EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

2020

ANNUAL REPORT

University of Tübingen

University of Tübingen Annual Report
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Contents

Welcome to Tübingen!

The Coronavirus pandemic of 2020 presented the University of Tübingen with enormous challenges. In the face of restrictions on travel and gatherings, we had to continue to fulfill our duties of teaching young people and conducting excellent research for a better future.

We rose to the challenges. Within a few short weeks, our teaching staff adapted thousands of courses to make them suitable for online classes. Our researchers kept up their groundbreaking projects, with many turning their skills to analyzing the manifold effects of the pandemic for a better understanding of the crisis and a faster recovery. Our students volunteered to support medical staff at the University Hospitals. And the central administration came up with many different schemes to help members of the University get through this difficult time.

As one of Germany's universities of excellence, we continued to build upon our outstanding work in many fields in 2020 and to create state-of-the-art infrastructure to support our research and teaching. With the backing of the state of Baden-Württemberg, our scientists are contributing to key measures to fight the Covid-19 disease. Our private sponsors, too, are standing by us in this time of crisis.

The University of Tübingen's experience of 2020 shows the solidarity and dedication that come with excellence, and we are very grateful to the entire University community and to our partners – both local and international – for their extraordinary commitment and support in these challenging times.

Research

Expanding to full strength

Here at the University of Tübingen, we are making good use of Excellence Strategy funding to establish new institutions and projects in key areas. Our three clusters of excellence – in cancer research, infection research and machine learning – are expanding to full strength in their respective fields. We are not only increasing knowledge via research. We are also building structures to process and analyze information, and training our researchers to optimally use the new tools available in every discipline. Our involvement in the National Research Data Infrastructure consortia creates infrastructure for data-intensive subjects ranging from personalized medicine to plant research. And the Coronavirus pandemic is leading to new alliances and projects in medicine and the life sciences.

University of Excellence status established

Tübingen will receive additional annual funding of around 14.25 million euros under the German government's Excellence Strategy until 2026. This status as one of Germany's universities of excellence was reinforced by the three clusters of excellence in the fields of machine learning, microbiology and infection research, and oncology, immunology and imaging, approved in 2018.

The University of Tübingen has used the latest Excellence funding to establish two new core facilities to provide centralized services for research and teaching. They are the Methods Center in economics and social sciences, and the Tübingen Structural Microscopy to support the earth, life and materials sciences. The two new facilities complement the services offered by the existing core facilities: QBiC in biology, LISA^{+} in physics and chemistry, and the eScience Center for the humanities and social sciences. Excellence funding will also help consolidate the University's Competence Center for Sustainable Development.

Machine learning holds great potential in many fields – even art.

The Clusters of Excellence

Cancer of the liver seen under the microscope. Carcinoma cells (top) are under attack by lipotoxic treatment, while the normal liver cells (bottom of picture) are barely affected.

Machine learning opens up new vistas

The cluster of excellence **Machine Learning: New Perspectives for Science** seeks to exploit the full potential of machine learning for research – from the natural sciences to the humanities. The cluster is funded by the Excellence Strategy with a total of 38.3 million euros over seven years. The cluster has around 50 members from various faculties at the University of Tübingen or from the Max Planck Institute for Intelligent Systems.

Three new professorships and five junior research groups have been established. Three further professorships receive support from the cluster. In addition to the development of new machine learning methods, the new groups focus on machine learning applications in medicine and in the environmental and earth sciences. They also explore the ethics and philosophy of machine learning.

The aim is to identify and solve fundamental problems arising from machine learning. There are four research areas:

- Comprehension instead of prediction
- Learning to deal with imprecision
- Interfaces between researchers and algorithms
- Developing philosophy and ethics of machine learning in science

The Machine Learning / Science Collaboratory was set up to advise researchers of all disciplines who are looking for ways to optimize their knowledge gain via machine learning.

Controlling infections by influencing the microbiome

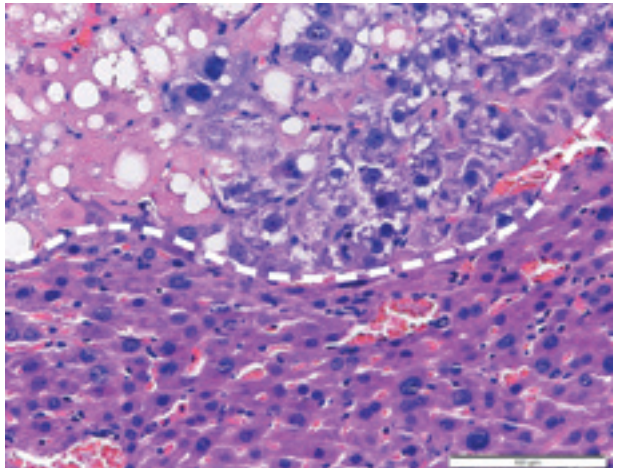
The use of antibiotics to combat infections often leads to resistance in pathogens and also damages the microbiome, the populations of microorganisms that naturally colonize the body.

The cluster of excellence **Control of Microorganisms to Combat Infection** (CMFI) takes a new approach. The focus is on the complex balance of harmful and beneficial bacteria in the microbiome. The researchers are seeking ways to control infections caused by usually benign bacteria or their metabolic products. The cluster, launched at the beginning of 2019, will receive 45 million euros in funding over seven years.

The cluster involves around 30 research groups from the Faculties of Science and Medicine at the University of Tübingen and from the Max Planck Institute for Developmental Biology. They are currently working on 30 projects, with more in the pipeline. Six new junior research groups have been established as part of the cluster. In 2020, a new professorship of Bacterial Metabolomics was added, and another on microbiome-host interactions is to follow in 2021.

Four new core facilities have been established within the cluster to provide research support services:

- NatResource is a facility where substances produced by bacteria are purified, chemically analyzed and tested for their effects on other bacteria;



- The QBiC-CMFI platform supports data management, bioinformatics analysis and evaluation, and the development of analytical methods and statistical concepts;
- The Gnotobiotic Research Center Tübingen (GRCT) provides animals with a defined and standardized microbiome, thus enabling the investigation of microbiome-host interactions;
- The Platform for Clinical Studies focuses on the colonization of the human body with specific microorganisms under controlled conditions to explore the potential of benign bacteria in controlling pathogens in the microbiome.

New Core Facilities to serve research needs

Finding individualized, sustainable cancer treatments

In the cluster of excellence **Image-Guided and Functionally Instructed Tumor Therapies** (iFIT), more than 130 researchers are working in three focus areas: functional target identification and molecular tumor therapies; immunotherapies; and molecular and functional multiparametric imaging. Their goal is to develop sustainable new cancer treatments.

Launched in 2019, the cluster will receive 47.3 million euros of Excellence Strategy funding to the end of 2025. Its work was a key factor in the selection of Tübingen as the site of the National Center for Tumor Diseases (NCT) in September 2020. The NCT coordinator for southwest Germany is Professor Lars Zender, Medical Director of Internal Medicine VIII at Tübingen University Hospitals. In close cooperation with the cluster and other departments of the University Hospitals and the University of Tübingen, the NCT seeks to make new treatments rapidly available to cancer patients. In this context, novel therapeutic concepts developed within the cluster's basic oncology research are first sent to the $TüCAD_2$ academic drug discovery center in Tübingen for the development of corresponding drugs. After successful preclinical testing, these will be clinically tested.

Cancer researchers in Tübingen are at the cutting edge of medical imaging and are thus able to support the cluster's newly-developed imaging-guided and individually tailored cancer treatments. Additionally, innovative immunotherapies will activate the patient's own immune system, supporting and complementing targeted drug therapy.

Developing and improving research methods

The **Methods Center** is a new core facility at the Faculty of Economics and Social Sciences. It helps develop methods, provides subject-specific expertise, helps connect current research projects, and offers a range of interdisciplinary teaching. Professor Augustin Kelava heads the center.

The Methods Center is a platform for quantitative and qualitative methodological research as well as for reflection on methodologies. It also provides a starting point for researchers carrying out and evaluating empirical studies both large and small. For example, the Methods Center was involved in a Baden-Württemberg Ministry of Science project to redesign an aptitude test for prospective medical students.

The center has a special bridging function for research projects that require statistical method development relevant to the social and behavioral sciences – for instance in projects in the Machine Learning cluster of excellence.

Central coordination of microscopy facilities

Tübingen Structural Microscopy (TSM) will centrally coordinate the use of existing resources in (cryo)electron microscopy and ion microscopy. The TSM, headed by Dr. Stefan Fischer, will make more efficient use of microscopes in the Center for Plant Molecular Biology, in $LISA^+$, in Biology, and in the Geosciences and will pool the expertise in operating them.

The equipment includes transmission electron microscopes, scanning electron microscopes, (cryo)scanning electron microscopes with focused ion beam (FIB-SEM) and a helium ion microscope. The decision to set up the TSM was made when the University purchased a new electron microscope (Cryo-FIB-SEM, Zeiss Crossbeam 550L) in Geomicrobiology. The instrument combines the use of cryogenic preservation techniques with high-resolution imaging and advanced analytical methods.

The TSM will offer methodological advice and training for researchers in the earth sciences, life sciences and materials sciences. This includes help with all the steps from sample preparation, instrument operation and imaging, to image interpretation and analysis, as well as support in research data management. The TSM will also initiate its own research projects, for instance on the development and establishment of cryogenic workflows for scientific problems that cannot be adequately solved with conventional electron microscopy at room temperature.

Long-term security for sustainable development center

2020 saw the Competence Center for Sustainable Development made permanent as part of the Excellence Strategy. It was originally established in 2014 as a project at the International Center for Ethics in the Sciences and Humanities. Its work earned it German government and UNESCO awards in 2016 and 2019. The team, headed by Professor Thomas Potthast and Dr. Diana Grundmann, initiates measures to establish sustainable development practices in studies, teaching and research across the University.

The center builds upon sustainable development teaching such as the Studium Oecologicum, and in our Environmental Platform for research. The university's many sustainable development measures contribute to the implementation of the United Nations' Sustainable Development Goals. Research topics in 2020 at the Competence Center included innovative education plans for sustainable development, bioeconomy and ethical issues in a global North-South perspective.

Ideas arising from a Competence Center for Sustainable Development conference

Top marks in international rankings

In the Times Higher Education (THE) World University Ranking 2021, the University of Tübingen was placed among the world's top 100 for the sixth time in a row, coming in at no. 78 internationally and at no. 5 in Germany. The University of Tübingen improved year-on-year on all the key indicators. Research and teaching were rated more highly, researchers at the university were cited more frequently in specialist publications, and our international prospects were also up. The biggest leap forward came in the amount of third-party funding.

In the QS Ranking 2020 by subject, Tübingen achieved excellent results above all for Archaeology and for Religious Studies.

The QS ranking by subject evaluates 48 disciplines on the basis of academic reputation, reputation among employers, the response to publications, and the citation frequency of those working in the discipline.

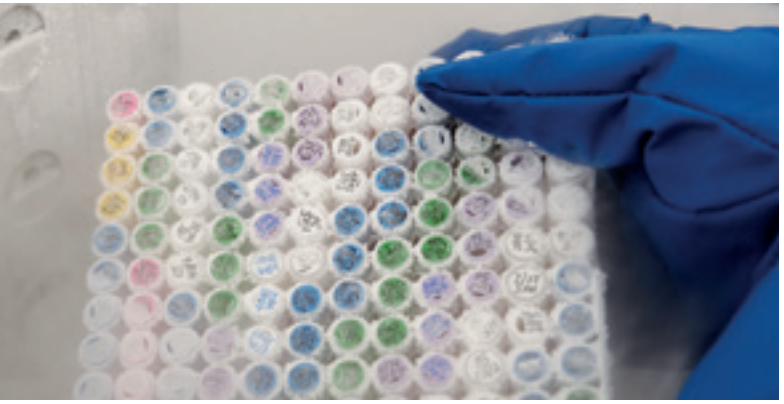
The following subjects attained outstanding places:

Subject	International Ranking	German Ranking
Archaeology	13	1
Protestant Theology and Catholic Theology, Religious Studies	7	1
Anthropology	38	2
Biology	51-100	4
History	51-100	5
Linguistics	101-150	8
Classical Studies	43	8

The Times Higher Education World University Ranking, QS and Shanghai Rankings are the three major indices in the field of assessing universities' quality.

Participation in National Research Data Infrastructure consortia

Information technology enables researchers to collect vast volumes of data. To structure this data for further use, German government inaugurated the National Research Data Infrastructure Initiative (NFDI) in 2020. It is a framework for nine consortia, initially funded by the German Research Foundation for five years. The University of Tübingen is involved in two of the nine consortia, the German Human Genome Phenome Archive and DataPLANT.

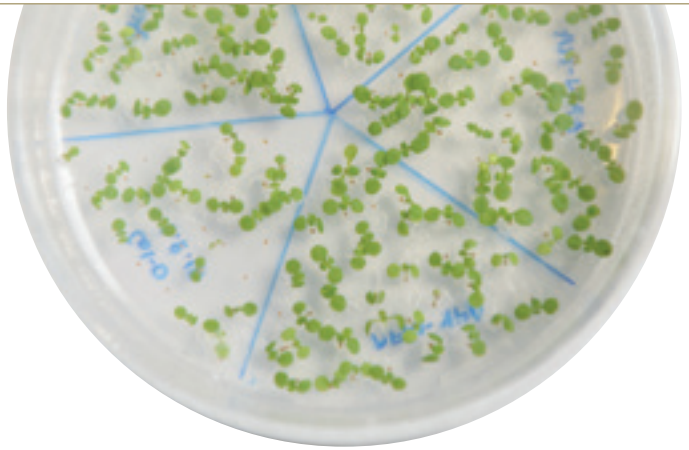


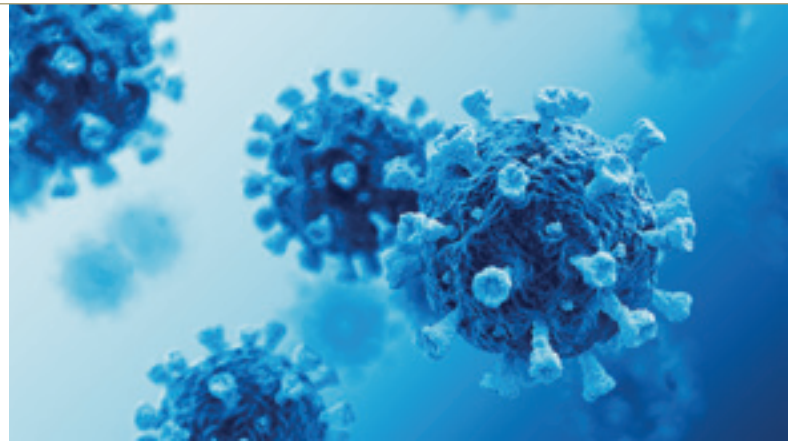
The **German Human Genome Phenome Archive** was one of the consortia founded in 2020 as part of the National Research Data Infrastructure Initiative (NFDI). Its aim is to make sensitive data from genome research available to the scientific community in Germany and internationally. At the same time, it seeks to ensure that patients' personal rights are protected. University of Tübingen researchers are involved, with Professor Oliver Kohlbacher of the Tübingen Interfaculty Institute for Biomedical Informatics as co-spokesperson. The consortium will receive 19.5 million euros over the first five years. Its initial focus will be on cancer and rare genetic diseases.

