west german cancer center consortium

Networking Excellence

Annual Report 2024

UKM Universitätsklinikum Münster

University Medicine Essen

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Milestones

What happened in 2024, and what topics will be important in 2025? Prof Annalen Bleckmann, Director of WTZ Münster, and Prof Dirk Schadendorf, Director of WTZ Essen, are joined by General Managers Prof Philipp Lenz (Münster) and Dr Stefan Palm (Essen) in looking back at the milestones achieved last year and at the highlights of the coming year.

WTZ made an outstanding impression on the international assessors during the appraisal process for continued funding as an Oncological Center of Excellence. This is an excellent interim testimonial for the growing collaboration in our consortium."

Prof Annalen Bleckmann

After a build-up phase, a key issue in the next five years of funding will be to continue developing the networking in our consortium. A stronger dovetailing of clinical treatment projects and evaluating them jointly will continue to increase both the quality of care and the importance of WTZ in the research sector."

Prof Dirk Schadendorf

With its Center for Personalised Medicine, WTZ Münster has been participating in the genome sequencing pilot project since 2024. This means that, from 2025, molecular diagnostics will be possible in a standardised form all over Germany – with the aim of continually improving our ability to establish changes to genetic material in tumour tissue as a tool in cancer treatment."

Prof Annalen Bleckmann

In 2024 we continued to increase patient empowerment in the WTZ consortium. This is because well-informed, physically active patients who are themselves involved in the decisions taken for their treatment become fit again faster."

Prof Dirk Schadendorf

Funding an Oncological Center of Excellence only makes sense when the innovations ultimately benefit the patients. The ONCOnnect alliance project, which started up in 2024, ensures that top-level oncological medicine also becomes available in rural areas."

Prof Philipp Lenz

Digitalisation in medicine is advancing more and more, and it needs the relevant tools for managing and evaluating the huge quantities of data produced. We are constantly investing in these tools and were therefore able, for the first time, to benefit fully from this for our 2024 Key Figures Report at the Center for Personalised Medicine."

Dr Stefan Palm

Patient care makes an essential contribution to good outcomes of treatments at WTZ. For this reason, in 2024 we again did a lot to develop special oncological patient care: in addition to programmes of further training, digital support tools were introduced and specialised nursing rounds were implemented."

Prof Philipp Lenz

The experience gained in the WTZ consortium now flows via ONCOnnect into a further, much bigger network: thanks to structured exchanges, the other Comprehensive Cancer Centers involved benefit from our expertise, and vice versa."

Dr Stefan Palm

The WTZ consortium: working as an alliance

WTZ has established itself as a consortium and is to receive funding of 4.8 million euros for another four years from German Cancer Aid (Deutsche Krebshilfe).

With the aim of enabling all cancer patients to have access to state-of-the-art treatment and diagnostics, German Cancer Aid is funding the expansion of the network of Oncological Centers of Excellence. WTZ has proved itself successfully in this network since 2021, and in 2024 it qualified for further funding after it was subjected to a comprehensive assessment.

"Even before the funding started, we invested a lot of energy in building up joint structures and standardised processes," explains Prof Georg Lenz, Scientific Director at WTZ Münster. "In the first funding period we worked on implementing standardised software solutions, developing joint methods of treatment, and building up a joint study landscape and cross-locational treatment for patients – and all these things convinced the team of assessors." And from the very beginning the chemistry between the two locations was right. "We very quickly and informally found common ground, which meant we were able to lay the foundations for optimum patient care and the research closely linked to this," says Prof Jens Siveke, Scientific Director of WTZ Essen. "Our specialists in a variety of disciplines and professional groups

The WTZ consortium was able to convince the team of assessors from German Cancer Aid in every respect. The photo shows the representatives of the Essen and Münster locations.

Together with our consortium partners, we want to be prepared for the future regional responsibilities which university medicine will have, and which are explicitly mentioned in the resolution on national hospital reform passed just recently by the German Cabinet."

Prof Dr Dirk Schadendorf
Director of WTZ Essen

The continued funding for WTZ by German Cancer Aid allows us to progress in the coming four years with the many projects which have been initiated in connection with treatment, research and teaching.”

Prof Annalen Bleckmann
Director of WTZ Münster

work hand in hand in order to offer patients the best possible and most advanced treatment,” adds Prof Alex W. Friedrich, Medical Director and Chairman of the Board at University Hospital Münster (UKM). One important pillar of the work done by the consortium, he says, is the superlative promotion of innovation and excellence at WTZ. This is demonstrated in numerous cancer-related research groups, as well as in the various programmes for junior researchers working in the fields of medicine and the natural sciences.

Cooperation also outside of funding

That the good cooperation which exists goes way beyond any work and programmes promoted is demonstrated by the additional funding acquired. “We have advanced from the level of creating structures to that of creating content,” comments Prof Annalen Bleckmann, Director of WTZ Münster, and cites the example of funding for both Centers for Personalised Medicine, as well as in the national ONCOnnect alliance project.

“In the funding period now beginning, we are very much looking forward to building up and expanding wide-ranging recording and observation of patient

Our specialists in a variety of disciplines and professional groups work hand in hand in order to offer patients the best possible and most advanced treatment.”

Prof Alex W. Friedrich
Medical Director and Chairman of the Board
at University Hospital Münster (UKM)

The renewed funding for WTZ from German Cancer Aid is an affirmation of our strategy of continually improving oncological care by means of digitalisation and networking."

Prof Jochen A. Werner
Medical Director and Chairman of the Board
at University Medicine Essen (UME)

and tumour characteristics," explains Siveke. "Merging these data from Essen and Münster gives rise to new research topics and, in the medium term, to new offers which make it possible to provide even more patient-centred care at all levels." In the process, patient involvement will continue to play a key role: "Involving the WTZ Patients Advisory Committee in our projects and studies serves as a model for the whole country," says Schadendorf. However, he also sees the external conditions as being a significant factor influencing work at WTZ in the coming years. "Hospital reform and the associated linking-up of centers will go hand in hand with changed patient flows, and participation in the genome sequencing pilot project – which from 2025 will allow molecular diagnostics to be standardised nationwide – will entail extremely fast developments in diagnostics and treatment." Lenz' concluding wish in these challenging times: "It would be great if the next appraisal for acquiring continued funding were to mean less bureaucracy for us as an established consortium."

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Excellent

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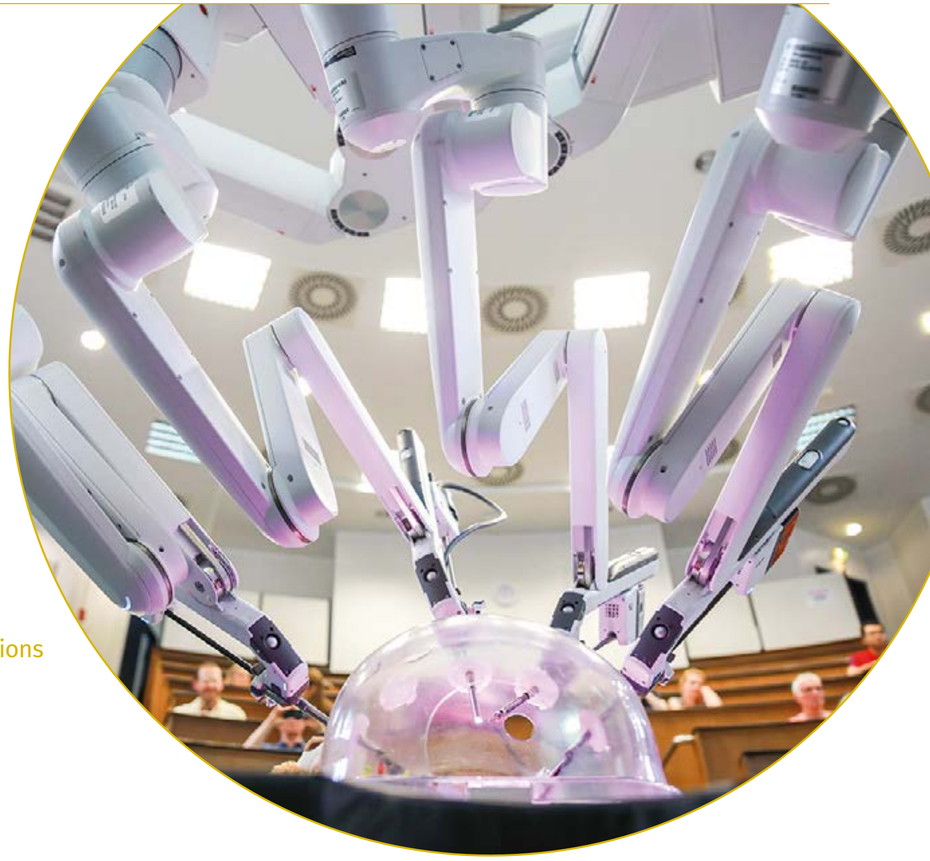
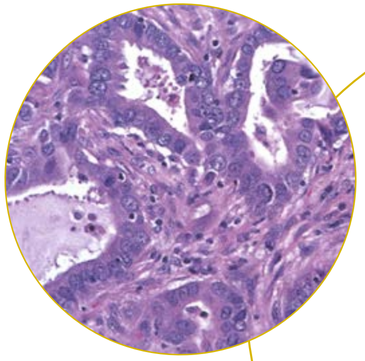




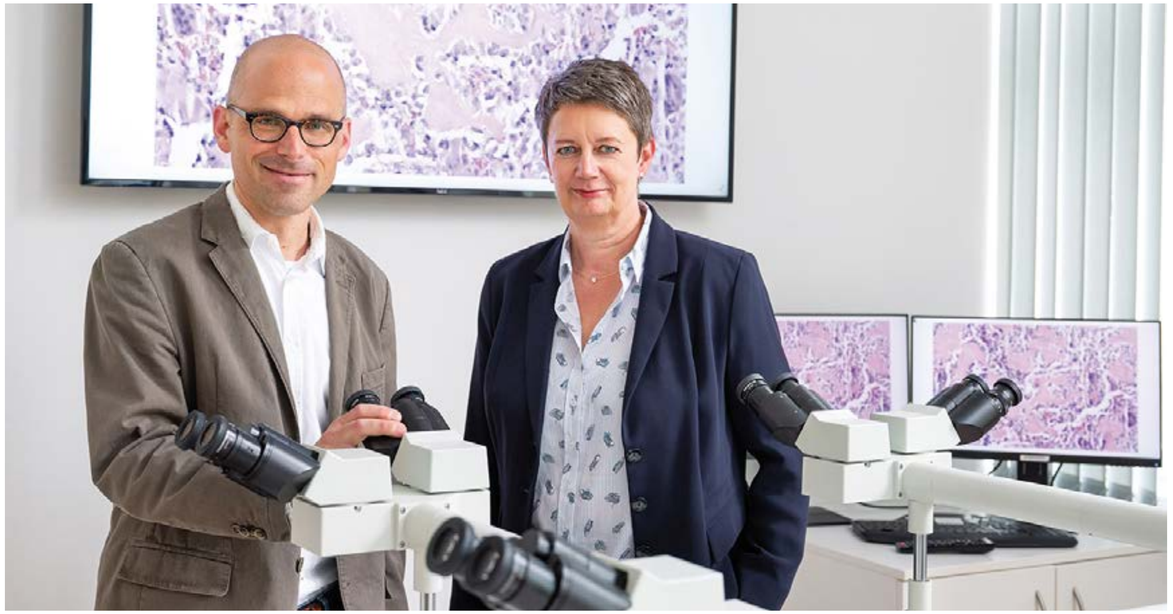
Personalised medicine and genome sequencing at WTZ

The options for treating cancer patients have increased exponentially over the past few years, with a decisive contribution to this being made by our ever better understanding of the biology of different forms of cancer.

