

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN



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ANNUAL REPORT

University of Tübingen



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WELCOME TO TÜBINGEN

The University of Tübingen was one of the cradles of German Humanism – and in keeping with the philosophy that our actions determine our destiny – we are continuing to push back the boundaries of knowledge in the disciplines of science, medicine, the social sciences and the humanities.

Not only do we provide support for groundbreaking research, we have also made this philosophy an integral part of our teaching and academic training programs. Our students learn to think critically and strategically while acquiring the practical skills essential to answer the questions they will face in their chosen fields and future careers.

As one of Germany's Universities of Excellence, we welcome students and researchers from around the world who come to Tübingen to contribute their ideas and enrich the University as a whole. In this Annual Report, you can read about a wide range of research projects, innovative approaches to teaching, our networks within Germany and abroad, and a variety of cultural events.

Our founder, Count Eberhard the Bearded, gave us our motto in 1477: *Attempto! – I dare!*
We face the future with the confidence to meet its challenges.



RESEARCH

INNOVATION AND COOPERATION

The University of Tübingen is continuing to support outstanding research, with three new clusters of excellence launched in 2018 under the German government's new Excellence Strategy funding initiative. This extraordinary success will further boost research into cancer, infectious diseases and machine learning. It also represents a milestone on the road to retaining our status as a university of excellence. We are participating in the Cyber Valley program, which brings together business and research institutions in southwest Germany to develop applications for artificial intelligence.

THREE NEW CLUSTERS IN THE EXCELLENCE STRATEGY PROGRAM

A vital decision for our future was made in September 2018. Three new University of Tübingen clusters of excellence were approved by a panel of international experts and Germany's federal and state science ministers. The clusters will receive funding for an initial seven-year period. Furthermore, with the approval of two or more clusters, the University was able to apply for continued "excellence" status and the corresponding additional funding.

In January 2019, the new research clusters were launched in the fields of **Machine Learning, Microbiology and Infection Research** and **Oncology and Clinical Imaging**. The University will receive a total of 126 million euros during the initial seven years.

The Excellence Strategy is the successor program to the Excellence Initiative. Under that program, the University of Tübingen received funding for the Center for Integrative Neurosciences (CIN) excellence cluster from 2007; and from 2012 for the LEAD Graduate School (Learning,

Educational Achievement, and Life Course Development) as well as for its institutional strategy, Research – Relevance – Responsibility.

Personalized medicine – Catching cancer cells even when they hide

The "Image-Guided and Functionally Instructed Tumor Therapies" excellence cluster aims to achieve a comprehensive understanding of the biological processes in tumors in order to develop innovative and sustainable cancer treatments. The cluster's method is translational: The results from basic research are to be integrated into clinical studies aimed at finding sustainable treatments. Cancer treatments to date have frequently proven ineffective in the long term. While nowadays modern drug therapies make it possible to contain the disease even when advanced, resistance to the treatment nearly always develops. The tumors begin to

grow again. The researchers are therefore seeking to comprehensively map the biological processes in tumors using functional genetic analysis, and to identify potential weak points which new medications could target.

They will focus in particular on biological processes which enable tumors to survive under stress. Under attack by conventional drugs, some tumor cells enter a kind of hibernation called senescence. These cells release messenger chemicals which may lead to increased formation of metastases, and the cancer spreads. The latest imaging techniques and image analysis algorithms will help researchers to identify senescent cancer cells.

Stress in tumors also leads to changes in the way the immune system recognizes the tumor cells. Innovative immunotherapies will seek to activate the patient's own immune system, supporting and complementing targeted drug therapy. The researchers will combine these approaches to find the best treatment for each individual patient. An important

goal is to knock out any senescent cells which have survived conventional treatments.

Spokesman for the cluster is the oncologist Professor Lars Zender, Medical Director of Internal Medicine VIII – Clinical Tumor Biology. Co-spokesmen are Professor Bernd Pichler, Director of the Werner Siemens Imaging Center at the University of Tübingen, and immunologist Professor Hans-Georg Rammensee. The Max Planck Institutes for Developmental Biology and Intelligent Systems and the Margarete Fischer Bosch Institute for Clinical Pharmacology are partners in the cluster.

Training the microbiome to tackle infections

The surfaces of the human body host colonies of microorganisms, known as the microbiome. Along with bacteria which have a positive effect on human health, microbiomes contain potentially life-threatening pathogens. In the past, broad-spectrum antibiotics have often been used to combat them. Nowadays it is known that this not only promotes resistance

to antibiotics – in many cases it also damages the microbiome as a whole. Researchers in the cluster of excellence “Controlling Microbes to Fight Infection” plan to develop a new strategy to fight infections. Instead of killing off the pathogens and many other organisms, they want to boost beneficial organisms in the microbiome, for example with new drugs. We know that useful bacteria help to keep down the harmful ones.

The investigation of the microbiome and antibiotics resistance will go hand-in-hand. Research into microbiomes is still in its early stages. The focus has so far been on the composition of the microbiome. Now this complex system is to be examined as a whole.

In order to understand and exploit the underlying mechanisms, the excellence cluster will bring together researchers from molecular, bioinformatics and clinical disciplines. The cluster speakers are Professor Andreas Peschel and Professor Heike Brötz-Oesterhelt of the Interfaculty Institute of Microbiology and Infection Medicine at the University, along with Professor Ruth Ley, Director of the Max Planck Institute for

Developmental Biology. The University Hospitals and the German Center for Infection Research (DZIF) are also partners in the cluster.

Machine learning for the benefit of science

New technologies using artificial intelligence are set to make tangible changes to our world in the coming decades, thanks to recent breakthroughs in the area of machine learning. Algorithms are now able to solve ever more complex problems. The new “Machine Learning: New Perspectives for Science” excellence cluster will analyze these developments, which promise to fundamentally change even the process of scientific investigation. The aim is to tap the full potential of machine learning for science – from medicine to geosciences and physics, to sociology and linguistics. The researchers seek to understand the changes this will mean for scientific processes.

At the heart of their research are algorithms which recognize complex structures and causal links in data sets; methods with which uncertainties can be quantified in data-driven scientific models; and techniques enabling the researchers to better understand, interpret and control the phases of machine learning. Researchers from many different disciplines in the sciences, humanities and social sciences will also come together to discuss ethical and social issues. The speakers for the cluster are the Informatics professor, Ulrike von Luxburg, and the neuroscientist, Professor Philipp Berens. The Max Planck Institute for Intelligent Systems and the Knowledge Media Research Center Tübingen are partners in the cluster.



WELL-PLACED IN INTERNATIONAL RANKINGS

Tübingen in the top 100

The University of Tübingen was placed at 89 in the 2019 Times Higher Education World University Ranking of 1258 institutions worldwide, up from 94th place last year. In Germany, Tübingen moved up two places and now ranks 7th out of the 47 German institutions of higher education analyzed by the THE. Tübingen improved in the key categories of teaching and third-party funding. The ranking uses 13 separate performance indicators to examine a university's strengths against all of its core missions – teaching, research, knowledge transfer and international outlook.

A number of Tübingen subject areas made a strong showing:

- Education: 42 worldwide
- Humanities: 43 worldwide
- Psychology: 62 worldwide
- Life Sciences: 70 worldwide
- Medicine: 84 worldwide

The **Shanghai Ranking**, published in July 2018, also gave the University of Tübingen excellent marks. Tübingen ranked 18th in a global comparison and first in Germany for pharmacy and pharmacology. Tübingen was also the best German university in the fields of water research and education science, and ranked among the world's top 100 universities for human biology, medical technology and psychology.

The Shanghai Ranking has been carried out by China's Shanghai Jiaotong University since 2003. It reportedly reviews more than 1,200 universities and compares them on the basis of six indicators with a prime focus on research.

GERMAN RESEARCH FOUNDATION SPONSORS A BROAD SPECTRUM OF RESEARCH

Transregional collaboration on blood platelets

The German Research Foundation (DFG) has approved the funding of a new Transregio Collaborative Research Center (SFB/TRR 240): Platelets – Molecular, cellular and systemic functions in health and disease, with the participation of

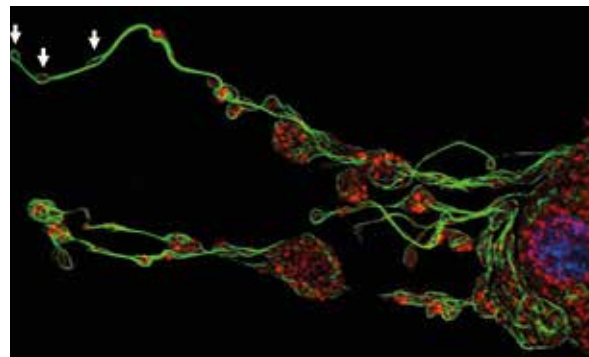
University of Tübingen researchers. The center started work in July 2018. Another Transregio Collaborative Research Center with Tübingen participation, the SFB/TRR 34, Pathophysiology of Staphylococcus in the Post-Genomic Era, reached its maximum funding period in June 2018.

In the blood – Platelets' complex functions

In the new Transregio Collaborative Research Center, Platelets – Molecular, cellular and systemic functions in health and disease (SFB/TRR 240), researchers from the University of Tübingen are collaborating with colleagues from the University Hospital and the University of Würzburg. From July 2018, the DFG will fund the SFB/TRR for four years with a total of 13.7 million euros. The SFB is led by Professor Bernhard Nieswandt from the Würzburg University Clinics

and the University of Würzburg. Professor Meinrad Gawaz from the Department of Internal Medicine III is the Tübingen spokesman.

Every day, about 100 billion platelets are formed in the bone marrow of a healthy person and then circulate in the bloodstream for about ten days. They check the vascular wall for injuries and close them if necessary. If these processes are uncontrolled, platelets can form such large aggregations that they lead to life-threatening vascular blockages, as in heart attack or stroke. Platelets also have many other unexplored functions which will be the subject of the new SFB/TRR. There are indications of complex relationships between platelets and various inflammatory processes, cellular defense mechanisms, innate immunity, the maintenance of vascular and organ functions and the development of tumors. The researchers hope their results can be rapidly incorporated into new treatments, for example for stroke or acute lung failure.



New blood platelets (white arrows) separate from their progenitor cells. Also shown are the cytoskeleton elements tubulin (green) and actin (red), and the cell nucleus (blue).

Collaborative research centers at the University of Tübingen

Title	Spokesperson	Duration
CAMPOS – Catchments as Reactors: Metabolism of Pollutants on the Landscape Scale (SFB 1253)	Professor Dr. Peter Grathwohl Center for Applied Geoscience – Hydrogeochemistry	1 Jan. 2017 - 31 Dec. 2020
Robust Vision — Inference Principles and Neural Mechanisms (SFB 1233)	Professor Dr. Matthias Bethge Werner Reichardt Center for Integrative Neuroscience/ Institute of Theoretical Physics	1 Jan. 2017 - 31 Dec. 2020
Molecular Coding of Specificity in Plant Processes (SFB 1101)	Professor Dr. Klaus Harter Center for Plant Molecular Biology	1 April 2014 - 31 Dec. 2021
ResourceCultures: Socio-cultural Dynamics in the Treatment of Resources (SFB 1070)	Professor Dr. Martin Bartelheim Institute of Prehistory and Medieval Archaeology	1 Oct. 2013 - 30 June 2021
Threatened Orders (SFB 923)	Professor Dr. Mischa Meier Institute of Ancient History	1 July 2011 - 30 June 2019
Construction of Meaning: The Dynamics and Adaptivity of Linguistic Structures (SFB 833)	Professor Dr. Sigrid Beck Institute of English Languages and Literatures	1 July 2009 - 30 June 2021
The Bacterial Cell Envelope: Structure, Function, and Infection Interface (SFB 766)	Professor Dr. Wolfgang Wohlleben Interfaculty Institute of Microbiology and Infection Medicine	1 July 2007 - 30 June 2019

Tübingen participates in these transregional collaborative research centers

Title	Tübingen spokesperson	Duration
Platelets – Molecular, cellular and systemic functions in health and disease (SFB-Transregio 240)	Professor Dr. Meinrad Gawaz Internal Medicine Department I, Cardiology	1 July 2018 - 30 June 2022
Liver Cancer – New mechanistic and therapeutic concepts in a solid tumor model (SFB-Transregio 209)	Professor Dr. Nisar Malek Internal Medicine Department I	1 July 2017 - 30 June 2021
The Skin as a Sensor and Effector Organ Orchestrating Local and Systemic Immune Responses (SFB-Transregio 156)	Professor Dr. Martin Röcken Department of Dermatology	1 July 2015 - 30 June 2019
Biological Design and Integrative Structures Analysis, Simulation and Implementation in Architecture (SFB-Transregio 141)	Professor Dr. Klaus G. Nickel Geoscience – Applied Mineralogy	1 Oct. 2014 - 30 June 2019
Pathophysiology of Staphylococci in the Post-genomic Era (SFB-Transregio 34)	Professor Dr. Andreas Peschel Interfaculty Institute of Microbiology and Infection Medicine	1 July 2006 - 30 June 2018

Tübingen to launch competence center for high-throughput sequencing

The DFG selected the University of Tübingen as one of four locations in Germany to establish a center of excellence for high-throughput sequencing. The universities are to provide researchers with comprehensive advice, service and bioinformatic evaluation for high-throughput sequencing projects; to this end they will be equipped with the latest Next Generation Sequencing (NGS) technology. The NGS Competence Center Tübingen will initially receive 5.8 million euros over three years.

Next-generation sequencing technology enables the complete mapping of the genome, epigenome and transcriptome of a biological sample. This applies to microorganisms such as bacteria as well as to higher organisms such as humans. Such methods generate huge amounts of data that require complex bioinformatic analyses. It is therefore important to have special expertise in the planning stage of such research projects.

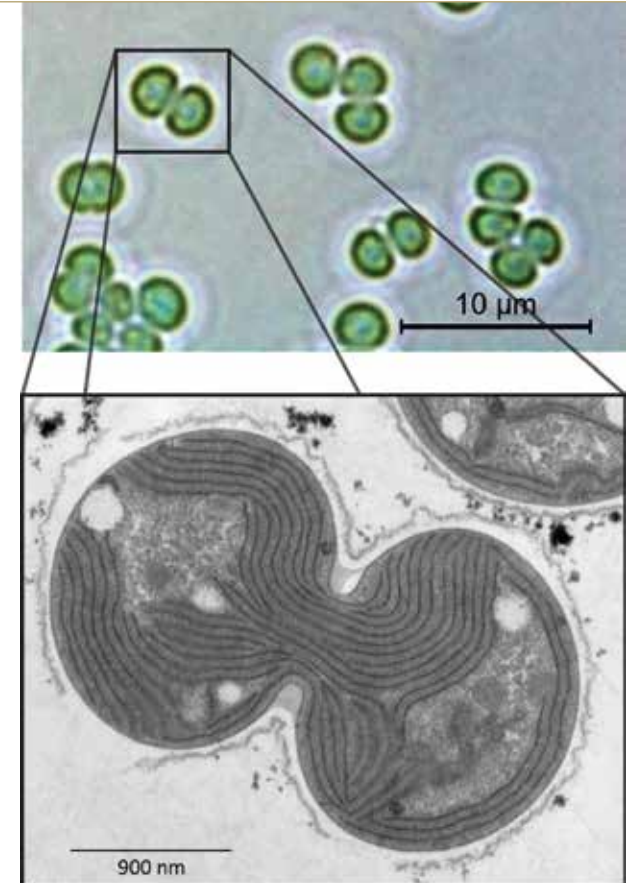
The new competence center will be coordinated by Professor Ingo Autenrieth from the Institute of Medical Microbiology, Professor Oliver Kohlbacher from the Center for Quantitative Biology and Professor Olaf Rieß from the Institute of Medical Genetics. They will work closely with Professor Detlef Weigel, director of the Max Planck Institute for Developmental Biology in Tübingen, who will contribute his expertise in the field of plant genomics.

