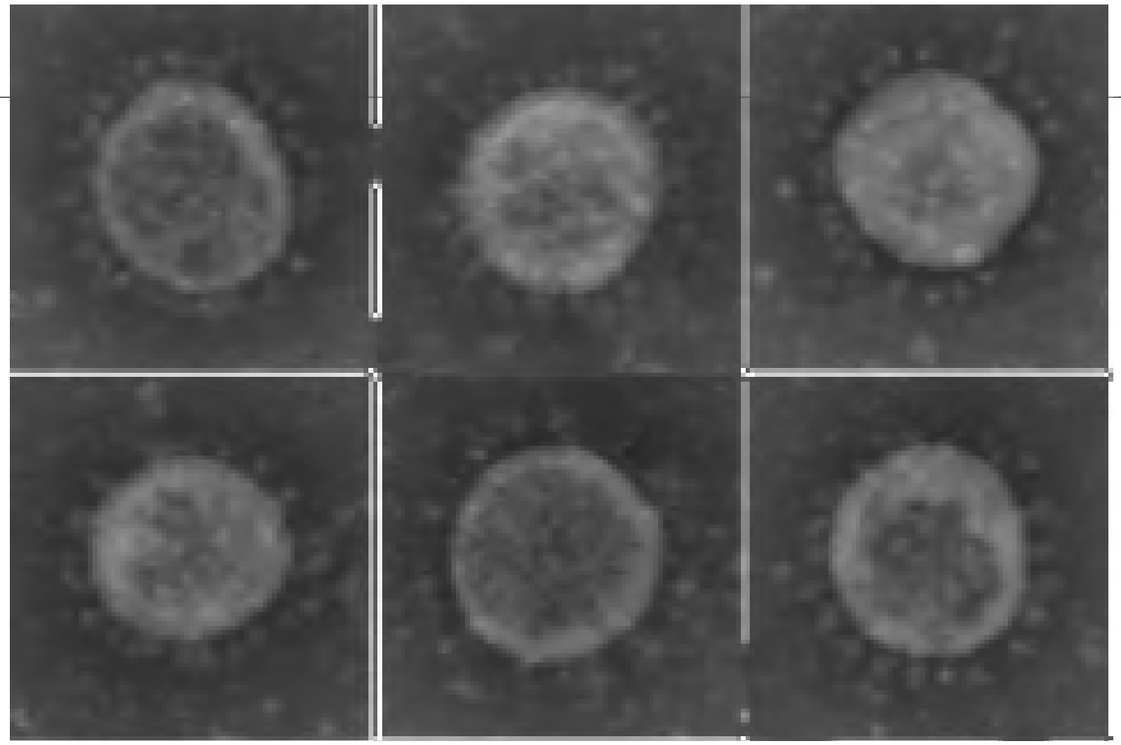


Source: Bernd Walkenfort and Dr. Mike Hasenberg from the Electron Microscopy Unit (EMU) of the Imaging Center Essen (IMCES) in collaboration with Maren Bormann, Lukas van de Sand, Leonie Schipper and PD Dr Adalbert Krawczyk of the Clinic for Infectious Diseases.

Transmission electron microscopy images of isolated SARS-CoV-2 virions

COVID-19 is a viral respiratory illness caused by the novel coronavirus SARS-CoV-2. Since it was first detected in late 2019, the virus has spread across the world. It is a global health problem that affects all parts of our lives. High-resolution transmission electron microscopy (TEM) imaging of SARS-CoV-2 provides important structural information about the morphology of the virus. These insights are valuable to researchers developing strategies for preventing and treating the illness.

Faculty of Medicine

The Faculty of Medicine employs 117 professors and more than 1,500 researchers. It has around 1,875 enrolled students. Its faculty building shares a campus with Essen University Hospital, so research and clinical care are closely interlinked, and new insights can be applied to practice as soon as they become available. In its research, the Faculty of Medicine focuses on several key priorities: cardiovascular medicine, oncology, transplantation, immunology, infectious diseases, and translational neuro- and behavioural sciences. Its 33 clinics and 28 institutes conduct scientific research at the highest level. With a remarkably high publication rate in relation to the number of professors employed here, the Faculty of Medicine is one of the most active publishers among all university hospitals in North Rhine-Westphalia.

In October 2019, the German Council of Science and Humanities lauded Essen as an emerging hub of university medicine in the federal state. Its statement particularly underscored the great potential of the city and the positive development which the Faculty of Medicine of the University of Duisburg-Essen (UDE) and Essen University Hospital underwent during the past years, emphasising the research achievements of the city's institutions.

Research

25.7 million euros for research: the DFG funds two collaborative research centres/Transregios at the Faculty of Medicine

The German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) approved two CRC/TRR applications from Essen in early 2020. Professor Jan Buer, Dean of the Faculty of Medicine, commented: "We are extremely pleased with our success and consider it a clear sign of the strength of our research. It reassures us of the viability of our strategy, on which the German Council of Science and Humanities commented very favourably. We are also pleased that both collaborative research centres are headed by renowned female scientists. Essen is a leading centre of gender equality in academia, too."

