



MEDICAL UNIVERSITY
OF VIENNA

TAKING RESPONSIBILITY

2019 Annual Report

EDITORIAL

The fourth mission

As a university, besides performing our core functions of teaching and research, we also have an obligation to use our findings for the good of society. This is what is known as our third mission. However, for us it is actually our fourth mission, as routine, top-quality patient care is also one of our core responsibilities.

Another pillar of the third mission is putting scientific findings into practice, as well as the transfer of technology and innovations by means of business and industry partnerships. As a result, our experts are increasingly gaining the attention of international audiences, who expect appropriate science-related communications from us.

Thanks to the latest developments in digitalisation and molecular medicine, the speed of advances in medicine is accelerating at an unprecedented rate. Medicine is becoming more and more personalised. With this in mind, MedUni Vienna will do everything it can to play its part as a leading medical institution and an ambassador for medical innovation in these challenging times, and to live up to its responsibilities to society. We have already implemented a number of strategic measures in this regard, in the shape of our Development Plan for the period to 2024, which includes construction projects at MedUni's Vienna General Hospital Campus for our groundbreaking centres for precision medicine, translational medicine and technology transfer, as well as our preclinical centre, the Mariannengasse Campus.



Professor Markus Müller
Rector, Medical University of Vienna





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FACTS AND FIGURES

For the good of everyone's health

Located close to the heart of the Austrian capital, the Medical University of Vienna (MedUni Vienna) is one of the country's leading medical and scientific institutions. Founded in 1365 as the medical faculty of the University of Vienna, MedUni Vienna became an independent university in 2004 and is now one of Europe's most highly respected centres of medical training and research. Vienna General Hospital, which works closely with MedUni Vienna, is among the largest university hospitals in the world.

5,905
EMPLOYEES

29
UNIVERSITY DEPARTMENTS
AND CLINICAL INSTITUTES

7,792
STUDENTS

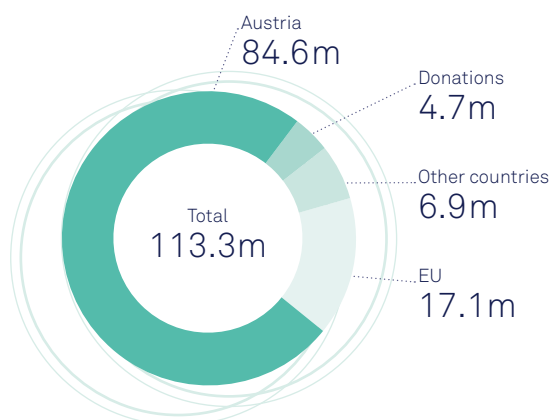
672,348
PATIENTS TREATED ANNUALLY

Worldwide collaboration and third-party funding

In day-to-day research activities, teams are primarily responsible for major scientific advances – which is why Nobel prizes are now frequently awarded to multiple recipients. The university's numerous cooperation agreements with partner institutions form a global scientific and research network that is vital to MedUni Vienna's success.

Both our academic output and the third-party funding attracted by the university underscore the success of our networks and partnerships: almost 60% of all MedUni Vienna publications are the product of international cooperation. Meanwhile, third-party funding for which the university competes accounts for a fifth of MedUni Vienna's financial resources. In 2019, revenue from R&D projects and donations reached EUR 113.3m.

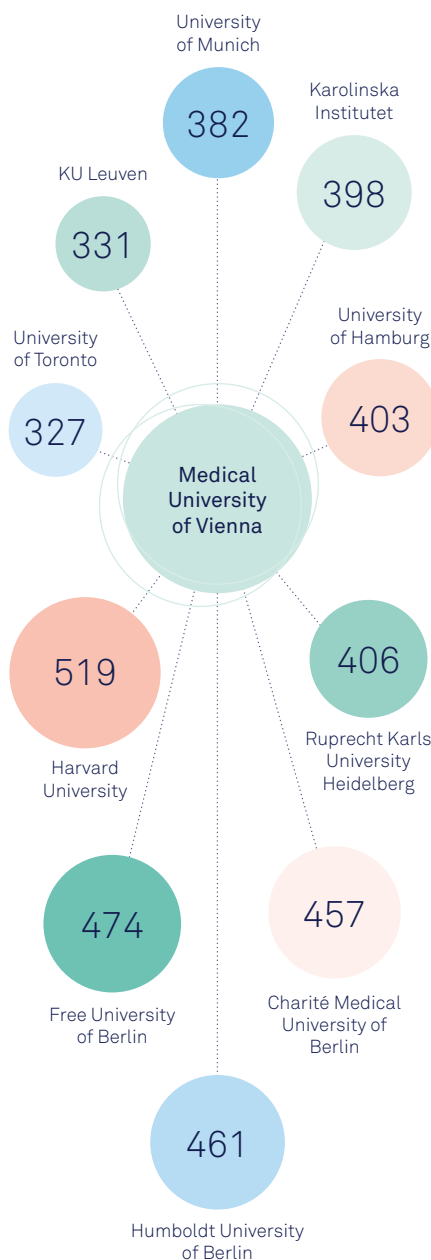
Third-party funding: revenue from R&D projects and donations (EUR)



Source: MedUni Vienna 2019 intellectual capital report

Publications based on international partnerships

Top 10 partners



Source: Incites

Clearly defined research focuses

In order to give its research a clear focus, MedUni Vienna has bundled its expertise into five interdisciplinary and cross-departmental research clusters. MedUni Vienna aims to be a world leader in these five fields.

Cancer Research/Oncology Research Cluster

A joint MedUni Vienna and Vienna General Hospital facility, the Comprehensive Cancer Center (CCC) builds on the work of the Cancer Research/Oncology Research Cluster, combining interdisciplinary care for cancer patients with clinical and basic research, as well as research-led teaching. This generates innovative diagnostic and treatment methods that can be directly deployed in patient care at Vienna General Hospital.

Immunology Research Cluster

Defective immune system responses take many different forms, including diabetes, arteriosclerosis, chronic polyarthritis, allergies and inflammatory bowel disease. Infectious diseases represent a particularly serious threat. Against this backdrop, the Immunology Research Cluster brings together research into allergies, inflammation and infectious diseases, and develops new diagnosis and treatment concepts.

Cardiovascular Medicine Research Cluster

Here, the focus is on cardiovascular diseases, imaging and non-imaging diagnosis, and epidemiology and genetic research. The cluster's strong track record is also down to its basic research into vascular biology and thrombosis, and interdisciplinary activities ranging from biomechanics to gene and stem cell therapy.

Medical Imaging Research Cluster

MedUni Vienna's institutes and research facilities involved in imaging collaborate within the Medical Imaging Research Cluster to perform research into new methods for diagnosis, individual risk stratification, and therapy planning and monitoring, which are integrated into personalised diagnosis and treatment plans. The aim is to enable earlier diagnosis and improved characterisation of diseases, and to develop new therapy approaches.

Medical Neuroscience Research Cluster

MedUni Vienna researchers regularly attract attention for their work on Alzheimer's, depression, multiple sclerosis and pain. These and numerous other neuroscience and psychosocial science research fields are brought together in the Medical Neuroscience Research Cluster, which facilitates a clearer understanding of the progression of nervous system diseases. The findings lead to improved diagnosis and treatment, which directly benefit patients with such conditions.

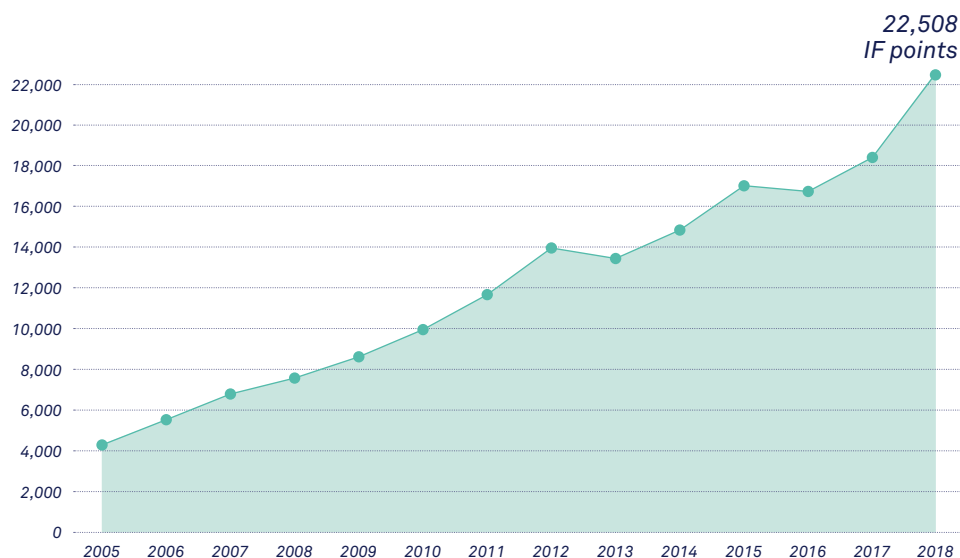
The numbers don't lie – research success

The relevance of the publications a university produces is an important indication of research performance, although the standing of the individual journals in which they are published – measured by their impact factor – is what carries the most

weight. Since its establishment as a university in its own right in 2004, year for year MedUni Vienna has significantly enhanced its research performance, as measured by the impact of its research publications.

Impact factors of scientific publications 2005-2018

The evolution of the cumulative impact factor (IF) shows the continuous improvement in scientific output and research quality over time.



Tailored education

MedUni Vienna has a diversified educational offering, ranging from undergraduate degrees to continuing education courses and PhD programmes.

- Medicine degree programme
- Dentistry degree programme
- Medical Informatics master's programme
- PhD programmes (18 research themes)
- Applied Medical Science doctoral programme (ten research themes with a focus on clinical research)
- 32 postgraduate programmes

Over 107 teaching hospitals in Austria, 75 general medical practices and numerous teaching hospitals abroad are accredited for clinical practice training.

Students by nationality	Women	Men	Total
Austria	2,818	2,399	5,217
EU	917	840	1,757
Other countries	460	358	818
Total	4,195	3,597	7,792

Source: 2019 intellectual capital report – winter semester 2019

PhD/doctoral programmes	Women	Men	Total
Austria	435	429	864
EU	155	121	276
Other countries	105	70	175
Total	695	620	1,315

Source: 2019 intellectual capital report – winter semester 2019

Students in mobility programmes (outgoing/incoming)	Women	Men	Total
EU host country/country of origin	172/178	151/78	323/256
Non-EU host country/country of origin	86/74	93/45	179/119
Total	258/252	244/123	502/375

Source: 2019 intellectual capital report – 2018/19 academic year

Medical expertise

MedUni Vienna has 5,905 employees (3,328 women and 2,577 men) and is one of the most important medical education, research and treatment centres in Europe. 3,935 academic staff (1,853 women and 2,082 men) work for the university as researchers, lecturers and doctors. In 2019, five new professors were appointed and 64 post-doctoral lecturing qualifications were awarded (to 23 women and 41 men; 32 non-surgical specialists, 21 surgical specialists and 11 biomedical basic research specialists).



**Patient care* at
Vienna General Hospital**

78,734

INPATIENT CASES



**University Clinic
of Dentistry Vienna**

146,476

TREATMENT SESSIONS

553,000

OUTPATIENT CASES

1,200,394

CLINIC APPOINTMENTS

40,614

PATIENTS

1,773

BEDS,

including 137 intermediate care (IMC) and 130 intensive care beds

51,676

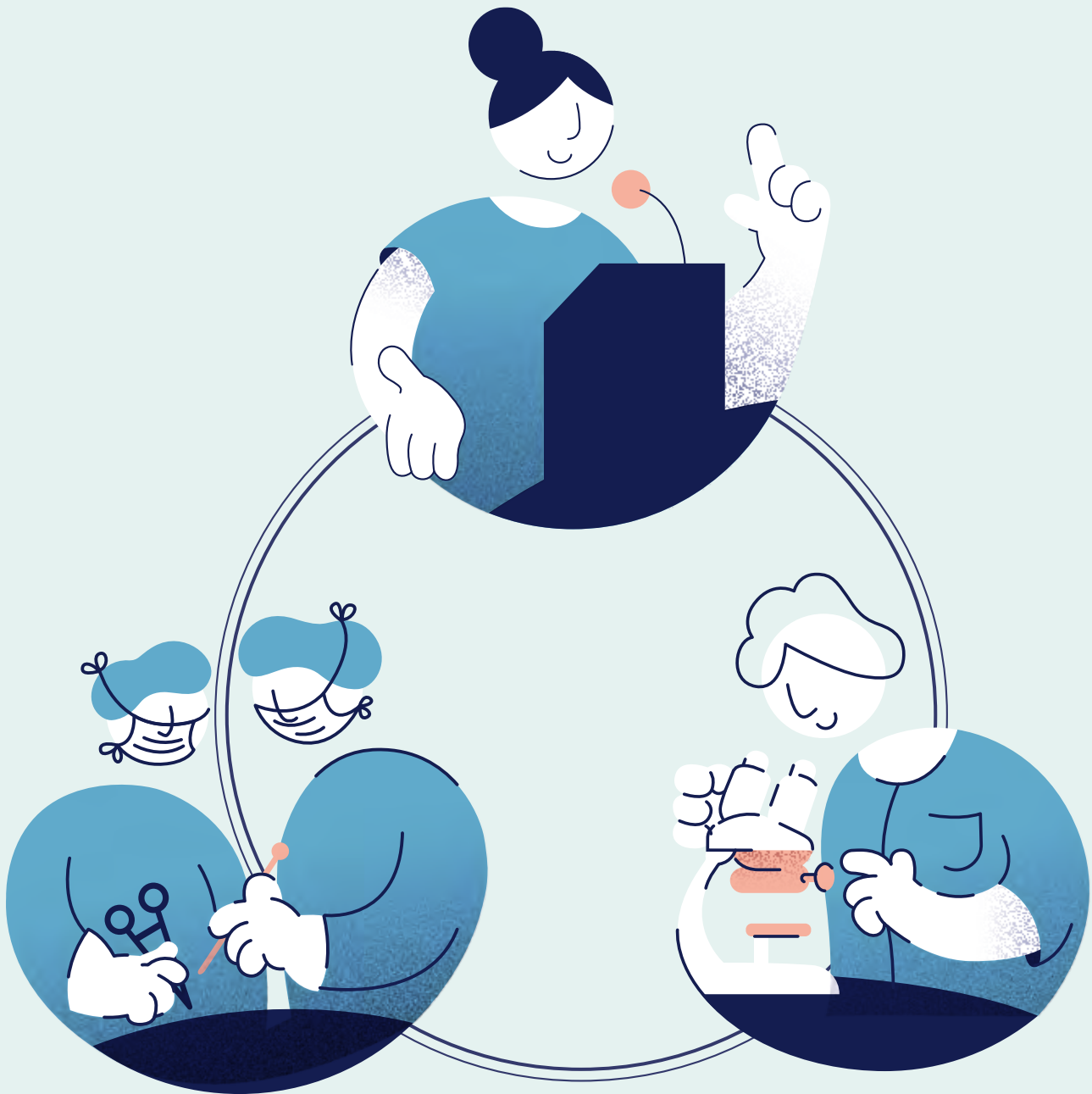
OPERATIONS

121

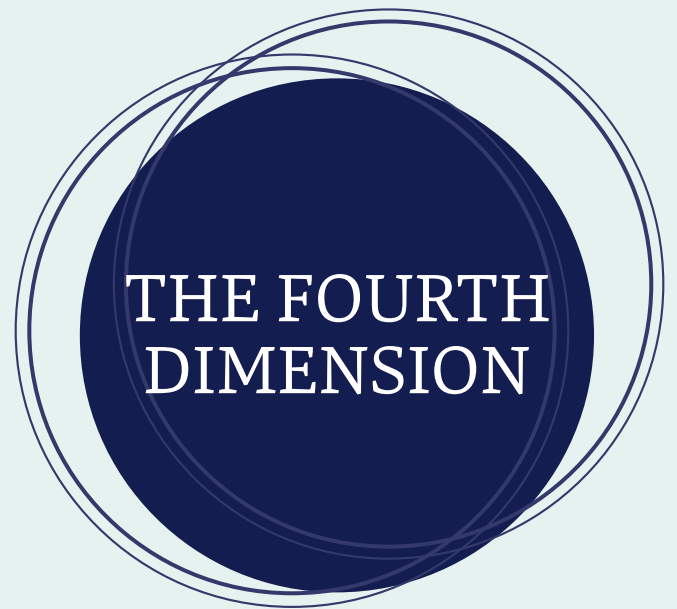
AVERAGE NUMBER OF PATIENTS

visiting the emergency dental clinic every weekend

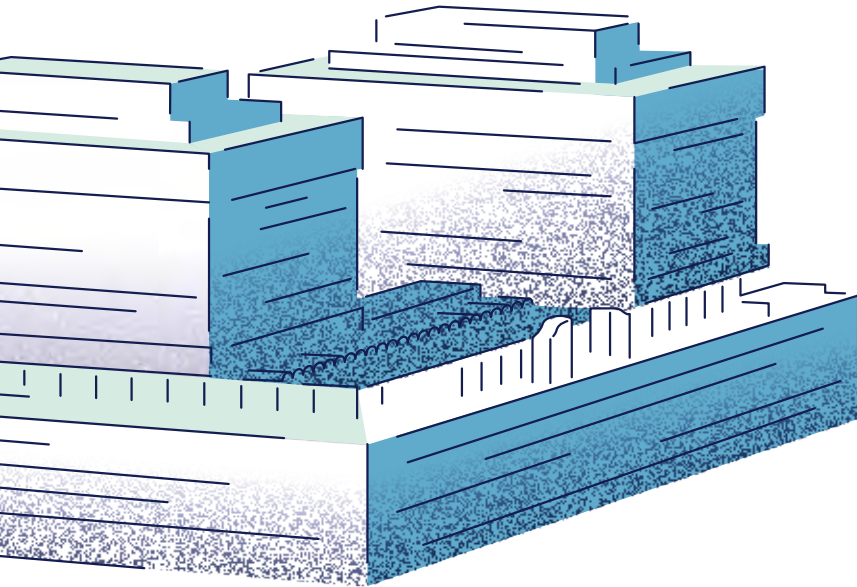
* Patient care: 2018 figures



Generating knowledge, transferring knowledge and putting knowledge to use in the three areas of research, teaching and patient care have always been MedUni Vienna's core activities. In addition to this, the university makes an important wider contribution to society. Together these form the basis of MedUni Vienna's four-fold mission.