New research group investigates cyanobacteria – The key to soil fertility?

Cyanobacteria are seen as the ancestors of chloroplasts, which are responsible for photosynthesis in the cells of green plants. They can therefore be considered a model for the process that led to life on earth. The microscopically small cyanobacteria themselves are of great importance to the Earth's ecosystem. The DFG has established a new research group at the University of Tübingen, called "The Autotrophy-Heterotrophy Switch in Cyanobacteria: Coherent Decision-Making at Multiple Regulatory Layers." The group started work at the beginning of 2019 and will receive 2.51 million euros in funding over an initial period of three years. The spokesman is Professor Karl Forchhammer from the Interfaculty Institute of Microbiology and Infection Medicine.

In photosynthesis, cyanobacteria – like green plants – convert carbon dioxide from the air and water into carbohydrates with the aid of sunlight, thereby producing oxygen. At night or in certain stressful situations, they switch their metabolism to break the carbohydrates back down. That process releases energy which they can use for vital functions. In the new research group, the scientists plan to investigate how the switch between the two substance flows can be flipped without creating chaos in the cell. Similarly, green plants have to constantly flip the switch between light and darkness.

The single-celled cyanobacteria are one step ahead of the plants – they can fix nitrogen from the air to make cell



material from it. In doing so, they contribute to soil fertility and are often the first colonists on bare surfaces such as rocks or concrete. The results of the research group could be of use in agricultural and climate research as scientists seek to use cyanobacteria as tiny factories for the production of nutrients.

Cyanobacteria – Enlargement: A cell dividing

Tübingen Research Units

Institute	Title	Spokesperson
Interfaculty Institute of Microbiology and Infection Medicine	The Autotrophy-Heterotrophy Switch in Cyanobacteria: Coherent Decision-Making at Multiple Regulatory Layers (FOR 2816)	Professor Dr. Karl Forchhammer
Center of Neurology and Hertie Institute for Clinical Brain Research	Epileptogenesis of genetic epilepsies (FOR 2715)	Professor Dr. Holger Lerche
Institute of Ancient History	Migration and Mobility in Late Antiquity and Early Middle Ages (FOR 2496)	Professor Dr. Mischa Meier
Interfaculty Institute of Biochemistry	Macromolecular complexes in mRNA localization (FOR 2333)	Professor Dr. Ralf-Peter Jansen
Interfaculty Institute of Biochemistry	VIROCARB: Glycans Controlling Non-Enveloped Virus Infections (FOR 2327)	Professor Dr. Thilo Stehle
Translational Gastrointestinal Oncology	Targeting Therapeutic Windows in Essential Cellular Processes for Tumor Therapy (FOR 2314)	Professor Dr. Lars Zender
Institute of Linguistics and Senckenberg Center for Human Evolution and Palaeoenvironment	Words, Bones, Genes, Tools: Tracking Linguistic, Cultural and Biological Trajectories of the Human Past (FOR 2237)	Professor Dr. Gerhard Jäger Professor Dr. Katerina Harvati
Interfaculty Institute of Biochemistry (IFIB)	cGMP Signaling in Cell Growth and Survival (FOR 2060)	Professor Dr. Robert Feil
Center of Neurology and Hertie Institute for Clinical Brain Research	The Physiology of Distributed Computing Underlying Higher Brain Functions in Non-Human Primates (FOR 1847)	Professor Dr. Hans-Peter Thier

EUROPEAN RESEARCH COUNCIL GRANTS FOR OUTSTANDING PROJECTS

The European Research Council (ERC) funds key research via the EU framework for research and innovation, Horizon 2020. One of the funding instruments is the Synergy Grant, in which two to four working groups collaborate on an interdisciplinary basis. In 2018, Professor Ulf Ziemann from the Hertie Institute for Clinical Brain Research, the University Hospitals and the University of Tübingen, together with his team and partners in Finland and Italy, became the first Tübingen researcher to receive a Synergy Grant for the “ConnectToBrain” project.

Synergy Grants are open to any discipline. They provide funding for exploration of the interfaces between established disciplines and demand substantial progress at the frontiers of knowledge. This includes the development of new methods, techniques, or unusual approaches. The maximum funding per Synergy Grant is ten million euros for a period of up to six years.

The ERC also awards research fellowships to individual scientists of all disciplines with excellent project ideas. These grants are made over five years. Top independent researchers can obtain Advanced Grants of up to 2.5 million euros; Consolidator Grants of up to two million go to those with seven to twelve years of experience, and Starting Grants to a maximum of 1.5 million are awarded to outstanding junior researchers.

In 2018, Professor Ana García-Saéz (IFIB) and Professor Eric Kemen (ZMBP and IMIT) were each awarded an ERC Consolidator Grant. Professor Marcello Porta from the Department of Mathematics and Dr. Marcus Scheele from the Institute of Physical Chemistry each received an ERC Starting Grant.

University of Tübingen researchers have received a total of seven Advanced Grants, six Consolidator Grants and 19 Starting Grants since the first round of ERC grants in 2007. In addition, a number of ERC Starting Grant holders have come to Tübingen from other institutions.

Synergy Grant for coordinated brain stimulation project

Professor Ulf Ziemann from the Hertie Institute for Clinical Brain Research, the University and its Hospitals is seeking to adapt non-invasive brain stimulation to the rhythm of the brain activity of individual patients, opening it up to a wide range of applications in treatments. Brain stimulation has so far mainly been used to treat depression. Ulf Ziemann’s project, ConnectToBrain, is funded by an ERC Synergy Grant. His team of researchers in Tübingen is working with partners at Aalto University in Finland and the University of Chieti-Pescara in Italy. The international research team will receive the maximum funding of ten million euros over a period of six years.

In conventional transcranial magnetic stimulation (TMS), the brain is stimulated non-invasively with magnetic impulses to influence its activity. The stimulus pulses are administered according to a fixed protocol. However, Ziemann demonstrated in previous studies that TMS is particularly effective when stimulation is synchronized with the patient’s own brain activity. Based on this finding, he and his team have developed closed-loop stimulation. The brain activity of the test persons is evaluated in real time. A TMS coil uses

an algorithm to transmit the impulses synchronized to the state of the brain to the nearest millisecond. The neuroscientists now seek to refine this technology with a helmet in which 50 magnetic coils are integrated along with the electrodes. In this way, the brain can be stimulated with high temporal and spatial resolution. The researchers believe this technology will help to alleviate brain network diseases such as strokes, depression and Alzheimer’s.

The Finnish group is producing the coils for the helmet, and their Italian colleagues are developing algorithms for the real-time analysis of the activity levels in the brain. Ziemann and his colleagues are responsible for preparing this technology for clinical application. The aim of the six-year “ConnectToBrain” project is to develop the device until it is ready for commercial production.





Ana García-Sáez



Eric Kemen

Two Consolidator Grants in the Sciences

Understanding the process of planned cell death

Professor Ana García-Sáez from the Interfaculty Institute of Biochemistry received a Consolidator Grant for her project Apoptotic Foci: Composition, Structure and Dynamics (APOSITE). The project investigates apoptosis, or programmed cell death. The Consolidator Grant – of two million euros for the next five years – follows on from the ERC Starting Grant for the APOQUANT project, which was awarded to García-Sáez in 2013.

Through apoptosis, the organism breaks down aged or damaged cells in a controlled manner. It is an active process which is key to the development of a living organism, its immune functions and for maintenance of tissue functions. In cancer and neurodegenerative diseases, this mechanism is often disrupted.

Apoptosis begins with the activation of what are known as Bax and Bak proteins. If a cell is under stress, the proteins become deposited in symmetrical pairs, forming lines, arcs, and rings at certain points on the otherwise impermeable shell of the mitochondria. The Bax and Bak proteins form pores on the outer shell, letting cytochrome pass out. Once that happens, the process of cellular death cannot be reversed and the cell dissolves. Ana García-Sáez investigated this process in earlier studies. Until now, little was known

about how and when the cell organizes this clustering of Bax and Bak proteins. Garcia Saez aims to close this gap with the work to be done in her new project.

She will investigate the composition and the interactions of Bax/Bak complexes in connection with apoptosis. Her team observes living cells using imaging methods as well as special methods of single-molecule and electron microscopy. A comprehensive understanding of the structure and function of the Bax and Bak proteins could also lead to apoptosis modulators for medical purposes.

Harnessing microbe communities for crop protection

Professor Eric Kemen heads a research group based at the Center for Plant Molecular Biology and the Interfaculty Institute for Microbiology and Infection Medicine. He obtained an ERC Consolidator Grant worth two million euros for his project “Knowledge based design of complex synthetic microbial communities for plant protection” (DeCoCt).

The surfaces of all higher organisms and plants are colonized by various microorganisms, which in their entirety are referred to as microbiota or the microbiome. On the one hand, microorganisms contribute to vital functions such as nutrient intake, stress tolerance, and resistance to patho-

gens. On the other hand, they can also cause diseases. We do not fully understand how or why microbial communities change from predominantly beneficial to harmful influences. The Kemen working group has been conducting research on microbiota of the model plant *Arabidopsis thaliana* (thale cress) for several years. They have developed methods allowing them to investigate microbial communities under natural conditions as well as in field experiments, and to recreate microbial communities in the laboratory. A breakthrough was the discovery of organisms which accompany *Arabidopsis* throughout its lifespan and which are important for the stability of the microbiota.

Kemen would like to change the unfavorable composition of microbiota by introducing new probiotics which contain microbial communities with favorable properties. Their effect on the microbiota and host plant will be tested in the laboratory. Promising combinations will be tested in field trials. With this new approach, Eric Kemen aims to develop alternatives to existing chemical and biological crop sprays.

Two new Starting Grants

Calculating the quantum systems of matter

Professor Marcello Porta joined the Department of Mathematics at the University of Tübingen in 2017. In 2018, he received an ERC Starting Grant for the project: MaMBoQ – Macroscopic Behavior of Many-Body Quantum Systems. Porta analyzes large quantum systems of interacting fermions – the particles which make up matter.

The project is divided into two parts: In Part A, Porta investigates the transport properties of two-dimensional lattice systems, such as graphene, which consists of a two-dimensional layer of carbon atoms arranged in a hexagonal lattice; and topological insulators – which are non-conducting inside but conduct current on their surface without resistance. In Part B, he plans to derive equations for fermionic multi-particle systems in suitable scaling limits. In both cases, the aim is to validate emergent effective theories, i.e. simplified models that approximate the macroscopic behavior of complex systems. Varying microscopic systems can often be described by the same effective theory, a phenomenon called universality. The validation of effective theories and their universality based on a fundamental microscopic model – here multi-particle quantum mechanics – using mathematical methods is a central goal of mathematical physics.

Graphs and topological insulators are of great interest to physicists and chemists because of their remarkable properties. If the interaction between electrons is ignored, some of the properties of these systems have already been explained mathematically. In real samples, however, the electrons interact and must be considered as a whole. Porta is exploring mathematical solutions for this complex problem.

Trying to find the switch

The chemist Dr. Marcus Scheele receives an ERC Starting Grant for COINFLIP – Coupled Organic Inorganic Nanostructures for Fast, Light-Induced Data Processing. He joined the University of Tübingen in 2013 and heads a junior research group at the Institute of Physical Chemistry.

Scheele is seeking to develop very fast optical switches with a reaction time of a few picoseconds (a trillionth of a second) that are compatible with silicon technology. This should



Marcello Porta



Marcus Scheele

enable very fast data processing with low energy consumption. For the switches, the scientist uses thin films with hybrid nanostructures in which organic and inorganic substances are coupled. He is therefore concerned on the one hand with the chemistry of inorganic nanocrystalline colloids – finely distributed droplets in a medium – and on the other hand with organic semiconductor molecules.

Optical switches, which are controlled by light beams, play a decisive role in modern data processing in silicon photonics. They control the interface between optical fibers for data transmission and the electronic processing units in computers. Up to now, data transmission at these interfaces has been a weak point; it is slow compared to other components. If the optical circuit could be accelerated, data processing systems as a whole would be faster and more efficient.

Current European Research Council Grants

Advanced Grants

Name	Project	Duration
Professor Dr. Harald Baayen · Institute of Linguistics	Wide Incremental learning with Discrimination nEtworks (WIDE)	2017 - 2022
Professor Dr. Hans-Georg Rammensee · Interfaculty Institute for Cell Biology	Mutation-driven Immunoediting of Human Cancer? (Mutaediting)	2014 - 2019
Professor Dr. Gerhard Jäger · Institute of Linguistics	Language Evolution: The Empirical Turn (EVOLAEMP)	2013 - 2018
Professor Dr. Bernd Pichler · Department of Radiology	Multiparametric Tumor Imaging and Beyond: Towards Understanding in vivo Signals (IMAGELINK)	2013 - 2018

Consolidator Grants

Name	Project	Duration
Professor Dr. Eric Kemen · Center for Plant Molecular Biology and Interfaculty Institute of Microbiology and Infection Medicine	Knowledge based Design of Complex Synthetic Microbial Communities for Plant Protection (DeCoCt)	2019 - 2024
Professor Dr. Ana Jesus García-Sáez · Interfaculty Institute of Biochemistry	Apoptotic Foci: Composition, Structure and Dynamics (APOSITE)	2019 - 2024
Professor Dr. Professor Dr. Katerina Harvati · Department of Geoscience – Palaeoanthropology	Human Evolution at the Crossroads (CROSSROADS)	2017 - 2022
Professor Dr. Lars Zender · Translational Gastrointestinal Oncology	Functional in vivo Analysis of Cholangiocarcinoma Development, Progression and Metastasis (CholangioConcept)	2015 - 2020
Professor Dr. Thorsten Stafforst · Interfaculty Institute of Biochemistry	Site-directed RNA Editing to Manipulate RNA and Protein Function (RNArepair)	2015 - 2020
Professor Dr. Todd Ehlers · Geoscience Department – Geodynamics	Extreme Tectonics and Rapid Erosion in Mountain Environments (EXTREME)	2014 - 2019

Starting Grants

Name	Project	Duration
Dr. Marcus Scheele · Institute of Physical and Theoretical Chemistry	Coupled Organic Inorganic Nanostructures for Fast, Light-Induced Data Processing (COINFLIP)	2019 - 2024
Professor Dr. Marcello Porta · Department of Mathematics	Macroscopic Behavior of Many-Body Quantum Systems (MaMBoQ)	2019 - 2024
PD Dr. Surjo Soekadar · Department of Psychiatry and Psychotherapy, Applied Neurotechnology	Building Next-Generation Brain/Neural-Machine Interfaces for Restoration of Brain Functions (NGBMI)	2018 - 2023
Dr. Chang Liu · Center for Plant Molecular Biology	Chromatin Packing and Architectural Proteins in Plants (CHROMATADS).	2018 - 2022
Dr. Radu Iovita · Early Prehistory and Quaternary Ecology	A Silk Road in the Palaeolithic: Reconstructing Late Pleistocene Hominin Dispersals and Adaptations in Central Asia. (PALAEOSILKROAD)	2017 - 2022
Dr. Claudio Tennie · Institute of Prehistory and Medieval Archaeology	Do Early Stone Tools Indicate a Hominin Ability to Accumulate Culture? (STONECULT)	2017 - 2022
Professor Dr. Cynthia Debono Spiteri · Institute of Prehistory and Medieval Archaeology, partnering Professor Dr. Philipp W. Stockhammer, LMU München	Transformations of Food in the Eastern Mediterranean Late Bronze Age (FoodTransforms)	2016 - 2021
Dr. Stephan König · Geoscience Department – Isotope Geochemistry	From the Origin of Earth's Volatiles to Atmospheric Oxygenation (O2RIGIN)	2015 - 2020
Professor Dr. Michael Kormann · University Children's Hospital – Department of Paediatrics	Biochemically modified messenger RNA encoding nucleases for in vivo gene correction of severe inherited lung diseases (BREATHE)	2015 - 2020
Dr. Markus Siegel · Werner Reichardt Center for Integrative Neuroscience	Spectral Fingerprints of Neuronal Interactions (SPECFIN)	2014 - 2019
Professor Dr. Daniela Thorwarth · University Department of Radiation Oncology	Biologically individualized, Model-based Radiotherapy on the Basis of Multi-parametric Molecular Tumor Profiling (BIO-IRT)	2014 - 2018
Professor Dr. Ana J. García-Sáez · Interfaculty Institute of Biochemistry	The Quantitative Bcl2 Interactome in Apoptosis: Decoding How Cancer Cells Escape Death (APOQUANT)	2013 - 2019
Professor Dr. Sonja Utz · Knowledge Media Research Center	Redefining Tie Strength – How Social Media (Can) Help us to Get Non-redundant Useful Information and Emotional Support (ReDefTie)	2013 - 2018
Professor Dr. Jan Wehkamp · University Hospitals, Inner Medicine 1, Hepatology, Gastroenterology, Infectiology	The Influence of Environmental Factors on Antimicrobial Activity of Human Intestinal Defensins (DEFENSINACTIVITY)	2013 - 2018

NEW CENTER FOR KOREAN STUDIES

In July 2018, Korean Studies at the University of Tübingen became an independent institute, with all of its research brought together in the new Center for Korean Studies (CKS). Japanology, Chinese Studies and Korean Studies are now each represented by their own section at the Institute of Asian and Oriental Studies. Tübingen has become one of the strongest locations for Korean studies in Europe in recent years. Currently about 400 students are enrolled; the discipline has three professorships and maintains one of the largest Korean specialist libraries in Germany. It also has a lively student and academic exchange with Korean universities and in 2012 opened the Tübingen Center for Korean Studies (TUCKU) at Korea University in Seoul.