The power of expectations: a new collaborative research centre/Transregio at the Faculty of Medicine

The transregional CRC/TRR 289, 'Treatment Expectation', examines the impact of expectations on efficacy of medical treatments. Headed by the University of Duisburg-Essen, the CRC/TRR approaches the topic from an interdisciplinary perspective. Professor Ulrike Bingel of the Faculty of Medicine at UDE is the spokesperson for the research alliance, which also includes Universität Hamburg and the University of Marburg. The DFG will be funding this CRC for an initial period of four years with approximately 12 million euros.

Local control of thyroid hormone action: a new collaborative research centre/Transregio at the Faculty of Medicine

The new CRC/TRR 296 will be researching local control of thyroid hormone action over the next four years. Professor Dagmar Führer, Director of the Faculty's Clinic for Endocrinology, Diabetes and Metabolism at Essen University Hospital, is the spokesperson of the research alliance. Its other contributors are the University of Lübeck and Charité – Universitätsmedizin Berlin. The DFG will be funding this CRC for an initial period of four years with 13.7 million euros.

New research unit on stroke – more than one million euros of DFG funding for researchers in Essen

The DFG is establishing FOR 2879, a new research unit on stroke, at the UDE's Faculty of Medicine. Managed from Essen University Hospital, the new alliance is a collaborative project of the University of Essen, the University of Munich, Universität Hamburg, and the University of Münster. Its objective is to study the role of the immune system in stroke and develop new treatment options.

The DFG funds research into autoimmune hepatitis

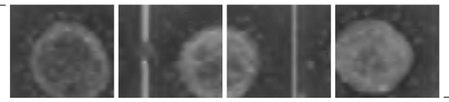
Autoimmune hepatitis is a rare chronic disease. A dysfunction in the body's immune system causes it to attack its own liver cells, which leads to hepatitis, i.e., inflammation of the liver. The DFG is funding the research project of the Clinic for Gastroenterology and Hepatology, which aims to develop new cellular therapies, with approximately 340,000 euros for an initial period of three years.

The DFG funds research into myocardial infarction

The DFG has allocated 470,000 euros in funding to a joint project by PD Dr Ulrike Hendgen-Cotta and Professor Tienush Rassaf, which aims to investigate the role of exogenic nitrite in protecting myocardial mitochondria during an acute myocardial infarction.

DFG-funded study: what role do our intestinal microflora and immune cells play in cerebral infarction?

Our gut flora affects our brain function. Imbalances in these microbiota may cause diseases, for example, stroke. Dr Vikramjeet Singh, a neuroscientist at UDE, researches the interrelation of intestinal microflora and immune cells and how it can affect cerebral infarction. In particular, he examines intestinal microbial diversity and neutrophils, the latter of which comprise the first line of immune response against pathogens. The DFG will be funding Dr Singh's study with 430,000 euros over the next three years.



750,000 euros in DFG funding against cancer

The German Research Foundation has allocated 750,000 euros in funding to two studies, one on melanoma and one on lung cancer, based at Essen University Hospital. Scientists of the UDE Faculty of Medicine are working on algorithms for imaging techniques that will allow their users to verify the success of cancer therapies faster and more precisely.

Worldwide university ranking: Essen's medical research scores top marks

The medical research of the University of Duisburg-Essen has achieved excellent results in the renowned 'Best Global Universities Rankings' published by the news magazine 'U.S. News & World Report'. It features prominently in the rankings for North Rhine-Westphalia, Germany and the world. For more than 30 years, the annual rankings have assessed the academic performance of nearly 1,500 universities, their faculties and departments.

The UDE's oncology research was particularly successful: it ranked second in Germany, first in North Rhine-Westphalia and 15th internationally. Oncology is one of five key research areas of the Faculty of Medicine. The Faculty's research into cardiovascular diseases also ranked first in North Rhine-Westphalia, came fourth in Germany and 57th worldwide. The radiology team has secured a place in the global top 100, occupying rank 70. Ranked eleventh in Germany and third in North Rhine-Westphalia, the researchers have achieved truly impressive results.

Better therapies for widespread conditions: the Institute of Transfusion Medicine researches anti-inflammatory extracellular vesicles

Within the scope of the international research project AutoCRAT, the Institute of Transfusion Medicine is developing new methods of using large quantities of extracellular vesicles (EVs) for therapeutic purposes. Stem-cell-derived EVs are a promising candidate for future therapies of widespread inflammatory diseases, such as arthritis. The EU is funding AutoCRAT to the tune of 760,000 euros for four years.

A new approach to stroke research: decoding signal pathways

Thromboinflammation has a decisive influence on the course of a stroke. This inflammatory response is triggered by an interaction of blood platelets and immune cells, which drives infarct growth in large parts of the brain. Researchers of the medical faculties and the University of Münster are currently researching the relation between these phenomena. The DFG is funding the project with approximately 500,000 euros.