Genome research, which focuses on a person's entire genetic makeup, plays a central role in modern health research. It is already helping to improve patient care. For example, in the case of some cancers, genetic alterations can be detected by analyzing each tumor genome, so that targeted treatments can be developed. Genomic analyses are also increasingly used to decipher the genetic causes of rare diseases. It is not only genome sequencing that produces immense amounts of data for analysis. In health research today, the entirety of messenger RNA in the transcriptome, epigenetic marks in the epigenome, and proteins in the proteome of individual patients are also analyzed. Collectively, these analyses are called omics technologies.

The new German Human Genome-Phenome Archive builds on existing national omics data generators and their IT infrastructures. The Tübingen site of the GHGA is supported by working groups at the Interfaculty Institute for Biomedical Informatics, by the Center for Quantitative Biology, the IT Center, the NGS Competence Center Tübingen as well as the Institute of Medical Genetics and Applied Genomics, the Center for Personalized Medicine and Internal Medicine I at the University Hospitals.

Tiny samples yield gigantic data sets. Scientists are finding new ways to process this information, leading to new insights into disease.





The **DataPLANT** consortium is set to be a service and data infrastructure for basic research on plants, where large amounts of data can be collected and made available for research. Several institutions at the University of Tübingen are involved. Part of the National Research Data Infrastructure Initiative (NFDI), it is funded by the German Research Foundation with a total of around eleven million euros in the first five years. Co-speaker of the consortium at the University of Tübingen is Dr. Jens Krüger from the IT Center.

In basic research, plant life is studied down to the molecular processes which determine growth, crop yield and biomass production. This knowledge is essential to ensure food security as global demand rises and environmental conditions change.

Analyses of natural genetic diversity and plant evolution give researchers the foundations for a better understanding of genetic and biochemical manipulation. This research generates highly complex and immense amounts of data that need to be processed and interpreted.

In such projects, scientists are dependent on effective research data management. Due to their size, plant genomes pose a particular challenge. DataPLANT aims to make research data available to all interested parties so that the potential of European basic research on plants can be fully exploited. The Tübingen site of DataPLANT is supported by the High Performance Cloud Computing group at the IT Center, by the Center for Quantitative Biology, the University Library and the Center for Plant Molecular Biology.

Cooperative effort to fight Covid-19

The new SARS-CoV-2 Coronavirus and the pandemic it triggered continue to raise new scientific questions. To come up with answers and practical solutions quickly and efficiently, a number of genome researchers joined forces in May 2020 to form the **German COVID-19 OMICS Initiative** (DeCOI). Scientists from more than 22 institutions are involved, including Tübingen University and the University Hospitals. DeCOI is investigating how SARS-CoV-2 changes its genetic information, what other infections occur in patients with COVID-19, and whether there are genetic risk factors. A better understanding of the processes involved in infection and the influence of individual genetic and immunological factors should help to identify new treatments, particularly for patients hit hard by the disease.

DeCOI is coordinated centrally at the University of Bonn. Participants at the University of Tübingen include Professor Oliver Kohlbacher of the Interfaculty Institute for Biomedical Informatics (IBMI), Dr. Sven Nahnsen at the Quantitative Biology Center (QBiC), and Dr. Jens Krüger of the IT Center (ZDV). At the University Hospitals Professor Olaf Riess and Professor Stephan Ossowski, both of the Institute of Medical Genetics and Applied Genomics, and Professor Julia Frick of the Institute of Medical Microbiology and Hygiene are all members of the initiative.

Top left: Reliable and structured data on the natural genetic diversity of plants will be made available for basic research via the DataPLANT consortium.

Top right: Many research institutions are cooperating to develop treatments and strategies to contain the novel Coronavirus SARS-CoV-2.

German Research Foundation-funded research

Collaborative research centers at the University of Tübingen

Title	Spokesperson	Duration
Different Aesthetics (SFB 1391)	Professor Dr. Annette Gerok-Reiter, German Language and Literature	1 July 2019 - 30 June 2023
CAMPOS – Catchments as Reactors: Metabolism of Pollutants on the Landscape Scale (SFB 1253)	Professor Dr. Peter Grathwohl Center for Applied Geoscience	1 Jan. 2017 - 31 Dec. 2021
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. 2024
Molecular Coding of Specificity in Plant Processes (SFB 1101)	Professor Dr. Klaus Harter Center for Plant Molecular Biology	1 April 2014 - 31 Dec. 2025
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 2025
Threatened Orders (SFB 923)	Professor Dr. Mischa Meier Institute of Ancient History	1 July 2011 - 30 June 2023
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

Tübingen participates in these transregional collaborative research centers

Title	Tübingen spokesperson	Duration
ANTIBIOTIC CellMAP – Cellular Mechanisms of Antibiotic Action and Production (SFB/TRR 261)	Professor Dr. Heike Brötz-Oesterhelt Interfaculty Institute of Microbiology and Infection Medicine	1 July 2019 - 30 June 2023
Platelets – Molecular, cellular and systemic functions in health and disease (SFB-Transregio 240)	Professor Dr. Meinrad Gawaz Internal Medicine III, 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 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 2023

Tübingen research units

Institute	Title	Spokesperson
Faculty of Catholic Theology, Medieval and Modern Church History	Being Catholic in the German Federal Republic. Semantics, Practices, and Emotions in Western Germany's Society 1965-1989/90 (FOR 2973)	Professor Dr. Andreas Holzem
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
School of Business and Economics	Understanding the Behavior of Multinational Corporations in the Context of International Tax Institutions (FOR 2738)	Professor Dr. Georg Wamser
Department of Psychology	Modal and Amodal Cognition: Functions and Interactions (FOR 2718)	Professor Dr. Barbara Kaup
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	VIROCARB: Glycans Controlling Non-Enveloped Virus Infections (FOR 2327)	Professor Dr. Thilo Stehle
Internal Medicine I, 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	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

DFG research units, clinical research units, centers of advanced study

The German Research Foundation (DFG) sponsors units in which researchers can work together on a specific, innovative research task. The groups usually receive funding for eight years and frequently lead to the establishment of new disciplines. 2020 saw the establishment of a new research unit at the University of Tübingen, in Catholic Theology.

Being Catholic in West German society

In the new research group **Being Catholic in the German Federal Republic. Semantics, Practices, and Emotions in Western Germany's Society 1965-1989/90** (FOR 2973), researchers are addressing a period on which, from the perspective of church history, only a few individual studies have been available to date. Across Germany, ten historical and theological institutes are involved in the research group (Berlin, Bochum, Mainz, Münster, Paderborn, Potsdam, Tübingen, Vallendar, Würzburg). The spokesman is Andreas Holzem, Professor of Medieval and Modern Church History at the Faculty of Catholic Theology at the University of Tübingen. The DFG is providing some three million euros over four years. The project is coordinated by the Commission for Contemporary History in Bonn.

The researchers explore the question of what contribution "being Catholic" made to the era following the Vatican Council II up to German reunification. They are not concerned with the internal history of a social milieu; rather, they are examining the religious-cultural dynamics across the breadth of society. Topics include the public perception of religious reform, changing roles, and the professionalization of spiritual and social professions among men and women. Also at issue are changes in sexual morality, the peace and environmental movements, the emergence of the Greens as a political party, as well as political struggles over education and pastoral care in cities.

European Research Council backs innovative new projects

The European Research Council (ERC) supports researchers at various stages of their careers with highly-endowed research grants. The funding is awarded for a period of five years based on outstanding research achievements and excellent project ideas. **Starting Grants** of up to 1.5 million euros are intended for researchers with several years of post-doctoral experience; those with seven to twelve years of post-doctoral research experience will receive up to two million euros in funding with a **Consolidator Grant**; and for an outstanding researcher with many years of experience, an **Advanced Grant** may be endowed with up to 2.5 million euros. The ERC also awards **Synergy Grants** for interdisciplinary cooperation between two to four working groups for up to six years, with maximum funding of ten million euros.

Sleep for remembering and forgetting

Professor Jan Born from the Institute of Medical Psychology and Behavioral Neurobiology at the University of Tübingen received an Advanced Grant for his project **Sleep Balancing Abstraction and Forgetting of Memory** (SleepBalance). In the project, Born investigates how the brain translates information into long-term memory during sleep, actively sorting out unimportant details for forgetting. The grant is associated with ERC funding of around 2.45 million euros over five years.

Sleep promotes the formation of long-term memories in an active consolidation process. If you sleep after absorbing new information, you can remember it better than if you

Jan Born

stay awake after learning it. Researchers have long assumed that sleep also organizes targeted forgetting – Born is seeking evidence of this. He says memories are consolidated during sleep by abstracting them, and this process is coupled with the active forgetting of random, unimportant details. How much is newly stored – and what is forgotten – is presumably subject to balanced control.

Born pursues the approach that the dual function of sleep is seen most clearly when so much information flows into the brain that the capacities for processing it are exhausted. This situation arises especially during the development of the brain in early childhood, when there is little knowledge and the brain is permanently overloaded with information.

Born conducts behavioral studies on humans and rodents to test whether his idea of the processes of storing and discarding information is tenable. The effect of sleep is measured by comparing it with control groups that remain awake after learning. Born also wants to investigate which mechanisms of the nervous system underlie these processes, how connections between nerve cells are newly formed and how they may cut again. Knowledge about forgetting during sleep will help researchers to better understand memory formation.

Land bridge for Stone Age humans

Dr. Sireen El Zaatari from the Institute of Scientific Archaeology at the University of Tübingen earned a Consolidator Grant for her project **Tracing Hominin Occupations of and Migrations through the Levant: Reviving Paleolithic Research in Lebanon** (REVIVE). The project will receive around two million euros over five years.

The evolution of man to the only living species today, *Homo sapiens*, is a success story both fascinating and confusing. Lebanon, with its rich archaeological heritage from the Stone Age, is an important region in this story. Previous research in the country was stalled by the outbreak of civil war in 1975. Lebanon is located in the heart of the Levant – as a land bridge between Africa and Eurasia – it was both a migration route and settlement region for various forms of early humans.

Researchers long assumed that the spread of humans from Africa across the world occurred in two independent waves of migration. One wave involved *Homo erectus* migrating out of Africa about a million years ago and evolving into Neanderthals; the second wave of migration was of modern humans, who evolved independently in Africa from *Homo erectus* and left the continent between 60,000 and 50,000 years ago. But now, archaeological, paleoanthropological, and genetic evidence paints a more complex and dynamic picture.

In her project, El Zaatari will seek to learn more about the specific events, such as the number and timing of migration waves, as well as the human species involved. She will investigate the influence of new technologies, climate and interactions between different human populations on the course of human prehistory.

Sireen El Zaatari

Three new Starting Grants

Improving cancer treatments

Dr. Judith Feucht from the Tübingen University Hospitals received an ERC Starting Grant of 1.8 million euros for the project **CARsen – Senolytic CAR T Cells as Novel Therapeutic Concept for Solid Tumors and Senescence-associated Diseases**. She leads a working group on cellular immunotherapies in the ''Individualization of Tumor Therapies by Molecular Imaging and Functional Identification of Therapeutic Targets'' (iFIT) excellence cluster. In the ERC project, she wants to explore new cancer immunotherapies, especially to tackle solid tumors in childhood.

In CAR-T cell therapy, T cells of the immune system from the patient's blood are genetically engineered with an artificial receptor that specifically recognizes the cancer cells. This is meant to enable the patient's own immune system to act against the tumors. The method is already being used successfully for certain types of B-cell blood cancer. However, it has its limitations, particularly in solid tumors, partly because the cancer cells have inconsistent characteristics, the tumor microenvironment suppresses the immune system, or the function of the T cells is impaired. Severe side effects can occur with a strong immune response under CAR T-cell therapy due to the release of cytokines.

In her new project, Feucht therefore combines CAR-T cells with treatments that put tumor cells into a dormant state known as senescence. She is seeking to develop this concept further, especially for solid tumors that have been virtually untreatable up to now. She believes that the approach of destroying damaged cells by CAR T-cell therapy is also promising for severe non-malignant diseases such as liver and lung fibrosis.

Judith Feucht

Bacteria as living medicine

Dr. Christoph Ratzke's ERC Starting Grant project BugDrug – **Bugs as Drugs: Understanding Microbial Interaction Networks to Prevent and Treat Infections** investigates interactions within microbial communities and their network structures. Ratzke conducts research as an independent junior research group leader in the ''Control of Microorganisms to Fight Infections'' (CMFI) excellence cluster at the Interfaculty Institute for Microbiology and Infection Medicine at the University of Tübingen. Communities of countless microbes – known as the microbiota – occur for example in the healthy human intestine, where they help digest food. However, certain microorganisms can trigger diseases. Ratzke is researching how such pathogens could be held in check by the existing microbial network. He has 1.49 million euros from the ERC grant at his disposal for this purpose.

Pathogens must contend with the microbial communities that already colonize the host during a new infection. The microbes present may suppress or support the pathogen. Depending on how the infection progresses, the human host may become more protected from disease or more susceptible to it. So far, the microbiota that colonize the human body cannot really be harnessed for therapeutic purposes.

In the ERC project, Ratzke seeks to develop a microscopy method that can be used to visualize the interacting net-

works in complex microbial communities. His research object is the nematode *Caenorhabditis elegans*, whose intestine harbors its own microbial community. Ratzke wants to identify microbes that can contain pathogens.

In humans, such microbes could be used as probiotics against microbial infections. This approach may lead to completely new ways of fighting infections as alternatives to antibiotics – to which more and more pathogens are becoming resistant.

Christoph Ratzke

Autophagy in plants and their pathogens

Dr. Suayb Üstün investigates how bacterial pathogens interfere with the regulated degradation and recycling processes of plants. He conducts research at the Center for Plant Molecular Biology at the University of Tübingen and heads the Emmy Noether junior research group Proteolytic Degradation Pathways and their Role in Plant Defense. Among other things, the plant controls its immunity via degradation and recycling processes, also known as autophagy, in which proteins damaged by attacks from pathogens are disposed of and their material reused. However, certain pathogens can take advantage of this ability of the plant and redirect its autophagy processes for their own purposes. In the **Utilizing Diversity to Decipher the Role of Autophagy in Plant-microbe Interactions** (DIVERSIPHAGY) project, Üstün will explore the role of autophagy in the interaction between plants and pathogenic microbes. For this, he is receiving a Starting Grant of 1.49 million euros.