*Musical accompaniment to the opening of the new Korean Studies institute and the Center for Korean Studies
Top: You Jae Lee, director of both institutions*

The ceremony for the establishment of the Center for Korean Studies in July 2018 was attended by the Consul General of the Republic of Korea, Dr. Bek Bumhym, the Director of the Institute for Peace and Unification of Seoul National University, Professor Jung Keun-sik, and the President of the Association of Korean Studies in Europe (AKSE), Professor James Lewis of Oxford University. The keynote lecture, Korean Studies: A Global Perspective, was given by the President of the Academy of Korean Studies, Professor Ahn Byung-Ook.



The Academy of Korean Studies is a state education and research institution in South Korea which also promotes Korean Studies around the world via various programs.

Professor You Jae Lee took over the chair of Korean Studies in Tübingen in 2010, and a Bachelor's and a Master's program were established. The Bachelor's degree program includes a year in Korea; students of the Master's degree program have the opportunity to acquire a double degree in Tübingen and at Seoul National University. In both programs, great emphasis is placed on language acquisition. Internships are also possible during the stays abroad.

The focus of Tübingen's Korean Studies is on the history, society and culture of modern Korea. In the new Center for Korean Studies, researchers are exploring issues of colonialism, the Cold War, migration, and the general history of Korea. The research is funded by the Academy of Korean Studies.

PROMISING PROJECTS

Space race: Tübingen in the running for ESA mission

The European Space Agency selected the Theseus mission for funding, one of only three chosen from a total of 25 applications; Professor Andrea Santangelo of Tübingen's Institute of Astronomy and Astrophysics is involved in the project. If ultimately chosen, the Theseus satellite could be launched in 2032 and would collect data on the early universe, especially the first 1.5 billion years after the Big Bang. The three mission projects selected to compete are to be developed in parallel over three years.

The development of the Theseus satellite (Transient High-Energy Sky and Early Universe Surveyor) has been given a



boost in recent years by a consortium of 60 scientists worldwide. Theseus carries a 70-centimeter infrared telescope (IRT), four special wide-angle X-ray cameras (SXI) and four gamma-ray spectrometers based on scintillator crystals (XGIS). With these instruments, the satellite would be able to observe a large section of the sky at once and react immediately to short-term changes in brightness caused by flickering high-energy sources, such as gamma-ray bursts.

These can be triggered by the fusion of two neutron stars or by a nuclear-collapse supernova, the explosion of a dying, very massive star. Due to their luminosity, such events can be observed from very far away and therefore allow researchers to draw conclusions about the early universe. Santangelo and his team are involved both in the scientific planning of the mission and in the development of hardware components for real-time data processing on board the satellite. ESA will decide in 2021 which of the three selected projects will go into space.

Wanted: Better legal framework for eurozone risk diversification

In the most recent economic and currency crisis, the mechanisms of limited risk diversification in European law proved to be unsustainable. Economists and lawyers at the University of Tübingen are investigating how economic and social risks in the eurozone could be distributed in the future using sustainable, legally and politically legitimate mechanisms. In the international project "Risk Sharing in the Euro Area" they are working with colleagues from Bocconi University in Milan and Aristotle University in Thessaloniki. The project receives some one million euros from the Volkswagen Foundation as part of the "Challenges for Europe" program. The project leaders are the Tübingen professors Gernot Müller and Wilhelm Kohler from the Economics and Social Sciences Faculty and Professors Jens-Hinrich Binder and Martin Nettesheim from the Faculty of Law.

In the individual projects funded, the researchers are investigating the legal and institutional reasons for the failure of risk distribution mechanisms. They focus on European financial markets, fiscal policy and labor migration in the internal market. The questions are examined empirically, theoretically on a comparative law basis, and in terms of legal economics. The funding will be used to finance junior research positions, project workshops, and an international final conference at the University of Tübingen in 2021.

Invasive species – What are they like at home?

The Franco-German program “Make Our Planet Great Again” (MOPGA), which was initiated by the governments of the two countries under the Paris Climate Agreement, provides the Institute for Evolution and Ecology with funding from the German Academic Exchange Service (DAAD) for the project “Genomics and Epigenomics of Invasive Plants.” In close collaboration with Professor Oliver Bossdorf from the Institute of Evolution and Ecology, Professor Christina Richards from the University of South Florida will study evolutionary and genomic changes in invasive plant species. These are species which have been introduced, spread extensively, and have negative effects on native ecosystems or biodiversity. Christina Richards will spend four years in Tübingen and set up her own research group. The DAAD is funding the project from 2019 to 2022 with a total of one million euros.

In her MOPGA project, Richards will mainly work with knotweed species from East Asia. The species – imported as ornamental plants to Europe and North America – have spread far and fast, placing them among the most problematic invasive species in the world. Richards and Bossdorf will work together with colleagues from Fudan University in Shanghai to conduct field expeditions to all three continents, collect and study material. The aim is to gain a better understanding of the biology and genetic diversity of knotweed species in their native area and to investigate the extent to which different evolutionary processes have favored the spread of the species in Europe and North America.

Seeking new types of antibiotics to fight multi-resistant germs

More and more bacterial pathogens are becoming insensitive to several antibiotics at the same time; they develop dangerous multi-resistances. In order to find new drugs to combat dangerous pathogens, the Baden-Württemberg Ministry of Science, the Arts and Culture is funding the “antibioPPAP” research group for three years. A total of six research groups from the Faculty of Chemistry at the University of Stuttgart, the Department of Biology at the University of Tübingen and the University Hospital in Ulm are involved in the project. The new research group is led by Professor Friedrich Götz from Tübingen and Professor Bernd Plietker from Stuttgart. They are intensifying their joint preparatory work for the further development of new types of antibiotics which are effective against multi-resistant *Staphylococcus aureus* bacteria (MRSA) and against vancomycin-resistant *Enterococci* bacteria (VRE).

In 2017, the Götz and Plietker working groups published a study on non-natural polycyclic polyprenylated acylphloroglucins (PPAP) as a new class of drugs that could be highly potent against multi-resistant germs. These compounds – based on substances found in nature – were produced synthetically in just a few steps and showed very high activity against VRE and MRSA. In the future, the researchers plan to analyze the mechanisms of the PPAPs and test how well they remain in the body and whether they have unwanted side effects. During the three-year funding period, the researchers hope to lay the foundation for national and international collaboration in the field of PPAP-based antibiotics.

Finding a replacement for formaldehyde

Pathologists, anatomists and undertakers have been using formaldehyde for more than 125 years to preserve biological tissue and entire bodies. The substance is highly toxic and carcinogenic; researchers are looking for a replacement. Professor Bernhard Hirt from the Institute of Clinical Anatomy and Cell Analysis at the University Hospital of Tübingen and his interdisciplinary team have developed and patented the substitute aminolipine. All previous studies have shown that aminolipine is an excellent fixative and preservative for organs and tissue. In April 2018, Hirt received GO-Bio funding from the German Ministry of Education and Research in order to take aminolipine into the commercial market. The project will receive a total of 4.5 million euros in funding over three years.

Following the adoption of greater restrictions on formaldehyde, some insurers will no longer cover its use in university facilities. However, preservation is necessary in some disciplines, such as medical training. As part of the project, the research team hopes to develop products based on aminolipine which can be used to preserve biological tissue.

Finding dangerous plaques in blood vessels

The alteration of blood vessels by atherosclerosis is one of the most common diseases of our time and the leading cause of death worldwide, as it leads to strokes and heart attacks. It is believed that injury to the vascular wall triggers an inflammation, which results in atherosclerotic plaques. Some of these plaques are unstable. They tend to break open, which in turn can lead to the formation of blood clots and vascular occlusions. Dr. Susanne Feil from the Interfaculty Institute of Biochemistry and partners from Madrid and Nijmegen will receive 750,000 euros in funding from the European Research Area Network on Cardiovascular Diseases (ERA-CVD) program for a period of three years for further research into these plaques. In the new project, SCAN – Multimodal imaging of atherosclerosis with the aid of nanoparticles, the researchers will use the latest imaging procedures to reveal atherosclerotic plaques.

The method for differentiating unstable – and thus potentially dangerous – plaques from stable deposits is being developed in preclinical animal studies and will then be transferred to humans. In this way, the progression of atherosclerosis and the risk of heart attacks could be assessed at an early stage and patients treated accordingly.

Examining 17th century translations into Chinese

A few years ago, the Nanjing library was the scene of a sensational rediscovery of the Chinese version of Georgius Agricola's (1494-1555) *De re metallica* (1556), a classic of the methods of mining and metallurgy known at the time. For more than 350 years the Chinese translation, commissioned by Ming official Li Tianjing (1579-1659) and supervised by Jesuit missionary Johann Adam Schall von Bell (1592-1666), was lost. Sinologist Professor Hans Ulrich Vogel of the Institute of Asian and Oriental Studies raised 500,000 euros in project funding from the German Research Foundation for a period of three years in order to translate the *Kunyu gezhi* (*Investigations of the Earth's Interior*; 1640), the Chinese title of the work, including all important accompanying documents, into English.

Work on the project, "The Transfer of Western Science, Technology and Medicine to Late Ming China: Convergences and Divergences in the Light of *Kunyu gezhi* (1640) and *Taixi shuifa* (1612)," began in June 2018. Vogel and his team want to clarify the selective and complex Jesuit approach to the translation. They chose the text *Taixi shuifa* (*Hydro-methods of the Great West*; foreword 1612) as a comparative work to *Kunyu gezhi* to provide them with insights into the transfer of European knowledge to China at that time.

An image of mine shafts and mining activity in Yunnan Province (approx. 1845) in: Diannan kuangchang tulüe (Illustrated portrayal of the mining- and smelting-works of Yunnan)



PROMOTING EARLY-CAREER RESEARCHERS

Ophthalmology project trains applications-oriented medical researchers

Translational research integrates basic and clinical research to take scientific findings out of the laboratory and into clinical application. The new training project “transMed” is intended to get more researchers involved in this integration process. It is funded by the European Union with more than 3.3 million euros over a period of four years. The project is coordinated by Professor François Paquet-Durand from the Research Center for Ophthalmology at the Tübingen University Hospitals.

The transMed project was launched at the beginning of 2018 and aims to train a new generation of scientists. In the field of retinal diseases, they will gain insight into all phases of research translation: from biomedical basics to pharmaceutical development and clinical trials to the successful marketing of a new drug. transMed will bring together expertise from the four universities of Tübingen, Lund in Sweden, Modena and Reggio Emilia in Italy and Iceland with a total of ten participating companies. The aim is to promote

the necessary cooperation beyond the academic environment in the training of scientists from the very beginning. At the end of the four-year project period, transMed participants will be able to continue working at a critical interface in biomedical research and thus accelerate medical translation both in academia and industry.

www.transmed-itn.eu

Research training groups

The DFG offers doctoral candidates structured qualification programs via its research training groups. Each of these programs has a common research topic and is funded for a maximum of nine years. The Research Training Group “cGMP: From the Sick Bed to the Laboratory Bench” (GRK 2381) was approved in November 2018 at the University of Tübingen.

Messenger chemicals as potential medications

The research training group 2381 “cGMP: From the bedside to the laboratory bench” starts work in July 2019 and will provide training for 18 doctoral researchers in the fields of biochemistry, pharmacy, biophysics, neuroscience and medicine. It will receive initial funding of 4.3 million euros over four and a half years. The coordinator is Professor Robert Feil from the Interfaculty Institute of Biochemistry (IFIB).

The early-career researchers will investigate the messenger chemical cyclic guanosine monophosphate (cGMP). It is responsible for the transmission of signals in cells and is used as a signal transmitter in many drugs. The main field of application so far has been drugs for the treatment of cardiovascular diseases. However, recent studies carried out in

Tübingen and other places have shown that cGMP-modulating drugs might also be useful in the treatment of other diseases.

The group will explore the importance of cGMP in different cell types and tissues of healthy and diseased organisms and seek new areas of application for these drugs.

The Research Training Group cooperates closely with research groups at Harvard Medical School and Tufts University School of Medicine in Boston, whose expertise complements that of the Tübingen scientists: The doctoral students are supervised by a mentor from Tübingen and Boston and spend three months in Boston in the co-mentor’s laboratory.



DFG-backed Research Training Groups

Title	Spokesperson	Duration
cGMP: From the bedside to the laboratory bench (GRK 2381)	Professor Dr. Robert Feil Interfaculty Institute of Biochemistry	1 July 2019 - 31 December 2023
MOMbrane: The multifaceted functions and dynamics of the mitochondrial outer membrane (GRK 2364)	Professor Dr. Doron Rapaport Interfaculty Institute of Biochemistry	1 April 2018 - 30 September 2022
Research training group Mannheim – Freiburg – Heidelberg – Koblenz-Landau – Tübingen Statistical Modeling in Psychology (SMiP) (GRK 2277)	Professor Dr. Edgar Erdfelder University of Mannheim Professor Dr. Mandy Hütter Professor Dr. Rolf Ulrich University of Tübingen · Faculty of Science	1 October 2017 - 31 March 2022
Research training group Frankfurt – Tübingen Doing Transitions – The Formation of Transitions over the Life Course (GRK 2105)	Professor Dr. Andreas Walther University of Frankfurt am Main Professor Dr. Barbara Stauber University of Tübingen · Economics and Social Sciences	1 January 2017 - 30 June 2021
Research training group Stuttgart – Tübingen Spectral Theory and the Dynamics of Quantum Systems (GRK 1838)	Professor Dr. Marcel Griesemer University of Stuttgart Professor Dr. Stefan Teufel (deputy spokesman) University of Tübingen · Faculty of Science	1 October 2013 - 31 March 2018
Research training group Stuttgart – Tübingen Integrated Hydrosystem Modelling	Professor Dr. Olaf Cirpka Faculty of Science	1 April 2012 - 31 March 2021
Ambiguity – Production and Reception (GRK 1808)	Professor Dr. Matthias Bauer Faculty of Humanities	1 October 2013 - 30 September 2022
Molecular Principles of Bacterial Survival Strategies (GRK 1708)	Professor Dr. Karl Forchhammer Interfaculty Institute of Microbiology and Infection Medicine	1 April 2012 - 31 March 2021
Religious Knowledge in Pre-modern Europe (800-1800) Transfers und Transformations – Ways to the Modern Knowledge Society (GRK 1662)	Professor Dr. Annette Gerok-Reiter Faculty of Humanities Professor Dr. Volker Leppin Protestant Theology	1 April 2011 - 31 March 2020



Current PhD network	Spokesperson	Duration
Theory of Balance – Forms and figures of balance in the media, art and literature	Professor Dr. Eckart Goebel Institute of German Language and Literature	1 November 2017 - 31 October 2020
The persistence of gender binaries	Professor Dr. Marion Müller Institute of Sociology	1 December 2017 - 30 November 2020
Entangled Temporalities in the Global South	Professor Dr. Sebastian Thies Institute of Romance Languages and Literatures	1 December 2017 - 30 November 2020
Individual response to physical activity – A transdisciplinary approach	Professor Dr. Ansgar Thiel Institute of Sports Science	1 December 2017 - 30 November 2020
New nanoparticles – From synthesis to application in the life sciences	Professor Dr. Erik Schäffer Center for Plant Molecular Biology	1 December 2017 - 30 November 2020
Integrative Augmented Reality (IAR)	Dr. Siegfried Wahl Research Center for Ophthalmology	1 February 2018 - 31 January 2021

PhD networks

PhD networks are generally formed by three to five professors from different disciplines whose doctoral students are examining one topic from different perspectives. The PhD networks each provide up to seven grants for three years. Successful PhD networks can form the basis of bigger research projects and may lead to research training groups sponsored by the German Research Foundation.

