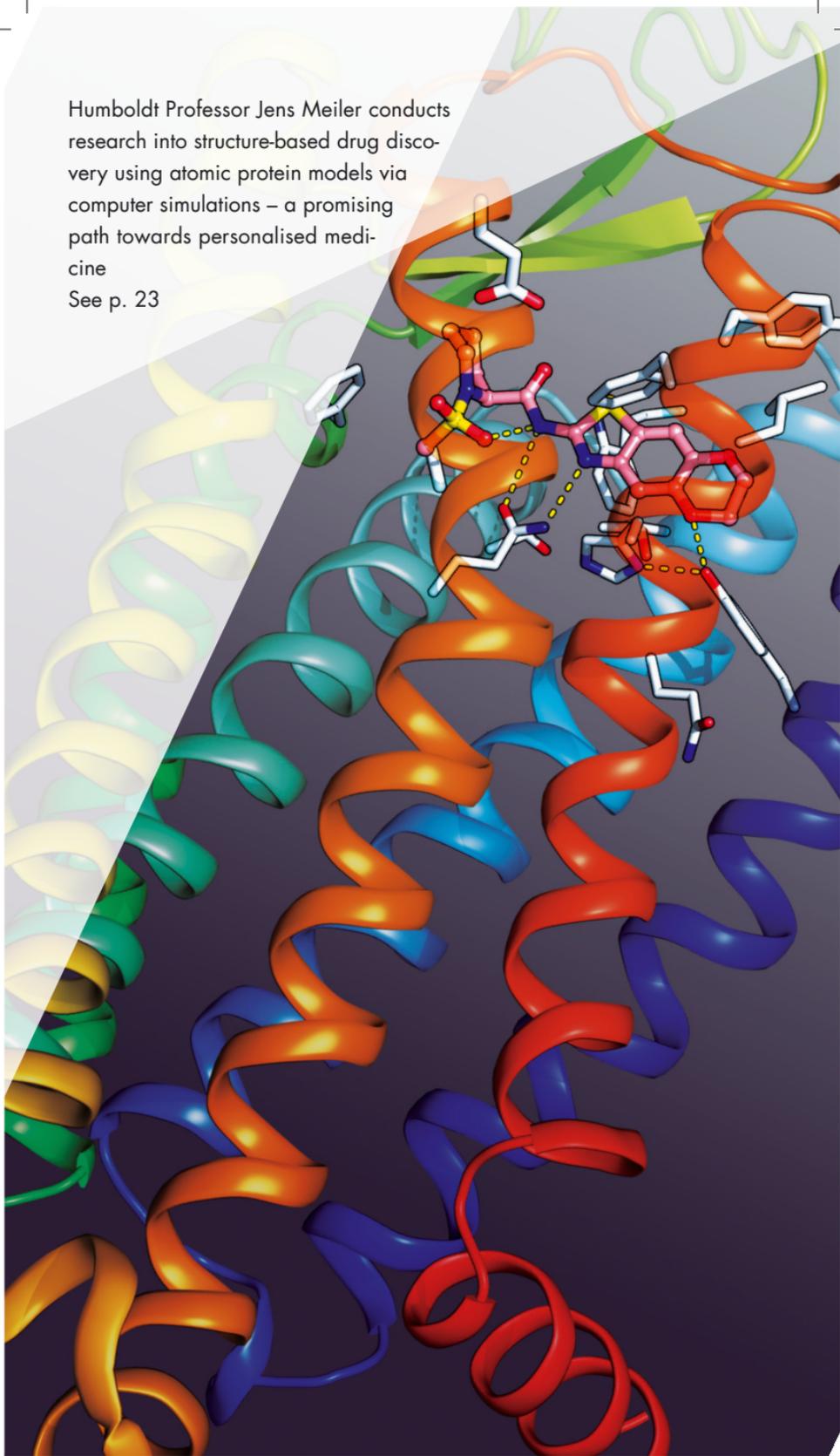
// It is great that we can now use the quantum theories of the solid state, developed by Heisenberg, Peierls and Bloch in Leipzig from 1927 to 1933, for everyday things like electricity meters or ultra-safe airbag systems."



Video interview with Professor Berend Meijer at:
www.uni-leipzig.de/+duaquantfab

Humboldt Professor Jens Meiler conducts research into structure-based drug discovery using atomic protein models via computer simulations – a promising path towards personalised medicine

See p. 23



Infants born prematurely often suffer from life-threatening respiratory failure. In the Neo-Takt project, researchers are investigating how apnoea phases in premature infants can be ended more quickly using a technique involving an ankle cuff
See p. 26



THE FUTURE OF PERSONALISED MEDICINE



Computer-aided precision medicine

Institution: Leipzig University, Faculty of Medicine

Project head: Professor Jens Meiler, Institute for Drug Discovery

One of the greatest challenges facing society is developing personalised medicine for all. New digital technologies have the potential to revolutionise biomedical research as well as prevention and patient care in the next decade. To deliver on the promise of precision medicine in research and its clinical application, it is necessary to combine digital methods such as artificial intelligence (AI) with knowledge-based models and research into molecular mechanisms. “Enabling technologies” include methods from the fields of life sciences and AI (such as the development of new vaccines) as well as IT security and networking (for example encrypted data storage and communication). The Institute for Drug Discovery is currently being established at Leipzig University. It will produce and test computer-designed molecules. The aim is to further dovetail biomedical basic research with applied research. Research at the crossroads of informatics, life sciences and medicine will enable and advance personalised medicine. Methods can be tested in realistic clinical fields, allowing them to be implemented in therapy and diagnostics. Bringing together (bio)informatics research with clinical application is a major goal of this initiative.

