

# PROGRESS BEGINS WITH IDEAS



**ANNUAL REPORT**  
2014





# SHAPING THE EVOLUTION OF MEDICINE

In 2014 the Medical University of Vienna celebrated the tenth anniversary of its establishment as an independent institution, following the separation of the long-standing medical faculty of the University of Vienna in 2004. We looked back on an extremely successful and eventful decade at a special celebration on 3 November 2014. But the event also focused on the future and a discussion of the University's development in the coming years. Keynote speakers included Eugene Braunwald of Harvard Medical School, one of the world's leading and most influential cardiologists.

MedUni Vienna also has world-class researchers and doctors specialising in a wide range of disciplines. Thanks to their outstanding achievements and publications, in its jubilee year Austria's largest medical university achieved its best ever position in the international university rankings: for the first time, MedUni Vienna was included in the top 50 medical institutions worldwide in the Times Higher Education Ranking, the world's most important university listing, taking 49th place in the clinical, pre-clinical and health category; we were ranked 14th in Europe and

third among the medical universities in the German-speaking countries.

MedUni Vienna's standing as an autonomous institution that is well known and respected in Austria and abroad is the result of hard work and innovative thinking. In spite of a comparatively low level of funding, our research achievements mean that we are on the fringes of the global elite. Many of our specialists in fields such as rheumatology, neuroimmunology, ophthalmology, hepatology and urology as well as our lymphoma researchers are among the most cited academics in the world.

But if Austria and the Vienna research hub are to continue delivering top-quality medical research, the country's politicians will have to redouble their commitment to promoting world-class research and providing the necessary infrastructure.

Our aim is to build on our highly successful first decade, and the University has taken a number of steps to boost its competitiveness in attracting external funding and the brightest minds. These include the brand development process launched in 2013,

which is designed to further sharpen the University's profile; the University Medicine Vienna 2020 project aimed at implementing joint operational management of MedUni Vienna and Vienna General Hospital, as well as leveraging synergies more effectively; and further intensifying international strategic partnerships as well as introducing innovations in teaching, both of which will preserve the high quality of the medical curriculum.

The Medical University of Vienna has set itself three core tasks: generating knowledge, conveying knowledge and putting knowledge to use. And the initiatives outlined above will put us in a position to carry on shaping the evolution of medicine in the future.

Wolfgang Schütz  
Rector, Medical University of Vienna

# CONTENTS

## TEN-YEAR SUCCESS STORY

### 06 OUTSTANDING PERFORMANCE IN MEDICINE

MedUni Vienna is ideally placed for the future as it celebrates its tenth anniversary

## GENERATING KNOWLEDGE

### 18 REVOLUTIONARY BREAKTHROUGH IN HEPATITIS C TREATMENT

12-week course of therapy and cure rate close to 100% – hope for 170 million people

### 22 CANNABIS PUTS UNBORN BABIES' BRAINS AT RISK

Cannabis consumption during pregnancy results in serious damage

### 25 FROM CELL TO CELL

New findings on the way Parkinson's disease spreads in humans

### 32 OVERWEIGHT BUT IN HEALTH NEVERTHELESS

HO-1 enzyme – the difference between sickness and health





## CONVEYING KNOWLEDGE

- 44** A MILESTONE IN THE DEVELOPMENT OF THE MEDICINE CURRICULUM  
Clinical practice year sets new standards
- 48** MEDUNI VIENNA TEAMS UP WITH SINGAPORE'S NTU  
Top universities to collaborate on research and teaching
- 50** HEALTH AND MIGRATION  
What keeps us healthy and makes us ill



## PUTTING KNOWLEDGE TO USE

- 58** NEW OPTION IN BREAST CANCER DIAGNOSIS  
PET-MR makes every second biopsy unnecessary
- 61** VACCINATION CLINIC FOR HIGH-RISK GROUPS  
First clinic of its kind in Austria provides special protection for people weakened by illness
- 62** CANCER PATIENTS  
Comprehensive Cancer Center paves the way for European charter
- 68** A NEW KIDNEY WITHOUT SIDE EFFECTS  
First successes in increased tolerance of transplanted organs – without the use of immunosuppressants



## MANAGING KNOWLEDGE

- 74** TWICE THE OPPORTUNITIES  
New initiative makes MedUni Vienna an even more attractive employer
- 76** FACTS AND FIGURES  
At a glance – the outstanding performance of the Medical University of Vienna





Guest of honour and keynote speaker at "MedUni Vienna – the first 10 years" Eugene Braunwald, Professor at Harvard Medical School, has revolutionised cardiology with his insights into heart attacks and has made major contributions to the leading textbooks on internal medicine. His talk, "The Physician Scientist: Protection of an Endangered Species", addressed the future of doctors in clinical practice and scientific research.  
[www.meduniwien.ac.at/10jahre](http://www.meduniwien.ac.at/10jahre) (German only)

# TEN-YEAR SUCCESS STORY

In 2014, the year of its tenth anniversary, MedUni Vienna for the first time ranked among the 50 best medical universities in the world in the Times Higher Education World University Rankings. In the Clinical, Pre-Clinical and Health category it took 49th place – third place among German-speaking medical universities.

**T**he Medical University of Vienna was created in 2004 out of the Medical Faculty of the University of Vienna and inherits its long tradition. Within a very short time, MedUni Vienna has come to be recognised as an independent research institution, a centre of education, a university hospital and an indispensable part of the Austrian university scene. In no other OECD country has clinical research output risen so steeply in the past 25 years as in Austria, and MedUni Vienna has contributed the major share.

Continuing profiling of its characteristic strengths and closer collaboration between MedUni Vienna and Vienna General Hospital will help university medicine in Vienna play an even more important role internationally in the future, as a centre of excellence. The University Medicine Vienna 2020 project forms the

basis of these efforts. The decision in favour of joint operational management by MedUni Vienna and Vienna General Hospital is already a significant step forward in their joint development.

## SUCCESSFUL AUTONOMY

Important factors in this continuing upward trend are the ability to make independent decisions and the dynamism that has developed since the University became autonomous in 2004. MedUni Vienna has the advantage of impressive size and – in combination with Vienna General in combination with Vienna General Hospital (the biggest hospital in Europe) and a large range of research institutions – an enormous reservoir of medical expertise and skills, which is what makes it attractive to teachers, researchers and students from Austria and abroad.





**SCIENTIFIC PROFILING AND CREATING CENTRES**

The five research clusters – cancer research and oncology, medical imaging, cardiovascular medicine, medical neurosciences and immunology – are increasingly successful at bundling competences in interdisciplinary, cross-cutting research. Cancer research taken a step forward: in 2010 MedUni Vienna and Vienna General Hospital, the university hospital, joined in establishing the Comprehensive Cancer Center (CCC). The CCC concerns itself with how cancer arises and how it can be treated; over and above its role in research, it functions as a centralised organisational platform in patient care and teaching for the departments of MedUni Vienna and Vienna General Hospital and cooperates closely with study groups, self-help programmes and research institutions. A neurosciences centre and a cardiovascular centre are in the process of being created.

**SOCIAL RESPONSIBILITIES**

MedUni Vienna also promotes and practises diversity, and attracts scientists from all over the world. Its focuses on gender mainstreaming and gender medicine are another way in which it lives up to its social

*High-end research is the central pillar of our international reputation. Our most serious challenge currently is to underpin existing and nascent strengths with a competitive infrastructure for precision medicine.*

Markus Müller  
Vice Rector for Research

responsibilities. To attract the most talented people and make the best use of existing intellectual and creative abilities, MedUni Vienna sets priorities in its organisational culture and staff development that include support programmes for gifted researchers and performance-related career models for doctors. It participates in a variety of international networks and in partnerships with institutions outside the university sector. And to good effect – roughly half of all MedUni Vienna’s publications stem from international collaboration.

**STRENGTHS IN PATIENT CARE**

In the triple track strategy of research, patient care and teaching, patient care is at the moment overweighted to the detriment of research and teaching, and the new working hours regulations pose an additional challenge. Despite this situation, university medical care in Vienna has an outstanding reputation – in terms of inpatient cases and case severity – both regionally and nationally. More than 20% of all inpatient admissions in Vienna are to Vienna General Hospital, and for severe cases the figure is as much as a quarter. Vienna General Hospital and the MedUni Vienna fully deserve their reputation for providing compre-

**LEADING THE WORLD FOR CENTURIES**

In 2014, MedUni Vienna celebrated its tenth anniversary. It is one of the youngest universities, but nonetheless the inheritor of a centuries-old tradition. As the medical faculty, it was part of the University of Vienna when it was founded in 1365. The faculty acquired a European reputation in the eighteenth century, when Gerard van Swieten of the Netherlands laid the foundations for the first era of the celebrated Vienna school of medicine. Today, MedUni Vienna is rated one of the best medical universities in the world, and its researchers publish in the top journals and produce outstanding research results.





From left to right: Christian Herold (Head of the Department for Radiology and Nuclear Medicine), Wolfgang Schütz (Rector of MedUni Vienna), Ingrid Vogl (President of the Public Relations Association Austria, PRVA), Christoph Burmann (Professor of Innovative Brand Management, University of Bremen).

#### Anniversary looks forward to the future

At the ten-year anniversary celebration on 3 November 2014 the participants discussed their visions for the future of research, teaching and patient care. There were many presentations of MedUni Vienna's facilities and institutions, and from its five research clusters.

hensive, high quality tertiary medical care. Compared with other university hospitals, MedUni Vienna's doctors also provide an above average proportion of secondary care (lower level inpatient care) and primary care (outpatient care).

#### COMPETITIVE, FOCUSED RESEARCH

In spite of the strong focus on patient care and the challenging financial situation facing the universities and the Austrian research environment in general, MedUni Vienna's scientific output is high and shows a continuing and noticeable upwards trend in the relevant indicators: impact factors, citation rates, external funding, knowledge transfer (inventions, inventions put to use, patent applications and patents) and PhDs awarded. The reason for this success is largely the

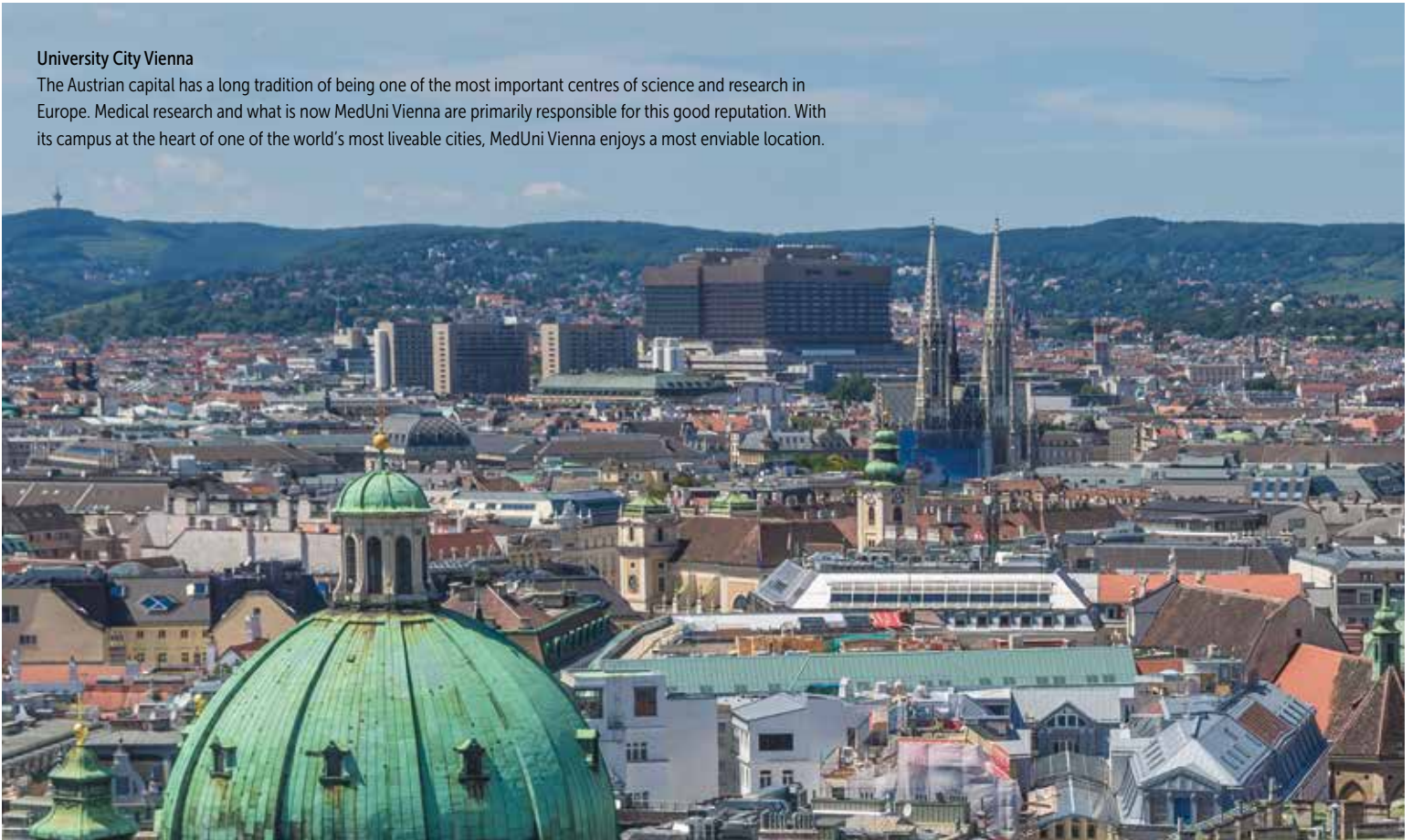
University's focus, and particularly in the context of the five research clusters. Collaboration in these areas is international and particularly intensive, and multinational research consortia and multicentric clinical studies are organised. Projects funded by the European Commission play a major role here.

#### STRATEGIC COOPERATIONS

In 2012, MedUni Vienna began a partnership with Johns Hopkins University in the USA, and since 2013 has been cooperating with Singapore's Nanyang Technological University (NTU). There is a major collaboration agreement with the cancer therapy and research centre MedAustron, which makes it possible to carry out research projects in medical radiation physics, radiobiology and experimental physics, and

### University City Vienna

The Austrian capital has a long tradition of being one of the most important centres of science and research in Europe. Medical research and what is now MedUni Vienna are primarily responsible for this good reputation. With its campus at the heart of one of the world's most liveable cities, MedUni Vienna enjoys a most enviable location.

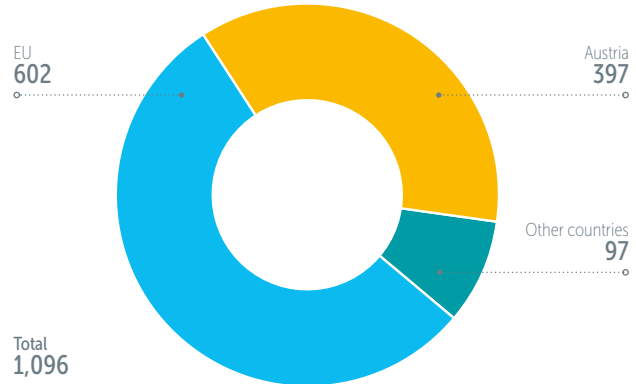


## MEDICAL EXCELLENCE

With more than 7,500 students and around 4,200 staff, of which 3,000 are scientists and doctors, MedUni Vienna is one of the largest centres of medical education and research in the German-speaking world and a medical school with an international reputation. The outstanding medical services provided by its 27 university clinics and three clinical institutes, its 12 medical research centres and departments, and its numerous highly specialised laboratories make MedUni Vienna also one of the most important biomedical research institutions in Europe and Austria's most important healthcare provider.

The latest research results from clinical studies benefit the more than 670,000 patients treated every year directly, since the University closely integrates basic research with clinical application. Due to the considerable medical benefits, this translational approach to research and medical treatment forms a core part of the cooperation between MedUni Vienna and Vienna General Hospital.

## COOPERATIONS



Cooperation agreements with 1,096 partner institutions form a ramified network.

since 2014 an agreement with the Austrian competence centre CBmed to develop new biomarkers for individualised cancer treatments. MedUni Vienna is also a partner in the Karl Landsteiner University of Health Sciences in Krems and is particularly involved in developing its curriculum, which is built up in line with the Bologna criteria for the European Higher Education Area (basic bachelor's and master's degrees). This internationally-orientated university is focused on medical engineering and health economics.

MedUni Vienna and the University of Vienna pool resources for molecular biology research at the Max F. Perutz Laboratories, at the Campus Vienna Biocenter. Interdisciplinary collaboration with University of Vienna institutes also takes place in joint research clusters. The Messerli Research Institute, which carries out research into human-animal interaction on the basis of comparative medicine, is operated jointly by MedUni Vienna, Vetmeduni Vienna and the University of Vienna.

On the national level MedUni Vienna's dense academic network is also reflected in the coordination of a number of Austrian Science Fund special research topics and in the Ludwig Boltzmann Institutes and Clusters. This culture of collaboration with other universities, institutes, researchers in industry and international research institutions is very carefully nurtured.

### STUDYING A MODERN CURRICULUM

MedUni Vienna is also proud of its modern curriculum, which provides integrated specialist knowledge and puts the emphasis on teaching in small groups and clinical practice. Since the introduction of the new curriculum, key indicators in teaching have improved radically: the dropout rate has been reduced from 60% to 13%, the majority of the more than 7,500 students complete their studies in the regulation time, and the number of those participating in international mobility programmes increases every year. In addition, since 2014 students' last year of study is a clinical practice year in accredited teaching hospitals, where they prepare for professional life and postgraduate education.



*Teaching is the basis of the University – with students as partners, MedUni Vienna has hit upon daring ideas for the future.*

Karin Gutiérrez-Lobos  
Vice Rector for Education,  
Gender and Diversity





*After a successful 2013, the ten-year anniversary in 2014 marked MedUni Vienna's coming of age, as well as an improved financial situation and greater international visibility in university rankings. A good basis for further development has been created. Now politics must play its part in creating the framework for future financing of the university clinical departments, the University's additional clinical expense and basic research, which in international terms is comparatively meagre.*

Franz Wurm  
Vice Rector for Finance

The number of PhD students with MedUni Vienna appointments has climbed to 700, the average length of study has been significantly reduced, and the number of students taking semesters abroad has tripled. All this became possible primarily because of the new curriculum, with its emphasis on small group teaching and clinical practice.

In addition to degree programmes in medicine and dentistry, the University offers doctors and other natural scientists an attractive range of studies and continuing education opportunities. This includes PhD and doctoral research programmes, a master's programme in medical informatics and a number of postgraduate continuing education courses. The doctoral and PhD programmes by themselves have

## RESEARCHERS HONoured

As part of the ten-year anniversary celebrations, nine researchers at MedUni Vienna were given awards for special achievements in clinical research: Oleh Hornykiewicz, Hans Lassmann, Josef Smolen, Rudolf Valenta, Wolfgang Drexler, Ursula Schmidt-Erfurth, Maria Sibilica, Sylvia Knapp and Diana Bonderman.

Oleh Hornykiewicz occupies a special position in this group: in 2014 he became the first Austrian to receive the prestigious Warren Alpert Foundation Prize for his research work. The contributions of Hans Lassmann and Josef Smolen are also outstanding: they are the University's most cited researchers in the international scientific community and acknowledged authorities in their fields.



around 1,400 early-stage researchers, half of whom have appointments at the University. To make MedUni Vienna's outlook even more international, its successful student exchange programmes – including study abroad scholarships, visiting researcher programmes and partnerships with other universities – are being further expanded.

#### EXTERNAL FUNDING

Between 2004 and 2014 external funding acquired by the University more than doubled – another effect of the University's autonomy – while state funding increased by only about 20%. Currently, roughly a fifth of all funding for research and teaching activities comes from sources of independent finance. To increase its financial resources even further, MedUni Vienna has

created an environment that actively encourages patenting and commercialisation of research discoveries. Collaboration between university research and industry mainly takes place in the form of the Christian Doppler Laboratories (CDLs), where university researchers work closely with private sector partners to develop innovative solutions for commercial use.

#### THE MEDUNI VIENNA BRAND

MedUni Vienna's national and international reputation today is the result of consistent hard work. As a faculty of the University of Vienna, until 2004 it had no distinctive profile of its own. External publicity for medical researchers came via Vienna General Hospital. It took years to change this. To give MedUni Vienna a more clear-cut profile it is necessary to highlight



From left to right: Wolfgang Drexler, Diana Bonderman, Ursula Schmidt-Erfurth, Wolfgang Schütz, Maria Sibilia, Josef Smolen, Markus Müller, Sylvia Knapp, Rudolf Valenta, Oleh Hornykiewicz, Hans Lassmann



## THE JOSEPHINUM: TREASURE HOUSE OF MEDICAL HISTORY

The Josephinum has a special role to play as a gateway to the history of medicine – not only because of the historical, architectural and cultural significance of the building itself and its original collections, but also as an institution that administrates, maintains and presents all of the University's historic holdings. One of the impressive aspects of MedUni Vienna's rich cultural legacy is that it consists of collections built up over many centuries. These collections form the basis for exhibitions open to the general public.

To celebrate MedUni Vienna's ten-year anniversary, the exhibition *Under the Skin* focuses on three people who made vital contributions to the emergence of modern medicine: Carl von Rokitansky and Josef Skoda as ground-breaking precursors of modern methods, and Emil Zuckerkandl, the famous anatomist and key figure in Jewish Austria. The exhibition was officially opened by Nobel Prize winner Eric Kandel.



*Today there is still nowhere better than the Josephinum to present the achievements of our doctors to the public. The new exhibition programme lays particular emphasis on the links between history and what our university hospital medicine currently achieves.*

Christiane Druml  
Vice Rector for Clinical Affairs

its unique features more effectively. This gives staff a stronger sense of identification with the organisation, and increases the options in external communications, so as to position the University optimally in international competition for reputation, funding and the best people.

In 2013 and 2014, 150 people from all areas of the University participated in a branding exercise with the aim of using brand features and strategic brand management to create a more clearly defined profile and greater emotional ties to target groups. It became clear that because of its distinguished history, its size and its triple track of research, teaching and patient care activities, MedUni Vienna is ideally positioned to present itself as driving knowledge forward – knowledge and innovation are primary concerns at the University, and acquiring, communicating and applying knowledge is the core of what the University is about.