Doctorates completed 2017 - 2018

Faculty/Institution	Doctorates completed in winter semester 2017/18 and summer semester 2018	
	female	male
Protestant Theology	4	10
Catholic Theology	1	6
Law	10	19
Medicine	168	140
Humanities	33	31
Economics and Social Sciences	28	23
Science	108	171
Institute of Islamic Theology	0	2
Total	352	402
	754	

As of 16 January 2019

Habilitations completed in 2018

Faculty	Habilitations	
	female	male
Protestant Theology	2	2
Catholic Theology	1	1
Medicine	11	22
Humanities	2	3
Science	2	9
Total	18	37
	55	

As of 3 January 2019

OUTSTANDING EARLY-CAREER RESEARCH

IEEE PAMI Young Researcher Award for artificial intelligence research

Andreas Geiger, Professor of Learning-based Machine Vision/Autonomous Vision at the Department of Informatics at the University of Tübingen and head of the Autonomous Machine Vision research group at the Max Planck Institute for Intelligent Systems, was the first German and third European to receive the IEEE Pattern Analysis and Machine Intelligence (PAMI) Young Researcher Award. The prize was awarded to Geiger at the IEEE Conference on Computer Vision and Pattern Recognition in 2018 in Salt Lake City. The prize, which has been awarded annually since 2012, is considered the world's most prestigious award for young researchers in the field of machine vision. It goes to persons whose doctorate was awarded no more than seven years ago.

Geiger's work integrates machine vision and learning with robotics. Geiger's algorithms are used in autonomous test vehicles worldwide. Over the past five years, the data sets and test methods he has developed have made a significant contribution. With a focus on autonomous driving, Geiger conducts research in the Cyber Valley, the research network for artificial intelligence with partners from science and industry in the Stuttgart-Tübingen region.

"The question is: how can the car see robustly and make autonomous decisions?" says Geiger. For example, the vehicle must be able to distinguish a traffic light from an advertising sign. The decisive factor for the safety of autonomous vehicles is above all the classification of moving objects. This requires high-precision mapping within the vehicle's range of motion and expensive 360-degree laser sensors that actively

scan the environment. "Humans don't need high-precision maps or 3D sensors – they see passively," Geiger says. Current approaches in the field of autonomous driving are therefore "not scalable," he adds. In other words, outside its familiar environment, an autonomous vehicle would be lost. At present, humans can generalize much better than robots and can usually cope well with unexpected situations or lighting.

Could a robot learn in a similar way to a human? "A good question," says Geiger with a smile, "we don't know exactly how humans learn yet, so we can't answer that." He adds that the learning processes of artificial neural networks are monitored, and need to be fed a lot of training data for different objects and scenarios. By contrast, humans make robust decisions based on only a small number of learning experiences. Also, autonomous driving takes a modular approach – seeing and classifying various objects and combinations as single problems to be solved separately.

Andreas Geiger is heading a research group at the Max Planck Institute for Intelligent Systems for several years before moving to the University permanently. The professorship gives him great freedom to choose his research direction. Within the Cyber Valley initiative, cooperation with partners from science and industry creates a lively atmosphere in which engineering and artificial intelligence come together. He and his research group have long been an attraction for international scientists. "And while experts in the field of artificial intelligence are in demand worldwide, we cannot complain about a lack of excellent applicants," says Geiger.



Andreas Geiger

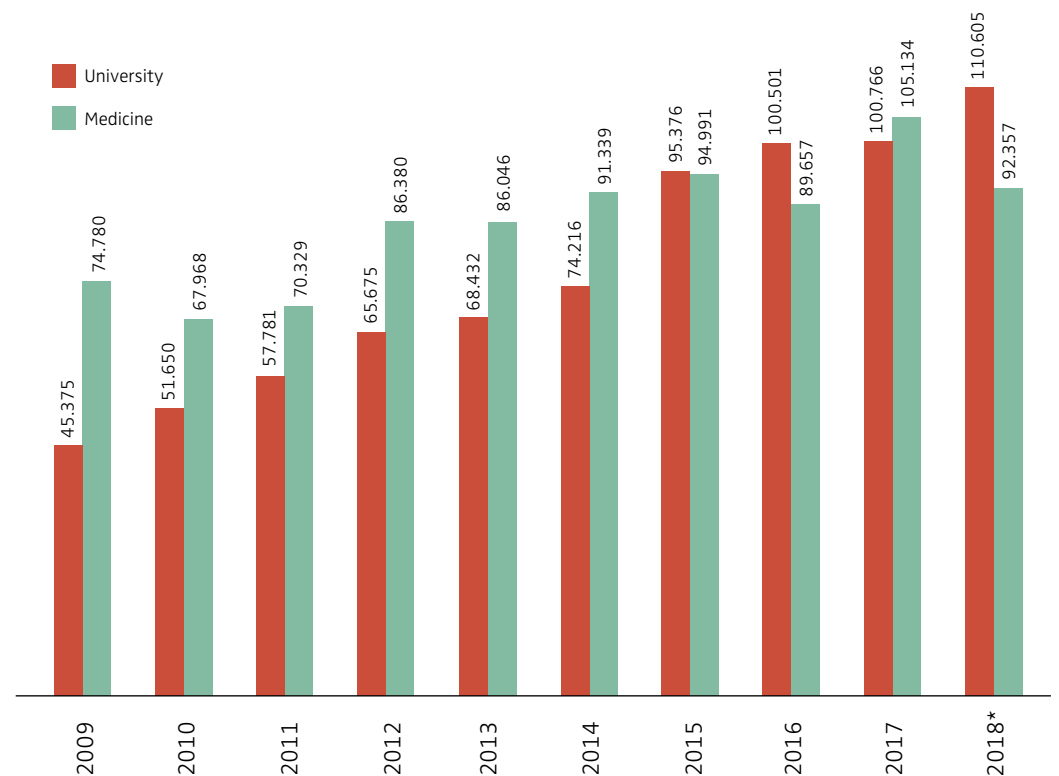
THIRD-PARTY FUNDING

The Sciences, Humanities and Social Sciences attract more investment than ever before

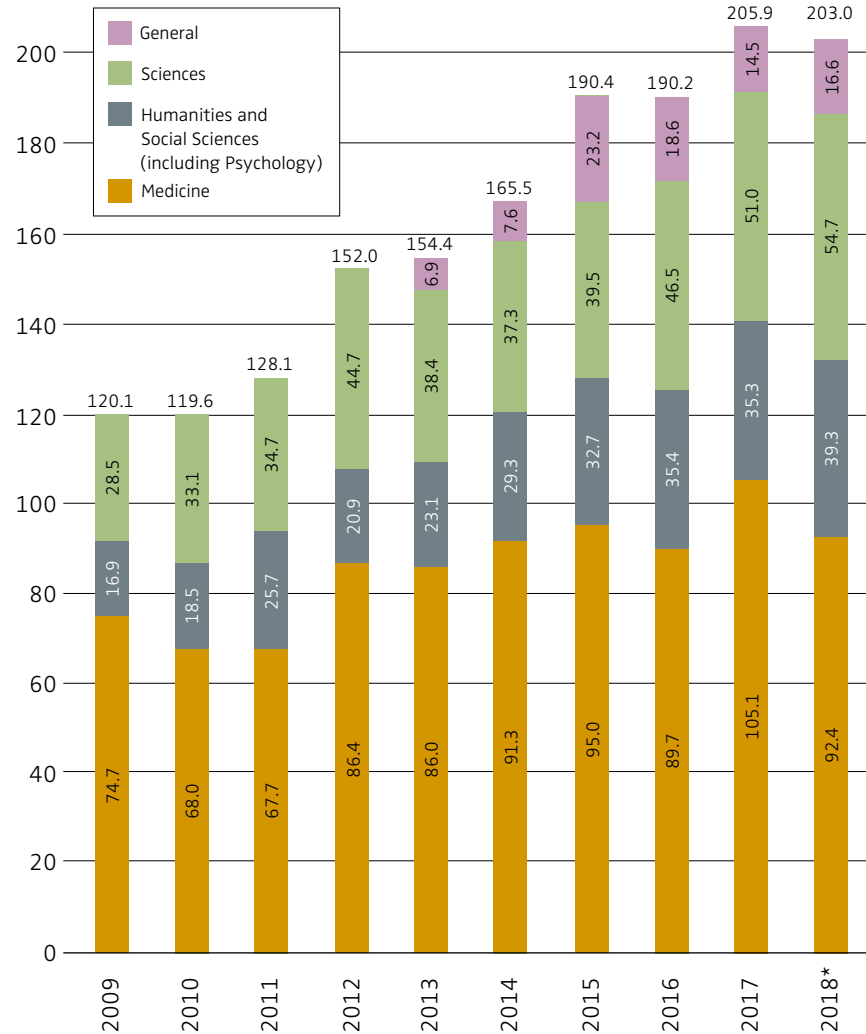
Third-party investment in University of Tübingen research – excluding Medicine – amounted to more than 110.6 million euros in 2018. Third-party sponsorship in the Sciences reached an unprecedented 54.7 million euros; it reached a new high in the Humanities and Social Sciences also, exceeding 39 million euros. This reflects the German Research Foundation’s major investment in Tübingen projects and researcher training programs (see pp. 11-13 and 22-25), and increased direct spending in specific areas by the German government, business and independent foundations. And, while European Union funding was lower in 2018, Tübingen is well represented with four new European Research Council grants (see p. 14f.). These are part of Horizon 2020, the European Union’s Research Framework Program for 2014 to 2020.

Overall third-party funding for the University including Medicine came to 203 million euros in 2018. This includes funds for the University as a whole, such as investment in infrastructure and strategy aimed at improving conditions in research, teaching and employment at the University of Tübingen.

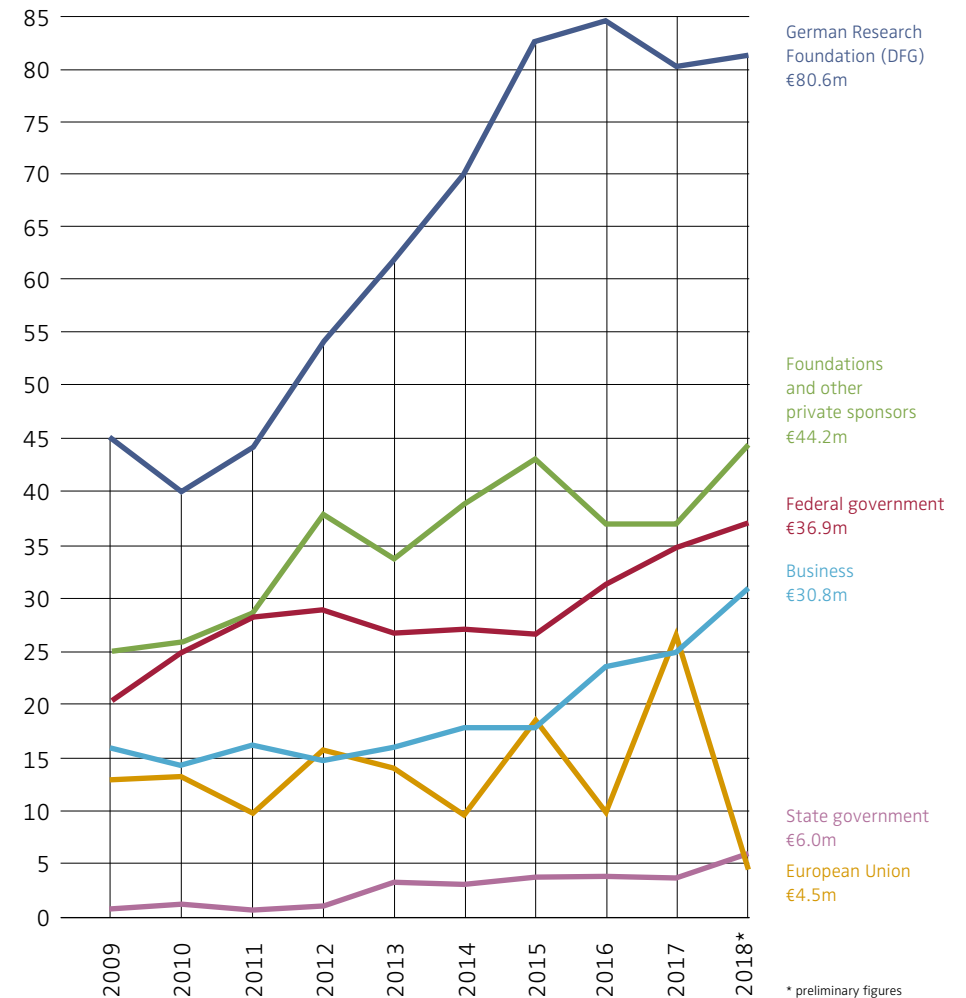
Third-party funding trends
in millions of euros, 2009 - 2018



Third-party funding attracted by the Sciences, Humanities, and Medicine
in millions of euros, 2009 - 2018



Sources of third-party funding
in millions of euros, 2009 - 2018



* preliminary figures



SPONSORSHIP

SPECIAL INITIATIVES

At the University of Tübingen, we understand how important it is to make new knowledge accessible and comprehensible, and we are proud to work with a wide range of sponsors who share that aim. From professorships to prizes, from scholarships to rare objects for the Museum Collections – outside patronage takes many forms. We would like to thank the generous sponsors whose money and efforts have helped to realize projects, both large and small, which support the University and its mission to promote better understanding.

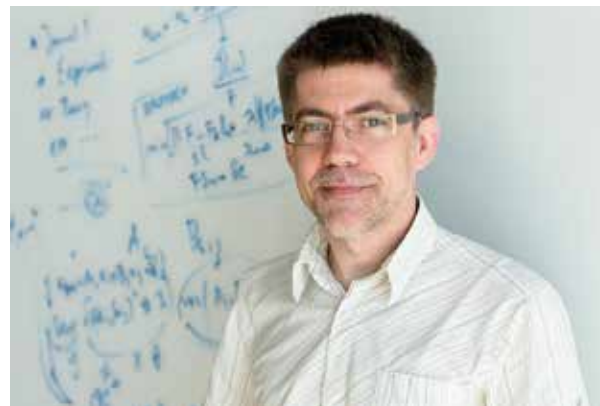
SPONSORED PROFESSORSHIPS

Focus on Machine Learning

The technology and service provider **Bosch** is putting up 5.5 million euros over the coming decade to finance an endowed professorship of Machine Learning. The position goes to Matthias Hein, who works in the area of statistical learning with applications in image processing and genetics. He will focus on the development of more robust and explainable learning processes, such as automatic decision-making systems. Matthias Hein began teaching Mathematics and Informatics at the University of the Saarland in 2007. He studied Physics in Tübingen and completed his doctorate in Computer Science at the University of Darmstadt. From 2002 to 2007 he was at the Max Planck Institute for Biological Cybernetics as part of the working group of Professor Bernhard Schölkopf, who now heads the Max Planck Institute for Intelligent Systems and is one of the world's leading researchers in machine learning.

