MEDICAL UNIVERSITY OF VIENNA

2018 Annual Report

Right on target

Thanks to the latest methods in genetics and molecular biology, illness is no longer viewed as a general diagnosis, but as a unique situation in the life of a unique human being. In terms of their individual nature, diagnoses are comparable to fingerprints. A molecular fingerprint allows for precise, tailored prevention and therapy. This is medicine that is as precisely targeted as possible – appropriately referred to as precision medicine.

Medicine 4.0 means that the doctors of the 21st century have access to new technology, in particular in post-genomic digital medicine, which is already dramatically changing the professional requirements of researchers and doctors and the skills they need.

The strategy defined in the 2024 Roadmap in the Medical University of Vienna Development Plan will meet these challenges. Preparations and planning for the biggest investments in our history, in construction projects at the MedUni Vienna General Hospital Campus to build the innovative centres for precision medicine, translational medicine and technology transfer, as well as the MedUni Campus Mariannengasse preclinical construction project, are in full swing. They are set to provide us with a strong foundation for the future of research, patient care and teaching.

A bright future which has been preceded by a successful, but also at times dark past, which as a socially responsible organisation we recognised in the 2018 commemoration year. Together with the University of Vienna, we remembered the events of 80 years previously at an international conference entitled The Anschluss in March 1938: Repercussions for Medicine and Society. This drew attention to the lessons learned from this turning point in the university's history that must not be forgotten, and the approach we need to take towards it today.

Professor Markus Müller
Rector, Medical University of Vienna

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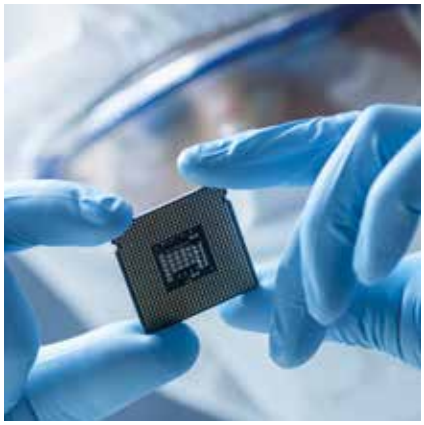

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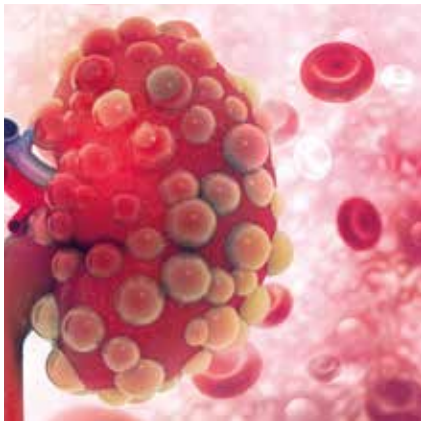
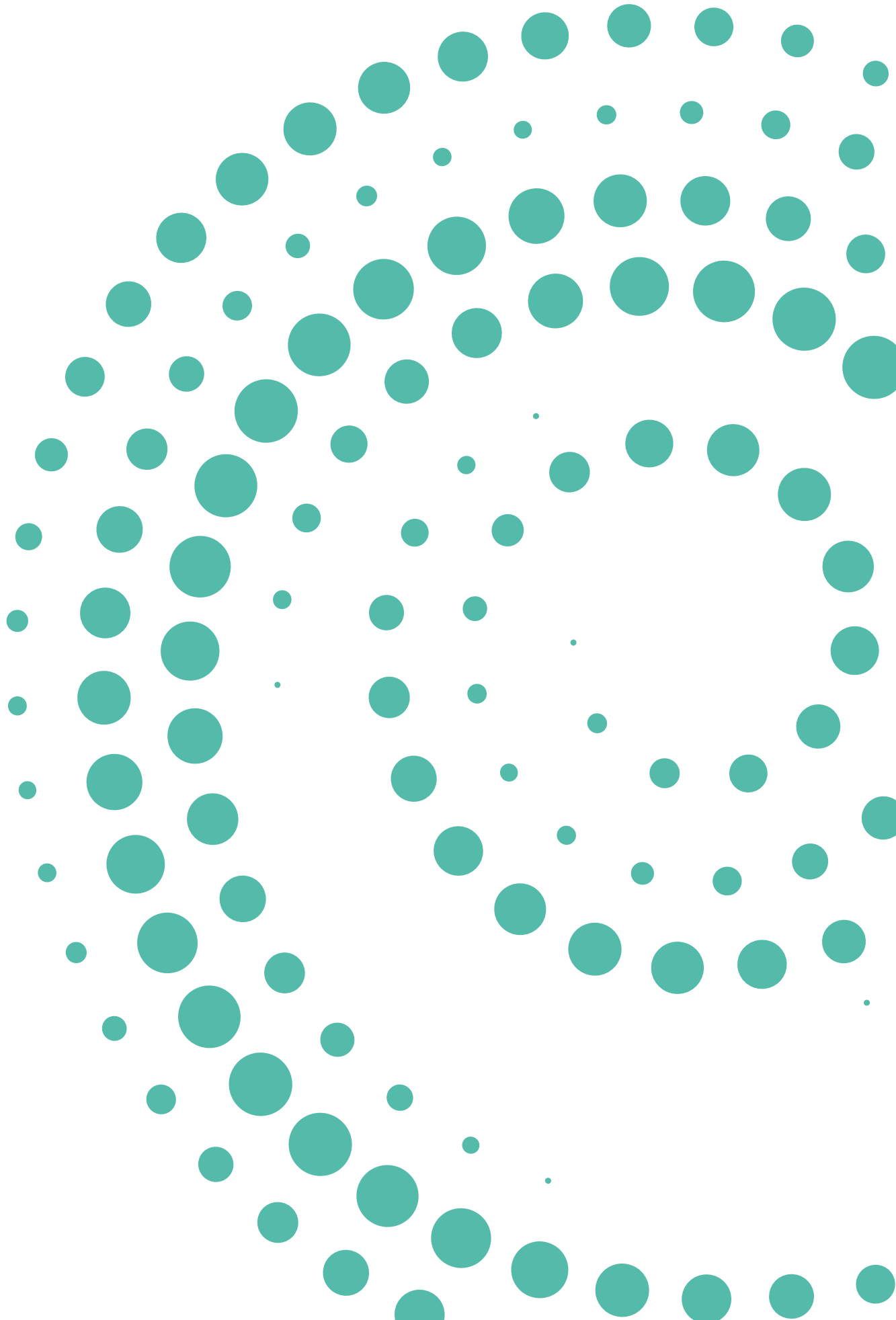


Living better and healthier for longer

Working together for medicine

The organisational structure of MedUni Vienna



Medicine 4.0

A fundamental transformation is under way in medicine – known in the business world as industry 4.0. Big data and the digital transformation – the driving forces behind this change – are paving the way to precision medicine, which will focus on each person's unique characteristics.

Markus Müller
Rector

We are all witnesses to a unique development in the history of mankind. Current developments in digitisation and molecular medicine have led to an unprecedented acceleration of medical progress.

Healthier thanks to big data, digitisation and precision medicine

We are currently right in the middle of a process in which medicine is not only being reconceived, but rebuilt. Medicine is increasingly becoming personalised and, due to technological advances, more and more able not only to recognise disorders and risk factors, but also to understand the underlying causes in each individual patient and predict the course of disease.

A revolution in medicine

This groundbreaking new approach opens up completely new possibilities – for instance, for treating illnesses more effectively, curing certain disorders for the first time, or preventing the onset of a disease as soon as it starts to develop. In this way, medicine is moving away from its traditional, reactive role, and towards predictive and preventive medicine. In practical terms, among other things this will help individuals to lead healthy lives for longer. And costs in the health system – in spite of demographic changes and an aging society with a higher risk of illness – will remain under control.

An important factor in so-called precision medicine – or personalised med-

Eva Dichand
Chair of the
University Council

MedUni Vienna carries out leading edge research and provides its students with forward-looking expertise, while patients are afforded the most advanced treatments available. This is a great position to be in – which we are working to further build on.

icine – is each person's entirely individual, inherited genetic disposition, which can give rise to them being at greater risk of a particular disease.

Big data and digitisation

Massive amounts of data must be collected and combined in order to identify such patterns. This includes, for example, clinical, epidemiological, imaging, molecular genetics and even economic data. Analysis of these data is resulting in completely new understanding of pathogenesis, disease prevention and individualised therapies. The major advances that have already been made today using personalised medicine, such as in the treatment of cancer, autoimmune disorders and rare diseases, show that this is not about fantasies of the future. These successes are benefiting patients in ways that would not have been imaginable just a few years ago.

Identify complexity and understand it

The individual patterns behind specific diseases are so different, and all present such a high degree of complexity, that they remain hidden to physicians applying conventional diagnosis techniques. To gain new, fundamental insights into complexity science, MedUni Vienna appointed Austria's first Professor of the Science of Complex Systems, Stefan Thurner, in 2009. Professor Thurner was named Scientist of the Year by Austria's education and science journalists in 2017.

Large volumes of data – such as those associated with big data, digitisation and artificial intelligence – form the basis for complexity research. In contrast to the possibilities this opens up today, traditional research in the natural sciences could only make use of a few "building blocks", since neither the computing power nor the data enabling these opportunities were available. Now both are, and large numbers of datasets can be represented as networks. Viewing quantities of data in this way allows researchers to describe these systems scientifically and make progress – an approach that the Center for Precision Medicine (see more from page 16) wants to exploit.

Recognition for Sigmund Freud

On 4 June 1938 at 15.25, the Orient Express departed from Vienna's Westbahnhof station, destined for Paris. Among the passengers on board was one of the most important figures of the era: Sigmund Freud, aged 82. He was leaving the city he loved but which had finally caused him great anguish. He would never return. Precisely 80 years later, a larger-than-life statue of Freud was erected and unveiled in front of the MedUni Vienna Rectorate, as a symbol of recognition of his achievements. David Freud, great-grandson of Sigmund Freud, and Heinz Fassmann, Federal Minister of Education, Science and Research were present at the unveiling ceremony.

Michaela Fritz
Vice Rector for
Research and Innovation

In a highly competitive international environment, MedUni Vienna must put in place the frameworks and research infrastructure it needs to retain and attract the best talent and to be able to implement innovative ideas. The Center for Translational Medicine and Therapeutics will play an important part in this.

Research outcomes attract worldwide attention

MedUni Vienna has established research clusters (read more on page 28) for medical imaging, immunology, cancer research/oncology, cardiovascular medicine and medical neuroscience in order to focus clinical and basic research efforts in these fields. The clusters again produced outstanding research findings in 2018 – many of which were based on precision medicine approaches (read more from page 30) – which attracted attention worldwide and were published in top academic journals. A number of studies also picked up coverage in the media around the globe.

Big data in neurology

Markus Brown from the Department of Pathology demonstrated a newly discovered way that breast cancer tumour cells metastasise, namely via the sentinel lymph nodes and their blood vessels. The paper was published in respected journal Science, as was a worldwide study carried out by the Brainstorm Consortium, in which child and adolescent psychiatrist Andreas Karwautz was involved. In the study, for the first time the genome of 1.1 million patients with psychiatric and neurological disorders was analysed. Its central finding was that there are genetic relationships between certain neurological disorders.

Predicting venous thrombosis and pulmonary embolism

Cancer patients are at higher risk of venous thrombosis and pulmonary embolism – which can be fatal if not diagnosed. Ingrid Pabinger, Deputy Head of the Division of Hematology and Hemostaseology at the Department of Medicine I, presented a prediction model that improves evaluation of this risk in journal The Lancet Haemotology (read more on page 35).

Worldwide recognition for eye scan diagnosis

MedUni Vienna has become a global pioneer and driver of the digital revolution in ophthalmology. The research carried out by Ursula Schmidt-Erfurth, Head of the Department of Ophthalmology and Optometrics, has played a major part in this. The importance of her discoveries was shown in a paper

1938: Repercussions for Medicine and Society

The Anschluss in March 1938, when Austria became part of Nazi Germany, was a catastrophe for medicine in Austria. Many of the country's best doctors were forced to flee abroad or were murdered. In addition to the tragic consequences for those affected, the result was a massive brain drain from which Austria only recovered slowly after the war ended. On the initiative of its Alumni Club, MedUni Vienna organised a high-level conference in cooperation with the University of Vienna, which was held on 12 and 13 March 2018, marking the 80th anniversary of the beginning of this dark period of Austria's history.

by Google published in the journal Nature Medicine, which cited her studies numerous times (read more on page 40).

Prostate cancer and arthritis

Smokers with prostate cancer have a significantly lower risk of relapse if they stop smoking soon after diagnosis. This was the finding of a study led by Shahrokh Shariat, published in the highly respected Journal of the American Medical Association (JAMA) (more on page 39). JAMA also invited MedUni Vienna researchers Daniel Aletaha and Josef Smolen to write a comprehensive rheumatoid arthritis review. This resulted in a positive conclusion that outcomes have improved significantly for patients in recent years – 80% of sufferers are now able to return to leading a normal life with the help of medication (more on page 45).

Unknown virus discovered

An international research group, led by the Head of MedUni Vienna's Department of Dermatology Wolfgang Weninger, discovered a previously unknown virus which acts as a driver of a certain type of kidney disease (interstitial nephritis). The researchers named the atypical parvovirus Mouse Kidney Parvovirus (MKPV). The results of their work were published in leading journal Cell (see page 47).

International media attention

The biggest stir internationally was caused by two other publications. Firstly, the microplastics study by Philipp Schwabl of the Clinical Division for Gastroenterology and Hepatology, in cooperation with the Austrian Federal Environment Agency, which demonstrated the presence of microplastics in human stools for the first time. The research sparked widespread international media attention.

Herwig Czech's research on paediatrician Hans Asperger also garnered attention around the world. The medical historian was able to prove that Asperger assisted with the euthanasia programme during the period of Nazi rule. For MedUni Vienna, the study was another step forward in coming to terms with its own past during this period – as was the conference organised at MedUni Vienna from 12-13 March 2018, entitled The Anschluss in March 1938: Repercussions for Medicine and Society.

Volkan Talazoglu
Vice Rector for Finance

2018 was an eventful and important year for the future of MedUni Vienna, with two highlights: the architectural design competition and start of construction for MedUni Campus Mariannengasse, and – following intensive discussions with the Federal Ministry of Education, Science and Research – the successful agreement of a financial framework to the end of 2021.

Eric Kandel receives honorary doctorate

On 24 March 2018 the Rector of MedUni Vienna, Markus Müller, presented an honorary doctorate to neuroscientist Eric Kandel. Born in Vienna in 1929, Kandel had to emigrate to the USA in 1939 and was awarded the Nobel Prize in Physiology or Medicine in 2000 for his research on memory storage. Austrian Federal Chancellor Sebastian Kurz and Science Minister Heinz Fassmann were also present to congratulate Professor Kandel in person.

Left to right: Minister Heinz Fassmann, University Council Chair Eva Dichand, Chancellor Sebastian Kurz, Denise Kandel, Eric Kandel, MedUni Vienna Rector Markus Müller

Patient care with a global reputation

In terms of inpatient cases and case severity, Vienna's university hospital occupies an impressive position both regionally and nationally: more than 20% of all inpatient admissions in Vienna are to Vienna General Hospital, and for severe cases this figure is as much as a quarter. The country's leading hospital, with its role as a central point for patient care in the Eastern Austria region, fully deserves its reputation for providing comprehensive, high quality tertiary medical care. In addition, MedUni Vienna doctors working at Vienna General Hospital are responsible for an above-average proportion of primary (minor inpatient cases) and secondary (outpatient cases) compared with other university hospitals.

New University Council

May 2018 saw the commencement of the new term of office for the University Council. The Federal Government's delegates are media executive Eva Dichand, who was elected chair by the members of the Council, and former State Secretary for Health, Reinhart Waneck. The University Senate nominated Brigitte Ettl (Medical Director of Hietzing Hospital) and Thomas Zeltner (Honorary Professor of Public Health at the University of Bern and WHO Special Envoy). These four delegates selected Irene Virgolini (Head of Nuclear Medicine at the Medical University of Innsbruck) as the fifth member of the Council. The term of office runs for five years.

Oswald Wagner
Vice Rector for
Clinical Affairs

The investments in the new centres for precision medicine, translational medicine and technology transfer will build an ideal bridge to preclinical care and the new MedUni Campus Mariannengasse. They allow us to ensure that discoveries from fundamental research find their way into clinical practice more quickly.

Herwig Wetzlinger
Director of
Vienna General Hospital

Renovation of the buildings at Vienna General Hospital will ensure that it continues to provide outstanding medical care for patients in the future. These investments and joint operational management of Vienna General Hospital and the MedUni Vienna patient care division will make a major contribution to continued success.

Vienna a leading centre for transplantation

Transplantation medicine is a standout feature of the university's broad portfolio of outstanding achievements and the hospital is one of the leading centres worldwide for organ transplants. Its 120 lung transplants, for example, make Vienna General Hospital the third largest centre in the field worldwide – which is not surprising given the high rates of success. Patients undergoing a lung transplant at Vienna General Hospital have very good survival rates: over 90% one year following the transplant and over 75% after five years.
Vienna also has an excellent international reputation for heart transplants and implanting and developing heart pumps, and it leads the way in the development and introduction of cochlear implants and bionic reconstruction for limbs.

In the premier league for bionic reconstruction

Surgeon Oskar Aszmann notched up significant successes in 2018. At the start of the year he presented a model of the psychological preconditions for bionic reconstruction – for example when a hand that has lost function due to injury is to be replaced by a mechatronic hand. And in October, together with colleagues from Genoa and London he received a EUR 10 million ERC Synergy Grant – a blue riband award among the research community – for a collaborative international bionics project. In between, MedUni Vienna's latest science book, *Bionische Rekonstruktion: Wiederherstellung an der Grenze zwischen Mensch und Maschine* (Bionic Reconstruction: restoring function at the border between person and machine) was published, by Aszmann and Laura Hruby. The book shows how artificial intelligence and digitisation are playing ever greater roles in the development of intelligent prosthetics.

Live research

A total of 11,433 knowledge-hungry visitors descended on the medical research trail at MedUni Vienna for the Austrian Long Night of Research on 13 April 2018. Over 60 different stations provided opportunities to get hands-on and interactive with medical research, while the biggest hit was the live stream of two pacemaker operations from the new hybrid operating theatre, directly to the lecture centre.

The Senate fulfilled its duties to shape the legislative definition of research and teaching remits in order to support the Rectorate in achieving the university's aims. Thanks to the effective collaboration of all of the working groups and committees, all objectives were attained.