Plants are constantly exposed to very different pathogens. To obtain a comprehensive picture of the role of autophagy, Üstün wants to include all organisms, processes and factors that influence autophagy in plant-microbe interactions. His work may be used to develop crops with resistance to bacterial pathogens.

Suayb Üstün

Current European Research Council Grants

Advanced Grants

Name	Project	Duration
Professor Dr. Jan Born Institute of Medical Psychology and Behavioral Neurobiology	Sleep Balancing Abstraction and Forgetting of Memory (SleepBalance)	2020 – 2025
Professor Dr. Gerhard Jäger Institute of Linguistics	Cross-Linguistic Statistical Inference Using Hierarchical Bayesian Models (CrossLingference)	2019 – 2024
Professor Dr. Klaus Scheffler Max Planck Institute for Biological Cybernetics/ Radiology	Ultra-Fast, Spread-Spectrum Magnetic Resonance Imaging (SpreadMRI)	2019 – 2024
Professor Dr. Harald Baayen Institute of Linguistics	Wide Incremental Learning with Discrimination nEtworks (WIDE)	2017 – 2022

Consolidator Grants

Name	Project	Duration
Dr. Sireen El Zaatari Institute of Scientific Archaeology	Tracing Hominin Occupations of and Migrations through the Levant: Reviving Paleolithic Research in Lebanon (REVIVE)	2021 – 2026
Professor Dr. Claudia Lengerke Department of Medicine, Internal Medicine I – Haematology, Oncology, clinical Immunology and Rheumatology	Targeting Leukaemia by Modulating Hematopoietic Stem Cell Competitiveness (Hemstem)	2021 – 2025
Professor Dr. Michael Butter English Languages and Literatures	Populism and Conspiracy Theory (PACT)	2020 – 2025
Professor Dr. Markus Siegel Werner Reichardt Center for Integrative Neuroscience/ Hertie Institute for Clinical Brain Research	Neuronal Information through Neuronal Interactions (NINI)	2020 – 2025
Professor Dr. Holger Zellentin Institute for the Study of Religion and Jewish Studies	The Qur'an as a Source for Late Antiquity (QaSLA)	2020 – 2025
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. 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 – 2021

Starting Grants

Name	Project	Duration
Dr. Judith Feucht University Hospitals	Senolytic CAR T Cells as Novel Therapeutic Concept for Solid Tumors and Senescence-associated Diseases (CARsen)	2021 – 2026
Dr. Christoph Ratzke Interfaculty Institute of Microbiology and Infection Medicine	Bugs as Drugs: Understanding Microbial Interaction Networks to Prevent and Treat Infections (BugDrug)	2021 – 2026
Dr. Suayb Üstün Center for Plant Molecular Biology	Utilizing Diversity to Decipher the Role of Autophagy in Plant-microbe Interactions (DIVERSIPHAGY)	2021 – 2026
Professor Dr. Andreas Geiger Department of Informatics	Learning Generative 3D Scene Models for Training and Validating Intelligent Systems (LEGO-3D)	2020 – 2025
Dr. Christina Schwarz Research Center for Ophthalmology	Exploring Visual Processes with Two-photon Ophthalmoscopy (TrackCycle.2P)	2020 – 2025
Professor Dr. Zeynep Akata Department of Informatics	Deeply Explainable Intelligent Machines (DEXIM)	2019 – 2024
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
Professor Dr. Philipp Hennig Department of Informatics	Probabilistic Automated Numerical Analysis in Machine Learning and Artificial Intelligence (PANAMA)	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
Assistant professor Dr. Cynthianne 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 – 2021
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

Synergy Grants

Tübingen Research Unit	Project	Duration
Professor Dr. Martin Giese Werner Reichardt Center for Integrative Neuroscience/ Hertie Institute for Clinical Brain Research	How Body Relevance Drives Brain Organization (RELEVANCE)	2020 – 2025
Professor Dr. Ulf Ziemann Hertie Institute for Clinical Brain Research/ Neurology	Connecting to the Networks of the Human Brain (ConnectToBrain) Coordination: Aalto University, Finnland	2019 – 2025

New Humboldt Professorship in Education research

Professor Kou Murayama, a psychologist and expert in education research, is moving to the University of Tübingen's Department of Social Sciences on Germany's highest-endowed international research prize. Up to now, he has been conducting research at the University of Reading in the United Kingdom. He emerged successful from the 2021 call for applications. The Humboldt Professorship is Germany's most highly endowed international research award. It is funded by the Alexander von Humboldt Foundation with five million euros over a period of five years. Murayama is appointed to a chair of Education Psychology at the Hector Research Institute of Education Sciences and Psychology.

Kou Murayama has received an Alexander von Humboldt Professorship, Germany's richest research prize.

With a focus on learning processes, Murayama explores what motivates people and what can strengthen or weaken motivation. In his work on learning success, Murayama addresses a number of aspects of central importance for education research. Among other things, he examines the influence of the family, intrinsic and extrinsic rewards, the role of competition, curiosity, and interests. His approach combines disciplines ranging from education to social and developmental psychology to neuroscience.

Kou Murayama was born in Japan, where he also studied and received his doctorate. Murayama has been a researcher at the University of Reading, UK, since 2013. He is a research professor there and heads the Motivation Science Lab that he founded. Prior to that, he spent research periods in the USA and Germany, including a Humboldt Research Fellowship at LMU Munich and a visiting professorship at the University of Tübingen.

Murayama is the fifth Humboldt Professor at the University of Tübingen. Other laureates are the linguist Harald Baayen, plant geneticist Marja Timmermans, geoscientist Lars T. Angenent, and the neuroscientist Peter Dayan.

A broad spectrum of new projects

Diagnostics, treatment and prevention of Covid-19

The **Baden-Württemberg Ministry of Science, Research and the Arts** (MWK) is supporting the state's five medical faculties in their research into Covid-19 with a total of eight million euros. Around 1.5 million went to the University of Tübingen Medical Faculty.

The state funding supports 51 projects in the diagnostics, treatment and prevention of the novel Coronavirus. Diagnostics projects seek, for instance, to develop faster ways of detecting the SARS-CoV-2 virus; on detecting antibodies in blood serum; and on finding and evaluating an innate cellular immune response. Treatment projects focus on the propagation of the virus and the course of the disease it causes,

and on identifying potential antiviral agents in cell culture. Research on prevention looks at passive vaccination by neutralizing antibodies, or active vaccination using viral surface proteins and virus-like particles. The broad spectrum of research is complemented by clinical and epidemiological studies of the course and treatment of Covid-19, including studies of the evolution of the virus within and between patients, and studies of the genome and epigenome of individuals in whom the disease manifests itself differently. At the University and the University Hospitals, one of the projects receiving special state funding was a Covid-19 study on the spread of the virus in children aged one to ten years.

Making health care better, statewide

The state government announced funding of more than 8 million euros for four new medical and health care projects under its **Forum Gesundheitsstandort Baden-Württemberg** initiative in May 2020. In total, 16 projects with total funding of 15.49 million euros will be supported via the forum.

The projects comprise a range of measures to improve health services in the state of Baden-Württemberg, for instance making personalized medicine more widely available. The Tübingen University Hospitals (UKT) are leading the expansion of the centers for personalized medicine, primarily for tackling forms of cancer. The UKT is also sponsoring a Clinical Information Center for Rare Diseases (KLINSE). Other projects funded by the Forum Gesundheitsstandort Baden-Württemberg at the UKT include a training program for relatives of patients with Internet and computer game addiction, as well as the prevention and treatment of malnutrition in hospitals in the Nutrition Management Unit.

The Forum Gesundheitsstandort Baden-Württemberg was launched by the state government in 2018 to improve health research and health care for the benefit of patients.

Interreligious research network for religious education

The **cooperative interreligious research network** for religious education was established at the University of Tübingen in December 2020. Professor Friedrich Schweitzer at the Faculty of Protestant Theology and Professor Reinhold Boschki at the Faculty of Catholic Theology as well as Professor Fahimah Ulfat at the Center for Islamic Theology are involved. The research network also includes the respective institutes for professionally oriented religious education (KIBOR, EIBOR) as well as the newly established Institute for Islamic Religious Education Research (IIRF).

The research network will look at a wide range of practical fields of religious and interreligious education and value formation. Research is planned in the area of interreligious teaching and in the dialogue of Judaism, Christianity and Islam.

Nationwide research project on organized crime

A team from the **Institute of Criminology** at the University of Tübingen, led by Professor Jörg Kinzig, is participating in a nationwide research project to study organized crime. The goals of the project, which began in October 2020, are to analyze structures and threat potentials and to develop prevention strategies. The Tübingen group is tasked with an empirical inventory of organized crime in Germany. The three-year joint project is funded by the German Federal Ministry of Education and Research (BMBF) as part of the Research for Civil Security program.
In the Tübingen submodule, a multimethod approach was chosen to analyze cases known to the law enforcement authorities while gaining insights into what the authorities do not know. To complete the picture, statistics and records from databases will be analyzed, numerous interviews will be conducted with prisoners, police officers and prosecutors, and relevant criminal cases will be examined in detail. The project is coordinated by the University of Osnabrück. The German Police University in Münster and the Fraunhofer Institute for Secure Information Technology in Darmstadt are also involved. In addition, the research network is supported by several state criminal investigation departments, general public prosecutors' offices and public prosecutors' offices, as well as the Customs Criminal Investigation Office.

Globalization in the early modern era

The Sino-German Center for the Research Promotion in Beijing is supporting the mobility program **Transfer of Technical Knowledge and Scientific Knowledge between Europe and China in the Early Modern Period** over three years from 2020. The funding will go to Chinese Studies Professor Hans Ulrich Vogel at the University of Tübingen and Professor Zhang Baichun from the Institute for the History of Natural Sciences at the Chinese Academy of Sciences in Beijing.
The mobility program is based on two ongoing core projects, one a Sino-German collaboration coordinated at the Max Planck Institute for the History of Science, focusing on the introduction of Renaissance mechanics in late Ming China; the other a German Research Foundation-funded project in Chinese Studies at the University of Tübingen, focusing on the transmission of Western mining and hydrological knowledge to China in the same period. The mobility program is intended to provide scholars as well as early-career researchers working on these or related topics with opportunities for exchange and international dialogue.

Environmental change in Oman in the Bronze Age

A new collaborative project on environmental changes and the way of life of people in central Oman obtained the backing of Germany's Ministry of Education and Research (BMBF) in November 2020 under its "Small Subjects – Strong Together" funding line. The interdisciplinary research project, led by Dr. Conrad Schmidt at the Institute for Ancient Near Eastern Studies (IANES) at the University of Tübingen, will receive funding totaling 2.3 million euros. Five junior researchers from the universities of Tübingen, Mainz, Frankfurt and Göttingen are involved in the project.
The Arabian Peninsula is one of the driest regions in the world. In what is now the Sultanate of Oman, there was a flourishing culture and economy in the early Bronze Age. How people managed to adapt to the barren environment at that time will be investigated in the project entitled **Environmental changes and way of life in the Central Oman in the 3rd and 2nd millennium BCE**. The researchers will collect comprehensive data on the environmental conditions in Oman during this period using various scientific and archaeological methods. The project's multifaceted approach includes soil analyses, the determination of phytoliths, pollen grains, seeds and charcoal to identify flora, and the examination of fossil snail shells to draw conclusions about seasonal rainfall changes and temperatures. The investigations will also show how humans interacted with their environment and how they intervened in the ecosystem at that time.

Rugged, rocky hills near al-Hamra in the Sultanate of Oman. Despite the desert conditions,

the region was home to a flourishing culture and economy in the Bronze Age.

Gottfried Wilhelm Leibniz Prize for Katerina Harvati

Professor Katerina Harvati-Papatheodorou of the Senckenberg Center for Human Evolution and Palaeoenvironment received the German Research Foundation's Gottfried Wilhelm Leibniz Prize for 2021. Harvati, a paleoanthropologist, received the 2.5-million-euro award for her groundbreaking findings on the evolution of humans and their closest relatives. The Gottfried Wilhelm Leibniz Prize is the most important research funding prize in Germany. The prize money can be used by the award winners for their research work as they see fit for up to seven years.

Using a combination of field research and 3D morphometry imaging techniques, Harvati has given us new insights into the processes of human evolution. For instance, she proved that Neanderthals engaged in many complex activities; this led to a revision of long-held beliefs about the extinct human species. In her field research, Harvati focused on the previously little-studied region of southeastern Europe as a migration path and glacial retreat for early humans. With the help of the methods she developed, she used for fossil finds from Greece to prove that they originated from a first settlement wave of modern humans from Africa to Europe 210,000 years ago.