Coronary artery calcification is partially hereditary

An interdisciplinary research unit at the UDE's Faculty of Medicine has been able to prove that lifestyle is not the only factor driving calcification of the coronary arteries. Genetic variations in the G-protein signalling pathway have an impact, too. The researchers spent five years analysing 3,108 randomly selected participants of the Heinz Nixdorf Recall Study. They have published their results in the journal Atherosclerosis.

A quantum leap in kidney research: the first explanation of kidney filtering disorders

Scientists of the UDE's Faculty of Medicine have worked with an international team of the CECAD Excellence Cluster in Cologne and various Institutes from Boston, Stockholm and Regensburg on a project that has led to the discovery of a previously unnoticed cause of kidney diseases. Their insights will aid and accelerate the development of targeted therapies. The renowned journal nature metabolism recently reported about their breakthrough discovery.

A boon for the mind: thyroid impact on brain function greater than assumed

Researchers from the UDE's Faculty of Medicine and the University of Edinburgh have discovered that thyroid hormones directly promote the formation of nerve cells in the part of the brain that control learning and memory. Their results will inform new approaches to improving mental performance. The renowned journal Stem Cell Reports reported on the discovery.

A study on malignant skin cancer: immune cells facilitate more accurate prediction of positive therapy outcomes

Merkel cell carcinoma is a malignant type of skin cancer that is often highly aggressive. Unfortunately, only half of patients benefit from conventional therapy. Scientists of the German Cancer Consortium (DKTK) at the UDE's Faculty of Medicine have explored potential methods of predicting the success of immunotherapy more effectively. Clinical Cancer Research reported on their work.

Hepatitis B viruses: liver cells are not defenceless

Once the hepatitis B virus enters the body, it causes a chronic infection of the liver in up to ten per cent of patients. To this day, we do not know how the pathogen overcomes the immune system. A recent discovery may help solve the riddle: a team of researchers of the Faculty of Medicine at the University of Duisburg-Essen have established how the immune system can successfully fight the virus.

Scavenger cells versus killer cells: interaction in the tumour tissue made visible

Neutrophil granulocytes, scavenger cells of the immune system, fight infection. But they are also suspected of promoting cancer. A UDE research team under Professor Sven Brandau of the Ear, Nose, and Throat Clinic at Essen University Hospital was able to prove this process in human tumour tissue for the first time.

Antiviral therapy: kidneys of hepatitis patients can be transplanted safely

There is still a severe shortage of donor organs in Germany. Medical researchers are developing methods to transplant organs that were previously considered unsuitable. An interdisciplinary team of the Faculty of Medicine has examined whether kidneys from deceased donors who carried the hepatitis C virus can help recipients without the virus.

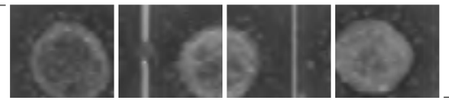
Polytherapy investigated in a phase-III study: a new life-prolonging treatment does not impact on the quality of life of glioblastoma patients

Glioblastoma are rapidly growing, highly aggressive brain tumours that are treated with surgery, radiation and chemotherapeutic agents. A team of researchers from several German university hospitals, including a medical doctor from the UDE's Faculty of Medicine, have taken a closer look at the efficacy of polytherapy involving two such chemotherapeutic agents. Any form of cancer therapy takes a toll on the patient. The researchers have analysed their condition after the polytherapy and found that quality of life is not impacted. Their study was published in Lancet Oncology.

Not just a mental-health issue: anorexia nervosa may be genetic

Anorexia nervosa is one of the most lethal psychiatric conditions. Within the scope of an international study, researchers of the Faculty of Medicine were able to show that the disorder can also be genetic. Nature Genetics has reported on their findings.