Matthias Hein

Bosch and the University of Tübingen are founding members of the Cyber Valley project, which is set to become an internationally-recognized focus of artificial intelligence research in southwest Germany. Bosch's overall contribution to the project is approximately seven million euros.



Research prize for the fight against measles

The 2018 **Dr. K. H. Eberle Foundation** research prize went to the virotherapy working group headed by Professor Ulrich Lauer. At the University Hospitals' Clinical Tumorbiology section, Lauer's team has been developing virotherapies against cancer and, currently, also against life-threatening viral infections such as measles. The award comes with €300,000 prize money; it was presented at the Dies Universitatis celebration on October 17.

The scientists in the working group are seeking new anti-viral drugs to stop measles, a highly infectious disease which remains one of the main causes of child mortality in Asia and Africa. The disease was largely beaten in Europe and the United States; however, a backlash against vaccinations has led to decreasing immunity in the wider population.

The group's goal is therefore to make anti-viral drugs available to combat measles in the near future. This would enable doctors to stop the disease once diagnosed in unvaccinated patients, and maybe even to prevent it in people who



have been in contact with the disease but have not yet shown any symptoms. This work in Tübingen could help to meet the World Health Organization's goal of eliminating measles world-wide – like smallpox in the 1970s.

Top: Ulrich Lauer (center) receives the Eberle Foundation Research Prize.

A center dedicated to digital teaching

The University of Tübingen is developing a new teaching and learning center for the training of junior researchers in the professional use of digital media. The Dr. Eberle Center for Digital Competence is sponsored by the Dr. K. H. Eberle Foundation for five years. The Center, which opens in 2019, will receive 200,000 euros annually.

The Center will cooperate with the University's eScience Center, which provides support and advice to researchers planning and evaluating projects. The Center will develop teaching modules in digital skills, and will work closely with institutes dealing with media informatics and rhetoric.

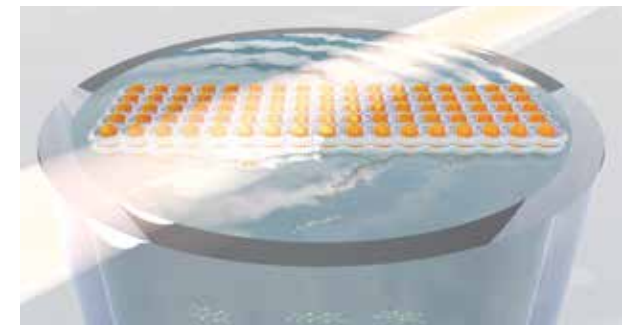
Image of nanoparticles forming a superlattice on a liquid surface.

MULTIDISCIPLINARY NANO-RESEARCH CENTER

The Carl Zeiss Foundation is funding a Nano-Research Center at the University of Tübingen, investing a total of one million euros over four years from April 2018. A nanometer is one-billionth of a meter; research on the nanometer scale goes down to the level of individual molecules.

The Center brings together seven scientists from the departments of Biology, Chemistry and Physics. Their common research goal is to produce and harness tiny nanoparticles for biological applications. For example, these nanoparticles could be docked onto individual biomolecules in order to guide their behavior and function.

The nano-research laboratory will allow the scientists to integrate and share different experimental techniques and equipment. It will be the central interface for doctoral training in nanoscience issues, continuing in research what the University has been offering for several years in its Bachelor's and Master's Nanoscience programs: solid training in the three core disciplines of biology, chemistry and physics – which makes fruitful interdisciplinary work possible.



WELCOME ADDITIONS

Endowed professorships

Field	Name	Sponsor
Faculty of Humanities		
Chinese Studies: Financial ethics	Professor Dr. Matthias Niedenführ	Karl Schlecht Foundation
General Rhetoric and Science Communication and Public Outreach	Professor Dr. Olaf Kramer	Klaus Tschira Foundation
Faculty of Economics and Social Sciences		
Financial Literacy and Economic Didactics	Professor Dr. Taiga Brahm	Dieter von Holtzbrinck Foundation
Professor (W3) of the Ethics of Globalization	Professor Dr. Claus Dierksmeier	Karl Schlecht Foundation
Medicine		
Neurodegenerative Diseases	Professor Dr. Thomas Gasser	Hertie Foundation
Cell Biology: Foundations of Neurological Diseases	Professor Dr. Mathias Jucker	Hertie Foundation
Clinical Neurogenetics	Professor Dr. Ludger Schöls	Hertie Foundation
Functional Neurogenetics	Professor Dr. Philipp Kahle	Hertie Foundation
Neurology/ Epileptology	Professor Dr. Holger Lerche	Hertie Foundation
Preclinical Imaging and Imaging Technology	Professor Dr. Bernd Pichler	Werner Siemens Foundation
Occupational and Social Medicine	Professor Dr. Monika Rieger	Südwestmetall Employers' Federation
Clinical Pharmacology	Professor Dr. Matthias Schwab	Robert Bosch Foundation
Infectious Diseases of the Circulatory System	Professor Dr. Harald Langer	Lichtenberg Professorship (VW Foundation)
Neuroplasticity of the Developing Brain	Professor Dr. Martin Staudt	Schön Kliniken GmbH, Behandlungszentrum Vogtareuth
Molecular Biology of Degenerative Retinal Disorders	Professor Dr. Marius Ueffing	Tistou und Charlotte Kerstan Stiftung Vision 2000 – Sehen – Kunst – Sinnesfunktion
Molecular Diabetology	Professor Dr. Cora Weigert	Sanofi-Aventis Deutschland GmbH
Personalized Diabetes Therapy	Professor Dr. Andreas Peter	Boehringer-Ingelheim
Professor (W3) of Transfusion Medicine	Professor Dr. Tamam Bakchoul	DRK-Blutspendedienst and Baden-Württemberg-Hessen gGmbH
Professor (W2) of Experimental Senology	Professor Dr. Markus Hahn	Novartis Pharma GmbH
Professor (W2) of Translational Gynaecology	position not yet filled	Karl Storz company
Faculty of Science		
Professor (W3) of Machine Learning	Professor Dr. Matthias Hein	Robert Bosch GmbH
Assistant Professor (W1) of Visual Big Data Analysis in the Life Sciences	Professor Dr. Michael Krone	Carl Zeiss Foundation
Didactics of Biology (Tübingen School of Education)	Professor Dr. Christoph Randler	Gips-Schüle Foundation
Didactics of Chemistry (Tübingen School of Education)	Professor Dr. Claudia Bohrmann-Linde	Gips-Schüle Foundation
College of Fellows		
Professor (W3) of the Philosophy and History of Science	Professor Dr. Reinhard Kahle	Carl Friedrich von Weizsäcker Endowed Professorship, Udo Keller Foundation Forum Humanum
Professor (W3) of the Didactics of Physics (Tübingen School of Education)	position not yet filled	Vector Foundation

OTHER MAJOR SPONSORSHIPS

Baden-Württemberg Foundation backs five key medical research projects

The Baden-Württemberg Foundation's pharmaceuticals research program sponsors investigation into highly innovative potential new treatments. It is funding five such projects at the University of Tübingen; the Tübingen Center for Academic Drug Discovery & Development (TüCADD) is involved in three of them.

Inheritable retinal degeneration leads to the loss of photoreceptors in the eye, impaired vision and blindness. It is a rare, incurable disease. Biochemist Professor François Paquet-Durand and his team have shown that the genetic mutations which lead to the condition often have an unusually high level of the messenger chemical cGMP (cyclic guanosine monophosphate). The researchers are testing various substances and processes to stop or weaken the signals which set the disease off.

Salmonella bacteria are among the leading causes of food-borne infections and cause more than 100 million cases of disease around the world every year. Infection biologist Professor Samuel Wagner and his team are developing **pathoblockers to combat salmonella infections**. Unlike antibiotics, which kill salmonella or inhibit its growth, pathoblockers stop its harmful effects. This approach seeks to reduce the risk of resistance developing. It also protects intestinal flora.

The team headed by virologist Professor Michael Schindler is focusing on an inhibitor that has proven highly effective in cell cultures against a broad spectrum of flaviviruses. These include tick-borne encephalitis and the hepatitis C virus. The team is investigating the inhibitor mechanism with the aim of developing a **broad-spectrum antiviral drug**.

Colorectal carcinoma, the most prevalent form of intestinal cancer, is the second most common cause of death by cancer in western countries. Treatment options for patients with advanced metastatic tumors are very limited. The protein kinase p38-alpha has been identified as a promising target for new drugs. A new class of inhibitors against protein kinase has been developed in the laboratory of Professor Stefan Laufer at the Institute of Pharmaceutical Chemistry. These inhibitors are now being tested by an interdisciplinary team to find the most promising ones for clinical trials and ultimately to find treatments.

Germs that do not respond to antibiotics are a growing problem, especially in hospitals. Tübingen microbiologists Dr. Evi Stegmann and Dr. Yvonne Mast are working on a way to produce **new antibiotics that break down resistance**. They are seeking to optimize two classes of emergency antibiotics, glycopeptides and streptogramins, which are produced by certain microorganisms. In a process known as mutasynthesis, the microorganisms are fed specifically modified substances which cause them to produce new variants, which can be tested for suitability as antibiotics.

Santander expands its support for research and teaching

Die Santander Consumer Bank AG has pledged to build upon its role as the sponsor of two research projects in Egyptology, and has boosted its number of Deutschlandstipendium scholarships to 20 per year. The bank will now back a University Career Service project which helps to prepare Master's degree students for management tasks. The cooperation deal was signed by President Bernd Engler and Santander's Fernando Silva in April 2018.



Santander Consumer Bank executive Fernando Silva (left) and University of Tübingen President Bernd Engler sign the cooperation agreement.

PROMOTING JUNIOR RESEARCHERS

New Ernst von Sieglin hall and research prize

The Stuttgart entrepreneur Dr. Ernst von Sieglin (1848-1927) was an antiquities enthusiast and, as a patron of archaeology at the University of Tübingen, he financed several expeditions to Greece and Egypt. He donated his finds to the University for study purposes. Room 165 of the Institute for Classical Archaeology at Hohentübingen Castle was dedicated to his memory in January 2018 and is now called the Ernst von Sieglin Lecture Theater. The Sieglin family has been associated with the University of Tübingen for four generations. Gunter Sieglin, a grandson of Ernst, and his wife Kerstin continue to support University projects. At the dedication ceremony they announced a new award for the Institute of Classical Archaeology. The prize, endowed with 5,000 euros, is to be awarded annually to an outstanding monograph in Sieglin's field of interest.

The entrance to the Ernst von Sieglin lecture hall at the Institute of Classical Archaeology at Hohentübingen Castle

New mainframe for Department of Informatics

The Department of Informatics at the University of Tübingen has received a new mainframe computer via the Academic Mainframe Consortium (AMC). The IBM z114 computer replaces the older z9 system in Tübingen, which had been in operation since 2007. An IBM DS8800 memory system was also installed. The new systems provide the latest

software for mainframe computer training. There is continued high demand for graduates with mainframe skills. The mainframe computer was provided by Fiducia & GAD IT AG, IT service provider to the cooperative financial group in Germany. The storage system comes from DATEV eG, software designer and IT service provider for tax consultants, auditors and lawyers.

Karl and Anna Buck Foundation sponsors Chemistry projects

The Stuttgart-based Karl and Anna Buck Foundation has been promoting research at the University of Tübingen with sums in the hundreds of thousands of euros annually for many years. In 2018, the Organic Chemistry Institute received a high-temperature 3D printer from the Foundation. The printer can be used to print thermoplastics with high chemical and thermal stability. The aim is to develop flow-through reactors that are highly versatile in organic synthesis due to their special composition. In addition, a project is being funded in Organic Chemistry to develop a promising drug which will improve the efficacy of antibiotics currently in use against bacterial pathogens.



Record numbers of Deutschlandstipendium scholarships

A total of 219 students from all faculties of the University of Tübingen received Deutschlandstipendium scholarships for the academic year 2018-19 – the greatest number since the start of the program in 2011. The Deutschlandstipendium grant is open to particularly talented and socially committed students. The German government and a private sponsor each provide half of the 300 euros in monthly funding. The Universitätsbund, the Association of Friends of the University of Tübingen, sponsored 34 students. 58 scholarships were awarded in 2018 from the estate of Slavistics Professor Ilse Kuhnert. Other sponsors include the Carl Zeiss Foundation, the TL Foundation and Santander Universitäten Deutschland. Many alumni and regional businesses also opened their wallets to give promising students a boost.

New Historical Archaeology Award

Professor Barbara Scholkmann sponsored a new prize for junior researchers in the field of Historical Archaeology. She was Professor of Medieval Archaeology at the University of Tübingen until 2007. The award encourages graduates in the field and raises the profile of the archaeology of Medieval and Early Modern Archaeology, which can be studied at only a few universities across Germany. The prize comes with 2,000 euros and is to be awarded every two years.

The first Barbara Scholkmann Award for Historical Archaeology went to Matthias Friedrich from Freiburg for his Master's thesis, "Archaeological chronology and historical interpretation. The Merovingians in southern Germany." The work connects historical dates with archaeological finds and redraws the chronology of the Merovingian era.



Rare gifts (left to right): Central Asian handwoven yurt band, approx. 14 m long; the silver cup of 1677; Mary, Queen of Scots' Book of Hours

BESTOWALS

A number of donors bestowed historical objects on the University of Tübingen in 2018. Longstanding donor **Dr. Dr. h. c. Marie Luise Zarnitz** gave the University of Tübingen Museum the silver University Cup made in 1677. It was commissioned by Count Eberhard Ludwig von Württemberg for the University's 200th anniversary.

Johanna and Gotthold Ephraim Lessing from Winterthur gave the Museum 49 Turkmen carpets and other textile objects. Most of the objects date to the 19th century and document the cultural and historical significance of the craft. The Lessing gift is a valuable addition to the Schmalzriedt collection of 93 Turkmen carpets donated to the University in 2010.

German artist Silke Radenhausen bequeathed three of her large canvas paintings to the University of Tübingen Museum. She painted them in 2001 for an exhibition at Hohen-tübingen Castle. Radenhausen's works deal with feminism and gender issues. Born in 1937, she is one of Germany's leading female artists.

Lydia Stilz once again enriched the University Library's collections with four high-quality illuminated copies of historical works. They include reproductions of prayer books, including Mary, Queen of Scots' "book of hours" – the original is in the Russian National Library.



PARTNERSHIPS

STRONG ALLIANCES

The University has been maintaining its long-term partnerships and forging new ones in an ever more connected world. These ties help promote research in both the newest disciplines and in the rich traditions of the humanities. We are expanding our collaboration with business and non-university research institutions in artificial intelligence programs which will seek solutions to key problems facing society and industry. And we are further advancing longstanding international partnerships in Brazil, France and Japan.

CYBER VALLEY COOPERATION

The Cyber Valley research network was born in 2016 – a collaboration between the Max Planck Institute for Intelligent Systems, the Universities of Tübingen and Stuttgart, the state of Baden-Württemberg, and businesses including Amazon, BMW, Bosch, Daimler, IAV, Porsche and ZF Friedrichshafen. The aim is to promote basic research into artificial intelligence and translate the findings into industrial applications. The initiative saw ten new junior research groups established in 2018. Of ten new professorships to be established under the Cyber Valley program, five will be at the University of Tübingen. Linked with Cyber Valley is the Cluster of Excellence “Machine Learning: New Perspectives for Science,” launched at the University of Tübingen as part of the German government-sponsored excellence strategy (see Research chapter, p.9).