Katerina Harvati-Papatheodorou

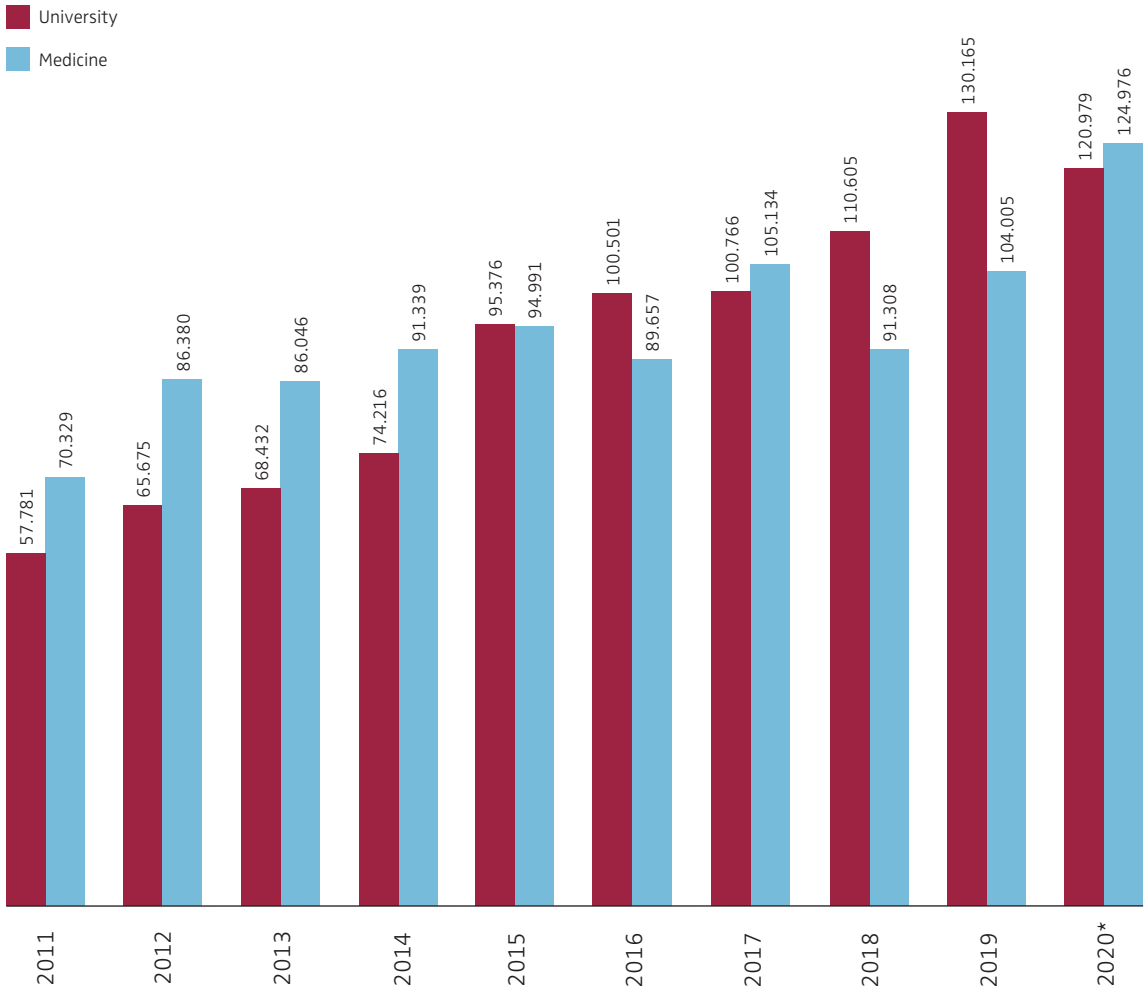
Katerina Harvati-Papatheodorou completed her doctorate in anthropology at City University, New York, and has conducted research at the Max Planck Institute of Evolutionary Anthropology in Leipzig. She has been a professor of Paleoanthropology at the University of Tübingen since 2009. Her many externally funded projects include a Starting Grant, a Consolidator Grant and an Advanced Grant from the European Research Council. She is also co-spokesperson of the DFG-funded center of advanced studies Words, Bones, Genes, Tools Tracking Linguistic, Cultural and Biological Trajectories of the Human Past.

Third-party funding

In the Excellence Strategy program, the University of Tübingen was successful across the board, obtaining three clusters of excellence and continued university of excellence status. Cluster of excellence funds flow via the German Research Foundation (DFG) and are booked as third-party funding. Excellence university funding is disbursed by the Baden-Württemberg Ministry of Science, Research and the Arts and is therefore no longer listed under third-party funding.

Third-party funding trends

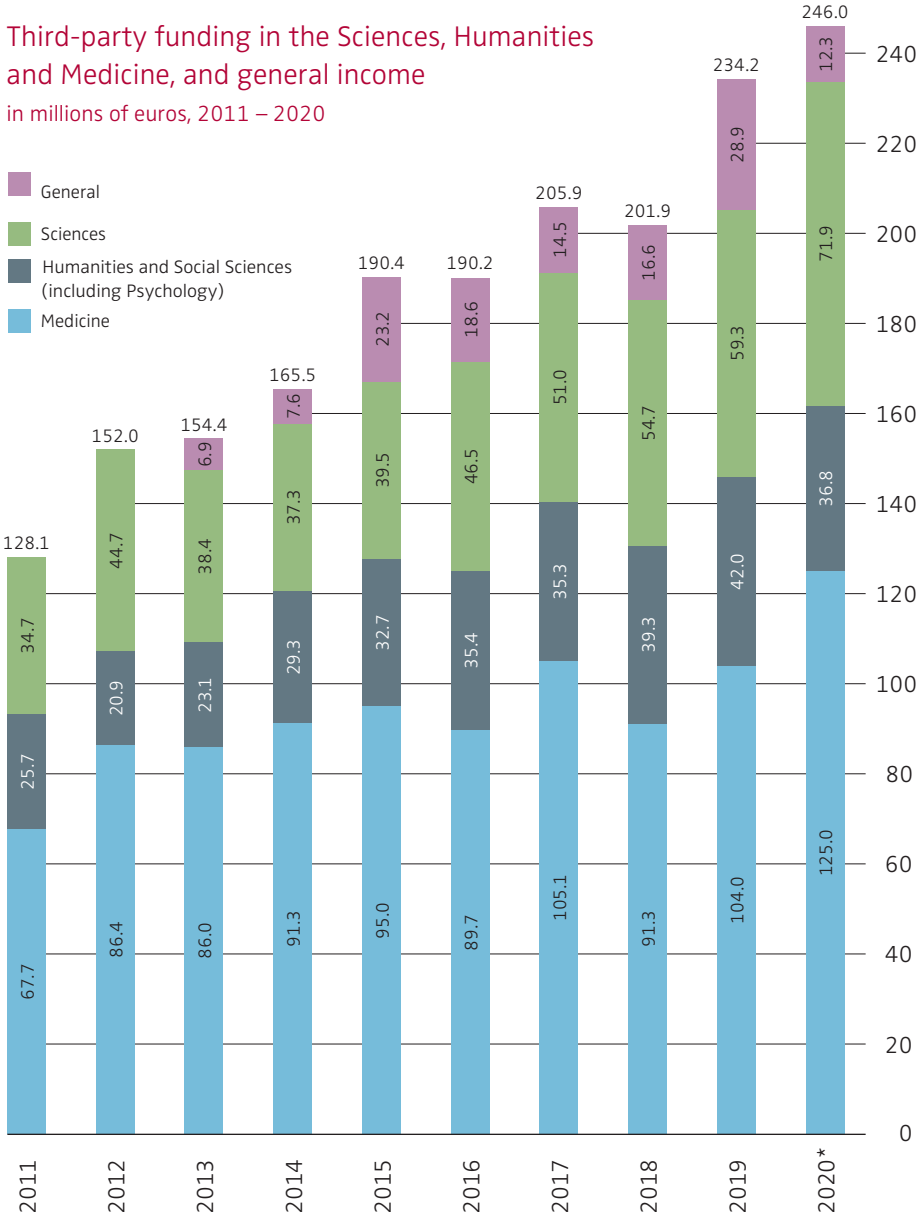
in millions of euros, 2011 – 2020



* preliminary figures

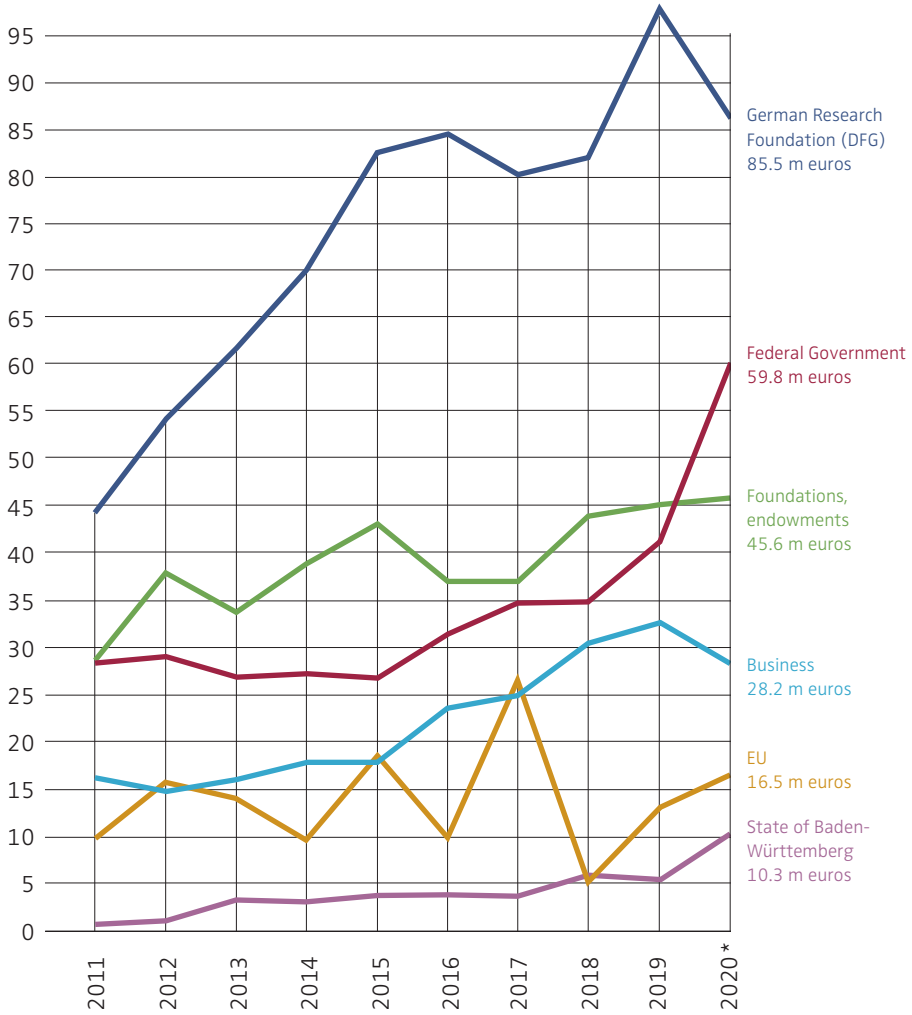
Third-party funding in the Sciences, Humanities and Medicine, and general income

in millions of euros, 2011 – 2020



Sources of third-party funding

in millions of euros, 2011 – 2020



Doctoral programs

DFG-backed 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.

In November 2020, the DFG approved the second funding phase of the **Doing Transitions – Forms of Shaping Transitions in the Life Course** research training group (GRK 2105), which began in 2017. It will be extended until the end of 2025. In it, Frankfurt and Tübingen researchers from the fields of education, psychology and sociology are pursuing their doctorates in the social processes underlying transitions in the life course.

Research training groups

Title	Spokesperson	Duration
Research training group Stuttgart – Tübingen Intraoperative multi-sensor tissue identification in oncology (GRK 2543)	Professor Dr. Oliver Sawodny University of Stuttgart Professor Dr. Arnulf Stenzl University of Tübingen, Faculty of Medicine	1 Jan. 2020 - 31 Dec. 2024
cGMP: From the bedside to the laboratory bench (GRK 2381)	Professor Dr. Robert Feil Interfaculty Institute of Biochemistry	1 July 2019 - 31 Dec. 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 Sept. 2022
Research training group Mannheim – Freiburg – Heidelberg – Koblenz-Landau – Tübingen Statistical Modeling in Psychology (SMiP) (GRK 2277)	Professor Dr. Thorsten Meiser University of Mannheim Professor Dr. Mandy Hütter Professor Dr. Rolf Ulrich University of Tübingen, Faculty of Science	1 Oct 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 Jan. 2017 - 31 Dec. 2025
Research training group Stuttgart – Tübingen Integrated Hydrosystem Modelling (GRK 1829)	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 Oct 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 Faculty of Protestant Theology	1 April 2011 - 31 March 2020

Structured doctoral programs

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.

PhD networks

Title	Spokesperson	Duration
Theory of Balance - Forms and figures of balance in the media, art and literature	Professor Dr. Eckart Goebel German Language and Literature	1 November 2017 - 30 June 2022
The persistence of gender binaries	Professor Dr. Marion Müller Institute of Sociology	1 December - 30 June 2022
Entangled Temporalities in the Global South	Professor Dr. Sebastian Thies Romance Languages and Literatures	1 December 2017 - 30 June 2022
Individual response to physical activity – A transdisciplinary approach	Professor Dr. Ansgar Thiel Institute of Sports Science	1 December 2017 - 28 February 2022
New nanoparticles – From synthesis to application in the life sciences	Professor Dr. Erik Schäffer Center for Plant Molecular Biology	1 December 2017 - 30 April 2021
Integrative Augmented Reality (IAR)	Dr. Siegfried Wahl Research Center for Ophthalmology	1 February 2018 - 30 June 2021

2020 doctorates

Faculty	Doctorates completed 2019-2020	
	female	male
Protestant Theology	1	4
Catholic Theology	1	3
Law	8	6
Medicine	171	131
Humanities	39	26
Economics and Social Sciences	24	15
Science	128	131
Total	**372**	**316**
	688	

As of: 1 March 2021

Habilitations completed in 2020

Faculty	2020 habilitations	
	female	male
Medicine	2	18
Humanities	2	3
Economics and Social Sciences	3	0
Science	1	3
Total	**8**	**24**
	32	

As of: 1 March 2021

Sponsorship

Valuable momentum

Professorships, projects and prizes – we at the University of Tübingen benefit in many ways from the dedication of our sponsors. The Carl Zeiss Foundation and the Dr. K. H. Eberle Foundation are building upon their long-term support with new projects. These and other initiatives provide valuable momentum for research and teaching, and it is this long-term funding in particular which allows successful projects and formats to grow and achieve greater success.

Additional funds for research

Computer scientist Gerard Pons-Moll appointed to Carl Zeiss Foundation professorship

Professor Gerard Pons-Moll was appointed to the endowed professorship of Continuous Learning on Multi-Modal Data Streams at the University of Tübingen's Department of Informatics. The post was established by the Carl Zeiss Foundation in 2019 to commence in 2021. Pons-Moll, an expert in computer vision, computer graphics and machine learning, comes to Tübingen from the Max Planck Institute for Informatics in Saarbrücken. The Carl Zeiss Foundation is providing 1.5 million euros for the professorship for a period of five years as part of its **Perspectives – Excellence of Tomorrow** funding line. After that, the professorship will be financed by the university.

Pons-Moll develops realistic virtual human models and trains machines to recognize people. Today's artificial vision can recognize people in images, yet it cannot match human visual perception. For example, one person can easily see another's emotional state by looking at his or her face and movements; people also make assumptions about each other's preferences based on things such as clothing. Pons-Moll seeks to develop such abilities in "virtual people" which look, move, and can even learn to think like real people.

Pons-Moll studied telecommunications engineering at the Spanish Polytechnic University of Catalonia, then completed a Master's degree in medical image analysis at Northeastern University in Boston, USA, in 2008. He was a visiting researcher at the University of Toronto in 2012 and also conducted research at Microsoft Research Cambridge, then completed his doctorate in computer vision at Leibniz Universität Hannover in 2014. Pons-Moll has been a research associate at the Max Planck Institute for Intelligent Systems in Tübingen and at the Max Planck Institute for Informatics in Saarbrücken, where he led a German Research Foundation Emmy Noether research group, Real Virtual Humans, from 2018.