This goal is also being pursued by the Center for Medicine Innovation (CMI), led by Professor Jens Meiler, by developing integrated digital value chains for personalised medicine and promoting the transformation of the Central German lignite mining district into a high-tech hub for health research. In the BMBF’s competition for the major research centre in the Central German mining district, the CMI was selected for the next funding phase.

“ Our goal is to combine basic research with clinical application through new digital methods in order to personalise patient care.”



Video interview with Professor Jens Meiler at:
www.uni-leipzig.de/+praezisionsmedizin

START-UPS: SOFTWARE DEVELOPMENT AND CARE DOCUMENTATION



E-health spin-offs mewedo and sciendis

Funding period: 2020–2022

Institution: Leipzig University, Faculty of Economics and Management Science

Project head: Professor Utz Dornberger, SMILE start-up initiative

mewedo GmbH & Co. KG (www.mewedo.de) is a young start-up based in Leipzig that specialises in developing software for algorithm-controlled resource allocation in large networks. The team, led by the two computer scientists Dr Christoph Theunert and Michael Maaß, already received funding between 2018 and 2019 in the form of an EXIST Business Start-Up Grant and a technology start-up grant from the Sächsische Aufbaubank (SAB). Active assistance was also provided from the outset by Leipzig University, in particular the SMILE start-up initiative. The original business idea behind mewedo was born in the private air sports sector and has since been transferred to the areas of fire and rescue services, education and schooling, and healthcare.

The two founders of sciendis GmbH (sciendis.de), Michael Aleithe and Philipp Skowron, earned their doctorates at Leipzig University in the field of digital health applications. Their application-oriented and practice-led understanding of research inspired them to found sciendis GmbH. The company develops digital aids for care documentation that are easy and intuitive to use. The product WUNDERA®, for example, helps care staff with the regular documentation of chronic wounds. One key advantage is how this saves time, thus also cutting costs. Care services in rural areas in particular also benefit from the product's offline capability, since this enables reliable documentation even when network coverage is patchy.



We are pleased to have been able to motivate many aspiring founders to start their businesses in 2020, a difficult year for society as a whole.

The unwavering entrepreneurial spirit at Leipzig University shows that the start-up scene isn't easily beaten, it looks ahead with optimism and actively promotes new ideas."



Professor Utz Dornberger

CHILD HEALTH MONITORING



SaxoChiLD – Innovation for Child Health Leipzig-Dresden

Participating institutions: Leipzig University and UKL; TU and Klinikum Carl Gustav Carus Dresden; Helmholtz Centre for Environmental Research (UFZ); Max Planck Institute for Evolutionary Anthropology; Helmholtz Institute for Metabolic, Adiposity and Vascular Research (HI-MAG); Robert Koch Institute

Coordinator: Professor Antje Körner, Leipzig University, Faculty of Medicine, Pediatric Research Center Leipzig

The regional network SaxoChiLD, one of seven sites of the new German Centre for Child and Adolescent Health (DZKJ), combines research on comprehensive epidemiological monitoring of children's health and development in a changing environment, with a special focus on psyche-soma interaction. To this end, SaxoChiLD offers excellence in the full interdisciplinary range, from mechanistic to applied clinical research in paediatric epidemiology, environmental research, immunology, obesity, and integrated psychosomatic research, and benefits from strong infrastructure including internationally unique cohorts. The interaction of predisposition and environmental conditions results in new health risks, the underlying mechanisms of which are being investigated by SaxoChiLD. Representative long-term observations cover obesity as a classic modern disease, immune disorders, infections and psychological aspects from epidemiology to basic science and clinical application. New, more precise, personalised and population-based instruments for early detection, therapy and prevention are being developed, with more reliable conclusions drawn about the causes of widespread diseases as a product of genetic predisposition, lifestyle habits and environmental factors. This holistic approach is contributing to a conceptual shift in child health research.

“Our goal is to identify new challenges to children's development and health, to be able to identify and understand new risks early, and then to address them specifically. For the sake of our children.”