A powerhouse of medical science



»In our role as a leading scientific institution in Austria, we live up to our social responsibilities and work hard to guide society through an age of rapid medical advancement.«

Markus Müller, Rector

MedUni Vienna has around 8,000 students and produces ten times as many graduates as Harvard Medical School. It is one of the largest medical education institutions in the world. In partnership with Vienna General Hospital, MedUni Vienna provides about a third of all outpatient care and almost a quarter of all inpatient care in Vienna. Notably, this includes leading-edge care in numerous highly specialised departments, which are constantly developing and applying new treatments. MedUni Vienna trains about 45% of Vienna's specialist doctors, or 15% of all specialist doctors in Austria. The contributions made to science by researchers working at MedUni Vienna play a major role in the university's clinical and academic performance.

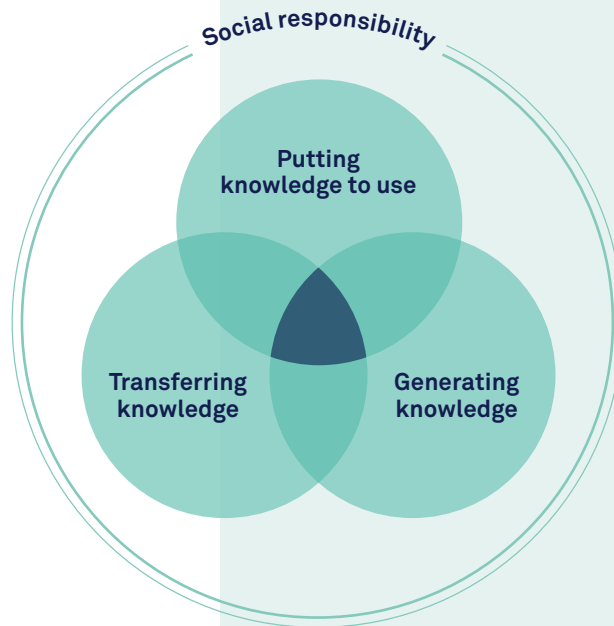
Four-fold social contribution

As well as fulfilling the three principle functions of a medical university – to research (generate knowledge), to teach (transfer knowledge) and to provide patient care (put knowledge to use) – MedUni Vien-

na also assumes its social responsibilities through a wide range of additional activities. This 'fourth dimension' of the university's work begins with educating and informing the general public using an objective, evidence-based approach. It also encompasses long-term provision of continuing education opportunities, knowledge transfer and awareness-raising, for example through numerous educational and information events aimed at members of the public and patients, and initiatives such as the Children's Medical University. In addition to providing careers advice and support for students and graduates, the university's Alumni Club stages public events to facilitate contact between members of the scientific community, students and anyone interested in medical topics. Representatives of MedUni Vienna hold leading positions on high-level committees and bodies, such as Austria's National Health Council, the national immunisation advisory committee (Impfgremium) and the Bioethics Commission. The result is a four-fold mission comprising research, teaching, patient care and corporate social responsibility activities. Turn to page 20 for more on the many different ways in which MedUni Vienna contributes to society.

Four-fold mission

MedUni Vienna's four-fold mission exploits the synergies between research, teaching and patient care. These three core activities are embedded within the framework of social responsibility.



dozens of working groups organised into a research cluster cooperate on interdisciplinary and translational projects. Patients benefit directly from their work.

Transferring knowledge

The university's curriculum encompasses medicine and dentistry degree programmes and doctoral studies, as well as a master's programme in medical informatics. A wide range of continuing education courses complete the learning portfolio. Students benefit from the interaction between research, education and patient care – with Vienna General Hospital playing an integral role in teaching.

Social responsibility

Digitalisation, big data, robotics, and precision and personalised medicine all present both opportunities and challenges in medicine today. In the face of the ever-increasing complexity that these developments bring, and as a leading educational institution, MedUni Vienna bears a special responsibility. The university therefore seeks to share insights from research, teaching and patient care with a wide audience. MedUni Vienna proactively and consciously fulfils this social responsibility with activities ranging from information and prevention work to contributing important economic and regionally-specific input by means of know-how and technology transfer.

»MedUni Vienna provides outstanding service to the general public through its advancements in research, teaching and patient care. A duty which is very dear to my heart.«

Eva Dichand,
Chair of the University Council



Putting knowledge to use

Working at Vienna General Hospital, MedUni Vienna's doctors deliver outstanding healthcare for patients living in the region and in other parts of Austria, as well as abroad. While it focuses on high quality tertiary medical care, the hospital also provides a large proportion of secondary and primary care in Vienna. Over 20% of all inpatient admissions in Vienna are accounted for by Vienna General Hospital.

Generating knowledge

Fundamental (or basic) research provides the basis for new insights into biomedical processes. MedUni Vienna places special emphasis on research in the fields of immunology, cancer/oncology, medical neuroscience, cardiovascular medicine, and medical imaging. In each of these areas



Groundbreaking achievements – part of the institutional DNA

MedUni Vienna has an enduring legacy as a pioneer of numerous world-changing innovations, ranging from the discovery of blood groups to the development of optical coherence tomography (OCT). The university's scientific success story is still being written today, thanks to leading contributions to the digital revolution in ophthalmology in the field of eye scan diagnosis, and advancements in bionics (see page 18), for example. Important scientific achievements such as these are in MedUni Vienna's DNA.

Third-party funding and scientific excellence

As well as scientific output and publication performance – read more about a selection of outstanding research achievements starting on pages 30 and 42 – third-party funding that is acquired competitively is another important measure of a university's performance and standing. The university had 18 Austrian Science Fund (FWF) and three Vienna Science and Technology Fund (WWTF) projects approved in 2019. These included a tumour microenvironment project led by Petra Heffeter from the Institute of Cancer Research, which received funding of EUR 1.5m within the scope of FWF's Research Groups programme. And a new FWF special research programme titled RNA-DECO, headed by Michael F. Jantsch of the Center for Anatomy and Cell Biology, which secured over EUR 4m for research into chemical modification of RNA.

»In 2019 MedUni Vienna introduced additional exciting career progression opportunities, in the form of new professorship models aimed at supporting young academics and attracting budding talent to our university.«

Michaela Fritz, Vice Rector for Research and Innovation



Eye scan diagnosis: science fiction becomes reality.

Important contributions at the interface between research and commercialisation

MedUni Vienna also enjoyed success at the European level. Igor Adameyko from the Center for Brain Research received a prestigious ERC Synergy Grant – one of only 37 awarded across the EU – worth EUR 9m. MedUni Vienna is the most successful Austrian institution participating in the EU's 8th Framework Programme, Horizon 2020, in the field of health. The university also continues to perform well when it comes to commercially-focused consortia. For example, MedUni Vienna opened its 19th Christian Doppler Laboratory (CDL) in spring 2019. The CDL for Applied Metabolomics is a collaboration with Siemens Medical Solutions USA under the direction of Alexander Haug (Biomedical Imaging and Image-guided Therapy) and Lukas Kenner (Pathology).



»We reported improved financial indicators once again in 2019 and operating revenue now amounts to EUR 620m. I was really pleased at the positive efforts of everyone involved in the future for preclinical care – MedUni Vienna's Mariannengasse campus.«

Volkan Talazoglu, Vice Rector for Finance

Digitalisation at the Clinic of Dentistry

The digital revolution is taking hold in all areas of the University Clinic of Dentistry. Digital intraoral impression systems featuring tiny intraoral cameras are already being used in day-to-day clinical care, bringing significant benefits to patients in the treatment of many conditions. And in 2019 the foundations were laid for the next steps on the road to full digitalisation with the introduction of across-the-board use of intraoral scanning technology in students' clinical training, increased use of digital technology in the various specialisms, and the expansion and enhancement of digital dentistry applications in areas such as face scanning, digital facebows, 3D printing and navigated implantation. There is also a focus on digital technologies in research, for instance with the application of 3D printing.

New continuing education courses

2019 saw the launch of two new continuing education programmes with an international focus: Master of Clinical Dentistry degrees in Esthetic Dentistry, and Periodontology and Implantology. Both master's programmes provide outstanding theoretical and practical training. Students graduate with valuable new skills, developed in particular through practical work and live operations.





»The teaching white paper produced in 2019 represents our common understanding of the developments that will shape the next few years in the education of our students, and encompasses digital innovation and a focus on teaching culture. As Vienna's medical university, we want to be setting the pace in degree course provision and teaching.«

Anita Rieder, Vice Rector for Education

The health professionals of tomorrow

About 8,000 students from Austria and abroad are currently enrolled in programmes at MedUni Vienna. In addition to the Medicine and Dentistry degree programmes, the curriculum also features a medical informatics master's programme that offers students an exceptional learning environment thanks to the wide range of outstanding medical services provided by the university. Over 1,000 young researchers are completing structured doctoral programmes, and in 2019 MedUni Vienna took part in PromLi, a new thesis support project for early stage researchers with disabilities or chronic disorders. The Molecular Precision Medicine master's programme, a new, innovative addition to the curriculum, was also launched in 2019. Appealing options in non-healthcare professions are part and parcel of providing an attractive range of continuing education opportunities.

Teaching taskforce and white paper

In 2018 the Rectorate launched a teaching taskforce to look into topics connected with the future of teaching and formulate corresponding strategies. A major part of this process was the teaching white paper, presented in 2019. In this document, teaching staff and students addressed teaching culture, career development within teaching, development

A career in medicine

12,960 candidates sat the MedAT admissions exam throughout Austria on 5 July 2019. The 740 study places available at MedUni Vienna went to 432 women (58.38%) and 308 men (41.62%). This shows a sustained interest in studying medicine – which is carried through into successful candidates' period of study: MedUni Vienna's graduation rate is 90%, and most students complete their medical degree in the minimum time or within the tolerance semester period.

of clinical teaching, joint education and interprofessional teaching, assessment and evaluation, as well as digitalisation, digital medicine and hybrid education strategies.

Clinical practice, small groups and digital skills

The Medicine degree programme's up-to-date curriculum develops integrated specialist knowledge and places particular emphasis on teaching in small groups and clinical practice. This ensures a focus on clinical skills from the beginning of the course. The importance of digital skills in medicine is growing rapidly. MedUni Vienna is carrying out the lead project among the 35 projects selected for the Austria-wide Digital Skills, Knowledge and Communication for Medical Degree Students programme, which runs until 2023. Providing impetus for the digital transformation, the project findings will feed into teaching development at Austria's public medical universities.

CPY programme of excellence in general practice

Since 2014, the final year of study at MedUni Vienna has been the Clinical Practical Year (CPY), during which students train in accredited teaching hospitals and medical practices. From the 2018/19 academic year, students have had the opportunity of completing an additional dedicated programme of excellence in general practice during their CPY, which has a stronger focus on the diverse areas of this field. The findings of the first programme evaluation show an increase in the appeal of general practice. The programme is a collaboration between MedUni Vienna, the City of Vienna and social insurance carriers.

Web-based ePortfolio

The CPY logbook and portfolio facilitate the inclusion of up-to-date, workplace-based forms of teaching and learning in the medical degree programmes. The new web-based ePortfolio is an important development for the CPY. Following a three-year preparatory phase, in August 2019 piloting of the ePortfolio began in MedUni Vienna's clinical departments, with an overwhelmingly positive response. This was the first use of digital CPY logbooks and portfolios in Austria. The insights gained in the clinical departments and feedback from students, mentors and coordinators will be important for the process of fully implementing the ePortfolio system.

Award-winning efforts

In June 2019 MedUni Vienna picked up an Ars Docendi state award for teaching excellence in the *Quality improvement in teaching and studyability* category. The university received the award for its course Interdisciplinary Case Conferences – Clinical Rounds. MedUni Vienna graduate Sophie Hartinger was also the recipient of a prestigious accolade, winning an honorary prize of the Federal Ministry for Education, Science and Culture for one of the best dissertations of the previous aca-

demical year in Austria. Anna-Dorothea Gorki and Laurin Ginner were presented with the Award of Excellence from the same ministry for their theses, titled *The role of basophilic granulocytes in postnatal lung development* and *Advanced techniques for functional parallel optical coherence tomography*, respectively.



Honorary senators and citizens of honour: At a ceremony held in January 2019, Erhard Busek and Hubert Pehamberger were appointed honorary senators and Ernst Singer and Ingwald Strasser citizens of honour in recognition of their outstanding service to the university.



»We have been able to contribute to a long-term improvement in the quality of teaching through targeted measures. In the course of the Senate's wide-ranging committee work we managed to achieve a range of objectives and implement important transparency initiatives.«

Harald Sitte, Chair of the Senate

Newly elected Senate

The University Senate elections for the term of office ending September 2022 took place at the end of September 2019. Cancer expert Maria Sibilia became the Chair of this key university body. Regina Patricia Schukro, Eren Eryilmaz and Klaus Markstaller were elected first, second and third Deputy Chair respectively.





»Strengthening the links between preclinical and clinical research is one of our key priorities. It was therefore great to see the beginning of detailed planning for the Center for Translational Medicine and Therapies and the establishment of new clinical centres.«

Oswald Wagner, Vice Rector for Clinical Affairs



Digitalisation and precision medicine are opening up completely new opportunities in research, diagnosis and treatment.

Outstanding patient services

The university hospital departments at Vienna General Hospital treat an enormous number of patients. With 400-plus specialised clinics, the hospital provides an unrivalled range of medical services, and delivers well over a third of primary care in Vienna. Vienna General Hospital also treats a quarter of all severe cases and provides 20% of all inpatient admissions in Vienna. Vienna's university hospital therefore occupies a unique position within the regional and national healthcare system. MedUni Vienna is investing heavily in order to maintain and expand this range of provision – read more about the latest expansion plans starting on page 38.

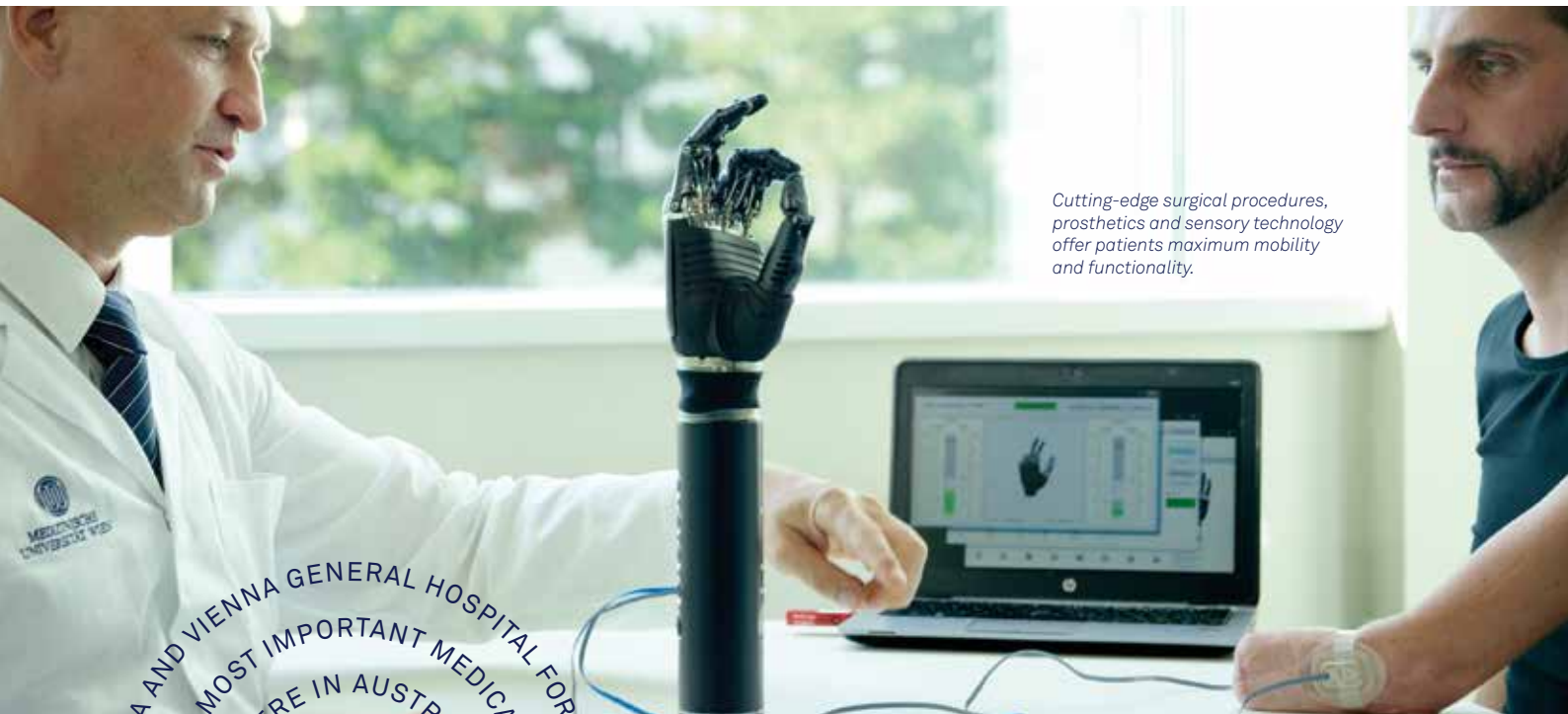
Major centre of transplantation medicine

MedUni Vienna's research clusters in Cancer Research/Oncology, Immunology, Cardiovascular Medicine, Medical Imaging, and Medical Neuroscience enable it to excel in these specific fields (see page 7 for more about

the research clusters). Vienna is also a leading centre of transplantation medicine worldwide. In 2019 a team from the Division of Cardiac Surgery led by Arezu Alia-badi, Günther Laufer and Andreas Zuckermann carried out Austria's first Donation after Circulatory Death heart transplant. MedUni Vienna also launched a transplantation research platform to strengthen the academic network and support the next generation of researchers in this field. Special priority will be given to addressing unanswered questions relating to organ rejection and loss of organ function.

Synthesis of man and machine

Bionics is another area that regularly attracts attention. Reflecting this field's growing importance, MedUni Vienna opened the Clinical Laboratory for Bionic Limb Reconstruction in June 2019, where experts will explore new options to enable limb loss patients to regain the highest possible levels of physicality and functionality by means of the latest prosthetic technology. "Crucial to this is creating what we've termed a manunculus", says Oskar Aszmann of the Division of Plastic



Cutting-edge surgical procedures, prosthetics and sensory technology offer patients maximum mobility and functionality.

MEDUNI VIENNA AND VIENNA GENERAL HOSPITAL FORM THE
LARGEST AND MOST IMPORTANT MEDICAL CARE
CENTRE IN AUSTRIA



»The cooperation between MedUni Vienna and Vienna General Hospital has developed very positively for both parties since 2016. More and more centres are being set up; most recently the cardiovascular centre to provide the best possible treatment for cardiovascular disease. The renovation of the cardiac and thoracic surgery outpatient clinic has also taken place. The growth in research and patient care performance demands that both partners provide more clinical staff.«

Herwig Wetzlinger, Director of Vienna General Hospital
(a business unit of Vienna Hospitals Association)

and Reconstructive Surgery, who heads the new lab. The term refers to the homunculus concept of central sensorimotor control of movement. The aim is to develop a biological interface that enables patients to control mechatronic replacements for lost body parts.