Harald Sitte
Chair of the Senate

For us, providing higher education fit for the future means making investments in the big topics for education, like the integration of technological development and digitisation, simulation training, interdisciplinary and interprofessional teaching and learning, joint education and hybrid education, as well as medical humanities.

Anita Rieder
Vice Rector for Education

Learning from the best

Research-led teaching with significant clinical components forms the basis of the sound medical education offered at MedUni Vienna. So that this opportunity is offered to the best potential doctors, there is a joint admissions test for medical degrees at all of the medical universities in Austria. The effectiveness of the selection process is demonstrated by the fact that nine out of ten students who start their degrees at MedUni Vienna complete them successfully, and the majority of students graduate within the minimum time period or the tolerance semester period. On 6 July 2018 more than 12,000 candidates took the annual admissions test for medicine and dentistry degree programmes, 5,967 of them at MedUni Vienna. The 740 study places available at MedUni Vienna went to 413 women (55.8%) and 327 men (44.2%).

Higher education 4.0

In preparation for the rapidly changing everyday world in which doctors work, from 2019 virtual reality will form part of the curriculum at MedUni Vienna. Methodical evaluation of the use of the new technology will accompany its introduction. Interprofessional simulation training will play a role in educating students at the Department of Pediatrics and Adolescent Medicine in particular: simulations of emergencies involving children will help to train

doctors in the department's Pediatric Simulation Center.

State prize for teaching excellence

Teaching staff at the Medical University of Vienna were the recipients of a number of high-profile awards in early 2018, demonstrating that the university is well-placed to make the step forward into the future world of higher education. An instruction project at MedUni Vienna was awarded the Ars Docendi state prize for teaching excellence. Thomas Binder, Wolfgang Weninger, Anahit Anvari-Pirsch, and Matthias Schneider, the team behind the "Echocardiography/Anatomy – Blended Learning" project, scooped the prize in the category for digital teaching and learning elements in combination with traditional forms of instruction. Another MedUni Vienna course, Interdisciplinary Case Conferences (Compact), made the shortlist. And Michael Wagner of MedUni Vienna's Division for Neonatology, Pediatric Intensive Care and Neuropediatrics was awarded a prize for interprofessional team training in education at the Austrian Patient Safety Platform's Austrian Patient Safety Awards.

Professional medical conduct will remain in focus in the future

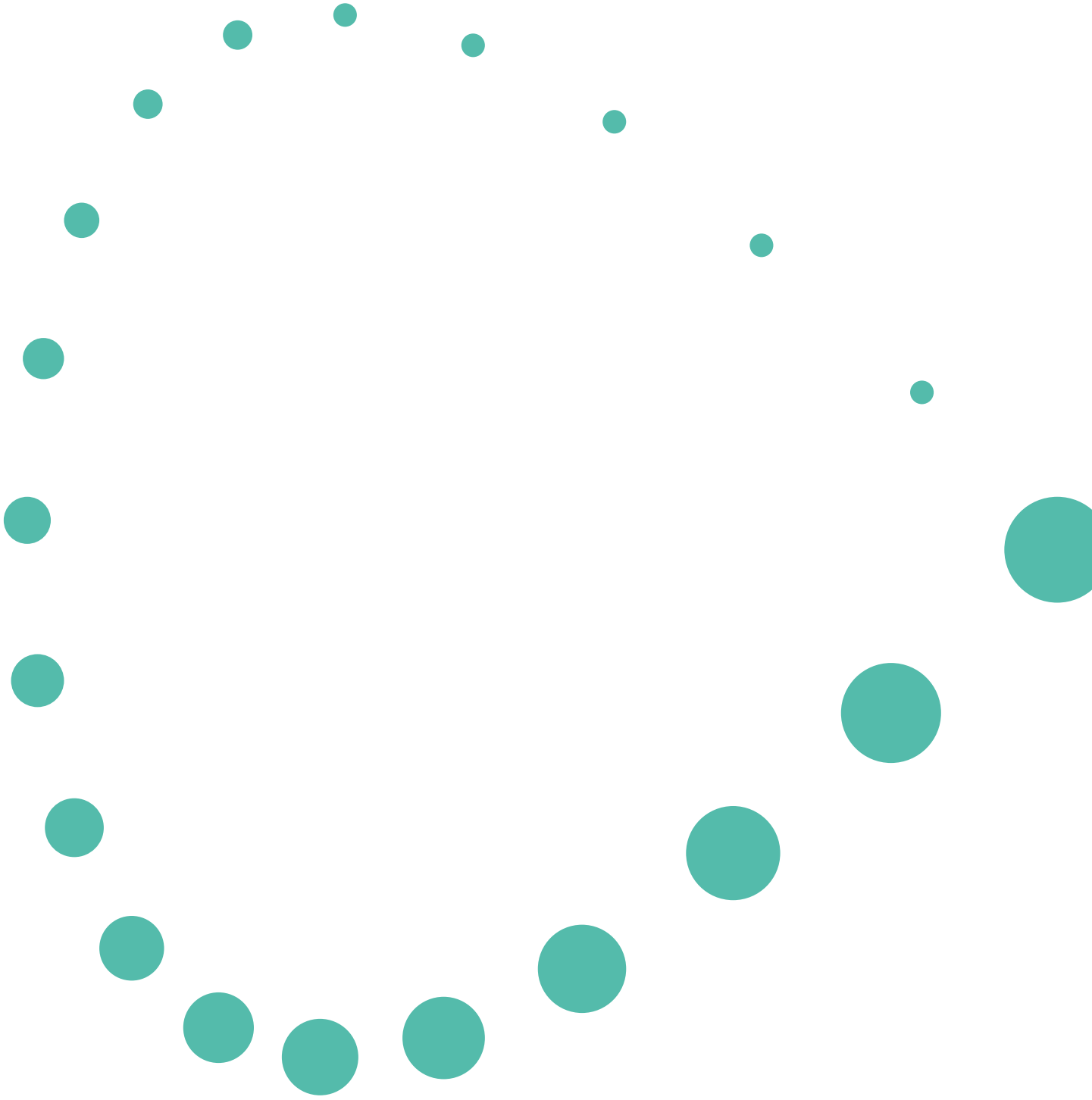
Anita Rieder, Vice Rector for Education at MedUni Vienna, emphasises the significance of virtual reality, 3D modelling, big data, digitisation and artificial intelligence for the doctors of tomorrow: "For us at the Medical University of Vienna, it is very important to prepare our students for the future – a future of incredible technological progress – but this is combined with all of the competencies that make up a good doctor: the specific communication skills required by a physician, a professional manner and a team-oriented approach."

Campus Mariannengasse

Following the completion of the EU-wide architectural design competition, the biggest construction project at a university anywhere in Austria – for around 750 researchers and 2,000 students – is moving into its next phase. Planning for the new MedUni Campus Mariannengasse, based on the winning concept, has started. Around 340 million euros will go into the construction, fit-out and equipment for the new high-tech campus. The building is scheduled to be fully operational in time for the 2025/26 winter semester.

First aid by app: students saving lives

Since March 2018, 735 MedUni Vienna students have completed a course at the university in which they receive specialist training and become registered as first responders. If they happen to be close to a cardiac emergency, they can be dispatched to the location of the emergency by the ambulance service control centre via an app, so that they can provide first aid until emergency services arrive. The initiative is a cooperation between Vienna Medical Students' Union (ÖH Med Wien), MedUni Vienna, PULS, the Lebensretter first responders' association and Vienna's professional ambulance service. This project also received an award from the Lebensretter association in 2018, for the largest increase in first responders in Austria.



Opening up new perspectives

The new ZPM – Center for Precision Medicine

The right treatment, at the right dosage, at the right time, for the right patient. Precision medicine is right on target – and the most important trend in medicine in the 21st century.

Strategic project for world-class medicine

What is precision medicine?

Personalised medicine – also known as precision medicine – is a fundamentally new approach to treating illness. It is based on the discovery that the same diseases can have different causes in different individuals. The reason for this is found in the genes: each person has a highly individual inherited genetic disposition, which can give rise to them being at greater risk of a particular disease.

As a result, the best form of treatment and prevention is personalised medical care – precision medicine. This approach is set to put countless previous medical advances in the shade. The traditional one-size-fits-all approach to treatment is often accompanied by significant side effects as well as poor outcomes in some cases.

MedUni Vienna sees the Center for Precision Medicine as part of upholding and continuing its tradition as a leading international institution – in this case in the most important area of medicine in the 21st century. Many patients are already benefiting from the application of personalised medicine and corresponding therapy. Treatment successes using the very latest approaches available to physicians provide hope that increased research in the field of precision medicine will help even more people to enjoy better quality of life for longer – even in cases of previously incurable diseases.

Highly effective tailor-made treatment

In a major investment programme, three

Scheduled start of construction:

2022

A project that can only be realised with private funding

Center for Precision Medicine

Gross floor space:

7,800 m²

Financing:

external funding, private donations

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. Construction of the Center for Precision Medicine is scheduled to begin in 2022. It will be one of the leading institutions for the research and development of new, personalised treatment strategies.

New perspectives for sufferers of disease

The new centre will focus on biomedical research, clinical trials, genome technology, bioinformatics and IT. Its close proximity to Vienna General Hospital delivers an additional advantage for patients: clinical practitioners and basic researchers can easily get together to collaborate and share cutting-edge findings with one another, giving patients better access to the very latest treatments.

For the medicine of the future

The Center for Precision Medicine will underline MedUni Vienna's position as one of the very best medical universities in the German-speaking countries. The university's commitment to precision medicine sends an important signal in terms of the infrastructure, research and teaching that will successfully overcome the future challenges in healthcare.

Funded by private donations

In the light of constraints on public spending, MedUni Vienna is turning to private individuals and companies to provide support for building the Center for Precision Medicine. Donations will be used to pay for construction of the centre at the MedUni Vienna General Hospital Campus, the fit-out of research and administrative areas, and installation of state-of-the-art medical equipment.

Getting more out of life

Many patients are already benefiting from the application of precision medicine and corresponding treatment and prevention measures. Gene analysis always plays a central role, providing the basis for diagnosis and treatment. Intensifying research efforts will result in even more people benefiting in the future, and having the chance to enjoy greater quality of life as well as to live longer.

Progress on leukaemia

Dietrich Karner, a senior business executive for many years, enjoyed perfect health – until he was diagnosed with chronic lymphocytic leukaemia (CLL). CLL is a serious disorder of the lymphatic system causing certain white blood cells – lymphocytes – to change and multiply uncontrollably. In the past, the inevitable outcome was that the patient died. But today, thanks to precision medicine, in most cases the disease is curable – as it was in Dietrich Karner's case. Karner is therefore convinced that building the Center for Precision Medicine is immensely important: "Every single contribution counts, however small, and is an excellent investment in health and in future prospects, including those of the individual donor."

Help for sufferers of multiple sclerosis

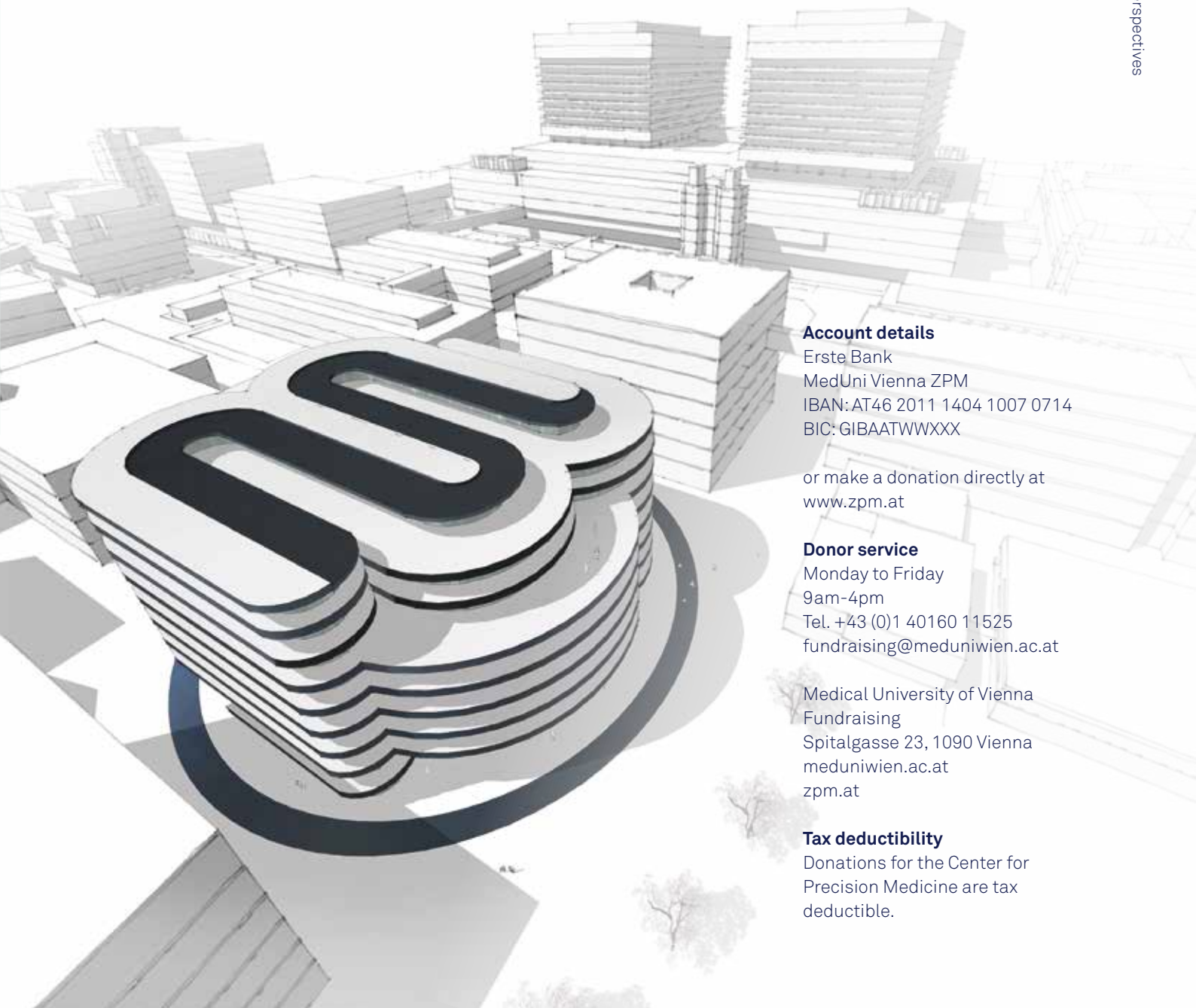
Multiple sclerosis (MS) is a chronic inflammatory neurological disease whose course cannot be predicted – hence it also known as "the disease with a thousand faces." MS has different effects on the body of each patient. For this reason, for Alexandra Vossoughi-Turnauer, patron of the Vienna Multiple Sclerosis Society, personalised treatment was vital. Since conventional treatment was unsuccessful, a drug needed to be found that would specifically target her form of MS. Vossoughi-Turnauer comments: "Without that medication, I don't know how things would be today – I would certainly not be sitting here."

Fitter than ever despite a transplant

Jutta Ludwig, a general practitioner from Carinthia, had her life saved by a heart transplant in 1991. 20 years later a repeat transplant was necessary. Thanks to precision medicine, Dr. Ludwig is healthier and fitter than ever today. The major advances in transplantation medicine in recent years are responsible for this. Patients with an unfavourable antibody status are benefiting in particular, since they face a greater risk of transplanted organs being rejected by the body. In this case, precision medicine means that the patient's individual immune system status and antibody situation is taken account of. For Jutta Ludwig, precision medicine resulted in quality of life that has meant she is even able to be active in the transplant sports association.

Serious illnesses no longer mean life is over

In order to make the incurable curable, MedUni Vienna is building the Center for Precision Medicine, funded by sponsors and private donations.



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Monday to Friday
9am-4pm
Tel. +43 (0)1 40160 11525
fundraising@meduniwien.ac.at

Medical University of Vienna
Fundraising
Spitalgasse 23, 1090 Vienna
meduniwien.ac.at
zpm.at

Tax deductibility
Donations for the Center for Precision Medicine are tax deductible.

Research, teaching and patient care

World-class medicine made in Vienna – as one of the largest universities in the German-speaking region, MedUni Vienna combines tradition with innovation. Outstanding performance in the core activities of research, patient care and teaching underline the high level of scientific expertise at the university and the institution's international significance.

Committed to good health

Based at the same location in central Vienna, the Medical University of Vienna (MedUni Vienna) and Vienna General Hospital are both distinguished medical institutions. Founded in 1365 as the medical faculty of the University of Vienna and made an independent university in 2004, today MedUni Vienna is among Europe's most highly respected centres of medical training and research – and with 8,000 students, the largest in the German-speaking region.

University hospital departments:

26

Employees:

5,750

Patients treated:

630,000

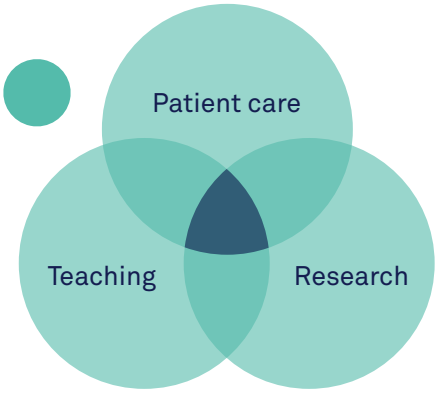
annually

Students:

8,000

The triple track: driving progress

MedUni Vienna's triple track strategy of intelligently bundling research, teaching and patient care to create synergies between these three core activities underpins the university's leading position and provides valuable impetus.



Conveying knowledge

MedUni Vienna's curriculum encompasses medicine and dentistry degree programmes and doctoral studies, as well as a master's programme in medical informatics. 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.

Putting knowledge to use

The university provides the medical staff for Vienna General Hospital, an outstanding institution serving the local region as well as patients from across the country. Over 20% of all inpatient admissions in Vienna are accounted for by Vienna General Hospital. While it focuses on high quality tertiary medical care, the hospital also provides a large proportion of secondary and primary care in the city.