Prof Sylvia Hartmann
Director of the Institute of Pathology at UME

In so-called “personalised medicine”, the cancer treatment is adapted to the specific molecular features of the individual tumour, and an exact knowledge of the individual tumour enables targeted treatment to be carried out. Genome sequencing is playing an ever more important role in this.

“The word ‘genome’ is used to describe the entire genetic information relating to a person, and genome sequencing is a technology with which a person’s entire genetic material can be analysed,” explains Prof Wolfgang Hartmann, Director of the Gerhard Domagk Institute of Pathology at UKM. Since the sequencing of the first complete human genome in 2001, research has developed rapidly and has shown that certain patients can benefit considerably from the sequencing of parts of their genome. “At the Centers for Personalised Medicine we can now adapt cancer treatment to individual genetic changes in the tumour cells of the patient in question,” says Prof Sylvia Hartmann, Director of the Institute of Pathology at UME. “This means that with this approach we can target tumour cells. At the moment it can sometimes have distinct side effects, but in the long term it offers the option of achieving better tolerability and leaving healthy cells unharmed,” adds Prof Frank Kaiser, Director of the Institute of Human Genetics at UME. There are corresponding Centers for Personalised Medicine at both WTZ locations, and both were certified for the first time in 2024.



Prof Wolfgang Hartmann and Prof Eva Wardelmann | Directorate of the Gerhard Domagk Institute (GDI) of Pathology at UKM

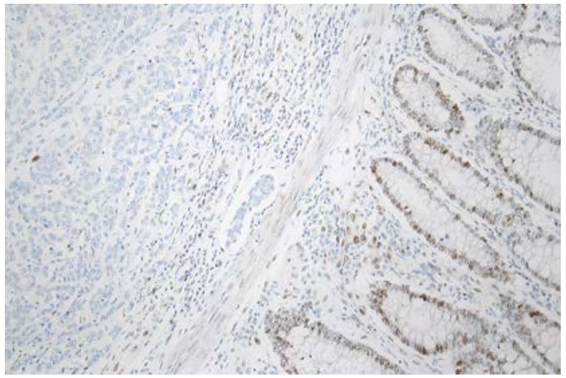
With no fewer than two certified Centers for Personalised Medicine, WTZ is making a decisive contribution to increasingly personalised patient care and to scientific development in this field."

Dr Ina Pretzell
Medical Director of the Molecular Tumour Board and of Molecular Diagnostics at UME, and Medical Director of the Center for Personalised Medicine in Essen

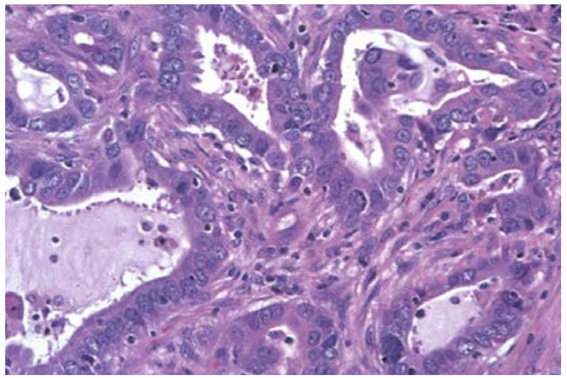
This is exciting news especially for two groups of patients: people with cancer at an advanced stage, and people who have a hereditary genetic mutation. "The best-known example of this is the predisposition to breast cancer," reports Prof Frank Tüttelmann, Director of the Clinic for Medical Genetics at UKM. "In this case, certain mutations go hand in hand with a greatly increased risk of cancer. Anyone who knows about this mutation undergoes a detailed early detection procedure." However, this concerns only ten percent of the genome sequencing undertaken at WTZ; by far the greater share is carried out for patients with cancer at an advanced stage. "By means of sequencing, we might be able to offer new treatment options to patients for whom standard therapies have been exhausted," explains Dr Ina Pretzell, Medical Director of the Molecular Tumour Board and of Molecular Diagnostics at UME and Medical Director of the Center for Personalised Medicine in Essen. "Our joint Molecular Tumour Board is available to all patients for whom the guideline therapy options have already been exhausted," adds Dr Klaus Wethmar, Medical Director of the Molecular Tumour Board and Coordinator at the Center for Personalised Medicine in Münster.

Prof Frank Kaiser
Director of the Institute of Human Genetics at UME

Prof Frank Tüttelmann
Director of the Clinic for Medical Genetics at UKM



Colon carcinoma with MLH1 deficiency.



Adenocarcinoma of the lung with EGFR mutation.

ZPM Essen ZPM Münster

Dr Klaus Wethmar
Medical Director of the Molecular Tumour Board and Coordinator at the Center for Personalised Medicine in Münster

Perspectives for patients and research

“In these Molecular Tumour Boards, experts from a variety of fields at clinics and in research come together to interpret and discuss findings, and they work on developing a recommendation for treatment based on a patient’s molecular examination and tailored to their individual situation,” explains Prof Jens Siveke, Scientific Director of WTZ Essen.

At the same time, in many cases it is decided here whether the patient in question is to be included in the national pilot project for genome sequencing. “The aim of this project is to analyse ever more comprehensive parts of cancer patients’ DNA in their tumour tissue, right up to the complete genome,” explains Wolfgang Hartmann. Prof Annalen Bleckmann, Director of WTZ Münster, adds: “The idea behind it is to constantly gain a better understanding of the changes in the genetic material in the tumour tissue, then to use this knowledge as a tool for treating cancer and evaluating the tool’s benefits for personalised medicine.” The certified Center for Personalised Medicine at WTZ Münster was selected to take part in the pilot project being financed by statutory and private medical insurance funds.

Prof Jens Siveke
Director of the Brückeninstitut für Experimentelle Tumortherapie (Institute for Developmental Cancer Therapeutics) at WTZ Essen; Deputy Director and Scientific Director of WTZ Essen

“For the first time, this project makes it possible to collate all the clinical and genomic data in one place and to thus gain a better understanding of the changes in the genome relevant to cancer,” says Bleckmann. These data are made available both for patient care and for research purposes. “At the end of the project, the benefits of genome sequencing will hopefully be so evident that it will become part of standard care in Germany,” says Prof Eva Wardelmann, Director of the Gerhard Domagk Institute of Pathology at UKM.

We are proud that WTZ is taking part in the genome sequencing pilot project being carried out nationwide and can thus contribute to the further development of first-class oncological medicine.”

Prof Annalen Bleckmann
Director of WTZ Münster

ONCOnnect brings first-class oncological medicine to outlying regions

*The aim of the national alliance project **ONCOnnect**, which is receiving funding of 13.8 million euros from the German Cancer Aid Foundation, is to link up the leading oncological centers with regional care and treatment structures.*

Dr Jens Kleesiek
Vice-Director of WTZ Essen

ONCOnnect enables us to build up networking structures at WTZ which benefit patient care, and then to scale them up to cover the whole of Germany."

Dr Stefan Palm
General Manager of WTZ Essen

In the care provided for cancer patients, there are still significant regional variations: anyone living near a large city can rely on care being provided by one of the 15 Comprehensive Cancer Centers (CCC) funded by German Cancer Aid. Patients living in rural areas are treated largely at regional hospitals and by local doctors. This is the starting point for the alliance project, which started up in 2024.

"Over the past few years, CCCs have started up at most university hospitals in Germany based on the American model," says Dr Stefan Palm, General Manager of WTZ Essen. "But because of the fragmented structure of medical care in Germany, the majority of cancer patients receive their treatment outside these first-class oncological centers." For this reason, the CCCs have built up regional networks in order to provide cancer patients everywhere with access to specialised diagnostics and treatment. However, a detailed status survey carried out in 2022 showed that these so-called "outreach networks" quickly come up against their limitations because of a lack of care provided in rural areas, insufficient coordination among the various CCCs, and a lack of funding. "For these reasons, one central aim that ONCOnnect has is to build up professional management of the outreach activities at the CCCs everywhere and to network these all across Germany," explains Prof Philipp Lenz, General Manager of WTZ Münster and Medical Director of Palliative Medicine.

To this end, what is being established is a central administration, an overarching CCC project management structure, with outreach managers at all CCCs. "In addition, five task forces are being set up to develop exemplary models in the regional context, and these are then to be transferred to the other CCCs," adds Dr Jens Kleesiek, Vice-Director of WTZ Essen and Head of the Medical Machine Learning research group at the Institute of AI in Medicine at UME. "The task forces are: Prevention and Early Detection, Patient Involvement, Clinical Studies, Quality Assurance, and Digitalisation. WTZ is involved in the area of Quality Assurance and plays a leading role in the Digitalisation task force."

This alliance project is a fantastic opportunity for using synergies and agreeing on common standards across all the CCCs."

Prof Philipp Lenz
General Manager of WTZ Münster

WTZ's role in the ONCOnnect alliance project

WTZ Essen is working with Berlin, Frankfurt, Freiburg and others on the "digital home" for the complete project, designing a central information and exchange platform which can be used by all the CCCs and by external specialists, as well as by patients and their families. "The aim is to be able to support doctors in the community in their treatment of patients," explains Prof Carsten Weishaupt, Director of the UKM Skin Tumour Center at WTZ Münster. Moreover, Essen is hosting the complete service architecture on which the various CCCs' applications are run. "The standardised platform with patients' data allows automatic allocation, for example, in the recruitment of patients for a very wide area of studies," is how Kleesiek explains the benefits of centralised data management.

In Münster, the focus is on establishing a virtual Tumour Board for external patients. "On the model of existing Tumour Boards, we want to create the possibility here of getting a second opinion based not only on what is in a patient's file," says Lenz. "To this end, we bring together the necessary patient data and an interdisciplinary team to discuss individual cases in videoconferences." Ultimately, the cases which are discussed in these Tumour Boards should not be left to chance. "We want to define uniform criteria which doctors in the community can use to decide which patients would benefit most from CCC support."

Prof Carsten Weishaupt
Director of the UKM Skin Tumour Center

For this, in the end, is the aim which ONCOnnect has during the project's three-year duration: to develop a digital platform which offers improved access to innovative cancer treatment, supportive measures and clinical studies for patients – irrespective of where the patients live, and complementary to their treatment provided by regional hospitals and doctors in the community.

wtz west german cancer center consortium
ONCOnnect
NETZWERK ONKOLOGISCHE SPITZENZENTREN
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Diagnosis and treatment of neuroendocrine tumours

Neuroendocrine tumours (NETs) are difficult to cure. However, if they are detected at an early stage, patients can live with them for decades. At its two locations, WTZ has certified treatment centers for this rare form of cancer.