A milestone in sensory technology

Oskar Aszmann's research team were able to announce a breakthrough in prosthetics soon after the opening of the laboratory: the first successful implant of wireless muscle signal sensors following nerve transfer, for transmitting biosignals to control bionic prostheses. "The results show that the data transfer is highly reliable, and significantly quicker and safer in use compared with standard systems," comments Aszmann, delighted with the outcome of the pilot project. A team led by Aszmann and Konstantin Bergmeister from the Division of Plastic and Reconstructive Surgery published further important findings in Science Advances at the beginning of 2019. Using an animal model, they demonstrated why redundant nerves can be transferred – an important procedure for the control of prostheses in bionic reconstruction. The reason lies in the muscle undergoing a change of identity caused by the donor nerve.

RESPONSIBILITY TOWARDS SOCIETY

In light of the major challenges facing society such as an ageing population, spiralling healthcare costs and climate change, the medical sector is called on more than ever. MedUni Vienna is fully aware of this responsibility and is taking the appropriate steps: from training doctors and its research activities, to patient care as well as prevention and awareness.









Health is everyone's concern

58

HEALTH INFORMATION
EVENTS

attracting

approx. 5,500

PARTICIPANTS

Training doctors is one of the pillars of MedUni Vienna's four-fold mission as a university. But when it comes to knowledge transfer, MedUni Vienna also has a clear focus on promoting dialogue and communication with the general public. For good reason, as this brings opportunities to successfully combat disease, preserve good health into old age and awaken people's interest in medicine.

If studying medicine used to be primarily about knowledge acquisition, now the goal for students goes beyond just 'knowing' and increasingly centres on putting knowledge into practice and adopting the right mindset as a physician. Practical competence is becoming more and more important. In this respect, Austria took giant strides some time ago with the reform of the medical curriculum. Where there used to be a heavy theoretical bias, there is now a closer focus on practical skills.

In August 2019, the AMEE medical education and training conference at the Austria Center Vienna, which was attended by around 4,000 participants, looked at the best education models of the future. Addressing the opening event, MedUni Vienna Vice Rector Anita Rieder emphasised that digital skills would take on an increasingly important role in training – but not at the expense of communication.

17 SEPTEMBER: WORLD PATIENT SAFETY DAY –
A WHO INITIATIVE



A brain operation simulated on a pepper

Interacting with the public

There are many sides to communication, since MedUni Vienna's educational remit goes further than the provision of courses for students and doctors. "Medicine has a particular responsibility towards society," explains Rector Markus Müller. "As the largest healthcare institution in the country, MedUni Vienna has been initiating measures designed to increase interaction with an interested public for many years," he adds. As a result, the list of offerings that go beyond providing patient healthcare services and undergraduate education is long. Events covering a range of topics are hosted throughout the year for members of the general public with an interest in medicine, including children and their parents.

Arousing interest

MedUni Vienna's communication initiatives start with the youngest age bracket, with activities including first aid for teddy bears at the Teddy Bear Hospital and performing brain surgery on peppers at the Children's Medical University. Not only great fun, they are a good way for children to gain valuable knowledge, while helping to remove any fears they may have about going to the doctor. "Introducing the next generation to the world of science and getting them interested in medicine and health starts at a very young age at MedUni Vienna, with the Children's Medical University and the Teddy Bear Hospital. Instructors work alongside students, sharing insights into important health topics while sparking an interest and developing understanding at an early age," says Vice Rector Anita Rieder, outlining the idea behind the two highly successful initiatives: Around 2,000 kids 'study' at the Children's Medical University each summer, and July 2019 was no different. The children find the course so enjoyable that some of them later go on to study medicine.

Safety culture across the board

Every year since its inception in 2015, the MedUni Vienna-backed Patient Safety Platform has invited everyone working in healthcare to do their bit for patient safety. In summer 2019, the World Health Organization's executive council, the World Health Assembly, declared 17 September annual World Patient Safety Day. The theme of the very first World Patient Safety Day in 2019 was 'Patient Safety: a global health priority'. To mark the occasion, various innovative projects were presented and discussed at a joint event hosted by MedUni Vienna and Vienna General Hospital.

Developing best-practice models

"At the Medical University of Vienna, conducting research into new treatment process paths is important in order to improve patient safety in a complex hospital environment," explains Klaus Markstaller, Head of the Department of Anesthesia, Critical Care and Pain Medicine. "One of the special challenges for this particular area of research is working in a joined-up way across disciplines and functions – which is why a task force and steering group have been set up open by MedUni Vienna and Vienna General Hospital that are open to all medical professions and disciplines. The goal is to increase visibility and develop joint best-practice models," he notes.



Day of the Medical University of Vienna

On 12 March 2019 – exactly 655 years after its founding – MedUni Vienna hosted its first ever Day of the University event. The formal opening ceremony was followed by a university lecture, discussion rounds, talks, academic celebrations and awards and a party which went on until late in the evening. In view of its success in the first year, there are plans to make the event an annual fixture. Presentation of MedUni Vienna's new brand video was one of the highlights, alongside a captivating talk by world-famous radiologist and biomedical engineer Elias Zerhouni. The first year's theme was 'on point', covering some of the most important trends in 21st-century medicine such as big data and precision medicine in various events and lectures.



University meets the public

Children are just one of the target audiences, as Anita Rieder explains: "In essence, our experts are key agents for knowledge transfer, and translate health information for the general public – overall, this is one of the core ways that MedUni Vienna contributes to society: being at the population's service with our expertise." MedUni Vienna's Alumni Club takes the same approach, regularly hosting public events that enable members of the general public to connect with students, graduates and researchers.

Held five times a year, MedUni Vienna's long-standing Health Talks with Austrian broadsheet Der Kurier are specifically designed as a low-threshold programme. Experts from the university talk to around 200 participants on a variety of topics, which in 2019 ranged from the skin as an immune system, to inflammatory bowel disease, to vices and addiction. MedUni Vienna regularly sends university lecturers to the University Meets Public events staged in a cooperation between the Center for Precision Medicine and the Wiener Volkshochschulen (VHS) adult education colleges, to give accessible and insightful talks on their latest research projects. Meanwhile, the MINI MED evenings held approximately 20 times a year offer people outside the university the chance to find out more about specific medical topics such as the effects of stress on the gut.

The Comprehensive Cancer Center Vienna (CCC), a joint facility established by MedUni Vienna and Vienna General Hospital, is committed to sharing information about the disease through its

Cancer School programme. Introductory and follow-up courses and excursions explore causes for the development of the disease, diagnosis and treatment methods, aspects of aftercare and social security questions, all explained in easy-to-follow language. The service is not just aimed at patients, but also relatives, patient representatives and people who work with cancer in their profession, too. Events have a positive effect in the other direction too, as researchers benefit from working with the public, for example by gaining opportunities to learn from patient organisations and parents of children suffering from rare diseases.

Dialogue between the scientific community and society

Through all of these measures, MedUni Vienna is able to improve healthcare expertise in the general population and raise awareness of important topics, while encouraging people with an interest in science and research to engage even more closely with the subjects, and even involving them directly in research activities. "These initiatives make the importance of research for our shared future more visible to a broader public. But it's also about drawing on insights from patients and involving them in new research ideas and their implementation," says Vice Rector for Research and Innovation Michaela Fritz, commenting on the relevance of public science projects. "Dialogue and interaction between science and wider society are important factors that can underpin public trust in the services provided by our university," she concludes.

Making an impact through public health



eases. At MedUni Vienna, the project is headed by Ruth Kutalek from the Department of Social and Preventive Medicine. Content focuses on social behaviour in epidemics, identifying and targeting at-risk groups and finding ways to integrate appropriate public health measures at local community level.

Mobile and healthy in old age

People who exercise regularly into old age enjoy greater day-to-day independence for longer, are not as reliant on outside assistance and save themselves and their communities money on care and support – these are the central findings of a recent study led by Thomas Dorner from the Center for Public Health and Richard Crevenna from the Department of Physical Medicine, Rehabilitation and Occupational Medicine. The study was published in time for European Public Health Week in May 2019.

Being born in December reduces cardiovascular risk

Links between death from cardiovascular disease and the time of year that the deceased was born have been the subject of multiple studies over the years. And now a research group led by Eva Schernhammer, Head of the Division of Epidemiology, has established a clear link between the month of birth and an increased risk of death from a cardiovascular disorder. According to the findings, women born in December have a lower risk of dying from such diseases than women who are born between March and July. The study was published in the British Medical Journal.



Public health

is concerned with protecting the health of entire populations with a specific focus on preventing diseases, promoting health and extending people's lives

In 2019, the tenth outbreak of Ebola since the emergence of the virus rocked the Congo. SONAR-global, an international social sciences network, was initiated to bolster public health measures in the face of epidemics like this in future, and to optimise cooperation with those affected. MedUni Vienna is heavily involved in the project, which is financed under the EU Horizon 2020 programme. Its ongoing and planned activities attracted recognition in the May 2019 issue of The Lancet Infectious Dis-



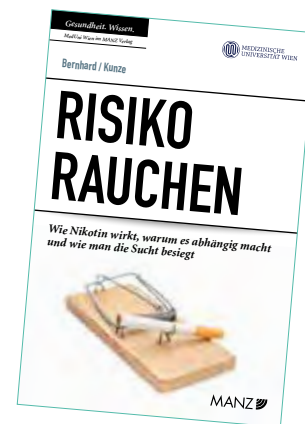
Vienna General Hospital declared a no-smoking zone

In addition to the smoking bans that were already in place in buildings, the entire site occupied by the MedUni Vienna General Hospital Campus was declared a smoke-free zone starting 1 July 2020. An information event on 4 June 2019 set the new changes in motion. From June onwards, a series of support programmes were launched to help staff and students adjust to the new rules. "Introducing this smoking ban throughout the campus shows how seriously we take our responsibility for the health of our staff and patients, and is fully in keeping with our role as the leading health institution in Austria," Vice Rector Oswald Wagner explains.

Taking responsibility for the health of all Austrians

In 2018, in the context of the general debate on anti-smoking laws in Austria, MedUni Vienna and Vienna General Hospital launched their Medics Against Smoking programme with the support of numerous researchers, who presented scientific facts and other information on the health dangers of passive and active

smoking. May 2019 saw the publication of a new guide entitled *Risiko Rauchen* (Smoking risks – how nicotine works, why it makes you addicted and how you can beat addiction to it) by MANZ Verlag in cooperation with MedUni Vienna. In it, Michael Kunze and Gerda Bernhard explain how a dependency on tobacco arises, the associated health risks, and how best to break the cycle of nicotine addiction. Plus tips for day X – the day of your last cigarette.



Published in 2019, *Risiko Rauchen* was the 11th book in the successful MedUni Vienna and MANZ Verlag self-help series.



Hygiene pioneer: A statue in memory of hand-washing pioneer Ignaz Semmelweis and gifted to MedUni Vienna by Semmelweis University in Budapest was unveiled on 21 February 2019. In the face of fierce opposition, Semmelweis introduced the world's first strict hand-washing and hygiene policy at Vienna General Hospital's maternity department in 1847. The unveiling ceremony was attended by Hungarian President János Áder, First President of Vienna Provincial Parliament Ernst Woller, Vienna General Hospital Director Herwig Wetzlinger, Rector of Semmelweis University in Budapest Béla Merkely and MedUni Vienna Rector Markus Müller.

Climate protection is health protection

In September 2019 at the start of a Climate Reminder Week packed with events and campaigns, MedUni Vienna and the Austrian Medical Chamber drew attention to the very real current and looming dangers of the climate crisis. “As doctors we have a special responsibility – but we are all called upon to take action,” was the overarching message.

140

MILLION

*climate refugees
by 2050*

“Climate change is one of the greatest challenges of our time. Whether it’s heat-waves, flooding or other climate-change driven events that have social, environmental or economic impacts, more often than not the detrimental effect on the health of those affected is a chief concern,” says MedUni Vienna Rector Markus Müller. “That’s why it’s so important for us at the Medical University of Vienna to engage with this topic, take responsibility and raise awareness of this global problem,” he adds.

Immense damage

The current climate anomalies and extreme weather conditions are already causing an immense amount of financial damage. But flooding, flash floods, storms and extreme heat in particular have a huge impact on people’s health and quality of life. If the 1.5°C target is not met, hundreds of millions more people will be directly affected by deadly 50°C heat waves. And by 2050 there could be as many as 140 million climate refugees unless politicians take more decisive action against climate change.

Implementing suitable measures

To summarise the medical experts, people can – and must – do a great deal. In their view, we must change our unhealthy and environmentally-damaging lifestyles today rather than wait until tomorrow if we are to avert the serious deterioration that is on the horizon. The scientific insights show that increased physical exercise – including when it comes to personal transport choices – eating less meat and adopting a critical attitude to today’s throwaway society adds up to improved health outcomes for all.

Wide-ranging effects on health

The challenges faced by the world of medicine will increase considerably, according to Hans-Peter Hutter. An environmental health expert from the MedUni Vienna Center for Public Health, Hutter says the climate crisis will have an enormous impact on human health. And in future there will be a far greater number of days when temperatures exceed 30°C, with a tenfold rise expected by 2100. As a result, the number of heat-related

WE ALL HAVE TO ACT.
NOW!



deaths will increase sharply. Rising temperatures will also bring more allergies and increased incidence of respiratory illness owing to higher pollen counts and a jump in atmospheric pollution, as well as a northward spread of infectious diseases – in particular, those found previously only in the tropics.

Doctors leading the way

For Hutter, strategies for adapting to the changes in the climate as well as climate protection measures need to be implemented as quickly as possible to protect people's health. "The healthcare sector is responsible for coming up with a response to the challenges of climate change at both the clinical and the preventive level. And doctors should lead the way as far as adopting a climate-friendly lifestyle is concerned," Hutter concludes.





Diseases in our sights

With the publication of new research discoveries, thrombosis, allergies and cancer were in the public eye during 2019. Brain research also gained special attention: studies showed that a diverse range of substances can have a significant negative effect on unborn babies during pregnancy – as well as consuming psychostimulants, coffee or nicotine, a high-fat diet can also have an impact.

A study team at MedUni Vienna's Center for Brain Research in collaboration with partners in Austria and abroad showed that abuse of psychostimulants during pregnancy can not only lead to foetal brain damage, but also to abnormal development of other organs.

Drug use by pregnant mothers can cause diabetes in children

The study aimed to discover whether the underlying mechanisms behind such metabolic disorders are similar to those that can occur in the brain. It was found that psychostimulants influence serotonin pathways in the pancreas, affecting the development of pancreatic beta cells, which are responsible for insulin production. This results in lower production of insulin, and permanently defective control of blood sugar levels. "The beta cells in the pancreas receive modifications to their epigenetic programming due to the drugs, which changes their identity in a certain way, limiting production of insulin," explains lead author Tibor Harkany. "This deficit results from modified epigenetic programming as a consequence of psychostimulant consumption by the mother, and remains for the whole of the child's life."



ADHS, schizophrenia

and anxiety disorders can result from a high-fat diet during pregnancy

Coffee, nicotine and amphetamines activate “hot spots” in the brain

In another study, published in the Proceedings of the National Academy of Sciences (PNAS), researchers at the Center for Brain Research in cooperation with the Karolinska Institutet in Sweden identified the areas of the brain that function as “hot spots” for psychostimulants. They found that consumption of amphetamine, nicotine or caffeine during pregnancy triggers wide-ranging malfunction in the foetal brain. Lead author Tibor Harkany from the Center for Brain Research: “A new type of neuron was found in the indusium griseum. Its development is severely inhibited by psychostimulants, meaning that the baby is born with neurons that are still in a foetal state. A significant consequence is that these cells are unable to integrate into the brain over the long term.”

“This shows that the networks in the brain are more complex than previously thought, and that the coordination of brain functions is even more multifaceted than expected,” emphasises Thomas Hökfelt, Adjunct Professor at the Center for Brain Research. Because these neurons form part of cognitive networks and are likely to facilitate thinking and memory, psychostimulants affect the network as it is developing, and life-long deficits may result.



High-fat diet damages foetus’ brain during pregnancy

However, it doesn’t have to be psychostimulants. A high-fat diet during pregnancy can also cause severe, irreparable damage. According to a study by the Center for Brain Research published in Molecular Psychiatry, mothers who consume a higher level of unsaturated fatty acids produce an excess of endocannabinoids, which overload the foetal organism and impair the development of healthy networks in the brain. Diseases such as ADHS, schizophrenia or anxiety disorders are the consequence. It is unlikely that such damage can be reversed by later modifications to diet. The study also shows that the impairments described are lifelong.

8-10

YEARS

until we have a potential topical treatment for pollen allergies administered by nasal spray or eyedrops



Ragweed app for the whole of Austria

The plant ragweed can lead to severe health complications. In 2019 the Austrian pollen warning service, based at MedUni Vienna, released a ragweed finder app that facilitates a ragweed action plan for the whole of Austria. It supports those affected as well as researchers, agriculture, industry and society. The action plan was created in cooperation with all of Austria’s state governments, so that ragweed can be quickly cut down and destroyed. As Uwe E. Berger and Katharina Bastl from the pollen warning service make clear: “We need to increase awareness that ragweed is a problem affecting society at large.”

Flu? Cold? Limited understanding among the general public

Information and knowledge about the difference between influenza – a genuine flu infection – and the common cold is lacking. Most people are at pains to distinguish between the two, according to an international study in Belgium, Croatia and Austria led by Kathryn Hoffmann from the Division of General and Family Medicine. In contrast to the common cold, it is possible to have basic protection against influenza. It is therefore highly advisable to get a vaccination against seasonal influenza, which can be fatal in severe cases.



“Stop sign” for pollen

Approximately 800 million people worldwide suffer from a pollen allergy. In Austria, 20% of the population are affected. MedUni Vienna researchers have therefore begun a pollen allergy immunisation programme for camels, in order to produce heavy single-chain antibodies to treat pollen allergy. Sabine Flicker, of the Institute of Pathophysiology and Allergy Research, explains: “Camels have an unusual characteristic in that they produce antibodies that are made up of a single chain. We can produce these single-chain antibodies in the lab and test their protective potential. Each single-chain antibody that prevents allergen binding works like a stop sign for the allergy.”