Gerard Pons-Moll

Endowed professorships

Field	Name	Sponsor
Faculty of Humanities		
Modern Taiwan Studies	Professor Dr. Yuchin Tseng	Education Ministry of the Republic of China (Taiwan)
Chinese Studies: Financial ethics	Professor Dr. Matthias Niedenführ	Karl Schlecht Foundation
General Rhetoric and Science Communication	Professor Dr. Olaf Kramer	Klaus Tschira Foundation
Assistant professorship of Music	Professor Dr. Matthew Gardner	Mainz Academy of Sciences and Humanities
Economics and Social Sciences		
Financial Literacy and Economic Didactics	Professor Dr. Taiga Brahm	Dieter von Holtzbrinck Foundation
Educational Effectiveness/Educational Trajectories	Professor Dr. Richard Göllner	Hector Foundation
Ethics of Globalization	Professor Dr. Claus Dierksmeier	Karl Schlecht Foundation
Medicine		
Transfusion Medicine	Professor Dr. Tamam Bakchoul	DRK-Blutspendedienst and Baden-Württemberg-Hessen gGmbH
Translational Gynecology	N. N.	Karl Storz company
Molecular Mechanisms in Age-related Macular Degeneration (AMD)	Professor Dr. Simon Clark	Helmut Ecker Foundation
Neurodegenerative Diseases	Professor Dr. Thomas Gasser	Hertie Foundation
Computational Sensomotorics	Professor Dr. Martin Giese	Hertie Foundation
Cell Biological Foundations of Neurological Diseases	Professor Dr. Matthias Jucker	Hertie Foundation
Functional Neurogenetics	Professor Dr. Philipp Kahle	Hertie Foundation
Neurology/ Epileptology	Professor Dr. Holger Lerche	Hertie Foundation
Clinical Neurogenetics	Professor Dr. Ludger Schöls	Hertie Foundation
Ubiquitin Signaling in Cancer	Professor Dr. Nikita Popov	Ludwig Hiermaier Foundation
Professor of Experimental Senology	Professor Dr. Markus Hahn	Novartis Foundation for Sustainable Development
Clinical Pharmacology	Professor Dr. Matthias Schwab	Robert Bosch Foundation
Molecular Diabetology	Professor Dr. Cora Weigert	Sanofi-Aventis Deutschland GmbH
Neuroplasticity of the Developing Brain	Professor Dr. Martin Staudt	Schön Kliniken GmbH, Behandlungszentrum Vogtareuth
Occupational and Social Medicine	Professor Dr. Monika Rieger	Südwestmetall Employers' Federation
Preclinical Imaging and Imaging Technology	Professor Dr. Bernd Pichler	Werner Siemens Foundation
Faculty of Science		
Philosophy and History of Science	Professor Dr. Reinhard Kahle	Carl Friedrich von Weizsäcker Endowed Professorship, Udo Keller Foundation Forum Humanum
Visual Big Data Analysis in the Life Sciences	Professor Dr. Michael Krone	Carl Zeiss Foundation
Continual Learning and Multimodal Datastreams	Professor Dr. Gerard Pons-Moll	Carl Zeiss Foundation
Didactics of Informatics (Tübingen School of Education)	N. N.	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. Stefan Schwarzer	Gips-Schüle Foundation
Machine Learning	Professor Dr. Matthias Hein	Robert Bosch GmbH
Didactics of Informatics (Tübingen School of Education)	Professor Dr. Jan-Philipp Burde	Vector Foundation

Hector Foundation funds groundbreaking research in education

The Hector Center for Education Science at the University of Tübingen conducts education research unique in Germany and is largely financed by the Hector Foundation II.

Since 2010, the foundation has been providing academic support for the **Hector Kinderakademien**, academies which offer a support program for very gifted children of elementary school age in Baden-Württemberg, with a focus on math, science, and technology. Findings from research are incorporated into the academies' program, and in turn, the program contributes its own findings about how science education and programs for gifted children can work better in the primary-school years. The program is designed as basic research and uses sophisticated methodology which has yielded important insights, for example, into how teachers can identify giftedness and how effectively certain courses promote children's skills. Hector Foundation II funding for research at the children's academies was significantly increased to around one million euros per year in 2019.

Following the success of Tübingen's education research in the German government's Excellence Initiative in 2012, the Hector Foundation expanded its commitment to the University of Tübingen, founding the **Hector Center for Education Science**. Since 2015, 750,000 euros per year have been available to the institute for research into key areas in education. The institute collaborates with the University of Tübingen's LEAD Graduate School and Research Network.

Within just a few years, a world-class institute was established, which has since gained Germany's first Alexander von Humboldt Professorship for education research. The holder is the psychologist Professor Kou Murayama, who moved from the UK's University of Reading to the University of Tübingen.

In 2019, following a comprehensive evaluation of the institute's work, the Hector Foundation II extended its contract with the University and the state of Baden-Württemberg to continue its sponsorship of the Hector Institute and to increase the amount of funding. Over the next ten years, the Hector Institute will receive some 19 million euros.

The Hector Foundation II was established in Weinheim in 2008 by Dr. h. c. Hans-Werner Hector and Josephine Hector. It supports research projects, universities, pupils, students and graduates gifted in mathematics and science, as well as social institutions.

New funding format at the Eberle Foundation

The Dr. K. H. Eberle Foundation awarded its research prize for innovative projects at the University of Tübingen for the fourth time in 2020. The award goes to researchers whose work has high innovative potential and which addresses pressing questions about the future.

The foundation, based in Lörrach, Baden-Württemberg, was established by entrepreneur Dr. Karl Helmut Eberle; it promotes research and innovation at the University of Tübingen and other universities. Eberle, who died in 2015 at the age of 88, was a Tübingen alumnus.

The **Dr. K. H. Eberle Foundation's 2020 Research Award** for Innovative Projects at the University of Tübingen, endowed with 250,000 euros, went to the interdisciplinary Microscopy of Metabolism project. Dr. Sabrina Hoffmann and Dr. André F. Martins from the Werner Siemens Imaging Center, working with physicists Dr. Lőrinc Sárkány and Professor József Fortágh from the Center for Quantum Science, are planning to develop a new microscopy method. They seek to track even the smallest changes in tissue metabolism locally and in real time, thus developing a new diagnostic method for preclinical imaging.

In medical diagnostics, metabolic changes are made visible by methods such as positron emission tomography (PET) and magnetic resonance imaging (MRI). However, these methods have limitations in terms of sensitivity and resolution.

The scientists are applying quantum and sensor technologies to medical diagnostics. With the help of fiber-optic laser techniques and modern spectroscopic methods, they plan to develop a microscopy method that requires only minimal intervention in the body and will be combined with PET/MRI imaging methods to enable continuous diagnosis in real time.

Three of the four winners of the Eberle Foundation Research Prize in 2020 (from left): André F. Martins, József Fortágh and Sabrina Hoffmann

The Eberle Foundation's new **Digital Teaching and Learning Materials** funding format, announced in 2020, finances ideas for online projects ranging from individual modules to multimedia-based courses. Up to 10,000 euros can be made available per project. The ideas must be useable in courses and they must be available internationally as open education resources. The Tübingen University Library provides a service making such resources widely accessible online.

The awards went to five project ideas:

"Computational Thinking as the Cognitive Basis of Programming" – Hector Research Institute of Education Sciences project to develop a teaching module for prospective teachers in the field of computer science;

"Virtual Museum" – training at the Institute of Classical Archaeology for the design and practical implementation of online exhibitions using scanned museum objects;

"Geodig online – practical learning elements in geoinformatics courses" – expansion of geoinformatics teaching content by the Institute of Geography on topics such as geo-visualization, use of programming languages and cloud computing;

"Natural and Formal Languages" – introduction to learning formal languages and their use for the functional description of natural languages, developed by the Institute of German Language and the Collaborative Research Center 833 on the Construction of Meaning;

"Embryology Learning Games" – expansion of an interactive online program about the Paleontological Collection for students and the public to understand phylogenetic research.

Carl Zeiss Foundation in focus

The Carl Zeiss Foundation in 2020 began funding a new interdisciplinary project to investigate the age-related deterioration of vision, **scharfes Sehen im Alter**. The foundation has pledged 2.8 million euros to tackle this common problem.

As people get older, many lose the ability to see close objects clearly as the lenses in their eyes stiffens. In 2015, an estimated nearly two billion people worldwide were affected by age-related long-sightedness, known as presbyopia. The new project will develop wireless contacts or intraocular lenses to control the refractive power of an artificial lens via electrodes attached to the ciliary muscle – similar to the natural function of the eye. This could restore sharp sight at close range.

A new interdisciplinary junior research group headed by Dr. Torsten Strasser has been set up for the project at the Research Center for Ophthalmology. There is cooperation with other departments of the Tübingen University Hospitals as well as with Ulm University's Institute for Microelectronics and the Institute for Microsystems Technology at Furtwangen University.

In 2020, the Carl Zeiss Foundation also became the main sponsor of the German Artificial Intelligence Competition, in which students are challenged to implement their own ideas for the world of tomorrow using artificial intelligence tools. The competition was launched in 2018 by the Competence Center for Machine Learning in Tübingen.

In the second round of the competition, from late March to November 2020, more than 2,000 students and teachers and interested parties took part. A free online course taught the basics of artificial intelligence. A weekly programming assignment provided an opportunity for students to hone their own programming skills. More than 150 students submitted their project ideas to the competition. At the virtual closing event on November 14, 2020, prizes were awarded for the best AI projects: a "smart cane" for the blind, an app to search for missing cats, and an app to detect leaf diseases on grapevines.

Physicist Philip Häusser moderated the awards ceremony of the German government's artificial intelligence competition.

Bristol Myers Squibb Foundation for Immuno-Oncology

More and more patients with melanomas can be treated successfully using immunotherapy. In a new project, researchers at the Tübingen University Hospitals are developing a new concept for monitoring such treatment. Their goal is to closely monitor the long-term success of the treatment with little effort and low radiation exposure for patients. The project, led by Dr. Andrea Forschner, head of the melanoma outpatient clinic at the Department of Dermatology, and Professor Christina Pfannenberg from the PET/CT Center at the Tübingen University Hospitals, is supported by the Bristol Myers Squibb Foundation for Immuno-Oncology with around 130,000 euros over a period of two years.

Immunotherapy against cancer uses the body's own defense system to fight cancer cells. More than half of melanoma patients respond to a special combination therapy. In one in five patients, the metastases disappear completely. Functional imaging methods such as PET/CT are used for clinical diagnosis and therapy control, but they are expensive. The project therefore aims to develop diagnostics for the patient follow-up phase by means of a simple blood test which measures the tumor DNA circulating freely. Rising values could indicate a recurrence of the tumor. This diagnostic method should give patients more certainty that any recurrence will be detected; this helps improve their quality of life.

Long-term ties

The Institute for Classical Archaeology at the University of Tübingen awarded the **Ernst von Sieglin Research Prize 2020** to **Dr. Martin Kovacs** for his postdoctoral thesis on Alexander the Great. Kovacs made the first comprehensive study of all the portraits of Alexander the Great, providing a broad basis for future research, the jury said. The prize, awarded for the second time, is endowed with 5,000 euros. The award was inaugurated in 2018 by Gunter and Kerstin Sieglin, grandchildren of the Stuttgart entrepreneur and patron of the arts, Dr. Ernst von Sieglin (1848-1927). Von Sieglin purchased many of the archaeological artifacts now in the Tübingen University Museum and provided generous funding for archaeological research.

Also awarded for the second time in 2020 was the **Barbara Scholkmann Award for Historical Archaeology**. It was shared by **Dr. Fabian Brenker** and **Dr. Roland Filzwieser** for their doctoral theses. The prize recognizes outstanding work by early-career researchers who break new ground in historical archaeology. Brenker examined images of tournaments and lance games from the Middle Ages and the early modern period, enabling him to draw conclusions about how the mostly noble participants in such equestrian games perceived themselves and others. Filzwieser traced processes of change in the late medieval and early modern landscape of Scharfeneck Castle in eastern Austria. The prize is awarded every two years; in 2020 it was endowed with a total of 3,000 euros. The donor is Barbara Scholkmann, who was Professor of Medieval Archaeology at the University of Tübingen until 2007.

The **Tübingen Early Prehistory and Quaternary Ecology Prize** was presented to **Dr. Flavia Venditti** of Sapienza University in Rome in early February 2020. Venditti received the distinction for her doctoral thesis, in which she demonstrated that "recycling" took place in the Upper Paleolithic strata of the Qesem Cave in Israel as far back as 420,000 years ago. Stone tools that were no longer usable in their



from left:
Martin Kovacs
Fabian Brenker
Roland Filzwieser
Flavia Venditti

original function were not discarded, but instead served as raw material for the production of small, very sharp tools. Venditti proved that the re-use of the stones was not a stop-gap solution due to a lack of raw material, but that the small cuttings were a common and significant component of the Paleolithic toolbox at some sites. The Early Prehistory and Quaternary Ecology Prize is endowed with 5,000 euros by the mineral water brand EiszeitQuell and was awarded for the 22nd time in 2020.

China's importance in science and technology is growing. The **China Center Tübingen** (CCT), funded by the **Karl Schlecht Foundation**, is working to improve cultural relations with China and to promote mutual understanding. The CCT's "China competence" section organizes dialogue with China as well as on China-related topics within the University of Tübingen; its Economic Culture section promotes an examination of Chinese economic culture in order to strengthen mutual cultural appreciation; via its China in School Education section, the CCT supports the establishment of Chinese as a school subject and the development and expansion of basic teacher training for Chinese. The Karl Schlecht Foundation has pledged further funding for the CCT to the end of 2023. Under the leadership of Professor Helwig Schmidt-Glintzer, the director of the CCT and senior professor, the foundation and the University of Tübingen intend to further develop the CCT into a platform for China expertise for the entire university.

The **Karl and Anna Buck Foundation** has been associated with the University of Tübingen for many years. It supports research in the Department of Chemistry by funding positions and research equipment. At the Institute of Organic Chemistry, the foundation has been supporting a project in biomolecular chemistry for drug optimization in antibiotics since 2019. The Karl and Anna Buck Foundation, based in Stuttgart, has been promoting scientific research since 2000. It was established by Karl Buck, founder of the Buck Chemie chemicals company.

A total of 129 students from all faculties received **Deutschlandstipendium** scholarships for the 2020/21 academic year. The Deutschlandstipendium program was launched in 2011 to support talented and socially committed students. They receive a monthly stipend of 300 euros. Half of the funding is provided by private sponsors and half by the German government. Sponsors include the Hugo Rupf Foundation, the Vector Foundation, the Friends of the University of Tübingen association, and Santander Universitäten Deutschland. Many University of Tübingen alumni and businesses in the region also contribute to the Deutschlandstipendium program.

Partnerships

Commonsense cooperation

Valuable partnerships may be near or far. The University is working with local partners such as the Max Planck Institutes in Tübingen to further expand the field of artificial intelligence as part of the region's Cyber Valley alliance. Internationally, we stand shoulder-to-shoulder with key institutions to increase the exchange of knowledge and ideas. The Guild of European universities and the EU-funded university alliance CIVIS are two of the important networks in which the University of Tübingen participates.