Here at WTZ, and in our international network, we are advancing NET-related research with a high degree of commitment, dynamism and interdisciplinary expertise."

Prof Dagmar Führer-Sakel
Head of the Endocrine Tumour Center with ENETS CoE at WTZ Essen and Director of the Endocrinology, Diabetology and Metabolism Clinic at UME

"Endocrine tumours are benign or malignant tumours which have their origin in hormone-producing gland tissue – for example thyroid, pancreas, adrenals or pituitary," explains Dr Harald Lahner, Director of the ENETS Center of Excellence (CoE) in Essen and Deputy Director of the Endocrinology, Diabetology and Metabolism Clinic at WTZ Essen. "Neuroendocrine tumours, on the other hand, originate in specific cells which are a cross between traditional endocrine cells and nerve cells and which can be found everywhere in the body." Diagnosing and treating this form of cancer thus presents two challenges at the same time: the disease is so rare, and so individual, that it is difficult to detect. And often it is a case of functional tumours which themselves produce hormones – which leads to symptoms arising independently, with other organs being involved in a potentially life-threatening way. Dealing with NETs therefore requires comprehensive experience, state-of-the-art technology as regards diagnostics and therapy, and a multidisciplinary team of specialists – and WTZ can offer all these at both its locations. For this reason, back in 2013 WTZ Essen was certified as a Center of Excellence by the European Neuroendocrine Tumor Society (ENETS), and this recognition followed for WTZ Münster in 2024. "One of the **requirements** for such a certification is having treated more than 80 patients annually with new NETs," says Dr Elena Vorona, Medical Coordinator at the ENETS Center of Excellence and Head of the Endocrinology/Diabetology Department at WTZ Münster. "At both WTZ locations there are several hundred such patients ever year, and the figure is rising steadily."

Excellent diagnostics and therapy

Treating NETs requires direct, close collaboration between specialists working in the fields of endocrinology, nuclear medicine, radiology, pathology, surgery, gastroenterology, oncology and other disciplines. "In addition to professional expertise, highly specialised methods of examination and treatment are also needed which are not available everywhere," says Prof Lars Stegger, Deputy Director of the Clinic for Nuclear Medicine at WTZ Münster. "In nuclear medicine, for example, these are state-of-the-art imaging methods such as PET-CT, PET-MRI and SPECT-CT, as well as a therapy ward for nuclear medicine which enables us to make specific diagnostics and treat tumour diseases by means of radioactively labelled molecules," adds Prof Ken Herrmann, Director of the Clinic for Nuclear Medicine at WTZ Essen. "If necessary, clinics which do not have their own NET Center and corresponding equipment can take

In the Tumour Board for endocrine tumours at WTZ Essen, 50 patients are discussed every week in pan-European networks of specialists.

Prof Lars Stegger
Deputy Director of the Clinic
for Nuclear Medicine at UKM

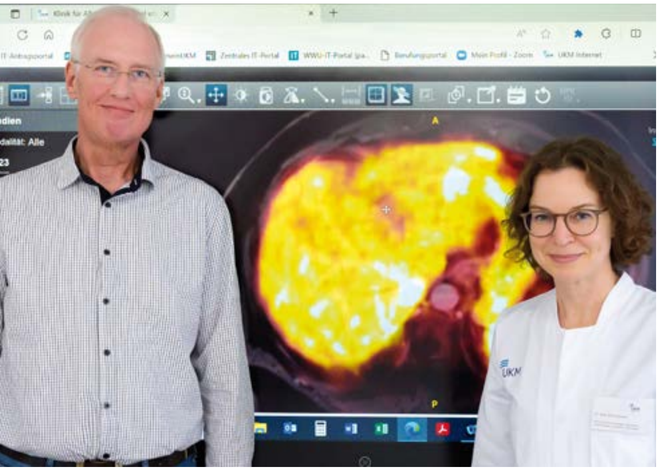
part in our tumour conferences." The results are incorporated in a structured concept for diagnosis and treatment. This concept, which involves patients in decision-making processes, is based on so-called "one-stop care". "This means that all discussions, examinations and therapies are planned to come from one source," explains Prof Dagmar Führer-Sakel, Head of the Endocrine Tumour Center with ENETS CoE at WTZ Essen, and Director of the Endocrinology, Diabetology and Metabolism Clinic at UME. "Although this concept requires extremely efficient patient management and defined contact persons, it is essential due to the rarity of NETs and to the large catchment areas involved." Patients come about three times a year and are monitored over a longer period of time: "One of our patients is a lady of 90 whom we have been treating for decades now," reports Prof Andreas Pascher, Head of the ENETS Center of Excellence, Director of the Surgical Clinic at UKM and Deputy Director of WTZ Münster. This treatment requires the interlocking of a wide range of specialist disciplines: "It involves not only the treatment of endocrine tumours but also nutritional medicine, physiotherapy and patient care." Both WTZ locations have, for example, an outpatients department in which patients are looked after their whole lives. "Many people with NETs have to contend with specific gastroenterological problems and suffer from short bowel syndrome or nutritional deficiencies, or they need special nutrition during chemotherapy," Vorona explains. Also, in the case of treatments for NETs lasting several years, special importance is attached to gentle robotic surgery, which is offered at both WTZ locations at the highest level. As a member of the WTZ Patients Advisory Committee **(see page 29),** Bruno Köhler – a patients' representative and himself a NETs patient – sees to it that patients' interests remain in the focus of any decisions taken.

Interdisciplinary collaboration: the team from the Münster ENETS Center of Excellence.

Across Germany there are only 14 specialist centers for the treatment of neuroendocrine tumours which have been certified by ENETS, and two of them are part of WTZ."

Prof Andreas Pascher
Head of the ENETS Center of Excellence, Director of the Surgical Clinic at UKM and Deputy Director of WTZ Münster.

Dr Harald Lahner
Head of the Essen ENETS Center of Excellence and Deputy Director of the Clinic for Endocrinology, Diabetology and Metabolism at UME



Patients Advisory Committee member Bruno Köhler with Dr Elena Vorona, Medical Coordinator at the ENETS Center of Excellence and Head of the Endocrinology/Diabetology Department at WTZ Münster.

Research on NETs

The scientific evaluation of the patients' data collected over the years is another central task at WTZ. "Taking a look at a problem is the first step towards solving it," says Lahner. "In Essen, for example, it was possible to show that a selective inhibition of the RET driver mutation improves the result in the case of rare NETs of the thyroid gland – which led to a distinctly more tolerable medicine being approved in 2024," reports Führer-Sakel. "Furthermore, WTZ evaluations have shown that, irrespective of the primary localisation, far more NETs patients than the five percent laid down in the guidelines suffer from bone metastases, and also that this is important when making prognoses, which means that nowadays our treatments are increasingly bone-focused," adds Lahner. Currently, work is being done in Essen – jointly with the Institute of Artificial Intelligence in Medicine – on a method for an even better recognition of NETs by means of artificial intelligence and on using machine learning for making therapy prognoses. "In Münster, on the other hand, the NELMAS Trial (see info box) is being coordinated for the European mainland – and Endocrine Surgery at WTZ Essen is involved in this through Prof Frank Weber," Pascher adds. "In this study, treatment using the radiopharmaceutical Lutathera is being compared with the best supportive treatment for patients after a resection of neuroendocrine liver metastases." Moreover, both WTZ locations are playing a key role in the development of the German and European guidelines on the treatment of NETs. Also, Münster is involved in the introduction of a European medical specialist for Neuroendocrine Tumour Diseases under the auspices of UEMS (European Union of Medical Specialists) and ENETS. "This means," says Pascher, "that WTZ is not only providing the highest standards for patient care, but has also established itself in research being done on NETs as rare tumours and, in close cooperation with patients' organisations, is actively engaged in further developing European standards and structures in basic and further training."

Prof Ken Herrmann
Director of the Clinic for Nuclear Medicine at UME

Info Box: Studies

In 2024 the NETTER-2 study, which WTZ Essen was involved in, represented a milestone in the treatment of neuroendocrine tumours. The study shows that peptide receptor radionuclide therapy (PRRT) can significantly lengthen the survival chances of patients with certain NETs – and should therefore be considered as a new therapy standard for the first-line treatment for this group of patients.
www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)00701-3/fulltext

In future, both WTZ locations will continue to be actively involved in studies relating to therapies aiming at further improvements in patients' long-term survival with a decent quality of life. One example of this is the NELMAS trial, which measures the value of a PRRT directly after the primary operation on the tumour.
www.hra.nhs.uk/planning-and-improving-research/application-summaries/research-summaries/nelmas-adjuvant-treatment-of-patients-after-resection-of-neuroendocrine-liver-metastases

Well-positioned

Some of the new appointments in the WTZ consortium

Since June 2024, **Prof Lars Christian Hanker** has been Professor of Gynaecology and Midwifery at the Gynaecology Clinic at UKM. A native of Münster, Hanker was previously at Schleswig-Holstein University Hospital. As an acknowledged expert on gynaecological oncology, he can contribute comprehensive experience in working on studies relating to the treatment of ovarian and endometrial carcinomas. For many years he has been a member of the executive board of the Study Group of the Working Group for Gynaecological Oncology (AGO). The focus of his clinical work and his research is on interdisciplinary care for cancer patients and on the development of minimally invasive and robot-assisted operating techniques.

Prof Sylvia Hartmann has been Professor of Pathology and Head of the Institute of Pathology at UME since 1 September 2024. She is an expert on research into malignant lymphomas and on the genetic backgrounds of cancer diseases. Previously, she was Heisenberg Professor of Translational Pathology at the University of Frankfurt. Prof Hartmann is researching into how lymphocytes, which normally tackle tumours, can degenerate malignantly. One focus of her research is on the Hodgkin lymphoma. She also studies the movements of immune cells and has identified three key genetic mutations of the Hodgkin lymphoma. Sylvia Hartmann studied medicine in Germany and France and in 2017 she was awarded the Rudolf Virchow Prize.

Since January 2024, **Prof Frank Tüttelmann** has been Professor of Human Genetics at the Clinic for Medical Genetics at UKM and at the Institute of Reproductive Genetics, as well as – jointly with Prof Monika Stoll – Director of the newly established Center for Medical Genetics. After studying medicine in Bochum and then completing his specialist medical studies in Münster, Tüttelmann specialised early on in the genetic causes of infertility. With his interdisciplinary working group he is researching in particular into the genetic backgrounds of male infertility, developing diagnostic approaches. In numerous national and international projects he contributes to personalised medicine, and his expertise strengthens translational oncological research at WTZ Münster – especially in cases where genetic diagnostics can recognise risks of cancer.

Prof Kathrin Thedieck has been Professor of Metabolism, Senescence and Autophagy at the University of Duisburg-Essen since 1 April 2024. At the One Health Research Center she researches into control of cell metabolism in tumours. After studying biology and biotechnology, she completed her doctorate at the Helmholtz Center for Infection Research. After that, she worked as a postdoc in Basel with Michael N. Hall, who discovered mTOR, and later at universities in Freiburg, Groningen, Oldenburg and Innsbruck. Prof Thiedeck is studying how the enzyme mTOR regulates cell metabolism and thus influences cell growth and reproduction. The aim is to decode new mechanisms in the mTOR network in order to develop more precise diagnoses and better cancer treatments. Thedieck has received several awards for her work, including a prestigious ERC Advanced Grant.