Video interview with Professor Antje Körner at:
www.uni-leipzig.de/+saxochild

PREVENTING OXYGEN DEFICIENCY IN PREMATURE BABIES



Neo-Takt: Development and evaluation of a tactile foot stimulation technique for the termination of apnoea phases in premature babies

Funding period: April 2018–June 2024

Institution: Leipzig University, Faculty of Medicine

Project head: Dr Martin Grunwald, Paul Flechsig Institute for Brain Research

The number of babies born prematurely is increasing worldwide, and every premature baby suffers from respiratory problems, potentially including life-threatening phases of apnoea – the cessation of breathing. Apnoea phases can occur up to 20 times per hour. If left untreated the child will die. Failure to treat apnoea phases quickly can result in permanent developmental damage due to a lack of oxygen in the brain. Until now, tactile stimulation of the child's body by medical staff has essentially been the only way to treat apnoea phases. Applying moderate pressure, especially on the soles of the premature infant's feet, usually leads to the resumption of independent breathing, thus ending the apnoea phase. In the three-part Neo-Takt project, we are using a series of basic studies to search for biological and technical interfaces to enable the termination of apnoea phases more quickly and effectively than before. For this purpose, in the initial stages of the project we conducted a long-term study to record the times and durations, and also the type and manner of manual body stimulation (pressure intensity, body region, etc.) when treating apnoea phases. The next studies will examine whether technically supported foot stimulation – by means of an inflatable cuff – terminates apnoea phases in premature infants faster and more safely than the previous method. In addition to clinical and biological challenges, this will also mean solving a number of technical problems.



Our project should help to end the dangerous lack of oxygen in premature babies during apnoea phases even more quickly than is currently possible."



Dr Martin Grunwald



DEALING WITH MENTAL ILLNESS

Attitudes towards people with mental illness in an increasingly polarised society

Funding period: 1 September 2018–31 March 2022

Participating institutions: Leipzig University; Hanover University of Music, Drama and Media

Project head: Professor Georg Schomerus, Faculty of Medicine and Department of Psychiatry and Psychotherapy

Are marginalisation and discrimination against people with mental illnesses decreasing? Has the way we approach mental illness improved? On the one hand, there seems to be a growing openness in dealing with mental stress, but on the other, serious mental illnesses are still taboo. In the context of a generally noticeable polarisation of public opinion, it is also precisely members of minorities or particularly vulnerable groups who see themselves exposed to growing rejection. The aim of the project is therefore to measure current changes in attitudes towards mental illness and at the same time to investigate whether the stigma of mental illness differs in different social milieus. To do this, we are conducting a large-scale, representative survey, the results of which we will compare with data from previous surveys conducted in 1990, 2001, and 2011. In this way, we can show in which contexts people with mental illness require special protection and how support services can best be communicated so that they reach those who need them most.



The pandemic has clearly demonstrated the importance of mental health and how it can be threatened by external conditions. Mental illness plays out in a social context, and we can improve the way we deal with mental illness."



Video interview with Professor Georg Schomerus at:
www.uni-leipzig.de/+haltungen

DIGITAL THINK TANK FOR SMALL AND MEDIUM-SIZED ENTERPRISES



Centre for Digital Work (ZdA) Funded by the Federal Ministry of Labour and Social Affairs, the European Social Fund and the Saxon State Ministry of Economic Affairs, Labour and Transport

Funding period: 1 October 2019–30 June 2022

Participating institutions: Leipzig University; HTWK; Arbeit und Leben Sachsen e. V. Leipzig; ATB Arbeit, Technik und Bildung gGmbH

Project heads at Leipzig: Professor Hannes Zacher, Wilhelm Wundt Institute of Psychology; Professor Thorsten Posselt, Institute of Service and Relationship Management

The Centre for Digital Work (ZdA) is a provider of expertise for work-oriented, social innovations. This includes company and individual training needs to cope with digital and demographic transformation. The focus is on supporting small and medium-sized enterprises (SMEs) and their employees in managing this change. It pools expertise and experience for identifying topics of cross-regional significance. The ZdA acts as a central network for interdisciplinary project partners, the Regional Future Centres, the Federal Ministry of Labour and Social Affairs, and stakeholders in the world of work.

As part of a thematic focus on work and innovation, the sub-project team at Leipzig University is looking at the prerequisites, success factors and challenges for SMEs to successfully participate in the digital transformation. The researchers are examining how digitalisation affects the health and development of employees. Health, innovation and digitalisation skills at the individual level along with general conditions at the organisational level need to be designed in such a way that all those involved can participate in the process and meet the changed requirements.

The project work centres around developing and maintaining a knowledge pool as well as collaborating in the digital think tank. Surveys and analyses are carried out to generate evidence-based and practical insights for advising SMEs.

“The Centre for Digital Work combines research findings with practical experience from the five Regional Future Centres in eastern Germany. We also develop innovative teaching and learning concepts for training and qualification in small and medium-sized enterprises.”



Video interview with Professor Hannes Zacher at:
www.uni-leipzig.de/+digitalearbeit

SOCIAL INEQUALITY THROUGH IDEAS ABOUT HEALTH



Leipzig Lab, Global Health project

Funding period: October 2019– September 2024

Institution: Leipzig University, Faculty of Social Sciences and Philosophy

Project heads: Marian Burchardt, Institute of Sociology; Maren Möhring, Institute for the Study of Culture

The COVID-19 pandemic is currently a stark reminder that diseases have never stopped at national borders. However, it is not only viruses that cross borders, but also very different health concepts. The Leipzig Lab Global Health investigates from a sociological-anthropological and historical perspective how concepts of health and the human body have changed over time, and in what ways these ideas circulate and change globally.

The interdisciplinary research team is particularly interested in how perceptions of health yield social inequality. Today, health has become an ideal and imperative that can never be fully achieved, while illness is often seen as individual failure in a society that pursues self-optimisation. Deviation from health ideals is often associated with great social costs and marginalisation – just think of the example of being overweight. More recently, researchers have turned to such forms of awareness-raising in relation to infectious diseases, and are investigating for example how different forms of self-responsibility come into play in quarantine situations.