Dean: Professor Dr Jan Buer



Professors

Professor Dr Clemens Aigner
Professor Dr Diana Arweiler-Harbeck
Professor Dr Baba Hideo
Professor Dr Thomas Bajanowski
Professor Dr Sebastian Bauer
Professor Dr Agnes Bankflavi
Professor Dr Dr Nikolaos E. Bechrakis
Professor Dr Jürgen C. Becker
Professor Dr Katrin Anne Becker-Flegler
Professor Dr Ivo Bendix
Professor Dr Sven Benson
Professor Dr Utta Berchner-Pfannschmidt
Professor Dr Marc Moritz Berger
Professor Dr Ulrike Bingel
Professor Dr Sven Brandau
Professor Dr Wolfgang Brandau
Professor Dr Thorsten Brenner
Professor Dr Lorenzo Brualla y Barberá
Professor Dr Jan Buer
Professor Dr Rainer Büscher
Professor Dr Elke Cario
Professor Dr Christel Depienne
Professor Dr Uta Dirksen
Professor Dr Joachim Dissemond
Professor Dr Ulf Dittmer
Professor Dr Gustav J. Dobos
Professor Dr Dobromir Dobrev
Professor Dr Richard Dodel
Professor Dr Christian Dohna-Schwake
Professor Dr Marcel Dudda
Professor Dr Nicole Dünker
Professor Dr Mark Dzietko
Professor Dr Anja Eckstein
Professor Dr Ute Eisenberger
Professor Dr Sigrid Elsenbruch
Professor Dr Daniel Engel
Professor Dr Harald Raimund Engler
Professor Dr Joachim Fandrey
Professor Dr Ursula Felderhoff-Müser
Professor Dr Anke Claudia Fender
Professor Dr Wolfgang Peter Fendler
Professor Dr Katja Bettina Ferenz
Professor Dr Gudrun Fleischhack
Professor Dr Katharina Fleischhauer
Professor Dr Stefanie B. Flohé
Professor Dr Michael Forsting
Professor Dr Dr Dagmar Führer-Sakel
Professor Dr Anja Gallinat
Professor Dr Alexandra Gellhaus
Professor Dr Bernd Glebel
Professor Dr Martin Glas
Professor Dr Rainer Görges
Professor Dr Klaus Georg Griewank
Professor Dr Ruth Grümmer
Professor Dr Anika Grüneboom
Professor Dr Viktor Grünwald
Professor Dr Erich Gulbins
Professor Dr Matthias Gunzer
Professor Dr Boris Hadaschik
Professor Dr Eva Nina Isabel Hadaschik
Professor Dr Tim Hagenacker
Professor Dr Wiebke Hansen
Professor Dr Matthias Hartmann
Professor Dr Johannes Hebebrand
Professor Dr Dirk Hermann
Professor Dr Ken Herrmann
Professor Dr Jochen Heß
Professor Dr Heike Heuer
Professor Dr Dr Gerd Heusch
Professor Dr Gero Hilken
Professor Dr Anke Hinney
Professor Dr Dagny Natascha Holle-Lee
Professor Dr Peter A. Horn
Professor Dr Bernhard Horsthemke
Professor Dr Peter Hoyer
Professor Dr George Iliakis
Professor Dr Jürgen in der Schmitten
Professor Dr Marcus Jäger
Professor Dr Verena Jendrossek
Professor Dr Dr Walter Jentzen
Professor Dr Karl-Heinz Jöckel
Professor Dr Frank Kaiser
Professor Dr Markus Kamler
Professor Dr Christina Kasten
Professor Dr Sabine Kasimir-Bauer
Professor Dr Stefan Kasper-Virchow
Professor Dr Max Daniel Kauther
Professor Dr Kathy Keyvani
Professor Dr Rainer Kimmig
Professor Dr Sonja Kinner
Professor Dr Michael Kirsch
Professor Dr Carsten Kirschning
Professor Dr Stephan Klebe
Professor Dr Dr Jens Kleesiek
Professor Dr Diana Klein
Professor Dr Petra Kleinbongard
Professor Dr Christoph Kleinschnitz
Professor Dr Joachim Klode
Professor Dr Martin Köhrmann
Professor Dr Cornelia Kohlberg-Liedtke
Professor Dr Michael Koldehoff
Professor Dr Katja Köhlebeck
Professor Dr Ilonka Kreitschmann-Andermahr
Professor Dr Andreas Kribben
Professor Dr Ralf Küppers
Professor Dr Mark E. Ladd
Professor Dr Stephan Lang
Professor Dr Karl Sebastian
Professor Dr Christian Markus Lange
Professor Dr Lars Libuda
Professor Dr Monika Lindemann
Professor Dr Dietmar Lohmann
Professor Dr Mengli Lu
Professor Dr Peter Lüdike
Professor Dr Stefan Mattheis
Professor Dr Klaus A. Metz
Professor Dr Eric Metzen
Professor Dr Folker Meyer
Professor Dr Thomas Minor
Professor Dr Susanne Moebus
Professor Dr Dr Christopher Mohr
Professor Dr Lars Möller
Professor Dr David G. Norris
Professor Dr Arzu Oezcelik
Professor Dr Lars Pape
Professor Dr Annette Maria Paschen
Professor Dr Andreas Paul
Professor Dr Micaela Poetsch
Professor Dr Christoph Pöttgen
Professor Dr Harald H. Quick
Professor Dr Sven Rahmann
Professor Dr Tienush Rassaf
Professor Dr Peter Michael Rath
Professor Dr Ursula Rauen
Professor Dr H. Christian Reinhardt
Professor Dr Christoph Rischpler
Professor Dr Alexander Rösch
Professor Dr Rudolf Stefan Ross
Professor Dr Alexander Röth
Professor Dr Arjang Ruhparwar
Professor Dr Fuat Hakan Saner
Professor Dr Benedikt Michael Sebastian Schaarschmidt
Professor Dr Dirk Schadendorf
Professor Dr Ulrike Schara-Schmidt
Professor Dr Michael Schedel
Professor Dr Manfred Schedlowski
Professor Dr Björn Scheffler
Professor Dr Norbert Scherbaum
Professor Dr Hans-Ulrich Schildhaus
Professor Dr Thomas Schlosser
Professor Dr Kurt Werner Schmid
Professor Dr Christoph Schöbel
Professor Dr Alexander Schramm
Professor Dr Martin Schuler
Professor Dr Christin Seifert
Professor Dr Winfried Siffert
Professor Dr Jens Siveke
Professor Dr Georgios Sotiropoulos
Professor Dr Andreas Stang
Professor Dr Ingo Stoffels
Professor Dr Martin Stuschke
Professor Dr Ulrich Sure
Professor Dr Tibor Szarvars
Professor Dr Georg Täger
Professor Dr Christian Taube
Professor Dr Martin Teufel
Professor Dr Dirk Theegarten
Professor Dr Jens Theyson
Professor Dr Matthias Thielmann
Professor Dr Dagmar Timmann-Braun
Professor Dr Beate Timmermann
Professor Dr Matthias Trotzeck
Professor Dr Jürgen Treckmann
Professor Dr Mirko Trilling
Professor Dr Selma Ugurel
Professor Dr Lale Umutlu
Professor Dr Cläre von Neubeck
Professor Dr Nils von Neuhoff
Professor Dr Reza Wakili Noduschan
Professor Dr Jürgen Wasem
Professor Dr Frank Weber
Professor Dr Daniel Wendt
Professor Dr Gunther Wennemuth
Professor Dr Astrid Westendorf
Professor Dr Alexander Weymann
Professor Dr Benjamin Wilde
Professor Dr Oliver Witzke
Professor Dr Yuan Zhu