German government sponsors Competence Center for Machine Learning

Tübingen was selected as one of four locations in Germany for the establishment of a competence center for artificial intelligence and machine learning funded by the German Ministry of Education and Research (BMBF). At the Tübingen AI Center, research groups from the University and the Max Planck Institute for Intelligent Systems will develop innovative learning systems. The German government is providing funding of some 6.6 million euros over four years. The centers are to play a key role in the German government’s artificial intelligence strategy.

While people in decision-making situations are often able to draw the right conclusions even under changing conditions, machines are often incapable of doing so. For example, automatic systems designed to recognize and block violent images can be fooled by minor changes in pixelation. Researchers

at the Tübingen AI Center are working on new ways of making artificial learning systems more robust, teaching them to respond to external and unexpected influences. The center will also focus on possible abuse of artificial intelligence, and on ways of protecting sensitive data.

Two new Industry on Campus professorships

Industry on Campus professors share their practical and commercial experience with students and get the chance to follow particular interests in research during their time at the University. As part of our cooperation with Robert Bosch GmbH, **physicist Björn Andres** became one of the latest Industry on Campus Professors. Andres works at the Bosch Center for Artificial Intelligence (BCAI) in Renningen, and is now setting up his own research group at the university.

His work focuses on issues surrounding industrial applications – such as vibration sensors used for predictive diagnos-



Björn Andres



Gjergji Kasneci

tics. These can help engineers identify a defective machine long before it breaks down – so they can replace the worn part and prevent major disruptions on the production line.

In 2018 the University of Tübingen also launched its cooperation with financial services analysts Schufa Holding AG. **Computer scientist Dr. Gjergji Kasneci**, Chief Technology Officer and Head of Innovation and Strategic Analysis at Schufa, is to head a new research group for Data Science and Data Analytics at the University for an initial period of five years as part of his Industry on Campus professorship.

We are increasingly influenced by “intelligent” algorithms which guide us when we use search engines or shop online. Kasneci is working to ensure that such algorithms deliver meaningful results. He also wants to ensure that machine learning processes remain transparent and understandable to users. As Industry on Campus Professor, he wants to contribute to the objective and ethical discussion of artificial intelligence methods. He will collaborate with the Max Planck Institute for Intelligent Systems and the International Center for Ethics in the Sciences and Humanities.

IBM Shared University Research Grant

In January 2018, Professor Wolfgang Rosenstiel from the Department of Computer Science received the IBM Shared University Research Grant (SUR Grant), with which the IT company supports research projects at universities. Rosenstiel had earlier received a SUR Grant in 2007 for a main-frame computer system for a research project on workload management. The current award is a “Power AI” platform,

which will support Tübingen’s research in the field of artificial intelligence. Along with the hardware, the SUR Grant includes the associated software and technical support. The Power AI platform is particularly suitable for developing new processing methods for unstructured data and for setting up large artificial neural networks.

INTERNATIONAL PARTNERSHIPS

Research cooperation agreement with Brazilian university agency

The University of Tübingen and the Brazilian university agency CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) are stepping up their collaboration. Baeta Neves, President of CAPES, and President Bernd Engler signed a broad cooperation agreement in October 2018. The agreement will run for ten years, enabling the partners to plan international research projects and involve both doctoral and postdoctoral students. It also provides for the establishment of a Distinguished Guest Professorship at the University of Tübingen for Brazilian researchers. Such “Brazil Chairs” have already been established at other universities such as Harvard, Oxford, and the Sorbonne. In addition to the visiting professorship, a focus will be to work on new pharmaceuticals via a program run by the Tübingen Center for Academic Drug Discovery & Development (TüCADD). A two-year exchange of doctoral students is planned.

Professor Abilio Baeta Neves, President of CAPES, signing the cooperation agreement.

New cooperation agreement with the University of Aix-Marseille

On the occasion of the 60th anniversary of their partnership, the Universities of Aix-Marseille and Tübingen concluded a new framework agreement in October 2018. The joint projects which have developed over a period of 60 years and are focused chiefly in the humanities; this is to be complemented with cooperation in other fields. These include neuroscience, neurosurgery and personalized medicine, infectiology and tropical medicine, geosciences and environmental research, the history and current development of the Mediterranean region, the Middle East and sub-Saharan Africa, law, as well as migration and multiculturalism.



Partnership with Doshisha University

Doshisha University in Kyoto and the University of Tübingen plan to intensify their cooperation, particularly in research. Professor Takashi Matsuoka, President of Doshisha University, and Tübingen president, Professor Bernd Engler, signed the new partnership agreement in Tübingen on 24th October 2018. The new contract is part of the Doshisha EU Campus, which is to be established at the University of Tübingen in 2019. In addition to strengthening research cooperation, the new campus will also promote the exchange of students.

The Tübingen Center for Japanese Studies at Doshisha University was opened in 1993, and was the first branch of a European university in Japan. This helped to bring Germany and Japan closer together in academic exchange. Many joint research projects have been developed within this framework. To date, more than 700 students have completed part of their education at the Doshisha Center. For Japanology students from Tübingen, a two-semester stay in Japan is an obligatory part of their Bachelor's program.

Doshisha University president, Professor Takashi Matsuoka, and University of Tübingen president, Professor Bernd Engler



The headquarters of the Heidelberg Academy of Sciences and Humanities are located below Heidelberg Castle.

LONGSTANDING PARTNERSHIPS AT HOME

Heidelberg Academy of Sciences and Humanities

The Heidelberg Academy of Sciences has sponsored a long list of valuable and varied research projects at the University of Tübingen. This reflects both the diversity of the Academy's research fields and the many ways in which it has worked with our researchers, often in collaboration with other institutions:

The Goethe Dictionary investigates the characteristic vocabulary of the great German poet, with some 90,000 keywords analyzed and made accessible.

The chronicle of John Malalas is a philological-historical analysis of the 6th-century Byzantine chronicle beginning with the Creation. This research is headed by Professor Mischa Meier at the Institute of Ancient History at the University of Tübingen.

The Temple as a Canon of Religious Literature in Ancient Egypt is led by Tübingen Egyptologist Professor Christian Leitz. This project investigates what constituted the essence of an Egyptian temple in Greco-Roman times.

The Role of Culture in Early Expansions of Humans is an interdisciplinary research project run jointly with the Senckenberg Research Institute in Frankfurt am Main. The project examines the spatial and temporal migration patterns of early humans and the role of culture in this expansion. The Tübingen coordinators are Professor Nicholas J. Conard and Professor Volker Hochschild.



Katja Schenke-Layland



Ulrich Hemel

Two associated institutes under new leadership

Professor Katja Schenke-Layland from Tübingen took over at the Natural and Medical Sciences Institute (NMI) in Reutlingen in April. The roughly 200 employees of this affiliated institute at the University of Tübingen carry out application-oriented, company-related research at the interface of the biosciences and materials sciences. Schenke-Layland succeeded Professor Hugo Hämmerle, who headed the institute from 2008.

The entrepreneur, theologian and activist for a global civil society **Professor Ulrich Hemel** became head of the Global Ethic Institute in June. The Institute is a research and teaching institution promoting value orientation and trust in business, politics and society. The Institute was founded in 2012 by the Global Ethic Foundation, the Karl Schlecht Foundation and the University of Tübingen in order to further develop the Global Ethics Project, which was founded by the theologian Hans Küng.

Key research partners in Germany

- Institute for Applied Economic Research (associated institute)
- NMI – Natural and Medical Sciences Institute (associated institute)
- Global Ethics Institute (associated institute)
- Bernstein Network for Computational Neuroscience (Freiburg)
- Helmholtz Association: German Consortium for Translational Cancer Research (DKTK)
- Helmholtz Association: German Center for Diabetes Research (DZD)
- Helmholtz Association: German Center for Infection Research (DZIF)
- Helmholtz Association: German Center for Neurodegenerative Diseases (DZNE)
- Dr. Margarete Fischer-Bosch Institute for Clinical Pharmacology (Stuttgart)
- Forschungsinstitut für Arbeit, Technik und Kultur e.V. – group researching processes of social, cultural and technical change (Tübingen)
- Forschungszentrum Jülich, member of the Helmholtz Association
- Fraunhofer Institute for Interfacial Engineering and Biotechnology (IGB, Stuttgart)
- Friedrich-Miescher-Laboratory of the Max Planck Society (Tübingen)
- Heidelberger Academy of Sciences and Humanities
- Helmholtz Centre for Environmental Research (Leipzig-Halle)
- HEP – Senckenberg Center for Human Evolution and Palaeoenvironment (Tübingen)
- HIH – Hertie Institute for Clinical Brain Research (Tübingen)
- University of Applied Forest Sciences – Rottenburg
- Institut für donauschwäbische Geschichte und Landeskunde (Tübingen)
- Institut für Rehabilitationsforschung, Qualitätsentwicklung und Strukturanalyse in der Behindertenhilfe (REQUEST) e. V. (Tübingen)
- Leibniz Institute: Knowledge Media Research Center
- Mathematics Research Institute (Oberwolfach), member of the Leibniz Association
- Max Planck Institute for Biological Cybernetics (Tübingen)
- Max Planck Institute for Developmental Biology (Tübingen)
- Max Planck Institute for Intelligent Systems (Stuttgart/Tübingen)
- Senckenberg Nature Research Society (Frankfurt am Main)
- Staatliches Seminar für Didaktik und Lehrerbildung (Gymnasien) Tübingen
- Universität Hohenheim – Center for Nutritional Medicine (ZEM) Tübingen – Hohenheim
- University of Stuttgart – inter-university center for medical technology (IZST)
- Werner Siemens Foundation

Our partners around the world

The University of Tübingen has three branches in Asia and maintains regular exchange programs with some 260 institutions of higher education across many different countries, as well as with our six partners in the Matariki Network of Research Universities. We are highly active in the European Union's Erasmus Program, involving partnership deals with 363 European institutions. Our seven faculties also have around 120 additional cooperation agreements with institutions worldwide.

In 2018, more than 880 students took advantage of the many exchange schemes we offer. The numbers on the map indicate how many Tübingen students studied in which continents in 2018. Some 780 students took part in excursions abroad. In total, more than 1,600 Tübingen students traveled abroad for their studies in 2018.

University of Tübingen branches

European Center for Chinese Studies,
Peking University - **BEIJING**
Tübingen Center for Japanese Studies,
Dōshisha University - **KYOTO**
Tübingen Center for Korean Studies,
Korea University - **SEOUL**