Since August 2024, **Prof Philipp Backhaus** has been Associate Professor of Molecular Imaging at the Clinic for Nuclear Medicine and at the European Institute for Molecular Imaging (EIMI) at UKM. After studying medicine in Würzburg and completing his specialist medical training in Münster, he worked at various locations including the Memorial Sloan Kettering Cancer Center in New York. He is developing new radioactive tracers for the visualisation of the microenvironment of tumours and of inflammatory processes. A tracer which he helped to develop to visualise activated fibroblasts is now used today clinically in cases of breast cancer.

Click here to read an interview with Prof Backhaus

On 1 March 2024, **Prof Jan Best** was appointed as Professor of Translational Hepatology at the Medical Faculty of the University of Duisburg-Essen. At WTZ Essen he researches into the early diagnosis and treatment of liver cancer as well as the influence of metabolic associated fatty liver disease (MAFLD). He is studying the use of biomarkers and other risk factors in order to develop individual monitoring strategies and to ensure an early detection of tumours. After studying medicine at the University of Duisburg-Essen he gained international experience at the Mayo Clinic (USA) and the Royal Adelaide Hospital (Australia), and also undertook research in Brussels, Essen and Magdeburg. Most recently he was Head of the Gastroenterology and Hepatology Department at the Knappschaft Clinic at Bochum University Hospital.

On 1 August 2024 **Prof Marcin Krawczyk** was appointed as Professor of Clinical Hepatology at the Medical Faculty of the University of Duisburg-Essen. At WTZ Essen he is researching into genetic markers for the early detection of liver diseases. Prof Krawczyk uses next-generation sequencing for an efficient identification of malignant bile duct constrictions and gall tumours in patients. He also carries out research for the prevention of liver diseases by means of genetic markers which help in the early detection of risks of chronic diseases such as fatty liver. Prof Krawczyk completed his doctorate in 2012 and qualified as a professor in 2018 on the genetics of liver diseases. Until the end of 2023 he was Acting Director of the Clinic for Gastroenterology and Hepatology at Saarland University Hospital.

Prof Claudia Bozzaro has been Professor of Medical Ethics since September 2024 and she is Head of the Institute of Ethics, History and the Theory of Medicine at UKM. She studied philosophy and art history in Freiburg and Paris, and completed her doctorate in the Department of Philosophy with an interdisciplinary dissertation on preference-oriented medicine. After appointments in Freiburg and Kiel, her research focuses on ethical issues at the beginning and at the end of life, on personalised medicine, and on normative concepts such as pain, suffering and justice. She contributes her expertise in particular in ethical questions in the care of cancer patients at WTZ Münster.

Since September 2024, **Prof Dominik Heider** has been Professor of Health Informatics and Director of the Institute of the same name at UKM. After studying computer science in Münster he qualified as a professor at the University of Duisburg-Essen; most recently he carried out research in Düsseldorf on machine learning in medicine. In his work he develops AI-based methods for analysing genetic and molecular-biological data, including forecasting resistances to antibiotics and modelling cancer diseases. His methods support personalised medicine and contribute to a better use of data in the WTZ consortium.

Highlights month by month

January
Cancer researcher **Dr Kerstin Menck is elected as President of the German Society for Extracellular Vesicles (GSEV)**

January
Prof Christian Reinhardt, Vice-Director of WTZ Essen, is elected as **President of the "Clinical Research/ Clinic-Oriented Basic Research" committee** at German Cancer Aid

February
The UKM Orthopaedic Department's **3D printing center is opened**

Click here for article "3D Printing in Tumour Orthopaedics"

March
The Neuroendocrine Center of Excellence Münster is certified as an ENETS Center of Excellence (ENETS CoE)

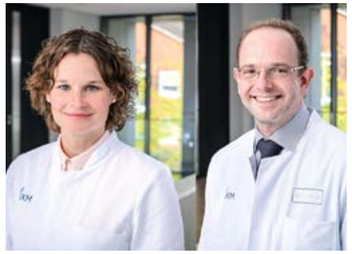
Click here for article "Diagnosis and Treatment of Neuroendocrine Tumours"

January

8.1.
Ina Brandes North Rhine-Westphalian Minister of Education and Research, **visits the Institute of Artificial Intelligence in Medicine** at Girardet House in Essen

20.1.
Ruhr Cancer Day: WTZ Consortium Patients' Day in Essen. For the first time, the event is sponsored by German Cancer Aid

February



7.2.
UKM online talk on World Cancer Day: "Revolution in Cancer Treatment? Bispecific antibodies and ADCs"

March

8.3.
2nd Westphalian Cancer Day: WTZ Consortium Patients' Day in Münster. For the first time, the event is sponsored by German Cancer Aid

22.4.
German Cancer Aid conducts its hearing at the WTZ consortium.
The consortium proves itself once again in the wide-ranging appraisal process carried out by German Cancer Aid with a view to continued funding as an Oncological Center of Excellence

Click here for article "The WTZ Consortium: A Working Alliance"

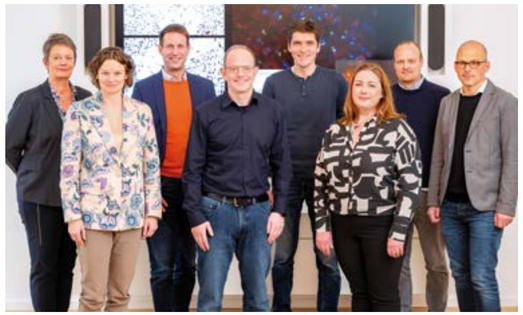
17 – 18.6.
OncoZert Audit of the Oncological Center at WTZ Essen – with a successful result

April

May

June

May
Certification of the Center for Personalised Medicine in Münster
by German Cancer Aid



24.6.
The state of North Rhine-Westphalia's Prime Minister, Hendrik Wüst, and its Minister of Science, Ina Brandes, are briefed at the **CCCE symposium** on the state's AI strategy for cancer.

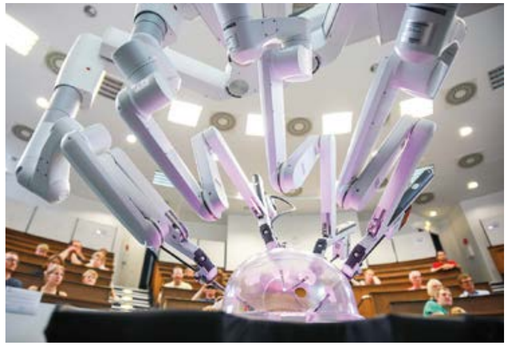
July
First-class cancer medicine for people in North Rhine-Westphalia: the WTZ consortium is again awarded the title of **Oncological Center of Excellence** by German Cancer Aid

23.8.
3rd Day of Action at WTZ Essen under the motto “Living with pain – remain active for a better everyday life”

25.8.
WTZ goes baroque – **benefit concert** organised by WTZ Münster for the UKM Breast Center

7.9.
3rd benefit regatta “Rowing to fight cancer” on Lake Baldeney in Essen raises 11,500 euros in donations for sport and exercise therapies at WTZ Essen

July



23.8
Long night of robotics at UKM

August

24.8.
19th Sarcoma Tour organised by WTZ Essen for research into sarcomas. 212,980 euros raised through donations

September

2.9.
Searching for the weak spots of deadly tumour cells: **the German Research Foundation welcomes Dr Emre Kocakavuk to its Emmy Noether Programme,** providing 2 million euros for his cancer research

20.9.
Oncological Care Symposium in Essen on the subject of “Multiprofessionalism as the key to success?”

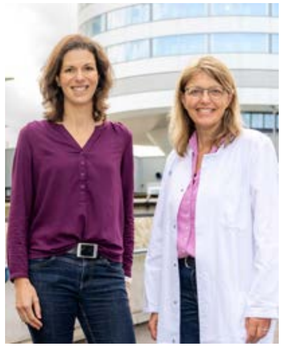
20–22.9.
WTZ patients' representatives attend 3rd National Conference on "Patients as partners in cancer research", held in Dresden. Stefanie Frenz (WTZ Patients Advisory Committee) presents the **standard operating procedure (SOP)**

4.11.
One Health Research Center Ruhr opened
by North Rhine-Westphalia's Prime Minister, Hendrik Wüst, and its Science Minister, Ina Brandes

26.11.
First impetus at WTZ Münster to set up a regional self-help group **"Self-help for women with cancer"**

September | October | November | December

6.11.
6th Münster Autumn Symposium



6.11.
"With the wheels coming off at 300 kph! Brain tumour – and now?"
Information event held by UKM Brain Tumour Center and WTZ Münster

November
Essen Center for Personalised Medicine certified
by German Cancer Aid

6.12.
Highest scientific award in Stockholm: **UKM neurosurgeon receives Olivecrona Award**

Personal

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Patient care with a bright future: careers and development at WTZ

Patient care needs perspectives for the future – and that is exactly what WTZ is creating. By means of specific measures it is enhancing the working conditions in patient care, thereby recruiting new colleagues while retaining existing staff for the long term.

At WTZ, regular discussions on career planning are part of the concept for nursing staff and have a very positive image."

Andrea Schmidt-Rumposch
Director of Nursing and member of the UME Board

The public perception of specialist patient care remains outdated and one-sided. However, with a comprehensive staff development concept, the Nursing Directors at both university hospitals, Essen and Münster, in which WTZ is embedded, are proving that patient care is an exciting, versatile career path for motivated new recruits – from further training in the subject to specialised courses of study.
"Our focus here is on incorporating and retaining the staff we have – recruiting new staff is secondary," explains Andrea Schmidt-Rumposch, Director of Nursing at UME. The acquisition of over 200 full-time staff in the last two years is evidence of the success of this strategy. "During their training, our staff experience that they are being involved and can make their voices heard, and that increases motivation, loyalty and, naturally, the number of people we take on after their training."

Thomas van den Hooven, Director of Nursing at UKM, adds: "As a hospital offering maximum care, we offer wide-ranging options for further training – for example, in care for cancer patients or in palliative care, as well as stoma, continence and wound therapy, nutrition, and delirium and pain management. We focus especially on oncological counselling and interface management. Setting up OncoCARE Plus also shows very clearly the status that oncological care has as part of oncological counselling at UKM in the highly complex care provided for patients."

Care specialist Melisa Dietrich (UME) and her team discuss mucosa care in the case of oral mucositis – an important aspect of specialist oncological care.

Rigo Fangemann, Advanced Practice Nurse at UKM, was presented with the Daisy Award.

Nina Kolbe
healthcare scientist and
Head of the Nursing Science
Department at UKM

Nursing staff and individual wards, too, are honoured for providing special levels of patient care or training: at UME. The three best training wards are honoured every year, and at UKM the Daisy Award is presented every month to outstanding members of the nursing staff. The attractiveness of the job is increased by the use of digital tools or artificial intelligence – with bureaucracy being constantly reduced, freeing up more time for direct patient care.