Improving organ transplants: with oxygen and slow temperature increases

How can we prepare sub-optimal liver transplants to give patients a new lease on life? Researchers of the Faculty of Medicine have studied the factors and processes involved in transplant quality and the long-term survival of transplant recipients. They have published their findings in two recent publications.

New approaches to fighting diabetes: CAR T cells

Autoimmune diseases are on the rise. As many as 300,000 people in Germany have type-1 diabetes. It is caused by an imbalance in the immune system, which attacks and kills the insulin-producing beta cells in the pancreas. Researchers of the Faculty of Medicine have attempted to restore the balance during laboratory experiments by artificially creating regulatory CAR T cells for type-1 diabetes.

Preventing hospital-acquired infection: growth factor inhibits natural killer cells

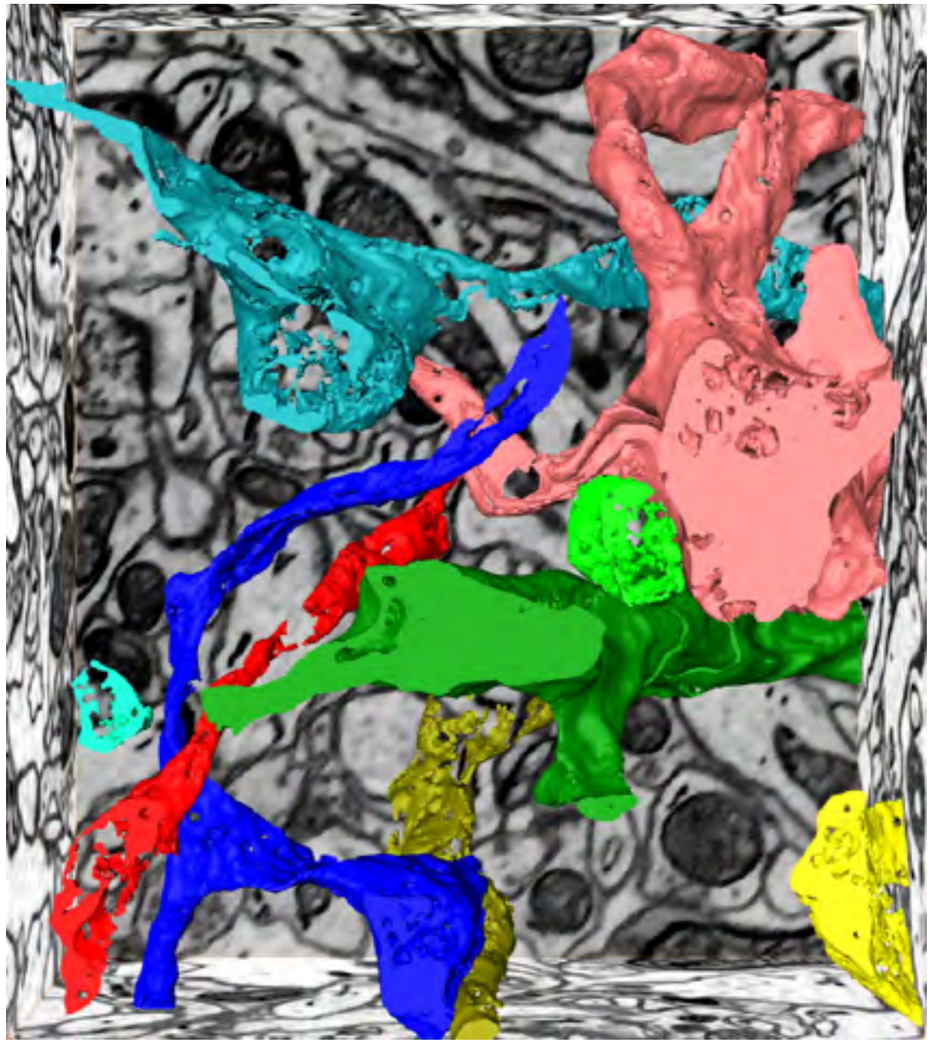
ICU patients often suffer from systemic inflammatory response syndrome, which them particularly vulnerable to hospital-acquired infections. Until recently, the reasons for this were entirely opaque. A team of researchers of the Faculty of Medicine has now discovered one of the causes: the natural killer cells of the immune system are compromised.