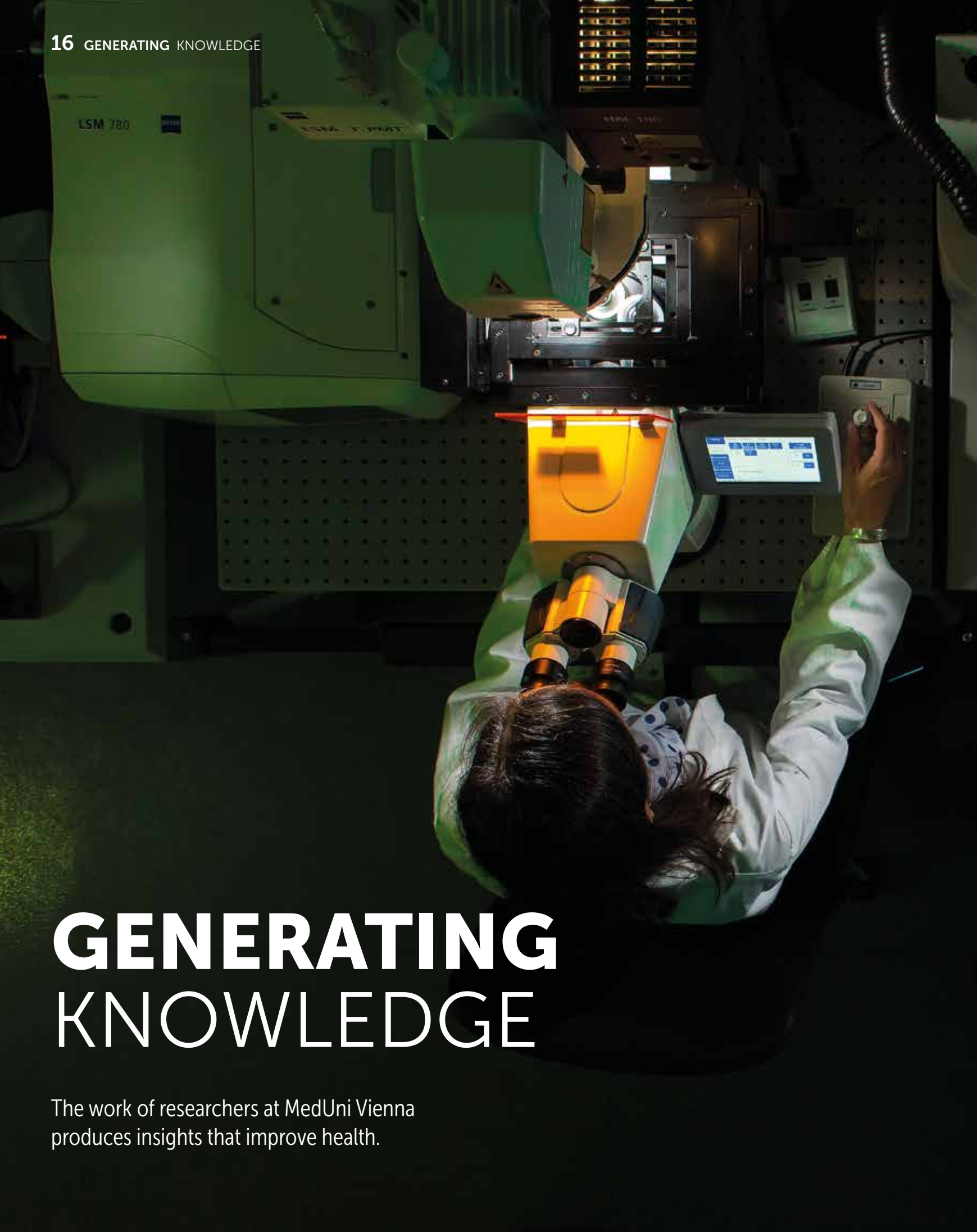


## HONORARY SENATOR ARNOLD POLLAK

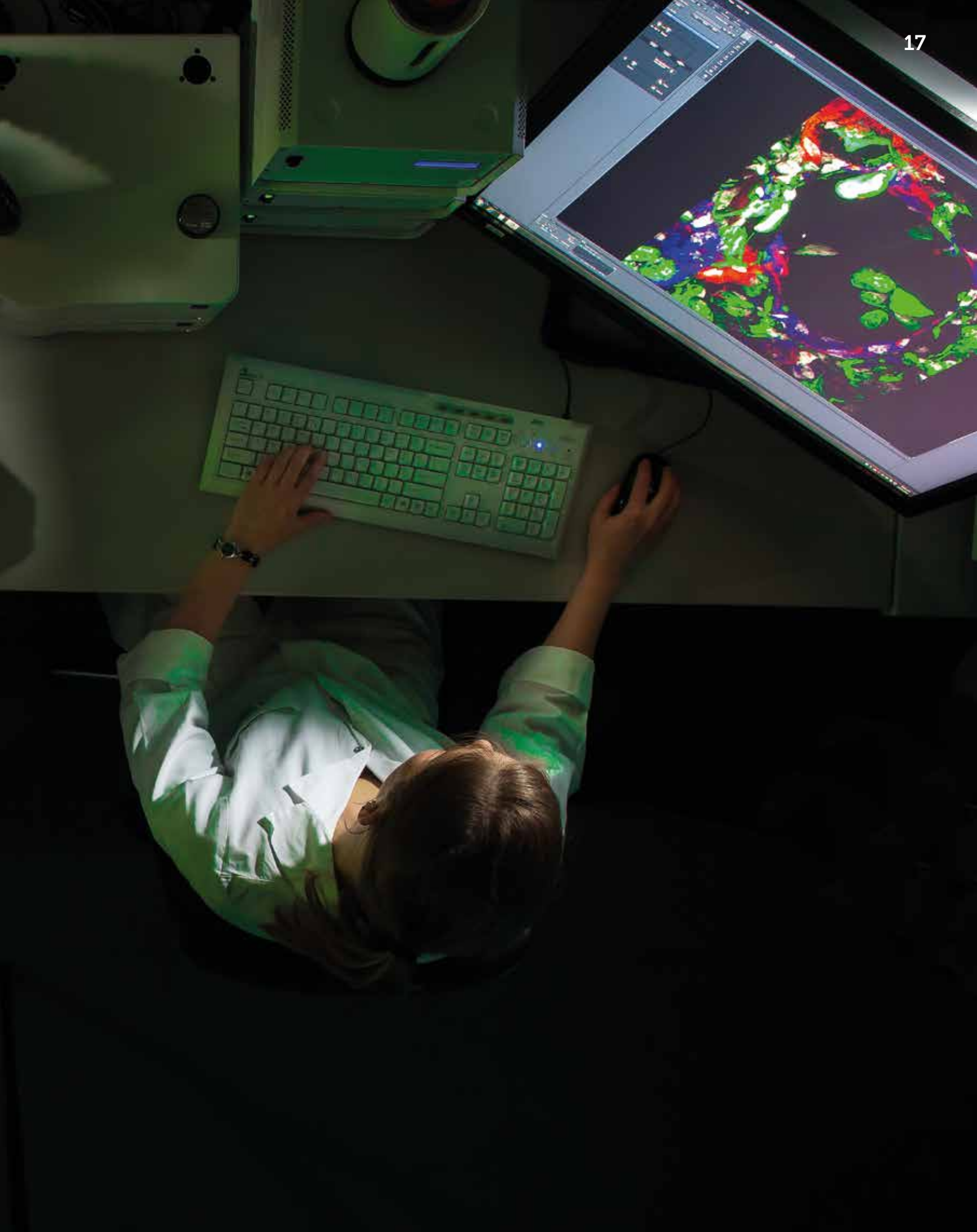
Arnold Pollak was for many years head of the Department of Paediatrics and Adolescent Medicine. As Chair of the founding conference of MedUni Vienna and Chair of the Senate from the University's foundation in 2004 until 2012, he was one of the people who assisted at the University's birth. He was made an Honorary Senator in a ceremony on 25 April 2015.

# GENERATING KNOWLEDGE

The work of researchers at MedUni Vienna produces insights that improve health.







# REVOLUTIONARY BREAKTHROUGH IN TREATMENT OF HEPATITIS C

A new combination therapy has opened the door to more efficient, lower-impact treatment of chronic hepatitis C. "This revolutionary breakthrough in the treatment of the condition has brought about a substantial improvement in quality of life for sufferers," explains Peter Ferenci, lead author of the PEARL study.

## CHARACTER CHANGE IN T HELPER CELLS

Nothing stays the same, you might say: according to a study published in leading journal *Nature Immunology*, certain immune cells – vital CD4+ helper T lymphocytes – can change character by deactivating particular enzymes.

In the study financed by the Austrian Science Fund (FWF) and Vienna Science and Technology Fund (WWTF) and carried out in collaboration with the Max F. Perutz Laboratories in Vienna, scientists bred mice in which production of the histone deacetylase enzymes HDAC1 and 2 could only be deactivated in T lymphocytes. The results were surprising, as Wilfried Ellmeier of the Institute of Immunology at MedUni Vienna explains: "Mature CD4 helper cells retained their function, but also took on the characteristics of CD8+ cytotoxic cells. This means that such cells have a certain degree of plasticity even when they are fully matured."

Lead authors Nicole Bucheron and Roland Tschismarov were supported by research teams from the Center for Molecular Medicine (CeMM) and other MedUni Vienna teams as well as several international research partners. The study has generated fundamental insights into the regulation and maintenance of cell identity in the immune system.

**I**n a study of 419 people suffering from chronic hepatitis C, Peter Ferenci of the Department of Internal Medicine III and an international team of academics showed that a combination of the protease inhibitor ABT-450r, the NS5A inhibitor ombitasvir and the non-nucleoside polymerase inhibitor dasabuvir delivers far more effective treatment than the previous therapy. The old form of treatment used the drug ribavirin and the hormone interferon (usually in combination with a protease inhibitor). The subjects participating in the study, which was published in the *New England Journal of Medicine*, were at an early stage of the illness, before the onset of liver cirrhosis.

### 12 WEEKS OF THERAPY – CURE RATE CLOSE TO 100%

"The new therapy has no side effects and after 12 weeks of treatment we achieved a cure rate of almost 100%," Ferenci explains. Patients are required to take two tablets in the morning and one in the evening. Previously, hepatitis C sufferers underwent up to 18 months of treatment with ribavirin and interferon. In many cases this resulted in severe side effects. "Often, additional therapy was necessary," according to Ferenci. But this is no longer the case, as the new combination therapy does not use interferon.

### 170 MILLION SUFFERERS WORLDWIDE

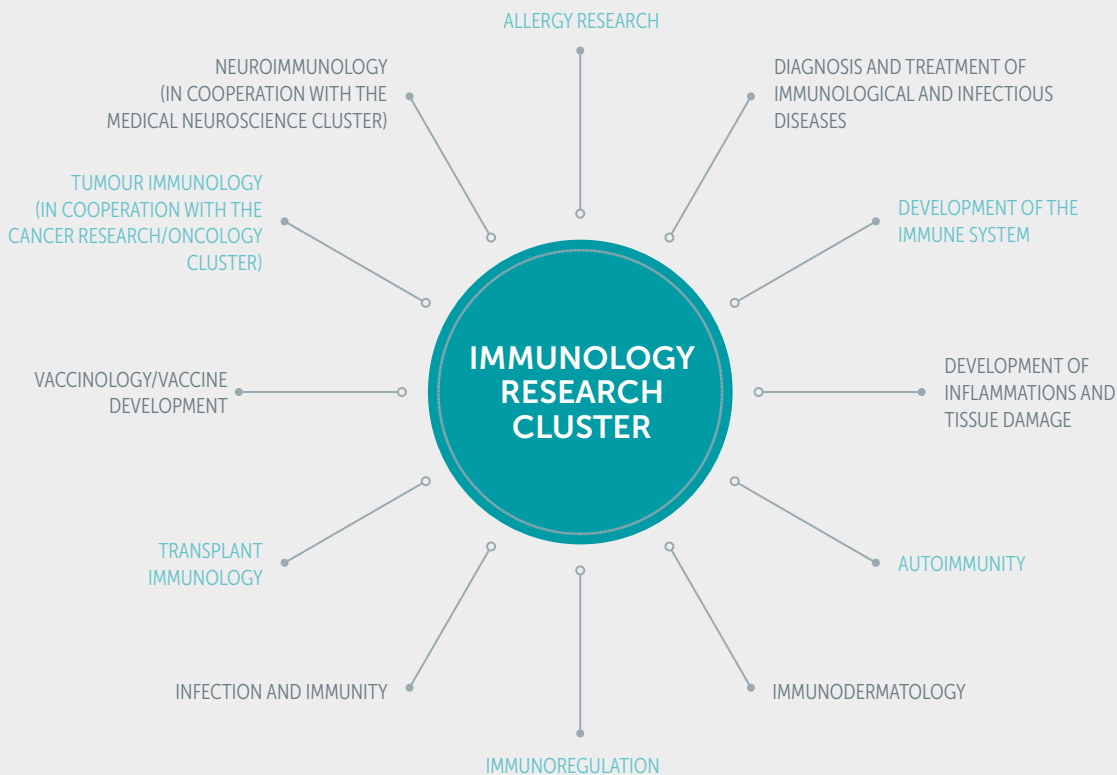
In Austria, between 40,000 and 80,000 people suffer from chronic hepatitis C infections, and there are some 170 million patients around the world. Prompt, targeted treatment is very important in the case of new infections, as this can stop the development of chronic conditions. Each year, several hundred patients are treated for chronic hepatitis C at the Clinical Section for Gastroenterology and Hepatology, part of the Department of Internal Medicine III. ●

# IMMUNOLOGY RESEARCH CLUSTER

Common conditions such as rheumatoid arthritis, arteriosclerosis, diabetes mellitus, allergies and inflammatory bowel disease are the result of defective immune system responses. Infectious diseases are also a growing problem. The complexity of immunological disorders calls for a multidisciplinary approach. The Immunology Research Cluster brings together research into allergies, inflammation and infectious diseases, and develops new concepts for diagnosis and treatment. There are research focuses in basic research as well as in translational and clinical research.

The cluster also aims to establish structures at various levels and launch initiatives with a view to exploiting synergies between academics more effectively and supporting innovative research activities. Supporting up-and-coming academics is another important issue within the cluster, which serves as a platform for collaboration with immunology researchers at other universities and at non-university research facilities.

[cluster.meduniwien.ac.at/irc](http://cluster.meduniwien.ac.at/irc)



# WHY SO MANY PEOPLE ARE ALLERGIC TO BIRCH POLLEN

This question is still to be fully answered. A particular birch pollen protein is known to trigger an overreaction by the immune system, and now scientists at the Messerli Research Institute have discovered how this protein turns into an allergen.

**T**he key finding of the study was that the pollen protein can bind with iron. If the protein is not iron-loaded, it becomes an allergen and prompts an allergic reaction. This small load may be down to environmental factors, which could explain the increase in the number of sufferers. In Austria alone some 400,000 people are affected by birch pollen allergies and the related intolerance to certain foods.



One of the best known allergens in birch pollen (*Betula verrucosa*), Bet v 1, was first produced synthetically in a laboratory in Vienna 25 years ago. Since then it has been used around the world as an allergen model for research purposes. Bet v 1 is the primary allergen among the hundreds of other proteins found in birch pollen. It leads to hypersensitivity in the immune system, and in 95% of birch pollen allergy sufferers it causes production of pathogenic antibodies called immunoglobulin E or IgE.

According to the study, the structure of Bet v 1 is very similar to that of lipocalin-2, a human protein found mainly in the lungs. Both have so-called molecular pockets with which they can form strong bonds with iron. If these pockets remain empty, the birch pollen protein will become an allergen, leading to allergic reactions in humans and animals. ●

## EXAMINING HUMAN-ANIMAL RELATIONS

In collaboration with Vetmeduni Vienna, the University of Vienna and MedUni Vienna, the Messerli Institute is investigating the relationship between humans and animals and the underlying issues of ethics and comparative medicine, as well as animal cognition and behaviour. The institute stands out for its broad, interdisciplinary approach, which encompasses biology, medicine, veterinary medicine, philosophy, psychology and law, and for its strong international focus.



# OUTSTANDING NEW HPV VACCINE



In a few years, a second-generation HPV vaccine should provide comprehensive protection. Its creators were presented with the Inventor of the Year award. And a nine-in-one HPV vaccine, which has been successfully tested at MedUni Vienna, is set to obtain approval shortly.

Reinhard Kimbauer and Christina Schellenbacher of the Section for Immunodermatology, part of the Department of Dermatology, shared the 2014 Inventor of the Year award at the Medical University of Vienna.

## SECOND-GENERATION HPV VACCINE

Working in collaboration with researchers from Johns Hopkins University in the US, Reinhard Kimbauer and Christina Schellenbacher developed an improved papillomavirus vaccine. This promotes a highly effective, neutralising immune system response to

human papillomavirus (HPV) infections. In the near future the vaccine will offer wide-ranging protection at a low cost in comparison with the vaccinations currently available. Such protection could remove the need for annual cervical cancer smears among women who have already been vaccinated. Patent applications have been filed in the USA, Europe and China. Reinhard Kimbauer also played a vital role in the development of the two-in-one and four-in-one vaccines that are currently authorised.

## NINE-IN-ONE HPV VACCINE CLOSE TO APPROVAL

Another HPV vaccine underwent trials at MedUni Vienna's Department of Gynaecology. The new vaccination provides protection against nine human papillomavirus subtypes which together account for 85% of early-stage cervical cancers. The efficacy of the vaccine was demonstrated in a phase III clinical trial in which MedUni Vienna played a leading role, with a team headed by Elmar Joura of the Department of Gynaecology. ●

## WINNING THE FIGHT AGAINST EBOLA

FX06, an experimental medication developed by Peter Petzelbauer of the Department of Dermatology at MedUni Vienna, was used at University Hospital Frankfurt to treat a patient who suffered multiple organ failure following infection with the Ebola virus.

FX06 had previously been the subject of pre-clinical trials for use in heart attacks, heart transplants and cases of bacterial infection. The drug is a protein fragment that seals the walls of leaking blood vessels and stops the leakage of fluid into the surrounding tissue, which in turn allows for treatment of complications arising from severe infections.

# CANNABIS USE DURING PREGNANCY PUTS BABIES' BRAINS AT RISK

A study headed by Tibor Harkany of MedUni Vienna's Center for Brain Research showed that cannabis consumption during pregnancy can affect fetal brain development and cause long-term damage after birth.

**M**ore and more children are suffering the consequences of drug consumption by their mothers during pregnancy. One of the most commonly used substances is cannabis. The authors of the study, which was published in *The EMBO Journal*, worked with a team of researchers from the Karolinska Institutet in Sweden and the Mount Sinai School of Medicine in the US to discover how delta-9-tetrahydrocannabinol (THC) – a key psychoactive component of cannabis – affects brain development in unborn children by deciphering its molecular basis.

## ABNORMAL DEVELOPMENT OF THE CEREBRAL CORTEX

The study underlines the fact that cannabis use in pregnancy leads to significant abnormalities in the development of nerve cells in the cerebral cortex. This part of the brain is responsible for higher human cognitive functions and managing the formation of memories. THC has a negative impact on the development and functioning of the structural basis as well as synapses and axons – the communication pathways that connect nerve cells.

## MINOR DAMAGE, MAJOR IMPACT

Not all children who have been exposed to cannabis in the womb suffer direct and obvious disorders. But according to lead author Tibor Harkany, even relatively minor damage can significantly increase the risk of neuropsychiatric illnesses later in life. ●

## MEDICAL NEUROSCIENCE RESEARCH CLUSTER

The research cluster reflects the broad spectrum of neuroscience and psychosocial science research activities at MedUni Vienna. MedUni's research is recognised around the world, particularly when it comes to Alzheimer's, depression, multiple sclerosis and pain.

The overriding aim is to gain insights that lead to a better understanding of the pathophysiology of nervous system disorders, which in turn will enable more effective diagnosis and treatment of sufferers. The cluster also plays its part in drawing public attention to new research findings.

Education is another major focus – doctoral students and other young staff will have access to high-quality, internationally recognised academic education at the participating departments and institutes.

# AddRes:

## MEDUNI VIENNA SETS UP ADDICTION RESEARCH CENTRE

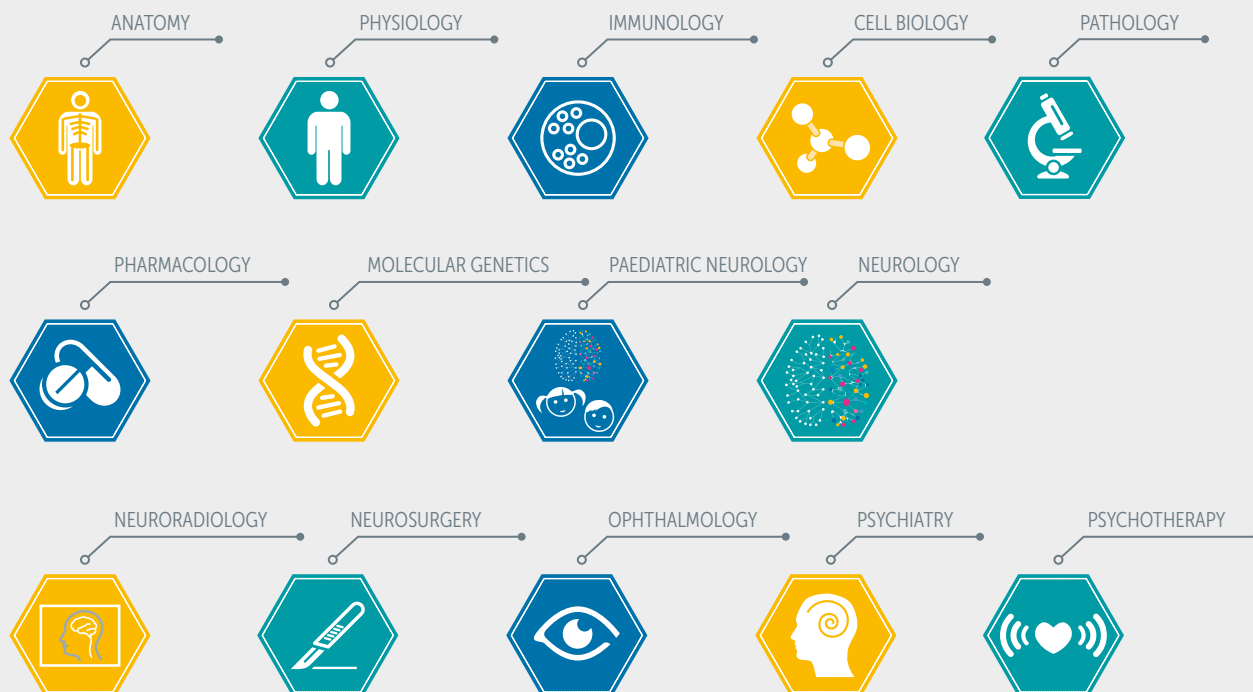
Increasing numbers of psychoactive substances are now available in addition to more conventional drugs, but little or no research has been carried out into their effects and any dangerous side effects they may have. All of which is reason enough to set up a new competence centre.

**R**esearch into psychoactive substances or “designer drugs” is thin on the ground. Their effects pose a health risk, in particular for minors, and are similar to those of substances such as nicotine, alcohol, cannabis, cocaine and opioids. With a view to enhancing research and public information on these drugs and on addiction, MedUni Vienna set up a research centre called AddRes (Center for Addiction Research & Science), part of the Medical Neuroscience Research Cluster.

### INFORMATION AND PREVENTION

The centre sees itself as a point of contact for people who require information, but the initiators also aim to play a more proactive part in educating the public. “Raising awareness among young people is one of our primary goals,” explains Harald Sitte from the Center for Physiology and Pharmacology’s Institute of Pharmacology at MedUni Vienna, “and by bringing science into the classroom we want to address children and youngsters directly and inform them about the dangers of drug use.” ●

### THE CLUSTER’S NEUROSCIENCE DISCIPLINES



# CRUCIAL TO BRAIN DEVELOPMENT

A research team at the Max F. Perutz Laboratories (MFPL) has identified the protein histone deacetylase 2 (HDAC2) as essential to brain development. This clears the way for the development of new drugs for the treatment of neurological disorders.