Generating knowledge

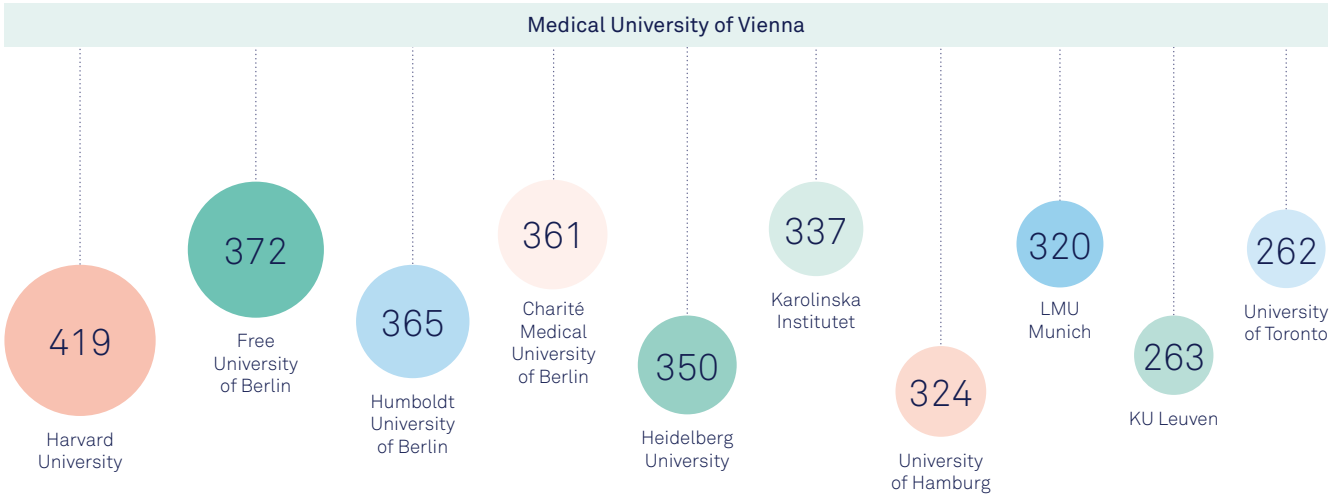
MedUni Vienna places special emphasis on research in the fields of immunology, cancer/oncology, medical neuroscience, cardiovascular medicine, and medical imaging. In each of these areas dozens of working groups organised into a research cluster cooperate on interdisciplinary and translational projects. Patients benefit directly from their work.

International partnerships and third-party funding

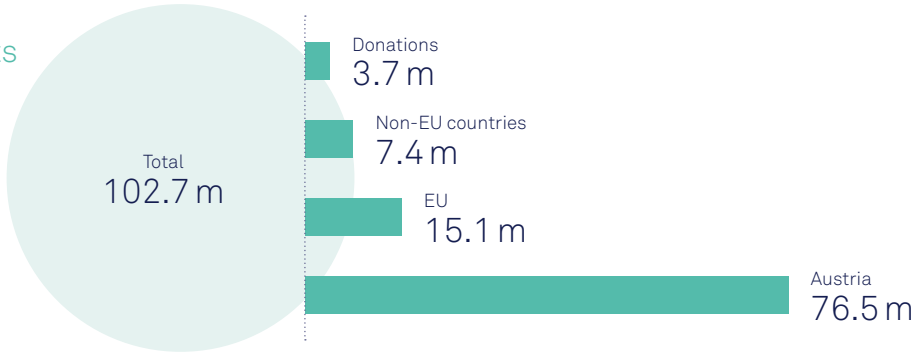
Solitary geniuses are the exception in science today. Big advances are almost always the result of team efforts, which is why Nobel prizes are now frequently awarded to multiple recipients. The numerous cooperation agreements the university has with partner institutions form a global scientific and research network that plays a vital role in MedUni Vienna's success.

Almost 60% of all publications by MedUni Vienna researchers are the result of international partnerships, and roughly a fifth of all funding for research and teaching activities comes from sources of independent (third-party) finance. Third-party funding for research and development amounted to EUR 102.7 million in 2018.

Publications based on international cooperations, 2015-2018



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



Medical excellence

MedUni Vienna has 5,748 employees (3,208 women and 2,540 men) and is one of the most important centres of medical education and research in Europe. 3,800 academic staff (1,746 women and 2,054 men) work for the university as researchers, lecturers and doctors.

Five new professors were appointed in 2018 and 48 post-doctoral lecturing qualifications were awarded (to 15 women and 33 men; 21 non-surgical specialists, 12 surgical specialists and 15 biomedical basic research specialists).

Medical care

Patient care at Vienna General Hospital

outpatient cases
553,000

inpatient cases
78,734

operations
51,676

clinic appointments
1,200,394

beds
1,773
including
137 intermediate care (IMC) and
130 intensive care beds

University Clinic of Dentistry Vienna

treatment sessions
145,236

patients
39,249

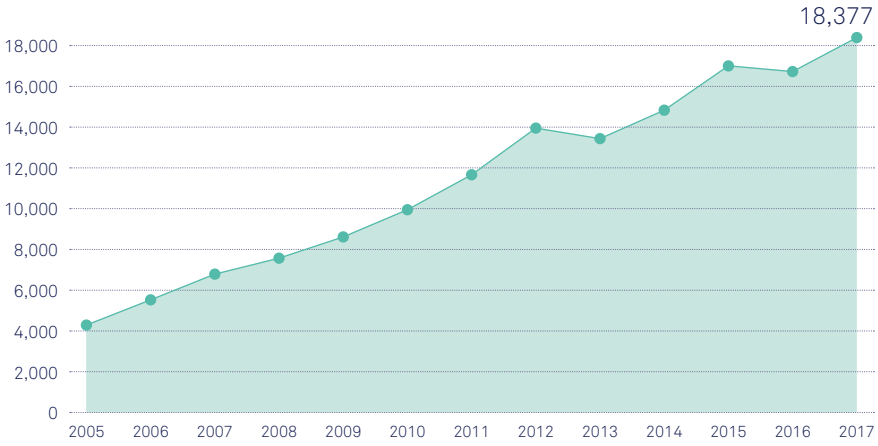
average number of patients visiting the emergency dental clinic every weekend
116.12

Measurable success

The number of 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. The impact factor of leading journals such as The Lancet or the New England Journal of Medicine can often be ten times higher than that of less well-known publications. Since its establishment as a university in its own right in 2004, MedUni Vienna has consistently increased its research performance in terms of the impact of publications by its researchers.

Impact factors of scientific publications 2005–2017

Total impact factors show that scientific output and the quality of research at MedUni Vienna are rising continuously.



Focused programmes of study

MedUni Vienna has a diversified educational offering, 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)
- 22 postgraduate continuing education courses and three certificate courses

Over 106 teaching hospitals in Austria, 69 general medical practices and numerous teaching hospitals abroad are accredited for clinical practice training.

Students by nationality	Women	Men	Total
Austria	2,747	2,479	5,226
EU	895	821	1,716
Other countries	531	414	945
Total	4,173	3,714	7,887

Source: 2018 intellectual capital report – winter semester 2018

Students in mobility programmes (outgoing/incoming)	Women	Men	Total
EU host country/country of origin	253/162	211/95	464/257
Non-EU host country/country of origin	184/45	149/29	333/74
Total	437/207	360/124	797/331

Source: 2018 intellectual capital report – academic year 2017/18

PhD/doctoral programmes	Women	Men	Total
Austria	427	434	861
EU	155	108	263
Other countries	120	73	193
Total	702	615	1,317

Source: 2018 intellectual capital report – winter semester 2018

Research with a clear focus

Clear objectives are needed in order to be able to work effectively and productively. This is why in research, MedUni Vienna focuses its diverse fields of expertise into five interdisciplinary and cross-departmental research clusters. MedUni Vienna strives to be among the best in the world in these five areas. And it has been successful in pursuing this goal: a number of scientists at MedUni Vienna are among the most cited researchers worldwide in their fields.

Cancer Research/ Oncology Research Cluster

Established on the basis of the Cancer Research/Oncology Research Cluster, the Comprehensive Cancer Center (CCC) is a joint facility of MedUni Vienna and Vienna General Hospital which combines interdisciplinary care for cancer patients with clinical and basic research, and research-led teaching. This results in innovative diagnostic and treatment methods that the CCC makes available to patients.

Immunology Research Cluster

Defective immune system responses are known to cause diabetes, arteriosclerosis, chronic polyarthritis, allergies and inflammatory bowel disease. Infectious diseases are also a growing threat. As the complexity of immunological disorders requires an interdisciplinary approach, the Immunology Research Cluster brings together research into allergies, inflammation and infectious diseases, and develops new concepts for diagnosis and treatment.

Cardiovascular Medicine Research Cluster

In addition to cardiovascular disease, the main focuses of the Cardiovascular Medicine Research Cluster's work are imaging and non-imaging diagnosis, as well as epidemiology and genetic research. The cluster is also known for 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 Cluster to perform research into new diagnostic methods, individual risk stratification, and therapy planning and monitoring for personalised diagnosis and treatment plans. The cluster's overriding objectives are to enable earlier diagnosis and improved characterisation of diseases, and to develop new therapy approaches.

Medical Neuroscience Research Cluster

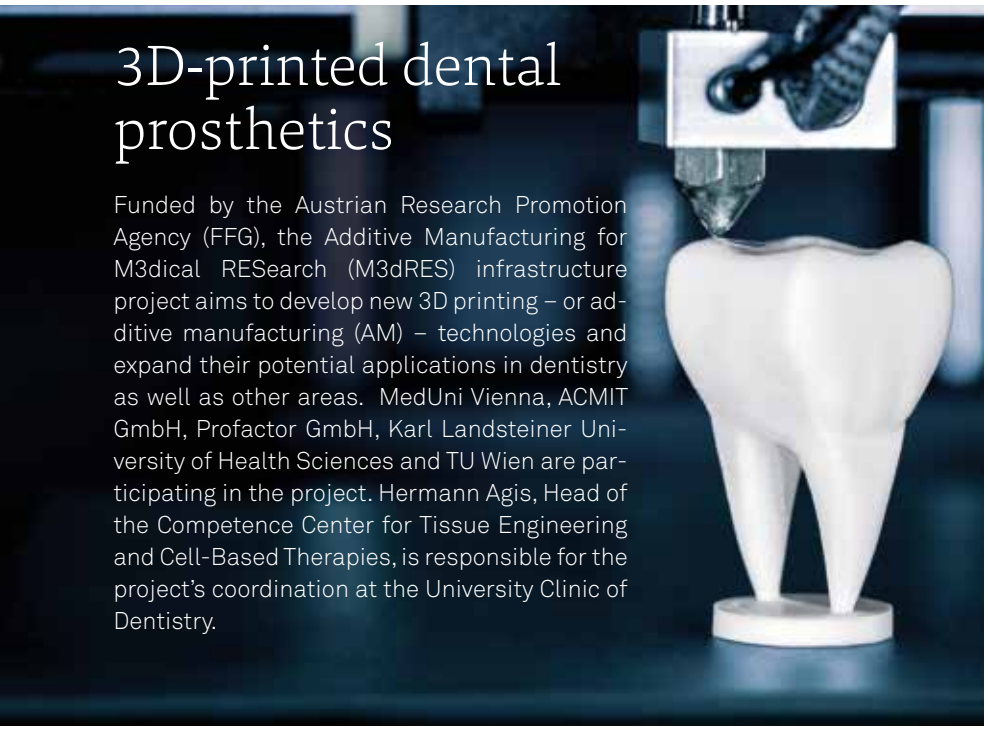
MedUni Vienna frequently attracts attention in Austria and abroad for its research into Alzheimer's, depression, multiple sclerosis and pain. These and numerous other fields of neuroscience and psychosocial science fall within the Medical Neuroscience Research Cluster. The primary goal of the researchers in this cluster is to gain new insights into the mechanisms of nervous system diseases. Their work leads to improved diagnosis and treatment for patients with these conditions.

Ten years of 7 Tesla

MedUni Vienna started using 7 Tesla ultra-high field MRI a decade ago and the university has been playing an important role in the development of the technology ever since. This ten-year anniversary was celebrated at a special symposium held in the university's Van Swieten Saal on 4 December. 7 Tesla MRI is becoming increasingly important in treatment monitoring, as a kind of final check in clinical testing. A good example of this is in the examination of epilepsy patients, where 7 Tesla MRI enables doctors to detect the areas of the brain that are triggering seizures more effectively.

The future of dentistry

Vienna's Clinic of Dentistry is one of the world's foremost dentistry institutions. It plays an active role in shaping developments in the field through numerous projects and partnerships in teaching, patient care and research. The Clinic of Dentistry has around 400 employees and is one of the largest and most advanced university dental hospitals in Europe. In 2018 it treated a total of 39,249 patients, providing 145,236 treatments.



3D-printed dental prosthetics

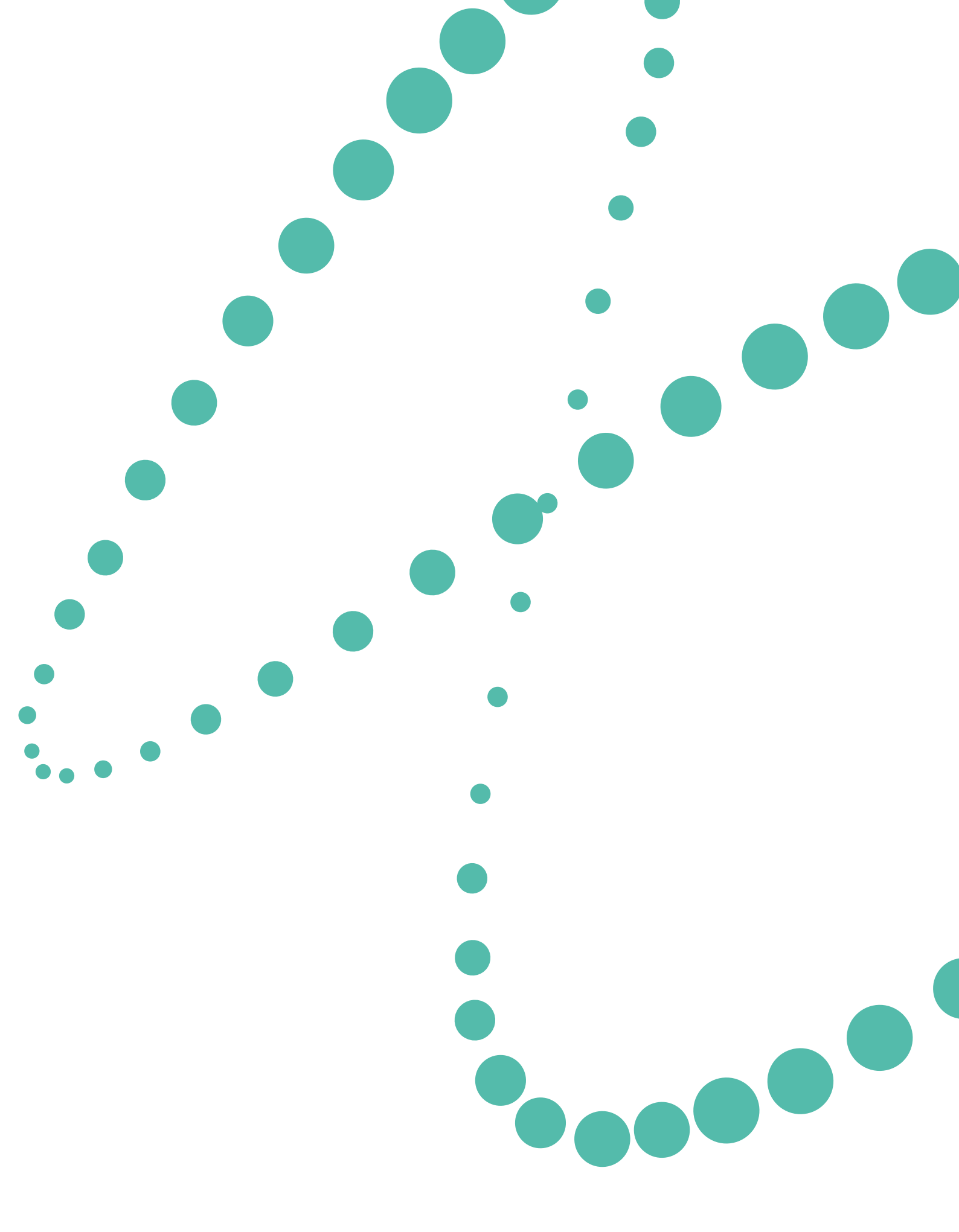
Funded by the Austrian Research Promotion Agency (FFG), the Additive Manufacturing for M3dical RESearch (M3dRES) infrastructure project aims to develop new 3D printing – or additive manufacturing (AM) – technologies and expand their potential applications in dentistry as well as other areas. MedUni Vienna, ACMIT GmbH, Profactor GmbH, Karl Landsteiner University of Health Sciences and TU Wien are participating in the project. Hermann Agis, Head of the Competence Center for Tissue Engineering and Cell-Based Therapies, is responsible for the project's coordination at the University Clinic of Dentistry.

Master's in Clinical Dentistry

In 2018 the University Clinic of Dentistry decided to broaden its postgraduate curriculum by introducing three new international master's programmes. Providing advanced theoretical and practical training, the four-semester, part-time courses starting in 2019 are aimed at practicing dentists and will be taught in English. The three new Master of Clinical Dentistry (MClinDent) programmes are in Endodontology, Esthetic Dentistry, and Periodontology and Implantology.

Partnership with Tokyo's Showa University

In March 2018, MedUni Vienna's Clinic of Dentistry entered into a cooperation agreement with Showa University in Tokyo, Japan. The partnership between the two higher education institutions will focus particularly on education and training, student exchange programmes and joint research projects. The Rector of MedUni Vienna Markus Müller and Head of the Clinic of Dentistry Andreas Moritz signed the agreement in the presence of Miyuki Hashimoto and Yuka Hiraizumi, as representatives of Showa University, in Vienna on 15 March 2018. Thanks to this agreement, the long-term cooperation between the two universities will now also encompass dentistry.



Living better and healthier for longer

An abundance of scientific research outcomes are helping to write new chapters in the success story of medical progress. And innovative approaches at the Medical University of Vienna – many of them related to precision medicine – are playing a part. They offer people affected by illness the prospect of a better, healthier and longer life.

Treating chronic heart failure individually

Targeted, individualised treatment

Chronic heart failure (chronic myocardial insufficiency) is a growing challenge in the western world due to its prevalence, costly treatment in hospital and fatality rates. The disorder is characterised by a long duration, a high level of suffering in patients and poor prognoses.

Varying effectiveness of ACE inhibitors

A cross-sectional study carried out by Noemi Pavo from the Division of Cardiology has provided cause for hope. Pavo was able to show that individual patients with chronic heart failure respond very differently to basic treatment with ACE inhibitors. The reason is that in different patient subgroups, different overactive systems in the body can determine the form taken by the illness.

Basis for individualised treatment

For the first time, the study offers an explanation as to why not all patients benefit to the same degree from taking an ACE inhibitor. Insights gained in the study are supporting efforts to develop targeted individual therapy that applies existing medications according to illness type.