Ozone causes breathing difficulties

The initial results of a new study have grabbed attention: higher levels of ozone seem to result in greater lung difficulties for allergy sufferers. The research established a direct connection between pollen count, air quality and allergy symptoms for the first time worldwide. The findings were announced by allergy experts in March 2019 at a press conference given by the Austrian pollen warning service, based at MedUni Vienna, together with the *Interessensgemeinschaft Allergenvermeidung* (a non-profit association for allergy prevention), around its annual outlook for the pollen season.



7,500

AUSTRIANS

die prematurely every year due to air pollution, according to the European Environment Agency

RISK OF ALLERGIES
TWO TO THREE TIMES HIGHER



Gastric protection drugs can trigger allergies

Using quantitative prescription data, a MedUni Vienna study in cooperation with social insurance carriers demonstrated a link between gastric protection drugs (especially proton-pump inhibitors, or PPIs) and subsequent prescription of allergy medication. The research showed that gastric protection medication made the risk of a reaction to allergens requiring anti-allergic treatment between two and three times higher. The findings were published in *Nature Communications*.

Better outcomes for numerous types of cancer

New drugs have significantly improved the prognosis for a range of cancers, and a study showed that the type of anaesthetic used in breast cancer surgery has no effect on the risk of relapse.



MedUni Vienna and Vienna General Hospital were involved in one of the world's biggest anaesthetics studies, which showed that use of an opioid general anaesthetic during breast cancer surgery does not increase the risk of tumours returning as compared with using regional anaesthesia. The findings, which were published in The Lancet, contradicted the assumption that anaesthesia can have a negative impact on cancer recovery.

Type of anaesthetic procedure has no influence on risk of relapse

Together with international colleagues, in the study a team led by Edith Fleischmann and Peter Marhofer at MedUni Vienna's and Vienna General Hospital's Department of Anesthesia, Critical Care and Pain Medicine were able to clear up the reservations regarding opioids. No advantages of regional anaesthetic could be identified in terms of breast cancer relapse. "This does

Patient safety

General anaesthesia using opioids does not present any additional risk for breast cancer patients

away with the last significant objection to the use of opioids for anaesthesia," explains Edith Fleischmann. Peter Marhofer adds: "Both general and regional anaesthetic are safe forms of anaesthesia with minimal complications."

Better prospects for triple-negative breast cancer patients

MedUni Vienna presented promising outcomes with regard to a particularly aggressive form of breast cancer to the congress of the American Society of Clinical Oncology (ASCO). A new immunotherapy combined with relatively gentle chemotherapy was shown to have a sustained positive effect on "triple negative" breast cancer. The combination of the immunotherapy with the monoclonal antibody atezolizumab and chemotherapy drug paclitaxel results in significantly longer survival for patients.

Avoiding severe side effects in cancer therapy

Targeted, highly effective cancer treatments often produce debilitating side effects. This is the case with one commonly used therapy which works by blocking the epidermal growth factor receptor (EGFR). If this protein is deactivated, the patient's skin is often so seriously affected by inflammations that the treatment must be stopped. Researchers led by Maria Sibilja of the Division of Cancer Research and the Comprehensive Cancer Center (CCC) unlocked the mechanisms that cause this skin condition, in a study conducted in collaboration with the Microbiome Facility (JMF), which is a joint venture of the University of Vienna and MedUni Vienna. They also developed a strategy that could be used to prevent this side effect. The results of the study were published in Science Translational Medicine.

40%

LONGER AVERAGE SURVIVAL TIME
with new combination therapies for triple-negative breast cancer and advanced kidney cancer



Healthy lifestyles and research are the most efficient ways to combat cancer – and the cancer research run combines the two. Proceeds are used to support the launch of innovative research projects, and participants support their own health by running laps of the course. 3,000 runners including 100 company teams took part in the 13th cancer research run at the Altes AKH campus, raising more than EUR 200,000 for cancer research.

Combination therapy may become standard for advanced kidney cancer

Another new combined therapy is significantly lengthening the lives of patients with advanced-stage kidney cancer. This was demonstrated by two effectiveness studies published in the New England Journal of Medicine. In the two studies, a new angiogenesis inhibitor called axitinib was ad-

ministered in combination with the immunotherapy treatments pembrolizumab and avelumab. The combination of pembrolizumab and axitinib markedly improved average survival times without the disease advancing. Manuela Schmidinger, an oncologist from MedUni Vienna, was one of the investigators taking part worldwide who included patients in the study. In the second study, participants were treated with avelumab and axitinib, which also significantly delayed the further advance of the disease. Due to their effectiveness, these combination therapies may become the new standard for initial treatment of metastatic renal cell carcinoma.

Smokers: early menopause increases bladder cancer risk

An interdisciplinary research group headed by Mohammad Abufaraj of the Department of Urology, together with university hospital departments in other countries in a study led by Eva Schernhammer, established that early menopause increases the risk of bladder cancer in smokers, using data from 230,000 participants in Nurses' Health Study I and II. Although hormonal factors do not play a role in the potential development of the disease, smokers who enter the menopause before the age of 45 have a 50% greater risk. The results of the study were presented at the European Association of Urology (EAU) Congress in Barcelona in March 2019, where MedUni Vienna's Department of Urology scooped up five awards.

4,900

MEN

in Austria are diagnosed with prostate cancer every year

Better treatment possibilities for prostate cancer patients

A new substance currently in development, in the class of drugs known as androgen receptor antagonists, can double the time period before metastasis in cases of prostate cancer. This was the finding of a large study with the involvement of Viennese hospitals that was published in the New England Journal of Medicine, to which Shahrokh Shariat, Head of the Department of Urology, and his department contributed. Overall, the new treatment reduced the risk of metastasis or death by 59%.

High risk of thrombosis for cancer patients

New guidelines

significantly improve prevention and treatment of thrombosis in cancer patients

THROMBOSIS: THE SECOND MOST COMMON CAUSE OF DEATH FOR CANCER PATIENTS



20% of all cases of venous thrombosis occur in connection with cancer, and they are the second most common cause of death in cancer patients. The Division of Hematology and Hemostaseology is one of Europe's leading centres in this field. A group of investigators led by Ingrid Pabinger and Cihan Ay have been researching the relationship between tumours and thrombosis for 15 years. The group was invited by The Lancet Oncology to work together with leading experts on drawing up new international guidelines to improve care for cancer patients who are at higher risk of thrombosis, or when thrombosis has occurred.

New thrombosis guidelines for cancer patients

On world thrombosis day, 13 October 2019, there was a special focus on this life-threatening condition in connection with cancer, and the new guidelines were a topic at a wide range of events around the world. Cihan Ay explains that major advances have been made in treatment: "Prevention and treatment of thrombosis in cancer patients has got better and easier thanks to direct oral administration of anticoagulants – medication which inhibits blood clotting and is included in the new guidelines."

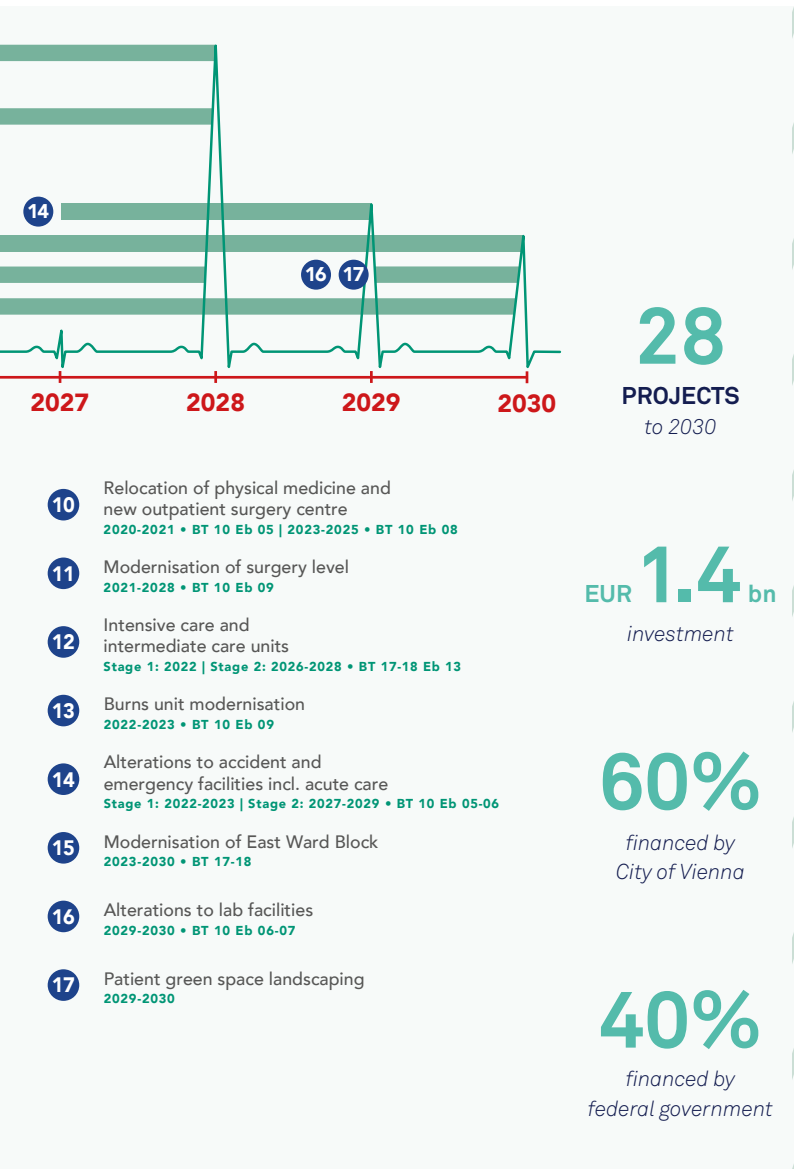
2020

EXPECTED APPROVAL

of the medication in the EU for children

Thrombosis in children: new, safer medication

Although medicines can have different effects on children than they do on adults, up to now few drugs have been approved specifically for this patient group. When treating thrombosis, children are usually given heparin and vitamin K antagonists, which can be problematic and are not approved for children. Now an international study has investigated the efficacy and safety of rivaroxaban (which is approved for adults) for children with acute venous thrombosis, in comparison with the standard treatment – with positive results. The study, led by Christoph Male of the Department of Pediatrics and Adolescent Medicine, was published in The Lancet Haematology.



In the top 4

medical universities in the German-speaking world

University rankings confirm consistent improvement

The Times Higher Education World University Rankings consistently rate the Medical University of Vienna better each year: in the 2019 overall ranking, MedUni Vienna was placed in the 201-250 group; just a few years ago, the university was ranked below place 300. This upward trend is also reflected in the US News rankings, with MedUni Vienna currently at place 196 in the Best Global Universities index. This ranking puts particular emphasis on the number and quality of research publications, as well as reputation in the academic community. In the clinical medicine category, MedUni Vienna is ranked 60th worldwide – or 22nd in Europe, and 4th among German-language universities, behind Munich, Zurich and Heidelberg.

Better conditions for doctors

Rather, “errors in the system” that have been present for years need to be corrected, and working conditions for doctors in Austria must be improved in order to boost attractiveness: “Austria is already a net producer of doctors for the whole world. Increasing study places will only intensify this as we use Austrian tax revenues to educate even more doctors for other countries,” emphasised MedUni Vienna Rector Markus Müller. This is clear from the numbers: as a percentage of the population, Austria already has very high numbers of medicine graduates by international comparison. However, current statistics show that only six out of ten of them start work in Austria.

Joint investment in the future of world-class medicine

Regardless of this political discussion, Vienna General Hospital and MedUni Vienna agreed on a comprehensive joint investment plan in January 2016, comprising 28 projects and a total investment of EUR 1.4 billion up to 2030, in order to be best placed to meet future requirements for medical care as well as teaching and research activities. This was underlined in mid-November by Vienna’s Executive City Councillor for Health, Peter Hacker, at a joint press conference with Herwig Wetzlinger, Director of Vienna General Hospital, and Oswald Wagner, Vice Rector of MedUni Vienna.



The MedUni Vienna Mariannengasse Campus will provide an ideal working environment for around 2,000 students and 750 researchers.



Construction projects already under way

The first project under the Construction Framework Agreement, namely the expansion of Child and Adolescent Psychiatry, was presented in February 2019. The adaptation works will be completed in June 2020, resulting in a clinic that is in line with the latest standards, including green spaces for patients. The expansion of the cardiothoracic centre for outpatient care is also nearly complete.

Further projects in the coming years

Another large project is the new parent and child centre and completion of the Kliniken am Südgarten (South Garden Clinics), including the paediatric surgery centre. Paediatrics, neonatology, paediatric surgery and maternity patients will all benefit from shorter care pathways and state-of-the-art infrastructure. The project is scheduled to be finished in 2022. An additional focus area is modernisation of operating theatres and refurbishing inpatient wards.

New research centres for the medicine of the future

In another major investment project, three centres being built at the MedUni Vienna General Hospital Campus will shape the future of medicine in the 21st century: the Center for Precision Medicine, the Center for Translational Medicine and Therapies, and the Center for Technology Transfer. All three of these institutions will be built and begin operations in the coming years. MedUni Vienna has initiated a fundraising campaign for the Center for Precision Medicine, aimed at also raising public awareness of precision medicine – probably the most important trend for the future of medical care. A significant component of the new MedUni campus will be the new high-tech Mariannengasse Campus. Preliminary work began in 2019, and the building is scheduled to be fully operational in time for the 2025/26 winter semester.

Digitalisation and world-class medicine

Center for Precision Medicine

The first Darwin's Circle digital health conference took place on 23 May 2019, a collaboration between MedUni Vienna and Darwin's Circle. The event featured top experts on areas including genetics, healthcare 4.0 and robotics, and took place in MedUni Vienna's Van Swieten Saal. The focus was the most important trend in medicine in the 21st century: precision medicine. MedUni Vienna begins construction of its Center for Precision Medicine in 2022, at the MedUni Vienna General Hospital Campus. Proceeds from the conference went towards this project.

Austrian Ski Federation stars auction racing gear for charity

The Austrian Ski Federation (ÖSV) launched a charity initiative to support construction of the Center for Precision Medicine at the end of 2019. Skiing stars gave up valuable race equipment to be sold in a series of four auctions. This included an original race suit belonging to eight-time World Cup champion Marcel Hirscher, Anna Veith's giant slalom race skis, and ski boots used by Garmisch double world champion Lizz Görgl. Proceeds were donated in full towards construction of the Center for Precision Medicine.

Personalised precision medicine

At the Center for Precision Medicine, researchers will look for new ways to treat incurable diseases using personalised precision medicine. This pioneering institution is being financed through fundraising.

Donations account

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or make a donation directly at www.zpm.at







Outstanding achievements

MedUni Vienna makes vital contributions to advances in medicine, enabling patients to get much more out of life.

When it comes to heart surgery and expertise in such operations, MedUni Vienna is a world leader. The same goes for the treatment of functional mitral regurgitation. For years, experts from all over the world have been discussing the question of how to determine when an operation on the mitral valve is unavoidable. The debate revolves around the amount of blood that can be allowed to flow back through the leaky valve. "In the USA, doctors currently operate when the amount of blood reaches 60ml, but their European counterparts do so at 30ml," explain cardiologists Philipp Bartko and Georg Goliashch of the Department of Medicine II.

Mitral regurgitation: study helps to revolutionise and standardise treatment principles

This particular discussion has now been put to bed. A study written by Bartko and Goliashch, which was published in the Journal of the American College of Cardiology, demonstrated for the first time the connection between the amount of blood flowing back through the valve and the survival rate among patients, and determined a new threshold to support effective classification regarding the need for a valve operation. "We showed that 45ml is an appropriate cut-off," they report.



Outstanding safety

for patients and the lowest possible impact thanks to innovative, minimally invasive operating techniques



New global treatment principles aimed at promoting precision medicine

“This will revolutionise the principles that currently guide treatment all over the world – especially in terms of precision medicine. It will enable much better evaluation of who needs which treatment and when,” adds Martin Hülsmann, Head of the Cardiac Insufficiency Specialist Clinic. Aimed at rectifying the problem for good, the treatment can either take the form of surgery or a minimally invasive procedure, and involves attaching a clip to both flaps in the mitral valve. There is no need to open the rib cage. “We can treat functional mitral regurgitation extremely effectively using a catheter in the new hybrid operating theatre at Vienna General Hospital. So we are able to use the very latest and the very best technology currently available,” as Bartko and Goliash point out.

Hybrid operating theatre – another success story

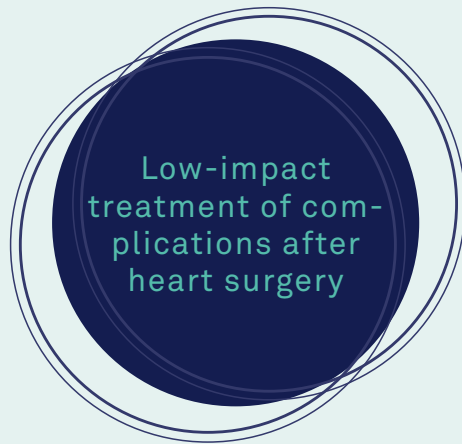
Opened in 2017, the hybrid operating theatre is used jointly by the Cardiology and Cardiac Surgery divi-

sions. It is regarded as the most advanced operating theatre in Europe, thanks in particular to the unique imaging techniques available. This allows for completely new types of surgery using smaller and smaller entry points. “At the moment, transcatheter valve replacement is the method of choice when treating high-risk patients, especially those with aortic valve conditions,” according to Christian Hengstenberg, Head of the Division of Cardiology.

Complex surgeries and development of new procedures

The angiography unit in the hybrid operating theatre provides access to a full range of imaging information. This makes even the most complex interventions possible, and clears the way for the development of new procedures – many of them minimally invasive, which significantly reduces the strain on patients. Operations are monitored on large screens. This maximises patient safety, and gives the surgeon the greatest possible control over the operation.

Electrical impulse reduces post-operative atrial fibrillation



Atrial fibrillation is one of the most common complications following heart surgery, affecting one in three patients. This undesirable side effect, with symptoms including heart palpitations, dizziness, shortness of breath or tightness in the chest, is usually suppressed using drugs, some of which can be strong.

Halving the risk

However, a phase II trial at the Department of Surgery headed by Martin Andreas, Alfred Kocher and Michael Wolzt of the Department of Clinical Pharmacology showed that non-invasive application of electrical impulses to the ear – directly to the vagus nerve, which runs there – can cut the risk of post-operative atrial fibrillation by half.

Final phase III trial planned

Stimulus is applied without interruption in the first five days following an operation, and ended if the results are good. “Now we are carrying out a phase III trial which will evaluate our promising results,” comments Martin Andreas. “If the trial results are also positive, we can expect the innovation to be used in clinical practice in four or five years’ time.”