**A** group of proteins, histone deacetylases (HDACs), have been on researchers' watch list for a considerable time already. They play an important role in carcinogenesis and neurodegenerative diseases. In recent studies it has become ever clearer that when developing drugs it is essential to focus on the exact class of HDAC to be inhibited.

## HDAC2 PLAYS A KEY ROLE IN SURVIVAL

Christian Seiser and his team in the Section for Molecular Genetics demonstrated in their study that the HDAC2 class plays a crucial role in the brain. If HDAC2 is deactivated, no healthy brain development is possible, and the organism is not viable.

## NEW DRUGS FOR NEUROTHERAPY

HDAC inhibitors have been shown to be beneficial in the treatment of neurodegenerative diseases such as Alzheimer's and Parkinson's disease in animal models. HDAC inhibitors are already licensed in human therapy for the treatment of epilepsy.

The results of the study could pave the way for the development of new neurotherapeutic drugs.

## CONTINUING SUCCESS STORY

Based at the Vienna Biocenter Campus, the Max F. Perutz Laboratories are a joint venture between MedUni Vienna and the University of Vienna. In September 2014 the rectors of the two Universities signed a new cooperation agreement. Wolfgang Schütz, Rector of MedUni Vienna, sees the collaboration as an unparalleled success story: "The Max F. Perutz Laboratories allow the two universities to combine their potential and create an optimal environment for research."

MFPL was established in 2005, and now employs some 500 staff engaged in basic research in molecular biology. The laboratories are named after Max F. Perutz, who studied at the University of Vienna and received the Nobel Prize in 1962. His 100th birthday fell in 2014. ●





# PARKINSON'S SPREADS FROM CELL TO CELL

An international, interdisciplinary research group led by Gabor G. Kovacs of MedUni Vienna's Clinical Institute of Neurology has supplied evidence that Parkinson's spreads from cell to cell in the human brain.

**U**ntil now, this mechanism had only been observed in experimental models, but a novel antibody now allows it to be demonstrated in humans as well. The study, published in the journal *Neurobiology of Disease*, focuses on the protein synuclein. This protein occurs in the human brain in Parkinson's disease and in a pathologically altered form in a common type of dementia, Lewy body disease.

The study shows that human nerve cells take up the pathological synuclein, so that the disease is transferred from one cell to the next. "This explains why patients' clinical condition gets worse and worse, and new symptoms appear as the disease progresses. This process of infection allows the disease to spread to other areas of the brain," says Kovacs.

This means that for Parkinson's sufferers, the synuclein proliferation mechanism could be a possible target for therapy. The antibody also represents a great

advance for diagnostics: for example, in clinical practice it allows diagnosis of whether Lewy body dementia is present. ●

## 79 EU PROJECTS AT MEDUNI VIENNA

In 2014, researchers at MedUni Vienna were working on a total of 79 EU projects, of which 12 started in that year. For 10 of the projects, MedUni Vienna acted as coordinator of an international research consortium. Two new projects were funded by European Research Council (ERC) grants, competition for which is particularly fierce.

TOP STORIES IN 2014

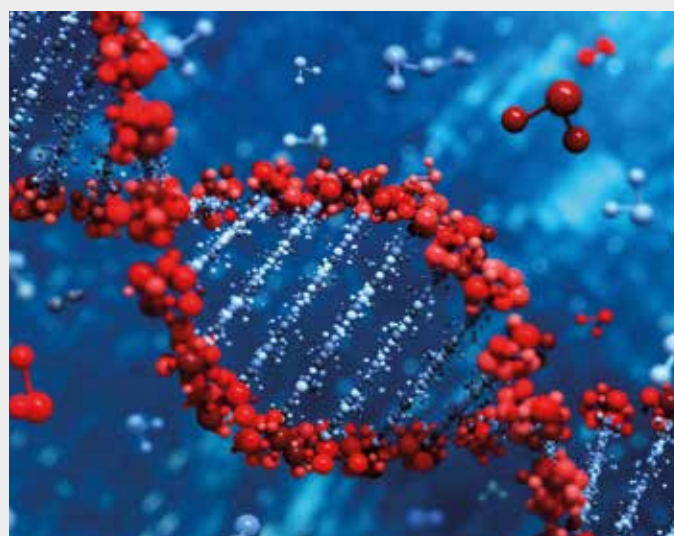
# SECRET OF THE HUMAN BRAIN

Evolution took several hundred million years to develop the complexity of the human brain from the initially primitive nerve systems of early animals. In 2014 MedUni Vienna researchers produced major new insights into the precise workings of the brain.

## GENES DETERMINE HOW STRESS WORKS IN THE BRAIN

Why the hippocampus grows or shrinks during crises

Our individual genetic make-up determines the effect that stress has on the emotional brain. A MedUni Vienna research team has established that different individuals react differently to identical stressful circumstances. Some people continue to develop during crises, while others crack and, for example, succumb to depression. It all depends on complex interactions between the different variants of depression genes and environmental factors, which together influence the size of the hippocampus.



## SUICIDE IN THE SUNSHINE

Sunny weather can precipitate suicide

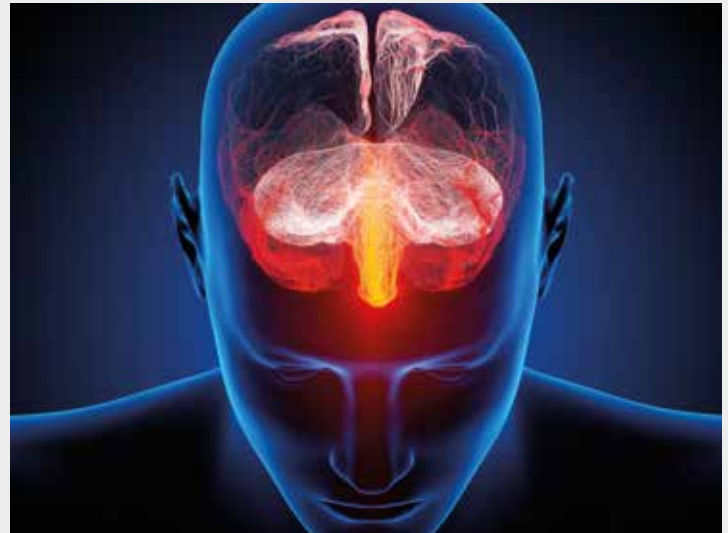
Prolonged periods of sunshine, many scientific studies have shown, have a positive effect on people's spirits, and can be a help to people with depressive tendencies. But the start of a period of good weather can work in the opposite direction. For people at risk, the first sunny days can bring increased levels of activity and inner unrest, and can act as a driver for suicide, as a MedUni Vienna study published in the Journal of the American Medical Association has shown.



## HOW THE BRAIN COMBINES AND SEPARATES

Gamma oscillations: new discoveries

The brain is constantly flooded with sensory impressions, some of which belong together. How the brain processes sensory inputs either separately or together is the subject of studies on rats by scientists at MedUni Vienna's Center for Brain Research. What the researchers have detected are distinct oscillations in the same neuron. The resulting information can be processed either in combination or separately, as required.



## FEWER JOB OPPORTUNITIES WITH SU- ICIDE ATTEMPTS

Alarming statistics-, published in the International Journal of Epidemiology

People who attempt suicide when young have poorer prospects of successful careers later on. This is the conclusion of a joint study carried out by Sweden's Karolinska Institutet and MedUni Vienna. Many people with one or more suicide attempts in their youth can expect to suffer from long-term unemployment later. More alarmingly, these people represent an even higher proportion of those on long-term sick leave or receiving disability pensions.

## STRESS CONTROL FACTOR DISCOVERED IN BRAIN

Possible approach to treatment of chronic stress

In collaboration with the Karolinska Institutet in Stockholm, a major stress control factor has been discovered in work carried out at MedUni Vienna's Center for Brain Research. The protein in question, secretagogin, plays an important role in the release of the stress hormone CRH, which enables stress signals in the brain to be transmitted to the pituitary gland, and then onwards to other organs. The study was published in EMBO Journal.



## ACTIVATING DORMANT MEMORY CELLS

Important contribution to understanding  
of learning and memory

In vivo electrical stimulation of the hippocampus activates exactly the same receptor complexes as learning or remembering. This has been demonstrated for the first time in a study at the University Department of Paediatrics and Adolescent Medicine. The results of the study have been published in the journal Brain Structure and Function. These discoveries could form the basis for the use of drugs to stimulate dormant or less active memories.







# SEEING, READING AND HEARING IN THE BRAIN

Using functional magnetic resonance tomography (fMRT), researchers at MedUni Vienna have found that areas of the brain that are subsequently responsible for vision are already active in utero. Another fMRT study revealed that the brain processes listening to speech and reading differently.

**T**he architecture of the brain develops particularly during the middle phase of pregnancy. To obtain insights into the development of the human brain in utero, the Computational Imaging Research Lab study group at MedUni Vienna observed 32 fetuses from the 21st to the 38th week of pregnancy. Using fMRT it was possible to measure neuronal activity and gather information about the most important cortical and sub-cortical structures of the developing brain.

## ORIGINS OF THE BASIS OF PERCEPTION

Between the 26th and 29th weeks of pregnancy, short-range neuronal connections in particular developed especially actively. In contrast, long-range nerve connections grew more linearly over the whole course of pregnancy. "What we saw was that the areas of the brain responsible for sensory perception develop first, and are followed about four weeks later by the

areas responsible for more complex, cognitive skills," explains lead author Andras Jakab.

## EARLY USE OF VISUAL AREAS OF THE BRAIN

In another study, a group led by Veronika Schöpf and Georg Langs was able to demonstrate that unborn babies begin to use areas of the brain which are later responsible for vision as early as the 30th to the 36th week of pregnancy. It is well known that newborn babies have to learn to process visual stimuli after they are born, but researchers in the Department of Radiology and Nuclear Medicine have now for the first time successfully shown that this crucial development begins before birth.

The group investigated the relationship between eye movements and brain activity. Even at this stage of development, eye movements are linked to the areas in the visual cortex of the brain responsible for pro-

cessing optical signals. "The relationship between eye movement and the responsible areas of the brain has therefore been demonstrated for the first time in utero", explains lead author Veronika Schöpf.

#### BRAIN DISTINGUISHES BETWEEN READING AND LISTENING

Another research team from the Department of Radiology and Nuclear Medicine investigated how the brain processes spoken and written words and published its findings in the journal *Frontiers in Human Neuroscience*. Here, too, the researchers used fMRT in order to identify the areas of the brain used in processing language.

Healthy subjects were presented with simple nouns, either aurally via headphones or visually on a monitor. The subjects were then asked to form corresponding

verbs. "Depending on whether the words were heard or seen, neurons in different parts of the network fired," explains Kathrin Kollndorfer, who together with Veronika Schöpf led the team.

#### BENEFITS FOR NEUROSURGERY

The study's results open up new opportunities in radiology, allowing preoperative identification of areas that must not be damaged in neurosurgery (for instance, when removing a brain tumour) if linguistic abilities are to be preserved. This is especially important in the case of language processing areas, because they are not located in exactly the same place in everybody. ●

## INTERNATIONAL RESEARCH CENTRE WITH NTU SINGAPORE

In May 2014 MedUni Vienna concluded a research and teaching cooperation agreement with Nanyang Technological University, Singapore (NTU). In addition to a joint PhD programme in Medical Technology, in the summer of 2014 MedUni Vienna established a joint research centre focused on medical imaging, signal analysis and e-health. It will be supervised by Wolfgang Drexler of the Center for Medical Physics and Biomedical Engineering and Christian Herold of the Department of Radiology and Nuclear Medicine. The new centre's research focuses will include molecular imaging and subjects such as e-health and ambient assisted living (AAL). Working with MedUni Vienna and NTU, its goal is to put such technologies into use in the health care sector.

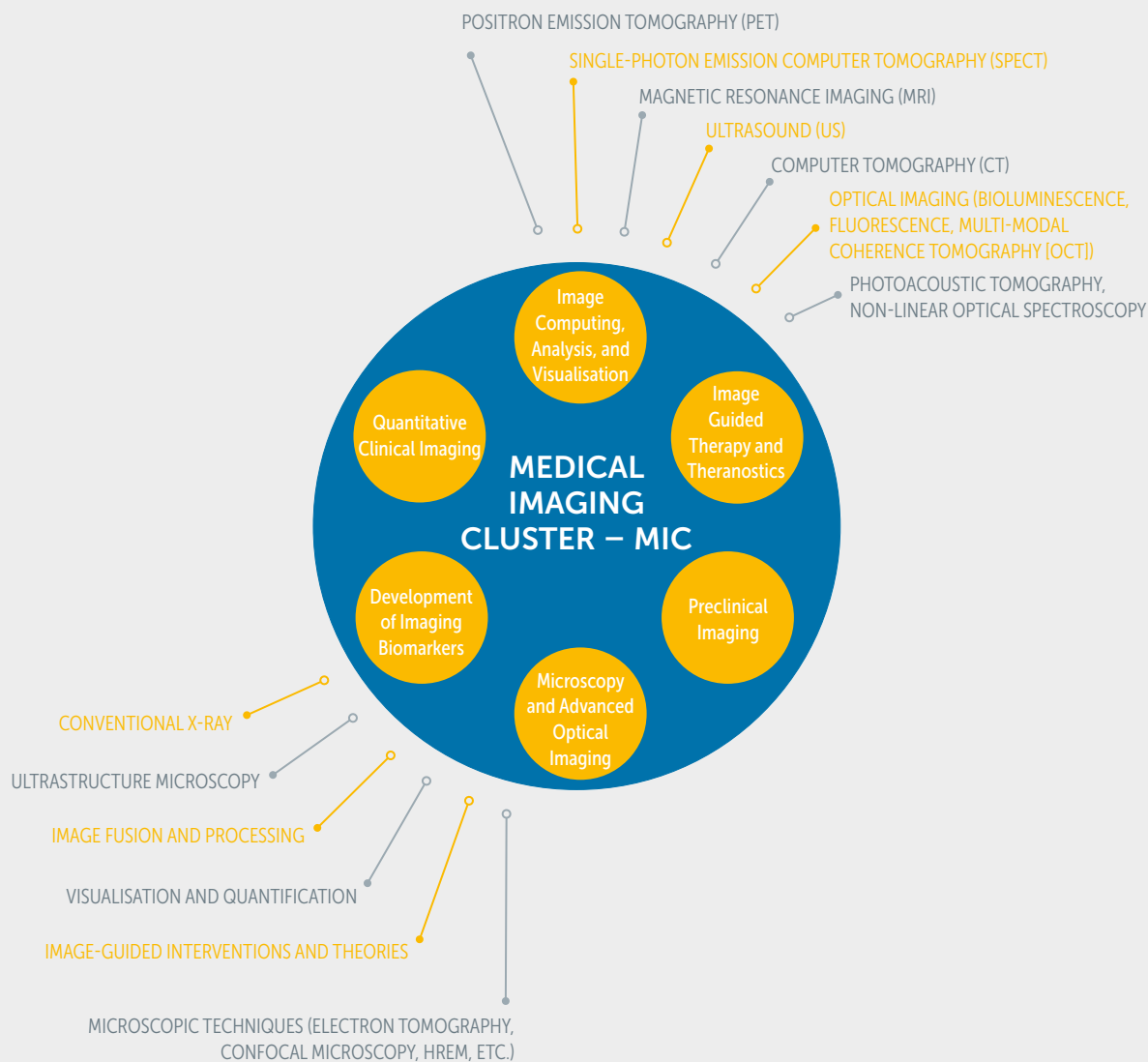
## WWTF FUNDS MEDICAL IMAGING RESEARCH

The Vienna Science and Technology Fund (WWTF) is providing grants totalling EUR 4.4 million for eight research projects, as part of its 2014 "Innovative biological and biomedical applications of novel imaging technologies" life sciences programme. Five of the eight projects are being carried out at MedUni Vienna, in the Institute of Hygiene and Applied Immunology, the Center for Medical Physics and Biomedical Engineering, the Department of Anaesthesia, Critical Care and Pain Medicine, the Section for Cognitive Neurobiology of the Center for Brain Research, and the High Field Magnetic Resonance Centre of Excellence.

# MEDICAL IMAGING RESEARCH CLUSTER

Medical imaging is the most recent research cluster, and it brings together the MedUni Vienna institutes and research facilities involved in imaging. The cluster is organised into six areas of specialist research, or nodes. The focus is on carrying out research into and achieving advances in morphological, functional and molecular imaging, so as to be able to diagnose and treat diseases at an earlier stage.

[cluster.meduniwien.ac.at/mic](http://cluster.meduniwien.ac.at/mic)



# OVERWEIGHT BUT IN HEALTH NEVERTHELESS



**P**eople with low HO-1 levels remain healthier in spite of obesity. This sensational discovery could open the door to more healthy ageing, since HO-1 could play a part in numerous age-related inflammations.

Headed by Harald Esterbauer of the Clinical Institute of Laboratory Medicine at MedUni Vienna, the research teams identified the factors that distinguish between morbid and non-morbid obesity. In collaboration with a working group led by Wolfgang Patsch of Paracelsus Medical University in Salzburg, they showed that HO-1 (heme oxygenase 1) is a very accurate indicator of the risk of type 2 diabetes and fatty liver: high levels of HO-1 in the liver and in adipose

tissue go hand in hand with a significant increase in various indicators of insulin resistance, irrespective of body weight, waist circumference and the proportion of fat in the abdomen.

*"The predictive power of HO-1, which is completely unrelated to body weight and build, is absolutely astonishing. This is a sign that we may be on the trail of a new risk factor for unhealthy adiposity," said Harald Esterbauer.*

## HEALTHY DIET FOR ROMAN GLADIATORS



Examination of the bones of warriors found in the ancient city of Ephesus produced astonishing insights into their diet: their meals were mainly vegetarian and after training they drank an invigorating tonic made from ashes.



Around one in five people in Austria are severely overweight, and the numbers are increasing. Three-quarters of those affected suffer from serious secondary conditions such as diabetes, cardiovascular diseases and cancer. Interestingly, though, one-quarter are considered healthy despite being severely overweight – and they often remain so. The key: the enzyme HO-1.

#### HO-1 LEADS TO DIABETES...

However, the question of whether HO-1 is simply a new indicator for morbid obesity or has a causal role in the onset of type 2 diabetes and fatty liver remained unanswered. So the Vienna-based researchers, working with a team under Andrew Pospisilik of the Max Planck Institute of Immunobiology and Epigenetics in Freiburg, used a mouse model to deactivate the enzyme in various organs that are vital for metabolism.

#### ...AND CHRONIC INFLAMMATIONS

The study appeared in the journal *Cell*. The key finding was that the mice continued to gain weight after HO-1 had been deactivated, but developed hardly any secondary conditions. In the process the researchers

also disproved the previous assumption that the enzyme inhibits inflammations. Indeed, the opposite is true: HO-1 promotes chronic inflammations without causing high temperature.

#### THERAPEUTIC APPROACH FOR HEALTHY AGEING

In general, such inflammations are risk factors for diabetes and cardiovascular diseases, as well as cancer and neurodegenerative conditions such as Parkinson's disease and Alzheimer's. As Esterbauer explains: "Our discovery could mean that inhibiting HO-1, which is an intriguing goal for therapeutic approaches, plays a wider role in promoting healthy ageing. We showed that mitochondria – the "power plants" of cells – function far more effectively without HO-1." ●

Bones dating back to the second or third century AD, which were excavated in 1993 from a gladiators' cemetery in what was formerly the Roman city of Ephesus (now Turkey), were examined as part of a study performed by MedUni Vienna's Department of Forensic Medicine in cooperation with the Department of Anthropology at the University of Bern's Institute of Forensic Medicine.

Using spectroscopic techniques the research team analysed the proportions of stable isotopes (of carbon, nitrogen and sulphur) in collagen from the bones, as well as the ratio of strontium to calcium in the bone mineral. The results were surprising: gladiators mainly ate vegetables.

The high levels of strontium in the gladiators' bones pointed to an increased intake of a strontium-rich source of calcium – suggesting that the "ash tonic" mentioned in the literature actually did exist.

"Plant ash seems to have been used to regain strength after physical exertion and to improve bone healing," explains Fabian Kanz of the Department of Forensic Medicine at MedUni Vienna, who headed the study. "This is similar to today's practice of taking magnesium and calcium, for instance in the form of effervescent tablets, after physical exercise."



# INNOVATIVE TEST: "GOOD" CHOLESTEROL CAN ALSO BE "BAD"

Thanks to an innovative new laboratory test, researchers at MedUni Vienna showed that the presence of certain proteins in "good" HDL cholesterol can heighten the risk of cardiovascular disease and increased mortality.

**H**igh density lipoprotein or HDL is often referred to as "good" cholesterol, but this is not always the case. A study by the Institute of Medical Genetics and the Clinical Section for Nephrology and Dialysis (part of the University Department of Internal Medicine III) at MedUni Vienna revealed that changes in HDL can be associated with cardiovascular diseases.

## INCREASED RISK FOR DIABETICS ON DIALYSIS

The research team was headed by Thomas Weich-

hart (Institute of Medical Genetics), Marcus Säemann and Chantal Kopecky (both from the Clinical Section for Nephrology and Dialysis at the University Department of Internal Medicine III). In an analysis of over 1,200 patients they showed that the presence of two particular proteins in "good" HDL led to worse prognoses for diabetics who were on dialysis.

## MEASURING DANGEROUS PROTEINS

Cholesterol only makes up about 20% of HDL, with various proteins accounting for over 50%. And this protein composition changes in the course of many diseases. In a previous study, the Vienna-based team had found higher concentrations of two particular proteins – serum amyloid A (SAA) and surfactant protein B (SP-B) – in HDL from dialysis patients, which causes HDL to lose its protective qualities. The new test developed in the course of the study now allows for the quick and direct measurement of SAA and SP-B. ●

# NEW COMPETENCE CENTRE FOR PERSONALISED MEDICINE

Early recognition and personalised treatment of cancer, diabetes, heart attack and fatty liver: this is the goal of biomarker research. 2014 saw the opening of the CBmed competence centre, a joint initiative between the Medical University of Graz, MedUni Vienna, Graz University of Technology, the University of Graz, AIT and Joanneum Research. The new centre is headquartered in Graz, with a core lab in Vienna.

**T**he aim of CBmed is to identify new biomarkers, verify candidate biomarkers and carry out systematic biomarker research, with a view to developing new products for clinical use, explains CBmed's Chief Scientific Officer Thomas Pieber. The focus is mainly on treating common conditions such as diabetes, heart and liver diseases and cancer. MedUni Vienna's 20% shareholding in the new centre reflects the fact

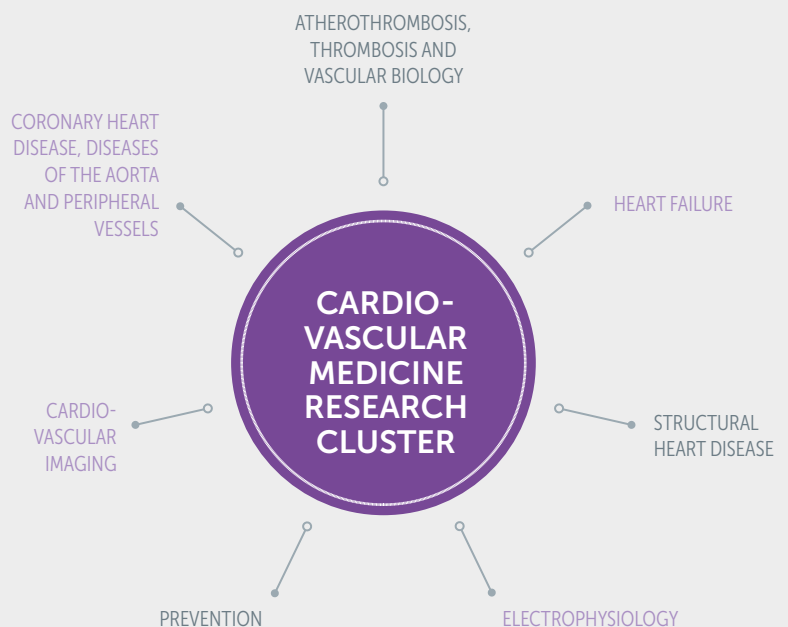
that biomarkers play a part in many of the University's research activities.