Academic qualifications for nursing staff

Furthermore, at WTZ particular importance is attached to opportunities for nursing staff to gain academic qualifications. “Integrating academically qualified nursing staff has two aims,” says Nina Kolbe, who heads the Nursing Science Department at UKM. “One is improved patient care grounded in evidence-based practice. And the other is to open up exciting career options in nursing.” At both WTZ locations, for example, there are so-called advanced practice nurses (APNs) – experienced staff with distinct clinical expertise who have obtained at least a master’s degree in nursing care.

“The opportunities for further academic training are already explained to trainees during their first years with us,” says van den Hooven, pointing out that trainees can embark on a course of studies parallel to their training or to their work later. In collaboration with Münster University of Applied Sciences, a bachelor’s course is offered entitled “Nursing Care – a Dual Variant” which runs parallel to the vocational training. At UME in Essen, a course of study is offered in collaboration with FOM Higher Education Institute entitled “Nursing and Digitalisation”.

“In the winter semester 2025/26, a joint Bachelor of Nursing course of study will be starting up at the Medical Faculty of the University of Duisburg-Essen,” Schmidt-Rumposch adds. “For those having completed a degree course or vocational training, a variety of trainee programmes are available to support people embarking on their careers,” explains Bernadette Hosters, Head of the Care Development and Research Department at UME. Depending on the career embarked on, anyone at either location who is interested can apply to go on trainee programmes in Specialist Oncological Care or Intensive Care, either as degree course graduates or as management trainees.

Bernadette Hosters
Head of the Care Development and
Research Department at UME

What makes working in care at WTZ so attractive are the modern academic development opportunities, and the structured exchanges between medical professionals and other healthcare specialists – right from the start of training: the number of new recruits speaks for itself."

Thomas van den Hooven
Director of Nursing and member of the UKM Board

Petra Flick
Healthcare and paediatric nurse specialising in oncology (DKG) and oncology care counselling at UKM

In the Magnet project **MACH-2** in the General Surgery Department at UKM, the focus is on interdisciplinary cooperation: teams of patient care specialists and physicians work hand in hand in the fields of case management, welfare services, physiotherapy and other areas.

Learning from one another

Besides external training, particular importance is attached at WTZ to the internal transfer of knowledge. In this way, staff who have undergone specialist training, care experts, APNs and bachelor course graduates complement one another in the field of clinical care. "There is more and more networking among individual roles, which means that specialist knowledge from all fields is contributed to the practical work being done for the benefit of patients," says Petra Flick, practice mentor at the Institute of Care and Health Education as well as within Further Oncological Care Training at UKM. "The meetings of the oncological care specialists' working groups every three months support this." Intensive discussions also take place between Münster and Essen during the regular oncology symposia. "At these meetings," says Kolbe, "someone from Essen also gives a talk in Münster, and vice versa." The staff themselves decide which topics are focused on. "What topics do we want to make progress on? This is the key question to which personnel development at WTZ will also be devoting itself in future," says Schmidt-Rumposch.

Standard operation procedure (SOP) for cooperation between Patients Advisory Committee and researchers

A standard operation procedure (SOP), drawn up by the WTU Patients Advisory Committee, guarantees structured cooperation between patients' representatives and medical staff at WTZ.

The challenges in healthcare are becoming more diverse and more complex. This makes it all the more important to include patients' voices in this phase of change. This is why the WTZ consortium set up a Patients Advisory Committee in April 2020 with the aim of improving the structural inclusion of patients in all areas. With the establishment of the SOP, a corresponding foundation has been laid for the inclusion of the Patients Advisory Committee in cancer research.

The Patients Advisory Committee at the WTZ consortium is an advocate for patients' interests.

The Directors of WTZ greatly appreciated the setting up of the SOP and gave it its full blessing – and this shows that patient involvement at WTZ plays an active and important role."

Nicola Prasuhn
Member of the WTZ Patients Advisory Committee

Katharina Kaminski
Advisor, Patients' Networks and Self-Help at WTZ Essen

Stefanie Frenz
Spokesperson of the WTZ Patients Advisory Committee

Julia Beusing-Markmann
Coordination of Patient Involvement and Self-Help at WTZ Münster

"Since the introduction of the Patients Advisory Committee we have registered an increasing interest in actively incorporating it into research," says Committee member Nicola Prasuhn. "As a result, in almost all of our meetings the question has come up of how we could best do this." After an initial brainstorming session, it quickly became clear that the ideas generated needed to be put into a structured form. "As SOPs are widespread in scientific practice, we took these as the model to base ourselves on in order to have a way familiar to us of reaching the target group of researchers," says Katharina Kaminski, Advisor for Patients' Networks and Self-Help at WTZ Essen. Help was provided by the General Manager of WTZ Münster, Prof Philipp Lenz.

In this way, a paper was drawn up which regulates how the Patients Advisory Committee and researchers work together in all phases of a study. "It was especially important to us to get the message across that the Patients Advisory Committee should provide specific input and not just be included as a matter of form in declarations of intent," explains Julia Beusing-Markmann, who is responsible for the coordination of patient involvement and self-help at WTZ Münster. In order for this to be possible, certain formalities need to be observed: "All enquiries go to a central email address, and they should include a description of the project in German, not longer than one page, and a concrete question directed at the Committee," says Stefanie Frenz, spokesperson of the WTZ Patients Advisory Committee. In return, the Committee undertakes to offer an online appointment within 20 days to discuss the project and, a maximum of five days later, to decide on the extent of the cooperation. After this, the researchers keep the Committee constantly informed on the progress the study is making and, after its completion, provide a short, easy-to-understand summary of the results.

"This way of proceeding strengthens trust and certainty on both sides," says Prasuhn. "The patients' representatives benefit from gaining a better understanding and having a greater opportunity to provide input; and the researchers profit from the precise feedback and can design their studies in a more patient-friendly way." Initial projects involving the new SOP have already been carried out successfully, and interest from all over Germany shows that, with the SOP, WTZ is setting new standards in patient involvement. "We presented our standardised work instructions at the national patient experts' conference and are now receiving numerous requests to help in setting up new committees or to share the SOP," Frenz reports. But the WTZ Patients Advisory Committee is not resting on its laurels. "We see the SOP as a living document and are continuously collecting suggestions for improvements," says Beusing-Markmann. "The SOP is then updated every two years."

Sport and exercise therapy for cancer patients

Sport is healthy – but does that also apply to cancer patients before, during and after their therapy? WTZ is exploring the issue in numerous projects and studies.

It's been a long time since sport was a subject addressed only in rehab. Studies show that regular sporting activity before and during the therapy phases leads to a marked improvement in fitness and quality of life."

Prof Dr Philipp Lenz
General Manager of WTZ Münster and
Director of Palliative Medicine at UKM

For people who have had a heart attack or a stroke, sport and exercise are nowadays, as a rule, a natural part of a normal care concept. At WTZ more and more activities are being offered for both outpatients and inpatients, and studies are being carried out in parallel to provide evidence of the effectiveness of exercise therapy in cancer patient care.

"Our work shows that regular physical activity has a measurable influence on the health and wellbeing of people with cancer," explains Dr Miriam Götte, Head of Sport and Exercise Therapy and a Vice-Director of WTZ Essen. "Anyone who does physical exercise regularly is measurably fitter, struggles less with operations, chemotherapy and radiation treatment, and suffers less from fatigue, anxiety and depression." Therefore, in addition to traditional physiotherapy and ergotherapy care, both WTZ locations offer a wide range of sport and exercise activities. At WTZ Münster, for example, a yoga course has been on offer for many years now to people both with cancer and in remission; and dancing courses called "Back in Motion" are held for patients and their partners. Sailing on Lake Aa is on offer, too, and the sports physiotherapy sports facilities at UKM are also available for patients to use. In 2019, for the first time, a **skiing trip** was organised for brain tumour patients in the Kleinwalsertal valley in Austria. "**Scientific monitoring** of neurooncological patients shows a decrease in stress and anxiety, as well as an increase in self-efficacy, subjective quality of life, and balance," says Prof Dorothee Wiewrodt, Neurosurgery/Psychotherapy and Psychooncologist Specialist at the Clinic for Neurosurgery at UKM. The study entitled **"Mobility with a brain tumour"**, completed in 2014, proves that sporting activity is also possible for brain tumour patients. "The focus of the study was on the safety and feasibility of a 16-week intensive training programme for brain tumour patients during adjuvant chemotherapy, with the aim of increasing their performance by

Individualised advice and systematic sport and exercise therapy are hugely important in meeting the needs and challenges of cancer patients.”

Dr Miriam Götte
Head of Sport and Exercise Therapy
and Vice-Director of WTZ Essen

15 percent,” explains Dr Johanna Engl, research associate at the Department of Neurosurgery and Pneumology Research at UKM. “It was even possible to exceed this target – with verified safety for the patients.”

Exercise before, during and after therapy

At WTZ Essen, too, the positive influence of sport and exercise for cancer patients of all ages has been demonstrated in studies. “It was possible to demonstrate in the **ANIMAL study**, for example,” says Götte, “that moderate to intensive physical training – with elements focusing on strength training, stamina and coordination – tends to have a positive influence on the immune reconstitution of children during a stem-cell transplantation. And the **ACTIVE study** provides evidence that a short, intensive endurance workout has an immediate effect on the mobilisation of immune defence cells in cancer patients.” This is why numerous sport and exercise activities are on offer as part of standard care at WTZ Essen – ranging from action days, climbing, cheerleading, swimming, and many other types of sport, to onco-logical training and exercise therapy involving over 60 patients a week. “There is a very high demand and, accordingly, we’re constantly increasing the number of activities we offer,” says Götte. The reason for this is understandable: “Anyone who trains with other patients or on a 1:1 basis has less need to feel inhibited than in a traditional gym,” explains Prof Philipp Lenz, General Manager of WTZ Münster and Director of Palliative Medicine at UKM. Anyone who wants to train from home has access to a video database. “Also, we are currently working on the ‘Hospital Mobility’ concept which aims to promote exercise for inpatients during a hospital stay.”

Kai Guzowski
Yoga teacher and course instructor for “Yoga for people with, and after, cancer” at WTZ Münster

Regular exercise is also very important during any hospital stay. A feeling of well-being can be increased through more exercise in hospital, with the risk of medical complications being reduced. Every step counts!"

Isabelle Stickdorn
Head of the Therapy Science Department at UKM

And the next steps?

The positive influence of sport and exercise on cancer patients will continue to be an important topic at WTZ. "Currently, we are working on building up decentralised training opportunities," explains Wiewrodt. "Because of our large catchment area, it is often difficult for patients to travel to Essen or Münster twice a week." Furthermore, Essen recently acquired funding of 7.4 million euros through the Federal Joint Committee of Public Health Agencies (Bundesausschuss) in order to evaluate, in the so-called **BEPPO Study** headed by Miriam Götte, the benefits of exercise therapy in paediatric oncology at 13 locations in Germany as compared to the current standard care on offer. In order to pool the wide range of activities offered by oncological sport and exercise science, and to make it easier for patients to use as many of them as possible, the activities carried out in research, patient care and teaching will in future be merged under the umbrella of a newly established Institute for Oncological and Interdisciplinary Sport and Exercise Science in Essen. "Sport and exercise therapy plays a significant role in the holistic approach to cancer treatment and evidence-based supportive medicine at WTZ," Lenz concludes.