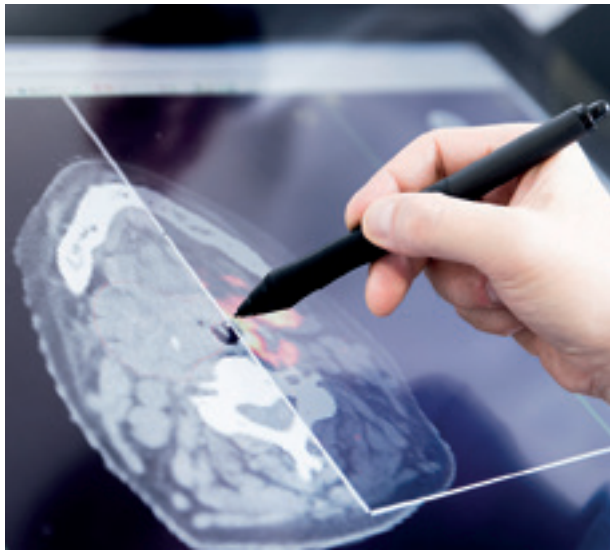
Cyber Valley partners launch initiative in AI applications for medicine

In September 2020 the University of Tübingen and the Max Planck Institutes for Biological Cybernetics and for Intelligent Systems launched a new initiative on the use of artificial intelligence in medicine and the life sciences. The Coronavirus pandemic highlighted the need to respond to global health threats faster and more efficiently than ever before. The partners are part of Cyber Valley Tübingen-Stuttgart, founded in 2016, one of the largest research alliances in the field of AI in Europe. The new initiative offers the opportunity to further expand Cyber Valley as a major location for research and applications of AI in medicine, making use of vast medical data sets.

The University and its Faculty of Medicine established four additional professorships in the field. The new professors are focusing on the evaluation of medical data and will seek new AI-supported tools for diagnosis, treatment options, and the development of new drugs.

As part of the new initiative, closer cooperation is planned between the universities of Tübingen and Stuttgart in data integration and simulation technology. Other important partners include the German Cancer Research Center, the European Molecular Biology Laboratory (EMBL), the University of Heidelberg and all of Baden-Württemberg's medical teaching universities, along with companies in Baden-Württemberg's medical technology industry. This research holds great potential for the emergence of start-ups in the fields of diagnostics, medical technology, pharmaceuticals and health-related services.

The non-profit Hertie Foundation seeks to promote the initiative with a new project on the use of AI in the neurosciences. For 20 years, the foundation has been funding the Hertie Institute for Clinical Brain Research in Tübingen, which is now considered a model for the transfer of findings from basic research to clinical application.



Key research partners in Germany

HEP – Senckenberg Center for Human Evolution and Palaeoenvironment (University of Tübingen associated institute)

Institute for Applied Economic Research (University of Tübingen associated institute)

NMI – Natural and Medical Sciences Institute (Reutlingen, University of Tübingen associated institute)

Global Ethics Institute (University of Tübingen associated institute)

Bernstein Network for Computational Neuroscience (Freiburg)

DKTK – German Consortium for Translational Cancer Research

Dr. Margarete Fischer-Bosch Institute for Clinical Pharmacology (Stuttgart)

DZD – German Center for Diabetes Research

DZIF – German Center for Infection Research

DZNE – German Center for Neurodegenerative Diseases

Forschungsinstitut für Arbeit, Technik und Kultur e.V. –
group researching 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, Max Planck Society (Tübingen)

Heidelberg Academy of Sciences and Humanities

Helmholtz Centre for Environmental Research (Leipzig-Halle)

Institut für donauschwäbische Geschichte und Landeskunde (Tübingen)

Institut für Rehabilitationsforschung, Qualitätsentwicklung und Strukturanalyse
in der Behindertenhilfe (REQUEST) e.V. (Tübingen)

IWM Knowledge Media Research Center (Leibniz Association)

MFO 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

University of Applied Forest Sciences Rottenburg

University of Hohenheim – Center for Nutritional Medicine (ZEM) Tübingen – Hohenheim

University of Stuttgart – inter-university center for medical technology (IZST)

Werner Siemens Foundation

International ties – within the EU and beyond

New member joins 'The Guild' of universities

The University of Tübingen was one of the founding members of The Guild of European Research-Intensive Universities in Brussels in 2016. The primary goal of this network is to bring the expertise of its members to bear in negotiations on the European Union's research policy. The Guild seeks to counteract the political and social divide in Europe through dialogue among institutions of higher education.

In 2020, The Guild welcomed a new member, **Babeş-Bolyai University Cluj**, the University of Tübingen's Romanian partner institution. With approximately 45,000 students in 21 faculties, UBB is Romania's largest university. In the network, UBB brings in the perspective of southeast Europe. It has roots going back to 1581 and is named after the Romanian biologist Victor Babeş and the Hungarian mathematician János Bolyai. To this day, UBB is multicultural; teaching is trilingual in Romanian, Hungarian and German. With UBB, twenty universities from 14 European countries are represented in The Guild.

The main building of Babeş-Bolyai University in Romania.

The network also supports higher education in Africa with an appeal for partnerships and financial support. Working with the **African Research Universities Alliance** of 16 leading African universities, The Guild is calling on African Union and European Union leaders to increase investment in African research universities. This initiative seeks to address the wide-ranging demographic, social, and environmental challenges facing both continents. The Guild and ARUA call for at least one billion euros from the EU budget to help African universities develop modern research infrastructure and the resources to train, recruit and retain top researchers. African governments are called upon to increase support for research, higher education and innovation. African Union members have pledged to invest at least one percent of GDP in research and development.

Two million euros funding for CIVIS alliance

Tübingen is also a member of the European Civic University alliance CIVIS, which is funded as part of the European Commission's "Science with and for Society" (SWAFS) program. The alliance will receive two million euros over a period of three years for the "RIS4CIVIS" project led by the University of Aix-Marseille. The project is intended to improve the structures for joint research activities between CIVIS partners. CIVIS brings together nine European universities with a total of more than 384,000 students and 30,000 researchers.

In the RIS4CIVIS project, the participating universities aim to advance research and innovation in the CIVIS Alliance and develop a long-term joint strategy to address global challenges, for example, by sharing research infrastructure and promoting academic collaboration, establishing open science formats, and stepping up cooperation with business and civil society.

CIVIS seeks to create a European inter-university campus in which all university members can move and collaborate as freely as within their own institution.

Five thematic priorities are at the heart of the alliance: climate, environment and energy; health; society, culture and cultural heritage; cities, regions and mobility; digital and technological change. Along with the universities of Aix-Marseille and Tübingen, other partners in the CIVIS alliance include the National and Kapodistrian University of Athens, the University of Bucharest, the Free University of Brussels, the Autonomous University of Madrid, the Sapienza University of Rome and the University of Stockholm. The University of Glasgow has been an associate member since December 2020.

Cooperation with University of Nottingham expanded

The University has stepped up its long-standing research collaboration and student exchange with the University of Nottingham in the United Kingdom. Vice-Chancellor Shearer West of Nottingham and Tübingen President Bernd Engler signed a memorandum of understanding in Nottingham on January 28, 2020, following the visit of a delegation from Nottingham to the University of Tübingen in July 2019. The meeting also brought together a number of research groups from both universities in workshops. Cooperation takes on particular importance in the wake of the UK's secession from the European Union in January 2020.

Close links already exist between Nottingham's Beacons of Excellence and the University of Tübingen's Clusters of Excellence, as well as in core and profile areas of research at both universities, particularly in plant molecular biology, physics, medical imaging, education and media, and cultural studies. A student exchange between the two universities has been running for several years via the EU's Erasmus+ program. Double degrees are offered by the two institutions in several courses, such as economics, business administration and management, and geography.

Vice-Chancellor Shearer West of the University of Nottingham and Bernd Engler, President of the University of Tübingen, at the signing of the memorandum in January 2020

Brazil center celebrates 20th anniversary

In October 2020, the Baden-Württemberg Brasilien-Zentrum at the University of Tübingen marked its twentieth year. The center coordinates academic cooperation of all Baden-Württemberg universities with Brazil on behalf of the state Ministry of Science, Research and the Arts. It promotes guest professorships and supports academics on research in Brazil. The center was founded in 2000 by a state agreement between the Brazilian state of Rio Grande do Sul and Baden-Württemberg.

The center is headed today by Professor Stefan Laufer of the Pharmaceutical Institute and the University Vice-President of Research Professor Peter Grathwohl. The center's history began back in 1996 with the construction of the Pró-Mata Research Station in Rio Grande do Sul in the Atlantic Araucaria Forest. It is operated in collaboration between the Pontifical Catholic University of Rio Grande do Sul (PUCRS) and the University of Tübingen. The station is used to study the coastal rainforest. A focus of collaboration developed from 2011 onward in the area of drug research and discovery between the University of Tübingen and the Federal University of Rio de Janeiro (UFRJ). There are also collaborations in neurosurgery and geology. The Brasilienzentrum coordinates the interdisciplinary German-Brazilian Symposium on Sustainable Development, which takes place every two years, alternating between Brazil and Baden-Württemberg.

Zoological excursions to Brazil began in 1989. A Geoecology field trip was added in 2002. Tübingen students conduct their research in the Pró-Mata, Rio Grande do Sul nature reserve.

EXIST program supports innovative new businesses

The German government founded the EXIST program to improve the start-up climate at universities and research institutions. The aim is to increase the number of successful technology-oriented and knowledge-based new businesses. The program supports university graduates, researchers and students in the preparation of start-ups via several program lines. In 2020, amid the Coronavirus pandemic, a research group from Tübingen University and University Hospitals received total funding of nearly 26 million euros in the EXIST Research Transfer line for a project on vaccine development. In this line, the German Economics Ministry funds both the work needed to demonstrate the technical feasibility of research-based start-up ideas and necessary preparations for the company launch. Funding of 1.7 million euros from the EXIST Potentials program line went to the University of Tübingen start-up center.

Research transfer project to develop anti-SARS-CoV-2 vaccine

The "Vaccination Power" project has been funded via EXIST since 2018. The University's Department of Immunology and the Tübingen University Hospitals cooperated to establish the company Prime Vector Technologies, which prioritized its efforts to develop a vaccine against SARS-CoV-2. As part of this, EXIST research transfer funding was increased to nearly 26 million euros over the course of 2020.

The researchers in the project, led by Dr. Ralf Amann from the Department of Immunology at the Interfaculty Institute of Cell Biology, initially focused on the development of vaccines for treating cancer. To do this, they relied on technology in which vaccine vectors can be flexibly adapted to individual requirements. The vaccine vectors are modified viruses that are harmless to humans and can transport genetic material specifically into the recipient cell. The genetic information can be read in the body cells of the vaccinated person and activate the immune system as antigens. In the Coronavirus pandemic, this technology was further developed for use against SARS-CoV-2. The vaccine vector was designed to be effective against several antigens of the virus simultaneously. Preclinical trials indicate a strong and long-lasting immune response. Furthermore, the vaccine is likely to remain effective in the presence of virus mutations.

The project team will collaborate with the French biotechnology company ABL Europe for the further development and production of this second-generation vaccine as part of a long-term strategy against SARS-CoV-2. ABL Europe will produce the clinical trial material to study the vaccine in humans. Phase I/II clinical trials have begun in collaboration with the Institute of Tropical Medicine, led by Professor Peter Kremsner.

Boost for a culture of discovery and entrepreneurship

The University of Tübingen is receiving around 1.7 million euros from the EXIST Potentials program, with which the German Economics Ministry supports start-ups from within the university as well as the transfer of knowledge into applications. The aim is to develop and promote the potential of students, researchers, and academics for an invention and start-up culture geared to the current needs of business and society. Across Germany, funding from the EXIST Potentials line will go to 142 universities. In Tübingen, the funding is being used to establish a Startup Center, which will serve as a central point of contact for the topics of innovation, entrepreneurship and startups. The funding will enable additional workshops and seminars to be held in the startup advisory service, and more resources to be allocated to establishing a mentor network. Funding will also be provided for the innovation lab, where university members can use the 3D printing facility.


Stephanie Donna...
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Teaching and Organization

The University goes online

In the early days of the Coronavirus pandemic, the University was compelled to completely reorganize its 2020 summer semester. Almost all in-class teaching had to be canceled to avoid gatherings and the attendant danger of a virus outbreak. Within a couple of weeks, most courses had to be converted to a format enabling them to be held via the internet. It was a major challenge for teaching staff and students alike, with many technical hurdles to overcome. However, by the time winter semester started in November 2020, online teaching had become routine.

Two remarkable semesters

Germany's Conference of the Ministers of Education and Cultural Affairs decided in April 2020 that the higher education summer semester should go ahead despite the huge restrictions caused by the Coronavirus pandemic. The aim was to reconcile teaching and research with a high level of protection against infection. Within a very short time, lecturers from all areas of the University had to convert thousands of courses to digital formats.

They were supported by the University's IT Center, the University Library, the central administration, and the Center for Media Competence. The Center for Teaching and Learning and the Hector Research Institute of Education Sciences provided instructions and helpful tips for successful teaching in online formats. A toolbox for the development of digital courses was compiled and continuously expanded by the Digital Teaching Task Force headed by the Vice-President of Student Affairs and Studies, Professor Karin Amos.

University of Tübingen medical students volunteered to help doctors and nurses at the University Hospitals during the pandemic. Their tasks included controlling access to hospital buildings to prevent the spread of infection.

Livestreaming and videoconferencing

The sudden and enormous demand for online services made for a bumpy start to the summer semester for many students. One big challenge was to reduce the disadvantages some students experienced. The lecturers made every effort to provide high-quality teaching and to respond to the students' individual needs. Teaching via livestream alternated with recorded lectures which students could access at any time.

The Baden-Württemberg Ministry of Science, Research and the Arts provided additional funding of 40 million euros for the digital upgrading of higher education institutions. The University of Tübingen received some 1.9 million euros.

Far-reaching changes

The students faced the most serious changes as a result of the Coronavirus restrictions. Many heeded the call not to come to Tübingen for the lecture periods. Examinations were postponed or taken online. Many students were not able to complete their studies as planned, causing delays in their long-term plans and career entry. Stays abroad and internships had to be canceled. Some students found themselves in a precarious financial situation because opportunities to earn money were lost during the pandemic and government aid was lacking.

Many students gave extraordinary service during the pandemic. In mid-March 2020, for example, thousands of them responded to the appeal by Theresia Bauer, Baden-Württemberg's Minister of Science, to provide assistance in the health sector. About 260 students, most of them medical students, assisted at the Tübingen University Hospitals with the entry control, support for nursing staff in the Covid-19 intensive care unit, and by carrying out studies of pandemic-related data.

Enrollments rise

The University of Tübingen recorded an increase in student numbers amid the Coronavirus pandemic in winter semester 2020/21. The percentage of women among students overall remained nearly constant at 58.6 to 58.8 percent in the 2020 and 2020/21 semesters.