CBmed is one of 15 K1 centres of excellence across Austria, and funding is provided by both the federal and provincial governments. By 2018 the centre will have a budget of EUR 17.4 million, EUR 11 million of which will come from industry. ●

## CARDIOVASCULAR MEDICINE RESEARCH CLUSTER

Numerous factors play a part in the development of cardiovascular conditions, which affect all of the body's organ systems. This is why the Cardiovascular Medicine Research Cluster has such an important role. In addition to cardiovascular disease, the principal objects of the cluster's research are imaging and non-imaging diagnosis, together with epidemiological and genetic issues.

The cluster is also well known for its basic research into vascular biology and thrombosis, and interdisciplinary activities ranging from biomechanics to gene and stem cell therapy. As with MedUni Vienna's four other research clusters, the aim of creating a centre-based organisation is modelled on the Vienna Comprehensive Cancer Center (CCC). ●



# DEALING WITH THE WIDESPREAD PHENOMENON OF RARE DISEASES

Conditions that affect fewer than 2,000 people are referred to as rare or orphan diseases. But although there are only a small number of sufferers of each individual disease, the total number of patients is substantial. This prompted the establishment of the Vienna Center for Rare and Undiagnosed Diseases (CeRUD).



**B**etween 5% and 8% of the population suffer from some form of rare disease. Estimates put the number of rare and undiagnosed diseases at 6,000-8,000. In total, about 27 million people in Europe and over 400,000 in Austria are afflicted.

## COUNTERING IMMUNODEFICIENCIES

A new centre for targeted diagnosis and treatment of primary immunodeficiencies is part of a MedUni Vienna initiative aimed at combating congenital immune system disorders. One in every 800 Austrians suffers from such a condition. Headed by Elisabeth Förster-Waldl, the University's new Jeffrey Modell Diagnostic and Research Center Vienna is looking to track down these immune system defects. They affect some 1.5 million people in Europe, and the centre aims to be a driving force in immunodeficiency research, diagnosis and treatment.

[www.jmf-vienna.at](http://www.jmf-vienna.at)



## GENETIC CAUSE OF NEW RARE DISEASE DISCOVERED

This discovery put researchers on the trail of a central control mechanism that could be relevant to more common conditions such as chronic and recurring infections, auto-immune disorders, allergies and inflammations.

A Vienna-based research team led by Kaan Boztug succeeded in uncovering the genetic cause of a new rare disease. The patients they studied were suffering from a congenital immune system defect which until now has not been attributable to any known illnesses. Scientists from the CeMM and MedUni Vienna showed that the condition results from a mutation in a key signal pathway that is responsible for controlling immune cells.

The failure of the NIK gene means that immune cells can no longer perform their function of making invasive pathogens harmless. The findings were published in Nature Communications, and they will play an important part in gaining a better understanding of the human immune system as a whole, as well as leading to the development of new therapies in the long term.

### NEW INTERDISCIPLINARY CENTRE

CeRUD is a new centre focusing on interdisciplinary research into rare and undiagnosed conditions and their treatment. It was set up by the Departments of Dermatology and Paediatrics and Adolescent Medicine at MedUni Vienna, in collaboration with the Austrian Academy of Sciences' Center for Molecular Medicine (CeMM). The centre opened on 28 February 2014 – the date of global Rare Disease Day – with a major symposium for specialists, sufferers and the general public.

### A CAUSE OF DESPERATION

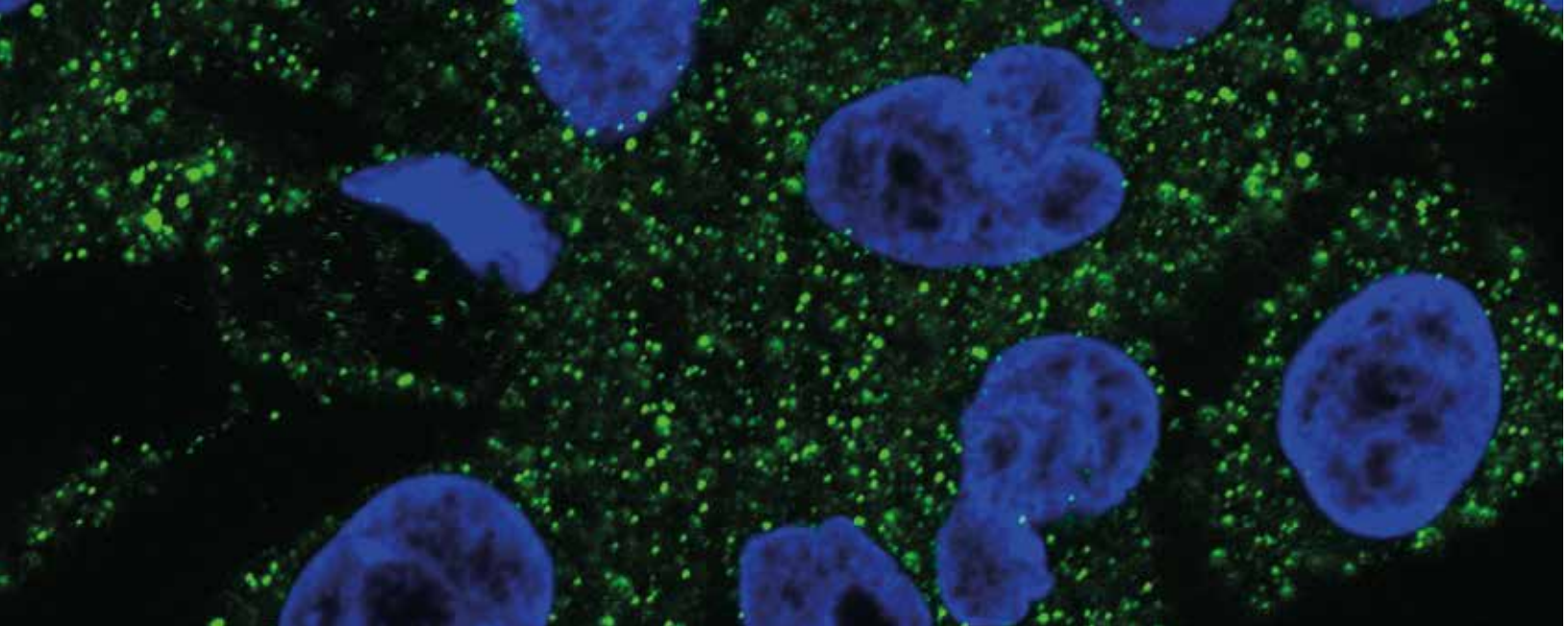
"Rare diseases are not rare at all, but part of our day-to-day clinical work," comments Kaan Boztug, a consultant at the Department of Paediatrics and Adolescent Medicine, who is also principal investigator at CeMM and the head of CeRUD. Resources and expertise have been bundled in the new centre in order to give sufferers support in finding the best possible care. Many patients are desperate and frustrated, having been pushed from pillar to post without being offered a precise diagnosis or suitable treatment. CeRUD aims to be a place where such people can turn for help. It is based

on models such as that adopted by the Undiagnosed Diseases Program (UDP) of the National Institutes of Health in Bethesda, USA, which is collaborating with the Viennese centre.

### GENETIC DEFECTS AS A POSSIBLE CAUSE

Although the centre and the bundling of activities there are new, the focus on this issue at MedUni Vienna and CeMM is anything but. The research team headed by Kaan Boztug has discovered a new genetic defect that causes a monogenetic form of a chronic inflammatory bowel disease that is combined with an immunodeficiency. Earlier research uncovered a previously unknown B-cell defect from which a 13-year-old patient had suffered since early childhood and which had not been diagnosed. This resulted in severe autoimmunity, which can now be treated more effectively. In another project, Boztug pinpointed the lack of a particular type of white blood cell (neutrophil granulocytes) as the cause of a hitherto unknown form of immunodeficiency.

[www.meduniwien.ac.at/cerud](http://www.meduniwien.ac.at/cerud) ●



# HIGH TECH TRUMPS THE MICROSCOPE

Two separate pathologists only give the same diagnosis in one out of three cases, as a study published in scientific journal PLOS ONE showed. New software developed by MedUni Vienna in conjunction with Vienna-based company Tissuediagnostics has helped to double diagnostic certainty.

## THREE NEW ENDOWED CHAIRS

Three new endowed chairs focusing on cancer research were established at MedUni Vienna and Vetmeduni Vienna at the start of 2014. The Ludwig Boltzmann Gesellschaft will finance the posts. The professorships are in Laboratory Animal Medicine – Laboratory Animal Pathology (at MedUni Vienna and Vetmeduni Vienna), Laboratory Animal Medicine – Translational Methods in Cancer Research (at MedUni Vienna and Vetmeduni Vienna), and Transgenic Models in Cancer Research (at MedUni Vienna). Turn to page 88 for further details.

**I**n pathology, cells and cell nuclei are usually examined for expressions of biomarkers in tumours using a microscope. This analysis forms the basis for evaluating the various treatment options, for instance in cancer cases. Diagnostic certainty is heavily dependent on the pathologist involved.

### NEW SOFTWARE DOUBLES DIAGNOSTIC CERTAINTY

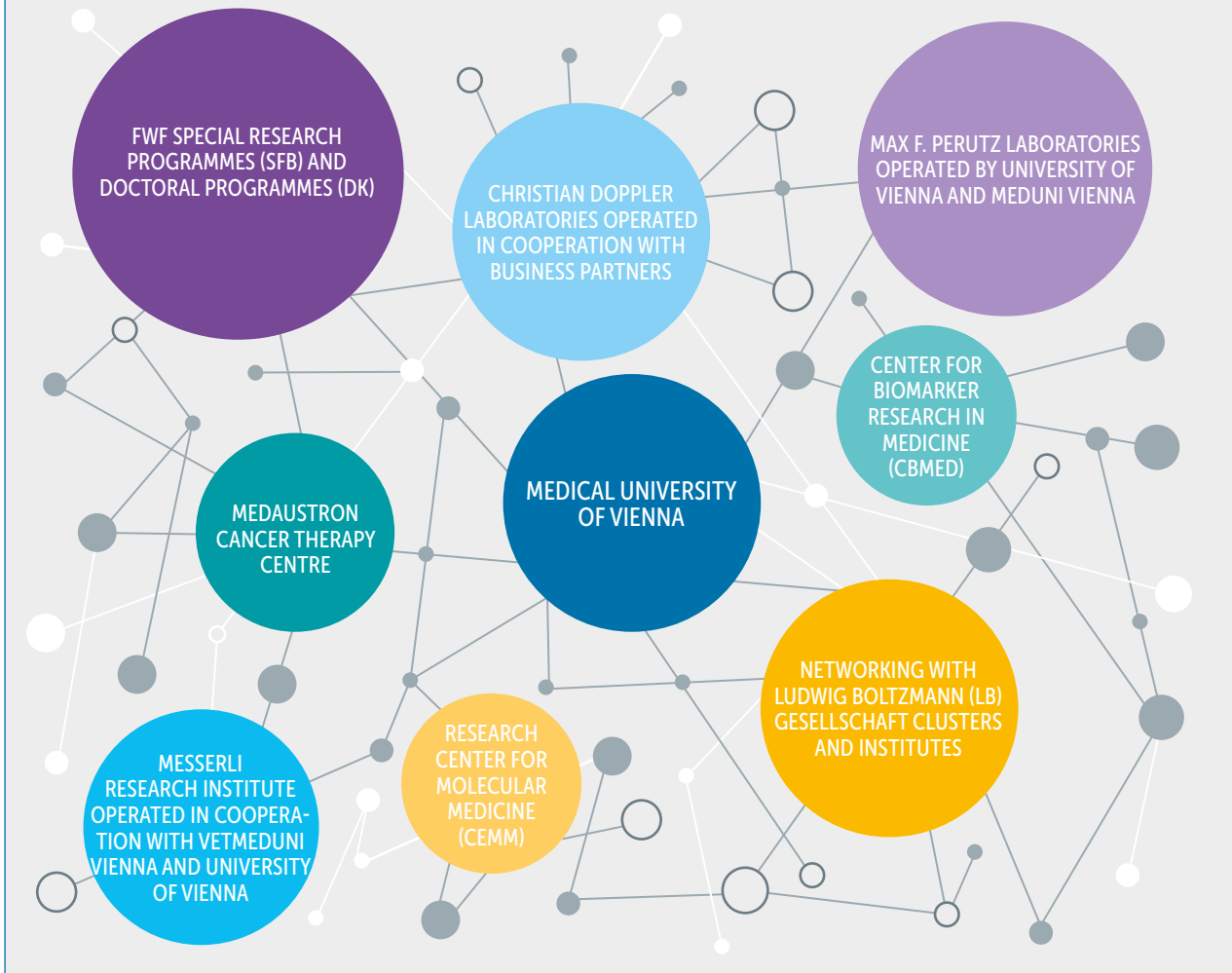
A study headed by Lukas Kenner and carried out by the Clinical Institute of Pathology at the Medical University of Vienna, the Ludwig Boltzmann Institute for Cancer Research (LBI-CR) and Vetmeduni Vienna revealed that two independent pathologists only give the same diagnosis in every third case. However, newly developed computer software will help to double diagnostic certainty in future.

### MORE ACCURATE CLASSIFICATION OF CHANGES IN CANCER CELLS

“Of course, the new program will not replace pathologists, but it is an additional method that significantly enhances the certainty of diagnoses,” comments Lukas Kenner. Experts at MedUni Vienna also believe that the new technology will allow for much more precise classification of changes in cancer cells, which are currently separated into four categories. More accurate categorisation could mean that doc-

# AT THE HEART OF A RESEARCH NETWORK

MedUni Vienna plays a central role in life sciences research in Austria. Various research consortiums have links to the University, or are headed or managed by MedUni Vienna experts.



tors have another tool at their disposal when it comes to selecting the most suitable, personalised course of treatment for patients.

## ADVANTAGES FOR PATIENTS – AND COST SAVINGS

Kenner points out two further benefits of the new software: "Cancer treatment is expensive. The new software will help physicians to assess more effectively when an expensive course of therapy is justified, and when such treatment is not necessary."

## TECHNOLOGY DELIVERS IMPROVED DIAGNOSIS OF CANCER CELLS

In the course of the study, scientists examined and analysed 30 liver cell carcinomas. Using the software developed by MedUni Vienna and Tissuediagnostics they then allocated the cells to categories ranging from negative to highly positive. Expressions of the proteins STAT5AB and JUNB in an aggressive T-cell lymphoma were also measured. The software uses a set of algorithms and high-sensitivity digital photography, presenting the matrix of cells and cell nuclei far more effectively than a microscope. ●

## TOP STORIES IN 2014

# SCIENCE MEETS INDUSTRY

With public finance in ever shorter supply, attracting third-party funding is a key success factor for universities. With this in mind, MedUni Vienna is looking to bridge the gap between basic research and its application in the economy.

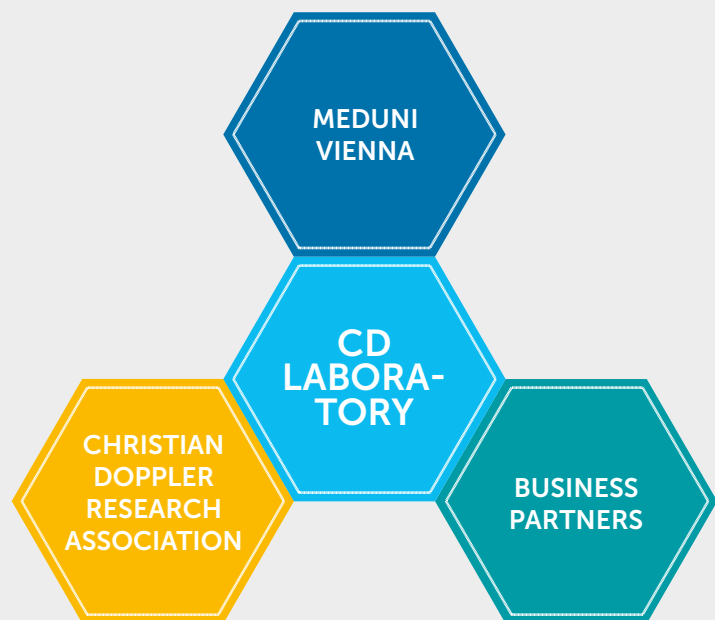
## SUPPORT FOR DRY EYE SUFFERERS

New CD laboratory examines potential of thiomers

Thiomers are modified biopolymers, a group of substances with outstanding potential for use in ophthalmology as they are suitable for the treatment of dry eye syndrome. Further research into their potential uses is one of the focus areas of the new Christian Doppler Laboratory for Ocular Effects of Thiomers. The researchers also aim to identify other possible applications in the field of ophthalmology.

MedUni Vienna has now established the following CD laboratories, which are intended to narrow the gap between basic research and industrial application by means of cooperation with businesses:

- Innovative Optical Imaging and its Translation to Medicine
- Complement Research
- Immunomodulation
- Development of Allergen Chips
- Cardiac and Thoracic Diagnosis and Regeneration
- Cardio-Metabolic Immunotherapy
- Recovery of Extremity Function
- Medical Radiation Research for Radiation Oncology
- Ophthalmic Image Analysis
- Ocular Effects of Thiomers
- Section for Molecular Genetics



Structure of a Christian Doppler laboratory

[www.cdg.ac.at](http://www.cdg.ac.at)



## NEW PRIZE AWARDED

Outstanding success: three from thirteen for MedUni Vienna

The best projects were nominated in the second call for the PRIZE 2014 award, which aims to promote prototype development as part of the knowledge transfer centre programme initiated by the Austrian Federal Ministry of Science, Research and Economy. The international jury selected 13 submissions which will each receive funding of up to EUR 150,000. These included three MedUni Vienna projects which secured a total of over EUR 200,000 in financing for the development of prototypes.

## MAKING MORE OUT OF SCIENCE

MedUni Vienna manages Knowledge Transfer Centre East

Four knowledge transfer centres based at Austrian universities opened at the beginning of August 2014. Their aim is to smooth the way for implementation of scientific insights and discoveries in the economy, bringing the worlds of research and business closer together in the process.

Funded by the Austrian Federal Ministry of Science, Research and Economy, the knowledge transfer centres and IP commercialisation programme was initiated as part of the country's Higher Education Plan. MedUni Wien coordinates the Knowledge Transfer Centre East.

## EGON OGRIS INVENTOR OF THE YEAR

An academic and outstanding innovator

In January 2014 Egon Ogris of the Section for Molecular Genetics at MedUni Vienna and an academic at the Max F. Perutz Laboratories was honoured as the University's 2013 Inventor of the Year. During the year, ten of his antibody technologies were commercialised under licensing agreements with eight different companies – the highest transfer rate for technologies developed at MedUni Vienna into the economy.



## INITS AWARDS FOR MEDUNI RESEARCHERS

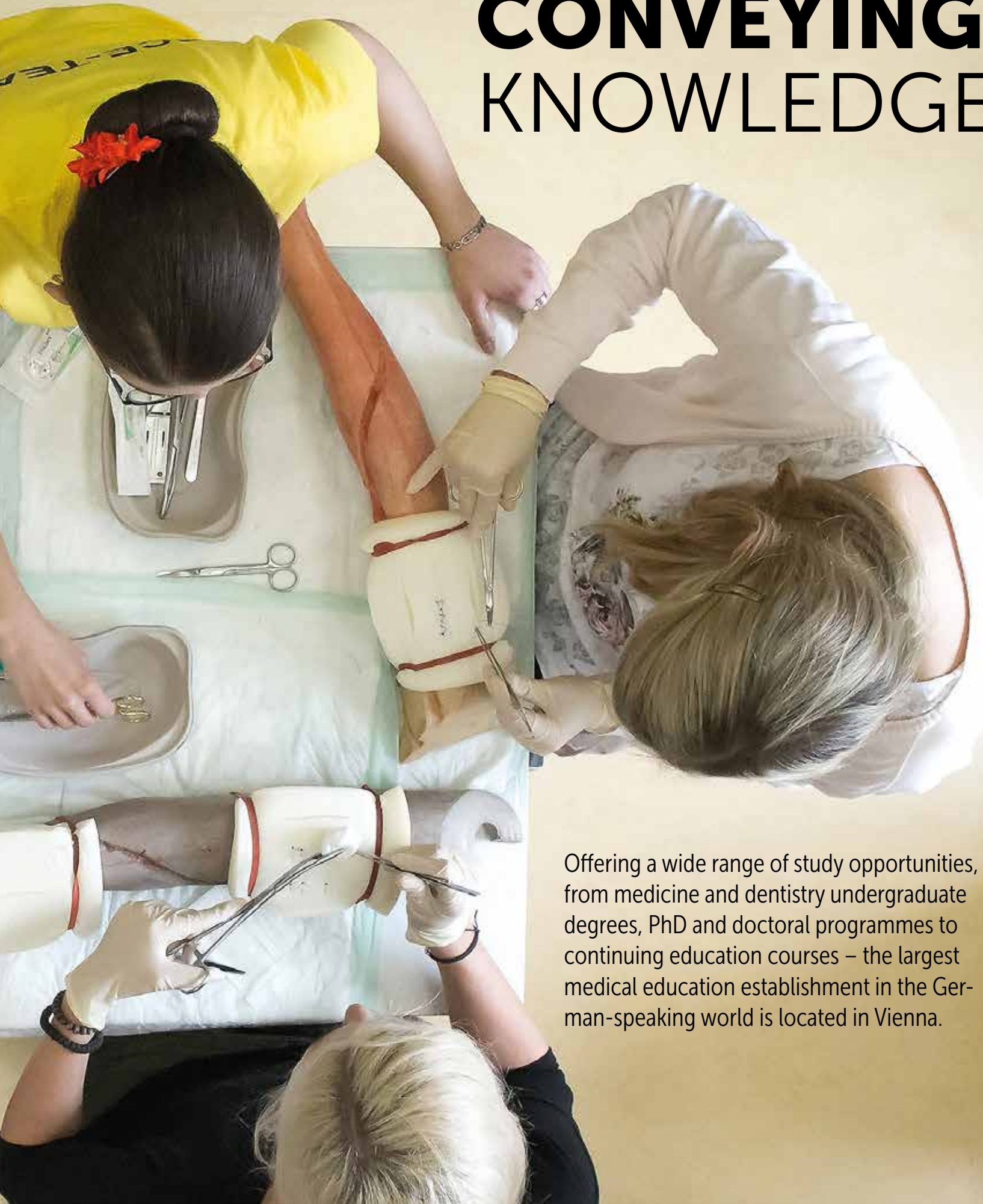
Business incubator INiTS honours new business ideas

A number of MedUni Vienna scientists were among the prizewinners at the tenth annual INiTS Award ceremony. The accolades are presented in recognition of innovative scientific work that has an economic application. Awards were presented to Petra Heffeter (first place, Life Sciences), Hady Haririan (third place, Life Sciences), Marion Prior (first place, Woman Award) and Stefanie Brezina (second place, Woman Award) of MedUni Vienna.