Specialist conferences in Vienna

Due to its prevalence, heart failure is of major importance in cardiology, which is why the European Society of Cardiology focuses intensively on the topic. More than 5,000 cardiologists took part in the international specialist Heart Failure Congress that took place in Vienna in May 2018, held almost at the same time as the 2018 Germany, Austria and Switzerland heart failure convention at MedUni Vienna's lecture centre at Vienna General Hospital.

Higher quality of life with implanted defibrillators

Sudden cardiac death is a frequent cause of death among patients with heart disease. With an implantable cardioverter defibrillator (ICD), patients carry a kind of life insurance in their chest, protecting against the underlying heart rhythm disorder. The protection is only activated when the heart deviates from its rhythm to a degree that means the patient's life is at risk. "Unfortunately, for some patients this treatment overshoots the mark," says Achim Burger of the Division of Clinical Cardiology.

Significantly reducing unnecessary treatment

Higher quality of life for sufferers

But it doesn't have to be that way. Together with a research team headed by Thomas Pezawas, Burger was able to demonstrate that the selected programming for an ICD plays an important role. Their work showed that an approach that was as "defensive" as possible is safe, and significantly reduces unnecessary treatment. In comparison with standard programming, programming with extended detection times can reduce unnecessary ICD shocks by 29%, and has already been used successfully in everyday clinical practice at MedUni Vienna for some time.

Defective RNA results in high blood pressure

New treatment options

Our DNA stores genetic information. At the cellular level, this information is transcribed into ribonucleic acid (RNA) and then, usually, "translated" into proteins that perform cellular functions. Normally, in this process RNA is modified so that the information can be read and used correctly. However, researchers at the Center for Anatomy and Cell Biology found proof of defective RNA modification. This results in over-contraction of smooth muscle tissue, which can lead to cardiovascular disease and high blood pressure.

Potential springboard for new treatment options

The cause of this defective RNA modification is not yet known, and will be the subject of subsequent studies that could lead to new therapeutic options, making high blood pressure caused by defective RNA changes and certain types of cardiovascular condition easier to treat.

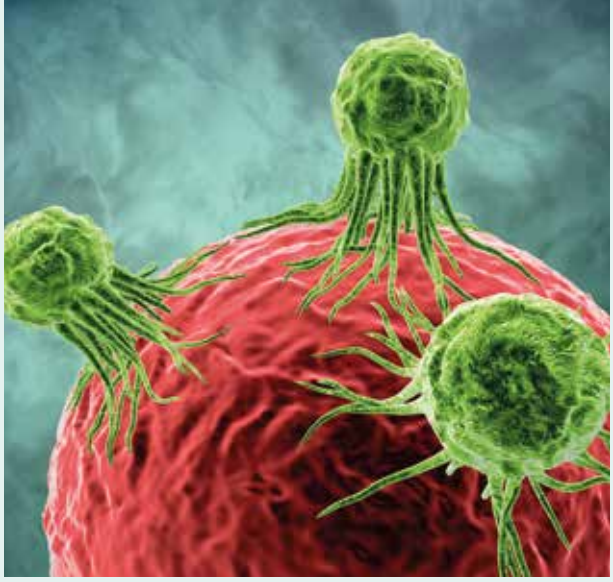
New immunotherapy for cancer tumours

When immunoglobulin E (IgE) responds to harmless antigens such as pollen, an allergic reaction can result. But the purpose of IgE antibodies is actually to defend the body against dangerous foreign substances. And researchers at MedUni Vienna, in conjunction with Vetmeduni Vienna and international colleagues, put this function of IgE antibodies to use: they developed a dog IgE that acts directly against the epidermal growth factor receptor (EGFR) in cancer tumours. The central finding was that in in vitro studies, the tumour was eliminated by IgE antibodies in 60% of cases.

Medicine for people and animals

Lead author Erika Jensen-Jarolim of the Institute of Pathophysiology and Allergy Research (at MedUni Vienna's Center for Pathophysiology, Infectious Disease and Immunology) and the Messerli Institute for research into the relationship between humans and animals explains: "This gives us hope that we are making an important contribution to a new form of immunotherapy for cancer tumours. The research we completed is a perfect example of the purpose of the Messerli Research Institute: to improve medicine for human beings, but also for animals."

An important contribution to the fight against cancer



Promising drug for fighting mesothelioma

Pleural mesothelioma is a particularly aggressive form of malignant tumour that originates in the lining of the lung. Typically, it develops as a result of exposure to asbestos in the past. Standard treatment comprises surgery, chemotherapy, radiotherapy or a combination of the three. Since the effectiveness of these conventional treatments cannot be increased any further, novel targeted approaches are being sought in order to improve survival rates.

New, targeted medicine

A study by MedUni Vienna together with researchers in Germany and Hungary that was published in the journal Clinical Cancer Research gives cause for hope. The results point to the conclusion that new drug nintedanib provides a promising approach for the targeted treatment of patients with mesothelioma.

New perspectives

Predicting venous thrombosis and pulmonary embolism

Cancer patients are at much greater risk of venous thrombosis and of pulmonary embolism – complications that can be fatal, especially if undiagnosed. Quality of life also declines due to thrombosis or pulmonary embolism, and anti-tumour therapy is often delayed. In principle, thrombosis can be prevented by anticoagulant drugs – but with limited success: depending on patient group, the risk of developing a thrombosis varies between 1% and over 20%.

Personalised medicine for precise risk evaluation

However, a study group at MedUni Vienna succeeded in developing a new model for precise prediction of tumour-related venous thrombosis and pulmonary embolism. Published in respected journal The Lancet Haematology, the prediction model makes it possible to estimate the risk for an individual patient during the first six months following the onset of illness – another step forward in personalised medicine.

Preventive care for patients

Lead author Ingrid Pabinger, Deputy Head of the Division of Hematology and Hemostaseology at the Department of Medicine I, explains: "Using this model, we can identify individual patients who have a high risk, inform them and in the future most likely protect them with anticoagulants."

> Identifying, informing and protecting high-risk patients

Cutting-edge mathematics makes breast cancer therapy more precise

The right individual treatment for breast cancer depends on determining oestrogen, progesterone and HER2 receptors. Currently, standard practice is to use immunohistochemistry testing (IHC) for this purpose.

In 5-10% of all cases, these tests on tumour tissue can produce false negative or false positive results – with serious consequences for patients. In an interdisciplinary collaboration, scientists at MedUni Vienna showed that a new testing method can significantly improve diagnostic certainty. The technique involves checking the gene expression of receptors on a gene chip, and then feeding all of the data into a mathematical model.

Choosing the right therapy with confidence

If the presence of one or more receptors driving the growth of the cancer is detected, hormonal therapy is the right choice. But if IHC shows that none of the receptors are present and that breast cancer has developed without them, chemotherapy is normally the recommended treatment. A serious situation can develop if IHC produces a false positive result due to a measurement error and hormone therapy is then selected on this basis. "Such an error can threaten the life of the patient," says Wolfgang Schreiner of the Institute of Biosimulation and Bioinformatics. The new precision medicine technique should mean that such life-threatening errors become a thing of the past.

> Reliably prevent life-threatening errors

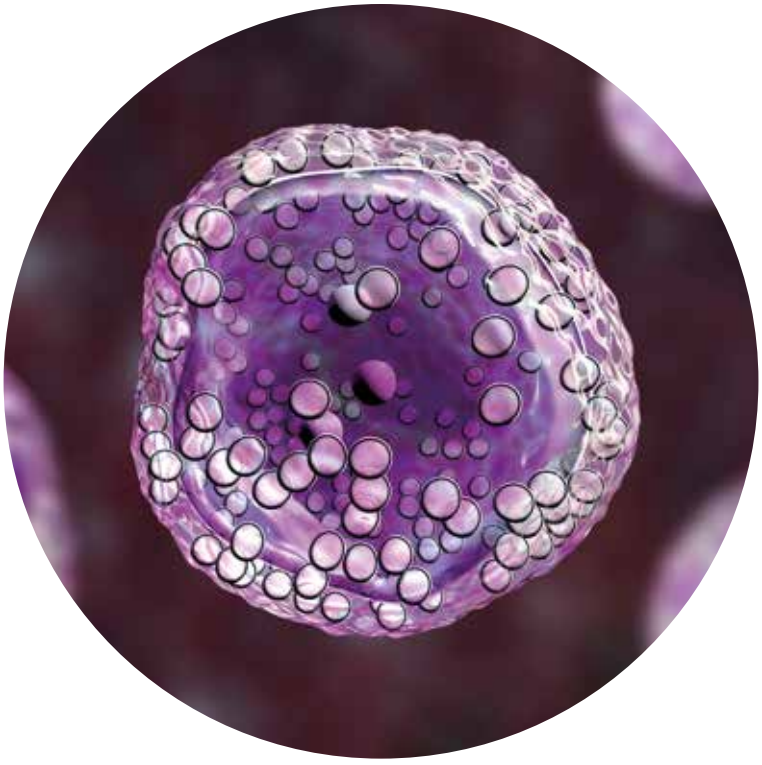
Molecular profiling for brain tumours

Meningioma – a specific type of brain tumour – can usually be treated effectively. However, there are a number of subtypes that develop very aggressively, and present a high risk of reoccurring after treatment. These subgroups need to be treated using a special therapy approach. Researchers at the Comprehensive Cancer Center (CCC), a joint institution of MedUni Vienna and Vienna General Hospital, have now been able to demonstrate that in addition to conventional tissue testing (histopathology), a special type of molecular DNA analysis can help to determine meningioma subtype, enabling more accurate prognoses and, as a result, more effective treatment planning.

> Precise identification of tumour type using DNA profiling

Life expectancy doubled in cases of B-cell lymphoma

Increased life expectancy thanks to a breakthrough treatment option



A new treatment option has the potential to double life expectancy for patients with B-cell lymphoma in comparison with current standard chemotherapy. CAR T-Cell therapy is a highly promising treatment option for around a fifth of patients who suffer from diffuse large B-cell lymphoma. This exciting discovery is the central outcome of the JULIET multi-centre study, in which researchers at the Comprehensive Cancer Center (CCC) were significantly involved.

Effective alternative to chemotherapy

This opens up a new therapy option for patients, in addition to the standard chemotherapy treatment applied up to now. The fact is that the two-year survival rate for patients who receive standard treatment is only 20%. With CAR T-Cell therapy, the overall survival rate was doubled to 40%. The results of the study were published in the New England Journal of Medicine.

Permanent recovery in hopeless cases

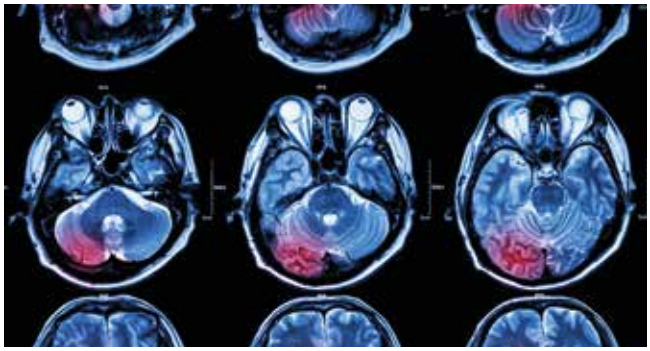
Ulrich Jäger, Head of the Division of Hematology and Hemostaseology at MedUni Vienna's Department of Medicine I, member of the CCC and lead researcher for the JULIET study in Austria: "We were able to show that CAR T-Cell therapy is a breakthrough treatment option, because it enables us to cure the disease permanently, including in previously hopeless cases."

Cell therapy a research focus

The researchers' next goal is to find out why 40% of patients respond to CAR T-Cell therapy and can be healed, but the remaining 60% do not. A study building on the JULIET project is planned to investigate this. As Jäger says: "It may be that the process could also be applied to treat many other conditions. By making cell therapy a research focus, MedUni Vienna can position itself as a centre for work in this field."

Better identification of aggressive brain tumours

More precise diagnosis for targeted treatment



Brain tumours known as glioblastomas have a devastating prognosis. But a study published in Nature Medicine by CeMM, MedUni Vienna and the Austrian Brain Tumour Register shows how epigenetic analysis of tumour samples from everyday clinical practice can be used for better diagnosis and more targeted treatment of glioblastomas in the medium term.

Important contribution to cancer research

The research was based on the Austrian Brain Tumour Register, which was set up by co-last author of the study Adelheid Wöhrer of MedUni Vienna's Institute of Neurology and has partners all over the country. By combining epigenetic data with imaging techniques and digital pathology, the study was able to illustrate important shared features among glioblastoma at the molecular, cellular and organ level. The new insights can now be used to support classification of tumour disease. The study also provided important insights into the role of epigenetics in glioblastomas, and demonstrated the relevance of epigenetics to personalised medicine.

Metal chemotherapy drugs boost anticancer effect

Improving the immune response to better fight cancer

Due to their effectiveness in killing tumours, metal drugs are often used in chemotherapy to treat cancer. However, because they also damage dividing healthy cells, it has normally been assumed that they damage the immune system. A review article published in Chemical Reviews – the world's foremost academic journal for chemistry – by the Translational Cancer Therapy research cluster established by the University of Vienna together with MedUni Vienna showed that the opposite is the case: metal-compound chemotherapies can actually boost the immune response against cancer and the effectiveness of immunotherapy, partly because they make cancer cells more "visible" and eliminate aspects of the immune response that limit recovery.

Combination therapy has a bright future

Walter Berger, lead author of the research, Deputy Head of the Institute for Cancer research at MedUni Vienna, member of the Comprehensive Cancer Center (CCC) and one of the two directors of the interuniversity research cluster, explains: "The results clearly show that a combination of metal-compound chemotherapy and immunotherapy is one of the most promising treatment approaches today and for the future."

Not smoking improves survival rate for prostate cancer

Significantly lower risk of relapse

Smokers who are diagnosed with prostate cancer have a markedly lower risk of relapse if they quit smoking soon after diagnosis. This is the finding of a retrospective meta-study published in the Journal of the American Medical Association and led by Shahrokh Shariat, Head of the Department of Urology at MedUni Vienna and member of the Comprehensive Cancer Center (CCC).

Major international study

The international meta-study involved researchers in Austria, Switzerland, Spain, Jordan, Japan and the USA and analysed 11 studies covering a total of 22,549 prostate cancer patients who had undergone a prostatectomy or radiotherapy. The central finding was that patients who continued to smoke had a significantly greater risk of relapse and of development of new metastases, as well as higher cancer-specific mortality.

Smoking bans and giving up are worthwhile

Shariat hopes that the results of the study will help to bring about policy changes. "Maybe it will be possible, based on this and many other findings, to persuade policymakers to raise awareness of the advantages of quitting smoking and of smoking bans." Shariat and colleague Nicolai Hübner are the authors of an up-to-date, accessible summary of the current state of research entitled *Prostatakrebs: Vorbeugung. Diagnose. Therapie.* (Prostate Cancer: prevention, diagnosis, treatment) that is part of MedUni Vienna's series of guides for the general public, published by Manz. The book contains numerous tips for cancer patients and for prevention.

Running for cancer research

In glorious autumn weather on 6 October 2018 around 3,695 runners, including 98 company teams, took part in MedUni Vienna's 12th cancer research run, helping to support important and innovative cancer research projects with every step. Over EUR 200,000 was raised in 2018. An international expert jury selected ten projects – from among the 80 submitted – to receive funding from the donations made.

Eye scan diagnosis: worldwide impact of MedUni Vienna development

Developed at MedUni Vienna, high-resolution optical coherence tomography (OCT) provides accurate images of layers of the retina without physical contact. Supported by artificial intelligence (AI) techniques recently developed at the university, diseases of the retina can be diagnosed using OCT early, within just a few seconds, and treated in a targeted way. MedUni Vienna has become a pioneer and driver of digitisation in ophthalmology. This technological revolution is now breaking through worldwide to benefit patients everywhere.

Early diagnosis of disease thanks to big data and Artificial Intelligence

Ophthalmology: pioneer and driver of the digital revolution

As a result of its research findings, MedUni Vienna is now regarded as a pioneer and a driver of the digital revolution in ophthalmology. "Even Google has taken up the topic and produced an academic paper on how digital algorithms can perform precise, automated diagnosis, in line with our developments and publications over the past few years," explains Ursula Schmidt-Erfurth, Head of the Department of Ophthalmology and Optometrics. The fact that Google – as well as other technology companies like IBM – has jumped on the digital ophthalmology bandwagon is a thoroughly positive sign, says the chair of MedUni Vienna's Medical Imaging research cluster: "In this way, our idea for using AI in ophthalmology will be spread further and implemented as a business model all over the world – benefiting patients and supporting doctors in their work."

Simple, accurate and fast diagnosis of diabetes

It isn't only diseases of the eye that can be diagnosed by digital retinal screening. One of the most recent achievements is automated diabetes screening, which has already been implemented at MedUni Vienna. "Patients are flocking to us at the department to undergo this from of retina screening, which allows us to detect diabetic changes within a few minutes and without an invasive procedure," says Schmidt-Erfurth. This groundbreaking analysis tool was presented publically during the 2018 Advanced Retinal Therapy (ART) conference, which took place in Vienna on 1 December.

MedUni Vienna leading the way internationally

Every stage of diabetic retinopathy can be identified using the technique. But big data is making even more possible: today, a further 50 illnesses can be diagnosed in this way. And MedUni Vienna is taking a leading role in this global digital revolution. At the university's Department of Medicine II, in the Division of Cardiology headed by Christian Hengstenberg, work is proceeding on early diagnosis of cardiovascular disease with the aid of digital retinal screening.

Accurate early diagnosis of Alzheimer's

Research is also forging ahead on further applications. In an EU project on Multimodal Optical Diagnosis of Ocular and Neurodegenerative Disease (MOON), MedUni Vienna is working together with partners in France, Germany and the Netherlands. The objective is to develop new technology for diagnosing these kinds of disorders early, and to implement it in diagnosis and treatment. About one and a half years after the start of the MOON project, researchers are confident that in the future it will also be possible to diagnose diseases like Alzheimer's by eye scan. "Initial investigations are highly promising," comments Rainer Leitgeb, Project Manager at the Center for Medical Physics and Biomedical Engineering at MedUni Vienna.

Inconclusive mammography results: MRI as an alternative to biopsy

A study conducted in Austria by Med-Uni Vienna in conjunction with Diagnostikum Graz has clearly demonstrated that magnetic resonance imaging (MRI) is the best option when investigating inconclusive mammography results. "MRI clearly shows if the finding is benign or malignant," says the study's lead author Claudio Spick, from MedUni Vienna's Department of Biomedical Imaging and Image-guided Therapy. MRI is therefore the best non-invasive and equivalent alternative to tissue removal (biopsy). MRI also picks up previously unidentified malignant tumours in about 5% of cases.