The proportion of international students fell by around one percent year-on-year. Restrictions on exchange programs played a significant role in this, with only 170 exchange students from abroad staying in Tübingen in the 2020/21 winter semester. This is about one-third of the usual number. Exchanges with the USA, South America and Africa were completely suspended. For students from these regions, the University's International Office launched a free online program TÜ-VIPP, which offers language courses, a buddy program, and courses on intercultural exchange and sustainability.

Student numbers at a glance

Enrollments

Winter semester 2020/21	Total		Female	International students	
All	27,436	16,133	58.8 %	3,622	13.2 %
New enrollments	5,332	3,244	60.8 %		

By faculty or institution

Faculty	Winter semester 2020/21
Protestant Theology	455
Catholic Theology	174
Law	2,133
Medicine	4,300
Humanities	7,432
Economics and Social Sciences	4,520
Science	8,213
Center of Islamic Theology	179
Leibniz Kolleg	30

Innovations in degree programs

A new combination of economics, psychology and machine learning

The new Master's program Quantitative Data Science Methods - Psychometrics, Econometrics and Machine Learning (QDS) was launched in the 2020/21 winter semester under the auspices of the Methods Center of the Faculty of Economics and Social Sciences. An international, interdisciplinary Master's program, it combines statistical methods from psychology, economics, and machine learning.

The four-semester, English-language program is coordinated by Dr. Pascal Kilian from the Methods Center. Graduates in this field will be able to move confidently between methodological approaches. The program has already attracted international attention.

22 students passed the pre-selection and selection interviews. They come from various disciplines. Three quarters of them come from outside Germany. The gender ratio was balanced in both applications and admissions. During the first semester of the program, the students emphasized that the teaching reflected the productive cooperation between the institutions - the Methods Center, the Departments of Psychology and Economics, and the Cluster of Excellence Machine Learning.

Services for prospective students

Stepping up health care workers

In June 2020, the state government decided to increase the numbers of students training in several medical fields.

At the Medical Faculty of the University of Tübingen, 15 additional students were admitted to Medicine in 2020. Starting in 2021, 15 additional study places will be available each semester, making a total of 372 first-year medical students beginning their studies in Tübingen each year.

Following successful pilot phases, two further health care degree programs – Nursing Science and Midwifery Science program – became regular degree programs as of winter semester 2020/21. The number of places for first-year students in Midwifery Science was doubled from 30 to 60.

New-look degree program database

The degree program database on the University website serves as a central source of information for prospective students at the University of Tübingen. It had almost 790,000 visitors in 2019. In order to make the information on the range of study programs more accessible, the database has been fundamentally revised in terms of structure, technology, content and design. Thematic headings guide the visitor to information on how to apply and what the degree programs entail, as well as pointing prospective students to useful tools to help in the decision-making process.

Information concerning international study programs is available in the two languages of instruction, German and English.

First online Student Information Day

Due to the Coronavirus restrictions, the annual Student Information Day at the University of Tübingen, where high school students obtain information about the range of courses on offer, also had to break new ground. The first digital Student Information Day was held in November 2020. Its dedicated websites and online services were visited by more than 15,000 people. This is more than twice the number of people who attended the on-campus event in Tübingen in previous years.

More than 100 video contributions were produced for the Student Information Day 2020 and the social media campaign in the run-up to the event. At the University's Center for Media Competence alone, 22 employees were involved in the production of media content. CampusTV offered a virtual tour of Tübingen as part of a seven-hour live broadcast on Student Information Day. Lectures and advice sessions on 70 subjects took place in the form of more than 200 web conferences. In subjects that were in high demand, the number of interested parties at times exceeded the technical capacity limit of up to 500 participants. On Student Information Day, 1.4 million hits were recorded on the websites. The event is held simultaneously at all Baden-Württemberg universities in mid-November.

The winning team (left to right): Sofia Kohler, Ursula Offenberger, Maike Gerstenkorn, Kevin Körner, Daniel Lieb, Annika Nagat, Leah Stange, Anna Kamenik and Karina Wasitschek

Cornelia Füllkrug-Weitzel, president of Brot für die Welt, focused on the fallout from the pandemic in the 2020 Sustainability Lecture.

Awards

Teaching Prize for Social Sciences comic

The University of Tübingen's Teaching Prize for 2020 went to Assistant Professor Ursula Offenberger, who conducts research at the Methods Center of the Faculty of Economics and Social Sciences, and the participants of the seminar "Chicago Pragmatism in Theory and Practice: Origins of Empirical Social Research in the USA" at the Institute of Education. The team developed a webcomic that tells the history of social science and which can be used in seminars. The Teaching Prize has been awarded annually since 2007 for innovative teaching achievements and special commitment to students. The prize is endowed with 2,500 euros.

https://digital-humanities.uni-tuebingen.de/webcomics/pragmatism-reloaded/

Sustainability Prize for six graduates

The University of Tübingen presented the tenth Sustainability Awards in November 2020. For the first time, however, the awards were presented at a digital event. Six graduates were honored for their outstanding work on sustainable development in their Bachelor's and Master's theses. Hannah-Marie Beck (Economics), Jessica Lawson (Cultural Anthropology) and Julika Merckle (Biology) received Sustainability Awards for their Bachelor's theses. Miriam Gerstberger (Biology), Rebecca Peters (Geoecology) and Jasmin Sessler (Media Science) received the distinction for their Master's theses. Around 140 guests followed the event online.

At the award ceremony, Dr. Cornelia Füllkrug-Weitzel, President of the religious charities Brot für die Welt and Diakonie Katastrophenhilfe, delivered the Sustainability Lecture on the topic of "Sustainable development under pressure: How do we shape globalization in the pandemic?" She spoke about the global impact of the Coronavirus pandemic, particularly with regard to achieving the United Nations Sustainable Development Goals. These were adopted in 2015 and show the path towards sustainable development in a global perspective.

Academic connections

European alliance of universities develops joint programs

Founded in 2019, CIVIS – A European Civic University group is an association of nine universities which began developing joint study programs in 2020. Tübingen and the other participating institutions are working together to promote student exchange and improve the mobility of their students. CIVIS is to receive five million euros from the European Commission over a period of three years.

Joint study programs are to be created via four thematic platforms, called CIVIS Hubs. The first of these was "Climate, Environment, Energy" coordinated by Stockholm University, through which the first joint programs were initiated. Three further platforms on the topics of "Society, Culture, Heritage" coordinated by the University of Tübingen and the National and Kapodistrian University of Athens, "Health" and "Cities, Spaces, Transport" are to follow.

In line with the "Health" platform, the Institute of Clinical Anatomy and Cell Analysis in the Faculty of Medicine at the University of Tübingen extended Sectio chirurgica, to medical students at the CIVIS partner universities for the winter semester 2020/21. Sectio chirurgica is a digital interactive teaching event in which surgeons demonstrate typical procedures on anatomical specimens. Experts from anatomy, radiology and physiotherapy comment on the operations. For the CIVIS edition of Sectio chirurgica, seven surgeries were broadcast live and bilingually in German and English to the auditoriums of the partner universities from November to December 2020.

In addition to Tübingen, members of the CIVIS Alliance are the University of Aix-Marseille, the National and Kapodistrian University of Athens, the University of Bucharest, the Free University of Brussels, the Autonomous University of Madrid, Sapienza University in Rome, and the Universities of Stockholm and Glasgow.

Outstanding sponsors support student exchanges

The Baden-Württemberg Foundation has been funding exchange programs between Baden-Württemberg universities and their non-European partner institutions since 2001. The scholarships are open both to students from partner institutions abroad who come to Tübingen, and to Tübingen students seeking to study outside Germany. Tübingen students on exchange with countries in North America, Asia, Latin America, Australia and New Zealand are selected primarily on their performance.

In 2020, only 14 Tübingen students received Baden-Württemberg Foundation scholarships to go abroad. Despite the pandemic restrictions, 41 students from selected partner institutions were funded during their stay at the University of Tübingen.

A special Regional Development Policy Component program launched in 2017 promotes exchanges with institutions from the world's poorest countries. In 2020, 16 scholarships were awarded chiefly to doctoral students from countries such as Rwanda, Togo, Ivory Coast, Benin, Kenya, Senegal, Ghana, Cameroon and India.

DAAD backs worldwide exchanges

The German Academic Exchange Service (DAAD) is the main funder of international exchanges at the University of Tübingen, providing 4.901 million euros in 2019. From 2018 to 2019, the number of international students, doctoral candidates, and visiting scholars who received scholarships for study or research stays in Tübingen remained nearly constant at around 200. The number of Tübingen students, doctoral candidates, and researchers going abroad decreased slightly to 138. Viewed over several years, there was a continuous slight increase in stays abroad prior to the pandemic. Around 1.906 million euros were available in total for personal funding in 2019. The university received around 2.995 million euros in 2019 for collaborative projects with international partners, including the Strategic Partnerships, Erasmus+, PROMOS, ISAP and Integra programs.

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 381 European institutions. Faculties at the University maintain agreements with institutions across Europe and farther afield. The University of Tübingen has joined forces with eight other European universities in the CIVIS – A European Civic University alliance.

Due to restrictions on travel and gatherings in 2020, contacts with many partners worldwide were restricted to online meetings, which were actively used at all levels. 379 students spent time abroad – the majority in Europe as part of the Erasmus program.

University of Tübingen branches

European Center for Chinese Studies,
Peking University - **BEIJING**
Tübingen Center for Japanese Studies,
Dôshisha 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**

Latin America

Argentina

Pontificia Universidad Católica Argentina - **BUENOS AIRES**
Universidad Nacional de Cordoba - **CORDOBA**

Brazil

Univates em Lajeado - **LAJEADO**
Universidade Federal Fluminense - **NITEROI**
Universidade Federal do Rio Grande do Sul - **PORTO ALEGRE**
P.U.C. do Rio Grande do Sul - **PORTO ALEGRE**
Universidade Federal de Pernambuco - **RECIFE**
USP Campus Universitario Ribeirão Preto - **RIBEIRÃO PRETO**
Universidade de Santa Cruz do Sul - **SANTA CRUZ**
Universidade Federal de Santa Maria - **SANTA MARIA**
Universidade de São Paulo - **SÃO PAULO**

Chile

Pontifícia Universidad Católica de Chile - **SANTIAGO**
Universidad de Chile - **SANTIAGO**

Ecuador

Universidad San Francisco de Quito - **QUITO**

Colombia

Universidad de los Andes - **BOGOTÁ**
Universidad Icesi - **CALI**

Mexico

Universidad Iberoamericana - **CIUDAD DE MEXICO**
El Colegio de México - **CIUDAD DE MEXICO**
Universidad Nacional Autónoma de México - **CIUDAD DE MÉXICO**
Universidad de Guadalajara - **GUADALAJARA**
Universidad de Guanajuato - **GUANAJUATO**
Tecnológico de Monterrey - **MONTERREY**
Universidad de Monterrey - **MONTERREY**
Universidad de las Américas - **PUEBLA**
Benemérita Universidad Autónoma de Puebla - **PUEBLA**

Peru

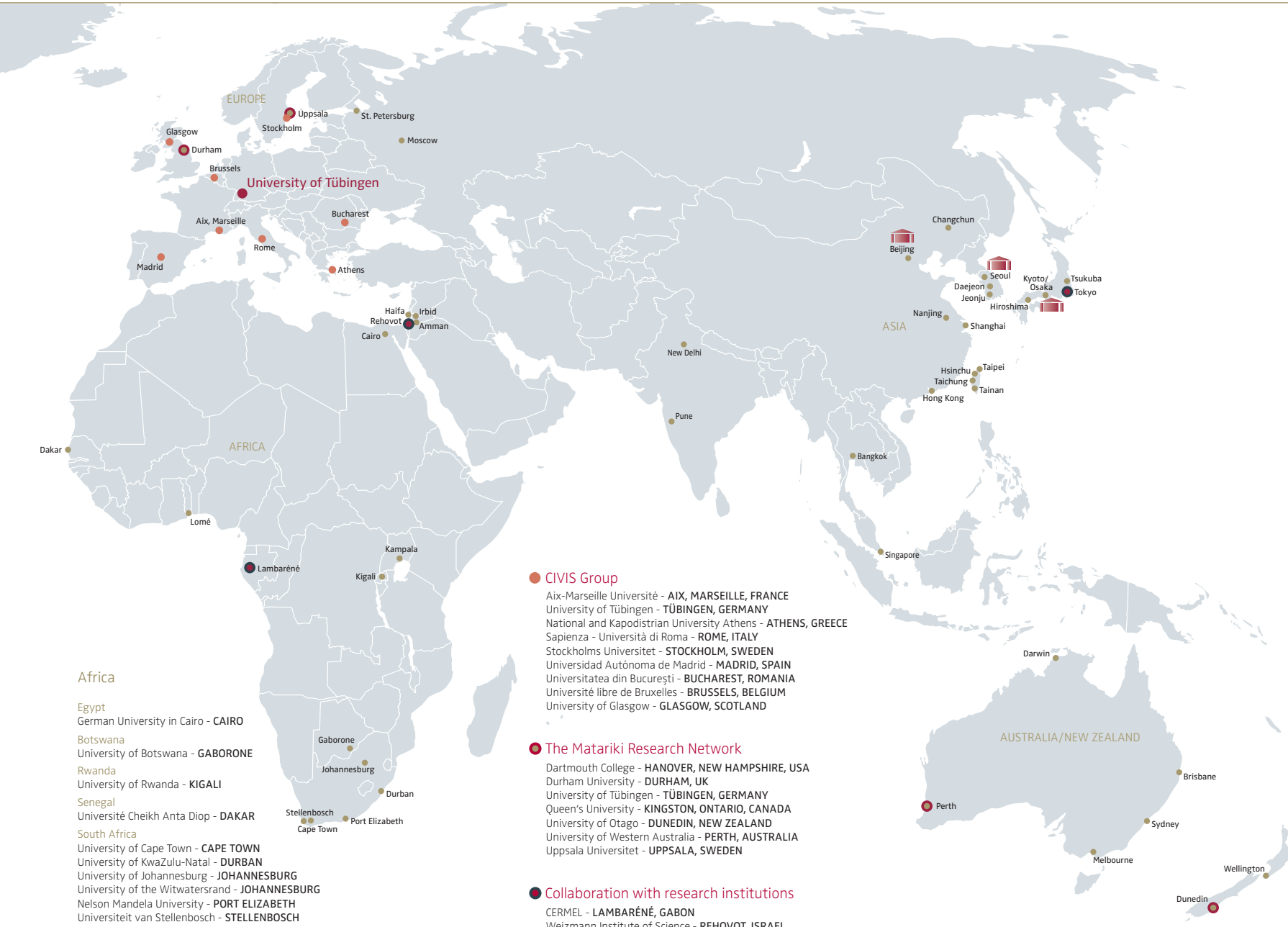
Pontificia Universidad Católica del Perú - **LIMA**

Uruguay

Universidad de Montevideo - **MONTEVIDEO**

Venezuela

Universidad de los Andes - **MÉRIDA**



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**

CIVIS Group

Aix-Marseille Université - **AIX, MARSEILLE, FRANCE**
University of Tübingen - **TÜBINGEN, GERMANY**
National and Kapodistrian University Athens - **ATHENS, GREECE**
Sapienza - Università di Roma - **ROME, ITALY**
Stockholms Universitet - **STOCKHOLM, SWEDEN**
Universidad Autónoma de Madrid - **MADRID, SPAIN**
Universitatea din București - **BUCHAREST, ROMANIA**
Université libre de Bruxelles - **BRUSSELS, BELGIUM**
University of Glasgow - **GLASGOW, SCOTLAND**

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**

Russia

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

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**

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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
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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**
Charles Darwin University - **DARWIN**
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**

Continuity in the University management

Vice-Presidents' terms extended

The Senate and the University Board of Trustees re-elected the three Vice-Presidents Professor Karin Amos, Professor Monique Scheer and Professor Peter Grathwohl in July 2020 for a further term of office in the University management. The new term of office began on October 1, 2020. With the Senate's vote, Karin Amos will remain as part-time Vice-President of Student Affairs and Studies for another four years. Peter Grathwohl was confirmed by the Senate and University Council as full-time Vice-President of Research for another eight years. Both bodies also re-elected Monique Scheer as full-time Vice-President for International Affairs for another eight years. Her office will be expanded to include responsibility for the area of diversity

The President's Office

President and Vice-Chancellor
Professor Dr. Bernd Engler
Institute of English Languages and Literatures

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,
Center for Applied Geoscience

Vice-President for International Affairs and Diversity
Professor Dr. Monique Scheer,
Ludwig Uhland Institute of Historical and Cultural Anthropology

New leadership at two faculties

Two of the University's trusted scientists stepped up to head their faculties in 2020.