Global Health is a Leipzig Lab that investigates the history, present and future (in the form of “planetary health”) of global health with the aim of reflecting on health policy interventions and understanding the dynamics of health as a mode of social order.



Health is changeable, and who can be healthy is a crucial question of social order.”



Video interview with Professor Maren Möhring at:
www.uni-leipzig.de/+globalhealth

STRENGTHENING DEMOCRATIC POLITICS



Democracy research and policy advice

Funding period: 27 September 2019–31 December 2024

Institution: Leipzig University

Project heads: Professor Oliver Decker, Else Frenkel-Brunswik Institute of Democracy Research

The Else Frenkel-Brunswik Institute (EFBI) researches and documents anti-democratic and authoritarian tendencies in Saxony. The focus is on investigating various forms of discrimination, the strategies and dynamics of right-wing authoritarian movements, in order to use the results to strengthen democratic politics. The new institute is anchored in the Saxon coalition agreement and is funded by the Free State.

The Else Frenkel-Brunswik Institute provides support for civil society through its own research on Saxony and focus projects in individual regions in Saxony, it prepares cross-regional studies on antidemocratic attitudes with reference to Saxony, and it evaluates the knowledge gained and actively makes it available to a variety of decision makers.

One project deals with anti-feminism as a strategy of mobilisation. Another theme is people who stand up for democracy, their experiences and their need for support. Attitude research gives rise to questions such as: “How do people in Saxony think, what are their political attitudes?”

Leipzig University offers the Institute an excellent environment with the Leipzig Authoritarianism Studies, the Competence Centre for Right-Wing Extremism and Democracy Research, the Institute of Political Science and the Centre for Journalism and Democracy.

Students are involved in research and transfer. The project offers advisory concepts and lectures to regions, towns and municipalities. Psychosocial counselling is also available for politically active individuals.

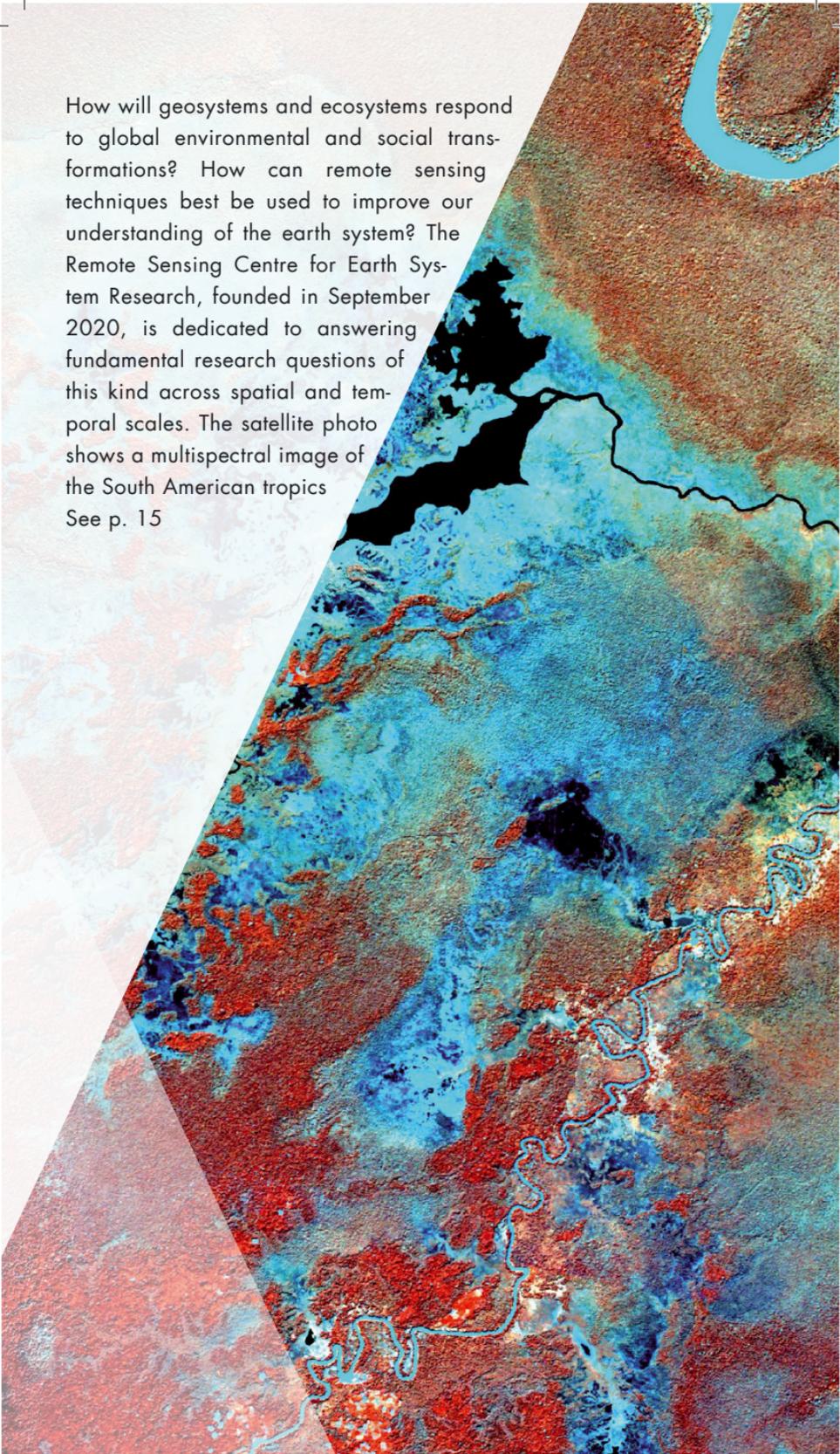


We are interested in who stands up for democracy – and how we can support these people.”