CCP: focus on children and mothers-to-be

MedUni Vienna's Department of Pediatrics and Adolescent Medicine is the largest and most important facility of its kind in Austria. Opened in 2019, the Comprehensive Center for Pediatrics (CCP) aims to enhance interdisciplinary cooperation with other units, such as Anesthesia, Cardiac Surgery and Biomedical Imaging, to make such collaboration more efficient for the benefit of patients, and to ensure that the precision-medicine findings are used to greater effect. According to Vice Rector for Clinical Affairs Oswald Wagner: “The CCP combines expert, interdisciplinary medical care with clinical research and teaching that meet the highest scientific standards. We have a similar centre that has achieved major success in cancer treatment and research: the Comprehensive Cancer Center Vienna. Our experience there has shown how important it is to bundle the expertise of the various specialist fields in a single centre.”

Robotic diagnosis



The digital revolution in ophthalmology became reality in clinical practice in mid-2019. Since then, doctors at MedUni Vienna and Vienna General Hospital have been able to identify diabetic retinopathy using automated digital retina screening, without the help of ophthalmologists. “The robot makes the diagnosis all on its own,” explains Ursula Schmidt-Erfurth, Head of the Department of Ophthalmology and Optometrics.

Strategy combats personal, medical and economic problem

This is an important step – 420 million people worldwide suffer from diabetes and 75% of them are affected by retina damage, which is frequently associated with significant loss of sight and irreversible visual impairments. And this in turn causes economic problems, as diabetics often begin to experience eye conditions when they are still of working age.



Even if a robot performs a diagnosis, interpreting the results is still a matter for physicians.

Efficient and cost effective

Now, an artificial-intelligence solution provides a cost-effective and efficient means of integrating early recognition into routine medical practice. As part of a project managed by the Department of Ophthalmology and Optometrics, a robotic camera is now in operation at three diabetology departments in Vienna (at Vienna General Hospital, and the Rudolfstiftung and Kaiser-Franz-Josef-Spital hospitals). In a matter of minutes it can identify whether a diabetes sufferer has retina damage that requires treatment. “The patient sits in front of the camera and the diagnosis is printed out five minutes later,” explains Schmidt-Erfurth, who also heads the Christian Doppler Laboratory for Artificial Intelligence in Ophthalmology at MedUni Vienna.

Diagnosis – artificial intelligence outperforms humans

The strong potential of big data and artificial intelligence (AI) was underlined in a MedUni Vienna study



published in *The Lancet Oncology*, which pitted 511 physicians against 139 imaging algorithms developed by 77 different laboratories around the world. According to the study, AI has the upper hand over humans in the diagnosis of pigmented skin lesions such as birthmarks and melanomas.

Machines get it right more often ...

The machines learned from the HAM10000 image database, which contains more than 10,000 images of different categories of pigmented skin lesions, including harmless birthmarks, liver spots and strawberry marks, as well as malignant melanomas and images of cases of Bowen’s disease (or squamous cell carcinoma). By contrast, the physicians had to rely solely on their medical expertise. The results were clear: the best diagnosticians correctly identified an average of 18.8 pictures out of 30, but the top-performing machines classified 25.4 of 30 images correctly.

... but aren’t a replacement for medical expertise

But when it comes to diagnosing skin lesions, machines won’t replace people any time soon. “Patient diagnosis is also a matter of observing the progression of the disease, assessing whether sufferers are high-risk on the basis of associated circumstances, touching the skin to find out what a change feels like, and making comparisons with other birthmarks on the patient’s body. Interpreting results is still a job for humans,” comments Philipp Tschandl of the Department of Dermatology, who was the lead author of the study.



Higher success rates for kidney transplants

Genome analysis improves transplant success rates

Matching genetic characteristics are vital for the long-term functioning of a transplanted kidney. This is the key finding of a study published in *The Lancet*, in which a global consortium headed by Rainer Oberbauer, Roman Reindl-Schwaighofer and Andreas Heinzl of the Division of Nephrology and Dialysis looked at over 500 patients who had undergone kidney transplants.

Genetic differences identified as cause of failed transplants

“Until now, it was widely known that a match in a section of the major histocompatibility complex on chromosome 6 played a vital role in survival following a transplant,” as Oberbauer explains, “but even with a perfect match between the donor organ and the recipient in this region, about 20% of transplants still failed within the first five years.” The MedUni Vienna team found that this was due to mismatches in various other genetic regions.

Genome analysis recommended before transplants

The conclusion suggested by the findings is that whole-genome analysis of both donor and recipient should be carried out before a living-donor kidney transplant, in order to carry out tissue typing. According to Oberbauer, MedUni Vienna has been routinely performing this check for several years in the case of poor tissue matches in the major histocompatibility complex – and with great success. Widespread application of such testing could help to significantly improve the success rate for kidney transplants around the world. At present, around 20% of transplanted kidneys fail after five years, and after 15 years the figure rises to 50%.

OPTION FOR
NEW MEDICATION



Skin stem cells can trigger psoriasis

Psoriasis is not a congenital condition. It emerges over the course of a person's life and has various causes, including stress and UV radiation, some of which have not yet been researched. In a study published in leading journal *EMBO Molecular Medicine*, a team of researchers from the Department of Dermatology and the Department of Laboratory Medicine proved that genetic changes in the hair follicles of skin stem cells can also cause psoriasis.

Key step towards better understanding of the condition

"Using a mouse model, we were able to show that the signal for the disease can also be directed from the outside to the inside, and not just vice versa," explains lead author Erwin Wagner. He adds: "If you switch off the target genes of the transcription factors, the inflammation can be slowed considerably." This basic research finding is an important step towards improved understanding of this heterogeneous condition.

Potential target for treatment identified

Additionally, the researchers found that thymic stromal lymphopoietin (TSLP), a transmitter that is released in large quantities in cases of psoriasis, plays a key role in this process. "If you inhibit TSLP, you can virtually stop the condition developing. This means TSLP is a potential target for future treatment approaches," says Wagner.

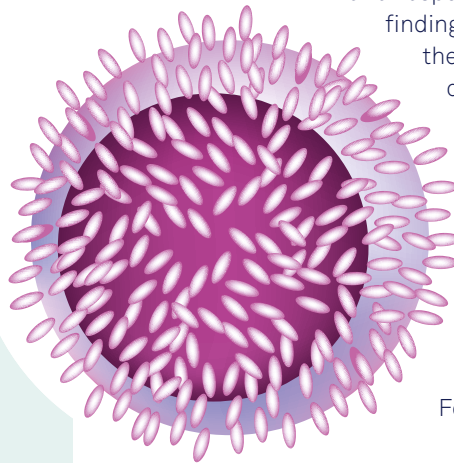


Although autoimmune diseases are common, in many cases the fundamental mechanisms behind them remain unclear. In a study published in Nature Communications, a team led by Kaan Boztug discovered a new rare disease and, in the process, identified a key molecule responsible for maintaining the balance of the immune system, which plays a decisive role in preventing autoimmunity. The researchers were also able to identify a targeted therapy which has already been used to successfully treat a child affected by the condition. The research was conducted at the Ludwig Boltzmann Institute for Rare and Undiagnosed Diseases, a collaboration between LGB, MedUni Vienna, CeMM and the St. Anna Kinderkrebsforschung childhood cancer research institute.

Melanoma: B-lymphocytes decisive for successful immunotherapy

So far, cancer research has focused on T-lymphocytes when it comes to the development of immunotherapies. In a study published in Nature Communications, a group of researchers led by dermatologists Johannes Griss and Stephan Wagner from the Department of Dermatology were able to demonstrate that special subtypes of B-cells also play a central role in the immune response to the melanoma. This

finding has the potential to drive the development of significantly improved immunotherapies. The international study was supported by the Austrian Science Fund (FWF), the European Research Council (ERC), the National Institute of Health and the Dr. Miriam and Sheldon G. Adelson Medical Research Foundation.

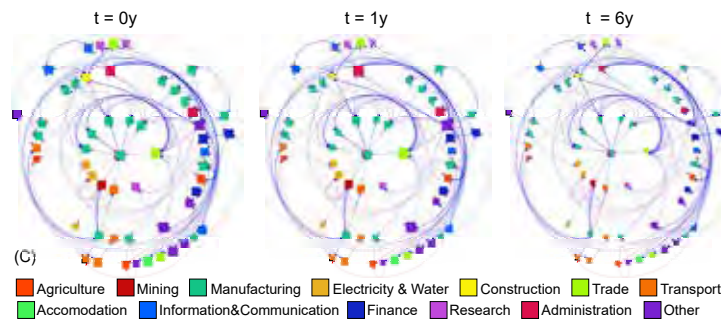


Fundamental insights into cancer and autoimmune diseases

Learning from the past – lessons for the future

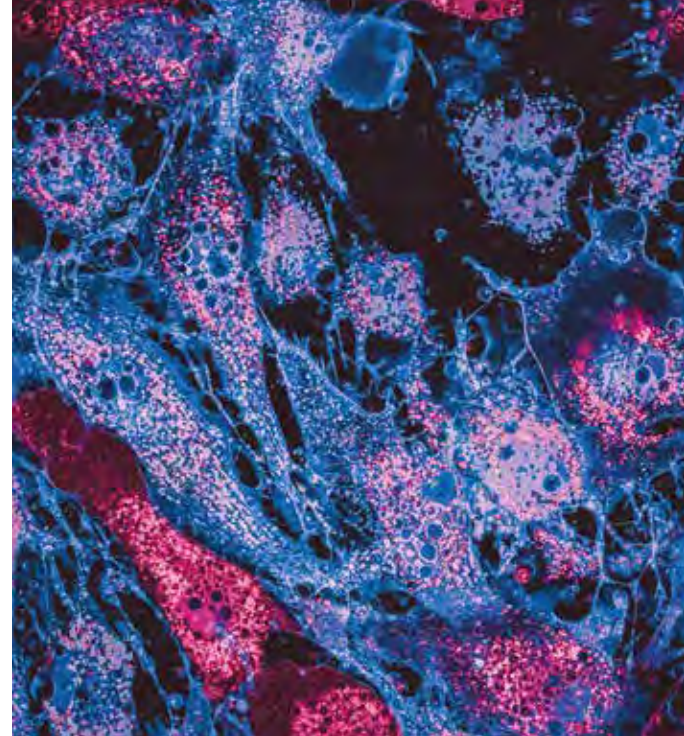
Why did economies take so long to recover from the 2008 recession? What is the effect of the steel and aluminium import duties introduced by Donald Trump on production in the EU? A newly developed digital tool created in Vienna by a research team headed by Stefan Thurner of the Complexity Science Hub (CSH) came up

with the answers to these questions. Details of the tool were published in Nature Communications. According to the researchers, the physical model they used – the linear response theory, which explains how electrical or magnetic substances respond to strong electrical or magnetic fields – significantly outperformed the economic models currently used in terms of the accuracy of predictions.



Leukaemia therapy: adopting a belt-and-braces approach

New cancer medicines are the cornerstones of personalised medicine. But in the case of leukaemia, they often merely slow the progression of the disease and are only rarely able to cure it. Patients need to take such medication permanently, which has serious side effects and costs the health system dearly. A joint study by the CeMM Research Centre for Molecular Medicine and MedUni Vienna, published in Nature Chemical Biology, showed how epigenetic analysis and automatic microscopy helps to identify promising combinations of medicines for the treatment of leukaemia and overcome possible restrictions. According to the study's lead authors, a new method for the targeted development of combined treatments represents an important step on the path to personalised oncology.



Mitochondria: when friend turns foe

A research group from MedUni Vienna and the CeMM Research Centre for Molecular Medicine decoded a new mechanism by which cells communicate in inflammatory processes. This involves endogenous mitochondria released from white blood cells triggering inflammation. Put simply, in effect, friends become enemies. An important basic-research finding, chronic inflammation promotes the development of conditions such as cardiovascular diseases. Conducted by Christoph Binder from the Department of Laboratory Medicine at MedUni Vienna and the CeMM, and his colleagues Taras Afonyushkin and Florian Puhm, as well as other partners, the study was published in Circulation Research.

Molecular processes behind vascular ageing discovered

Cardiovascular diseases lead to arteriosclerosis and heart failure, which are among the most widespread age-related conditions. In a study published in medical journal JCI, researchers in the group headed by Roland Foisner from the Max Perutz Labs at the University of Vienna and MedUni Vienna, working alongside scientists from the Ludwig Boltzmann Cluster for Cardiovascular Research, MedUni Vienna's Centre for Biomedical Research, and BOKU Vienna, described the molecular mechanisms behind cardiovascular diseases in the context of Hutchison Gilford Syndrome, a genetic disorder more commonly known as progeria. The findings could help researchers to better understand the natural ageing processes of the cardiovascular system.

Statins heighten risk of osteoporosis



There is a link between statin dosages and osteoporosis: the higher the dose of statins, the greater the likelihood of osteoporosis. This was proven by a team of researchers at MedUni Vienna under the endocrinologists and gender physicians Michael Leutner and Alexandra Kautzky-Willer, as well as the Department for Complex Static Systems led by Peter Klimek and Caspar Matzhold, in cooperation with the Complexity Science Hub Vienna following analysis of several million data sets.

Cholesterol-lowering drugs affect hormones

This new discovery is important, as statins are often used in the prevention and treatment of cardiovascular diseases due to their ability to lower cholesterol. However, there is a flip side to lowering cholesterol levels, as Kautzky-Willer explains: "Cholesterol is the basic element for the synthesis of sex hormones such as oestradiol and testosterone, but also of mineralocorticoids and glucocorticoids such as aldosterone and cortisol. Earlier studies have shown that low concentrations of sex hormones – here particularly the reduction of oestrogen during menopause – play a substantial part in the increase in osteoporosis in women. There is a similar relationship between bone density and testosterone."

The dose makes the difference

Against this biochemical backdrop, the relationship between statins and their dosages, and osteoporosis diagnoses was explored by looking at the health data of more than 7.9 million Austrians – an exemplary use of big data – from 2006 and 2007, filtered for those who had regularly taken statins for at least



a year. Surprisingly, patients given a dosage of up to 10mg were found to have a lower risk of developing osteoporosis than the control group who had not taken statins. From a dose of 20mg, the pattern reversed with the number of osteoporosis cases rising sharply.

Monitoring recommended for high-risk patients

Particularly patients with a high risk of developing osteoporosis, such as post-menopausal women undergoing statin therapy, should undergo regular bone metabolism checks – another important step towards personalised and individualised medicine. The study was supported by the Vienna Science and Technology Fund (Municipal Dept. 16-045) and published in *Annals of the Rheumatic Diseases*.



80,000

AUSTRIANS

have rheumatoid arthritis



New therapy option for rheumatoid arthritis patients

A medicine currently awaiting approval that contains the selective Janus kinase (JAK) inhibitor upadacitinib has shown itself to be a new and extremely effective treatment option for rheumatoid arthritis following an international study presided over by rheumatologist Josef Smolen from the Department of Medicine III. At present, two other JAK inhibitors (tofacitinib and baricitinib) are used to treat rheumatoid arthritis, albeit usually as part of a combination therapy also involving the standard treatment methotrexate.

20% of patients free of symptoms after three months

In the new study, which was published in *The Lancet*, researchers showed that significantly better results are possible when upadacitinib is used as a monotherapy: "With a daily dose of 15mg, more than one third of patients reported lower disease activity, a figure that rises to almost 50% with a dose of 30mg," Smolen says. "12.5% of patients given the lower dose and around 20% of those who received the higher dose experienced sustained remission – a state where disease

activity stops entirely. And that was after just three months," he concludes.

Tablet to replace injection

Unlike other therapies, treatment with Janus kinase inhibitors has the advantage that rather than being administered by injection, they are taken in the form of a daily tablet, making them a much more straightforward treatment option. And using upadacitinib has an additional outcome: "It works extremely quickly – positive responses are seen in just two to four weeks," says Smolen, who is the world's second-most-quoted rheumatism expert.



Insights and new discoveries

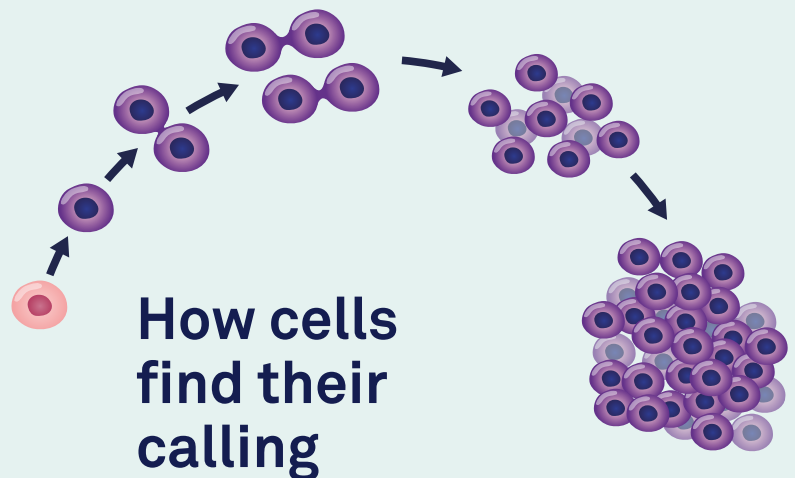


Twitter campaign against nutritional advice

In mid-January 2019, the EAT Lancet Commission presented a concept entitled 'The planetary health diet', which showed how precise nutrition guidelines are not just beneficial for health, but for the environment too. One central point was that consumption of red meat should not exceed 35g a day. Instead, people should eat more pulses, fruit and vegetables. By observing these guidelines, early deaths could be cut by around 20%, while also making a significant contribution to slowing climate change. Sensible recommendations that resonated well with many established media. But on Twitter the opposite was true, as David Garcia from the Complexity Science Hub (CSH) Vienna and a research team showed in *The Lancet*: according to the article, a campaign based around the #yes2meat hash tag successfully turned opinion against the recommendation to eat less meat.

Increase in suicides after 13 Reasons Why series

Suicide rates in the USA jumped after the release of 13 Reasons Why, a Netflix series in which a 17-year-old girl takes her own life. This was the conclusion drawn by researchers Thomas Niederkrotenthaler and Benedikt Till from the Suicide Research and Mental Health Promotion Unit at the Center for Public Health in a study published in *JAMA Psychiatry*. "In just three months a 13% rise was recorded in the 10-19 year old female bracket," Till and Niederkrotenthaler report. Due to the problematic treatment of the subject matter in the media, MedUni Vienna and the Austrian Society for Suicide Prevention (ÖGS) published a brochure entitled "Approaching the Netflix series '13 Reasons Why' in school", which is also suitable for use by teachers, doctors and families when looking at other ways in which suicide is portrayed.