Dr Johanna Engel (left), research associate in the Department of Neurosurgery at UKM, Prof Dorothee Wiewrodt (center), Neurosurgery/Psychotherapy and Psychooncologist Specialist at the Clinic for Neurosurgery at UKM, with sports scientist and graduate training instructor Ralf Brandt.

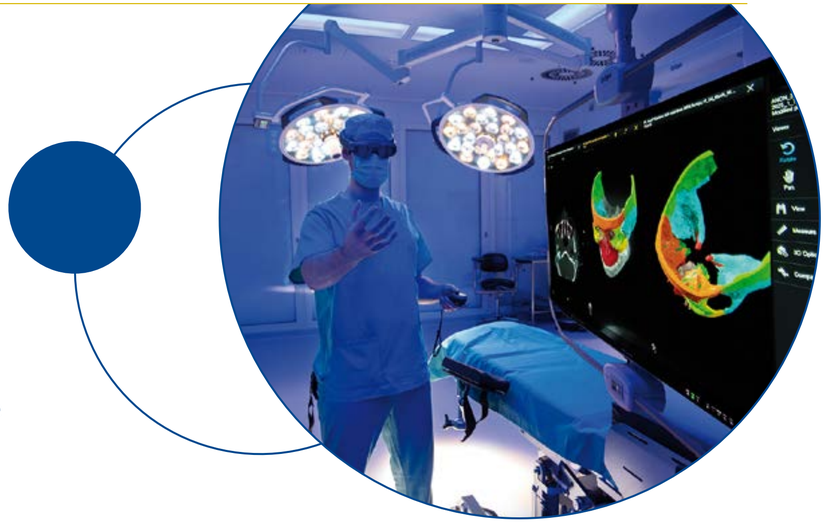
Neurooncological sports office hours at UKM

Office hours with senior physician Dr Lars Lemcke and graduate training instructor Ralf Brandt are every Friday between 9.00 and 11.00 a.m.

Many of these activities, which go beyond the usual medical care for patients, can only be funded thanks to donations. Click here for further information:
www.ukm.de/zentren/wtz/spenden
If you wish to make a donation to UKM for extra activities to support cancer patients, please quote ZU200047 to indicate the purpose of your donation.

www.universitaetsmedizin.de/informieren/foerderschwerpunkte/helfen-und-heilen
If you wish to make a donation to UME, please quote "Sporttherapie Kinderklinik" (to help children) or "Sporttherapie WTZ (Erwachsene)" (to help adults) to indicate the purpose of your donation.

Innovative



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46 Using FAPI tracers to detect breast cancer

47 PSMA PET scans confirmed as prognostic markers

Robotics and AI in operative medicine

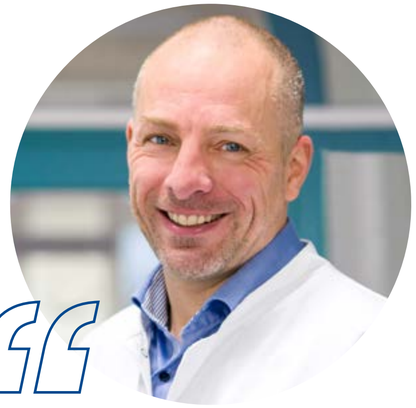
Digitalisation in the operating theatres at WTZ is raising diagnostics and treatment to a new level.

Planning operations by means of artificial intelligence, and carrying them out using VR headsets and with robotic support – there is hardly any area at WTZ still untouched by digitalisation. It improves not only patient care but also the training of future medical practitioners.

“Nowadays, robot-assisted techniques for carrying out operations are standard in oncological care – and, naturally therefore, at **WTZ Münster** and WTZ Essen, too,” says Prof Maximilian Kückelhaus, Deputy Director of the Clinic for Plastic and Reconstructive Surgery at UKM. “They allow us to move barriers in the human physique, making it possible to simplify operations on extremely fine structures such as nerves and lymphatic vessels.” Together with his team he has taken the next step and developed a worldwide unique combination of surgical robot and robotic microscope. “In principle, with this combination the operating team do not even have to stand at the operating table as the surgeon sees the operating area through a 3D augmented reality headset and guides the microscope via head movements.”

Prof Maximilian Kückelhaus
Deputy Director of the Clinic for Plastic and Reconstructive Surgery at UKM

“This decoupling from the operating theatre is also extremely interesting from the training point of view,” adds Dr Jens Peter Hölzen, Deputy Director of the Clinic for General, Visceral and Transplant Medicine at UKM. “Not only experts but also students can, in principle, look in on the operation from anywhere in the world.” As Head of the Center for Robotics in General Surgery he is largely



Robotic surgery is a natural part of specialist medical training here. Using it not only attracts patients from all over Germany but also makes it more attractive for the medical staff."

Dr Jens Peter Hölzen
Deputy Director of the Clinic for General, Visceral and Transplant Medicine and Head of the Robotics Department at UKM

Prof Stephan Lang
Director of the Clinic for Otorhinolaryngology/ Head and Neck Surgery at UME

Prof Markus Holling
Deputy Director of the Clinic for Neurosurgery at UKM

responsible for the fact that WTZ Münster was designated as a recognised international training center for robotic oesophagectomies and liver surgery. "On average we have three visitors per month coming for training, and since 2023 we have held several master classes through the German Society for General and Visceral Surgery."

Innovative operating techniques

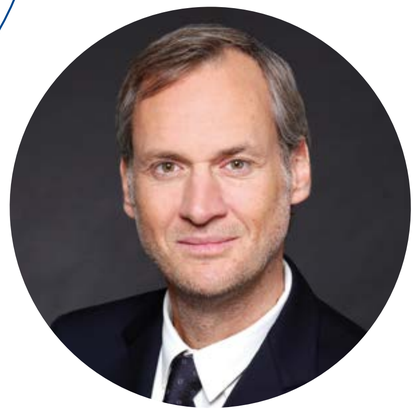
In the **Otorhinolaryngology Clinic** at UME, all the phases of an operation are linked digitally – from the planning and preparation to the surgical procedure itself. "It is especially in the case of complex tumours in the nose and throat region or at the base of the skull that the planning of each individual operation is so important," says Prof Stephan Lang, Director of the Clinic for Otorhinolaryngology/ Head and Neck Surgery. For this purpose, two-dimensional CR or MRI images are visualised in 3D with AI support, which means that they can be rotated by means of a VR headset and viewed from all sides. This three-dimensional representation of tumours and their environment is used at WTZ not only to prepare operations but also to inform patients. "Patients can look at the images in 3D through the VR headset and in this way, and without any previous anatomical knowledge, they can form an impression of what will happen during surgery," explains Prof Markus Holling, Deputy Director of the Clinic for Neurosurgery at UKM.

Neurosurgery at Essen is also equipped with **state-of-the-art technology for operations**. It has for example an angiography C-arm installed on an industrial robot, which enables vessels to be displayed or correct screw placement to be made during an operation. "Everything here is linked to a robotic navigation system," explains Dr Marvin Darkwah Oppong, senior physician at the Clinic for Neurosurgery and Spinal Surgery at UME. "In addition, a robotic arm connected to the system allows us to carry out a precise, robotically guided and minimally invasive extraction of biopsy samples or screw placement."

Dr Martin Janssen
Head of the Center for Robotic Surgery at the Urology Clinic at UKM

examined by means of a PSMA-PET scan before any operation is performed on patients with high-risk prostate carcinomas. And at WTZ, also since 2024 and as part of **a study**, research has been carried out to determine how reliably tumours can be removed by means of a special image-assisted operating technique. “During the operation itself a so-called PSMA-PET scan is used to see whether a tumour has been removed completely,” reports Dr Christopher Darr, senior physician at the Clinic for Urology and Coordinator at the Prostate Carcinoma Center at UME. “The process makes it possible to **operate with greater precision**, which means treatment for high-risk patients which lowers the risk of erectile dysfunction and incontinence.”

Dr Christopher Darr
Senior physician at the Clinic for Urology and Coordinator at the Prostate Carcinoma Center at UME



Prof Florian Ulmer
Deputy Director of the Clinic for General, Visceral, Vascular and Transplant Surgery at UME

Improved imaging

With greater advances being made by robotic surgery, however, this means that the imaging methods must also get better. “In the case of patients with high-risk prostate carcinomas, conventional imaging sometimes comes up against its limitations: the best possible operations require the best possible imaging,” says Dr Martin Janssen, Head of the Center for Robotic Surgery at the Urology Clinic at UKM and an internationally renowned expert in the field. Since 2024, therefore, and as part of a multicentric study, propagation diagnostics at WTZ Münster have been

At the UKM Center for Robotic Surgery, a combination of high-precision technology and medical expertise enables gentler and, at the same time, more effective surgery to be performed.

Operations performed with robotic assistance make greater precision possible and, as a result, a more effective removal of tumours; at the same time, patient recovery is faster and there are fewer complications. This opens up therapeutic options for patients for whom an operation was not possible in earlier times.”

Prof Andreas Rink
Head of the Minimally Invasive Oncological Surgery Department at the Clinic for General, Visceral, Vascular and Transplant Surgery at UME

In operations to remove carcinomas of the rectum or liver, on the other hand, the fluorescent dye indocyanine green is used. “This allows us to determine precisely where a tumour ends and healthy tissue begins,” explains Prof Andreas Rink, Head of the **Minimally Invasive Oncological Surgery Department** at the Clinic for General, Visceral, Vascular and Transplant Surgery at UME. “The special camera on the surgical robot visualises tissue perfusion, vessels, bile ducts and, in some cases, also metastases in the liver, and this allows more precise surgery in the region of the liver and the pancreas,” adds Prof Florian Ulmer, Deputy Director of the Clinic for General, Visceral, Vascular and Transplant Surgery at UME. The WTZ locations in Essen and Münster are among the most experienced and most active in Germany, with operations being performed on the liver robotically instead of with open surgery.

These innovative approaches show most impressively how artificial intelligence and robotics are revolutionising oncological surgery. The combination of high-precision technology and medical expertise not only enables gentler and more effective surgery to be performed but also helps in the successful treatment of tumours which had previously been considered to be inoperable.

Dr Marvin Darkwah Oppong
Senior physician at the Clinic for Neurosurgery and Spinal Surgery at UME

Prof Maximilian Kückelhaus presents the new method in a “dry run” in a training session. The surgical robot (left) is linked to a robotic microscope (right).

3D printing in tumour orthopaedics

In 2024 the 3D Center – a unique facility in Germany – opened at WTZ Münster, presenting completely new opportunities in patient care.

"Spare parts" from the 3D printer, printed right there during an operation? What sounds like a scene from a science fiction film will soon be reality at WTZ Münster. In the newly opened 3D Center, the possibilities of additive manufacturing in the medical field will be exploited to the full. Dr Martin Schulze and design graduate Max Tönnemann are responsible for the facility, and here they report on their everyday work with it, with cases seen as being difficult or even non-operable.

What happens exactly in the 3D Center?

Tönnemann: What we are researching here is how additive manufacturing can be used in a medical context – in other words, what technology and what materials can be used where.