In December 2020, the Faculty Council elected Professor Thilo Stehle of the Interfaculty Institute of Biochemistry as the new Dean of the Faculty of Science. The 58-year-old succeeds Professor Wolfgang Rosenstiel, a computer scientist who passed away in August 2020.

Professor Bernd Pichler, Director of Pre-Clinical Imaging and Radiopharmacy at the University Hospitals, was elected by the faculty board in May 2020 as the new Dean of Medicine. Pichler succeeds Professor Ingo Autenrieth, who took up the post of Chief Medical Director at Heidelberg University Hospital on April 1, 2020.

Left to right: University Vice-Presidents Karin Amos, Peter Grathwohl, Monique Scheer



... and the new Deans of Medicine and Science, Bernd Pichler and Thilo Stehle


Equality and diversity measures

The University's Athene Program offers women researchers a helping hand as they start their careers. The program, which was initially launched with funds from the Excellence Initiative, is now firmly established. Researchers receive the grants for two years. The program offers additional funds that can be used flexibly, for example for staff, conference attendance or research organization. With this and other measures, the University has increased the proportion of women professors by more than 12 percent over ten years, to 26.8 percent in 2020.

Beyond the advancement of women, the University is introducing policies to promote greater acceptance of diversity, as well as reinforcing its status as a family-friendly workplace.

The March 2020 shutdown, imposed due to the Coronavirus pandemic, hit University students and employees with family responsibilities particularly hard. From one day to the next, they had to manage teaching online, working or studying from home alongside caring for and homeschooling their children. Many parents were pushed to the limit. To support them, the University of Tübingen set up a Coronavirus Emergency Family Program at short notice.

Important building projects

The University has spent around 50 million euros annually in the past four years for the construction of purpose-built homes for specialist research. Recent projects include:

The new **Environmental and Geoscience Center**, completed in early 2020, houses the research fields of Applied Geoscience, parts of Mineralogy and Geodynamics, and Palaeobiology.

The new building for the **Interfaculty Institute of Biochemistry** was finished in May 2020.

Work commenced in 2020 on the new **Institute of Malignome, Metabolome and Microbiome Research**.

Work is ongoing on the new building for the **Center of Islamic Theology**. It will be located near the Theologicum, home to the Faculties of Protestant and Catholic Theology, to encourage interfaith dialogue.

Above: Architect's design of the new M3 institute, home to groundbreaking medical research

Below: The new center for the Geosciences and Environmental Sciences


PGM
DSP

Celebrating Knowledge

New Perspectives

All public activities in 2020 were deeply affected by the Coronavirus pandemic. To reduce the risk of infection, gatherings had to be canceled. That included most on-campus classes and public events at the University. Museums had to close their doors for many months. This led members of the University of Tübingen to seek other ways to share knowledge. Today's technology enabled many events to go online.

Valuable information on the Covid-19 pandemic

In the summer semester of 2020, University of Tübingen medical researchers, scientists, economists and social scientists reported on the state of research in a number of different lecture series livestreamed on the internet. The lectures were made for students, but were also available to the public. This was one of the University's responses to the demand for reliable information about the novel coronavirus, its effects and symptoms, treatment options, and the pandemic's wider psychological and social impact.

Medical researchers explain aspects of the new virus

Professors at the Faculty of Medicine gave online presentations highlighting aspects of the Covid-19 pandemic in light of their research; they then answered questions from the online audience. The presentations described both the diverse research into the Covid-19 virus as well as its impact on other diseases. Professor Nisar Malek, Medical Director of Internal Medicine I, gave the first lecture on April 21, talking about the observed course of Covid-19 infections. The events ran weekly to the end of summer semester. Other topics in the series included potential treatments for Covid-19, vaccine development, the psychological consequences of infection, and ethical issues. The lectures were broadcast live on Tuesdays at 12:00 via the Sectio Chirurgica website and are now available on the university's YouTube channel (see web link below).

Economists and social scientists shed light on ramifications

In a second lecture series, which ran nightly from June 29, various professors from the Faculty of Economics and Social Sciences presented current findings on the social, economic and political consequences of the Coronavirus crisis. The talks focused on questions such as: What economic policy

challenges does the pandemic pose? How does the crisis affect the capital market, the labor market, the welfare state, social mobility and European relations? Which professions are "systemically relevant"? What does social distancing mean for education and our mental health, and what about the well-being of children and young people in the Coronavirus era? What role do sports, the media and social media play?

The rhetoric of crisis

Professor Olaf Kramer of the Institute of Rhetoric also discussed the wider implications of the pandemic. His lecture series, "The rhetoric of the Coronavirus crisis," focused on its political, social, and cultural consequences. How do politicians talk about the crisis? What strategies and techniques are used to persuade people to change their behavior? Why does the crisis seem to invite nationalist and authoritarian responses? How can effective epidemic control and democratic freedoms be reconciled? What does the crisis teach us about effective science communication? Kramer discussed these issues in general terms using current examples.

The lectures have been posted on the University's YouTube channel: *https://www.youtube.com/UniTuebingen*

Right: An artist's impression of Danuvius guggenmosi, whose fossil remains raise new questions about the common ancestry of apes and humans.

Real and virtual exhibitions

University Museum exhibits fossil of earliest primate to walk upright

"Udo – The first pedestrian" was the title of the first exhibition showcasing the sensational find of *Danuvius guggenmosi*. The exhibition at the University of Tübingen Museum (MUT) featured a reconstruction of the first known primate to walk upright, a male individual dubbed Udo. He lived 11.62 million years ago, and his fossil remains indicate that he was able to both walk and climb. The bones were found by a team of Tübingen paleontologists headed by Professor Madelaine Böhme in the Hammerschmiede clay pit in southern Germany, close to the Austrian border; the find was published in 2019. The find caused an international sensation because it indicates that apes were able to walk on two legs as early as twelve million years ago. Previously, the oldest evidence of this was from six million years ago.

If the upright gait evolved in trees more than 12 million years ago, Danuvius could be considered the starting point for both walking on two legs and climbing on four. This new hypothesis places *Danuvius guggenmosi* as a previously unknown link between humans and apes.

After closing in March due to the pandemic, the "Udo" exhibition reopened in May under strict hygiene regulations. At the same time, the show "Life and Meaning … it's personal" by New York artist Morgan O'Hara (the University of Tübingen's 2019 invited artist) with works by Tübingen students was on view again, as well as the special exhibitions "The Invisible Exhibition. Hidden Objects by Stefan Göler."

Online exhibitions: Three formats

The University Museum made large parts of its collections accessible via three online exhibitions that you can visit from quarantine or simply when time is tight. This "**eMuseum**" provides insights into the diversity of objects in the 70 collections at the University of Tübingen.

The **3D museum** shows all the details of selected objects. The pieces - including the famous Ice Age figurines - have been scanned so that they can be viewed from all sides in a way that is not possible in the real-life exhibition.

The **360° exhibitions** offer a step into the next dimension. The visitor can make a virtual tour of an exhibition – such as the Leonardo exhibition of 2019 – deciding where to go, which images to look at, and which object or text to click on.

eMuseum: *https://www.emuseum.uni-tuebingen.de/objects/images*

3D museum: *https://www.unimuseum.uni-tuebingen.de/de/sammlungen/3d-museum.html*

360° exhibitions: *https://www.unimuseum.uni-tuebingen.de/de/ausstellungen/online-ausstellungen/360-ausstellungen.*

Students put historical dentistry collection online

Among the new virtual exhibitions at the Museum of the University of Tübingen is the online dental collection, which took on a special role in the pandemic year 2020. As part of the practical seminar "Dental | Things – a dental exhibition," students of the Master's profile "Museum and Collections" digitalized the collection of the University Clinic for Dentistry, Oral and Maxillofacial Surgery at the University of Tübingen. After two semesters, the online exhibition was inaugurated in July 2020.

The online exhibition provides a variety of digital insights into the dental collection: drills, forceps, curettes, dentures; a dentist's chair with an ashtray; even a statue of the patron saint of dental patients, Apollonia of Alexandria. The website also presents information on the history of the collection, exhibition designs for the future, 3D models of the exhibition rooms and 360° views of objects.

A virtual reality experience was added in October 2020:
https://www.unimuseum.uni-tuebingen.de/de/ausstellungen/online-ausstellungen/dental-things-eine-zahnmedizinische-ausstellung.html

A 1930s dental care set from the historical collection

Time travel from home

In March 2020, the Collaborative Research Center ResourceCultures began taking visitors on a journey around the world and through time with its virtual exhibition "Symbols of Power - (In)visible Representation."

You can "stroll" through three rooms, examining interesting objects such as donut stones from Iran, ancient cisterns on Mediterranean islands, and Viking cats; or you can travel via mouseclick through the many projects in the collaborative research center's depot. Following a timeline, you can explore projects from the Early Stone Age right up to the present day. These projects are being carried out by interdisciplinary researchers from the fields of archaeology, cultural anthropology, history and geoscience, and many more.

The virtual museum is for the public as well as academics – outlining how they analyze artefacts which may be thousands of years old and arrive at new information which is relevant today. More than 60 members of the collaborative research center worked to put the museum together.

The virtual museum of the Collaborative Research Center 1070 ResourceCultures makes it possible to visit research objects and sites together in a way that would not be possible in the real world:

https://museum-ressourcenkulturen.de

Anniversaries – Remembrance of things past

One hundred years of student services

The predecessor of today's Student Services was founded on August 6, 1920, on the initiative of students, professors and lecturers. In a time of economic hardship after the First World War, it was intended as a self-help organization for the approximately 3,000 students at the University of Tübingen. Along with Dresden, Munich and Aachen, Tübingen was one of the first university towns in Germany to have such an association.

Its main job was to feed students in the Hotel Prinz Karl in Hafengasse – one of the oldest refectories in Germany still operating today. About one third of our students ate lunch there. The "Prinz Karl" also had a student café and a reading room with many newspapers.

Moreover, a shoemaker's workshop, a laundry, a bookbindery and a typewriter shop provided more affordable services for students. The association also organized student jobs in other workshops, offices, factories, mines, and on farms. In 1923, the association opened the first dormitory with low rents for Tübingen students.

The successor organizations today are the Tübinger Studentenwerk e. V. and the Studierendenwerk Tübingen-Hohenheim, which now has 400 employees and an annual turnover of 42 million euros. It serves around 52,000 students at nine university locations, offering meals, housing, financial support, childcare and counseling for students.

The „Prinz Karl," located in a historical building in Tübingen's old town, is one of the oldest refectories at a German university. It was set up in the 1920s to give students access to good, affordable meals.

Pioneering Center for Rare Diseases celebrates 10th anniversary

In 2010, the University and the Tübingen University Hospitals founded Germany's first Center for Rare Diseases (ZSE Tübingen). It now comprises 14 specialist areas and every year treats more than 5,000 patients who come from all over Germany as well as from abroad. The center was a pioneer in this work; there are now 30 centers nationwide, focusing on different rare diseases.

The celebration looked back on ten successful years in which innovative structures were established to tackle diseases so rare that they long received little attention. In a roundtable discussion with patients, the importance of the center's work became clear. It often takes a long time for patients to get the right diagnosis, and finding the right treatment is hard. Cooperation with patient organizations such as the Alliance of Chronic Rare Diseases (ACHSE) has proven to be an important tool for improving care for those affected.

Awards

2020 Lucas Prize

In 2020, the Dr. Leopold Lucas Prize 2020 was shared between two academics renowned for their work in the role of religion in different areas of contemporary life. The 50,000-euro prize, awarded annually by the Faculty of Protestant Theology on behalf of the University of Tübingen, went to Linda Woodhead (Lancaster, UK) and Adam Seligman (Boston, USA). In deciding to divide the prize, the committee honored two different yet essentially interrelated approaches to the relationship between religion and society in the present day.

The 2020 Dr. Leopold Lucas Young Researcher Award went to the Catholic theologian Dr. Johannes Reich. In his doctoral thesis on moral theology, he raised important new insights into the continuity of Kant's theory of religion by comparing Kant's early lectures and his later work, enriching the ethical discussion.

Relaunch of the Hans Bausch Media Prize

The broadcaster Südwestrundfunk's Hans Bausch Media Prize was last awarded in 2009. It goes to outstanding media personalities and has now been relaunched in cooperation with the Institute of Media Studies at the University of Tübingen. The first award ceremony for the new "Hans Bausch Media Prize for Social Responsibility in Digital Public Spheres" is scheduled to take place in 2021 at the Institute for Media Studies' "Media Days" program. The prize is endowed with 5,000 euros. It is awarded for essays, Master's theses or dissertations that classify and evaluate current media developments.

The prize is named after Hans Bausch (1921-1991), a journalist and director at Süddeutscher Rundfunk in Stuttgart (now Südwestrundfunk) from 1958 to 1989.

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