Discovery of a key enzyme that slows down collapse of the blood-brain barrier

After a stroke, it is imperative to restore blood flow through the brain. The blood clot is either dissolved by drugs or removed mechanically. In rare cases, however, the return of the blood supply (reperfusion) can lead to a collapse of the vital blood-brain barrier. Scientists of Maastricht University, the Faculty of Medicine at the University of Duisburg-Essen, and Essen University Hospital have investigated the causes of this phenomenon.

Newly discovered blood vessel system in bones

A team of researchers under Professor Matthias Gunzer and Dr Anja Hasenberg of the Institute of Experimental Immunology and Imaging at UDE's Faculty of Medicine has



© Foto: UK Essen

3D volume reconstructions of synaptic structures in the neocortex based on data obtained from animal testing

Capturing the ultrastructure of the brain in detail is essential for understanding its functional processes. Due to the large volumes of data involved and the complexity of the target structures, this endeavour still poses major challenges for cutting-edge imaging procedures. Many biomedical researchers worldwide are working on this sub-discipline of neurobiology. Professor Joachim Lübke's research group (Institute of Neuroscience and Medicine INM-10 at Forschungszentrum Jülich GmbH) has been studying the synaptic organisation of the neocortex and hippocampus for many years using transmission electron microscopy and quantitatively evaluable 3D models of synaptic structures. In collaboration with the Electron Microscopy Unit (EMU) of the Imaging Center Essen, managed by Dr Mike Hasenberg, the Faculty of Medicine at the University of Duisburg-Essen has successfully established the focused ion beam scanning electron microscopy (FIB-SEM) technique. This method allows researchers to produce high-resolution electron microscopy data stacks of the neocortex of rodents and, as of recent, humans. It also facilitates the reconstruction and quantification of 3D models of individual synaptic structures (specimens are colour-coded). Jacqueline Heinen-Weiler (doctoral candidate at the Clinic for Cardiology and Angiology – CardioScienceLabs in collaboration with the EMU) carried out the imaging and reconstruction process.

identified a previously overlooked network of extremely thin blood vessels which directly connects the bone marrow with the circulatory system under the periosteum. Their results have been published in Nature Metabolism

Research into COVID-19

SARS-CoV-2: Essen's researchers are working at full steam

Since SARS-CoV-2 and COVID-19 came into our lives, all eyes have been on science. The UDE's Faculty of Medicine has specialised in infectious diseases and immunology for many years. Since the spring of 2020, its researchers have been working at full steam to understand the novel coronavirus. Between then and late September, the ethics committee approved around 70 research applications, so the corresponding studies went underway immediately.

An important axis of science: Essen and Wuhan collaborate on research into COVID-19

The Faculty of Medicine operates a German-Chinese laboratory in the Chinese city of Wuhan. The Wuhan-Essen International Laboratory of Infection and Immunity was founded in 2017 by the University of Duisburg-Essen and the Huazhong University of Science and Technology in Wuhan. Their partnership can help advance research during the ongoing pandemic. Professor Ulf Dittmer, Director of the Institute of Virology at the UDE's Faculty of Medicine, believes that the large number of human samples from virus-bearing patients and the clinical data provided by the team in Wuhan constitute a particular advantage.

Coronaviruses: mouthwash can lower the risk of contagion

Certain brands of commercial mouthwash can deactivate SARS-CoV-2 viruses. That was the insight gained from a series of promising cell culture experiments conducted by researchers from six universities, including two members of the Faculty of Medicine at the University of Duisburg-Essen: PD Dr Adalbert Krawczyk from the Clinic for Infectious Diseases and Professor Jörg Steinmann from the Institute of Medical Microbiology. The laboratory results are yet to be verified in clinical studies. The research project was funded by Stiftung Universitätsmedizin Essen and the EU Horizon 2020 project.

A new test for analysing antiviral substances and neutralising antibodies for SARS-CoV-2

Neutralisation tests for the novel coronavirus are very complicated and require special laboratories. Researchers of the Faculty of Medicine have developed a faster, more economical method that is widely applicable. A pre-print of the study has been published to give the scientific community rapid access to the new method.

The Merkel phenomenon: a study into the significance of political communication

It was a historic speech that made an impact: in her TV address in March, Angela Merkel found the words we all needed to hear. COVID-19 does not just attack the respiratory system, it also takes a toll on our mental health. Clear political leadership and communication are incredibly important. The renowned journal Public Health reported on a study into the significance of political communication conducted by researchers of the UDE's Faculty of Medicine.