An international study published in *Science*, in which MedUni Vienna played a major role, delivered important new insights into how the biological function of undifferentiated cells is determined. According to the researchers, the cells they looked at are faced with several competing options during the course of their development and take a number of binary choices before reaching their final state. The observations in the study have also helped to understand how cells can 'take a wrong turn' and start to divide uncontrollably – the key characteristics of a carcinoma, for example. Co-lead author Igor Adameyko from the Center for Brain Research: "Cancer-initiating events are still a mystery and our research suggests that they may result from miscalculations which leave the cell hanging in a corrupted state, in the same way as when a computer program crashes, even though the underlying hardware is still working."



Monoclonal antibodies against rare blood disorder

A newly developed monoclonal antibody can be used to treat acute thrombotic-thrombozytopenic purpura (TTP), as a phase III trial involving MedUni Vienna has shown. Acute TTP is a rare blood disorder that can also be fatal, with mortality rates of 10-20%. As a result, a fast-acting and effective treatment is particularly important. "After overcoming the acute phase, which has to be treated through plasma exchange, the autoimmune disease can be treated well through immune suppression. So well, in fact, that it disappears entirely," explains the study's co-author Paul Knöbl from the Division of Haematology and Hemostaseology.

New therapy for vivax malaria

Vivax malaria, a serious illness characterised by high temperatures, is the most common form of malaria in many parts of Asia and South America. While commonly-used medicines successfully combat the disease in its blood stages, they are unable to prevent malaria parasites from invading the liver. According to the results of an international phase III trial involving MedUni Vienna published in the *New England Journal of Medicine*, a new drug tafenoquine is able to prevent this with just a single dose. "It's important that the treatment only comprises a single dose," confirms co-author Harald Nödl from the Center for Pathophysiology, Infectiology and Immunology. Now trialled and expected to be available for clinical use in the near future, the drug provides "real hope that one day we will be able to eradicate vivax malaria in many countries. This is a huge opportunity," stresses Nödl.

Preventing multidrug resistance

Multiple resistance to cancer medicines or antibiotics (multidrug resistance or MDR) is a serious medical complication that can undermine or, in some cases, prevent the effective treatment of cancer or infections. Researchers from the Max Perutz Labs, a joint venture between MedUni Vienna and the University of Vienna, have now decoded how ABCG2 – a kind of cellular medicine pump – causes MDR. The results suggest new therapeutic strategies that can prevent MDR in the treatment of cancer or infections without significantly compromising normal physiological detoxification.



Major breakthroughs in the treatment of liver diseases

The beneficial effects of the synthetic bile acid with the active agent nor-ursodeoxycholic acid (nor-urso) in the treatment of the previously incurable liver disease primary sclerosing cholangitis (PSC) had already been demonstrated at the Division of Gastroenterology and Hepatology led by Michael Trauner around two years ago. And now a recent study published in *The Lancet Gastroenterology & Hepatology* has shown that nor-urso is an effective treatment option for nonalcoholic fatty liver disease. Usually caused by an unhealthy lifestyle with too much fatty and sugary food and too little exercise, the condition affects more than a quarter of all Austrians. Between 35% and 50% of people in the 50-60 age bracket already have a fatty liver, and the long-term effects, ranging from cirrhosis to cancer, can be serious.

Better prognosis for fatty liver

“The phase IIa trial of nor-urso that we have recently completed with help from numerous Austrian and German centres shows positive results when used to treat nonalcoholic fatty liver disease,” says lead author Stefan Traussnigg from MedUni Vienna’s Department of Medicine III. The main finding was that synthetically produced bile acid protects the liver from inflammation. The researchers used the hormone effect of the bile acid as a target. As Trauner explains: “The bile acid circulates through the body like a steroid hormone and regulates many metabolic processes. In fatty liver disease, it is as if a bile-acid-sig-

nal resistance develops, so that these processes no longer function properly. Nor-urso re-intensifies the hormone effect of the bile acid.” This gives patients a much better prognosis for the future course of the disease.

Personalised medicine in hepatology

At the same time, hepatologists at MedUni Vienna – all leading global experts in liver and biliary tract diseases – also identified two more treatment options involving bile acid. One of the approaches targets the activation of the FXR bile acid receptor (a sensor for bile acids) and was recently approved as a treatment for primary biliary cholangitis (PBC). In addition to the obeticholic acid used in this treatment option, other new FXR activators and ligands are also available, which have shown positive results in the treatment of biliary tract diseases and fatty liver disease. “These promising options now give us three further possibilities for individual treatment, in the sense of offering personalised medicine, that utilise the signal properties and hormone effects of bile acids. In future, we will be able to use these in combination to help patients,” Trauner notes.

FIGHTING THE LIFESTYLE DISEASE
FATTY LIVER





Successful treatment of fatty liver disease in obese patients

A group of researchers led by Thomas Scherer from the Division for Endocrinology and Metabolism at the Medical University of Vienna was able to decode the mechanism governing how the hormone leptin stimulates the liver to export lipids and reduce fat production in the liver, proving that it occurs due to the activation of neurons in the brain stem. These findings open up new approaches for the fight against nonalcoholic fatty liver disease, which often occurs in connection with obesity. One possible starting point for future therapies would be the direct administration of leptin into the brain, for instance by means of a nasal spray, thereby circumnavigating the blood-brain barrier. The results of the study were published in Nature Communications.

Genetic mutation improves prognosis for Wilson disease

Wilson disease – also known as copper storage disease – is a rare genetic disorder that disrupts the liver's ability to metabolise copper due to one or several gene mutations. This can lead to serious liver damage and neurological problems, among other complications. Around 300 people in Austria suffer from this hereditary condition. Alongside Yale and Heidelberg, MedUni Vienna is one of the leading research and treatment centres for this rare disease. Researchers at MedUni Vienna led by hepatologist Peter Ferenci have now discovered that a recently identified mutation in the gene HSD17B13 – apparently via metabolism of vitamin A – protects against fatty liver disease and ensures better outcomes for Wilson disease patients. This finding could prove highly beneficial for the personalised treatment of such patients in future.

DRIVING PROGRESS

Through its national and international partnerships and cooperations, strategic investments, top experts from Austria and abroad, and training for emerging talent, MedUni Vienna produces wide-ranging impetus that drives medical progress forward.





New top academic staff

A number of outstanding scientists strengthened the university's range of medical expertise in 2019 (presented here in alphabetical order).



Maria Sibia, Head of MedUni Vienna's Institute for Cancer Research, and Ursula Schmidt-Erfurth, Head of the Department of Ophthalmology and Optometrics were admitted as full members of the Austrian Academy of Sciences at its annual electoral meeting on 12 April 2019.



Daniel Aletaha became Professor of Rheumatology in July 2019, taking over management of the Division of Rheumatology in the Department of Medicine III. Previously he was interim head of the division.

Bertrand Lell, Head of the Centre de Recherches Médicale de Lambaréné, in Gabon, was appointed Professor of Tropical Medicine on 1 May 2019. Lell will drive forward scientific cooperation between Africa and Austria.



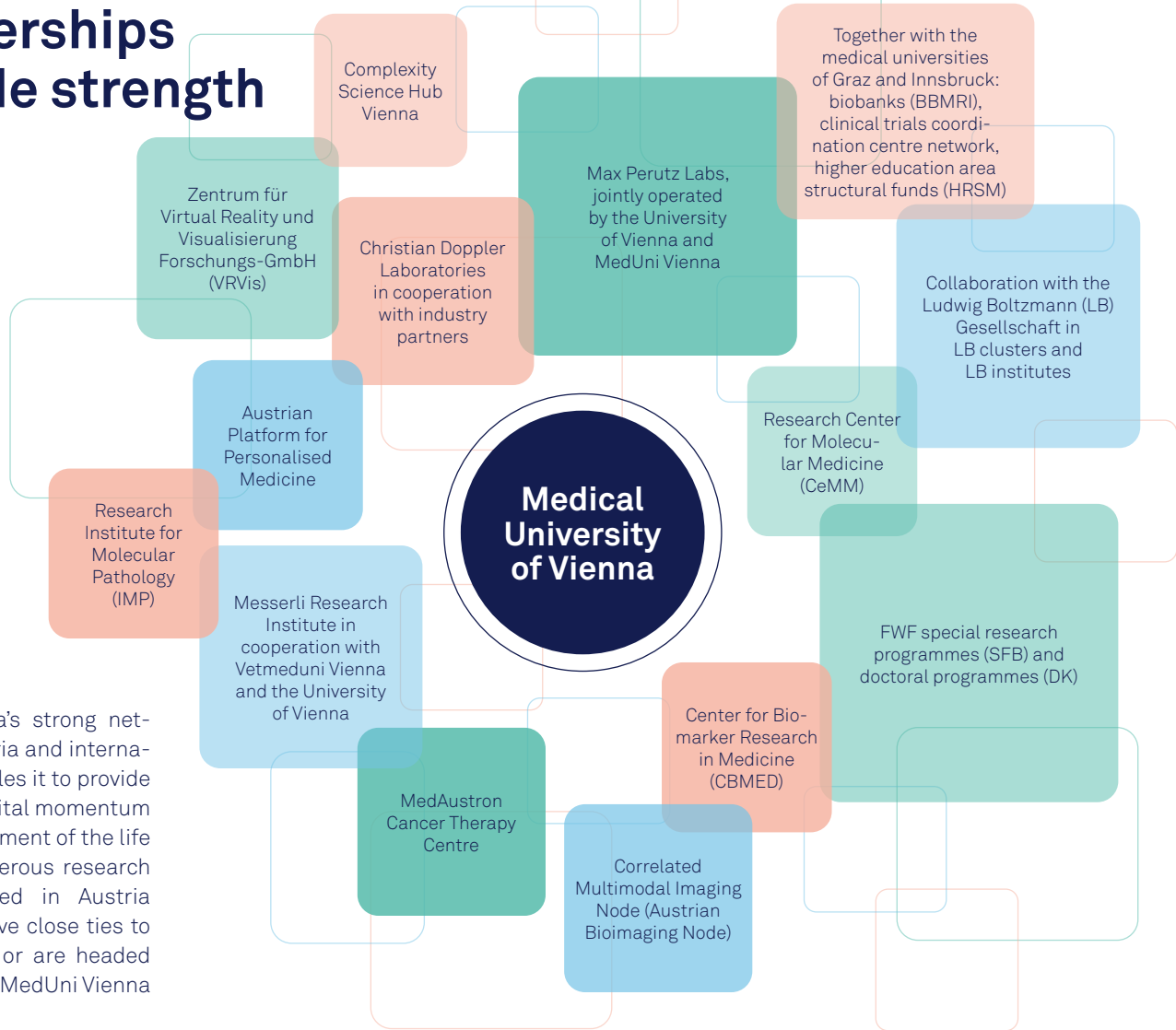
Karl Rössler was appointed Professor of Neurosurgery and Head of the Department of Neurosurgery as of July 2019. Professor Rössler returned to his alma mater from the University of Erlangen-Nürnberg (FAU).

Maxim Zaitsev became Professor of Magnetic Resonance Physics at the beginning of November 2019. Before joining the High Field Magnetic Resonance Centre of Excellence in Vienna, the MR physicist worked at Freiburg University Hospital.



Daniel Zimpfer was appointed Professor of Paediatric Heart Surgery as of 1 September 2019. Professor Zimpfer already led the paediatric heart surgery programme at the Division of Cardiac Surgery.

Partnerships provide strength



MedUni Vienna's strong network – in Austria and internationally – enables it to provide and maintain vital momentum for the development of the life sciences. Numerous research consortia based in Austria and abroad have close ties to the university, or are headed or managed by MedUni Vienna scientists.

Ready to go: special research programme on RNA modifications

The Austrian Science Fund (FWF) established a new special research programme (SFB), RNAdeco, in December 2019. Over the next four years, it will support 12 research groups investigating chemical modification of RNA. Five of the research groups (led by Walter Rossmanith, Matthias Schäfer, Elisa Vilardo, Javier Martinez and Michael Jantsch) are based at MedUni Vienna. The university currently coordinates the following SFBs:

- **Myeloproliferative Neoplasms**
(Project Manager: Peter Valent, Department of Medicine I)
- **RNA Regulation of the Transcriptome**
(Project Manager: Franz-Michael Jantsch)
- **Strategies for the Prevention and Treatment of Allergies**
(Project Manager: Rudolf Valenta, Institute of Pathophysiology and Allergy Research)
- **Inflammation and Thrombosis**
(Project Manager: Johannes Schmid, Center for Physiology and Pharmacology)
- **HDACs as Regulators of T Cell-mediated Immunity in Health and Disease**
(Project Manager: Wilfried Ellmeier, Institute of Immunology)
- **RNAdeco: Chemical Decoration of RNA**
(Project Manager: Michael F. Jantsch, Center for Anatomy and Cell Biology)

From lab to maturity

As joint institutions of MedUni Vienna, partners in industry and the Christian Doppler Research Association, the Christian Doppler Laboratories turn scientific discoveries into marketable products.

- **Applied Metabolomics**

(Head: Alexander Haug, commercial partner: Siemens Medical Solutions USA, Inc)

- **Molecular Stress Research in Peritoneal Dialysis**

(Head: Klaus Kratochwill; commercial partner: Zytoprotec GmbH)

- **Clinical Molecular MR Imaging**

(Head: Siegfried Trattinig; commercial partner: Siemens AG Österreich)

- **Innovative Optical Imaging and its Translation to Medicine**

(Head: Rainer Leitgeb; commercial partners: Carl Zeiss Meditec Inc., Exalos AG)

- **Ocular and Dermatological Effects of Thiomers**

(Head: René Werkmeister; commercial partner: Croma-Pharma Gesellschaft m.b.H.)

- **Ophthalmic Image Analysis**

(Head: Ursula Schmidt-Erfurth; commercial partner: Novartis Pharma AG)

- **Recovery of Extremity Function**

(Head: Oskar Aszmann; commercial partner: Otto Bock Healthcare Products GmbH)

- **Medical Radiation Research for Radiation Oncology**

(Head: Dietmar Georg; commercial partners: EBG MedAustron GmbH, PEG MedAustron GmbH, Siemens AG Österreich - Sector Healthcare, Elekta GmbH)

- **Arginine Metabolism in Rheumatoid Arthritis and Multiple Sclerosis**

(Head: Gernot Schabbauer; commercial partner: Bio-Cancer Treatment International Limited)

The foundation of knowledge

Fundamental (or basic) research provides the basis for the process of scientific discovery. Countless medical advances that would have been unthinkable without basic research are testament to this. The role played by the funders of basic and clinical medical research is therefore vital, in particular:

- the Austrian Science Fund (FWF);
- the Vienna Science and Technology Fund (WWTF);
- the Mayor of Vienna's Medical-Scientific Fund;
- European Union programmes, and
- a range of international programmes, such as the NIH.

Catalysing innovation

The Ludwig Boltzmann Gesellschaft (LBG) targets new research topics in medicine and life sciences. The LBG is an important partner for MedUni Vienna for externally financed research, with the following Ludwig Boltzmann Institutes (LBIs) located at the university.

- **LBI for Rare and Undiagnosed Diseases**

(Head: Kaan Boztug)

- **LBI Applied Diagnostics**

(Head: Markus Mitterhauser)

- **LBI for Hematology and Oncology**

(Head: Peter Valent)

- **LBI for Arthritis and Rehabilitation**

(Head: Günter Steiner)

- **LBI for Cardiovascular Research**

(Head: Johann Wojta)

- **LBI for Digital Health and Patient Safety**

(heads: Harald Willschke and Maria Kletecka-Pulker)

ERC grants: the premier league

Grants awarded by the European Research Council (ERC) are among the largest of their kind and continue to represent a widely recognised commendation for scientific excellence. MedUni Vienna is proud of its ERC grant winners – and especially the award of a second ERC Synergy Grant to Igor Adameyko, as a corresponding principal investigator, in 2019.

ERC synergy grants

Igor Adameyko,

KILL-OR-DIFFERENTIATE

Division of Molecular Neurosciences at the Center for Brain Research, in collaboration with Harvard Medical School, Karolinska Institutet and Institut Curie, selected for funding by the ERC in 2019, project to commence in 2020

**Oskar Aszmann,
Natural BionicS**

Department of Surgery/
Division of Plastic and
Reconstructive Surgery, in
collaboration with IIT Genoa
and Imperial College London,
2019-2025

ERC starting grants

**Bernhard Baumann,
OPTIMALZ**

Center for Medical Physics
and Biomedical Engineering,
2015-2020

ERC consolidator grants

Igor Adameyko,

STEMMING-FROM-NERVE

Division of Molecular Neurosciences/Center for Brain Research, 2015-2020

Kaan Boztug, iDysChart

CeMM and MedUni Vienna,
2019-2024

Alwin Köhler, NPC-BUILD

Division of Molecular Cell
Biology/Center for Medical
Biochemistry, 2018-2023

ERC advanced grants

Maria Sibilja, TNT-TUMORS

Division of Cancer Research,
2016-2021

Tibor Harkany, Secret-Cells

Division of Molecular Neurosciences/Center for Brain Research, 2016-2021

**Giulio Superti-Furga,
Game of Gates**

CeMM and MedUni Vienna,
2016-2021

Erwin Wagner, CSI-Fun

Department of Dermatology,
2018-2023



EU projects

MedUni Vienna participated in a total of 85 projects with EU funding in 2019.

- 66 projects within the 8th EU Framework Programme, Horizon 2020
- 3 projects in the 7th EU Framework Programme
- 5 researchers at MedUni Vienna coordinated Horizon 2020 consortia comprising European and third-country partners
- 16 projects running in other programmes: 14 in the Innovative Medicines Initiative, 1 in the 3rd Health Programme, and 1 in EURATOM
- 20 projects kicked off in 2019

WWTF Life Sciences Call 2019

In its Life Sciences Call 2019 – Multimodal Imaging, the Vienna Science and Technology Fund (WWTF) awarded funding to three research projects led by or involving MedUni Vienna. Each of the grants, for projects in the field of medical imaging, is worth approximately EUR 700,000.

Deciphering breast cancer heterogeneity and tumor microenvironment with correlative imaging
Principal Investigator and Coordinator: Katja Pinker-Domenig; Co-principal Investigators: Goran Mitulovic, Lukas Kenner

Tracking Nutrient Metabolism and Cellular Partitioning by Multimodal Molecular Imaging
Principal Investigator and Coordinator: Martin Krssak; Co-principal Investigators: Cecile Philippe, Arno Schintlmeister (University of Vienna)

Elucidating the mechanics of mitotic chromosome assembly by light, electron and atomic force microscopy

Principal Investigator and Coordinator: Daniel Gerlich (IMBA); Co-principal Investigator: Shotaru Otsuka (Max Perutz Labs, MedUni Vienna)

Science-focused study programmes

MedUni Vienna's PhD programmes and doctorate degrees offer many possibilities for specialisation beyond its standard degree programmes. Over 1,300 early stage researchers are currently completing PhD or other doctoral studies. The PhD programmes are aimed at further developing skills in independent scientific research, and focus on basic research and training for young academics. The applied medical sciences doctoral programmes are an alternative which focuses on providing training in applied bio-medical research.