Video interview with Professor Oliver Decker at:
www.uni-leipzig.de/+demokratieforschung

How will geosystems and ecosystems respond to global environmental and social transformations? How can remote sensing techniques best be used to improve our understanding of the earth system? The Remote Sensing Centre for Earth System Research, founded in September 2020, is dedicated to answering fundamental research questions of this kind across spatial and temporal scales. The satellite photo shows a multispectral image of the South American tropics. See p. 15





Researchers on the Children and Nature project are investigating the attitudes of children and adolescents towards animals in different societies and how these attitudes develop depending on a child's age and on animal species
See p. 33

CHILDREN AND ANIMALS ALL OVER THE WORLD



Leipzig Lab: Children and Nature

Funding period: 1 November 2019–31 December 2022

Participating institutions: Leipzig University; Max Planck Institute for Evolutionary Anthropology

Project head: Professor Katja Liebal, Faculty of Life Sciences, Institute of Biology

Why do we share our beds with dogs and cats, but eat pigs and chickens? Why do we donate to save the habitat of orangutans, but ignore insect extinction? Why do we kill wasps and mosquitoes, but spare butterflies?

People's relationships with other living beings are diverse and complex. They vary not only according to whether animals are pets or livestock, pests, carriers of disease or predators, but also between different societies. What causes this diversity of different relationships? How do our attitudes towards other species change over the course of our lives? How can we promote respectful interaction between humans and other living beings?

The interdisciplinary Children and Nature project focuses on these questions. The aim is to explore the diversity of children's relationships with their living environment in different cultural contexts. Researchers from different disciplines use a variety of methodological approaches to study children's and adolescents' cognitive and emotional attitudes towards animals. The first step involves conducting interviews with children and young people in urban and rural regions of different countries (such as in India, Namibia, Peru, Madagascar, Germany and Switzerland). Based on this, culturally sensitive experimental approaches are developed to systematically compare relationships with animals in different societies.

“ We want to perceive and describe in detail our research object from the perspective of children in order to work out culturally sensitive, playful experimental approaches.”



Video interview with Professor Katja Liebal at:
www.uni-leipzig.de/+zookinder

THE ZOO THROUGH A CHILD'S EYES



Zoo Kids

Funding period: 1 October 2019–30 September 2022

Institution: Leipzig University, Leipzig Lab

Project head: Professor Katja Liebal, Faculty of Life Sciences, Institute of Biology

Positive early childhood experiences with pets lead to positive attitudes towards other animals as well, and at the same time promote empathy towards people. Research into the underlying mechanisms and factors that promote respectful interaction with other living beings from an early age is not only of scientific importance, but also of the greatest social relevance, especially in the age of digitalisation and increasingly limited interaction with nature. Research on these issues still pays too little attention to children's perspectives. The project aims to take the perspectives of children and young people, to look at the world through children's eyes and to enable them to actively participate in generating and answering research questions. What animals do they like? What emotions and cognitive abilities do they attribute to them? Which animals do they pay attention to, which do they ignore? Together with the Leipzig "zoo school", these questions are investigated by working with children and young people between the ages of eight and 16. On a tour of the zoo, they photograph animals that they think are particularly strong, intelligent or endangered. The children and youngsters then discuss why they associate certain abilities and characteristics with certain animals. They exhibit their photographs in public and guide visitors through the exhibition.

“Once people know more about a particular animal, their attitude towards that species changes.”



Video interview with Professor Katja Liebal at:
www.uni-leipzig.de/+zookinder



Jean Monnet Centre of Excellence: The European Union and Its Rural Periphery in East Central Europe

Funding period: 13 October 2020–14 October 2023

Participating institutions: Leipzig University, Leipzig Research Centre Global Dynamics (ReCentGlobe)

Project head: Professor Astrid Lorenz, Institute of Political Science

Research and media coverage involving the European Union focus heavily on the European Commission, the European Parliament, the European Council and the European Court of Justice. There is often a preoccupation with negotiations between governments and political parties. The EU from below receives less attention than its institutions and elites. It is hardly surprising that many people have no idea to what extent “ordinary citizens” can help shape the EU community.

The Jean Monnet Centre of Excellence in Leipzig wants to focus more on the citizens, concentrating in its analyses and events specifically on the rural peripheries of East Central Europe. These areas are often known for their beautiful natural surroundings. But there’s a downside: they are less populated and, in some cases, have less digital connectivity and poorer transport networks than the rest of the country. It is not uncommon for young and well-educated people to leave in search of work elsewhere.