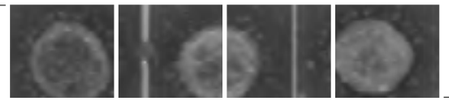
Early detection of severe COVID-19 cases

Many cases of COVID-19 are mild. Around ten per cent of patients, however, develop severe pneumonia and require intensive care. Identifying at-risk patients is an important step towards initiating the right treatment at an early stage. In partnership with the Wuhan Union Hospital, researchers from the Institute of Virology have found that the T cell population is a useful indicator. The study was preliminarily published online in The Lancet EBiomedicine.

Collaborations and international affairs

Research partnership initiated: Havana and Essen form a new axis of science

A new research partnership has been initiated in the Cuban capital of Havana. It involves the Medical University of Havana, the



International Center of Neurological Restoration (CIREN, Cuba's leading neurological research institute), and the Faculty of Medicine of the University of Duisburg-Essen. The partnership aims to facilitate exchange between students and researchers and establish collaborative research projects.

The Metropolitan Autonomous University (UAM) in Mexico City has entered into a collaboration agreement with the UDE's Faculty of Medicine.

The Alexander von Humboldt Foundation has appointed Professor Elke Cario of the Clinic for Gastroenterology and Hepatology to the selection committee for research scholarships. She joined the committee in January 2020.

Professor Dagmar Führer-Sakel, the Vice-Rector for Research, Career Development and Science Transfer and Director of the Clinic for Endocrinology, Diabetes and Metabolism, was appointed to the Permanent Senate Commission on Key Questions in Clinical Research of the German Research Foundation (DFG).

Professor Norbert Scherbaum has been appointed to the expert committee on the narcotics act of the Federal Ministry of Health again.

Professor Verena Jendrossek of the Institute of Cell Biology (tumour research) has been appointed to the Kompetenzverbund Strahlenforschung, an advisory committee of the Federal Ministry of Education and Research, as a representative of the German Society for Biological Radiation Research (DeGBS).

Prizes and awards

Scientists from Essen named on the global list of 'Highly Cited Researchers' in 2019

Every year, the Web of Science Group (a Clarivate Analytics company) identifies researchers all over the world who have published multiple academic works and whose publications are in the top one per cent of citations in their field. Three researchers of the UDE's Faculty of Medicine have made the list: Professor Gerd Heusch (Director of the Institute of Pathophysiology, research focus: heart attack), Professor Dirk Schadendorf (Director of the Clinic for Dermatology, research focus: skin cancer) and Antje Sucker (principal technical assistant at the Clinic for Dermatology).

Vordenker2020: Professor Michael Forsting

The Initiative Gesundheitswirtschaft, the B. Braun Foundation and the Bibliomed publishing house give out the Vordenker Award der Gesundheitswirtschaft. It honours individuals whose innovative ideas and projects have made pioneering improvements in healthcare. In 2020, the prize went to Professor Michael Forsting, the Director of Radiology and Head of IT at Essen University Hospital. The jury emphasised Professor Forsting's crucial contributions to the digital transformation of the hospital.

PD Dr Adalbert Krawczyk receives the G. D. Baedeker Prize 2020

The virologist PD Dr Adalbert Krawczyk, who teaches and researches at the Faculty of Medicine, University of Duisburg-Essen, has been awarded the 2020 Gottschalk Diederich Baedeker Prize. It honours his outstanding achievements at Essen University Hospital, where he works on developing a highly effective antibody to prevent and treat infection with the herpes simplex virus.

European Society of Cardiology honours researchers of the Clinic for Cardiology and Angiology

Four clinical and experimental researchers of the Clinic for Cardiology and Angiology, headed by director Professor Tienush Rassaf, have secured funding on the occasion of the annual conference of the European Society of Cardiology. Dr Lars Michel, Dr Raluca Mincu and Dr Simone Mrotzek were awarded the ESC Congress Educational Grant; Sebastian Korste (PhD candidate) won the ESC Basic Science Travel Award.

PD Dr Felix Nensa receives the Thieme Management Award 2018

The Thieme journal kma Klinik Management aktuell has honoured PD Dr Felix Nensa of Essen University Hospital as a 'high-flyer' in his field. He is the head of the research group on artificial intelligence at the Institute of

Selected Publications

Schwerpunkt Herz-Kreislauf

Merz, S.F., S. Korste, L. Bornemann, L. Michel, P. Stock, A. Squire, C. Soun, D.R. Engel, J. Detzer, H. Lörchner, D. M. Hermann, M. Kamler, J. Klode, Ulrike. B. Hendgen-Cotta, T. Rassaf, M. Gunzer, M. Totzeck (2019): *Contemporaneous 3D characterization of acute and chronic myocardial I/R injury and response. Nat Commun. 10(1):2312. doi: 10.1038/s41467-019-10338-2.*

Heusch, G. (2020): *Myocardial ischaemia-reperfusion injury and cardioprotection in perspective. Nat Rev Cardiol 17(12):773–789. doi: 10.1038/s41569-020-0403-y. Epub 2020 Jul 3.*