# CONVEYING KNOWLEDGE



Offering a wide range of study opportunities, from medicine and dentistry undergraduate degrees, PhD and doctoral programmes to continuing education courses – the largest medical education establishment in the German-speaking world is located in Vienna.



# THE CLINICAL PRACTICE YEAR: A MILESTONE IN THE DEVELOPMENT OF THE MEDICAL CURRICULUM

The clinical practice year was introduced in the winter semester of 2014. It is a structured programme with accompanying logbook and portfolio, accreditation requirements for teaching hospitals and a return week that has set new standards in both Austria and abroad.





## THE CLINICAL PRACTICE YEAR IN NUMBERS

The University provides 215 in-house placements at Vienna General Hospital in the 24 clinical sections of the university departments, five clinical institutes, two institutes and one clinical centre. A further 1,332 placements are offered at 84 training hospitals. Organised into components lasting a third of a year, there are a total of 404 places for internal medicine, 500 for perioperative care and surgery, and 643 for electives. Accredited training hospitals abroad, as well as the 20 general practices that are currently accredited to provide training, also offer placements.

**A** clear trend in medical education has emerged all round the world. In comparison with just a few years ago, medicine degree programmes are now much more practice based and have a stronger focus on problem-solving skills. At MedUni Vienna this paradigm shift began more than ten years ago, when an innovative new curriculum that put the emphasis on small group learning and clinical practice was introduced. The high point of the curriculum is the clinical practice year (CPY) that was launched in the winter semester of 2014.

### CLINICAL MENTORING

Replacing traditional approaches to teaching and learning, the focus of the CPY is clinical mentoring with short bi-weekly oral examinations and follow-up feedback sessions. The performance logbook previously used in phase three of studies has been revised and now takes the form of a CPY logbook, which in-

cludes detailed requirements and also documents the skills that have been acquired. Additionally, in a similar system to that used in continuing education courses, points are awarded for self-study tasks completed as part of a training programme. The 1:1 ratio of mentors to students ensures efficient teaching and effective learning.

### PREPARATION FOR THE HANDS-ON YEAR IN HOSPITAL

In preparation for the CPY, around 600 mentors, student coordinators and academic coordinators completed compact training courses provided by the curriculum and curriculum coordination management teams. In addition to agreements with Austrian training hospitals, the training agreements in place with foreign universities offer international mobility. The first CPY students attended compact courses to familiarise themselves with the logbook and portfolio, and to be given a general overview.

### ONE OF THE LARGEST TRAINING HOSPITAL NETWORKS IN EUROPE

The design of the CPY ensures that students have the opportunity to learn about many different areas of healthcare in clinical, solution-oriented environments. The number of students taking the CPY – over 600 for each intake – means that alongside the university departments of Vienna General Hospital, more than 80 other hospitals provide placements. The network of training hospitals MedUni has formed is one of the largest in Europe.

### TRANSPARENCY AND CONTINUOUS ASSESSMENT

The CPY is divided into two 16-week compulsory components: internal medicine, and perioperative care and surgery. Students can select from 46 electives for the final third of the year, and during return week back at the university, they undergo a final skills assessment. Training descriptions and learning objectives for all compulsory components and electives are published online in German and English, helping to ensure maximum transparency for students. CPY is subject to ongoing evaluation by the evaluation staff, and mentors, coordinators and students are invited to attend optional workshops to provide additional feedback which is then fed into the development process. External input is provided by an international advisory board. ●

## INTERACTIVE MEDICAL TEACHING

E-learning and interactive learning play an important role at MedUni Vienna. An example of this are the selected lectures, seminars and examinations employing voting technology to provide teaching staff with instant feedback on the students' understanding.

In the winter semester of 2013/14, over 700 students simultaneously participated in the lectures and seminars for block 26 (dermatology) held via a large interactive learning platform, and delivered in a format which alternated between lecture and question and answer session. Karl Kremser from the Department of Medical Education was very satisfied with the outcome: "This is the first time anywhere in the world that so many medical students have simultaneously participated in interactive learning of this kind."

## KICK-OFF FOR CURRICULUM DEVELOPMENT DIALOGUE

In the 2014 summer semester students, professors, and research and teaching staff embarked upon Forum MedUni, a Senate Curriculum Commission project to develop the medical curriculum at an interdisciplinary level. As a starting point, the forum uses innovative curriculums at universities abroad and the latest research findings.



#### New admissions

On 4 July 2014, 4,861 applicants took part in MedAT, the admissions process for the medicine and dentistry degree programmes in Vienna. 2,872 women and 1,989 men applied for the 740 available places, which were awarded to 393 women and 347 men. 660 places were available for medicine and 80 for dentistry.



#### Five years of interpersonal skills training

The compulsory course in social competence at Haus der Barmherzigkeit hospital has been preparing MedUni students for the delivery of empathetic and respectful patient care since 2009.



#### Initial clinical training

MedUni's Skills Lines courses provide students with practical training in clinical skills at an early stage of their studies (second year). The courses cover basic medical skills, physical examinations and consultation techniques and form part of the preparations for the first stage of clinical training.

# GROUNDBREAKING INTERNATIONAL COOPERATION AGREEMENTS

In May 2014 MedUni Vienna and Nanyang Technological University (NTU) in Singapore agreed to enter into a new research and teaching partnership: preparations for a joint PhD programme are now underway and experts from Austria will also provide support for the establishment of a medical imaging centre.

**M**edUni Rector Wolfgang Schütz and NTU's President Bertil Andersson signed two agreements that break new ground in international cooperation. MedUni Vienna and NTU will collaborate on a medical

technology PhD programme, and the two universities will also work together on a project to set up a centre for research into medical imaging, signal analysis and e-health. The Austrian Institute of Technology (AIT) is also a partner in the cooperation.

#### KNOWLEDGE TRANSFER AT THE HIGHEST LEVEL

Medical Imaging is one of the University's five research clusters – the other clusters specialise in cancer research/oncology, cardiovascular medicine, medical neuroscience and immunology respectively. International networks are a prerequisite for knowledge transfer in cutting edge research. Rector Wolfgang Schütz on the agreement with NTU: "In the last few decades, Singapore has developed into one of the most dynamic centres of academic research in the world. NTU is an outstanding strategic partner for us in the field of medical imaging, and we are very excited about collaborating with them."

#### YOUNG INSTITUTIONS ON THE UP

Two ambitious universities have teamed up for this partnership. NTU was founded in 1981 and is today one of Asia's leading universities. QS World University Rankings place it second in the world in their young institutions category, and 41st in their overall global ranking. In 2013 the first intake of students began their studies at the Lee Kong Chian School of Medicine – NTU's new medical school set up in collaboration with Imperial College London. NTU took fifth spot in the Times Higher Education 100 under 50 Rankings, a comparison of the best institutions in the world that are less than 50 years old. The Medical University of Vienna once again comes out as the top Austrian university in this ranking, and also moved up from place 49 to place 36. ●



From left to right:  
Christian Herold, Wolfgang  
Schütz, Bertil Andersson  
and Markus Müller.



## DOCTORAL AND PHD PROGRAMMES

More than 1,300 early stage researchers are currently engaged in PhD or other postgraduate doctoral studies at MedUni Vienna, with an international contingent of around 30%. PhD students are fully integrated into research groups, and their studies lay the foundations for their subsequent research specialisation. On receiving their PhD they already have numerous publications to their name, in many cases in leading journals. Admissions to the doctoral research programmes funded by the Austrian Science Fund (FWF) are subject to a two-stage selection process that incorporates international review. The applied medical sciences doctoral programmes provide in-depth training in applied biomedical research.

### PHD PROGRAMMES

- Molecular Signal Transduction
- Molecular Mechanisms of Cell Biology
- Medical Physics
- Neuroscience
- Malignant Diseases
- Endocrinology and Metabolism
- Vascular Biology
- Immunology
- Medical Informatics, Biostatistics and Complex Systems
- Inflammation and Immunity (IAI)
- Cell Communication in Health and Disease (CCHD)
- Molecular Mechanisms of Cell Signaling
- Structure and Interaction of Biological Macromolecules
- RNA Biology
- Molecular Drug Targets (MolTag)
- Molecular, Cellular and Clinical Allergology

### APPLIED MEDICAL SCIENCES DOCTORAL PROGRAMMES

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

# HEALTH EFFECTS OF MIGRATION

Immigration has a significant impact when it comes to health and is an important consideration in the context of the Austrian healthcare system. Diversity with respect to factors such as social status, cultural background and gender pose challenges which MedUni's new continuing education course aims to address.

**T**he provision of healthcare services to people with migration or refugee backgrounds is now routine, and the resulting wide social, ethnical, cultural and religious diversity is having a direct impact on the work of healthcare institutions. Hospital staff, general practitioners, specialists, chemists and other healthcare professionals must respond to the challenges that this presents.

## MIGRANTS AT GREATER RISK

It is often women in particular who suffer poor health. Low social status of women within the family is a common factor that impacts negatively on health, and this is frequently also tied up with poor working and living conditions and limited financial means.

However, the physical toll of migration is considerable for both men and woman.

## THE IMPACT OF LANGUAGE AND GENDER

Anita Rieder, Head of the Center for Public Health at MedUni Vienna explains: "The most common issues that come up in the course of everyday healthcare situations are problems with communication and providing care that arise due to language barriers." There are also socio-cultural influences, such as accepted gender roles, which come into play in the context of routine examinations.

## NEW CONTINUING EDUCATION COURSE

The new five-semester Transcultural Medicine and Diversity Care continuing education course at MedUni Wien seeks to address the migration related challenges that the healthcare sector is facing. It is currently the only programme of its kind in Europe and equips students with specialist expertise from the fields of medical anthropology, transcultural psychiatry, gender studies und migration research. ●

# MENTORING FROM SENIOR PROFESSIONALS

The Austrian Scientists and Scholars in North America (ASCINA) mentoring programme facilitates inter-university networking for MedUni students and graduates. In the 2014/15 academic year, 121 experienced mentors signed up to pass on their knowledge to the next generation of young academics.

**N**owadays, gaining experience abroad and building a network of contacts is important for professionals starting out on their careers. In October 2014 students and recent graduates from the University were invited to an Alumni Club information evening where they could find out all about the many benefits of the ASCINA mentoring programme.

#### ALUMNI CLUB SPONSORSHIP

ASCINA connects Austrian early stage researchers based in North America and Mexico with knowledge-

able and experienced mentors. Since mentors and mentees may be located at different sites, the MedUni Vienna Alumni Club provides sponsorship of up to USD 4,400 per mentoring pair to meet the cost of travel and communications.

#### EXPERT SUPPORT

121 senior mentors are taking part in the scheme in the 2014/15 academic year, comprising 112 medical experts, 8 dentists and a mentor for students who are pregnant or have a child. ●

## CONTINUING EDUCATION COURSES

The University's range of postgraduate continuing education courses is growing steadily. These programmes are particularly attractive as the part-time format means that students can combine work and study and the programmes also represent a direct route to becoming a specialist in the respective field. Taught by experts from Austria and abroad, and conducted in cooperation with other leading universities and educational institutions, each continuing education course offers postgraduate training of the highest quality.

[www.meduniwien.ac.at/ulg](http://www.meduniwien.ac.at/ulg)

- Ergonomics and Fitness for Work
- Clinical Research
- Gender Medicine
- Health Care Management
- Interdisciplinary Pain Medicine
- Clinical Trials Assistant
- Medical Hypnosis
- Medical Physics
- Periodontology
- Patient Safety and Health Care Quality
- Prosthodontics
- Psychotherapy Research
- Public Health
- Principles and Practice of Traditional Chinese Medicine
- Toxicology
- Transcultural Medicine and Diversity Care
- Medical Hypnosis for Dental Care

## TOP STORIES IN 2014

# MEDUNI VIENNA GOES PUBLIC

The University's core activities are research, patient care, and education and training, but it performs a range of other functions too. An important aspect of its educational work is awareness raising and providing medical-related information to the public.

## MINI MED AND MEDUNI VIENNA

Sharing knowledge with the general public

At the Mini Med lectures anyone with an interest in health and medicine has the chance to get up to date with the latest medical research – as explained by the researchers themselves. MedUni Vienna became a Mini Med partner for Vienna in 2014. Vice Rector Karin Gutiérrez-Lobos on the background to this cooperation: "Our educational remit goes further than the provision of courses for budding doctors, dentists and academics. The Mini Med lecture series gives the public the opportunity to find out about current scientific developments from the experts, and ask them questions of a medical nature."



## VISITORS FLOCK TO THE JOSEPHINUM

The Long Night of Museums

The Josephinum was a participant in Austria's Long Night of Museums at the beginning of October 2014, when around 1,000 visitors took the opportunity to view the University's historical collections. The museum holds a world-famous collection of wax models comprising approximately 1,200 specimens, a library of papers and publications dating from the 15th to the 18th century and numerous other collections.



## LIVE ARTIFICIAL HEART IMPLANT

The highlight of the Long Night of Science and Research

The most popular event at MedUni Wien during the Long Night of Science and Research was undoubtedly the live artificial heart implant at the Department of Surgery. Visitors could watch the implantation of the smallest heart assist pump in the world on a large screen in the lecture centre. The operation was carried out by heart surgeon Daniel Zimpfer and head of the Clinical Section for Heart Surgery Günther Laufer.

Almost 4,000 people attended the Long Night, with the slogan "Hands on with research and medicine", where 40 stations from the MedUni Vienna campus encouraged people to participate, mostly interactively. For instance, you could see your own DNA under a microscope or even try your hand at stabilising broken bones.





## TAKING CONTROL

Large scale continence patient event

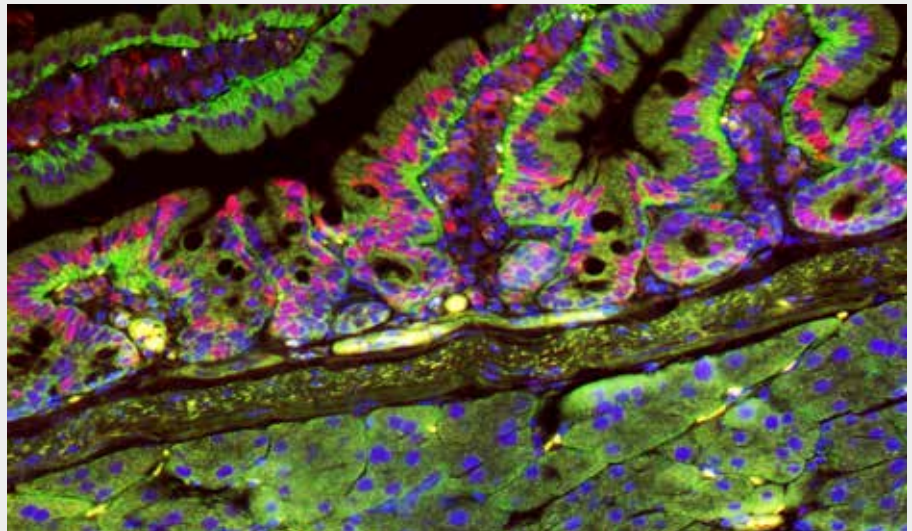
MedUni Vienna, Vienna General Hospital and the Austrian continence society Medizinischer Kontinenzgesellschaft Österreich teamed up to host the Taking Control continence patient event. After informative talks by MedUni and Vienna General Hospital experts on the latest findings in gynaecology, urology, surgery and physiotherapy, there was the opportunity to consult expert panels interactively and in detail on three topics – bladder diaries and continence training, pelvic floor training and biofeedback, and operations for weakness of the bladder, bowl and pelvic floor.

## CANCER SCHOOL

Cancer information event

The slogan for this event held by the Comprehensive Cancer Center (CCC Vienna) is "Let's learn about cancer". Experts give short talks about cancers, their causes and development, diagnostic techniques and therapy options, after which, the audience is invited to take part in informal discussions. In 2014, the 16 evenings with 48 talks followed by open discussions attracted around 1,100 participants.

[www.cancerschool.at](http://www.cancerschool.at)



## NEW EVENT HOTSPOT

Success for the new Van Swieten Saal

Over 100 events have taken place in the multi-functional hall since its opening in 2013. It has been the venue for academic conferences and lectures, workshops, panel discussions and gala occasions. This modern event location was created in the course of the renovation and conversion of the former Garnisonsspital army hospital to provide a flexible venue which would meet the needs of the life sciences community.



## HEALTH TALKS 2014

Another successful year for the popular discussion evenings hosted in collaboration with the Kurier daily newspaper

2014's series of five discussions focusing on the topics of genetic testing, allergies, chronic itching, rheumatism and vaccination were well attended. Since 2012 the Kurier, MedUni Vienna and Novartis have cooperated on this project to tackle topical health issues and inform the public about the latest research findings – and of course participation is absolutely free.



## BRAIN WEEK 2014

Ambitious initiative for schools by Center for Brain Research

The Center for Brain Research's annual schools initiative has already become an institution. Brain Week 2014 from 10-14th March comprised a wide range of lectures for children, young people and school classes on the fascinating subject of the human brain, with titles such as Teenagers think differently: the brain research that's trying to find out why, Epigenetics: how the lives we lead affect our genes and The Naked Ape?: evolutionary theory and brain research.



## PAGE BY PAGE

The historic collections of MedUni Vienna's Josephinum library contain many hidden treasures

Visitors have the chance to see these for themselves in the special Page by Page series of guided tours. The new series, which began in October 2014, gives the librarians the opportunity to regularly exhibit some of the rare treasures of the library's unique collections.



# PUTTING KNOWLEDGE TO USE

As one of the leading biomedical research institutions in Europe and Austria's most important healthcare provider, MedUni Vienna puts the latest research results directly into practice.







# BREAST CANCER: PET-MR MAKES EVERY SECOND BIOPSY UNNECESSARY

A clinical study at MedUni Vienna's Department of Radiology and Nuclear Medicine has shown that the use of positron emission tomography (PET) and magnetic resonance tomography (MRT) in combination radically improves the diagnosis of breast cancer.



**B**reast cancer is the commonest form of cancer in women. In Austria, 5,400 people a year are affected. When diagnosing, it is difficult to tell a harmless lump from a malignant tumour with certainty, so generally a biopsy is necessary.

## GREATER DIAGNOSTIC CERTAINTY

In the world's first clinical study of its kind, Katja Pinker of MedUni Vienna's Department of Radiology and Nuclear Medicine and Comprehensive Cancer Center (CCC) was able to demonstrate that combined use of the two most modern imaging technologies – mul-

## ETHICS COMMITTEE AND GOOD SCIENTIFIC PRACTICE

MedUni Vienna's Ethics Committee was set up in 1978. It plays a vital role in ensuring that ethical standards are maintained in scientific studies, and has made a significant contribution to the integrity of medical research. All clinical research projects must be submitted to the Ethics Committee before going ahead, to ensure that the rights of subjects and patients participating in the study are protected. Since 2004 the Ethics Committee has maintained Austria's first public register of clinical studies. MedUni Vienna also has clear guidelines for good scientific practice, which ensure that research activities are carried out correctly, transparently and systematically in accordance with international standards.

tiparameter positron emission tomography and magnetic resonance tomography – can achieve 96 % certainty in diagnosis. This means that half of all biopsies of non-malignant lumps in breasts can be avoided.

#### RADIOLOGY: SUCCESSFUL DETECTIVE WORK

Up until now, MRT and PET have always been used separately. Combining the two imaging processes makes it possible to obtain a wide range of information about key processes in mammary carcinogenesis simultaneously. As Pinker explains, "It's like hunting for a criminal. The more information you have, the easier it is to get on his trail." Thanks to this successful detection method, diagnosis of breast tumours can be

non-invasive and less unpleasant for the patients. The results of the study have been published in top journal *Clinical Cancer Research*.

#### AUSTRIA'S FIRST PET-MR DEVICE IN ACTION

MedUni Vienna and Vienna General Hospital have together invested €6.7 million in the combined device, which provides whole body scans and makes anatomical and metabolic data visible simultaneously. The PET-MR equipment is used among other things for cancer diagnosis, oncological treatment planning and therapy monitoring, and neurological and cardiological disorders. ●

## DETAILED MAP OF LANGUAGE CENTRES BEFORE BRAIN SURGERY

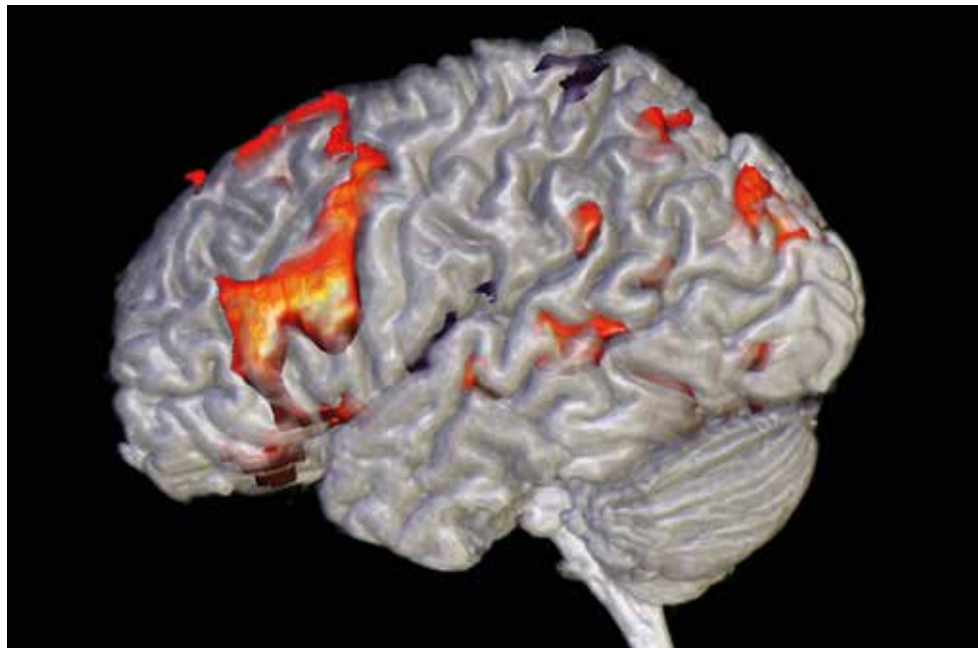
Neurologists at MedUni Vienna have shown that the areas of the brain important for understanding language can be significantly better identified using ultra-high field (7 Tesla) MRI.

**B**efore brain surgery takes place, it is important to know precisely the areas of the brain associated with language, so as to avoid damaging them during the course of the operation. Their position can shift significantly, particularly with brain tumours or injuries. If areas responsible for language control and processing are damaged in an operation, this can result in an inability to communicate. Today, functional magnetic resonance tomography (fMRT) is used to prepare a map of language control areas before surgery.