North America

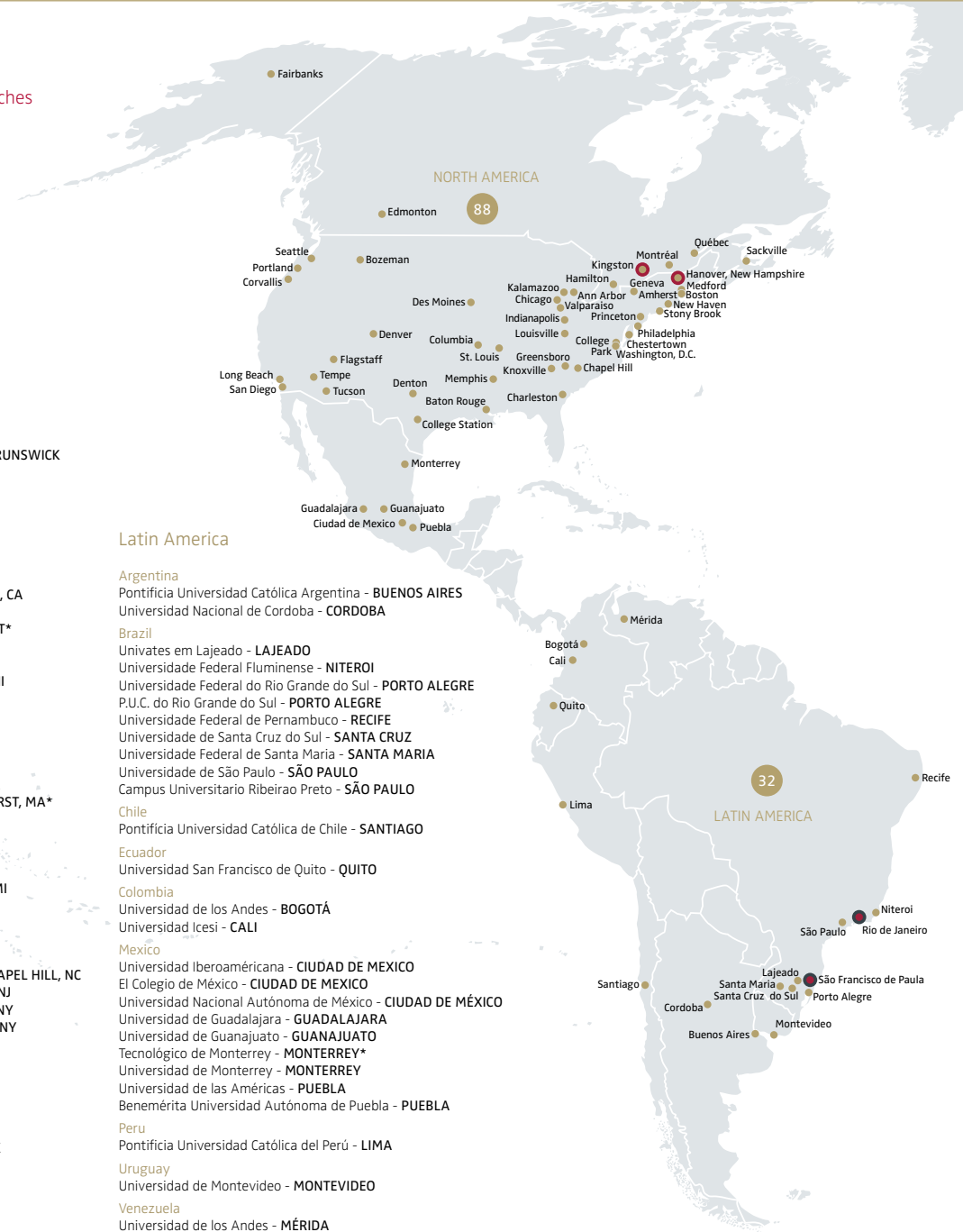
Canada

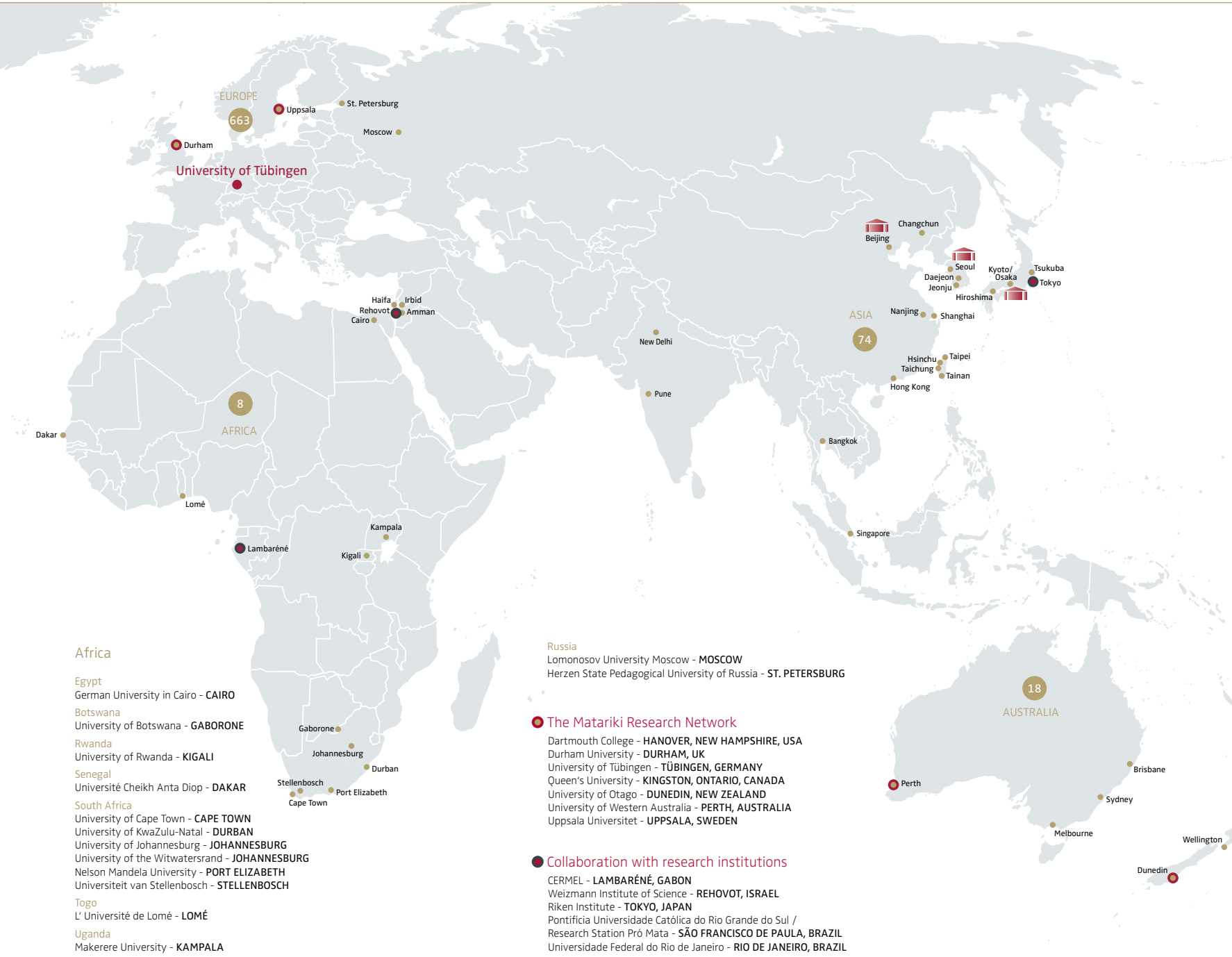
University of Alberta - **EDMONTON, ALBERTA**
McGill University - **MONTRÉAL, QUÉBEC**
McMaster University - **HAMILTON, ONTARIO**
Ontario Colleges and Universities - **ONTARIO***
Université Laval - **QUÉBEC, QUÉBEC**
Mount Allison University - **SACKVILLE, NEW BRUNSWICK**

United States of America

University of Alaska - **FAIRBANKS, AK**
Northern Arizona University - **FLAGSTAFF, AZ**
Arizona State University - **TEMPE, AZ**
University of Arizona - **TUCSON, AZ**
California State Universities - **CA***
University of California San Diego - **SAN DIEGO, CA**
University of Denver - **DENVER, CO**
Connecticut State Universities and Colleges - **CT***
Yale University - **NEW HAVEN, CT**
Georgetown University - **WASHINGTON, D.C.**
University of Hawai'i at Mānoa - **HONOLULU, HI**
Drake University - **DES MOINES, IA**
Roosevelt University - **CHICAGO, IL**
Butler University - **INDIANAPOLIS, IN**
Valparaiso University - **VALPARAISO, IN**
Bellarmine University - **LOUISVILLE, KY**
Louisiana State University - **BATON ROUGE, LA**
University of Massachusetts - **BOSTON, AMHERST, MA***
Tufts University - **MEDFORD, MA**
Washington College - **CHESTERTOWN, MD**
University of Maryland - **COLLEGE PARK, MD**
University of Michigan - **ANN ARBOR, MI**
Western Michigan University - **KALAMAZOO, MI**
University of Missouri - **COLUMBIA, MO**
Washington University - **ST. LOUIS, MO**
Montana State University - **BOZEMAN, MT**
North Carolina State Universities - **NC***
University of North Carolina at Chapel Hill - **CHAPEL HILL, NC**
Princeton Theological Seminary - **PRINCETON, NJ**
Hobart and William Smith Colleges - **GENEVA, NY**
State University of New York - **STONY BROOK, NY**
Oregon University System - **OR***
Reed College - **PORTLAND, OR**
Temple University - **PHILADELPHIA, PA**
College of Charleston - **CHARLESTON, SC**
University of Tennessee - **KNOXVILLE, TN**
Rhodes College - **MEMPHIS, TN**
Texas A & M University - **COLLEGE STATION, TX**
University of North Texas - **DENTon, TX**
University of Washington - **SEATTLE, WA**

* national exchanges





Africa

- Egypt**
German University in Cairo - CAIRO
- Botswana**
University of Botswana - GABORONE
- Rwanda**
University of Rwanda - KIGALI
- Senegal**
Université Cheikh Anta Diop - DAKAR
- South Africa**
University of Cape Town - CAPE TOWN
University of KwaZulu-Natal - DURBAN
University of Johannesburg - JOHANNESBURG
University of the Witwatersrand - JOHANNESBURG
Nelson Mandela University - PORT ELIZABETH
Universiteit van Stellenbosch - STELLENBOSCH
- Togo**
L' Université de Lomé - LOMÉ
- Uganda**
Makerere University - KAMPALA

- Russia**
Lomonosov University Moscow - MOSCOW
Herzen State Pedagogical University of Russia - ST. PETERSBURG

- The Matariki Research Network**
Dartmouth College - HANOVER, NEW HAMPSHIRE, USA
Durham University - DURHAM, UK
University of Tübingen - TÜBINGEN, GERMANY
Queen's University - KINGSTON, ONTARIO, CANADA
University of Otago - DUNEDIN, NEW ZEALAND
University of Western Australia - PERTH, AUSTRALIA
Uppsala Universitet - UPPSALA, SWEDEN

- Collaboration with research institutions**
CERMEL - LAMBARÉNÉ, GABON
Weizmann Institute of Science - REHOVOT, ISRAEL
Riken Institute - TOKYO, JAPAN
Pontifícia Universidade Católica do Rio Grande do Sul /
Research Station Pró Mata - SÃO FRANCISCO DE PAULA, BRAZIL
Universidade Federal do Rio de Janeiro - RIO DE JANEIRO, BRAZIL

Asia

- China**
Renmin University of China - BEIJING
Peking University - BEIJING
Jilin University - CHANGCHUN
Nanjing University - NANJING
Fudan University - SHANGHAI
Tongji University - SHANGHAI
Shanghai Institutes for Biological Sciences - SHANGHAI
City University of Hong Kong - HONG KONG
University of Hong Kong - HONG KONG
- India**
Jawaharlal Nehru University - NEW DELHI
University of Pune - PUNE
- Israel**
University of Haifa - HAIFA
- Japan**
Hiroshima University - HIROSHIMA
Dōshisha University - KYOTO
Ritsumeikan University - KYOTO
Kansai Gaidai University - OSAKA
Chuo University - TOKYO
Rikkyo University - TOKYO
Sophia University - TOKYO
Waseda University - TOKYO
Tsukuba University - TSUKUBA
- Jordan**
University of Jordan - AMMAN
Yarmouk University - IRBID
- Singapore**
National University of Singapore - SINGAPORE
Singapore Management University - SINGAPORE
Nanyang Technological University - SINGAPORE
- South Korea**
Chungnam National University - DAEJEON
Chonbuk National University - JEONJU
Seoul National University - SEOUL
Ewha Womans University - SEOUL
Hanyang University - SEOUL
Korea University - SEOUL
Yonsei University - SEOUL
Sookmyung Women's University - SEOUL
Sogang University - SEOUL
Sungkyunkwan University - SEOUL
- Taiwan**
National Tsing Hua University - HSINCHU
National Chung Hsing University - TAICHUNG
National Taiwan University - TAIPEI
National Chengchi University - TAIPEI
National Cheng Kung University - TAINAN

- Thailand**
Chulalongkorn University - BANGKOK
Mahidol University - BANGKOK

Oceania

- Australia**
Griffith University - BRISBANE
University of Queensland - BRISBANE
Queensland University of Technology - BRISBANE
Monash University - MELBOURNE
University of Technology Sydney - SYDNEY
University of New South Wales - SYDNEY
- Fiji**
University of the South Pacific - SUVA
- New Zealand**
Victoria University of Wellington - WELLINGTON



TEACHING / ORGANIZATION

STUDIES WHICH MAKE A DIFFERENCE

In 2018 we launched our first Bachelor’s programs integrating health care studies with admission to a health care profession. This new model was made possible as a joint project with Esslingen University of Applied Sciences. It is intended to give Nursing Care graduates a scientific basis which will help them to incorporate fast-moving developments in medical research into practice. And with our new online orientation test which provides advice and guidance, our students now get more help finding the right subject even before they start studying.

INNOVATIVE NEW IDEAS FOR NEW STUDENTS

Nursing and Midwifery programs offer training and professional admission

The University of Tübingen inaugurated its Bachelor programs in Nursing Care and Midwifery in 2018. Graduates of these new programs will receive two qualifications after seven semesters – both an academic Bachelor of Science degree and the state admission to the profession of nurse or midwife.

Health care services are facing ever more complex challenges. New findings, methods and forms of treatment are changing these professions rapidly. Our new study programs are designed to better prepare students for the current and future challenges. The students are taught in Tübingen and in Esslingen under a cooperation deal with Esslingen University of Applied Sciences. Tübingen’s Faculty of Medicine, the University Hospitals and Esslingen University of Applied Sciences founded a joint Health Campus to develop the new qualifica-

tion programs for health care professionals. This has created new study places in Nursing Care and in Midwifery. Both courses are part of a state government program creating extra study places to provide health care professionals with academic and scientific foundations for their work.

New orientation test provides guidance for prospective students

The University of Tübingen has developed a free online test to help prospective students find the subject which best suits their interests and strengths – and determine whether their desired program really does match their expectations. Nearly 30 percent of all students in Germany drop out or change subjects at least once; this test is intended to prevent that by giving students a clear picture of what they’re signing up for before they start.

This test is one of the recognized orientation procedures which all prospective students must take. Detailed information is currently available on more than 30 subjects, including the more exotic choices such as Egyptology, Korean Studies and Latin. The results of the test give prospective students objective data to help them reflect on their true strengths and aims. But it does not make recommendations; the final decision rests entirely with the student.

Enrollments remain steady

Student numbers at a glance

Winter semester 2018-19	Total	Female		International students	
Proportion of total	27,565	16,147	58.6%	3,924	14.2%
New enrollments	5,319	3,215	60.4%		



PROGRAMS AND PROJECTS FOR STUDENT TEACHERS

Tübingen School of Education – Further funding assured

The Tübingen School of Education (TüSE), the central institution for teacher training at the University of Tübingen, will receive a total of 5.25 million euros in German government funding from 2019 to 2023. The money is to help facilitate reforms in teacher education.

It will be used to further develop the structures and projects launched in the first funding phase. These include professorships for more effective teaching in subject didactics, for research into teaching as a profession – with a special focus on subject didactics, and on inclusion and diversity. The funds will also support a number of projects aimed at improving communication between university disciplines and those who teach the corresponding subjects in schools.

Guest Professorship brings new perspectives to English teacher training

The Institute for English Languages and Literatures has begun welcoming guest professors to the Otilie Wildermuth Chair for Teaching English as a Foreign Language, organized by Professor Uwe Küchler, Chair for Didactics of English. Four international professors have so far participated, bringing fresh impetus to the teacher training program and introducing new ideas and methods. The first holder of the Otilie Wildermuth Chair was Dr. Amos Paran from the Institute of Education at University College London. He has been head of the Master's program Teaching English to Speakers of other Languages at University College London since 2001. His research focus is in literary didactics. In winter semester 2018-19, Professor Elizabeth A. Wheeler from the University of Oregon took over the Otilie Wildermuth Chair. Her research focuses on comparative literary studies in American literary and popular culture, with a special focus on studies on the representation of physical and mental disabilities in literature.

Enrollments by faculty or institution

Faculty/Institution	Winter semester 2018-19
Protestant Theology	526
Catholic Theology	187
Law	2,175
Medicine	3,979
Humanities	8,024
Economics and Social Sciences	4,453
Science	7,995
Institute of Islamic Theology	173
Leibniz Kolleg	53



Education specialist Amos Paran was the first guest professor in Otilie Wildermuth Chair for teaching English as a Foreign Language.



The Student Commitment Prize was awarded to the Week of Links team: (left to right) Moritz Koch, Konstantin Dufner, Antonia Tertelmann and Pia Wessling.



The Teaching Prize went to Alexander Kobusch, Natalie Pawlowski and Thomas Nielebock (left to right) for their use of link-up technology to conduct multi-location seminars.

Anne Herrmann-Werner

AWARDS

Commitment Prize for sustainability initiative

The University of Tübingen's 2018 Student Commitment Prize went to the organizers of the "Week of Links" initiative. It is a summer academy set up by students from all disciplines, dealing with social, environmental and economic sustainability. The prize was presented at the annual Dies Universitatis festivities on 18 October. In the Week of Links initiative, students and doctoral candidates from various disciplines aim to sensitize their fellow students to sustainability issues and inspire them to get involved in these areas.

University Teaching Prize goes to multi-location seminar format

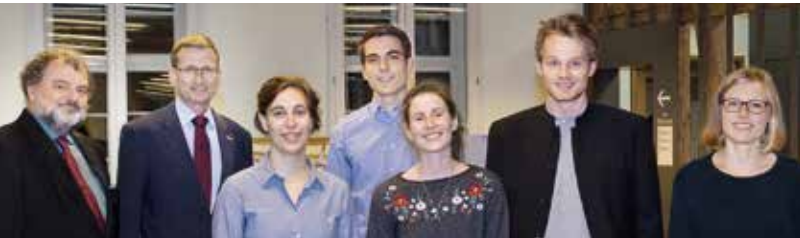
Alexander Kobusch, Dr. Thomas Nielebock and Natalie Pawlowski of the Institute of Political Science received the 2018 Teaching Prize for developing an innovative seminar format. Eight German universities cooperated via video conferencing

technology and a learning platform in the award-winning teaching project, which dealt with peace and conflict resolution and Europe research. The award comes with 2,500 euros in prize money. In a series of lectures on the threats to peace in Europe in summer semester 2017 and on security, migration and development in summer semester 2018, students explored current crises such as right-wing nationalism, the financial crisis, Brexit, and the integration of the policy fields of security, development and migration in EU-Africa relations. The focus was on the impact of these developments on peace in Europe and the EU's strategies for action in the global context. The students listened to international experts in the relevant fields and prepared comments and questions for discussion in weekly video conferences. They also initiated the public e-learning platforms "Peace in Europe" and "The Security Migration Development Nexus."

www.elearning-europa.politik.uni-freiburg.de
<https://tinyurl.com/elearningnexus>

Ars legendi Medical Faculty Award for Anne Herrmann-Werner

Dr. Anne Herrmann-Werner received the Ars legendi Faculty Prize for Medicine for her outstanding, innovative contribution to in the field of teaching Medicine. The prize is endowed with 30,000 euros. Herrmann-Werner is medical director of the Faculty of Medicine's interdisciplinary DocLab training center. The jury praised Herrmann-Werner's combination of preclinical and clinical study content in teaching. The various teaching formats designed and implemented by Herrmann-Werner include interdisciplinary communication courses and integrative tandem programs in the pre-clinical phase. The jury expressed its appreciation, saying these formats were effective in incorporating successful doctor-patient communication into new teaching concepts. In addition to her teaching activities, Anne Herrmann-Werner is a specialist in psychosomatics and has conducted several key research projects over the past ten years.