Schulze: At the moment we're manufacturing anatomical models which are used in preparing an operation, for patient information and for training purposes. Under special hygienic conditions, customised instruments are already being manufactured, too, which facilitate individual steps during surgery – for example, in drilling or sawing. Moulds can also be made which, in an operation, can be used to make an impression of individual placeholder implants from bone cement that remain temporarily or permanently in a patient's body. In the medium term, the aim is to directly produce implants which can be placed permanently in the body.

"3D printing will change the world of orthopaedics."

Prof Georg Gosheger
Director of the Clinic for Orthopaedics and Tumour Orthopaedics at UKM

What technology does the 3D Center have?
Tönnemann: Currently we have ten printers. The biggest of them weighs 1.4 tonnes and had to be delivered using a crane. Some of the printers work with plastic, others with liquid or powder. As these materials must on no account come into contact with one another, the printers are housed in different rooms with specific temperature and humidity levels.

Design graduate Max Tönnemann
Project leader at the 3D Center at UKM

Schulze: Unlike in traditional 3D printing, all the materials used for our purposes in the medical field have to be firstly sterilisable and secondly biocompatible.

How did the establishment of the 3D Center at UKM come about?
Tönnemann: Back in 2010, Prof Gosheger, the Director of the Clinic for General Orthopaedics and Tumour Orthpaedics, acquired the first 3D printer in order to produce simple bone models. A few years later Dr Schulze came along, and as a mechanical engineer and physician he was very interested in the subject and was already gaining his first experience with the technology during his training.

Dr Martin Schulze
Head of the 3D Center at UKM

Schulze: And in 2021 Max Tönnemann joined us. As a product designer he brought with him years of experience using 3D in industry. Parallel to this, the Medical Device Regulation came into force, which stipulates that all objects printed for medical purposes have to meet certain requirements. So we applied for EU funding for a project to bring together, in one place, all the little individual solutions spread over the University Hospital and to transfer them into a quality-assured process which met the strict regulatory requirements. This project then led up to the opening of the 3D Center in February 2024.

What has your experience been since then?
Tönnemann: The opening attracted a lot of attention from the media and led to networking with centers in other European countries. It became clear that the benefits of 3D technology were recognised in principle, but that using it – over and above the hygiene regulations – entailed enormous challenges.

Schulze: Our 3D processes are used primarily in cases which are seen as being difficult or non-operable – so this always means individualised medicine. For this reason, the advantages can only ever be documented for individual cases, and not for a large cohort. The core indicators, which we otherwise know from evidence-based medicine, are difficult to pin down as every individual case has to be clarified with the health payers. These things have progressed much further in the USA.

Can you give us an example of just such an individual case?

Schulze: We had a patient who contracted an infection in her pelvis and thigh bone after a hip replacement operation. The plan was to remove the prosthesis and insert a placeholder containing antibiotics until a new prosthesis could be put in after the healing process. However, there was a 50 percent risk for the patient that she could lose her leg. So, instead of a traditional placeholder, we used one from the 3D printer with a much larger surface which enabled a much better release of the antibiotics into the infected tissue. Today the patient is fine, and she can stand and walk on her own legs.

What plans do you have for the future of the 3D Center?

Tönnemann: Data have to be fed into the printers, which means we have to get in more people who can do this predominantly. Only when specialists from the fields of computer science, mechanical engineering, microbiology and design pool their know-how can we make the best use of the possibilities that 3D printing offers.

Schulze: The aim for 2025 is to extend our offer to all clinics and provide support in the individualised treatment of patients. Also, we'll be continuing our research involving new materials in order, for example, to develop new applications in the field of radiotherapy. Implants which can remain in the body permanently are a focus for the long term, and this is something we are simultaneously working on in parallel.

Presenting the certificate at the opening ceremony: Max Tönnemann (left), Dr Martin Schulze (center) and engineer Gregor Reischle.

The 1.4-tonne printer would not fit through any door, and when it was delivered the front of the UKM building had to be opened up.

Promoting talent at WTZ

Specific funding programmes are in place in Münster and Essen to support physicians who, in addition to their work in the hospital, would also like to undertake research.

Medical progress needs physicians who receive the best possible training both in patient care and in research and are active in both areas. For this reason, WTZ is promoting Clinician Scientist programmes at both locations. Anyone interested can apply with an idea for a project and, if they are successful, they are given protected research time during which others stand in for them in hospital. For this, in Essen, there is the University Medicine Essen Clinician Scientist Academy (UMEA), and in Münster the Clinician Scientist Programme “CareerS”. Both receive funding from the German Research Foundation (DFG) and the Federal Ministry of Education and Research (BMBF). Some of the talents receiving funding are presented here.

Prof Annalen Bleckmann
Vice-Dean of Research and Junior Researchers at the Medical Faculty of the University of Münster and Director of WTZ Münster

At WTZ we attach particular importance to translational research, i.e. the link between basic research and clinical applications. Thanks to the various funding programmes, junior researchers have a protected space here in order to look more closely at questions which crop up during clinical work.”

Our aim is to systematically support the next generation of researchers and offer them long-term career perspectives – for translational cancer research at WTZ which is close to patients’ needs and brings real innovations to clinical applications.”

Prof Anke Hinney
Vice-Dean of Academic Career Development and Diversity at the Medical Faculty of the University of Duisburg-Essen

What really spurs me on is the transfer of research results from the laboratory to the clinic.”

Prof Philipp Backhaus
Senior physician in the Clinic for Nuclear Medicine at UKM

Clinician Scientist CareerS Münster

Prof Philipp Backhaus is a senior physician in the Clinic for Nuclear Medicine at UKM and, as a Clinician Scientist, has been shuttling between clinical work and research since 2017. The biggest highpoint in his career so far was the appointment to a junior professorship in August 2024.

What fascinates you about research?

While I was completing my doctoral dissertation I already came into contact with experimental research and my enthusiasm for this type of creative work was kindled. So in 2017 I began my career as a Clinician Scientist, but I was already shuttling between clinical work and research even before that. In my view, translational work – in other words, the transfer of new research findings from the lab to the clinic – is a great challenge in our field, and it is one which I want to face up to.

What are you currently researching into?

I’m working on molecular imaging, looking in particular at the depiction of tumour microenvironments. Our team at the European Institute for Molecular Imaging (EIMI) and the Clinic for Nuclear Medicine has helped to develop a new tracer which attaches itself to a protein in the microenvironment of breast cancer tumours, for example, and this makes it easier to detect mammary carcinomas in a PET/MRI. Recently we acquired funding for an Investigator Initiated Trial to look at the distinction between breast cancer in its preliminary stages and invasive breast cancer. We will soon be starting with the recruitment of patients.

What plans do you have for the future?

After six years a decision will be made as to whether my associate professorship is converted into a tenured university professorship – so I will have to prove myself in the next few years. During this time, I would like to continue building up my working group and recruit talented, motivated junior researchers to it. My aim is to transfer preclinical tracers to clinical work and to back up the functioning tracers with hard data so that they pass the approval process and can benefit as many patients as possible.

Certain questions only arise during contact with patients.”

Dr Sied Kebir
Senior physician and Deputy Head of the Clinical Neuro-Oncology Department at UME

Dr Sied Kebir, Senior physician and Deputy Head of the Clinical Neuro-Oncology Department at WTZ Essen, was the first scholarship holder, in 2018, in brain tumour research at Essen, and in 2021 he was also awarded an Else Kröner Scholarship. Since September 2024 he has been taking part in the BMBF-funded Advanced Clinician Scientist Programme UMEA² at the Medical Faculty in Essen.

Dr Sied Kebir

Where does your enthusiasm for research come from?

While I was studying medicine at Bonn University Hospital I already realised that therapeutic decisions in neurology are, to a high degree, influenced by research results. I wanted to be part of this decision-making process and so I set about acquiring funding at an early stage – because many projects cannot be realised without financial support. Moreover, such funding raises the visibility of WTZ and UME considerably as it allows us to demonstrate that we can be successful in highly competitive programmes and can advance our internationally acclaimed research which, ultimately, benefits patients.

UMEA² ADVANCED CLINICIAN SCIENTIST PROGRAMM

What are you currently researching into?

The focus of my research is on gliomas. At UME I have ideal conditions for this as I am part of the Neuro-Oncology Center at WTZ and work closely together with experts from the fields of neurosurgery and spinal surgery, nuclear medicine, internal medicine/tumour research, radiotherapy and particle therapy, the Institute of Neuropathology, the Institute of Diagnostic and Interventional Radiology and Neuroradiology, the Translational Neuro-Oncology Department at the German Cancer Research Center (DKFZ) and the Institute of Artificial Intelligence in Medicine. In this interdisciplinary network, one of the things I am developing is a deep-learning model which – with the aid of histological slides, next-generation sequencing data, and clinical imaging and electrophysiological information – is able identify new glioma phenotypes which are difficult to research into with other methods.

What plans do you have for the future?

I'm currently building up an interdisciplinary team and am looking for talented PhD students who would like to undertake research at the interface between artificial intelligence and clinical neuro-oncology. My main objectives are to present our research findings in prestigious publications and to use them as quickly as possible for the benefit of patients.

Not only patients are spurred on by hope – we are, too."

Dr Imke Karsten
Junior doctor at Medical Clinic A at UKM

Clinician Scientist CareerS Münster

Dr Imke Karsten is a junior doctor at Medical Clinic A at UKM and, besides her clinical work, she is researching into alternative ways of therapeutically addressing apoptosis-resistant cells. Funding provided by the CareerS Starter module of the Clinician Scientist Programme at the Medical Faculty at the University of Münster provides her with the space necessary for conducting research during her training as a specialist physician.

What sparked your enthusiasm for research?

I got to know lab work during my job rotation inside the clinic and was immediately fascinated by it. I was curious about how an idea in the lab turns into a clinical study for patients. The frequently difficult courses that diseases can take in oncology made me want to play an active part in developing new options for therapy which we can offer patients. The CareerS Programme at the University of Münster provides a fantastic opportunity to satisfy this urge in young years.

Dr Imke Karsten

What are you currently researching into?

During prior therapy, many tumour cells develop mutations which make them resistant to apoptosis – in other words, they bypass natural cell death. I'm working on ferroptosis – cell death dependent on iron – and I'm looking for an alternative way of addressing apoptosis-resistant cells.

What plans do you have for the future?

After the CareerS funding has ended I will be returning to clinical work for 12 months – hoping very much that I can continue with my research during this time. Afterwards, I definitely want to get back into research. I am very grateful to my supervisor, Prof Georg Lenz, for the opportunities I am being offered in this respect.

Research as an end in itself has never interested me."

Dr Julius Keyl
Clinician Scientist in the DFG-funded UMEA Programme at the Medical Faculty in Essen

Since 2024, Dr Julius Keyl has been a Clinician Scientist in the DFG-funded UMEA Programme at the Medical Faculty in Essen. In addition to his work as a junior doctor at the Institute of Pathology at UME, he is also carrying out research in the "Medical Machine Learning" research group at the Institute of Artificial Intelligence in Medicine (IKIM).

Why did you apply to join the Clinician Scientist Programme?

I became interested in the interface between oncological research and AI at an early stage and I had the impression that many of the results from clinical diagnostics were not being used. After completing my doctoral dissertation in Munich, I began searching quite specifically for a location enabling a link to be made between oncology and AI research. And I found that at WTZ Essen.