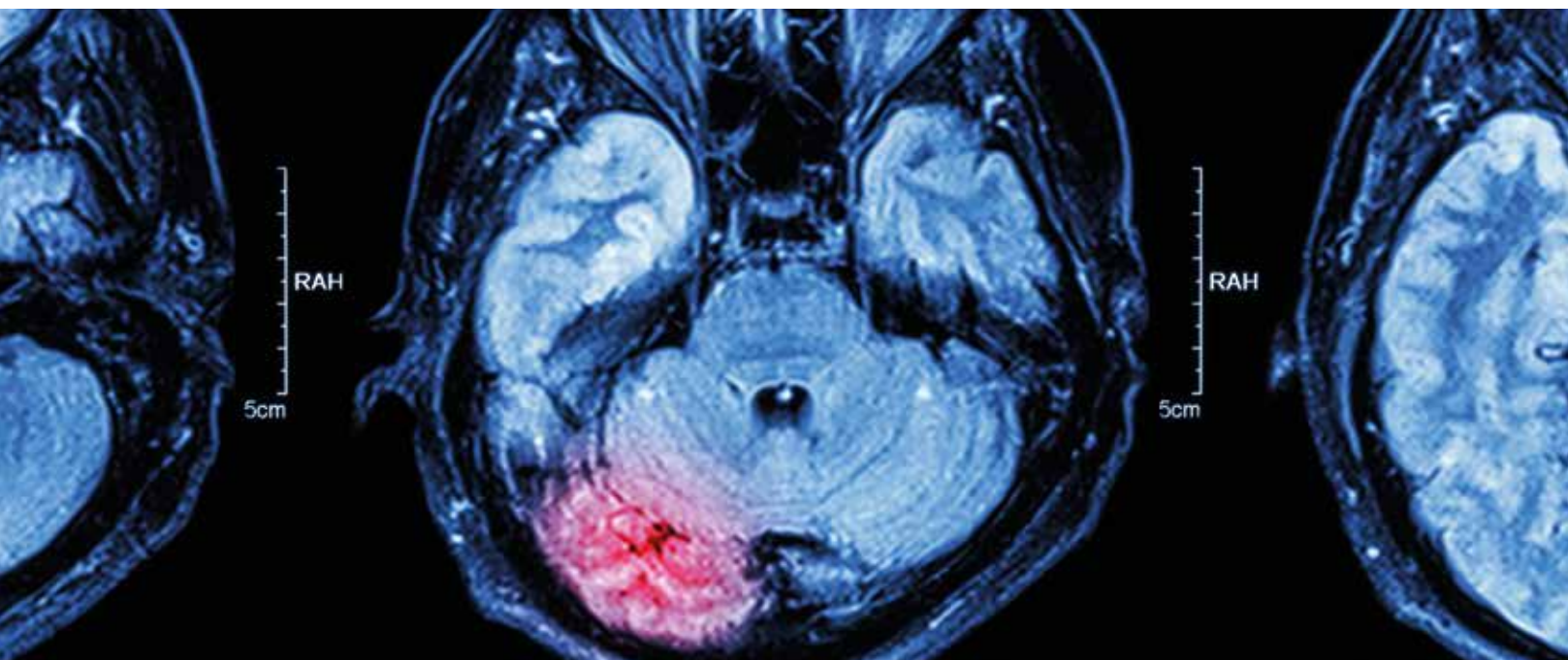
#### HIGH-TECH GIVES SIGNIFICANTLY BETTER RESULTS

A multicentre study in 2013 revealed the strengths of fMRT-supported localisation in the brain. This new investigation by the working group headed by Roland Beisteiner (from the University Department of Neurology) showed for the first time that the areas of the

brain important for understanding language could be pinpointed much more accurately using ultra-high field (7 Tesla) MRI than with conventional clinical MRI scanners. ●







# 50 YEARS OF NEURO-SURGERY IN VIENNA

The anniversary was celebrated with a meeting of the Austrian Society for Neurosurgery and the World Academy of Neurological Surgery (WANS) in the Leopold Museum.

**N**eurosurgery has been an independent specialist field in Vienna since 1964. Its origins lie even farther in the past, towards the beginning of the last century. In 1904 Anton Eiselsberg was the first to operate on the brain, removing a malignant tumour (glioma). "This can be seen as the birth of neurosurgery," explains the Head of MedUni Vienna's Department of Neurosurgery at Vienna General Hospital, Engelbert Knosp. For many years neurosurgery was part of the Department of Surgery. It was spun off as a separate department in 1964 and a chair was created in the Medical Faculty of the University of Vienna.

## 2,000 OPERATIONS AND 10,000 TREATMENTS EVERY YEAR

Another milestone was the construction of a new building for the Department of Neurosurgery at Vienna General Hospital: planning started in 1977, and the new building was opened in 1984. There are currently 60 beds for patients. The four operating theatres handle 2,000 operations a year, and there are 10,000 treatments in the special outpatient clinics. The only neurosurgical intensive care unit in Austria makes it possible to carry out especially complicated neurosurgical operations in Vienna.

## TINY ROBOTS FOR EVEN BETTER TREATMENT

The use of state-of-the-art imaging technologies has revolutionised neurosurgery, for example the removal of aneurysms in the brain or the detection of malignant tumours using fluorescence imaging. And the future is already with us, according to Engelbert Knosp: "The latest advance is the use of robots for various neurosurgical interventions. This enables us to locate and operate on targets in the sub-millimetre range." ●



# AUSTRIAN FIRST: VACCINATION CLINIC FOR AT-RISK GROUPS

Special protection for at-risk groups: Austria's first special vaccination clinic for outpatients has opened at MedUni Vienna's Institute of Specific Prophylaxis and Tropical Medicine.

**H**igher-risk patients are being given individual attention at a new special vaccination clinic. Target groups include cancer sufferers, patients with autoimmune disorders or defects or suffering from immunosuppression, post-transplant patients, obesity sufferers, patients with allergies, and people with migration-related health risks. Pregnant patients are also included, because the mother's immune system may be weakened by its need to protect the unborn child.

## OPTIMISED CARE AS GOAL

Special treatment is necessary because chronic illnesses or other concurrent treatment can lead to increased risks of infection. "Our goal is to treat these patients individually and optimally, taking into account underlying disorders and existing therapy," explains Ursula Wiedermann-Schmidt, Head of the Institute of Specific Prophylaxis and Tropical Medicine and medical director of the newly established clinic. The most modern tests are used as the basis for an individually tailored vaccination plan. Patients at risk can also get the standard traveller vaccinations here.

## FIRST POINT OF CONTACT FOR AT-RISK CASES

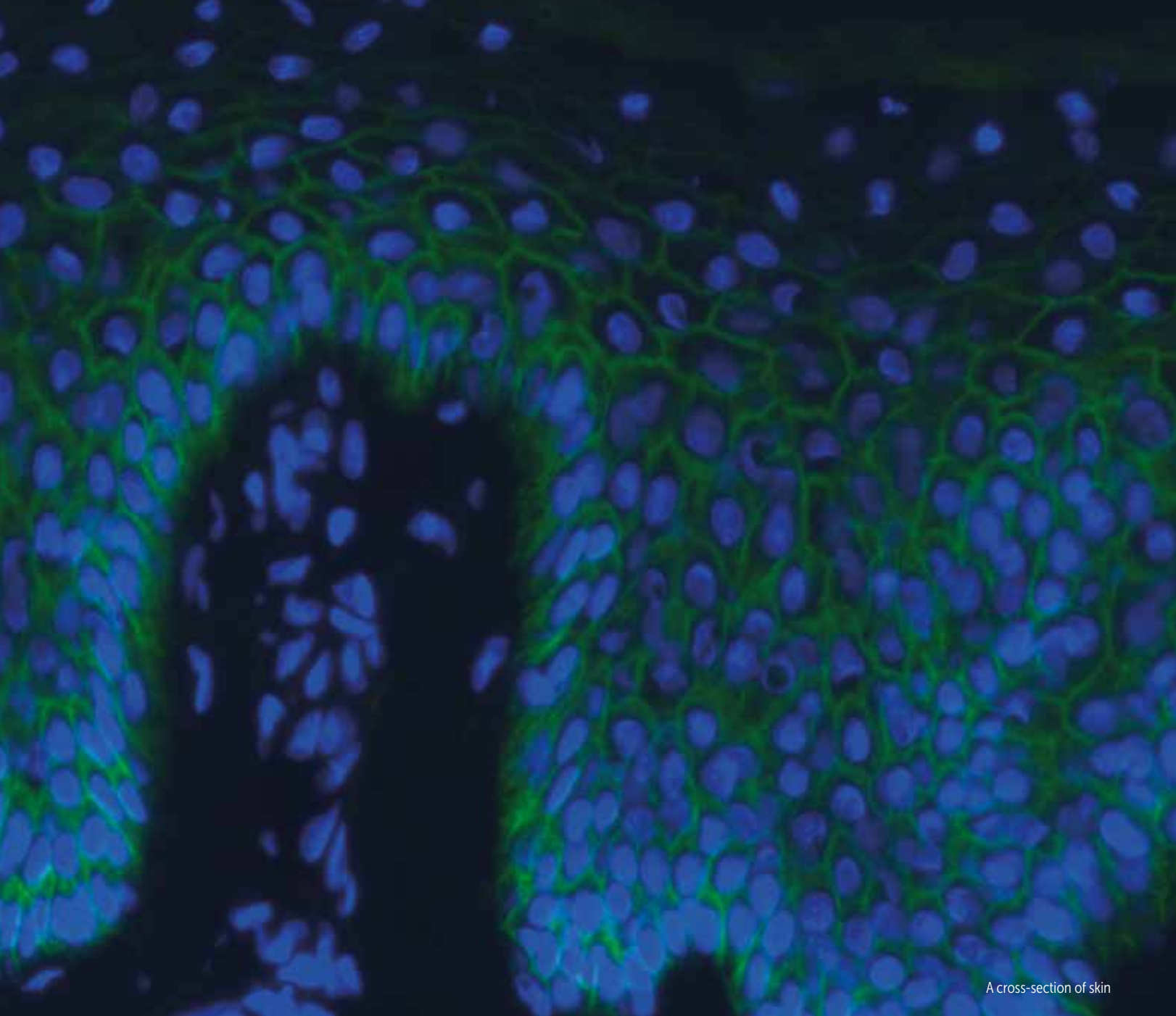
The aim is to work closely with patients' doctors and the hospitals. "We are offering our colleagues the op-

portunity to refer risky cases to us or to consult us," says Wiedermann-Schmidt. Other people can also get the vaccinations recommended under the Austrian vaccination programme in the clinic, and MedUni Vienna's staff and students can also receive the vaccinations recommended for health care staff. ●

Austria's first special  
vaccination clinic  
Kinderspitalgasse 15,  
1090 Vienna,  
ground floor



# CANCER PATIENTS: CCC SIGNIFICANTLY INVOLVED IN EUROPEAN CHARTER



A cross-section of skin

On 4 February 2014, World Cancer Day, top ranking oncologists unveiled the European Cancer Patient's Bill of Rights, the first European charter of rights for cancer patients, in Strasbourg. The Comprehensive Cancer Center (CCC), headed by Christoph Zielinski, Head of the University Department of Internal Medicine I and its oncology section, played a key role in the creation of this ground-breaking charter.

**A**ccording to the European Cancer Concord (ECC), each year roughly 3.5 million people in Europe are diagnosed with cancer and around 1.75 million cancer patients die from a form of the disease. Highly respected journal The Lancet has reported that the example of cancer highlights the growing differences between countries within Europe. In order to achieve a uniform European standard for the treatment of the disease, the ECC – an initiative sponsored by patient groups and leading oncologists – has drawn up the European Cancer Patient's Bill of Rights.

#### THE SAME RIGHTS FOR ALL EU CITIZENS

The central requirements of the Bill, presented to the European Parliament in Strasbourg, are the right of every European citizen to be given precise information about his or her disease and to be proactively involved in its treatment, the right to prompt access to the most appropriate, specialist treatment based on innovative research and the right to expect treatment in healthcare systems that guarantee optimal outcomes, patient rehabilitation, the best quality of life and affordable healthcare.

#### MILESTONE FOR PATIENTS

"The introduction of the European Cancer Patient's Bill of Rights is a milestone, since there are now finally standards that can provide benchmarks," explains Christoph Zielinski. "They give patients a means of

highlighting any shortfalls in comprehensive national action plans for cancer monitoring or, for example, the lack of access to adequate care. In the long term, this will help to improve and even out the level of care across Europe."

#### KREBSHILFE: AN APP TO REPLACE GOOGLE

The results of another important project to help cancer patients and their families were announced in January 2014. Since the start of 2013, the Division of On-

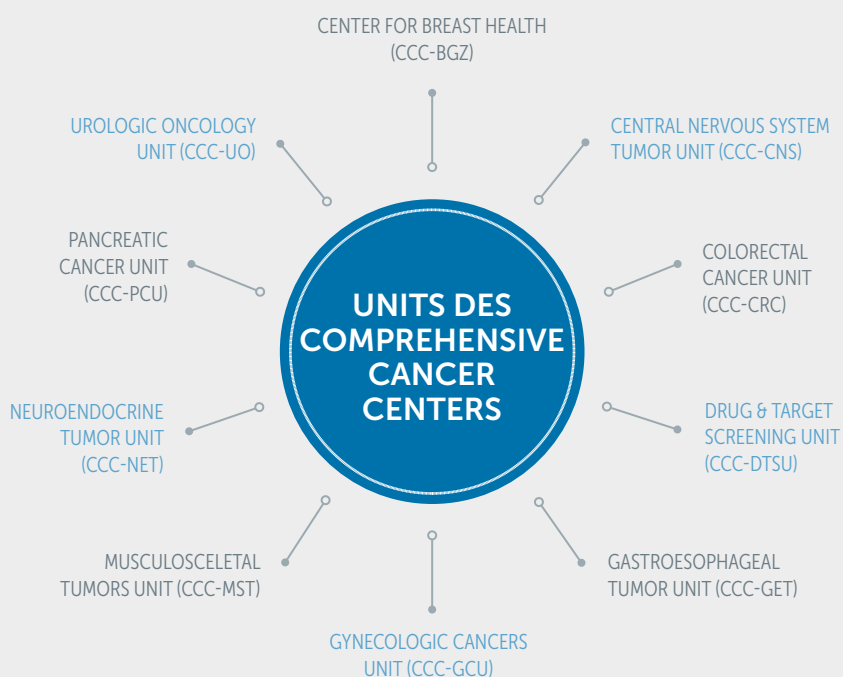
## CANCER RESEARCH AND ONCOLOGY RESEARCH CLUSTER

MedUni Vienna and Vienna General Hospital have established an interdisciplinary centre, the Comprehensive Cancer Center (CCC), on the basis of the Cancer Research/Oncology Research Cluster. A joint facility of the University and the Hospital, the CCC combines interdisciplinary patient care with clinical and basic research, and world-class academic teaching. Patients benefit from the innovative procedures and technologies in both diagnosis and therapy available to the experts working at the CCC thanks to the close links between care and scientific research.

[www.ccc.ac.at](http://www.ccc.ac.at)

## CCC UNITS

The aim of the interdisciplinary units of the CCC is to network and bundle activities in the various areas of oncology, so as to ensure the best possible interdisciplinary patient care and research and teaching at the highest level.



cology, Austrian Cancer Aid, and the initiative "Leben mit Krebs" (living with cancer) had been working on the first German-language app for cancer sufferers and their relatives. The app KrebsHILFE (available for iOS and Android) is designed to be a practical help for people looking for information about cancer and cancer therapy. It provides extensive information and tips on such subjects as side effects, nutrition, rehabilitation, cancer and working, and immediate support from Austrian Cancer Aid.

### PATIENTS THE FOCUS AT THE COMPREHENSIVE CANCER CENTER (CCC)

Participating in the creation of the European Cancer Patient's Bill of Rights and launching the app KrebsHILFE are only two of the projects with which the CCC actively supports patients and their rights. To give patients more political weight, the CCC supports and sponsors patient advocacy groups such as Patient Advocacy for Adolescents and young Adults with Neoplasia (PAN) and Europa Donna, the European Breast Cancer Coalition. These patient interest groups aim to strategically support the rights of cancer patients. Another of the CCC's major projects is the Cancer School, which offers normal people affected by the disease the chance to learn about it.

### TUMOR BOARDS FOR THE BEST POSSIBLE THERAPY

The CCC's tumour boards are of outstanding importance. These conferences generally take place once a week. They are the basis for interprofessional oncotherapy recommendations and are the key to optimally tailored treatment for each individual patient and including everything known about the specific illness from all the relevant disciplines. As diagnosis and treatment of tumour diseases become more complex, the integration of specialist expertise from different medical disciplines is of ever growing importance.



Roughly 3,500 participants joined the 8th Cancer Research Run organised by MedUni Vienna's Cancer Research Initiative. Including the contributions of partners and sponsors, the event raised €100,000 for cancer research projects.



### REGISTER OF STUDIES PROMOTES CLINICAL SCIENCE

Austria's first register of clinical studies in oncology serves to support cancer patients. The register of oncological studies lists all of the oncological studies currently in progress at MedUni Vienna. Doctors have access to information on the studies under way at any given time, so that their patients can participate in them where appropriate. This also simplifies the recruitment of suitable patients for the studies, encouraging the ongoing development of clinical cancer research. ●

## IMMUNOTHERAPY FOR PROSTATE CANCER IN SIGHT

An international study in which MedUni Vienna participated gives hope for patients with advanced prostate cancer.

Ipilimumab may be licensed for immunotherapy in the treatment of what is the third commonest form of cancer worldwide in only a few years' time. Ipilimumab shows clear, positive effects in the treatment of patients who fail to respond to existing hormone therapies and chemotherapies. This is the key message of a study published in leading journal *The Lancet Oncology*. The study was the collaborative work of the world's leading centres for research into and treatment of carcinoma of the prostate.

The scientists investigated the extent to which the use of this agent in immunotherapy was also appropriate for advanced prostate cancer. The drug is already being used successfully in immunotherapy of advanced melanomas. Michael Krainer, leader of the urological tumours working group in the Division of Oncology at MedUni Vienna, which played a major role as the leading recruiting centre for Germany and Austria, comments on the results of the study: "For us it is almost a miracle that the therapy shows such a marked effect even in this very late stage of the disease."

# DENTISTRY: DIGITAL REPLACES ANALOGUE

The University Clinic of Dentistry Vienna is a trailblazer in digital dental impressioning. In 2014 more than half of patients enjoyed the benefits of the new technology, which is particularly advantageous in complex cases.

**T**he University Clinic of Dentistry is fully committed to the use of digitalised dental impressions: since its introduction in 2011, the technology has come to be used more than 50% of the time, and in some areas the percentage is even higher. The use of modern CAD-CAM equipment for digitalisation makes it possible for dental laboratories to use novel innovative materials, with a consequent improvement in work processes. Another advantage for both patients and their dentists

is that the data from the impression is stored and can be reused at any time. The data can also be used to produce physical models.

Systems and products from various manufacturers are used both for digitalisation and in the dental lab in a wide range of different applications. This means that the University Clinic of Dentistry with its clinical digital workflows is very well positioned in the making of digital impressions and caring for patients in highly

## RESEARCH CLINIC AND DENTAL RESEARCH SUPPORT



The research clinic set up in 2014 serves as the point of contact for the staff of the University Clinic of Dentistry Vienna who wish to carry out research projects in collaboration with one of the Competence Centers. With the help of the members of the research clinic – the heads of the Competence Centers – research ideas are elaborated, funding instruments are selected, and funding applications are prepared.



complex cases. The Clinic is also among the leaders in research and development of dental technology, with a range of own inventions and its involvement in industrial production of test series.

#### COMPETENCE CENTRES STRUCTURE RESEARCH PROJECTS

In 2014, six competence centres were established in the University Clinic of Dentistry to further enhance research performance. Existing competencies are ex-

Research support helps scientists engaged in fundamental and applied research with external funding applications, organising and running scientific retreats, carrying out research activities, and stimulating new research. The work is made transparent, both for staff and the public, with regular scientific publications and publications aimed at the general public. Scientific collaboration is encouraged: in 2014, for example, the seminar series “Scientific Tuesday” was launched, to promote scientific exchange with internal and external experts.

tended, bundled and focused in these new research units.

The Competence Center for Dental Materials develops preclinical test procedures for assessing the patient risks of dental materials. In the Competence Center for Oral Biology, basic research results from cell and developmental biology and from genetics and materials science are used to develop new dental therapy strategies. The Competence Center for Oral Microbiology and Hygiene carries out routine clinical investigations in oral microbiology and conducts fundamental research.

The Competence Center for Periodontal Research does research into pathogenesis and the molecular and cell-biology basis of periodontal disorders and the mechanisms involved in their healing, while the Competence Center for Tissue Engineering and Cell-Based Therapies specialised in the application of tissue engineering in regenerative dentistry. The Competence Center for Morphology focuses on experimental histology research, with the aim of improving diagnostics and therapy in trauma surgery, critical care medicine and dentistry. ●

# A NEW KIDNEY WITHOUT SIDE EFFECTS

Taking immunosuppressive drugs often has serious side effects. Research teams at MedUni Vienna have achieved the first successes in increased tolerance of transplanted organs – without the use of immunosuppressants.

**P**atients who receive organ transplants must take medication every day for the rest of their lives. The drugs suppress the body's immune response, which would otherwise recognise and reject the foreign organ. The side effects can be considerable: transplant patients frequently suffer from higher rates of infection and a higher incidence of tumours, as well as from diabetes and high blood pressure. In addition, even in spite of the medication gradual rejection of the transplant can occur. "Not to need such drugs any more would enormously enhance patients' quality of life," emphasises transplant immunologist Thomas Wekerle of MedUni Vienna.

## BONE MARROW TRANSPLANT SUCCESS

That this could one day become reality is shown by the sensational case of a young patient who – after a bone marrow transplant and a subsequent kidney transplant – is able to do without immunosuppressive drugs entirely. The patient had a tumour and was given a bone marrow transplant at St. Anna Children's Hospital.

## RESULT – IMMUNE TOLERANCE

Years later, the failure of a kidney meant a kidney transplant at Vienna General Hospital. What was special about the case was that both bone marrow and

kidney came from the same donor, so that the patient had immune tolerance of the kidney and there was no threat of rejection. Since then the patient has had no problems and needs no immunosuppressive drugs.

## INTERDISCIPLINARY TEAM – KEY TO SUCCESS

Treatment of this degree of complexity was only possible on the basis of the cooperation of a multidisciplinary team from MedUni Vienna and Vienna General Hospital. In addition to staff from St. Anna Children's Hospital, specialists in surgery, haematology, nephrology, blood group serology, pathology and transplant immunology were involved.

## NEW ROUTE TO TOLERATION OF DONOR ORGANS

Research teams at MedUni Vienna are pursuing tolerance induction and have initial successes to report. Wekerle comments on the research: "Our goal is to be able to transplant bone marrow without having to give the patient the drastic preliminary treatment that is necessary when the transplant is needed to treat a tumour. Only if this is possible will the procedure become part of everyday clinical practice in organ transplants." Recent research results show that bone marrow transplants without toxic effects are possible in principle. ●





## VIENNA A LEADING CENTRE FOR TRANSPLANTATION

Thanks to MedUni Vienna's achievements, Vienna General Hospital is internationally one of the most successful centres for organ transplants. Its 120 lung transplants, for example, make it the third largest centre in the field worldwide. Vienna also enjoys an international reputation for heart transplants and the implantation and development of artificial hearts. The establishment of a chair of transplantation immunology in 2012 signalled new priorities and strengthened Vienna's leading position in transplant medicine. MedUni Vienna's Department of Ear, Nose and Throat Diseases also leads the way in the development and introduction of cochlear implants (electronic hearing aids), while the Division of Plastic and Reconstructive Surgery has a strong reputation in bionic reconstruction for arms and legs.