PhD programmes

- Cell Communication in Health and Disease
- Endocrinology and Metabolism
- Immunology
- Inflammation and Immunity
- Integrative Structural Biology
- Malignant Diseases
- Medical Imaging
- Medical Informatics, Biostatistics and Complex Systems
- Medical Physics
- Molecular and Cellular Control of Tissue Homeostasis in Health and Disease – TissueHome
- Molecular, Cellular and Clinical Allergology
- Molecular Drug Targets
- Molecular Mechanisms of Cell Biology
- Molecular Signal Transduction
- Neuroscience
- RNA Biology
- Signaling Mechanisms in Cellular Homeostasis
- Vascular Biology

Applied medical sciences doctoral programmes

- Biomedical Engineering
- Cardiovascular and Pulmonary Disease
- Clinical Experimental Oncology
- Clinical Endocrinology, Metabolism and Nutrition
- Clinical Neurosciences (CLINS)
- Mental Health and Behavioural Medicine
- POeT – Programme for Organ Failure, Replacement and Transplantation
- Preclinical and Clinical Research for Drug Development
- Public Health
- Regeneration of Bones and Joints

Honouring Eric Kandel

Nobel laureate Eric Kandel, whose groundbreaking work revolutionised the understanding of short and long-term memory formation, was honoured by the University of Vienna and MedUni Vienna in a joint ceremony held at the former's Main Ceremonial Hall on 7 November 2019, on the occasion of Kandel's 90th birthday.



From left to right: Erwin Rasinger; Markus Müller, Rector of MedUni Vienna; Anton Zeilinger, President of the Austrian Academy of Sciences; Denise Kandel; Eric Kandel; Iris Rauskala, Minister of Education, Science and Research; Alexander Van der Bellen, President of Austria; Heinz W. Engl, Rector of the University of Vienna; Oliver Rathkolb, Professor of Contemporary History at the University of Vienna

IT and medicine experts

The Medical Informatics master's programme focuses on providing academic professional training so that graduates are equipped to design and implement informatics projects in the fields of biomedical research, medicine and healthcare. Students can specialise in bioinformatics, neuroinformatics, clinical informatics, informatics for assistive technology or public health informatics. The curriculum focuses on research-related, medical and clinical scenarios, as required. Learning the communication skills needed to tackle such issues forms a key part of the programme.

Researcher of the Month

Each month, MedUni Vienna names one or more young scientists Researcher of the Month. The researchers who received this recognition in 2019 were officially honoured in November.



Top researchers and representatives of MedUni Vienna (left to right): Anna-Dorothea Gorki, Barbara Kiesel, Anete Romanauska, Claudia Fuchs-Steiner, Karl Heinrich Schneider, Hugo Malagon-Vina, Vice Rector Michaela Fritz, Eva Schwindt, Gerald Stübinger, Katarzyna Niespodziana, Klaus Markstaller, Daniela Pollak, Bruno Podesser, Rector Markus Müller, Nina Buchtele, Philipp Tschandl and Mamta Jain.

Not pictured: Johanna Klughammer, Johannes Längle and Robert Zilberszac.

Lifelong learning for success

Lifelong learning has become indispensable in the world of work today. With master's programmes resulting in an MPH, MAS, MClintDent, MDSc or MBA, as well as certificate courses and continuing education courses providing an academic qualification, MedUni Vienna offers a wide variety of possibilities in this regard. All of these part-time postgraduate courses provide excellent training, with expert teaching staff from Austria and abroad, as well as cooperations with other top universities and institutions.

Master of Science (MSc)

- Ergonomics and Fitness for Work
- Occupational and Organisational Medicine
- Clinical Research
- Forensic Sciences
- Gender Medicine
- Healthcare Facilities
- Critical Care Nursing
- Interdisciplinary Pain Medicine (ISMED)
- Professional Interaction and Counselling
- Psychotherapy Research
- Study Management
- Toxicology
- Traditional Chinese Medicine (TCM)
- Transcultural Medicine and Diversity Care

Master of Public Health (MPH)

- Public Health

Master of Business Administration (MBA)

- Health Care Management (MBA)
- Health Care Management (HCM-AE)

Master of Advanced Studies (MAS)

- Insurance Medicine

Master of Clinical Dentistry (MClintDent)

- Endodontology
- Esthetic Dentistry
- Periodontology and Implantology
- Periodontology

Master of Dental Science (MDSc)

- Prosthodontics

Continuing education courses with certification

- Occupational Medicine
- Occupational Health Professional
- Medical Hypnosis
- Medical Physics
- Study Management
- Medical Hypnosis for Dental Care

Certificate courses

- Crisis Intervention and Suicide Prevention
- Sleep Coaching
- Clinical Trials Assistant

Spin-offs and investments

Medical University of Vienna International GmbH (MUVI)

MUVI is an international healthcare market consultancy that is specialised in providing management, knowledge transfer and academic medicine solutions.

Universitätszahnklinik Wien GmbH

With around 400 employees, the University Clinic of Dentistry – a subsidiary of MedUni Vienna – is one of the largest and most advanced university dental hospitals in Europe.

Forensisches DNA-Zentrallabor Wien GmbH (DNA Central Laboratory)

The principle services performed by the DNA Central Laboratory are trace analysis and forensic DNA analysis in relation to criminal and parentage investigations.

CBmed GmbH – Center for Biomarker Research in Medicine

Besides MedUni Vienna and Graz's three universities, CBmed's shareholders include the Austrian Institute of Technology (AIT) and Joanneum Research, as well as numerous partners in science and industry.

Karl Landsteiner Privatuniversität für Gesundheitswissenschaften GmbH

MedUni Vienna is one of the four maintaining bodies of the private Karl Landsteiner University of Health Sciences in Krems.

ACOMarket GmbH

MedUni Vienna established ACOMarket GmbH together with five other universities in 2019. The company is a central IT service broker and provider for Austrian universities that will bundle activities around digitalisation and make them accessible to all universities.



Josephinum – Medizinische Sammlungen GmbH

The Josephinum keeps the Medical University of Vienna's rich heritage and history alive. It houses and maintains the university's medical history collections, and operates a museum and stages exhibitions to make them accessible to the public. To ensure that this work can continue in the future, the heritage-protected 18th-century building at Währingerstrasse 25 has been undergoing comprehensive renovation and modernisation works since 2019.

Modern museum restored to original condition

The building's owner, the Bundesimmobiliengesellschaft (Federal Property Corporation, BIG), is investing about EUR 11 million in converting the Josephinum into a modern museum. In the course of renovation, areas such as the lecture theatre and the forecourt will be restored to their original condition, preserving the history of the building for future generations. The project is scheduled to be completed in early summer 2021.

Joseph II – visionary

Besides its significance in the history of medicine, the Josephinum – built in 1785 – is an important monument to enlightenment-era Vienna, and a reminder of the visionary achievements of its namesake, Emperor Joseph II. This heritage and the Josephinian project of a systematic “revolution from above” was the theme of the Josephinum Lecture & Symposium on 6 and 7 November 2019, titled “Reason. Power. Vision. Joseph II and the brief rule of the enlightenment.”

Max Perutz Labs

Researchers at Max Perutz Labs – a joint facility with the University of Vienna – work in various cutting-edge areas of life sciences. They investigate the structure of essential cell molecules as well as their role in developmental biology and in disease.

Extension of successful cooperation

The success of this joint institution from Vienna's two leading universities resulted in the decision, at the beginning of 2019, to extend cooperation at the Max Perutz Labs. Rectors Heinz W. Engl of the University of Vienna and Markus Müller of MedUni Vienna resolved to continue the joint venture until 2025.

Alumni Club

Staying connected to the alma mater: this the aim of the Alumni Club, the postgraduate knowledge, dialogue and career platform for MedUni Vienna graduates, students and staff, which also involves the wider public.

Medicine and the end of life

As part of its *Alumni Standpunkt* series, on 30 October 2019 the Alumni Club put the spotlight on an important topic in medical ethics, Medicine and the End of Life, at an event in the university's Van Swieten Saal. The advances made in acute medicine have shifted the border of life. Death, previously perceived as a natural event, has fundamentally changed due to the possibilities resulting from high-tech medicine.

Esoterism and evidence

The Alumni Club took up a controversial topic for its *Alumni Standpunkt* event on 22 May 2019: Esoterism in Medicine – Methods, Evidence, Business Model. Complementary and alternative approaches are popular and not only in demand, but often demanded by many patients. Against this background, the event provided an insight into such methods and the evidence for them, and examined why people turn to pseudomedicine in spite of scientific evidence to the contrary. The event was of particular significance as MedUni Vienna replaced its Complementary Medicine elective with a seminar course entitled Complementary Medicine: Esoterism and Evidence.

Reunion, Going USA

Other highlights in the Alumni Club calendar included the semester opening concert on 30 September 2019; the Reunion 2019 academic ceremony on 13 November 2019 – with presentation of gold medical degrees to alumni who graduated in 1949, 1959 and 1969, celebrating their 70th, 60th and 50th anniversaries; and the Going USA 2019 information evening for students on 6 November 2019, presenting the opportunities and requirements for training, fellowships and research in the United States.





ADMINIS- TRATION AND FINANCES

The university's organisational structure and 2019 financial statements, with statements of financial position and profit or loss: MedUni Vienna in numbers and key facts.



Organisational structure as at 31 December 2019



University Council

5 members

Scientific Advisory Board

Organisational units with university management responsibilities

11 service departments

- University Management Office
- Human Resources
- Legal Department
- Corporate Communications
- Studies and Examinations Department
- Research Service
- Clinical Trials Coordination Centre
- Finance Department
- Facility Management
- IT Systems and Communications
- Works Council Representatives Office

4 staff units

- Internal Audit
- Evaluation and Quality Management
- Gender Mainstreaming
- Controlling

Spin-offs

- Alumni Club
- Medical University of Vienna International GmbH
- Universitätszahnklinik Wien GmbH
- Max Perutz Labs
- FDZ – Forensisches DNA-Zentral-labor GmbH
- CBmed GmbH
- Karl Landsteiner Privatuniversität für Gesundheitswissenschaften GmbH
- Josephinum – Medizinische Sammlungen GmbH
- ACOmarket GmbH

Committees

- Arbitration Committee
- Ethics Committee
- Works Council for General University Staff
- Works Council for Academic Staff
- Working Group on Equal Opportunities
- Students Union (ÖH Med Vienna)
- Advisory Board for People with Disabilities
- Data Protection Commission
- Data Clearing House
- Ombudsman for Good Scientific Practice

Curriculum Directors

- Medicine
- Dentistry
- PhD Programme and Doctoral Programme in Applied Medical Science
- Medical Informatics master's programme
- Continuing education courses

University management

• Rectorate

The Rectorate is the university's executive management body.

Prof. Markus Müller, Rector
Dr. Michaela Fritz, Vice Rector for Research and Innovation
Prof. Anita Rieder, Vice Rector for Education
Dr. Volkan Talazoglu, Vice Rector for Finance
Prof. Oswald Wagner, Vice Rector for Clinical Affairs

www.meduniwien.ac.at/rectorate

• University Council

The University Council is one of the University's three most senior management bodies, alongside the Rectorate and the Senate. Two of the Council's members are appointed by the Senate of the Medical University of Vienna, and two by the federal government. A fifth member is elected by these four members.

Dr. Eva Dichand (Chair)
Dr. Brigitte Ettl
Prof. Irene Virgolini
Prof. Reinhart Waneck
Prof. Thomas Zeltner

www.meduniwien.ac.at/university-council

• Senate

The Senate is made up of 13 representatives from among the university's full professors, six representatives of teaching and research staff, one representative of the general university staff and six student representatives, appointed by election or, in the case of student representatives, by delegation in accordance with section 25 Universities Act 2002.

Until 30 September 2019

PROFESSORS

Prof. Harald Sitte (Chair)
Prof. Johannes Wancata
Prof. Ursula Wiedermann-Schmidt
Prof. Rudolf Valenta
Prof. Elisabeth Presterl (Fourth Deputy)
Prof. Klaus Markstaller
Prof. Hannes Stockinger
Prof. Renate Koppensteiner
Prof. Barbara Bohle
Prof. Michael Trauner
Prof. Angelika Berger
Prof. Maria Sibilía
Prof. Irene Lang*

* Currently deputy curriculum director for the Doctoral Programme in Applied Medical Science (N790), PhD programme (N094) and the Medical Informatics master's programme (N066 936), and therefore unable to exercise her mandate due to the regulation on conflicts of interest. The mandate is currently exercised by Prof. Thomas Helbich.

TEACHING AND RESEARCH STAFF

Prof. Diana Bonderman
Prof. Ivo Volf
Prof. Birgit Willinger
Dr. Martin Andreas
Dr. Regina Patricia Schukro (First Deputy)
Prof. René Wenzl

STUDENTS

Carina Borst
Leon Fierek (Second Deputy)
Julia Wunsch
Markus Seibt
Lukas Wedrich
Daniela Kitzmantl

GENERAL UNIVERSITY STAFF

Gerda Bernhard

CO-OPTED MEMBER – WORKING GROUP ON EQUAL OPPORTUNITIES

Prof. Alexandra Kautzky-Willer

From 1 October 2019

PROFESSORS

Prof. Maria Sibilía (Chair)
Prof. Harald Sitte
Prof. Ursula Wiedermann-Schmidt
Prof. Klaus Markstaller (Third Deputy)
Prof. Angelika Berger
Prof. Shahrokh Shariat
Prof. Barbara Bohle
Prof. Rudolf Valenta
Prof. Irene Lang
Prof. Christoph Binder
Prof. Daniela Pollak-Monje Quiroga
Prof. Bruno Podesser
Prof. Renate Koppensteiner

TEACHING AND RESEARCH STAFF

Dr. Miriam Kristin Hufgard-Leitner
Prof. Ivo Volf
Prof. Birgit Willinger
Dr. Martin Andreas
Dr. Regina Patricia Schukro (First Deputy)
Prof. René Wenzl

STUDENTS

Isolde Kostner
Daniela Kitzmantl
Eren Eryilmaz
(Second Deputy, from 5 April 2019)
Leon Fierek
(Second Deputy, until 5 April 2019)
Yannick T. Suhr
Berfin Sakar
Gesche-Magdalena Langer

GENERAL UNIVERSITY STAFF

Gerda Bernhard

CO-OPTED MEMBER – WORKING GROUP ON EQUAL OPPORTUNITIES

Prof. Alexandra Kautzky-Willer
www.meduniwien.ac.at/senate

Committees

- **Arbitration Committee**

Chair: Dr. Anna Sporrer

www.meduniwien.ac.at/arbitrationcommittee

- **Ethics Committee**

Prof. Jürgen Zezula and

Dr. Martin Brunner

www.meduniwien.ac.at/ethics

- **Works Council for General University Staff**

Chair: Gabriele Waidringer

First Deputy Chair: Gerda Bernhard

Second Deputy Chair: Helga Kalser

www.meduniwien.ac.at/wc-gus

- **Works Council for Academic Staff**

Chair: Dr. Ingwald Strasser

(until 30 September 2019)

Chair: Prof. Christian Windischberger
(until 1 October 2019)

Deputy: Dr. Stefan Konrad

Deputy: Prof. Michael Holzer

Deputy: Prof. Harald Leitich

www.meduniwien.ac.at/wc-sus

- **Working Group on Equal Opportunities**

Chair: Prof. Alexandra Kautzky-Willer

First Deputy Chair: Prof. Ulrike Willinger

Second Deputy Chair: Irene Bednar

www.meduniwien.ac.at/equalopportunities

- **Student Union (ÖH Med Vienna)**

Until 30 September 2019

Chair: Julia Wunsch

First Deputy: Jakob Eichelter

Second Deputy: Leopold Buvier-Azula

General Secretary: Lisa Leutgeb

From 1 October 2019

Chair: Johannes Schmid

First Deputy: Yannick T. Suhr

Second Deputy: Isolde Kostner

General Secretary: Olga Fotadis

www.oehmedwien.at

- **Advisory Board for People with Disabilities**

Chair: Prof. Richard Crevenna

Deputy Chair: Prof. Johannes Wancata

www.meduniwien.ac.at/disabilities

- **Intra-university Data Protection Commission**

Chair: Hon. Prof. Markus Grimm

Deputy Chair: Ernst Eigenbauer

www.meduniwien.ac.at/dbc

- **Data Clearing House**

Chair: Dr. Thomas Wrba

Deputy Chair: Dr. Claudia Ernst-Ballaun

www.meduniwien.ac.at/data-clearing-house

- **Ombudsman for Good Scientific Practice**

Spokesperson: Prof. Elisabeth

Förster-Waldl

www.meduniwien.ac.at/gsp

- **Medicine Curriculum Director**

Prof. Gerhard-Johann Zlabinger

Deputy: Prof. Anahit Anvari-Pirsch

Deputy: Prof. Werner Horn

Deputy: Prof. Franz Kainberger

Deputy: Prof. Andreas Sönnichsen
(from 29 April 2019)

Deputy: Dr. Barbara Steinlechner
(until 28 April 2019)

- **Dentistry Curriculum Director**

Prof. Anita Holzinger

Deputy: Prof. Andrea Nell

Deputy: Prof. Martina Schmid-Schwap

- **PhD Programme and Doctorate Programme in Applied Medical Science Curriculum Director**

Prof. Stefan Böhm

Deputy: Prof. Sylvia Knapp

(from 11 October 2019)

Deputy: Prof. Irene Lang

(until 10 October 2019)

- **Medical Informatics Curriculum Director**

Prof. Stefan Böhm (until 21 May 2019)

Prof. Georg Dorffner

(from 22 May 2019, previously Deputy Director)

- **Continuing Education Curriculum Director**

Prof. Michael Hiesmayr

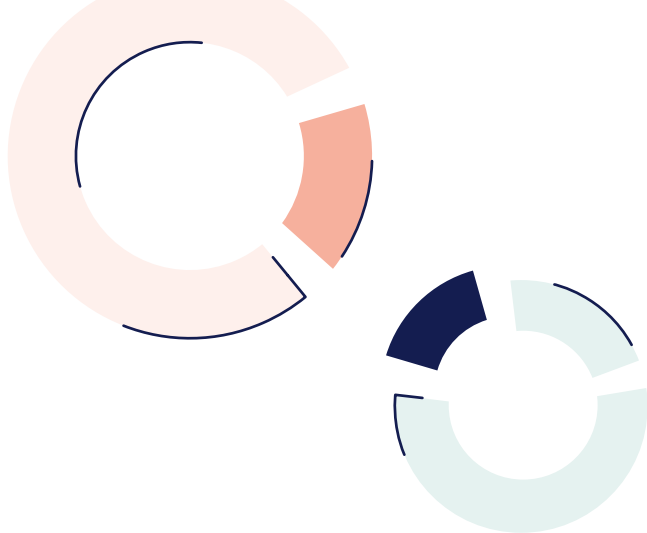
(until 30 September 2019)

Prof. Henriette Löffler-Stastka

(from 11 October 2019, previously Deputy Director)

Deputy: Prof. Martin Bauer
(from 11 October 2019)





Scientific Advisory Board

This external body advises the MedUni Vienna Rectorate on all matters related to research, with the aim of safeguarding the University's strategic positioning for the long term.