Schwerpunkt Onkologie

Liu, D., B. Schilling, D. Liu, A. Sucker, E. Livingstone, L. Jerby-Amon, L. Zimmer, R. Gutzmer, I. Satzger, C. Loquai, S. Grabbe, N. Vokes, C.A. Margolis, J. Conway, M.X. He, H. Elmarakeby, F. Dietlein, D. Miao, A. Tracy, H. Gogas, S.M. Goldinger, J. Utikal, C.U. Blank, R. Rauschenberg, D. von Bubnoff, A. Krackhardt, B. Weide, S. Haferkamp, F. Kiecker, B. Izar, L. Garraway, A. Regev, K. Flaherty, A. Paschen, E.M. Van Allen, D. Schadendorf (2019): *Integrative molecular and clinical modeling of clinical outcomes to PD1 blockade in patients with metastatic melanoma. Nat Med. 25(12), 1916–1927.*

Schuler, M., B.C. Cho, C.M. Sayehli, A. Navarro, R.A. Soo, H. Richly, P.A. Cassier, D. Tai, N. Penel, L. Nogova, S.H. Park, M. Schostak, P.Gajate, R. Cathomas, P. Rajagopalan, J. Grevel, S. Bender, O. Boix, H. Nogai, M. Ocker, P. Ellinghaus, M. Joerger (2019): *Rogaratinib in patients with advanced cancers selected by FGFR mRNA expression: a phase 1 dose-escalation and dose-expansion study. Lancet Oncol. 20(10), 1454–1466.*

Schwerpunkt Translationale Neuro- und Verhaltenswissenschaften

Masuda, T., R. Sankowski, O. Staszewski, C. Böttcher, L. Amann, Sagar, C. Scheiwe, S. Nessler, P. Kunz, G. van Loo, V.A. Coenen, P.C. Reinacher, A. Michel, U. Sure, R. Gold, D. Grün, J. Priller, C. Stadelmann, M. Prinz (2019): *Spatial and temporal heterogeneity of mouse and human microglia at single-cell resolution. Nature 56, 388–392.*

Hagenacker, T., C.D. Wurster, R. Günther, O. Schreiber-Katz, A. Osmanovic, S. Petri, M. Weiler, A. Ziegler, J. Kuttler, J.C. Koch, I. Schneider, G. Wunderlich, N. Schloss, H.C. Lehmann, I. Cordts, M. Deschauer, P. Lingor, C. Kamm, B. Stolte, L. Pietruck, A. Totzeck, K. Kizina, C. Mönninghoff, O. von Velsen, C. Ose, H. Reichmann, M. Forsting, A. Pechmann, J. Kirschner, A.C. Ludolph, A. Hermann, C. Kleinschnitz (2020): *Nusinersen in adults with 5q spinal muscular atrophy: a non-interventional, multicentre, observational cohort study. Lancet Neurol. 19, 317–325.*

Schwerpunkt Infektiologie und Immunologie

Lang, J., P. Bohn, H. Bhat, H. Jastrow, B. Walkenfort, F. Cansiz, J. Fink, M. Bauer, D. Olszewski, A.Ramos-Nascimento, V. Duhan, S.K. Friedrich, K.A. Becker, A. Krawczyk, M.J. Edwards, A. Burchert, M. Huber, J. Friebus-Kardash, J.R. Göthert, C. Hardt, H.C. Probst, F. Schumacher, K. Köhrer, B. Kleuser, E.B. Babiychuk, B. Sodeik, J. Seibel, U.F. Greber, P.A. Lang, E. Gulbins, K.S. Lang, J. Lang et al. (2020): *Acid ceramidase of macrophages traps herpes simplex virus in multivesicular bodies and protects from severe disease. Nat Commun. 11(1):1338.*

Grüneboom, A., I. Hawwari, D. Weidner, S. Culemann, S. Müller, S. Henneberg, A. Brenzel, S. Merz, L. Bornemann, K. Zec, M. Wuelling, L. Kling, M. Hasenberg, S. Voortmann, S. Lang, W. Baum, A. Ohs, O. Kraff, H.H. Quick, M. Jäger, S. Landgraeber, M.Dudda, R. Danuser, J.V. Stein, M. Rohde, K. Gelse, A.I. Garbe, A. Adamczyk, A.M. Westendorf, D. Hoffmann, S. Christiansen, D.R. Engel, A. Vortkamp, G. Krönke, M. Herrmann, T. Kamradt, G. Schett, A. Hasenberg, M. Gunzer (2019): *A network of trans-cortical capillaries as mainstay for blood circulation in long bones. Nat Metab. 1(2), 236–250.*

Schwerpunkt Transplantation

Minor, T., C. von Horn, A. Gallinat, M. Kaths, A. Kribben, J. Treckmann, A. Paul (2020): *First-in-man controlled rewarming and normothermic perfusion with cell-free solution of a kidney prior to transplantation, Am J Transplant. 20(4): 1192–1195.*

Radtke, S., A. Görgens, S. Vitoriano da Conceição Castro, L. Kordelas, A. Köninger, J. Dürig, M. Möllmann, P.A. Horn, B. Giebel (2019): *Human multipotent hematopoietic progenitor cell expansion is neither supported in endothelial and endothelial/mesenchymal co-cultures nor in NSG mice. Science Reports. 9(1): 12914.*