Potential application for prostate cancer

"This study confirms MRI's high degree of accuracy. As well as decisively characterising the ambiguous findings as either benign or malignant using MRI, we also discovered additional malignant tumours which had gone unnoticed. The data therefore proves that breast MRI is a precise problem-solving tool," explains Spick. The only alternatives are invasive biopsies or regular check-ups, which involve waiting times, complications and additional worry. The researchers hope that in future MRI will also help to achieve similar levels of diagnostic certainty in prostate cancer diagnosis.

> Greater certainty for breast cancer patients

Medical Imaging Cluster shines the spotlight on personalised medicine

Precision medicine was the focus of the university's first Medical Imaging Cluster festival, which was held in the Van Swieten Saal in June 2018. Diagnostic imaging techniques play a key part in precision, personalised treatments. This was reflected in the event's broad programme of presentations and panel discussions on topics ranging from molecular imaging of cells and subcellular structures, to qualitative and quantitative analysis of metabolic processes, applications of microscopic and optical techniques, the exciting advances in minimally invasive treatments, and insights into artificial intelligence, big data and radiomics.

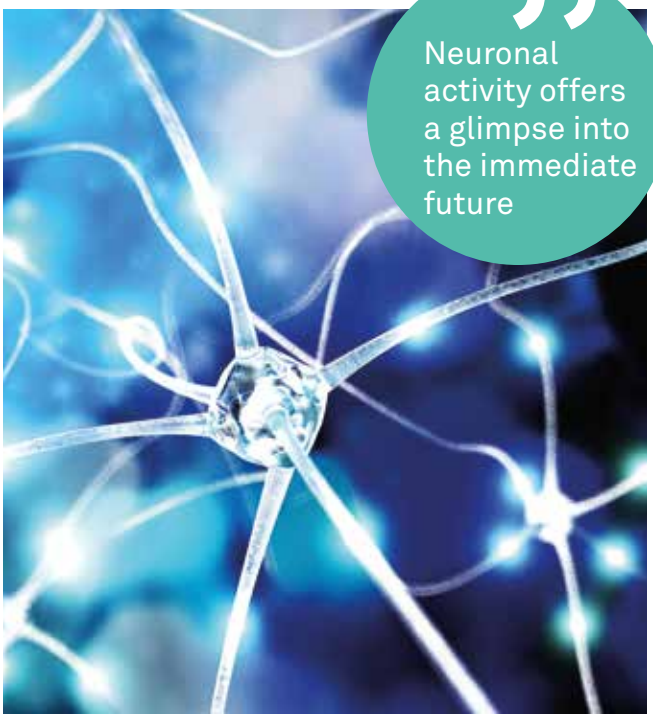
Cause of long-term stress identified

Researchers from MedUni Vienna, Semmelweis University in Budapest, the Karolinska Institutet in Stockholm and Yale University have, for the first time, identified a process in the brain which is responsible for delayed response to stress and the enduring effects of stress. In an international collaboration, they discovered that following a perceived danger, the area of the brain which reacts to stress and is responsible for subsequent behaviours is activated via the cerebrospinal fluid after a ten-minute delay.

Third stress mechanism discovered in the brain

The research was overseen by Tibor Harkany (MedUni Vienna), Alán Alpár (Semmelweis University), Tamás Horváth (Yale) and Tomas Hökfelt (Karolinska Institutet) and revealed a third stress mechanism in the brain in addition to the two main stress mechanisms which were already known. The findings could lead the way to a better understanding of the neural processes which occur in post-traumatic stress disorder, chronic stress and burnout syndrome.

New perspectives on chronic stress



Neuronal activity offers a glimpse into the immediate future

Predicting intuitive decisions

Gamble or take the safe option? Actions that are about to be performed can be predicted on the basis of neuronal activity in the prefrontal cortex. This was the key finding of a study undertaken by MedUni Vienna's Center for Brain Research and Center for Medical Statistics, Informatics and Intelligent Systems as well as NYU School of Medicine (New York).

New treatment options for depression and gambling addiction?

"We were able to predict the choices that the test animals were going to make by analysing their neuronal activity. By selectively manipulating brain activity, we could even influence the animals' decisions and cause them to take greater risks when speculating," says the study's author Johannes Passecker. The researchers now want to precisely identify the synaptic neural pathways and specific cell types that are significant in changing or maintaining behaviour. This knowledge could lead to improvements in the treatment of disorders such as gambling addiction and depression.

Specific protein a target in Alzheimer's therapy

For many years beta-amyloid protein was regarded as a promising therapeutic target for Alzheimer's, but the outcomes of international studies proved disappointing. Following a pioneering MedUni Vienna trial, the protein is now making a successful comeback. The phase III trial led by Elisabeth Stögmann from the Department of Neurology demonstrated that monoclonal antibodies which are directed at amyloid-beta deposits (plaque) in the brain are able to dissolve them.

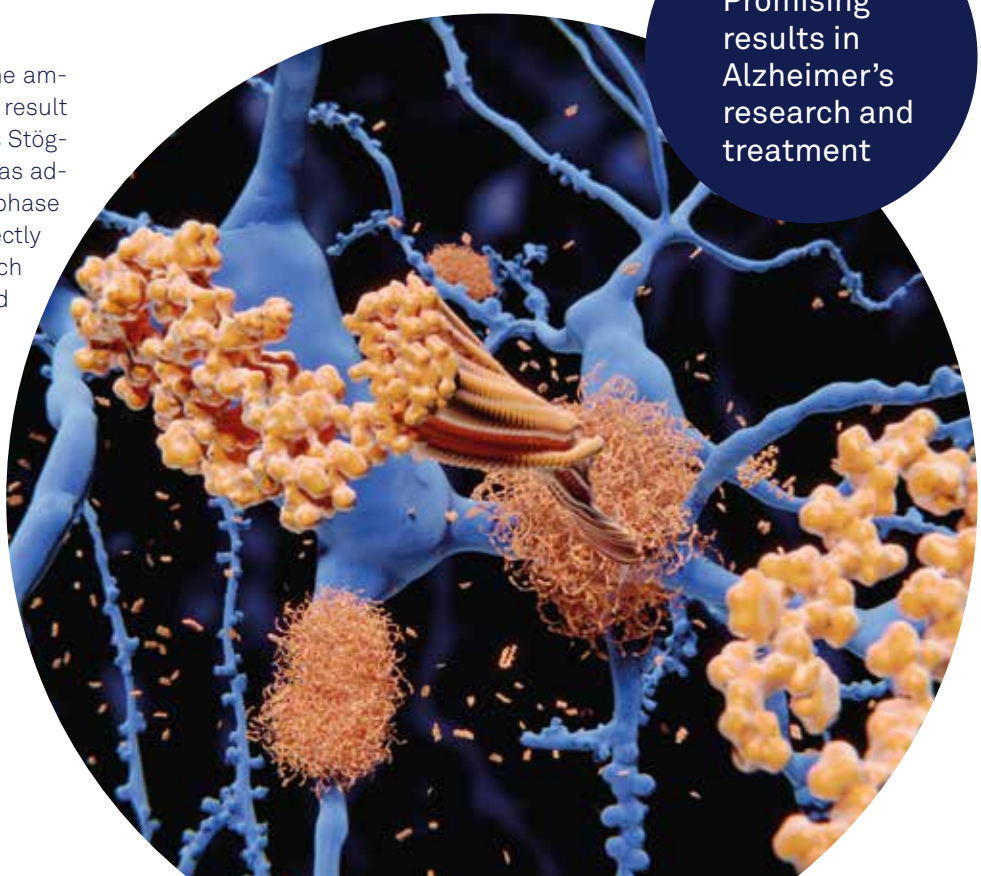
Disappearance of dangerous plaque

"These improved results with the amyloid antibodies are partly the result of using a higher dose," explains Stögmann. The drug aducanumab was administered intravenously in the phase III trial at MedUni Vienna. It directly attacks the protein deposits which characterise Alzheimer's and helps to destroy and dissolve them in the brain. "After having demonstrated this positive effect, we now want to investigate whether the disappearance of the plaque can help stop or reduce the deterioration of a patient's memory. Initial results are positive," says Stögmann. The first concrete findings will be available in about three years' time.

Potential blood test for personalised early detection

The antibodies against the beta-amyloid protein are more effective the earlier they are administered to Alzheimer's patients. Early detection currently relies on identifying the first obvious cognitive symptoms, even though before these arise beta-amyloid plaque can already have been lying dormant in the body without posing a threat for up to 20 years. A corresponding test is therefore being developed. "This test could totally transform Alzheimer's research and treatment within a few years," adds Stögmann.

> Promising results in Alzheimer's research and treatment



A more treatable disease thanks to personalised medicine

Better quality of life for rheumatoid arthritis patients

In a highly positive development, today 80% of rheumatoid arthritis sufferers are able to lead a normal life. MedUni Vienna researchers Daniel Aletaha and Josef Smolen were invited to conduct a comprehensive review of the current status of research in the field by the highly respected Journal of the American Medical Association. The principal finding was that outcomes for sufferers have significantly improved in recent years. "80% of sufferers are able to lead a normal life with the aid of medication," according to the rheumatism expert Daniel Aletaha from the Division of Rheumatology.

Lives of 80% significantly improved

Innovative techniques for measuring the disease, new medicines and improved management of the disease have all played their part. Only 20% of sufferers who receive treatment now experience severe recurring episodes of the disease. "30 years ago, the figure was 50%. Similar to the way HIV was transformed from a terminal illness into a chronic disorder thanks to new medicines, with the use of new treatments rheumatoid arthritis has now become a disease which, although still chronic, no longer leads to long-term damage and leaves virtually no patients in need of a wheelchair," says Aletaha.

Precision therapy options

Personalised medicine is becoming increasingly important in treating rheumatoid arthritis. New small-molecule drugs are now attractive options. These personalised therapies are individually synthesised to inhibit specific molecules inside a cell. The result is an increasing number of alternatives for doctors to choose from: "The range of drugs available to us today – whether biologics or small molecules – is much, much greater than it was about ten years ago," Aletaha points out. "So we're getting better at assessing what the best treatment is going to be in cases where the conventional approach is no longer working – and ideally this will be personalised," he adds.

RHEUMATOID ARTHRITIS

More accurate risk assessment for kidney transplants

Many donor kidneys are rejected by the recipient within ten years of a transplant. Immunoglobulin G (IgG) antibodies are among the causal factors and are used as a biomarker for increased risk of rejection.

New evidence a worldwide first

Researchers from the Department of Surgery, in collaboration with the Institute of Pathophysiology and Allergy Research and the Division of Nephrology, have now succeeded in demonstrating for the first time that IgE antibodies are also produced following kidney transplantation. “This new insight could lead to totally new diagnostic options,” says transplantation immunologist Thomas Wekerle. “In future, we may be able to more accurately predict the risk of rejection with the help of these antibodies, which are quite uncommon in transplantation.”

Significant advance in transplantation immunology

Simplified multi-allergen test

Hugely beneficial for many people

Allergic sensitisation can be diagnosed at an early stage with the help of the Allergy Chip, a technology co-developed by MedUni Vienna. The process normally involves taking a blood sample for analysis at a lab equipped with the chip. A team led by Rudolf Valenta of the Institute of Pathophysiology and Allergy Research have shown that this multi-allergen test works just as well with dried blood samples. This represents a big step forward in countries with relatively poorly-equipped health systems, where until now samples often had to be carefully protected and packed before being transported under refrigerated conditions by air for analysis.

Pioneers of newborn screening

The Viennese researchers drew inspiration for their discovery from the newborn screening programme introduced by the Department of Pediatrics and Adolescent Medicine at MedUni Vienna over 50 years ago. Babies are screened for congenital diseases by pricking their heels to take a blood sample, which is collected on paper.

Atypical virus a cause of kidney diseases

Basis for new, more effective medicines

An international research group led by the Head of MedUni Vienna's Department of Dermatology, Wolfgang Weninger, has discovered a previously unknown virus which acts as a driver of certain kidney diseases. The researchers named the atypical parvovirus mouse kidney parvovirus (MKPV). The results of their work were published in leading journal Cell.

From animal model to use in humans

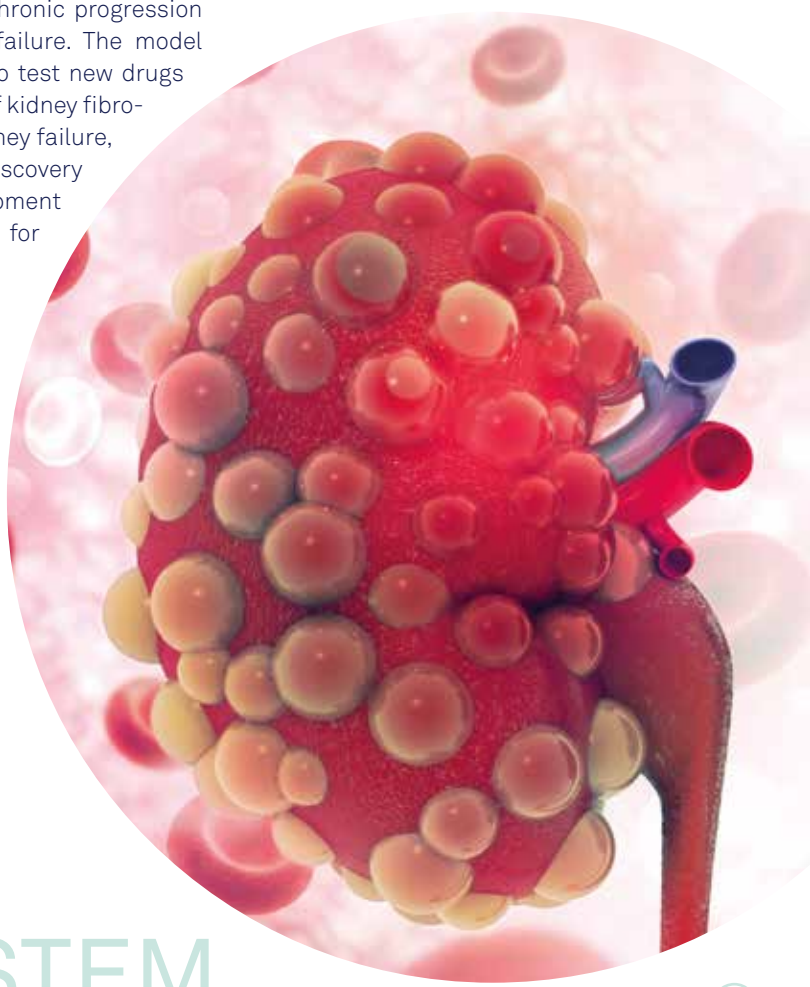
A coincidence led to the discovery: "For years a spontaneous kidney disease had been occurring in laboratory mice at our institute which was leading to the unexpected, premature death of animals with an immune system disorder. We identified a disease of the renal tubules as the cause," explains Weninger. The disease is called tubulointerstitial nephropathy and is triggered by MKPV. "The MKPV infection is very similar to a form of viral tubulopathy which occurs in patients following kidney transplantation," continues the immunology expert.

Alternative option for testing new medication

The researchers were therefore able to develop a new model for the study of viral kidney diseases, kidney fibrosis and chronic kidney failure. In contrast to conventional models, the MKPV infection is a natural model which closely resembles the chronic progression of human kidney failure. The model can now be used to test new drugs for the treatment of kidney fibrosis and chronic kidney failure, as well as for the discovery and clinical development of new biomarkers for these diseases.

Further research into MKPV

"We are now going on to answer the question of whether similar viruses also lead to kidney infections and kidney failure in humans, particularly in immunosuppressed patients following a transplant," says Weninger. The MKPV virus could also have gene therapy applications, such as repairing genes in renal tubules.



IMMUNE SYSTEM

Basic research of great clinical relevance

How the lungs get their immune cells

The adult lung is made up of various highly specialised types of cells, which are protected by many different kinds of immune cells. Little research has been done into how these immune cells migrate to the lungs and influence each other in the embryo and following birth. MedUni Vienna researchers working in close cooperation with the Center for Molecular Medicine (CeMM) and Israel's Weizmann Institute of Science have discovered a fundamental new mechanism by employing a high-tech procedure in a mouse model. They showed that basophils perform a significant role in the development of phagocytes in the lung. Until now, basophils were largely associated with allergic reactions. The resulting study, which was published in the journal Cell, could lead to new clinical strategies for lung diseases.

First complete developmental map of the lung

The research involved the first complete mapping of lung development, and was carried out by a group led by Ido Amit at the Weizmann Institute of Science in collaboration with Sylvia Knapp's teams at CeMM and at MedUni Vienna's Department of Medicine I, as well as Tibor Harkany of the Center for Brain Research. "We demonstrated that lung development takes place in several spurts, and that the basophils in the lung fulfil a significant function in this," explains Anna-Dorothea Gorki, a PhD student at CeMM and co-lead author of the study. "They broadly interact with other lung cell types, particularly the macrophages, which are an extremely important kind of immune cell. Molecular signals released by basophils lead to the maturation of macrophage precursors into their lung-specific form – alveolar macrophages."

Potential new therapeutic target

"The discovery is very interesting from a clinical perspective," adds MedUni Vienna Professor Sylvia Knapp, the leader of a CeMM research group. "This remarkable function of the basophils and their influence on macrophages indicate that they may also play a part in lung diseases, and therefore represent a potential therapeutic target for immunotherapies."

Protection against a potentially fatal disease

Chikungunya virus vaccine on the horizon

A genetically engineered live vaccine based on a common measles vaccine shows great potential for protection against the chikungunya virus. This was the principal finding of a phase II trial in which MedUni Vienna participated, published in The Lancet. The trial involved MedUni Vienna's Institute of Specific Prophylaxis and Tropical Medicine, headed by Ursula Wiedermann-Schmid, and Christa Firbas' research group from the Department of Clinical Pharmacology, as well as a working group at the Medical University of Graz.

Just two injections

Two injections were enough to provide immunisation regardless of whether they were given at an interval of one or six months. In both cases the new vaccine, which is based on a modified measles virus, proved to be effective and safe. Injected into the muscle, it triggers the production of antibodies in the lymphatic system. In the event of a chikungunya virus infection, these antibodies neutralise the virus and prevent the onset of the disease.