What are you currently researching into?

In Essen I have the opportunity to access a huge pool of data from routine oncological care – including results of clinical examinations and histological images. With the aid of AI-based models we are linking all these different types of data with one another in order to be able to recognise correlations in prognostics and to support decisions relating to therapies.

UMEA
CLINICIAN SCIENTIST PROGRAMM

What plans do you have for the future?

My aim is to develop models which bring about changes in routine clinical work and which have a real impact on patient care. AI research has already made considerable progress, and I would like to transfer its enormous potential to work in the clinic.

Using FAPI tracers to detect breast cancer

A study led by WTZ Münster aims to help in the early detection of invasive breast cancer with PET/MRI

Ductal carcinoma in situ (DCIS) is a precancerous stage in the breast which has not yet spread into the surrounding tissue (i.e. is non-invasive). Nevertheless, an invasive carcinoma is discovered in 25 percent of cases after the DCIS has been removed. The aim of the MI-CISDIR study is to help in the early detection of such cases in future.

Leading the study is Associate Professor Philipp Backhaus, senior physician at the Clinic for Nuclear Medicine at UKM. He was involved in developing and establishing tracers which attach themselves to a protein on the surface of cancer-related connective tissue cells in breast cancer tumours, providing much more reliable evidence of invasive tumours than through conventional imaging methods. “This so-called FAPI tracer has a half-life period of only about 70 minutes – which means that all the clinics which want to use it for their work have to be able to produce it themselves each day for their studies,” Backhaus explains. As both locations, Münster and Essen, have these possibilities, they are working together on the study being funded by the Interdisciplinary Center for Clinical Research Münster. “We are currently recruiting patients at both locations for the study, which is set to run for two years,” adds Prof Ken Herrmann, Director of the Clinic for Nuclear Medicine at UME.

Maximum intensity projection of a woman in the FAPI-PET with breast cancer.

Prof Ken Herrmann
Director of the Clinic for
Nuclear Medicine at UME

The aim is to distinguish between invasive carcinomas and non-invasive precancerous stages – something which is very difficult to achieve using the imaging processes available. “At the same time, this distinction is extremely important for any therapies decided on,” Backhaus explains. “In ideal cases we can spare women any biopsies and operations and can provide them directly with the best possible therapy.” In order for this to happen as quickly as possible, the pilot study is to be followed as soon as possible by further studies to provide evidence for the success of the method and thus have a long-term influence on patient care.

We do not make images for their own sake, but rather because in our work we want to find answers to clinically important questions and change standard medical care.”

Associate Professor Philipp Backhaus
Senior physician in the Clinic for
Nuclear Medicine at UKM

PSMA PET scans confirmed as prognostic markers

A study led by WTZ Essen was able to demonstrate that the PET scans introduced in 2012 enable reliable statements to be made on risk assessment and survival chances for prostate cancer patients.

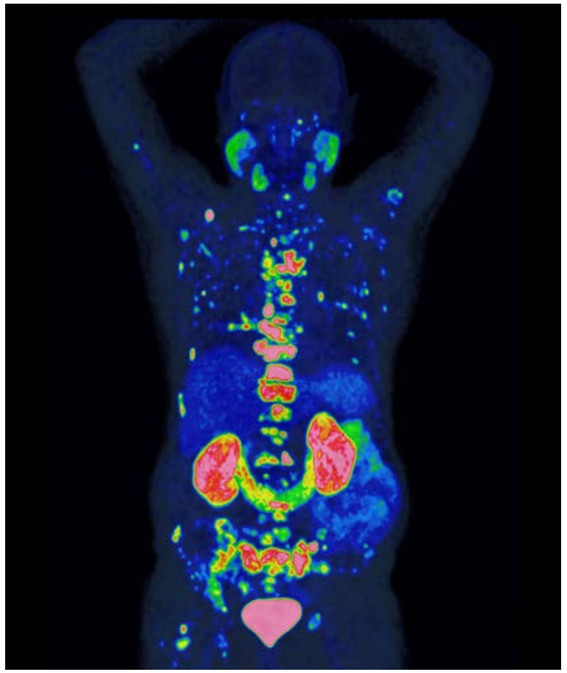
Prostate carcinomas are the most frequent form of cancer in men, with over 70,000 new cases every year. Due to its speed and accuracy, the PET scan developed in Germany in 2012 has rapidly become the preferred instrument for diagnosing prostate cancer. But what consequences do the findings have for prognoses for patients?

"This study is a prime example of cooperation in the field of nuclear medicine, not only making it a real lighthouse project for WTZ but also delivering huge benefits for patients."

Prof Wolfgang Fendler
Consultant in Translational and Oncological Research at the Clinic for Nuclear Medicine at UME.

Prof Kambiz Rahbar
General Manager and Senior Physician at the Clinic for Nuclear Medicine at UKM

"Over a million of these examinations are carried out worldwide every year. Evidence needed to be produced urgently," explains Prof Wolfgang Fendler, a consultant in Translational and Oncological Research at the Clinic for Nuclear Medicine at UME. "As the method was developed and introduced in Germany, there are actually only datasets here covering more than ten years," adds Prof Kambiz Rahbar, General Manager and Senior Physician at the Clinic for Nuclear Medicine at UKM. With Münster as its strongest partner, and with the involvement of the University Hospitals in Freiburg and Dresden, WTZ Essen therefore **initiated a study** into which were incorporated the PSMA-PET data from 2,414 patients with prostate cancer from 2014 to 2021.



PET scan of a patient with metastatic prostate cancer.

The results are unequivocal. "We were able to prove that there was a strong link between the PET data and patients' survival and that they are therefore suitable as prognostic markers for individual risk assessments," says Rahbar. The results were presented in "The Lancet Oncology" in July 2014 and afterwards at large international congresses such as the ASCO Annual Meeting and the ESMO in 2024. "Today, the dataset is twice as large as when it was first published, which is why we will be publishing updates at regular intervals," says Fendler, looking towards the future. "Our aim is to continue to implement PET imaging in the guidelines, so that its value is recognised and paid for by the health payers." One app (promise-pet.org) has already been put into practice which enables colleagues to make standardised analyses of PET scans and then risk classifications based on them.

Excellence in figures

University Hospital Essen and University Hospital Münster

80 clinics

72 institutes

22,664 employees

3,213 beds

63,000 patients undergoing surgery

322,167 outpatients

93,254 inpatients

39,000 cancer patients

16,300 cancer inpatients

37,900 cancer outpatients

Focus on oncology

(number of patients)

21,200 medical oncology

10,600 surgical oncology

10,000 haemato-oncology

8,100 radio-oncology

1,900 paediatric oncology

Cancer patients

15,200 newly diagnosed

Oncological care

156 skilled nursing staff with and undergoing further oncological training

20 care specialists / advanced practice nurses

200 skilled nursing staff with and undergoing further training in palliative care

16 care specialists for stoma, wounds and incontinence

17 medical assistants with advanced oncological training

7 Breast-care nurses

Publications

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PMID: 38749854 **| 49 Exploiting WEE1 Kinase Activity as FUS::DDIT3-Dependent Therapeutic Vulnerability in Myxoid Liposarcoma** Heinst L, Lee KS, Berthold R, Isfort I, Wosnig S, Kuntze A, Hafner S, Altvater B, Rossig C, Åman P, Wardelmann E, Scholl C, Hartmann W, Fröhling S, Trautmann M. Clin Cancer Res. 2024 Nov 1;30(21):4974-4986. doi: 10.1158/1078-0432.CCR-24-1152. PMID: 39207225 **| 50 Inotuzumab Ozogamicin as Induction Therapy for Patients Older Than 55 Years With Philadelphia Chromosome-Negative B-Precursor ALL** Stelljes M, Raffel S, Alakel N, Wäsch R, Kondakci M, Scholl S, Rank A, Hänel M, Spriewald B, Hanoun M, Martin S, Schwab K, Serve H, Reiser L, Knaden J, Pfeifer H, Marx J, Sauer T, Berdel WE, Lenz G, Brüggemann M, Gökbuget N, Wethmar K. J Clin Oncol. 2024 Jan 20;42(3):273-282. doi: 10.1200/JCO.23.00546. Epub 2023 Oct 26. PMID: 37883727

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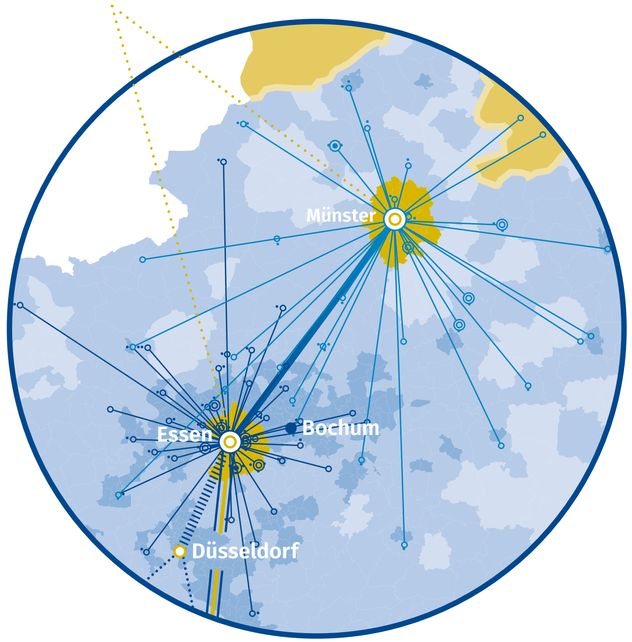

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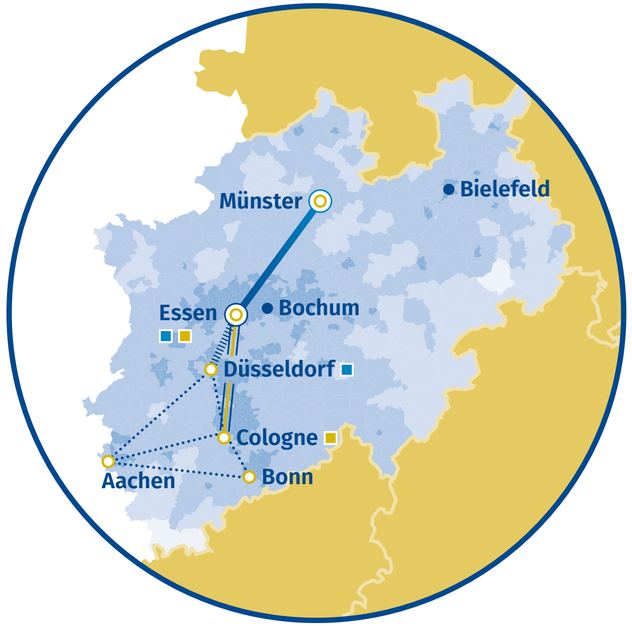
- CIO ABCD – Center for Integrated Oncology Aachen Bonn Cologne Düsseldorf
- DKTK PARTNER LOCATION DÜSSELDORF/ESSEN
- CCCE – Cancer Research Center Cologne Essen
- NCT WEST Essen, Cologne
- NCT LOCATION
- DKTK LOCATION



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