Sustainability Prize for six graduates

In November, the University of Tübingen's Sustainability Prize was awarded to a total of six graduates. Three Bachelor's theses, two Master's theses and one admission thesis documented outstanding work on sustainable development issues. The Bachelor's graduates were: Silvan Birkner in Cultural Anthropology, Franziska Koch in Geoecology and Robin Scholl in Chemistry; Judith Irmer in Peace Research and International Politics, Vera Middendorf in Geoecology and Judith Schwarz in Geography received awards for their Master's projects. Alfred T. Ritter, co-owner of the Ritter Sport confectionary company, spoke on "Sustainable Development as a Perspective for Companies" at the award ceremony.

*Top, left to right:
Thomas Potthast of the International Center for Ethics in the Sciences and Humanities and Executive Vice-President Andreas Rothfuss with the prizewinners Judith Irmer, Robin Scholl, Franziska Koch, Silvan Birkner and Vera Middendorf*

INTERNATIONAL TIES

The Baden-Württemberg Foundation – Promoting student exchanges around the globe

Students participating in University of Tübingen exchange programs can apply for a Baden-Württemberg-STIPENDIUM. Since 2001, this Baden-Württemberg Foundation scholarship has been supporting Tübingen students during their stays abroad as well as students who come to Tübingen University from partner universities for one or two semesters. In the academic year 2017-18, the funding volume of the Baden-Württemberg Foundation was 267,000 euros; in the academic year 2018-19 it was 310,000 euros. In 2018, just over 100 Baden-Württemberg-STIPENDIUM scholarships were awarded, divided evenly between non-German students for their stay in Tübingen and Tübingen students abroad.

A new Baden-Württemberg Foundation initiative introduced in 2017 to support students from African, Caribbean and Pacific countries and Least Developed Countries saw more than 20 scholarship holders studying at the University of Tübingen under the scheme in 2018. Nearly all were doctoral students from countries such as Benin, Burundi, Ivory Coast,

Gabon, Cameroon, Rwanda, Senegal, South Africa and Togo. They were conducting research in fields as diverse as parasitology, evolution and ecology, immunology, psychiatry, zoology, literature, molecular biology and managerial accounting. The funding amounted to 112,000 euros for 2017-18 and around 95,000 euros for 2018-19.

German Academic Exchange Service schemes

The German Academic Exchange Service (DAAD) also sponsors a range of programs supporting international contacts at German institutions of higher education. Tübingen exchanges received some 4.6 million euros of DAAD funds in 2017. Among the individual grants, 181 international students, doctoral candidates and visiting academics received DAAD sponsorship to come to Tübingen. 128 students, PhD candidates and researchers from Tübingen went abroad on DAAD money. Overall, individual funding here came to more than 1.9 million euros. Funding for projects and for group programs such as ERASMUS, Bachelor-Plus, PROMOS and ISAP amounted to some 2.7 million euros.

BUILDING ON STABLE STRUCTURES

Continuity guaranteed

The University of Tübingen is ensuring continuity in its Excellence Strategy; both the President and the Executive Vice-President were re-elected in 2018. The Senate overwhelmingly confirmed American Studies **Professor Bernd Engler** as President in December. His new term begins October 2020. Engler has been President of the University of Tübingen since 2006; this will be his third term of office. During his tenure, the University of Tübingen budget has grown by around 230 million euros to more than 600 million; the number of students by around 4,000 to 27,500; and the number of employees has risen by around 2,500 to more than 7,000. In that time, the University has established stronger networks with non-university research institutions such as the Tübingen Institutes of the Max Planck Society, the Helmholtz Association and the Leibniz Association. Following the University of Tübingen's success in the Excellence Initiative, Tübingen has also made a good start in the current round of high-profile German government funding.

On 12 April, **Dr. Andreas Rothfuss** was elected by the Senate and University Council for a further term as Chancellor of the University of Tübingen. The new term of office, which begins on 27 July 2019, is fixed at eight years.



The President's Office

President

Professor Dr. Bernd Engler,
American Studies Program

Executive Vice-President

Dr. Andreas Rothfuss

Vice-President of Student Affairs and Studies

Professor Dr. Karin Amos, Institute of Education

Vice-President for Research and Innovation

Professor Dr. Peter Grathwohl, Applied Geoscience

Vice-President for International Affairs

Professor Dr. Monique Scheer, Ludwig Uhland Institute of
Historical and Cultural Anthropology

The President's Office (from left):

Professor Peter Grathwohl, Professor Monique Scheer, Professor Bernd Engler, Professor Karin Amos, Dr. Andreas Rothfuss

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Sandra Kauenhowen, Tübingen School of Education

Jacob Bühler, student, Tübingen

Bernhard Sibold elected chair of University Board

At its constituent meeting on 22 October, the University Board of Trustees elected Bernhard Sibold, President of the Deutsche Bundesbank Baden-Württemberg, as its new Chairman. The 64-year-old succeeds Professor Antonio Loprieno, who retired from the Board on 30 September. The committee re-elected Professor Oliver Kohlbacher, Chair of Applied Bioinformatics at the University of Tübingen, as deputy chairman. Bernhard Sibold has been President of the Bundesbank Head Office in Baden-Württemberg since 2005. He has been a member of Tübingen University Board since December 2017.



Professors at the University of Tübingen

Faculty/institution	2018		
	Total	Male	Female
Protestant Theology	12	10	2
Catholic Theology	12	10	2
Islamic Theology	6	4	2
Law	22	18	4
Medicine	117	97	20
Humanities	102	66	36
Economics and Social Sciences	65	46	19
Science	189	148	41
Knowledge Media Research Center	8	5	3
Central institutions	3	3	0
Total	536	407	129

FIRST CYBER VALLEY LOCATION

The new Tübingen AI Research Building opened its doors at the Technology Park Tübingen-Reutlingen at the end of 2018. The building will be used by a series of institutions, professorships and working groups at the University of Tübingen which focus on machine learning, computer graphics and neural information processing.

For the University, the move to the new building marks the start of Cyber Valley, the regional research network with partners from science and industry in the field of artificial intelligence. The building has 4,900 square meters of floor-space, comprising five office floors and a lecture hall, cafeteria and lounge and was completed within a year.

AI Research Building tenants

University of Tübingen researchers at the AI Research Building:

- Computational Neuroscience & Machine Learning – Professor Dr. Matthias Bethge
- Machine Learning – Professor Dr. Matthias Hein
- Methods of Machine Learning – Professor Dr. Philipp Hennig
- Computer Graphics – Professor Dr. Hendrik Lensch
- Theory of Machine Learning – Professor Dr. Ulrike von Luxburg
- Neural Information Processing – Professor Dr. Felix Wichmann and the
- Neural Intelligence working group – Dr. Fabian Sinz
- Cyber Valley AI Unit – Administration
- Machine Learning Excellence Cluster
- Competence Center for Artificial Intelligence – Tübingen AI Center



CELEBRATING KNOWLEDGE

LIVING CULTURE

The increasing exploration of artificial intelligence has underscored the importance of human intelligence. In 2018 the Museum of the University of Tübingen brought historical highlights to life in two very different new permanent exhibitions – one virtual, the other at its central location at Hohentübingen Castle. Also in 2018, two new honorary senators were appointed, and prominent guests and members of the University shared their insights into global issues affecting us all.

THE UNIVERSITY MUSEUM – SOMETHING OLD, SOMETHING NEW

The **eScience Center** and the **University of Tübingen Museum** presented the new **3D museum**, featuring more than 50 of the most remarkable objects in the University collections. The objects can now be viewed online – from all sides – in high resolution. They include preserved animals from the Zoological Collection, the wax model of a dissected body in the Anatomical Collection, and the famous Ice Age figurines from the Prehistory Collection. The virtual exhibition also uses 3D scanning and other imaging technology to recreate spaces, such as the Museum's Ancient Egyptian sacrificial chamber and the Vogelherd Cave, where many of the Ice Age animal figures were found.

Users can view the images on any scale, download them, and even recreate them via 3D printing. And with virtual reality glasses, you can view the objects as if you were holding them in your hand. This collaboration between the University Museum and the eScience Center also adds an important

teaching function, as it provides students in the Master's program of museum curatorship and of the Digital Humanities with a chance to obtain qualifications in the field of virtual 3D exhibitions.

The **Bohnenberger Observatory** at Hohentübingen Castle reopened in October 2018. This followed the restoration of the building and the historical surveying equipment contained within it – just in time for the 200th anniversary of the first survey of Württemberg territory. Johann Gottlieb Friedrich von Bohnenberger (1765-1831) was a professor of Mathematics and Astronomy at the University of Tübingen. He had the observatory built and equipped with what was state-of-the-art surveying technology in 1814. King Wilhelm I of Württemberg needed precise surveys to make

accurate maps and to carry out fair taxation in his kingdom; Bohnenberger was given the task in 1818. Bohnenberger set the zero mile marker for his surveys in the Observatory, and it remains the zero position on all land survey maps in Württemberg to this day.

The sarcophagus of Tadiyaina (664-525 B.C.E.) at the University of Tübingen Museum Egyptian Collection





Left: The philosopher Patricia Churchland
Top: Religious philosophers Sarah and Guy Stroumsa

CULTURAL MILESTONES

The neurobiology of conscience

What are the neural requirements for moral principles and a moral conscience? **Patricia Churchland**, a Canadian analytical philosopher noted for her contributions to neurophilosophy and the philosophy of mind, spoke on the Neurobiology of Moral Conscience at the **Unselde Lecture** in June. If we can work out which neural processes contribute to social practices, we can learn something about how moral behavior may arise. Churchland propounds the controversial idea that proof of a neural platform for moral consciousness means that the traditional philosophical reasons for the existence of moral principles need to be revised. Key studies have focused on the evolutionary origins of moral behavior. Churchland goes one step further, asking about the role of chemically-driven brain activity in social behavior.

Churchland held a lively debate with science writer Dr. Stefan Klein on moral values and neurobiological facts. She also participated in the annual International Master Class, discussing her work with 20 junior researchers from around the world. She is Professor Emerita of Philosophy at the Univer-

sity of California, San Diego (UCSD), where she has taught since 1984. She has also held an adjunct professorship at the Salk Institute for Biological Studies since 1989.

The University's Forum Scientiarum holds the annual Unselde Lectures in cooperation with the Udo Keller Foundation Forum Humanum and Suhrkamp Verlag publishers.

For a better understanding of Middle Eastern history

The religious philosophers **Guy and Sarah Stroumsa** received the University of Tübingen's 2018 **Dr. Leopold Lucas Prize**. The Faculty of Protestant Philosophy paid tribute to the Stroumsas' internationally-recognized research focusing on the dynamics of encounters between religious traditions and institutions in the Roman Empire and in Late Antiquity in the Mediterranean and the Middle East. They have also carried out important work on philosophy and religion in the Muslim world during the Middle Ages, the jury said. Sarah Stroumsa is the Alice and Jack Ormut Professor Emerita of

Arabic Studies at the Hebrew University of Jerusalem. Guy G. Stroumsa was the Martin Buber Professor of Comparative Religion at the Hebrew University of Jerusalem from 1991 to 2009 and then Professor Emeritus of the Study of the Abrahamic Religions at the University of Oxford until 2013.

The €50,000 Prize honors outstanding achievements in the fields of theology, intellectual history, historical research and philosophy. It goes to individuals who have promoted tolerance and better relations between peoples and nations. The Leopold Lucas Prize honors the memory of the Jewish rabbi and scholar Dr. Leopold Lucas, murdered at Theresienstadt concentration camp in 1943. The Prize was endowed by his son, Franz D. Lucas, in 1972.

At the suggestion of the Faculty of Protestant Theology, this year's **Lucas Prize for Junior Researchers** went to **Dr. des. Jan Schole** for his work on the theological, philosophical, and physical ideas of the relationship between God, eternity, and time. The prize is endowed with 20,000 euros.

The ethics of digitization



The chairman of the council of Germany's Protestant church, **Professor Heinrich Bedford-Strohm**, held the 13th **Global Ethics Lecture** at the University of Tübingen, focusing on the ethical challenges of digitization. He outlined his own experience of the rapid changes in recent decades and his realization of the power of digital communication to support civic action. But Bedford-Strohm underlined that, along with the vast benefits, digitization was also leading to the loss of the private sphere due to data mining by big corporations; to the widespread acceptance of fake news and hate speech; and even to the loss of humanity and truth.

Bedford-Strohm pointed out the concentration of power in big corporations such as Facebook, and argued that the spread of digital communication had created a new space requiring ethical and democratic control.

The Global Ethics Lectures have been organized jointly by the Global Ethic Foundation and the University of Tübingen since 2000. Outstanding public figures are invited to give their perspectives on Global Ethics issues. The Global Ethics discussion was launched in 1990 by Professor Hans Küng and is intended to find common ethical ground between the values, standards and basic beliefs of world religions and humanist traditions.

Top:
Heinrich Bedford-Strohm



Bottom:
The writer Juli Zeh, flanked by SWR Tübingen Studio director Andreas Narr (left) and Media Studies Professor Bernhard Pörksen (right)

Digital communities – Freedom or slavery?

German writer **Juli Zeh** held the July 2018 **Media Lecture** in front of a packed auditorium. She spoke on the topic of "the turbo-me – human beings in the age of communications," describing how the traditional allegiances of family, religion and party have faded and are failing to provide a filter for the onslaught of facts and opinions. She said this lack of ties focuses the individual's concentration on him- or herself, the self becoming what Zeh calls "the turbo-me" – the individual who demands too much of him- or herself. This creates fears which lead people straight back into the bondage they have only so recently escaped, Zeh said. She sees it as the tragic downside of liberation.

Zeh warned of the "turbo-me" in the media, where she said objective reporting is all too often replaced by the opinions of prominent journalists. In politics, too, she sees the changed nature of communications and the use of social media as mixing up the public and private. The only way out is to set boundaries and orient yourself on more universal values, she said, because democracy requires everyone to have principles, to live up to their responsibilities and to care about the greater good.

Juli Zeh is one of Germany's best known authors. Her debut novel *Eagles and Angels* (2001) was translated into 31 languages. It was followed by more novels, non-fiction, plays, short stories and essays.

The Media Lecture is sponsored by regional broadcaster SWR and is intended to inspire future journalists.

Theologian Hans Küng turns 90

Two events were held to pay tribute to the Catholic theologian **Professor emeritus Hans Küng** on his 90th birthday on 19 March. Küng, a respected critic of the Church and Global Ethic visionary, is a passionate proponent of ecumenical dialogue. He has been a professor of Theology at the University of Tübingen since 1960 and was a key figure in the ideological and theological debates of the 1960s and 70s. Swiss-born Küng is a co-founder of the Global Ethic Institute, which is sponsored by the Karl Schlecht Foundation.

Prominent theologian Hans Küng at his desk, in conversation with University President Bernd Engler



Contemporary German authors speak

The writers **Uwe Timm and Frank Witzel** were the guests at the 32nd Tübingen Writers' Lectureship in November 2018. They reflected on their work as literary chroniclers of German everyday life as well as German 20th-century history. The Writers' Lectureship at the University of Tübingen is sponsored by the Würth Foundation. It has been held annually since 1996 and has been directed by Professor Dorothee Kimmich since 2005. Authors are invited to give public lectures as well as seminars and workshops.

HONORS

The University confers honorary senatorships for special services to academia, research, art, culture, and society. Two new honorary senators were appointed in 2018. Economist and University Board member of many years, **Professor Wilhelm Rall**, became an honorary senator in April 2018. Rall headed the University Board of Trustees from 2009 to 2017. **Dr. Ingmar Hoerr**, founder and long-term CEO of medical research company CureVac AG, became an honorary senator in October 2018 in recognition of his investigative scientific spirit and entrepreneurial courage.

Germany's former Economics Minister **Helmut Haussmann** became an honorary professor of the University of Tübingen in November 2018. Haussmann, who studied in Tübingen, was Economics Minister from 1988 to 1991 under the government of Helmut Kohl which oversaw the reunification of East and West Germany. He has taught International Business Administration at the University's School of Business and Economics since 2010.



The new honorary senator, Wilhelm Rall, with his wife

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