Market-ready in a matter of years

"The results of this phase II trial are extremely promising in terms of the vaccine's immunogenicity, safety and tolerability," says Wiedermann-Schmidt. The next stage is to confirm the findings in a phase III trial. After clearing this hurdle, a final version of the vaccine could make it onto the market in just a few years. There is currently no specific treatment for the chikungunya virus, which causes high fever and severe muscle, limb and joint pain, and can even be fatal.

Enzymes and their influence on autoimmune diseases

Important for new therapy approaches

Histone deacetylases (HDACs) are an important class of enzymes which regulate cell development and differentiation. The role of HDACs in CD4+ T cells was the topic of a review article written by Wilfried Ellmeier from the Institute of Immunology and Christian Seiser of the Division of Cell and Developmental Biology, for the prestigious journal Nature Reviews Immunology.

Discussion of important research questions

As well as providing an overview of recent findings, Ellmeier and Seiser's article also discusses important unanswered questions in this field of research. For example, they promote the concept that isoform-selective HDAC inhibitors, which potentially have fewer side effects, might extend the clinical application of HDAC inhibitors to T cell-mediated immune diseases.

HDAC1 an important factor in many diseases

Wilfried Ellmeier and Christian Seiser have been carrying out research into these enzymes in T cells for many years. Their findings include that the integrity of CD4+ T cells is regulated by HDAC1 and HDAC2, that HDAC1 performs a protective role in inflammatory respiratory tract diseases, and that HDAC1 is a significant factor in the regulation of the development of autoimmune diseases.

A new generation of drugs

"In the age of highly advanced proteomic and next-generation sequencing technologies, it will eventually become possible to create a model for HDAC function in CD4+ T cells. This could also provide the foundation for the development and application of new isoform-selective HDAC inhibitors for treating T cell-mediated autoimmune diseases," the researchers comment. Pan-HDAC inhibitors are currently used to treat some forms of cancer. Preclinical data indicates that modulating HDAC activity could also be beneficial in the treatment of immunological disorders that are induced by T cells.

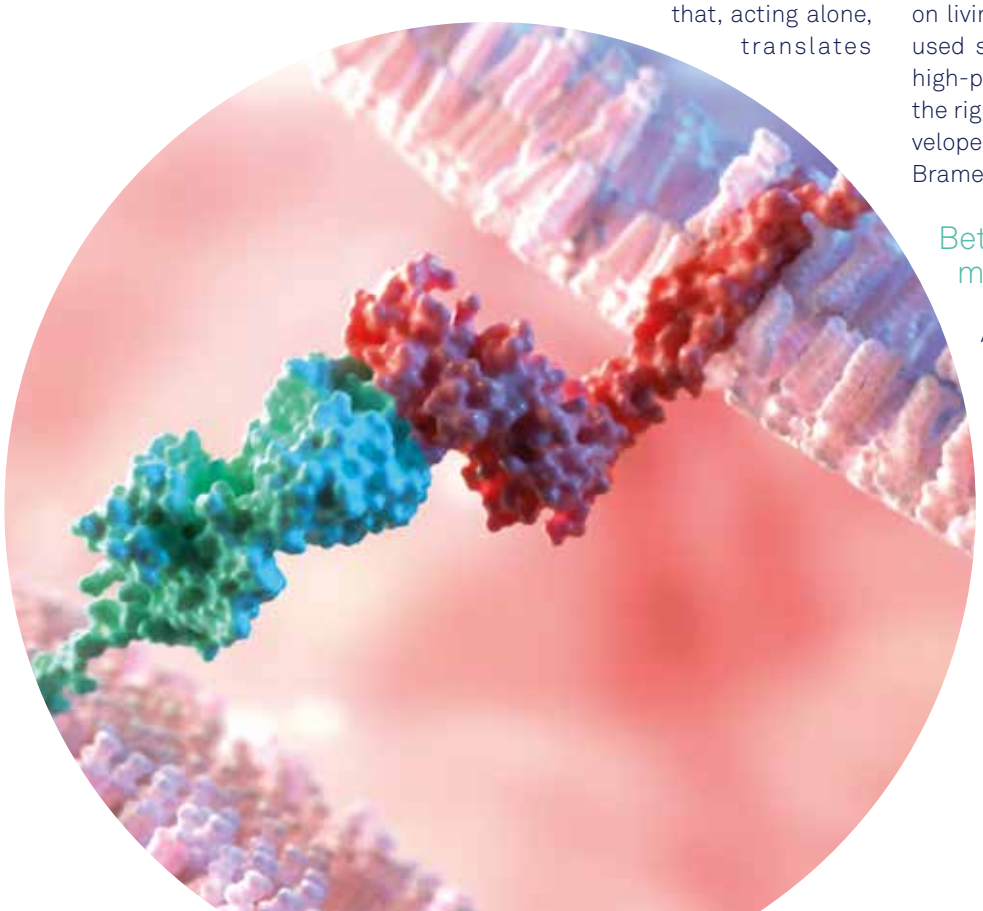
High-tech methods providing insights

Lone watchmen able to warn the immune system

T cell receptors do not engage in teamwork in order to signal the presence of foreign substances, as previously thought, but function alone – this is the key finding of a study carried out by a team led by Johannes Huppa of MedUni Vienna's Institute of Hygiene and Applied Immunology and Mario Brameshuber from the Institute of Applied Physics at TU Wien, and which was published in Nature Immunology.

Finely tuned molecular machines

The T cell receptors wait on the surface of immune system T cells, ready to seize on foreign substances or invaders. It was previously thought that they worked together in pairs or groups, but in fact a single receptor is capable of raising the alarm on its own. "It appears that a T cell receptor is a finely tuned molecular machine that, acting alone, translates binding events on the cell surface into signal reactions with remarkable efficiency," explains Huppa.



Innovative research methods

The researchers produced these game-changing findings by studying a mouse model and employing a new combination of different methods to observe the actions of T cell receptors on living T cells for the first time. "We used specially labelled molecules as high-precision probes placed at just the right location, as well as newly developed microscopy techniques," says Brameshuber.

Better understanding of many different diseases

According to the authors of the study, the major significance of their findings is not limited to basic research. These new insights will also help to investigate diseases in which the immune system attacks the body's own cells.

Specific gene that could help weight loss

Brown fat cells could help weight loss

Being severely overweight often leads to serious secondary diseases such as diabetes, cardiovascular disease and cancer. In light of this, scientists from MedUni Vienna and the Max Planck Institute for Metabolism Research in Cologne and the University of Southern Denmark in Odense carried out an investigation into brown fat cells.

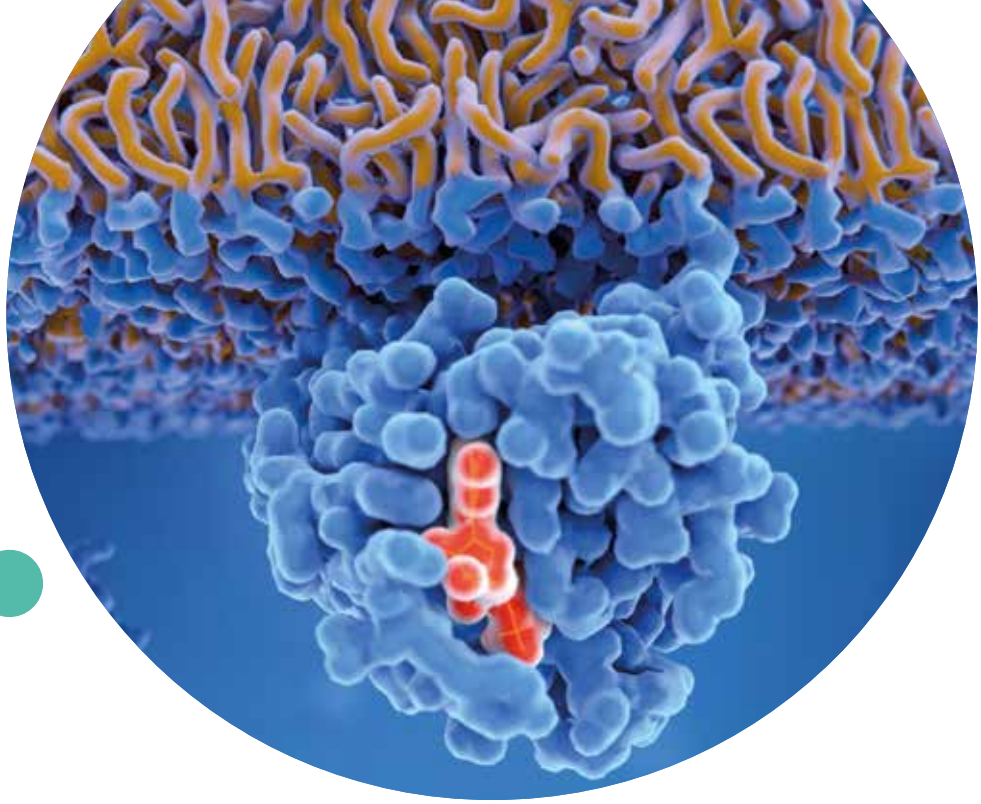
Specific gene curbs weight gain

The researchers used a mouse model to show that the H19 gene protects against the development of obesity when highly active. "We were surprised to see that the animals with high H19 activity, even when eating a fat-rich diet, gained hardly any more weight than healthy animals of the same species," says Martin Bilban from the Department of Laboratory Medicine. Activating brown fat cells and this specific gene, which they contain, could help in weight loss and will therefore be investigated in further studies into potential human applications.

Fat-burning fat cells

People often have much more 'bad' white fat compared to 'good' brown fat, and this is a disadvantage when it comes to dieting. The international research team demonstrated in its study, which appeared in Nature Communications, that brown fat could help people reduce their weight because it can burn large amounts of calories.

Key cancer formation mechanism discovered



Investigating a basis for new cancer treatments

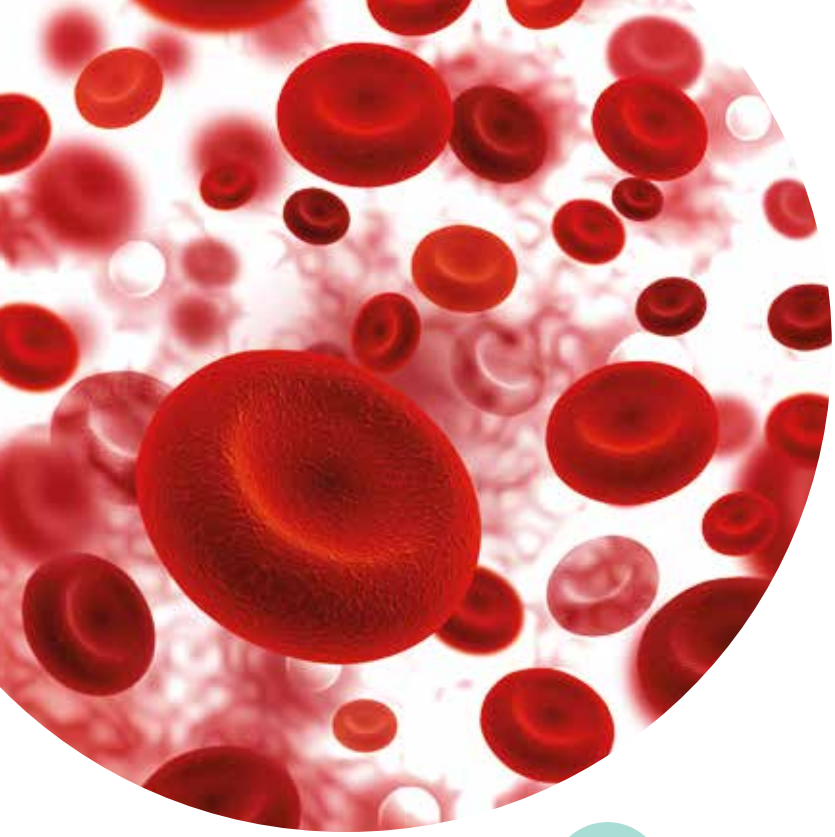
RAS is one of the key regulators of cell growth. But what controls how RAS proteins go about their work? A research team led by Giulio Superti-Furga, Professor of Medical System Biology at MedUni Vienna and Scientific Director of the Research Center for Molecular Medicine (CeMM), discovered that the LZTR1 protein acts as a brake on RAS proteins and their activity in the cell. The precise functioning of this newly discovered mechanism by which the activity and localisation of RAS proteins are regulated – proteins that perform a crucial role in the formation of cancer – was published in prestigious journal Science.

Mechanism responsible for many diseases

According to the study's lead author, Superti-Furga, this research is part of a sustained effort to understand the mechanism of cancer drugs used to treat leukaemia and other forms of the disease: "It's very encouraging to have made a contribution to the discovery of a new, fundamental aspect of RAS protein regulation because these proteins are among the key cellular growth regulators." Lead author Johannes Bigenzahn adds: "Finding a mechanism that lies behind so many different genetic diseases and lots of uncommon forms of cancer was really exciting. We anticipate that our discovery could prompt the development of new therapy strategies for RAS-dependent diseases."

International research consortium

The study was carried out in close collaboration with the Icahn School of Medicine at Mount Sinai in New York as well as the Netherlands Cancer Institute (NKI) in Amsterdam and a CeMM Adjunct Principal Investigator from NKI. It was funded by the European Research Council (ERC), the Austrian Science Fund (FWF) and the Austrian Academy of Sciences (ÖAW).



First long-term treatment option for rare blood disease

Cold agglutinins are antibodies in the blood which are generally only active at low temperatures. They cause cold agglutinin disease, a rare autoimmune disease which affects one in 150,000 people. The immune systems of sufferers produce antibodies that attack their own blood cells, which are then broken down and consumed by the liver. "The red blood cells are identified as foreign – even though they aren't – and destroyed," summarises Bernd Jilma from the Department of Clinical Pharmacology, one of the authors of the study.

Halting the self-destruction

This autoimmune mechanism can be countered by administering a new monoclonal antibody at two-week intervals. "When sufferers are injected with the antibodies, it stops the destruction of the red blood cells within a day – and it continues to prevent it as long as we administer them regularly," says Jilma. The lack of side effects is an aspect of the treatment which will be particularly well-received by those affected by the disease.

From an incurable to a chronic disease

The verification of this new, long-term treatment by Bernd Jilma's working group, who cooperated closely with the Department of Medicine I's Division of Hematology and Hemostaseology, has cleared the path for a new treatment option which means cold agglutinin disease can be treated as a chronic disease for the first time. The study was published in the highly respected journal Blood.

> Highly-effective drug without significant side effects

Medication: improved treatment success thanks to statistics

The power of numbers: higher efficacy, fewer side effects

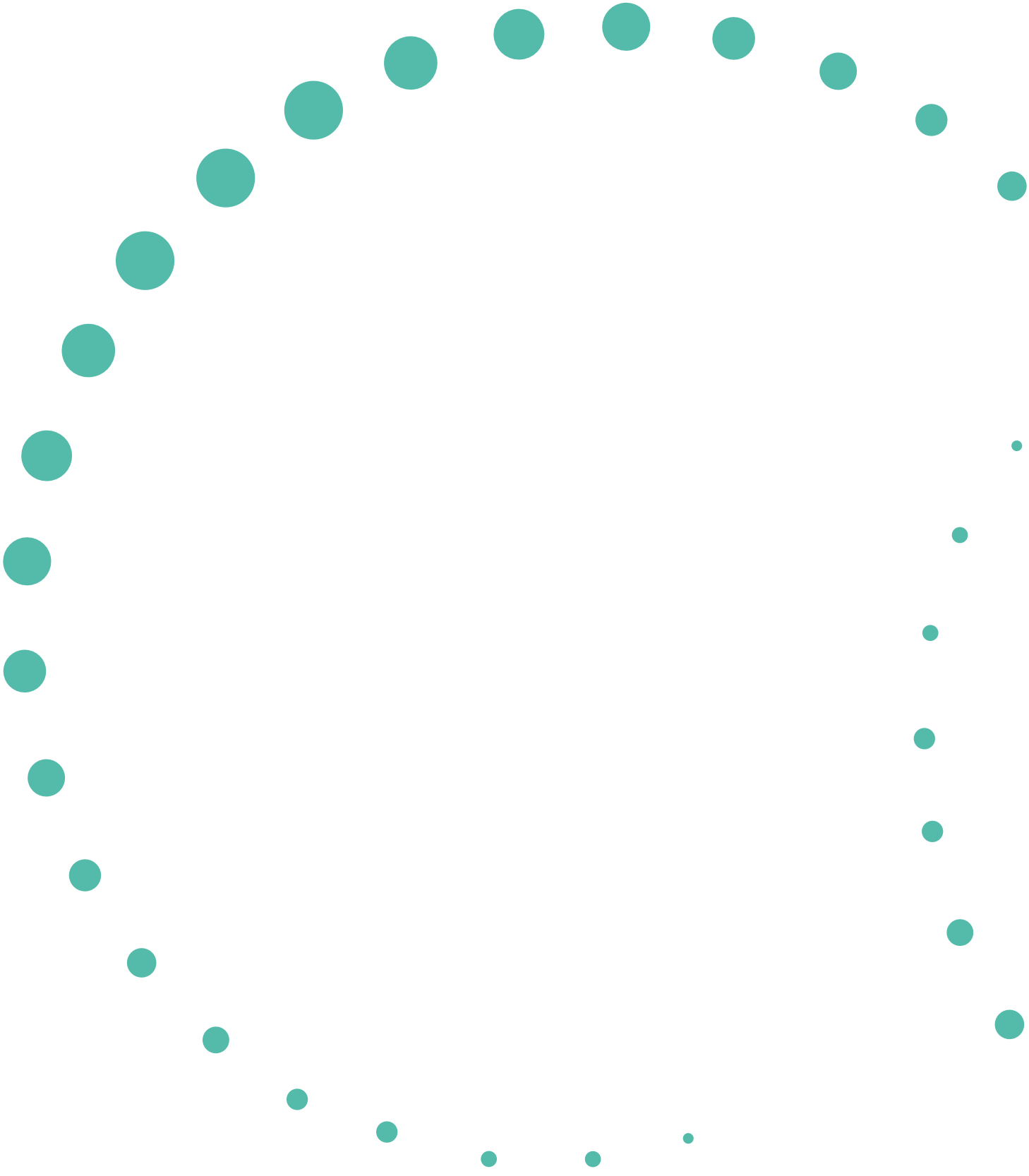
The efficacy of particular drugs can differ from person to person. But this need not be a disadvantage if we know how individuals will respond to specific medicines. In the development of such personalised treatment – an aspect of precision medicine – statistical methods play an important role. An example is data from clinical trials being used to predict the effectiveness of medicines according to patients' individual characteristics. This type of prediction should now become more accurate thanks to a new mathematical method which has been developed by a research team from the Institute of Medical Statistics.