# UNIVERSITY MEDICINE VIENNA 2020 CONFERENCE

Interim report on the joint project by Austria's biggest hospital and largest medical university: on 19 September 2014 the management of Vienna General Hospital and MedUni Vienna received a report on the work of the team so far on the University Medicine Vienna 2020 project.

**A** forward-looking conference included progress reports on the most important aspects of the University Medicine Vienna 2020 project, followed by discussions. Since January 2013, work on a model for future collaboration – commissioned by the City of Vienna (the hospital provider), and MedUni Vienna (and the Federal Ministry for Science and Research) – has been intense. The project has two overarching goals:

- the creation of a shared vision of the future development of Vienna General Hospital on which the City of Vienna and MedUni Vienna agree, and
- the creation of a model for long-term collaboration that will be beneficial to both parties.

It is vital that the outstanding position of university medical care in Vienna be preserved and extended, as well as the closest possible integration of patient care, research and teaching. Three sub-projects have been started to achieve these goals – the medical masterplan, establishing a centre-based organisational structure, and operational management. They focus on the medium-term and long-term challenges, and the design and implementation of possible solutions.

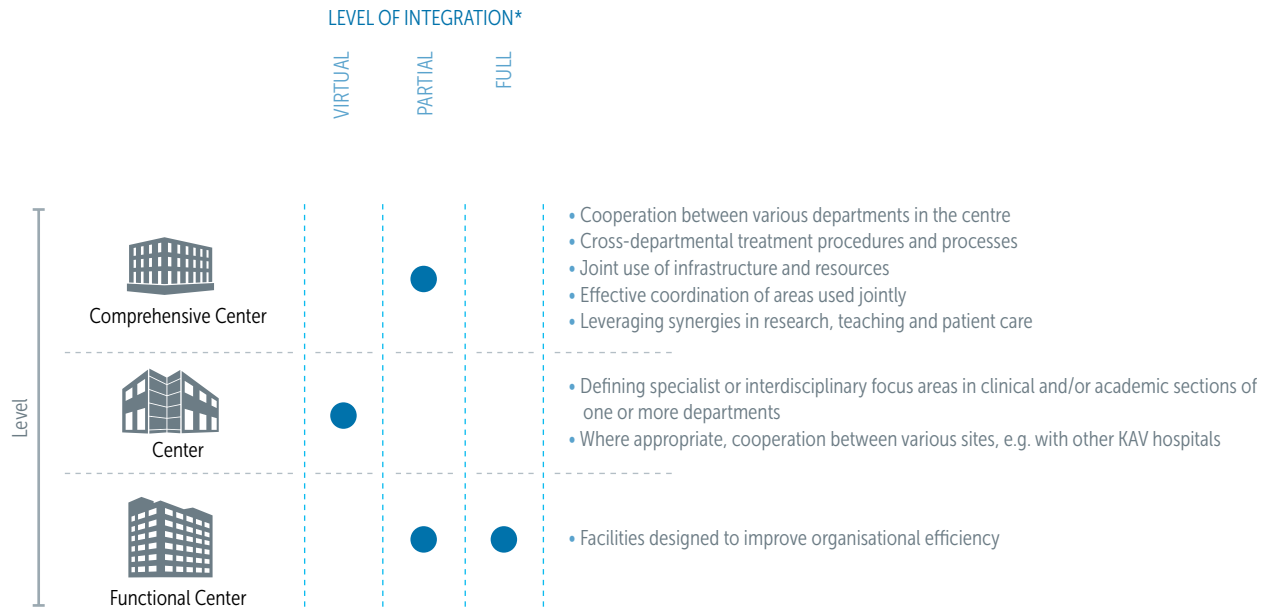
## OPERATIONAL MANAGEMENT

In the summer of 2013 the City of Vienna and MedUni Vienna signified their support for a new model as the basis of future collaboration. As the next step, a model for operational management was developed and agreed: it consists of two jointly appointed boards, a Supervisory Board and a Management Board, with clearly defined responsibilities. The function of the Supervisory Board is strategic – it will be responsible for proposing and approving strategic goals – while the Management Board will be responsible for the operational implementation of the goals established by the Supervisory Board. The details are currently the subject of legal review and will then be finally agreed between the two parties.

## MEDICAL MASTERPLAN AND CENTRE-BASED ORGANISATION

The other two sub-projects are also intended to underwrite Vienna General Hospital's performance potential and its national and international importance in patient care, research and teaching. The medical masterplan will define focus areas in patient care and clinical research, consistent with MedUni Vienna's development plan. The services underlying

## PLANNED INTERDISCIPLINARY CENTRES



\*Five criteria for assessing level of integration: facilities, organisation, finance, personnel and hierarchy

these focuses provide the strategic foundations of the buildings and equipment plans and staff planning. They are also to be included in structural health planning for the Vienna region.

The centre-based structure sub-project is designed to institutionalise interdisciplinary collaboration in the context of university medicine. The medium-term aim is to tie in other hospitals, so that Vienna General Hospital can function as a "centre of centres."

One such already established centre is the Comprehensive Cancer Center, in which cancer experts with the widest range of specialisms collaborate highly successfully. A cardiovascular centre and centres for neurosciences and perioperative care are planned to follow. The underlying strategic goal is internationally competitive positioning and a more clearly defined profile for Vienna General Hospital and MedUni Vienna in patient care, research and teaching.

### IMPROVING ON WHERE WE STAND

The background to the University Medicine Vienna 2020 project is the unusual organisational structure of Vienna General Hospital, with two distinct owners and employers. The doctors at Vienna General Hospital are all MedUni Vienna staff, and their salaries are ultimately paid by the federal government. The City of Vienna – via Vienna Hospitals Association (KAV) – is the provider of the largest hospital in Austria. Nursing and administrative staff are employed by the City of Vienna. In practice, this arrangement hinders the University's research and teaching activities, since the day-to-day running of the hospital takes up a major portion of doctors' time. Implementation of the current project should result in significant improvements. ●







# MANAGING KNOWLEDGE

30 university clinics and clinical institutes, 12 medical science centres and departments and various service facilities make up the structure that supports MedUni Vienna's work.







# TWICE THE OPPORTUNITIES THANKS TO THE DUAL CAREER SERVICE

A new human resources initiative will make MedUni Vienna an even more attractive employer: the dual career service helps partners of newly appointed professors to find a position themselves.

**M**ore often than you might expect, appointments of top international academics fall through because of a seemingly mundane hurdle, when the candidate's spouse or partner does not find a suitable opportunity for their own academic career. The new Dual Career Service for Vienna, Lower Austria and Upper Austria is an initiative of the Universities Austria (uniko) gender and diversity task force, which is led by MedUni Vienna Vice Rector Karin Gutiérrez-Lobos. The service helps couples to tackle this and similar obstacles when moving to a different city, as does the Dual Career Service Support provided by the Vienna Science and Technology Fund (WWTF).

#### KEY FACTOR WHEN COMPETING FOR THE BEST TALENT

Thanks to the new advisory service, top international academics and their partners can make a well-informed decision about moving, with a realistic picture of prospective career opportunities. Couples and their families also receive support to help them get their bearings and settle in quickly and easily once they move. WWTF and uniko already have considerable experience in this area, a topic that is becoming increasingly important in the scientific community and can be a decisive factor in the competition for securing the best talent.

Karin Gutiérrez-Lobos comments: "I see it as a priority to support dual career couples in balancing their responsibilities to their professions, careers and families, and to help increase international diversity at the universities located in Vienna, Lower Austria and Upper Austria. As universities we have an opportunity to open up and implement a range of models for balancing life and career that will set precedents for future generations."

#### ATTRACTIVE UNIVERSITY LOCATIONS IN AUSTRIA

The Universities involved in the regional Dual Career Service offer information on a wide variety of issues, ranging from family matters such as kindergartens, schools, housing and taxes, to useful tips on adult education and training, leisure activities and health, as well as entering the country and official registration in the new city. Regular contact between universities, allowing them to share lessons learned, ensures that advice and support can be provided to dual career

couples on an individual, personalised basis. They are also given support in getting in touch with other university services.

#### BALANCING WORK AND FAMILY LIFE

MedUni Vienna's Families Service is dedicated to helping with another key career issue, offering information and support on everything to do with combining working or studying with family life. Family is understood in a very broad sense in this context and can mean parents with children, same-sex or heterosexual life partnerships, commitments to siblings and grandparents, or relatives who require care. Combining family commitments with work or study has been a focal issue for the Medical University of Vienna since 2010.

#### CAREERS AND STAFF DEVELOPMENT

Besides the new Dual Career Service, MedUni Vienna's Human Resources Development department offers employees a range of other career development services. Staff can receive an individual assessment to look at their current situation and prospects, which makes use of a number of tests as well as professional career counselling. Further services include Scient-MedNet, offering development specifically for early stage researchers, and an office management course that can be taken by administrative staff working in departments or other units at the University. ●

## UNIVERSITY CONFLICT COUNSELLORS

Following completion of a pilot scheme in the 2012/13 academic year, 30 conflict counsellors have been in place at MedUni Vienna since the beginning of March 2014. Counsellors have professional training and provide support to staff on all matters to do with conflict at work. They are qualified to provide counselling to individuals as well as to moderate group counselling, and will receive training on an ongoing basis, focused on conflict advice and management. The service was initiated by Karin Gutiérrez-Lobos, Vice Rector for Education, Gender and Diversity, and is rooted in the principles of professionalism, independent advice, impartiality and confidentiality.

# FACTS AND FIGURES

## GENERAL

### EMPLOYEES\*

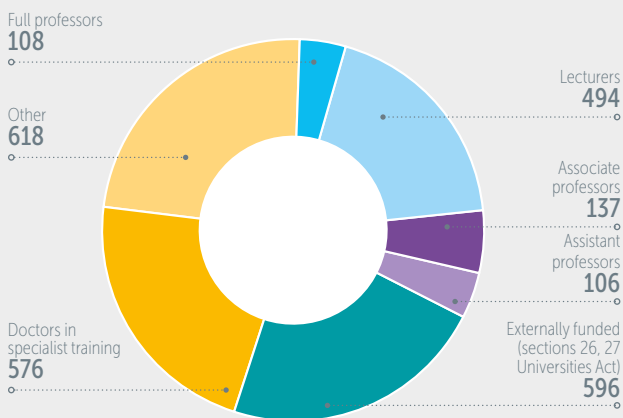
With 4,196 employees in 2014, MedUni Vienna is one of the largest centres of medical education and research in the German-speaking world.



WOMEN 2,278      MEN 1,918

\*Full-time equivalents as at 31 Jan. 2014

### ACADEMIC STAFF\*



Total 2,630  
(Academic staff: 1,109 women, 1,521 men)

\*Full-time equivalents as at 31 Jan. 2014

### 30 CLINICAL INSTITUTES AND UNIVERSITY DEPARTMENTS AND 12 MEDICAL SCIENCE CENTRES AND DEPARTMENTS

MedUni Vienna's core activities in research, teaching and patient care are carried out in 30 university clinical departments and institutes and 12 centres of medical science.

## RESEARCH

### RESEARCH FOCUSES (CLUSTERS)

- Immunology (Immunology Research Cluster)
- Cancer Research/Oncology (Comprehensive Cancer Center)
- Medical Neuroscience
- Cardiovascular Medicine (Cardiovascular Cluster)
- Medical Imaging (Medical Imaging Cluster)

### RESEARCH INFRASTRUCTURE

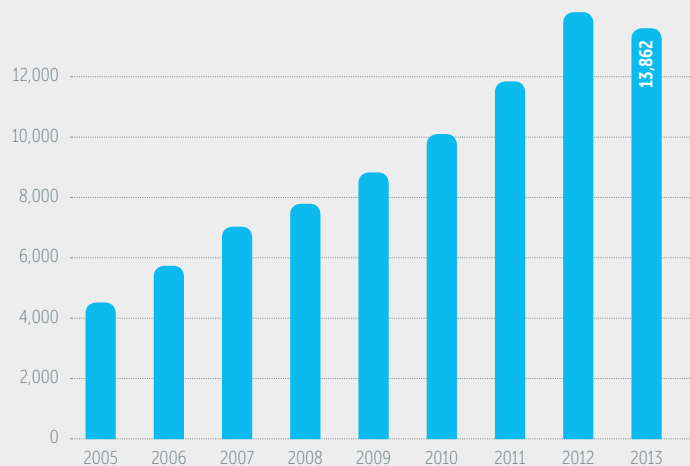
MedUni Vienna offers a full range of support facilities for the research groups active at the University.

- Flow Cytometry Core Facility
- Genomics Core Facility
- Imaging Core Facility
- Proteomics Core Facility
- Institute of Medical Genetics
- Center for Medical Statistics, Informatics, and Intelligent Systems
- Clinical Trials Coordination Centre
- Medical Imaging Platform
- MedUni Vienna Biobank
- Department of Biomedical Research
- University Library
- Center for Medical Physics and Biomedical Engineering

### IMPACT FACTORS

Impact factors of scientific publications, 2005-2013

Scientific output and the quality of research at MedUni Vienna have risen steadily.

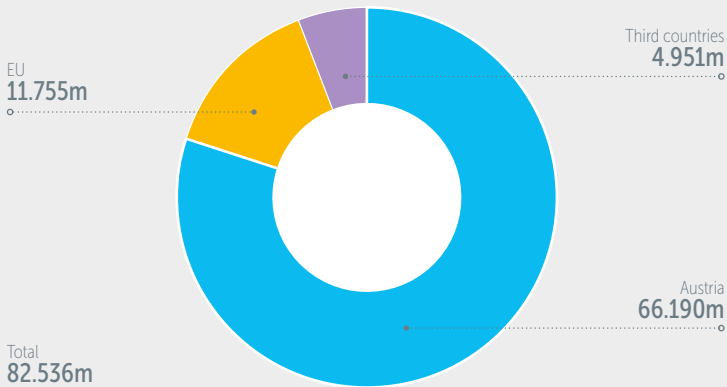




## RESEARCH

### EXTERNAL FUNDING REVENUE FROM R&D PROJECTS

External funding raised by MedUni Vienna pursuant to sections 26 and 27 Universities Act 2002, together with donations, amounted to EUR 82.536 million (m) in 2014. After remaining flat year on year in 2013, in 2014 revenue from research grants and donations increased once more.



#### Research project proposals submitted to the Ethics Committee

202	Assessments for compliance with Pharmaceuticals Act
120	Assessments for compliance with Medical Products Act
808	Other studies
1,130	Clinical research study proposals

## PATIENT CARE

#### Patient care at Vienna General Hospital

- 105,930 inpatient cases
- 547,874 outpatient cases
- 51,933 operations
- 1,568 doctors

#### Clinic of Dentistry

- 113,880 treatment sessions
- 29,695 patients
- 89.6 weekend patients (average)
- 73.6 dentists (FTE)

## EDUCATION

### COURSES OFFERED AT MEDUNI VIENNA

- Medicine degree programme
- Dentistry degree programme
- Medical Informatics master's programme
- PhD programmes (16 research themes)
- Applied Medical Science doctoral programme (ten research themes)
- Medical Sciences doctoral programme (being phased out)
- 18 postgraduate continuing education courses

84 teaching hospitals and two teaching clinics are accredited for clinical practice training.

Students by nationality	Women	Men	Total
Austria	2,734	2,753	5,487
EU	750	731	1,481
Other countries	415	349	764
<b>Total</b>	<b>3,899</b>	<b>3,833</b>	<b>7,732</b>

Students in mobility programmes (outgoing and incoming)	Women	Men	Total
Host/home country in EU	243/80	255/24	498/104
Host/home country outside EU	127/19	85/26	212/45
<b>Total</b>	<b>370/99</b>	<b>340/50</b>	<b>710/149</b>

Students in doctoral programmes	Women	Men	Total
Austria	470	458	928
EU	132	93	225
Other countries	113	110	223
<b>Total</b>	<b>715</b>	<b>661</b>	<b>1,376</b>

# FINANCIAL STATEMENTS

## I. STATEMENT OF FINANCIAL POSITION AS AT 31 DECEMBER 2014

### ASSETS

	31 December 2014 EUR			31 December 2013 EUR '000		
<b>A. Fixed assets</b>						
I. Intangible assets						
1. Concessions and similar rights, and licences thereto		1,051,454.45			1,294	
<i>of which acquired by purchase</i>	1,051,454.45			1,295		
2. Rights of use		20,000,000.00	21,051,454.45	20,000	21,294	
II. Property, plant and equipment						
1. Land, leasehold rights and buildings including buildings on third-party land		58,865,721.14			56,980	
<i>a) of which land value</i>	47,545,900.41			47,546		
<i>b) of which building value</i>	1,071,000.77			1,127		
<i>c) of which investments in third-party buildings and land</i>	10,248,819.96			8,307		
2. Plant and machinery		10,824,951.59			9,132	
3. Scientific literature and other scientific data media		6,892,617.56			6,865	
4. Other fixtures and fittings, operating and business equipment		2,737,451.55			2,309	
5. Advance payments and assets under construction		3,732,649.45	83,053,391.29	2,323	77,608	
III. Financial assets						
1. Investments in subsidiaries and associates		2,848,650.18			2,809	
2. Loans to subsidiaries and associates		1,300,999.03	4,149,649.21	108,254,494.95	1,394	4,203
					103,105	
<b>B. Current assets</b>						
I. Inventories						
1. Inventories		403,755.87			404	
2. Services rendered to third parties not yet invoiced		82,026,975.46	82,430,731.33	88,761	89,165	
II. Receivables and other assets						
1. Trade receivables		8,554,230.83			7,123	
2. Receivables from associates		789,714.99			1,106	
3. Other receivables and other assets		7,708,104.88	17,052,050.70	8,208	16,437	
III. Securities			6,241,459.52		6,258	
IV. Cash and cash equivalents			103,078,993.84	208,803,235.39	76,021	187,881
<b>C. Prepaid expenses and deferred charges</b>						
				1,225,555.38		1,288
<b>Total Assets</b>				<b>318,283,285.72</b>		<b>292,274</b>

The 2014 financial statements were given an unqualified audit certificate by auditors Moore Stephens City Treuhand GmbH, Wirtschaftsprüfungs- und Steuerberatungsgesellschaft.

## LIABILITIES

	31 December 2014 EUR		31 December 2013 EUR '000	
<b>A. Negative equity</b>				
1. Equity		-8,334,166.31		-8,334
2. Net loss		-10,732,459.08	-19,066,625.39	-13,448
<i>of which loss/profit brought forward</i>	-13,447,603.07			-18,265
<b>B. Investment grants</b>			<b>32,107,772.82</b>	<b>29,834</b>
<b>C. Provisions</b>				
1. Provisions for severance payments		12,205,718.00		12,039
2. Other provisions		117,417,294.42	129,623,012.42	100,235
				112,274
<b>D. Liabilities</b>				
1. Advances received		124,547,086.32		129,617
<i>of which deductible from inventories</i>	82,026,975.46			88,761
2. Trade payables		15,208,723.21		9,103
3. Payables to associates		645,258.20		147
4. Other liabilities		17,042,374.12	157,443,441.85	17,274
				156,141
<b>E. Deferred income</b>			<b>18,175,684.02</b>	<b>15,807</b>
<b>Total liabilities</b>			<b>318,283,285.72</b>	<b>292,274</b>
Contingent liabilities			98,749.00	99

### Note regarding equity:

The University's negative equity figure results from the separation of the Medical University of Vienna from the University of Vienna on 1 January 2004 in accordance with the Universities Act 2002. In respect of Austria's constitutional guarantee for institutions and its incorporation into the Universities Act 2002, the federal government's resulting obligations to guarantee the continued existence of universities and to finance MedUni Vienna mean that, in all events, a positive going concern forecast may be given for the Medical University of Vienna. Including investment grants, equity was positive as at 31 December 2014.