The Jean Monnet Centre is investigating whether people, especially in the rural peripheries of Poland, the Czech Republic, Slovakia and Hungary, are aware of their EU citizenship and what this means to them. To what extent do they exercise their rights to feed their issues and interests into EU policy and public debate? One of the ways to answer these questions is to conduct group interviews on site and to analyse the results, along with existing data, based on specific topics. Building on this, we explore future potential and formulate policy recommendations.



The Leipzig Jean Monnet Centre of Excellence aims to promote participation in democratic life in the EU and active European Union citizenship. That includes critical voices, because in democracy every idea has to prove itself by presenting good arguments in the face of objections.”



Professor Astrid Lorenz

PARTICIPATION THROUGH CULTURAL EDUCATION IN RURAL AREAS



Meta-Project for “Cultural Education in Rural Areas” (MetaKLuB) Funding Line

Funding period: 1 December 2019–30 November 2024

Participating institutions: Federal Ministry of Education and Research; Leipzig University

Project head: Professor Nina Kolleck, Institute of Political Science

The meta-project is based on a new BMBF concept under the second Framework Programme for Empirical Educational Research. The project assumes a researching, coordinating and connecting role, comprising the three aspects of networking, transfer and research. In addition, more than 20 collaborative and individual projects are supported. With its broad focus and the participation of a variety of disciplines in educational science, social science, the humanities and cultural studies, the meta-project performs an important bridging function. The aim of the research, which is of high social relevance, is to be able to make reliable statements about cultural education in rural areas. Education is not reduced to school, but is understood as a lifelong learning process, which above all includes places of education outside the school setting. Some of the projects are also examining aspects of social inequality and the transmission of cultural education across generations. Others are interested in how cultural education affects people’s sense of home or how rooted they feel in their place of origin.

The meta-project is part of national and international research efforts in this field. Its results as well as those of the sub-projects, which are very broadly spread within the funding line, will be used to develop a theoretical framework.

“ We first need to understand the specific characteristics and conditions of rural areas: what makes them special – apart from the fact that they are not urban? What are the specific characteristics of the region that a project is researching? Last but not least, there is no one ‘rural area’ – rural areas are diverse and the projects in the funding line reflect that diversity.”



Professor Nina Kolleck

IMPROVED UNDERSTANDING OF COVID-19 INFECTIONS



PROVID: Clinical, molecular and functional biomarkers for prognosis, pathomechanisms and treatment strategies of COVID-19

Funding period: 1 June 2020–30 November 2021

Participating institutions: Charité – Universitätsmedizin Berlin; CAPNETZ STIFTUNG; Medizinische Hochschule Hannover; Leipzig University, Faculty of Medicine

Sub-project head in Leipzig: Professor Markus Scholz, Institute for Medical Informatics, Statistics and Epidemiology (IMISE)

Infections with SARS-CoV-2 show a wide spectrum of clinical presentations ranging from asymptomatic infections, upper respiratory tract infections and uncomplicated pneumonias to severe pneumonias with respiratory failure and a high mortality rate. Despite more than 100 million documented infections worldwide (as of February 2021, WHO), there are still large gaps in our understanding of the disease. As part of the collaborative project PROGRESS, in recent years we have worked with the Charité and the CAPNETZ foundation to build up a powerful multicentre platform for recruiting patients with community-acquired pneumonia of a cause other than SARS-CoV-2. To improve the management of COVID-19, it is important to identify clinical and molecular predictors of disease progression as well as novel therapeutic targets. The cooperation with the Charité was further expanded and the PROVID consortium founded to contribute to these goals. As a project partner, Leipzig is contributing in the following ways: (1) supporting the establishment of a COVID-19 clinical patient cohort; (2) integrating this data with data on community-acquired pneumonia of other causes; and (3) bioinformatic and statistical analysis of the collected data. This includes comparing molecular signatures between COVID-19 and pneumonia of other origin as well as identifying causal relationships to better understand molecular pathomechanisms.

With this project, we are contributing to a better understanding of the molecular mechanisms of severe cases of COVID-19."



Video interview with Professor Markus Scholz at:
www.uni-leipzig.de/+provid

CORONAVIRUS ANTIBODY TEST



AProof serological antibody test

Funding period: 1 August 2020–30 June 2022

Participating institutions: Leipzig University, Institute of Bioanalytical Chemistry, Centre for Biotechnology and Biomedicine (BBZ), Leipzig Research Centre for Civilization Diseases (LIFE); Adversis Pharma GmbH; Klinikum St. Georg Leipzig

Project head: Professor Ralf Hoffmann, Institute of Bioanalytical Chemistry

Why is it important to detect SARS-CoV-2 antibodies? By March 2021, the SARS-CoV-2 Beta variant had been detected in around 2.5 million people in Germany according to the Robert Koch Institute. However, studies show that significantly more people were infected. Detecting antibodies is an important indicator to determine the spread of coronavirus in the population. The Institute of Bioanalytical Chemistry, in close collaboration with the participating institutions, has developed a serological test called AProof to detect the relevant antibodies in blood samples. This is a reliable method of proving an infection that occurred at least two weeks ago. Furthermore, detecting antibodies – in particular their quantity, or titre – also provides an important indication of possible immune protection against further infections with SARS-CoV-2. The test is currently being expanded to make it possible to distinguish between immune protection after vaccination and after infection. To this end, the efficacy of the vaccine will initially be tested, and antibody titres tracked over a two-year period. The researchers will also investigate the extent to which vaccinated individuals contract SARS-CoV-2 and whether this results in the formation of new antibodies that provide better and longer-lasting protection against SARS-CoV-2 and, in particular, against emerging mutants of the virus. The success of the project depends on the close networking of research institutions and companies.