Information from biomarkers

Making such predictions involves the use of statistical methods to filter out relevant biomarkers from large amounts of data. The biomarkers could be specific gene mutations or results of particular lab tests, for instance, as well as other patient characteristics like age, sex or disease stage. Using these biomarkers, models can be developed to predict which patient groups will respond better to new medications compared to the standard therapy. This approach may be used to predict which patients are likely to have their lives extended if given a new treatment in cancer trials, for instance.

Statistics making predictions more reliable

The research team, whose work has now been published, developed new statistical prediction methods that significantly improve the reliability of predictions. This represents an important contribution to the advancement of personalised therapies, providing treatment which is more effective and has fewer side effects.

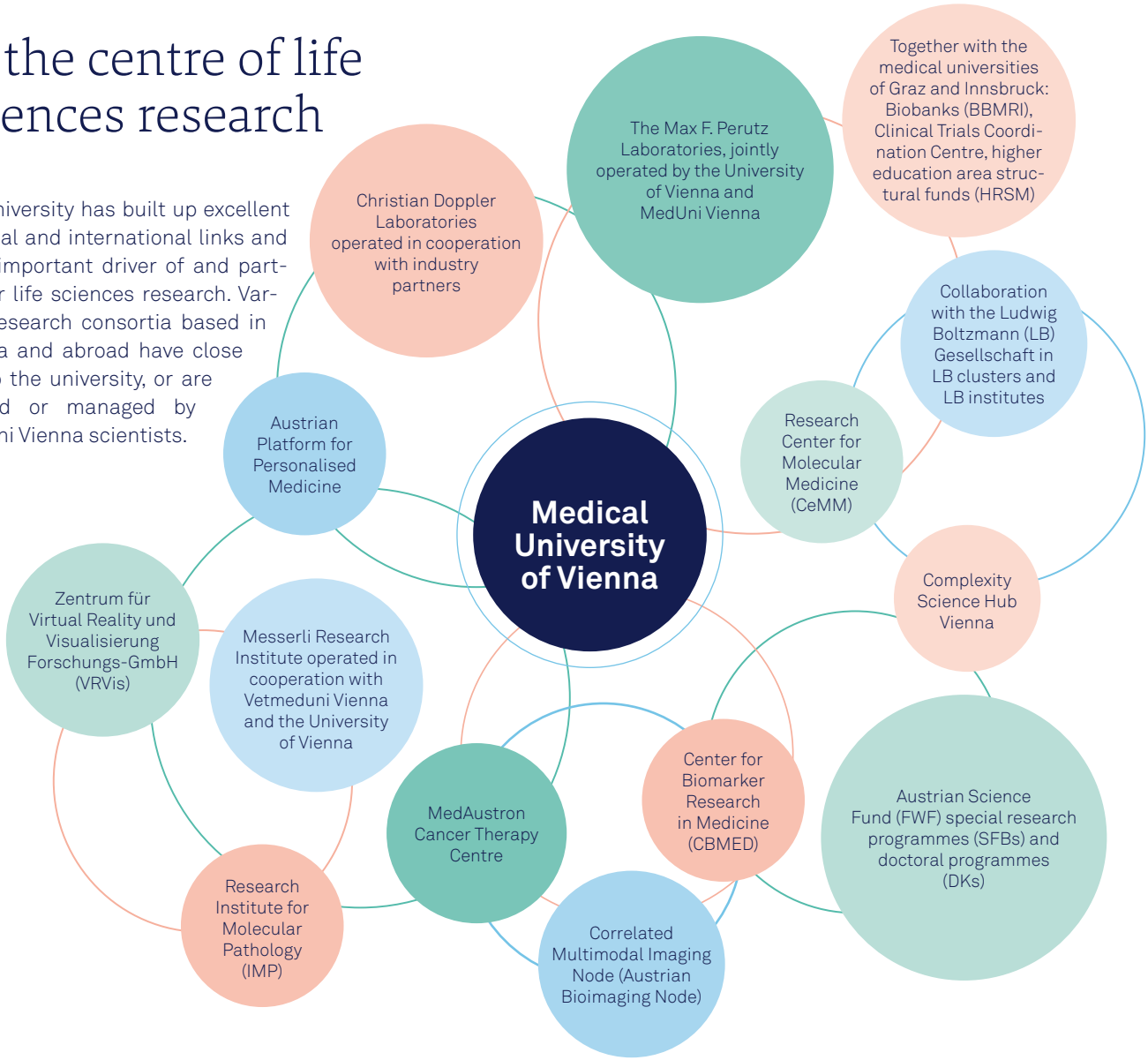


Working together for medicine

As a research partner and a medical training institution, MedUni Vienna is highly respected both nationally and internationally. Its diversified research network, its stable economic status and its ability to nurture and retain talent as well as attract top expertise to Vienna all play a major role in this.

At the centre of life sciences research

The university has built up excellent national and international links and is an important driver of and partner for life sciences research. Various research consortia based in Austria and abroad have close ties to the university, or are headed or managed by MedUni Vienna scientists.



Special Research Programmes (SFBs)

In 2018 the board of the Austrian Science Fund (FWF) approved a new Special Research Programme (SFB) with the title "HDACs as regulators of T cell-mediated immunity in health and disease". Following the completion of the "Transmembrane Transporters in Health and Disease" SFB headed by Harald H. Sitte of the Institute of Pharmacology as of 30 September 2018, MedUni Vienna is currently coordinating the following SFBs:

- **Myeloproliferative Neoplasms**
  (Project Manager: Peter Valent, Department of Medicine I)
- **Strategies for the Prevention and Treatment of Allergies**
  (Project Manager: Rudolf Valenta, Institute of Pathophysiology and Allergy Research)
- **RNA Regulation of the Transcriptome**
  (Project Manager: Franz-Michael Jantsch, Center for Anatomy and Cell Biology)
- **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)

Spin-offs and investments

Alumni Club

Staying connected with the alma mater: the Alumni Club is the postgraduate knowledge, dialogue and career platform for MedUni Vienna graduates, students and staff.

CBmed GmbH – Center for Biomarker Research in Medicine

As well as 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.

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.

Medical University of Vienna International GmbH (MUVI)

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

Josephinum – Collections of the Medical University of Vienna

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 exhibitions to make them accessible to the public.

Max F. Perutz Laboratories Support GmbH (MFPL)

Researchers at MFPL – 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.

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.

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.

Fundamental research – the basis of scientific progress

Fundamental or basic research is not carried out for its own sake, but provides the basis for the process of scientific discovery. Countless achievements in medicine would never have been conceived of without basic research. The role played by the funders of medical basic and clinical research in Austria 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;
- the Oesterreichische Nationalbank's Jubilee Fund, and
- the EU Commission.

Innovative research

The Ludwig Boltzmann Gesellschaft (LBG) has a thematic focus on medicine and life sciences research, and specifically targets new research topics. The LBG is an important partner of MedUni Vienna for externally financed research, with the following Ludwig Boltzmann Institutes (LBIs) and Ludwig Boltzmann Clusters (LB Clusters) located at the university.

- **LBI for Rare and Undiagnosed Diseases** (Head: Kaan Boztug)
- **LBI for Applied Diagnostics** (Head: Markus Mitterhauser)
- **LBI for Cancer Research** (Head: Richard Moriggl)
- **LBI for Hemotology and Oncology** (Head: Peter Valent)
- **LBI for Arthritis and Rehabilitation** (Head: Günter Steiner)
- **LB Cluster for Cardiovascular Research** (Head: Johann Wojta)

From lab to application

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

- **Applied Metabolomics** (Project managers: Alexander Haug, Lukas Kenner; commercial partner: Siemens Healthineers)
- **Molecular Stress Research in Peritoneal Dialysis** (Project Manager: Klaus Kratochwill; commercial partner: Zytoprotec GmbH)
- **Clinical Molecular MR Imaging** (Project Manager: Siegfried Trattnig; commercial partner: Siemens AG Österreich)
- **Innovative Optical Imaging and its Translation to Medicine** (Project Manager: Rainer Leitgeb, commercial partners: Carl Zeiss Meditec Inc., Exalos AG)
- **Complement Research** (Project Manager: Peter Steinberger, commercial partner: Alexion Pharmaceuticals, Inc.)
- **Ocular and Dermatological Effects of Thiomers** (Project Manager: René Werkmeister; commercial partner: Croma-Pharma Gesellschaft m.b.H.)
- **Ophthalmic Image Analysis** (Project Manager: Ursula Schmidt-Erfurth, commercial partner: Novartis Pharma AG)
- **Recovery of Extremity Function** (Project Manager: Oscar Aszmann; commercial partner: Otto Bock Healthcare Products GmbH)
- **Medical Radiation Research for Radiation Oncology** (Project Manager: Dietmar Georg; commercial partners: EBG MedAustron GmbH, PEG MedAustron GmbH, Siemens AG Österreich – Sector Healthcare, Elekta GmbH)
- **Applied Metabolomics** (Projekt Manager: Alexander Haug, commercial partner: Siemens Medical Solutions USA, Inc)
- **Arginine Metabolism in Rheumatoid Arthritis and Multiple Sclerosis** (Project Manager: Gernot Schabbauer, commercial partner: Bio-Cancer Treatment International Limited)

EU projects

MedUni Vienna participated in a total of 75 projects with EU funding in 2018.

55 projects were funded as part of the 8th EU Framework Programme, Horizon 2020.

9 projects were still running under the 7th EU Framework Programme.

5 researchers at MedUni Vienna are coordinators of Horizon 2020 consortia made up of European and other international partners.

11 projects form part of other programmes: 8 in the Innovative Medicines Initiative, 2 in the 3rd Health Programme, and 1 in EURATOM.

15 projects started in 2018.

ERC grants: funding excellence

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 rightly proud of its ERC grant recipients.

ERC Synergy Grant

Oskar Aszmann, Natural BionicS
Department of Surgery, Division of Plastic and Reconstructive Surgery with IIT Genoa and Imperial College London,
period: 2019-2025

Starting grants

Bernhard Baumann, OPTIMALZ
Center for Medical Physics and Biomedical Engineering,
period: 2015-2020

Christoph Bock, Epigenome Programming
CeMM and MedUni Vienna,
period: 2016-2021

Andreas Bergthaler, CMIL
CeMM and MedUni Vienna,
period: 2016-2021

Consolidator grants

Igor Adameyko, STEMMING-FROM-NERVE
Division of Molecular Neurosciences/Center for Brain Research,
period: 2015-2020

Kaan Boztug, ImmunoCore
CeMM and MedUni Vienna,
period: 2018-2023

Alwin Köhler, NPC-BUILD
Division of Molecular Cell Biology/ Center for Medical Biochemistry,
period: 2018-2023

Stefan Kubicek, CHROMABOLISM
CeMM and MedUni Vienna,
period: 2018-2023

Advanced grants

Maria Sibilia, TNT-TUMORS
Institute for Cancer Research,
period: 2016-2021

Tibor Harkany, Secret-Cells
Division of Molecular Neurosciences/Center for Brain Research, period: 2016-2021

Giulio Superti-Furga, Game of Gates
CeMM and MedUni Vienna,
period: 2016-2021

Erwin Wagner, CSI-Fun
Department of Dermatology,
period: 2018-2023

WWTF Life Sciences Call 2018

"Linking Research and Patients' Needs" was the theme of the Vienna Science and Technology Fund (WWTF) 2018 Life Sciences Call, under which nine projects received funding: five at MedUni Vienna and two each at the University of Vienna and the St. Anna Kinderkrebsforschung children's cancer research institute. The Viennese research teams that received awards all work at the intersection of basic and clinical research: translational research. EUR 6.2 million was awarded in total.

The following five MedUni Vienna projects overcame the competition in a call that attracted 114 submissions:

- **A novel macrophage precursor in adult bone marrow,** Wolfgang Weninger
- **Combination cell therapy for immunomodulation in kidney transplantation,** Thomas Wekerle
- **Systems medicine analysis of sarcoidosis by targeting mTOR in a co-clinical trial in patients and mice,** Georg Stary
- **Protecting vascular barrier function across discipline and disease boundaries,** Klaudia Schossleitner
- **Beyond lipid lowering – defining residual risk of cardiovascular events,** Irene Lang

Individually tailored academic careers

PhD programmes, doctorate degrees – 1,000 of which were completed in 2018 – and doctoral research programmes mean that MedUni Vienna offers a whole range of possibilities for specialisation in addition to standard degree programmes. Over 1,300 early stage researchers are currently completing PhD or other doctoral studies, and the majority of these have service contracts with the university as integral members of research groups. The doctoral research programmes (DK) funded by the Austrian Science Fund (FWF) are another option. The applied medical sciences doctoral programmes are an alternative which focuses on providing in-depth training in applied biomedical research.

PhD programmes
- Cell Communication in Health and Disease (DK)
- Endocrinology and Metabolism
- Immunology
- Inflammation and Immunity (DK)
- Integrative Structural Biology (DK)
- 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 (DK)
- Molecular Drug Targets (DK)
- Molecular Mechanisms of Cell Biology
- Molecular Signal Transduction
- Neuroscience
- RNA Biology (DK)
- Signaling Mechanisms in Cellular Homeostasis (DK)
- 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
- Programme for Organ Failure, Replacement and Transplantation (POET)
- Preclinical and Clinical Research for Drug Development
- Public Health
- Regeneration of Bones and Joints

Success based on lifelong learning

Lifelong learning is an essential aspect of working life today. With master's programmes resulting in an MPH, MAS, MClinDent, 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 courses provide excellent postgraduate training, with 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
- Clinical Research
- Forensic Sciences
- Gender Medicine
- Interdisciplinary Pain Medicine (ISMED)
- 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 (HCM)

Master of Advanced Studies (MAS)
- Insurance Medicine

Master of Clinical Dentistry (MClinDent)
- Endodontology
- Esthetic Dentistry
- Periodontology and Implantology
- Periodontology

Master of Dental Science (MDSc)
- Prosthodontics

Continuing education courses with certification
- Study Management
- Medical Hypnosis
- Medical Physics
- Medical Hypnosis for Dental Care

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

Experts for IT in medicine

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.

Researchers of the month

Each month, MedUni Vienna names one or more young scientists Researcher of the Month. The researchers who received this recognition in 2018 were honoured at a celebratory event.

From left to right: Klaus Markstaller, Markus Müller and Susanne Mayer with young researchers Julia Vodopiutz, Carmen Stecher, Katharina Göral, Philipp Schwabl, Simona Saluzzo, Bernhard Grubmüller, Bianca S. Gerendas, Georg Greiner, Bernhard Gesslbauer, Michaela Fritz, Daniela Pollak-Monje Quiroga and Bruno Podesser

New professors

Six outstanding academics joined the team at MedUni Vienna in 2018.

Heinz Burgmann became Professor of Internal Medicine with a focus on Infectious Diseases and Tropical Medicine – at the same time, the highly respected infection expert took over as Head of the Division for Infectious Diseases and Tropical Medicine in the university's Department of Medicine I.

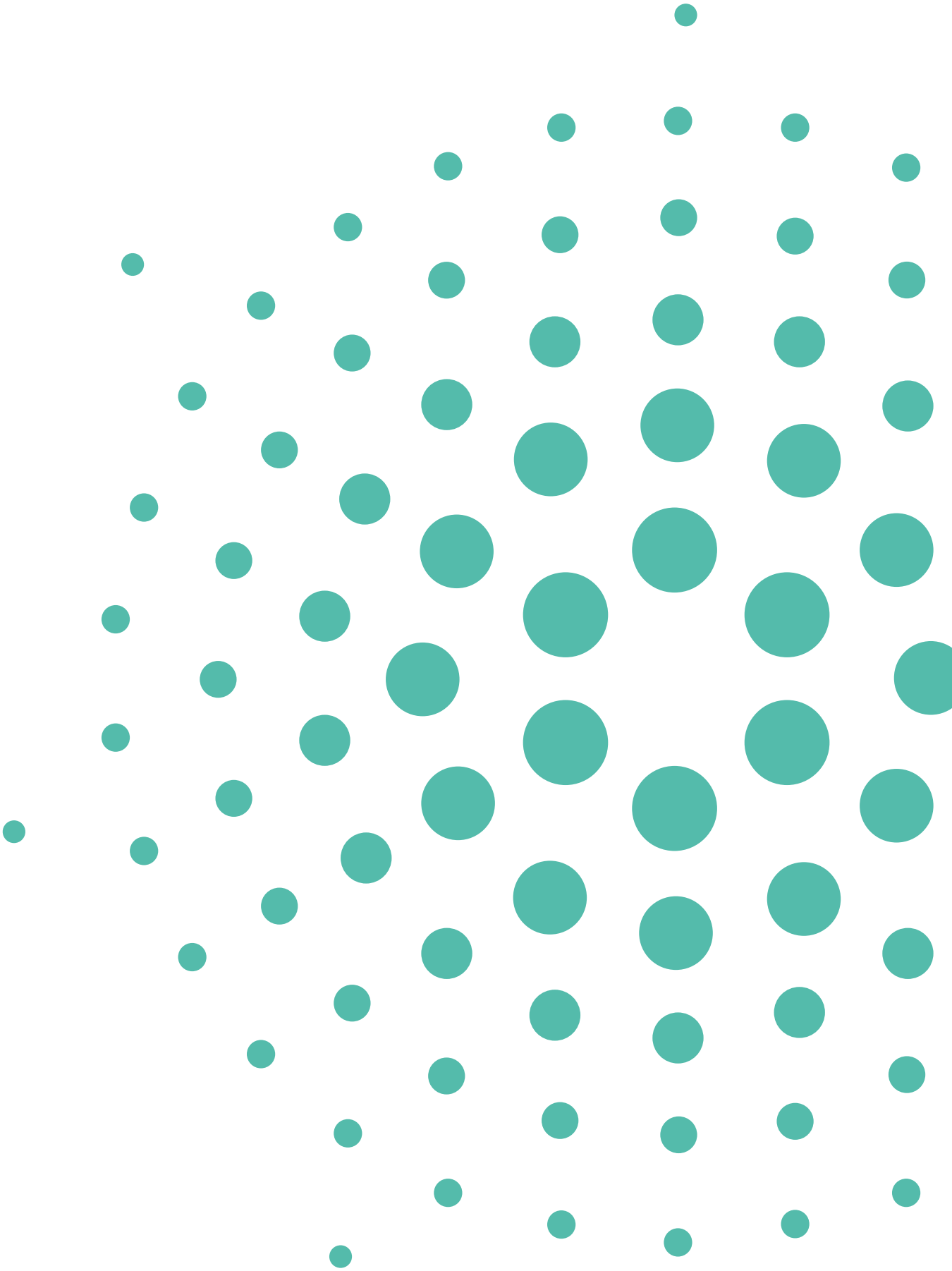
Andreas Sönnichsen became Professor of General Medicine, and heads the Division of General and Family Medicine at the university's Center for Public Health. Sönnichsen's research focuses include evidence-based medicine and healthcare quality.