## II. 2014 STATEMENT OF PROFIT OR LOSS

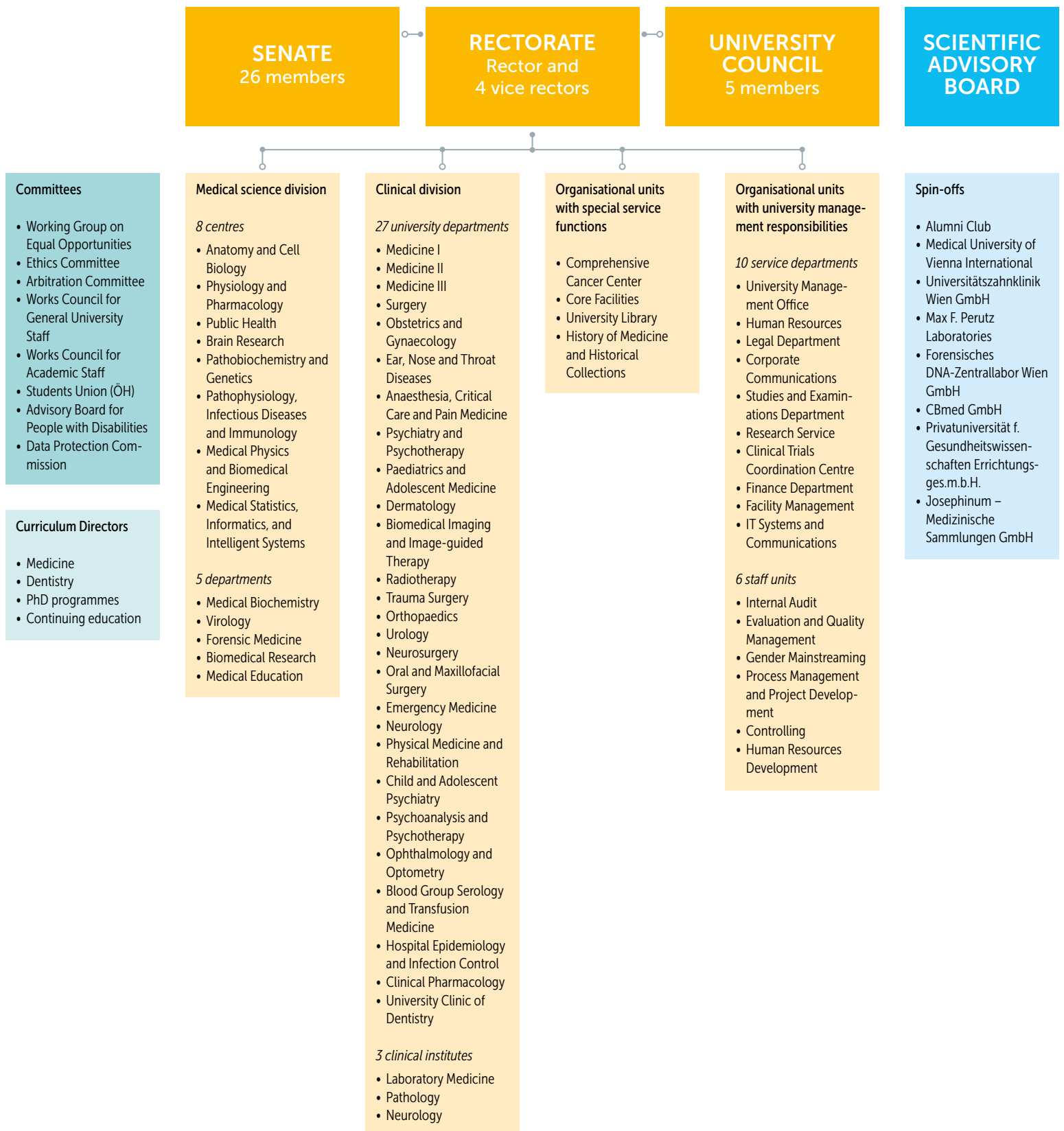
	2014 EUR	2013 EUR '000
<b>1. Umsatzerlöse</b>		
a) Erlöse auf Grund von Globalbudgetzuweisungen des Bundes	373,863,123.99	361,833
b) Erlöse aus Studienbeiträgen	812,109.81	699
c) Erlöse aus Studienbeitragsersätzen	4,762,976.38	5,117
d) Erlöse aus universitären Weiterbildungsleistungen	1,135,809.32	967
e) Erlöse gemäß § 27 UG	76,963,379.08	63,568
f) Kostenersätze gemäß § 26 UG	14,913,736.27	14,468
g) Sonstige Erlöse und andere Kostenersätze	14,377,025.15	13,942
	<b>486,828,169.00</b>	<b>460,594</b>
<b>2. Veränderung des Bestands an noch nicht abrechenbaren Leistungen im Auftrag Dritter</b>		
	<b>-6,734,148.67</b>	<b>7,839</b>
<b>3. Sonstige betriebliche Erträge</b>		
a) Erträge aus dem Abgang vom und der Zuschreibung zum Anlagevermögen	15,794.93	1
b) Erträge aus der Auflösung von Rückstellungen	3,038,140.87	2,913
c) Übrige	12,527,732.69	12,360
<i>davon aus der Auflösung von Investitionszuschüssen</i>	<i>10,297,382.67</i>	<i>9,852</i>
	<b>15,581,668.49</b>	<b>15,274</b>
<b>4. Aufwendungen für Sachmittel und sonstige bezogene Herstellungsleistungen</b>		
a) Aufwendungen für Sachmittel	-17,318,698.07	-10,477
b) Aufwendungen für bezogene Leistungen	-4,702,766.00	-4,229
	<b>-22,021,464.07</b>	<b>-14,706</b>
<b>5. Personalaufwand</b>		
a) Löhne und Gehälter	-268,096,941.08	-263,510
<i>davon Refundierungen an den Bund für der Universität zugewiesene Beamtinnen und Beamte</i>	<i>70,113,966.83</i>	<i>73,342</i>
b) Aufwendungen für externe Lehre	-101,345.85	-101
c) Aufwendungen für Abfertigungen und Leistungen an Betriebliche Vorsorgekassen	-3,710,506.19	-4,732
<i>davon Refundierungen an den Bund für der Universität zugewiesene Beamtinnen und Beamte</i>	<i>15,290.96</i>	<i>26</i>
d) Aufwendungen für Altersversorgung	-7,435,506.88	-7,200
<i>davon Refundierungen an den Bund für der Universität zugewiesene Beamtinnen und Beamte</i>	<i>404,340.48</i>	<i>407</i>
e) Aufwendungen für gesetzlich vorgeschriebene Sozialabgaben sowie vom Entgelt abhängige Abgaben und Pflichtbeiträge	-62,044,456.71	-60,757
<i>davon Refundierungen an den Bund für der Universität zugewiesene Beamtinnen und Beamte</i>	<i>17,882,623.55</i>	<i>18,993</i>
f) Sonstige Sozialaufwendungen	-2,489,132.72	-2,306
	<b>-343,877,889.43</b>	<b>-338,606</b>

	2014 EUR	2013 EUR '000
6. Abschreibungen	-18,610,714.38	-18,028
7. Sonstige betriebliche Aufwendungen		
a) Steuern, soweit sie nicht unter Z 13 fallen	-570,397.40	-479
b) Kostenersätze an den Krankenanstaltenträger gem. § 33 UG	-52,887,781.39	-51,419
c) Übrige	-39,471,745.64	-34,560
	-92,929,924.43	-86,458
8. Zwischensumme aus Z 1 bis 7	18,235,696.51	25,908
9. Erträge aus Finanzmitteln und Beteiligungen	831,226.36	941
a) davon aus Zuschreibungen	58,293.52	102
b) davon von Rechtsträgern, mit denen ein Beteiligungsverhältnis besteht	0.00	0
10. Aufwendungen aus Finanzmitteln und aus Beteiligungen	-16,225,740.69	-21,887
a) davon Abschreibungen	80,255.32	96
b) davon Aufwendungen von Rechtsträgern, mit denen ein Beteiligungsverhältnis besteht	16,145,483.42	21,791
11. Zwischensumme aus Z 9 bis 10	-15,394,514.33	-20,946
12. Ergebnis der gewöhnlichen Universitätstätigkeit	2,841,182.18	4,962
13. Steuern vom Einkommen und vom Ertrag	-126,038.19	-145
14. Jahresüberschuss	2,715,143.99	4,817
15. Verlustvortrag	-13,447,603.07	-18,265
16. Bilanzverlust	-10,732,459.08	-13,448

After reporting a loss in both 2011 and 2012, the University recorded a profit in 2013 and 2014, which was made possible by an improved budget adjusted to conditions, as well as cost-awareness practised by University staff.

Despite a marked increase in competition for external funding, a high level of revenue was maintained and the University achieved numerous successes in research and teaching, as well as respectable positions in a number of university rankings. This trend is set to continue, though due to increasing costs for medical staff as a result of amendments to the Hospital Working Hours Act, profit or loss for the year is likely to decline in 2015.

# ORGANISATIONAL STRUCTURE



## UNIVERSITY MANAGEMENT

### • Rectorate

The Rectorate is the University's executive management body. It comprises the Rector and the four vice rectors (for Finance, Research, Clinical Affairs, and Education, Gender and Diversity).

Prof. Wolfgang Schütz, Rector  
 Prof. Karin Gutiérrez-Lobos, Vice Rector for Education, Gender and Diversity  
 Dr. Christiane Druml, Vice Rector for Clinical Affairs  
 Prof. Markus Müller, Vice Rector for Research  
 Dr. Franz Wurm, Vice Rector for Finance

### • University Council

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

Dr. Erhard Busek (Chair)  
 Dr. Elisabeth Hagen  
 Prof. Veronika Sexl  
 Dr. Walter Dorner  
 Prof. Robert Schwarcz

### • 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. Oswald Wagner (Chair)  
 Prof. Michael Gnant  
 Prof. Eduard Auff (until 14 Nov. 2014)  
 Prof. Wolfgang Gstöttner (from 14 Nov. 2014)  
 Prof. Veronika Fialka-Moser (d. 2 Apr. 2014)  
 Prof. Ursula Schmidt-Erfurth (from 16 May 2014)  
 Prof. Eva Piehslinger  
 Prof. Hubert Pehamberger  
 Prof. Anita Rieder<sup>1</sup>  
 Prof. Irene Lang<sup>2</sup>  
 Prof. Elisabeth Presterl  
 Prof. Rudolf Valenta  
 Prof. Ursula Wiedermann-Schmidt

<sup>1</sup>Currently a curriculum director and therefore unable to exercise her mandate due to the regulation on conflicts of interest. The mandate is exercised by Prof. Siegfried Trattnig.

<sup>2</sup>Currently a deputy curriculum director and therefore unable to exercise her mandate due to the regulation on conflicts of interest. The mandate is exercised by Prof. Renate Koppensteiner.

### TEACHING AND RESEARCH STAFF:

Prof. Ivo Volf (First Deputy)  
 Dr. Dietrich Haubenberger  
 Dr. Martin Frossard  
 Dr. Diana Bonderman  
 Dr. Martin Andreas  
 Dr. Regina Patricia Schukro

### STUDENTS:

Frédéric P.R. Tömböl  
 Lisa Ballmann (Second Deputy) (until 26 Sep. 2014)  
 Johanna Zechmeister (from 26 Sep. 2014)  
 Matthias Schlechta (until 21 Feb. 2014)  
 Sarah Schober (from 21 Feb. 2014; Second Deputy from 26 Sep. 2014)  
 Abelina Zimba  
 Martin Schauerperl  
 Mirijam Müller (until 21 Feb. 2014)  
 Lukas Wedrich (from 21 Feb. 2014)

### GENERAL UNIVERSITY STAFF:

Gerda Bernhard

### CO-OPTED MEMBER – WORKING GROUP ON EQUAL OPPORTUNITIES:

Prof. Alexandra Kautzky-Willer  
[www.meduniwien.ac.at/senate](http://www.meduniwien.ac.at/senate)



### University Council

From left to right: Walter Dorner, Elisabeth Hagen, Erhard Busek, Veronika Sexl and Robert Schwarcz



## COMMITTEES

### • Arbitration Committee

Chair: Prof. Herbert Watzke  
[www.meduniwien.ac.at/arbitrationcommittee](http://www.meduniwien.ac.at/arbitrationcommittee)

### • Ethics Committee

Chair: Prof. Ernst Singer  
 Deputy Chair: Prof. Hildegard Greinix (until 4 Nov. 2014)  
 Deputy Chair: Dr. Jürgen Zezula  
 Deputy Chair: Dr. Martin Brunner  
[www.meduniwien.ac.at/ethics](http://www.meduniwien.ac.at/ethics)

### • Works Council for General University Staff

Chair: Gabriele Waidringer  
 Deputy Chair: Gerda Bernhard  
 Deputy Chair: Helga Kalser  
[www.meduniwien.ac.at/wc-gus](http://www.meduniwien.ac.at/wc-gus)

### • Works Council for Academic Staff

Chair: Dr. Thomas Perkmann (until 18 Jun. 2014), Dr. Ingwald Strasser (18 Jun. 2014-15 Dec. 2014), Dr. Martin Andreas (from 15 Dec. 2014)  
 Deputy: Dr. Martin Andreas (until 15 Dec. 2014)  
 Deputy: Prof. Peter Birner  
 Deputy: Prof. Anita Holzinger  
 Deputy: Dr. Ingwald Strasser (until 18 Jun. 2014, then from 15 Dec. 2014)  
[www.meduniwien.ac.at/wc-sus](http://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](http://www.meduniwien.ac.at/equalopportunities)

### • Students Union (ÖH)

Chair: Sarah Schober  
 First Deputy: Falk Preissing  
 Second Deputy: Lukas Wedrich  
[www.oehmedwien.at](http://www.oehmedwien.at)

### • Advisory Board for People with Disabilities

Chair: Prof. Veronika Fialka-Moser (d. 2 Apr. 2014)  
 Prof. Richard Crevenna (from 30 Jun. 2014)  
[www.meduniwien.ac.at/disabilities](http://www.meduniwien.ac.at/disabilities)

### • Data Protection Commission

Chair: Ernst Eigenbauer  
 Deputy Chair: Dr. Markus Grimm  
[www.meduniwien.ac.at/dataprotection](http://www.meduniwien.ac.at/dataprotection)

### • Medicine Curriculum Director

Prof. Anita Rieder  
 Deputy: Prof. Franz Kainberger  
 Deputy: Prof. Werner Horn  
 Deputy: Prof. Gerhard-Johann Zlabinger

### • Dentistry Curriculum Director

Prof. Anita Holzinger  
 Deputy: Dr. Reinhard Gruber  
 Deputy: Prof. Andrea Nell

### • PhD Programmes Curriculum Director

Prof. Stefan Böhm  
 Deputy: Prof. Irene Lang  
 Deputy: Prof. Harald Trost

### • Continuing Education Curriculum Director

Prof. Rudolf Mallinger (until 31 Jan. 2014)  
 Prof. Michael Hiesmayr (from 1 Feb. 2014)



*Angelika Berger was appointed Professor of Neonatology and Paediatric Critical Care as of 1 October 2014, and heads the Division for Neonatology, Critical Care Medicine and Paediatric Neurology at the MedUni Vienna Department of Paediatrics and Adolescent Medicine.*

## SCIENTIFIC ADVISORY BOARD

Consisting of five members, 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.

Prof. Frederica Salusto  
Institute for Research in Biomedicine  
Bellinzona, Switzerland

Prof. Hedvig Hricak  
Chair, Department of Radiology  
Memorial Sloan Kettering Cancer Center  
New York City, USA

Prof. Joseph Thomas Coyle  
Professor of Psychiatry and Neuroscience  
Harvard Medical School

Prof. Fortunato Ciardiello  
Professor of Medical Oncology  
Second University of Naples



*Martin Metzelder took over as Professor of Paediatric Surgery and head of the Clinical Section for Paediatric Surgery on 1 April 2014. He was previously in charge of the Section for Paediatric Surgery at Essen University Hospital.*

## UNIVERSITY DEPARTMENTS AND CLINICAL INSTITUTES

27 departments and three clinical institutes make up the organisational units of MedUni Vienna's clinical division. 12 of these are further divided into clinical divisions (in accordance with section 31(4) Universities Act). Departments, institutes and divisions all have a concurrent role as patient care departments (pursuant to section 7(4) Hospitals Act).

### Department of Medicine I

Head: Prof. Christoph Zielinski

- Division of Oncology
- Division of Haematology and Haemostaseology
- Division of Palliative Medicine
- Division of Infectious Diseases and Tropical Medicine
- Institute of Cancer Research



*Emeka Nkenke, formerly Director of the University Department and Polyclinic for Oral, Maxillofacial and Facial Plastic Surgery in Halle (Saale), took up the MedUni Vienna professorship of Oral and Maxillofacial Surgery on 1 October 2014 and heads the university department of the same name.*

### Department of Medicine II

Head: Prof. Gerald Maurer

- Division of Cardiology
- Division of Angiology
- Division of Pulmonology
- Institute of Occupational Medicine

### Department of Medicine III

Head: Prof. Josef Smolen

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

### Department of Surgery

Head: Prof. Ferdinand Mühlbacher  
(until 3 Sep. 2014)

Head: Prof. Michael Gnant  
(from 1 Oct. 2014)

- 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 Paediatric Surgery



*Rainer Oberbauer was appointed as the new head of the Division for Nephrology and Dialysis at the University Department of Internal Medicine III from 1 October 2014.*

### Department of Obstetrics and Gynaecology

- Head: Prof. Peter Wolf Husslein
- Division of Obstetrics and Feto-Maternal Medicine
  - Division of General Gynaecology and Gynaecologic Oncology
  - Division of Gynaecological Endocrinology and Reproductive Medicine

### Department of Ear, Nose and Throat Diseases

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

### Department of Anaesthesia, Critical Care and Pain Medicine

- Head: Prof. Michael Hiesmayr (until 11 Feb. 2014)  
Head: Prof. Klaus Markstaller (from 12 Feb. 2014)
- Division of General Anaesthesia and Intensive Care Medicine
  - Division of Specialist Anaesthesia and Pain Medicine
  - Division of Cardiothoracic and Vascular Anaesthesia and Intensive Care Medicine

### Department of Psychiatry and Psychotherapy

- Head: Prof. Siegfried Kasper
- Division of Biological Psychiatry
  - Division of Social Psychiatry

### Department of Paediatrics and Adolescent Medicine

- Head: Prof. Arnold Pollak (until 30 Sep. 2014)  
Head: Prof. Susanne Greber-Platzer (from 1 Oct. 2014)
- Division of Neonatology, Intensive Care Medicine and Neuropaediatrics
  - Division of Paediatric Cardiology
  - Division of Paediatric Cardiology, Allergy and Endocrinology
  - Division of Paediatric Nephrology and Gastroenterology
  - Division of General Paediatrics with special focus on Paediatric Haemato-oncology (St. Anna Children's Hospital)

### Department of Dermatology

- Head: Prof. Hubert Pehamberger
- Division of General Dermatology and Dermato-Oncology
  - Division of Immunodermatology and Infectious Diseases of the Skin

### 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



*Reinhard Gruber has been the University's Professor of Oral Biology since 1 October 2014. Previously, the biotechnologist headed the Laboratory for Oral Cell Biology at the University of Bern's School of Dental Medicine.*

### Department of Radiotherapy

Head: Prof. Richard Pötter

### Department of Trauma Surgery

Head: Dr. Stefan Hajdu

### Department of Orthopaedics

Head: Prof. Rudolf Windhager

### Department of Urology

Head: Prof. Shahrokh Shariat

### Department of Neurosurgery

Head: Prof. Engelbert Knosp

### Department of Oral and Maxillofacial Surgery

Head: Dr. Clemens Klug  
Prof. Emeka Nkenke  
(from 1 Oct. 2014)

### Department of Emergency Medicine

Head: Prof. Anton Laggner

### Department of Neurology

Head: Prof. Eduard Auff

### Department of Physical Medicine and Rehabilitation

Head: Prof. Veronika Fialka-Moser  
(d. 2 Apr. 2014)  
Interim Head: Prof. Richard Crevenna

### Department of Child and Adolescent Psychiatry

Deputy Head: Dr. Christine Vesely

### Department of Psychoanalysis and Psychotherapy

Head: Prof. Stephan Doering

### Department of Ophthalmology and Optometry

Head: Prof. Ursula Schmidt-Erfurth

### Department of Blood Group Serology and Transfusion Medicine

Deputy Head: Prof. Simon Panzer

### Department of Clinical Pharmacology

Head: Prof. Markus Müller

### University Clinic of Dentistry Vienna

Head: Prof. Andreas Moritz

### Department of Hospital Epidemiology and Infection Control

Head: Prof. Elisabeth Presterl

### Institute of Laboratory Medicine

Head: Prof. Oswald Wagner

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

### Institute of Neurology

Deputy Head: Prof. Johann Hainfellner

### Institute of Pathology

Head: Prof. Dantscho Kerjaschki



*Dietmar Georg was appointed Professor of Medical Radiation Physics and Oncological Engineering as of 1 October 2014. He is Austria's first professor in the field of medical radiation physics.*

## CENTRES OF MEDICAL SCIENCE

The medical science division is organised into centres and departments. While the departments – like university clinical departments and clinical institutes – 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

Deputy Head: Prof. Adolf Ellinger

- General Division of the Center for Anatomy and Cell Biology
- Division of Applied Anatomy
- Division of Systemic Anatomy
- Division of Cell and Developmental Biology
- Division of Cell Biology and Ultrastructure Research



### 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

- Division of General and Family Medicine
- Institute of Social Medicine
- Institute of Environmental Hygiene
- Division of Epidemiology
- Institute of Medical Psychology
- Ethics in Medical Research
- Division of Health Economics

### Center for Brain Research

Head: Prof. Jürgen Sandkühler

- Division of Neuroimmunology
- Division of Neurophysiology
- Division of Molecular Neuroscience
- Division of Neuronal Cell Biology



*Bruno Podesser became head of the Department for Biomedical Research and Professor of Laboratory Animal Research on 1 October 2014.*

- Division of Cognitive Neurobiology
- Division of Pathobiology of the Nervous System

### Center for Pathobiochemistry and Genetics

Head: Prof. Markus Hengstschläger

- Institute of Medical Genetics
- Institute of Medical Chemistry and Pathobiochemistry

### Center for Pathophysiology, Infectious Diseases 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. Wolfgang Dorda

(until 30 Sep. 2014)

Head: Prof. Michael Schemper

(from 1 Oct. 2014)

- General Division of the Center for Medical Statistics, Information Technology, and Intelligent Systems
- Institute of Medical Statistics
- Institute of Clinical Biometrics
- Institute of Biosimulation and Bioinformatics
- Institute of Medical Information Management and Imaging
- Institute of Medical Expert and Knowledge Based Systems
- Institute of the Science of Complex Systems
- Institute of Artificial Intelligence



*Professor Anita Holzinger was appointed Professor for Curriculum Development with effect from 1 May 2014. She has headed the Department of Medical Education since 1 October 2014.*

### Department of Medical Biochemistry

Deputy Head: Prof. Roland Foisner

- Division of Molecular Cell Biology
- Division of Molecular Genetics

### Department of Medical Education

Interim Head: Prof. Siegfried Meryn  
(until 30 Sep. 2014)

Head: Prof. Anita Holzinger  
(from 1 Oct. 2014)

- General Division of Medical Training
- Administration
- Curriculum Coordination
- Unified Patient Division
- Methods and Development
- Science and International Relations

### Department of Virology

Head: Prof. Franz Xaver Heinz

- Division of Applied Medical Virology

### Department of Forensic Medicine

Head: Prof. Daniele Risser

### Department of Biomedical Research

Head: Prof. Bruno Podesser

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



*The Federal Ministry of Science, Research and Economy and the Ludwig Boltzmann Gesellschaft support cancer research with three endowed chairs. The professorships are in Laboratory Animal Medicine – Laboratory Animal Pathology (at MedUni Vienna and Vetmeduni Vienna), Laboratory Animal Medicine – Translational Methods in Cancer Research (at MedUni Vienna and Vetmeduni Vienna), and Transgenic Models in Cancer Research (at MedUni Vienna). They are held by Richard Moriggl, Lukas Kenner and Emilio Casanova-Hevia (from left to right).*

## ORGANISATIONAL UNITS WITH SPECIAL SERVICE FUNCTIONS

### Comprehensive Cancer Center

Head: Prof. Christoph Zielinski

### Core Facilities

Head: Prof. Johann Wojta

- DNA-Genomics
- RNA-Genomics
- Imaging
- Proteomics
- Cell Sorting

### University Library

Head: Bruno Bauer

### History of Medicine and Historical Collections

Head: Dr. Christiane Druml

## CENTRAL SERVICES

### 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

### Staff units

- Internal Audit
- Evaluation and Quality Management
- Gender Mainstreaming
- Process Management and Project Development
- Controlling
- Human Resources Development

## EXTERNAL SUBSIDIARIES

**Bernhard Gottlieb  
Universitätszahnklinik GmbH**

**Max F. Perutz Laboratories GmbH  
(mfpl)**

60% University of Vienna,  
40% MedUni Vienna

**Medical University of Vienna  
International GmbH (MUVI)**

**Forensisches DNA-Zentrallabor  
Wien GmbH**

**Alumni Club**

Publisher: Professor Wolfgang Schütz, Rector  
Medical University of Vienna, Spitalgasse 23, 1090 Vienna, Austria  
[www.meduniwien.ac.at](http://www.meduniwien.ac.at)

Responsible for content: Corporate Communications – Johannes Angerer (Head of Department),  
Klaus Dietl, Kerstin Kohl, Thorsten Medwedeff

Content development and design: zauberformel | Karlheinz Hoffelner and  
veni vidi confici® | Bettina Graser

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

Photos: Fotolia, R. Fuchs, Daniel Hinterramskogler, Christian Houdek, Gregor Kasprian,  
Felicitas Matern, Novy/Kurier, Shutterstock Inc., Wilke/Fotostudio

Published: Vienna, 2015

ISBN 978-3-902610-15-7  
Medical University of Vienna







**Medical University of Vienna**

Spitalgasse 23, 1090 Vienna

Phone +43 (0)1 40 160 0

Fax +43 (0)1 40 160 910 000

[www.meduniwien.ac.at](http://www.meduniwien.ac.at)

ISBN 978-3-902610-15-7

Medical University of Vienna