- Frederica Sallusto
Institute for Research in Biomedicine
Bellinzona, Schweiz
- Hedvig Hricak
Chair, Department of Radiology,
Memorial Sloan-Kettering Cancer
Center, New York City, USA
- Joseph Thomas Coyle
Professor of Psychiatry and
Neuroscience, Harvard Medical School,
Boston
- Robert Schwarcz
Professor of Psychiatry, Pharmacology
and Pediatrics, Department of
Psychiatry, University of Maryland
School of Medicine
- Michael Roden
Professor of Medicine, Scientific
Director of the German Diabetes Center
and Director, Institute for Clinical
Diabetology, Heinrich Heine University
Duesseldorf
- Sarah König
Head of the Institute of Medical
Education and Education Research,
Julius Maximilian University of
Würzburg

University Departments

MedUni Vienna's clinical division consists of 26 departments, including three clinical institutes. 11 of these comprise a number of different divisions (in accordance with section 31(4) Universities Act). Departments, institutes and divisions also serve as patient care departments (pursuant to section 7(4) Hospitals Act).

Department of Medicine I

- Head: Prof. Herbert Watzke
- Division of Oncology
 - Division of Hematology and Hemostaseology
 - Division of Palliative Medicine
 - Division of Infectious Diseases and Tropical Medicine
 - Division of Cancer Research (not a patient care department pursuant to section 7(4) Hospitals Act)

Department of Medicine II

- Head: Prof. Christian Hengstenberg
- Division of Cardiology
 - Division of Angiology
 - Division of Pulmonology

Department of Medicine III

- Interim Head: Prof. Alexandra Kautzky-Willer
- Division of Endocrinology and Metabolism
 - Division of Nephrology and Dialysis
 - Division of Rheumatology
 - Division of Gastroenterology and Hepatology

Department of Surgery

- Head: Prof. Walter Klepetko
(from 1 July 2019)
Deputy Heads: Prof. Günther Laufer
(until 30 June 2019),
Prof. Martin Metzelder, FEAPU
- Division of General Surgery
 - Division of Cardiac Surgery
 - Division of Thoracic Surgery
 - Division of Vascular Surgery
 - Division of Transplantation
 - Division of Plastic and Reconstructive Surgery
 - Division of Pediatric Surgery

Department of Obstetrics and Gynecology

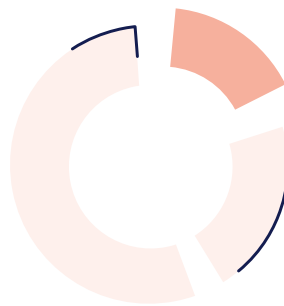
- Head: Prof. Peter Wolf Husslein
- Division of Obstetrics and Feto-Maternal medicine
 - Division of General Gynecology and Gynecologic Oncology
 - Division of Gynecological Endocrinology and Reproductive Medicine

Department of Otorhinolaryngology

- Head: Prof. Wolfgang Gstöttner
- Division of General Ear, Nose and Throat Diseases
 - Division of Speech and Language Therapy

Department of Anesthesia, Critical Care and Pain Medicine

- Head: Prof. Klaus Markstaller
- Division of General Anesthesia and Intensive Care Medicine
 - Division of Specialist Anesthesia and Pain Medicine
 - Division of Cardiothoracic and Vascular Anesthesia and Intensive Care Medicine



Department of Psychiatry and Psychotherapy

Head: Prof. Siegfried Kasper
(until 30 September 2019)

Deputy Head: Prof. Johannes Wancata

- Division of Biological Psychiatry
- Division of Social Psychiatry

Department of Pediatrics and Adolescent Medicine

Head: Prof. Susanne Greber-Platzer

- Division of Neonatology, Intensive Care Medicine and Neuropediatrics
- Division of Pediatric Cardiology
- Division of Pediatric Pulmonology, Allergology and Endocrinology
- Division of Pediatric Nephrology and Gastroenterology
- Division of Pediatrics with special focus on Pediatric Hematology-Oncology (St. Anna Children's Hospital)

Department of Biomedical Imaging and Image-guided Therapy

Head: Prof. Christian Herold

- Division of General and Paediatric Radiology
- Division of Cardiovascular and Interventional Radiology
- Division of Neuroradiology and Musculoskeletal Radiology
- Division of Nuclear Medicine

Department of Orthopedics and Trauma Surgery

Head: Prof. Reinhard Windhager

- Division of Orthopedics
- Division of Trauma Surgery

Department of Dermatology

Head: Prof. Wolfgang P. Weninger

Department of Radiotherapy

Head: Prof. Joachim Widder

Department of Urology

Head: Prof. Shahrokh Shariat

Department of Neurosurgery

Head: Prof. Karl Rössler

(from 1 July 2019)

Interim Head: Prof. Thomas Czech
(until 30 June 2019)

Department of Oral, Maxillary and Facial Surgery

Head: Prof. Emeka Nkenke

Department of Emergency Medicine

Head: Prof. Anton Laggner

Department of Neurology

Head: Prof. Thomas Berger

Department of Physical Medicine, Rehabilitation and Occupational Medicine

Head: Prof. Richard Crevenna

Department of Child and Adolescent Psychiatry

Head: Prof. Paul Plener, MHBA

Department of Psychoanalysis and Psychotherapy

Head: Prof. Stephan Doering

Department of Ophthalmology and Optometrics

Head: Prof. Ursula Schmidt-Erfurth

Department of Blood Group Serology and Transfusion Medicine

Interim Head: Dr. Gerda Leitner

Department of Hospital Epidemiology and Infection Control

Head: Prof. Elisabeth Presterl

Department of Clinical Pharmacology

Head: Prof. Markus Zeitlinger

University Clinic of Dentistry Vienna

Head: Prof. Andreas Moritz

Department of Laboratory Medicine

Head: Prof. Oswald Wagner

- Division of Medical-Chemical Laboratory Diagnostics
- Division of Clinical Microbiology
- Division of Clinical Virology

Department of Pathology

Head: Prof. Renate Kain

Institute of Neurology

Interim Head: Prof. Johann Hainfellner

Centres of Medical Science

The medical science division is organised into centres and departments. While the departments – like university clinical departments – generally cover a single scientific discipline, the centres are tasked with efficiently combining the priorities of research and teaching, with various disciplines clustered in accordance with international practice.

Center for Anatomy and Cell Biology

Head: Prof. Franz-Michael Jantsch

- General Division of the Center for Anatomy and Cell Biology
- Division of Anatomy
- Division of Cell and Developmental Biology

Center for Physiology and Pharmacology

Head: Prof. Michael Freissmuth

- Institute of Vascular Biology and Thrombosis Research
- Institute of Pharmacology
- Institute of Physiology
- Division of Neurophysiology and Neuropharmacology

Center for Public Health

Head: Prof. Anita Rieder

- Department of General Practice and Family Medicine
- Department of Social and Preventive Medicine
- Department of Environmental Health
- Department of Epidemiology
- Department of Medical Psychology
- Department of Health Economics

Center for Brain Research

Head: Prof. Thomas Klausberger

- Division of Neuroimmunology
- Division of Neurophysiology
- Division of Molecular Neurosciences
- Division of Neuronal Cell Biology
- Division of Cognitive Neurobiology
- Division of Pathobiology of the Nervous System

Center for Pathobiochemistry and Genetics

Head: Prof. Markus Hengstschläger

- Medical Genetics
- Institute of Medical Chemistry and Pathobiochemistry

Department of Medical Biochemistry

Part of Max Perutz Labs, a joint venture of MedUni Vienna and the University of Vienna for research in the field of molecular biosciences.

Head: Prof. Arndt von Haeseler

- Division of Molecular Biology
- Division of Molecular Genetics

Department of Virology

Head: Prof. Elisabeth Puchhammer

- Division of Applied Medical Virology

Department of Forensic Medicine

Head: Prof. Daniele U. Risser

Center for Pathophysiology, Infectiology and Immunology

Head: Prof. Hannes Stockinger

- Institute of Pathophysiology and Allergy Research
- Institute of Immunology
- Institute of Specific Prophylaxis and Tropical Medicine
- Institute of Hygiene and Applied Immunology

Center for Medical Physics and Biomedical Engineering

Head: Prof. Wolfgang Drexler

Center for Medical Statistics, Informatics and Intelligent Systems

Head: Prof. Martin Posch

- General Division of the Center for Medical Statistics, Informatics and Intelligent Systems
- Institute of Medical Statistics
- Institute of Clinical Biometrics
- Institute of Biosimulation and Bioinformatics
- Institute of Medical Information Management
- Institute of the Science of Complex Systems
- Institute of Artificial Intelligence and Decision Support
- Institute of Outcomes Research

Department of Biomedical Research

Head: Prof. Bruno Podesser

- Division of Laboratory Animal Science and Genetics
- Division of Decentralized Biomedical Facilities
- Division of Biomedical Research



Organisational Units with special Service Functions

Comprehensive Cancer Center
Interim Head: Prof. Maria Sibilja
(from 1 January 2019)

Comprehensive Center for Pediatrics
Head: Prof. Angelika Berger

Core Facilities

Head: Prof. Johann Wojta

- Genomics: DNA analysis
- Genomics: genome analysis
- Imaging
- Proteomics
- Cell Sorting

Library

Head: Bruno Bauer

Ethics, History of Medicine and Historical Collections

Head: Dr. Christiane Druml

Teaching Center

Head: Prof. Gerhard Zlabinger

- Postgraduate Education and Training Unit
- Research Unit for Curriculum Development
- Resources Management
- Curriculum Management
- Assessment and Skills

Central Services

Administrative support

- University Management Office
- Human Resources
- Legal Department
- Corporate Communications
- Studies and Examinations Department
- Research Service
- Clinical Trials Coordination Centre
- Finance Department
- Facility Management
- IT Systems and Communications
- Office of the Works Councils

Staff units

- Internal Audit
- Evaluation and Quality Management
- Gender Mainstreaming
- Controlling



Financial statements

I. Statement of financial position as at 31 December 2019

ASSETS

	31 December 2019 EUR			31 December 2018 EUR,000		
A. Fixed assets						
I. Intangible assets						
1. Concessions and similar rights, and licences thereto		299,244.38			456	
<i>of which acquired by purchase</i>	299,244.38				456	
2. Rights of use		20,000,000.00	20,299,244.38		20,000	20,456
II. Property, plant and equipment						
1. Land, leasehold rights and buildings including buildings on third-party land		15,437,536.76			18,447	
<i>a) of which land value</i>	718,605.00				587	
<i>b) of which building value</i>	920,014.94				849	
<i>c) of which investments in third-party buildings and land</i>	13,798,916.82				17,011	
2. Plant and machinery		12,332,282.44			12,804	
3. Scientific literature and other scientific data media		7,718,855.36			7,367	
4. Other fixtures and fittings, operating and business equipment		3,921,064.44			3,736	
5. Advance payments and assets under construction		12,360,728.32	51,770,467.32		9,237	51,591
III. Financial assets						
1. Investments in subsidiaries and associates		3,103,650.18			3,083	
2. Loans to subsidiaries and associates		379,026.80			598	
3. Securities and similar instruments held as fixed assets		114,995,311.60	118,477,988.58	190,547,700.28	74,509	78,190 150,237
B. Current assets						
I. Inventories						
1. Inventories		450,000.00			450	
2. Services rendered to third parties not yet invoiced		64,846,321.64	65,296,321.64		62,569	63,019
II. Receivables and other assets						
1. Trade receivables		11,924,364.90			10,682	
2. Receivables from associates		3,046,159.68			1,292	
3. Other receivables and other assets		23,124,005.31	38,094,529.89		26,522	38,496
III. Securities and equity interests			4,620,799.97		4,610	
IV. Cash and cash equivalents			151,062,145.50	259,073,797.00	156,335	262,460
C. Deferred income				1,487,555.03		1,396
TOTAL ASSETS				451,109,052.31		414,093

The 2019 financial statements were given an unqualified audit certificate by auditors Moore Stephens City Treuhand GmbH (in future to be named Mazars Austria GmbH Wirtschaftsprüfungs- und Steuerberatungsgesellschaft).

PASSIVA

	31 December 2019 EUR		31 December 2018 EUR,000	
A. Equity				
1. University negative equity		-8,334,166.31		-8,334
2. Profit/loss		8,624,947.82	290,781.51	751 -7,583
<i>of which losses brought forward</i>	751,163.50			-3,530
B. Investment grants		31,079,508.25		31,255
C. Provisions				
1. Provisions for severance payments		19,743,136.61		13,039
2. Other provisions		155,908,010.41	175,651,147.02	149,492 162,531
D. Liabilities				
1. Advances received		131,779,732.08		120,709
<i>of which deductible from inventories</i>	63,207,660.48			60,802
2. Trade payables		16,072,661.85		21,488
3. Payables to associates		521,476.87		118
4. Other liabilities		20,798,209.57	169,172,080.37	19,796 162,111
E. Deferred income		74,915,535.16		65,779
TOTAL LIABILITIES		451,109,052.31		414,093

Note regarding equity:

In 2019 the university recognised a positive equity figure for the first time, at EUR 291thsd. Irrespective of this, the Univ. RechnungsabschlussVO (University Financial Statements Order) 2010 provides for medical universities to have the option of capitalising investments relating to additional clinical expense, research and teaching as rights of use. Capitalising these investments, taking into account investment grants as at 31 December 2019, results in positive equity in the meaning of section 16(2) University Financial Statements Order of EUR 31,370thsd (2018: EUR 23,672thsd).

II. Statement of profit or loss 2019

	2019 EUR	2018 EUR,000
1. Revenue		
a) Revenue from Federal Government global budget allocation	464,027,134.13	418,896
b) Revenue from tuition fees	1,087,120.78	981
c) Revenue from tuition fee compensation by Federal Government	0.00	4,729
d) Revenue from postgraduate training programmes	1,778,457.04	910
e) Revenue pursuant to section 27 Universities Act	86,888,743.34	94,887
f) Reimbursements of costs pursuant section 26 Universities Act	17,425,297.70	16,984
g) Other revenue and reimbursements	14,006,919.92	31,775
<i>of which revenue from federal ministries</i>	379,050.04	7,511
	585,213,672.91	569,162
2. Change in services rendered to third parties not yet invoiced		
	2,277,434.30	-9,494
3. Other operating income		
a) Income from disposal and revaluation of fixed assets	442.96	5
b) Income from reversal of provisions	16,972,865.58	11,084
c) Other	16,167,938.72	13,887
<i>of which from reversal of investment grants</i>	10,335,064.67	10,383
	33,141,247.26	24,976
4. Expenditure for materials, consumables and purchased services		
a) Expenditure for materials and consumables	-13,889,185.78	-13,564
b) Expenditure for purchased services	-5,152,452.92	-5,118
	-19,041,638.70	-18,682
5. Staff costs		
a) Salaries and wages	-353,048,515.77	-315,911
<i>of which refunds to the Federal Government for officials assigned to the university</i>	72,662,723.93	71,038
b) Expenditure for external teaching staff	-161,276.10	-156
c) Cost of severance payments and payments to employee benefits funds	-11,564,233.20	-4,315
<i>of which refunds to the Federal Government for officials assigned to the university</i>	0.00	0
d) Cost of pensions	-11,168,070.63	-9,539
<i>of which refunds to the Federal Government for officials assigned to the university</i>	415,813.43	411
e) Social security contributions and other pay-related contributions	-73,546,670.30	-70,415
<i>of which refunds to the Federal Government for officials assigned to the university</i>	16,080,724.95	16,363
f) Other employee benefits	-3,546,844.51	-3,273
	-453,035,610.51	-403,609

	2019 EUR	2018 EUR,000
6. Depreciation and amortisation	-24,777,083.98	-20,281
7. Other operating expenses		
a) Taxes other than those under item 13	-967,000.94	-874
b) Reimbursements to hospital operator pursuant section 33 Universities Act	-50,104,248.07	-61,575
c) Other	-49,995,827.72	-57,989
	-101,067,076.73	-120,438
8. Subtotal items 1 to 7	22,710,944.55	21,635
9. Income from financial resources and investments	1,250,428.54	803
a) of which from write-ups	11,115.64	2
10. Expenditure arising from financial resources and equity holdings	-15,906,008.48	-17,976
a) of which from write-downs	0.00	12
b) of which expenditure arising from subsidiaries and associates	15,906,000.00	17,056
11. Subtotal items 9 to 10	-14,655,579.94	-17,172
12. Earnings before tax (sum of items 8 and 11)	8,055,364.61	4,462
13. Taxes on income and profit	-181,580.29	-181
14. Loss/profit after tax	7,873,784.32	4,281
15. Loss/profit brought forward	751,163.50	-3,530
16. Profit/loss for the year	8,624,947.82	751

Publisher and media owner: Prof. Markus Müller, Rector,
Medical University of Vienna, Spitalgasse 23, 1090 Vienna, Austria
www.meduniwien.ac.at

Responsible for content: Corporate Communications: Johannes Angerer (Head of Department),
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Content development and design: zauberformel | Karlheinz Hoffelner and
Confici® | Bettina Jarosch

Design, illustration and layout: Confici® | Bettina Jarosch

Editorial content: zauberformel | Karlheinz Hoffelner, Johannes Angerer,
Klaus Dietl, Thorsten Medwedeff

Photos: Adobe Stock, buero bauer, Delugan Meissl Associated Architects/Architektur Consult, Mark Glassner,
Christian Houdek, Christoph Jäckle, George Kaulfersch, Marco Kovic, Joseph Krpelan, Zsolt Marton,
Felicitas Matern, ÖSV/Erich Spiess, Jochen Russmann, Shutterstock Inc., University Clinic of Dentistry Vienna

Published in: Vienna, 2020

ISBN 978-3-902610-59-1
Verlag Medizinische Universität Wien

Medical University of Vienna
Spitalgasse 23, 1090 Vienna
Phone: +43 (0)1 40 160-0
www.meduniwien.ac.at

ISBN 978-3-902610-59-1
Verlag Medizinische Universität Wien