Paul Plener was named Professor of Child and Adolescent Psychiatry, and Head of the respective department. Plener studied medicine in Vienna and has returned to his alma mater after working at Ulm University Hospital.

Wolfgang J. Weninger, who has carried out research on the genetic and biomechanical causes of congenital deformities as well as innovative imaging techniques, was appointed MedUni Vienna's Professor of Anatomy.

Matthias Preusser was appointed Professor of Internal Oncology and Head of the Division of Oncology. His research focuses on precision medicine and immunotherapy.

Wolfgang P. Weninger returned to Vienna from a post at the University of Sydney to take up the position of Professor of Dermatology and Head of the Department of Dermatology.



The organisational structure of MedUni Vienna

Facts and figures

The Medical University of Vienna is a leading international centre of medicine. Its individual institutes, centres, clinical departments and divisions employ 5,748 staff and form an indivisible whole, providing education, research and patient care at the highest level.

Organisational structure as at 31 December 2018

Senate
26 members

Rectorate
Rector and 4 vice rectors

Medical science division

12 centres

- Anatomy and Cell Biology
- Physiology and Pharmacology
- Public Health
- Brain Research
- Pathobiochemistry and Genetics
- Pathophysiology, Infectiology and Immunology
- Medical Physics and Biomedical Engineering
- Medical Statistics, Informatics and Intelligent Systems
- Medical Biochemistry
- Virology
- Forensic Medicine
- Biomedical Research

Clinical division

26 university departments

- Medicine I
- Medicine II
- Medicine III
- Surgery
- Obstetrics and Gynecology
- Otorhinolaryngology
- Anesthesia, Critical Care and Pain Medicine
- Psychiatry and Psychotherapy
- Pediatrics and Adolescent Medicine
- Dermatology
- Radiology and Nuclear Medicine
- Radiotherapy
- Orthopedics and Trauma Surgery
- Urology
- Neurosurgery
- Oral, Maxillary and Facial Surgery
- Emergency Medicine
- Neurology
- Physical Medicine, Rehabilitation and Occupational Medicine
- Child and Adolescent Psychiatry
- Psychoanalysis and Psychotherapy
- Ophthalmology and Optometrics
- Blood Group Serology and Transfusion Medicine
- Hospital Epidemiology and Infection Control
- Clinical Pharmacology
- University Clinic of Dentistry

3 clinical institutes

- Laboratory Medicine
- Pathology
- Neurology

Organisational units with special service functions

- Comprehensive Cancer Center
- Comprehensive Center for Pediatrics
- Core Facilities
- University Library
- Ethics, Historical Collections and the History of Medicine
- Teaching Center

University Council
5 members

Scientific Advisory Board

Organisational units with university management responsibilities

10 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

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 F. Perutz Laboratories
- FDZ-Forensisches DNA-Zentrallabor GmbH
- CBmed GmbH
- Karl Landsteiner Privatuniversität für Gesundheitswissenschaften GmbH
- Josephinum – Medizinische Sammlungen GmbH

Committees

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

Curriculum Directors

- Medicine
- Dentistry
- PhD programmes
- Continuing education courses
- Medical Informatics master's programme

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.

Until 28 February 2018
Dr. Erhard Busek (Chair)
Dr. Elisabeth Hagen
Prof. Veronika Sexl
Prof. Robert Schwarcz
Dr. Maximilian Kothbauer

From 1 March 2018
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.

PROFESSORS
Prof. Michael Gnant (Chair)
(until 8 November 2018)
Prof. Harald Sitte (Chair)
(from 30 November 2018)
Prof. Johannes Wancata
(from 30 November 2018)
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 Sibilia
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
www.meduniwien.ac.at/senate

Committees

• Arbitration Committee
Chair: Dr. Anna Sporrer
Deputy Chair: Prof. Herbert Watzke
www.meduniwien.ac.at/arbitration-committee

• Ethics Committee
Prof. Jürgen Zezula und
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
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 Wien)
Chair: Julia Wunsch
First Deputy: Jakob Eichelter
Second Deputy: Leopold Buvier-Azula
General Secretary: Lisa Leutgeb
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
(from 6 February 2018)
Chair: Dr. Thomas Wrba
Deputy Chair: Dr. Claudia Ernst-Ballaun
www.meduniwien.ac.at/data-clearing-house

• Ombudsman for Good Scientific Practice
(from 6 February 2018)
Chair: Prof. Elisabeth Förster-Waldl
Deputy Chair: Prof. Christian Schöfer
Dr. Andrea Kolbus
www.meduniwien.ac.at/gsp

• Medicine Curriculum Director
Prof. Gerhard-Johann Zlabinger
Deputy: Prof. Franz Kainberger
Deputy: Prof. Werner Horn
Deputy: Prof. Anahit Anvari-Pirsch
Deputy: Dr. Barbara Steinlechner

• Dentistry Curriculum Director
Prof. Anita Holzinger
Deputy: Prof. Andrea Nell
Deputy: Prof. Martina Schmid-Schwap

• PhD Programmes Curriculum Director and Medical Informatics master's programme
Prof. Stefan Böhm
Deputy: Prof. Irene Lang
Deputy: Prof. Georg Dorffner

• Continuing Education Curriculum Director
Prof. Michael Hiesmayr
Deputy: Prof. Henriette Löffler-Stastka

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 Salusto
  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
- Fortunato Ciardiello
  (until 17 October 2018)
  Professor of Medical Oncology, Second University of Naples
- Jeroen J. Bax (until 17 October 2018)
  Professor of Cardiology, Leiden University
- Robert Schwarcz
  (from 17 October 2018)
  Professor of Psychiatry, Pharmacology and Pediatrics, Department of Psychiatry, University of Maryland School of Medicine
- Michael Roden
  (from 17 October 2018)
  Professor of Medicine, Scientific Director of the German Diabetes Center and Director, Institute for Clinical Diabetology, Heinrich Heine University Duesseldorf
- Sarah König
  (from 17 October 2018)
  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

Head: Prof. Josef Smolen
(until 30 September 2018)
Interim Head: Prof. Alexandra Kautzky-Willer (from 1 October 2018)

- Division of Endocrinology and Metabolism
- Division of Nephrology and Dialysis
- Division of Rheumatology
- Division of Gastroenterology and Hepatology

Department of Surgery

Head: Prof. Michael Gnant
(until 3 October 2018)
Deputy heads: Prof. Günther Laufer, 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
- Division of Biological Psychiatry
- Division of Social Psychiatry

Department of Pediatrics and Adolescent Medicine
Head: Prof. Susanne Greber-Platzer
- Division of Neonatalogy, 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 Hemotology-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 (from 1 September 2018)
Interim Head: Prof. Peter Petzelbauer (until 31 August 2018)

Department of Radiotherapy
Head: Prof. Joachim Widder

Department of Urology
Head: Prof. Shahrokh Shariat

Department of Neurosurgery
Head: Prof. Engelbert Knosp (until 30 September 2018)
Interim Head: Prof. Thomas Czech (from 1 October 2018)

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 (from 1 November 2018)
Interim Head: Prof. Christian Müller (until 31 October 2018)

Department of Physical Medicine, Rehabilitation and Occupational Medicine
Head: Prof. Richard Crevenna

Department of Child and Adolescent Psychiatry
Head: Prof. Paul Plener, MHBA (from 1 April 2018)
Interim Head: Dr. Christine Vesely (until 31 March 2018)

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
- Medizinische Genetik
- Institut für Medizinische Chemie und Pathobiochemie

Department of Medical Biochemistry
Part of Max F. Perutz Laboratories, 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 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
Head: Prof. Christoph Zielinski

Comprehensive Center for Pediatrics
(from 1 January 2018)

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 2018

ASSETS

	31 December 2018 EUR				31 December 2017 EUR,000		
A. Fixed assets							
I. Intangible assets							
1. Concessions and similar rights, and licences thereto		456,401.57			671		
of which acquired by purchase	*456,401.57*				*671*		
2. Rights of use		20,000,000.00	20,456,401.57		20,000	20,671	
II. Property, plant and equipment							
1. Land, leasehold rights and buildings including buildings on third-party land		18,447,418.49			18,114		
a) of which land value	*587,155.00*				*587*		
b) of which building value	*848,557.43*				*904*		
c) of which investments in third-party buildings and land	*17,011,706.06*				*16,623*		
2. Plant and machinery		12,803,735.10			12,321		
3. Scientific literature and other scientific data media		7,366,728.30			7,082		
4. Other fixtures and fittings, operating and business equipment		3,736,030.20			3,100		
5. Advance payments and assets under construction		9,236,945.13	51,590,857.22		5,921	46,538	
III. Financial assets							
1. Investments in subsidiaries and associates		3,083,650.18			3,083		
2. Loans to subsidiaries and associates		597,736.39			811		
3. Securities and similar instruments held as fixed assets		74,508,719.18	78,190,105.75	150,237,364.54	54,523	58,417	125,626
B. Current assets							
I. Inventories							
1. Inventories		450,000.00			450		
2. Services rendered to third parties not yet invoiced		62,568,887.34	63,018,887.34		72,063	72,513	
II. Receivables and other assets							
1. Trade receivables		10,681,772.09			10,776		
2. Receivables from associates		1,291,831.17			2,077		
3. Other receivables and other assets		26,522,091.01	38,495,694.27		23,301	36,154	
III. Securities and equity interests			4,609,684.33			5,292	
IV. Cash and cash equivalents			156,334,662.73	262,458,928.67		159,575	273,534
C. Deferred income				1,396,501.34			1,690
TOTAL ASSETS				**414,092,794.55**			**400,850**

The 2018 financial statements were given an unqualified audit certificate by auditors Moore Stephens City Treuhand GmbH.

LIABILITIES

	31 December 2018 EUR				31 December 2017 EUR,000		
A. Negative equity							
1. Equity			–8,334,166.31			–8,334	
2. Profit/loss			751,163.50	–7,583,002.81		–3,530	–11,864
of which losses brought forward	*–3,529,812.60*				*–7,958*		
B. Investment grants				31,255,187.09			31,458
C. Provisions							
1. Provisions for severance payments			13,039,260.88			15,747	
2. Other provisions			149,492,565.58	162,531,826.46		141,484	157,231
D. Liabilities							
1. Advances received			120,708,721.67			126,010	
of which deductible from inventories	*60,801,588.45*				*69,827*		
2. Trade payables			21,487,636.49			17,643	
3. Payables to associates			118,174.00			2,839	
4. Other liabilities			19,795,650.56	162,110,182.72		18,467	164,959
E. Deferred income				65,778,601.09			59,066
TOTAL LIABILITIES				**414,092,794.55**			**400,850**

Note regarding negative equity:
As in previous years, in 2018 the university recognised negative equity.
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 2018, results in positive equity in the meaning of section 16(2) University Financial Statements Order of EUR 23,662thsd (2017: EUR 19,594thsd).

II. Statement of profit or loss 2018

		2018 EUR		2017 EUR ,000
1. Revenue				
a) Revenue from Federal Goverment global budget allocation		418,896,418.52		405,464
b) Revenue from tuition fees		981,271.91		932
c) Revenue from tuition fee compensation by Federal Government		4,728,748.54		4,727
d) Revenue from postgraduate training programmes		909,622.15		846
e) Revenue pursuant to section 27 Universities Act		94,887,494.41		88,081
f) Reimbursements of costs pursuant section 26 Universities Act		16,984,290.64		16,388
g) Other revenue and reimbursements		31,774,459.89		18,100
of which revenue from federal ministries	*7,510,767.62*		*7,303*	
		569,162,306.06		**534,538**
2. Change in services rendered to third parties not yet invoiced		**–9,493,742.42**		**–8,466**
3. Other operating income				
a) Income from disposal and revaluation of fixed assets		5,538.56		21
b) Income from reversal of provisions		11,084,012.04		4,444
c) Other		13,886,892.30		16,631
of which from reversal of investment grants	*10,382,998.39*		*10,480*	
		24,976,442.90		**21,096**
4. Expenditure for materials, consumables and purchased services				
a) Expenditure for materials and consumabels		–13,564,344.60		–13,226
b) Expenditure for purchased services		–5,118,189.00		–5,551
		–18,682,533.60		**–18,777**
5. Staff costs				
a) Salaries and wages		–315,910,673.49		–303,343
of which refunds to the Federal Government for officials assigned to the university	*71,037,864.95*		*71,707*	
b) Expenditure for external teaching staff		–156,184.62		–151
c) Cost of severance payments and payments to employee benefits funds		–4,315,364.27		–5,966
of which refunds to the Federal Government for officials assigned to the university	*0.00*		*0*	
d) Cost of pensions		–9,538,695.70		–9,056
of which refunds to the Federal Government for officials assigned to the university	*411,093.13*		*406*	
e) Social security contributions and other pay-related contributions		–70,415,556.26		–68,118
of which refunds to the Federal Government for officials assigned to the university	*16,362,911.07*		*16,818*	
f) Other employee benefits		–3,272,778.95		–2,916
		–403,609,253.29		**–389,550**

		2018 EUR		2017 EUR ,000	
6.	**Depreciation and amortisation**		**–20,281,001.68**		**–19,686**
7.	**Other operating expenses**				
	a) Taxes other than those under item 13		–873,985.67		–775
	b) Reimbursements to hospital operator pursuant section 33 Universities Act		–61,574,865.82		–50,094
	c) Other		–57,988,773.25		–45,454
			–120,437,624.74		**–96,323**
8.	**Subtotal items 1 to 7**		**21,634,593.23**		**22,833**
9.	**Income from financial resources and investments**		**803,446.26**		**851**
	a) of which from write-ups	*2,000.00*		*56*	
10.	**Expenditure arising from financial resources and equity holdings**		**–17,975,922.51**		**–19,070**
	a) of which from write-downs	*11,827.92*		*36*	
	b) of which expenditure arising from subsidiaries and associates	*17,056,106.00*		*18,734*	
11.	**Subtotal items 9 to 10**		**–17,172,476.25**		**–18,218**
12.	**Earnings before tax (sum of items 8 and 11)**		**4,462,116.98**		**4,614**
13.	**Taxes on income and profit**		**–181,140.88**		**–186**
14.	**Loss/profit after tax**		**4,280,976.10**		**4,428**
15.	**Loss/profit brought forward**		**–3,529,812.60**		**–7,958**
16.	**Profit/loss for the year**		**751,163.50**		**–3,530**

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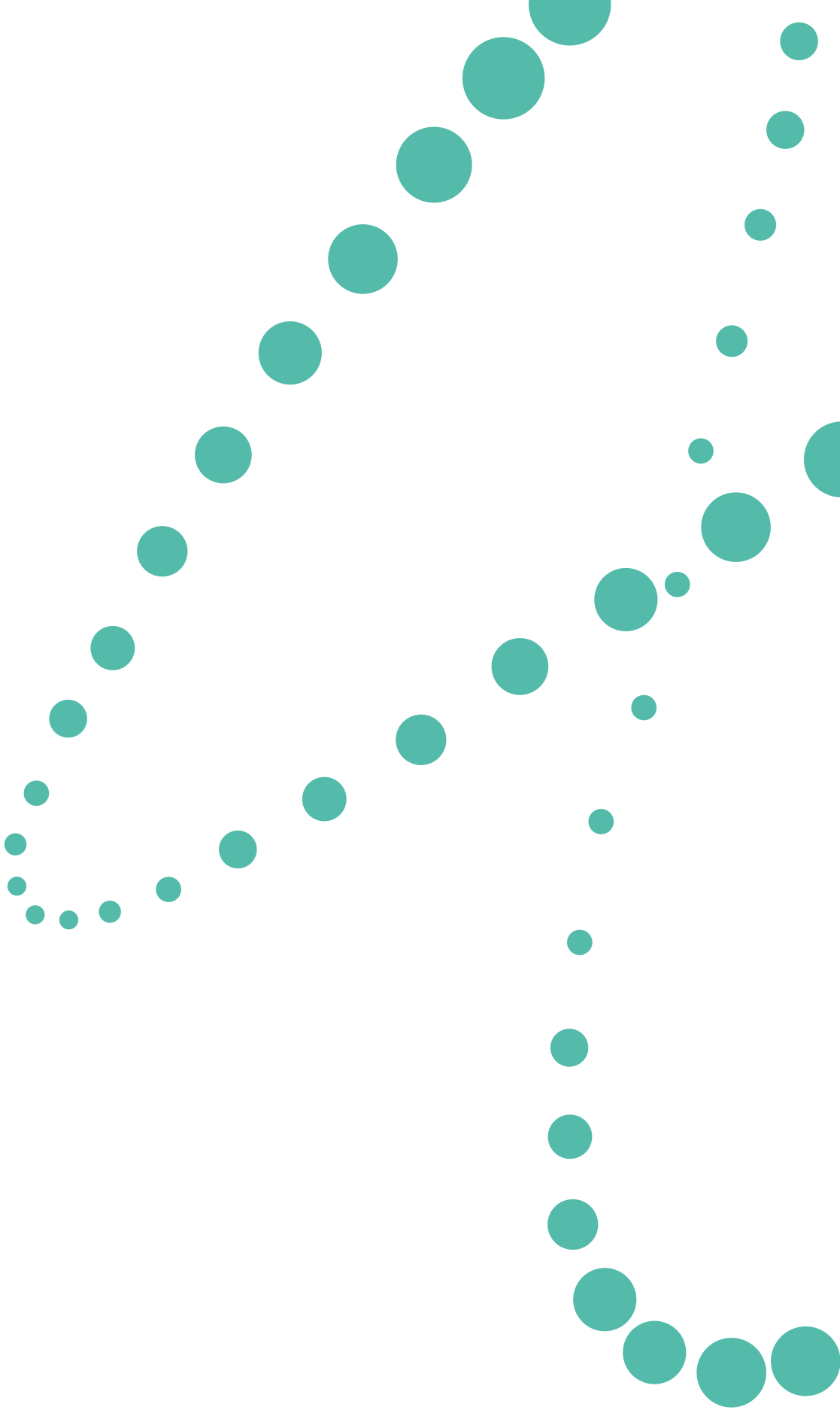

Medical University of Vienna
Spitalgasse 23, 1090 Vienna
Tel. +43 (0)1 40 160-0
www.meduniwien.ac.at

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