“**Thanks to the close cooperation with the partners and the existing expertise at BioCity Leipzig, we have succeeded in producing a highly efficient diagnostic agent that is very valuable in data analysis.**”



Professor Ralf Hoffmann

SUSTAINABLE MANAGEMENT OF FISH STOCKS IN THE WESTERN BALTIC SEA



Marine Ecological-Economic Systems in the Western Baltic Sea and Beyond: marEEshift

Funding period: 1 May 2019–30 April 2022

Participating institutions: Universities of Leipzig, Freiburg, and Hamburg; Thünen Institute of Baltic Sea Fisheries Rostock; Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB)

Project head: Professor Martin Quaas, German Centre for Integrative Biodiversity Research (iDiv)

marEEshift is funded by the BMBF as part of its BioTip funding programme. The project investigates social, ecological and economic tipping points in the herring and cod fisheries of the western Baltic Sea, which are understood as an integrated ecological-economic system and are in a constant state of flux due to changing environmental conditions, exploitation demands by humans, and political and legal frameworks. marEEshift pursues two main scientific objectives:

1. To empirically and theoretically identify, analyse and model processes leading to tipping points in the marine ecological-economic system
2. To identify and initiate measures, institutions and processes that can bring the western Baltic Sea into a stable sustainability regime involving mixed commercial and recreational fisheries for cod and herring and, to this end, to characterise, in transdisciplinary collaboration with stakeholders and experts outside academia, what constitutes such a sustainability regime and the responsibility for it. marEEshift examines these tipping points according to the “five Ws”: what, when, where, why and who? The spatial scale (where?) and the temporal scale (when?) are concentrated on the western Baltic Sea and the period of four decades each in the past and future.

The participating institutions aim to jointly develop targeted management options as a basis for stable and sustainable fisheries management.

“Currently, fish stocks in the western Baltic Sea are in historically poor condition. But therein may lie the opportunity for a fundamental shift towards sustainable management.”



Video interview with Professor Martin Quaas at:
www.uni-leipzig.de/+mareeshift

RESEARCH ON INFRASTRUCTURE, DIGITALISATION, ARTIFICIAL INTELLIGENCE



Research Center Sustainable and Smart Infrastructure (RCI)

Funding period: 1 June 2019–31 December 2021

Participating institutions: Leipzig University; Leipzig University of Applied Sciences (HTWK); Institute for Applied Informatics (InfAI)

Project head: Professor Thomas Bruckner, Faculty of Economics and Management Science, Institute for Infrastructure and Resource Management (IIRM)

The RCI is the cross-university research network of the City of Leipzig's Smart Infrastructure Digital Hub. Within the RCI, classical infrastructure research, digitalisation and artificial intelligence merge to form a joint innovative research field for Leipzig's cutting-edge research.

The RCI bundles the individual areas of expertise required for sustainable and digital infrastructure projects, grouping projects under the key themes of Smart City / Smart Living, Energy, and eHealth. It sees itself as an interface to local authorities and politics, to the business world, to start-up incubators and accelerators, and an internal cooperation platform for the research institutes.

In the RCI project SUSIC (Smart Utilities and Sustainable Infrastructure Change), Leipzig University, the HTWK and the InfAI use computer-based tools to support transformation processes of municipal and regional infrastructure systems. The thematic focus is on the provision of energy and water. In the project SARDINE (Smart Regional Development Infrastructure), Leipzig University and the HTWK are developing a web-based data platform for geodata, which will be made available for use by municipalities, citizens, businesses and others. For example, text and sensor data will be georeferenced and displayed in a graphical interface for further use. The research is focused on former open-cast lignite mines in the Lusatian and Central German mining districts.



At the RCI, classic infrastructure research, digitalisation and AI are merging into a new field of research at the Leipzig site with international resonance."



Professor Thomas Bruckner

COLLABORATIVE RESEARCH AND PARTNERSHIPS

As an outward-looking institution, collaborative research and inter-university cooperation are an integral part of Leipzig University's regional, national and international network strategies and the basis for successful interdisciplinary research transfer. We present a selection of research alliances and networks in which Leipzig University is actively involved.

RESEARCH NETWORKS

DFG Research Centre

FZT 118: German Centre for Integrative Biodiversity Research (iDiv)

Collaborative Research Centres and Transregios

(Spokespersons and co-spokespersons)

- CRC 1052: Obesity Mechanisms
- CRC 1199: Processes of Spatialization under the Global Condition
- CRC 1423: Structural Dynamics of GPCR Activation and Signaling
- Transregio/CRC 102: Polymers Under Multiple Constraints: Restricted and Controlled Molecular Order and Mobility
- Transregio/CRC 172: Arctic Amplification: Climate-Relevant Atmospheric and Surface Processes, and Feedback Mechanisms (AC)³
- Transregio/CRC 67: Functional Biomaterials for Controlling Healing Processes in Bone and Skin – From Material Science to Clinical Application

Priority Programmes

- SPP 1294: Atmospheric and Earth System Research with the “High Altitude and Long Range Research Aircraft” (HALO)
- SPP 1981: Transottomanica: Eastern European-Ottoman-Persian Mobility Dynamics
- SPP 1782: Epithelial intercellular junctions as dynamic hubs to integrate forces, signals and cell behaviour
- SPP 2361: On the Way to the Fluvial Anthroposphere

Research Training Groups

- GRK 2011: Interaction of Grammatical Building Blocks
- GRK 1763: Quantitative Logics and Automata
- GRK 2522: Strong Dynamics and Criticality in Quantum and Gravitational Systems
- GRK 2324: TreeDi – Tree Diversity Interactions: The Role of Tree-Tree Interactions in Local Neighborhoods in Chinese Subtropical Forests
- GRK 2721: Hydrogen Isotopes: 1,2,3H

DFG Research Groups (spokespersons and co-spokespersons)

- FOR 2149: Elucidation of Adhesion-GPCR Signalling
- FOR 2177: Integrated Chemical Micro Laboratories
- FOR 2344: Multiple Secularities – Beyond the West, Beyond Modernities
- FOR 2857: Copper Iodide as Multifunctional Semiconductor
- FOR 5000: Biotic Interactions, Community Assembly, and Eco-Evolutionary Dynamics as Drivers of Long-Term Biodiversity–Ecosystem Functioning Relationships
- FOR 3004: Synaptic Physiology of Autoimmune Encephalitis (SYNABS)
- FOR 5175: Cyclic Optimization

BMBF collaborative projects

- Research Institute for Social Cohesion (FGZ)
- ScaDS.AI: Center for Scalable Data Analytics and Artificial Intelligence
- MetaKLuB: Funding Line Meta-Project for “Cultural Education in Rural Areas”
- Integrated Research and Treatment Center (IFB) AdiposityDiseases
- nutriCARD: Competence Cluster for Nutrition and Cardiovascular Health Halle-Jena-Leipzig
- SaxoChiLD: Innovation for Child Health Leipzig-Dresden
- SMITH: Smart Medical Information Technology for Healthcare
- Praxis digitaliS: Shaping Digital Practice in Saxony
- MECAM: Merian Centre for Advanced Studies in the Maghreb
- SaxoCell: Precision Therapy Cluster

NETWORKS

Leibniz institutions

- Leibniz Institute for Tropospheric Research (TROPOS)
- Leibniz Institute of Surface Engineering (IOM)
- Leibniz Institute for Regional Geography (IfL)
- Leibniz Institute for Jewish History and Culture – Simon Dubnow (DI)
- Leibniz Institute for the History and Culture of Eastern Europe (GWZO)
- Leibniz ScienceCampus “Eastern Europe – Global Area” (EEGA)

Helmholtz institutions

- Helmholtz Centre for Environmental Research (UFZ)
- Helmholtz Institute for Metabolic, Adiposity and Vascular Research (HI-MAG)
- Helmholtz-Zentrum Dresden-Rossendorf (HZDR)

Fraunhofer Institutes

- Fraunhofer Institute for Cell Therapy and Immunology (IZI)
- Fraunhofer Center for International Management and Knowledge Economy (IMW)

Max Planck Institutes (MPI)

- Max Planck Institute for Evolutionary Anthropology (MPI-EVA)
- Max Planck Institute for Human Cognitive and Brain Sciences (MPICBS)
- Max Planck Institute for Mathematics in the Sciences (MPIMIS)

Max Planck School of Cognition (MPS-Cog)

Federal research institutions

- Deutscher Wetterdienst (DWD), Leipzig branch
- Deutsches Biomasseforschungszentrum (DBFZ)
- Federal Agency for Nature Conservation (BfN), Leipzig branch
- Agency for Disruptive Innovation
- Agentur für Innovation in der Cybersicherheit

University networks (selection)

- German U15
- Arqus European University Alliance
- Utrecht Network
- Halle-Jena-Leipzig Central German University Alliance
- European University Association (EUA)
- University Network on Social Responsibility

Inter-university research and cooperation platforms

- Forum for the Study of the Global Condition
- Leibniz ScienceCampus “Eastern Europe – Global Area” (EEGA)
- International Max Planck Research School “The Leipzig School of Human Origins” (IMPRS LSHO)
- International Max Planck Research School “Mathematics in the Sciences” (IMPRS MiS)
- International Max Planck Research School on “Neuroscience of Communication: Function, Structure and Plasticity” (IMPRS NeuroCom)
- Minerva Center
- Mentoring Programme for Postdocs Halle-Jena-Leipzig
- Central German Archive Network
- National Research Data Infrastructure (NFDI)
- Open Researcher and Contributor ID (ORCID)
- Global Hub research building
- Leipzig Research Centre for Civilization Diseases (LIFE Child)
- SMART Infrastructure Hub Leipzig
- NAKO: German National Cohort (GNC) Leipzig

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