west german
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WEST GERMAN CANCER CENTER CONSORTIUM

ANNUAL REPORT 2020

04 THE WTZ NETWORK
Interview

26 WTZ PATIENT ADVISORY BOARD
On Equal Terms

36 CANCER & CORONA
Optimum Protection

CONTENTS

03 Preface
04 The WTZ Network
07 One Year of Collaboration

EXCELLENT

08 CCCE/NCT
11 New professorships
12 AML Expertise
13 CAR T Cells
14 Expansion of the KMT
15 Eye Tumors
16 Urooncology
18 Dermato-Oncology
20 People & Moments

PERSONAL

22 Creating Art
24 Fatigue
25 Yoga
26 WTZ Patient Advisory Board
28 New Palliative Care Unit
29 Opening of the Outpatient Unit

INNOVATIVE

30 Personalized Therapy (BIT)
31 Unique Basic Research
32 Theranostics
34 Cancer Research
36 Cancer & the Coronavirus
38 Telemedicine
40 Teaching during the Pandemic
42 Excellence in Numbers
44 Publications
46 Your WTZ Contact
47 Imprint

PREFACE

Dr. Stefan Palm
Essen General Manager WTZ Essen

Prof. Dr. Philipp Lenz
General Manager, WTZ Network Partner Münster

Dear readers,

We look back on our first year as Network Partner in the West German Cancer Center (WTZ) and it was really not an easy year. The corona lockdown meant that we were unable to meet in person. So that we could nevertheless achieve the goals set, we had to find new ways of communicating with each other as precisely as possible. Meeting this challenge was extraordinarily important for coalescence within the Network. We had no time to discuss virtual options in caring for patients, we had to directly implement them. This begins with clinical pathways for the patients and, by all means, does not end with the virtual conferences which have meanwhile become a matter of routine.

Excellence in health care, close coordination and an even closer-knit Network represent the basis for the best possible standard of care that we wish to offer you. Especially when it comes to translating even more quickly the latest research results into advanced and efficacious treatment options. The National Center for Tumor Diseases (NCT) supports this development with great dedication throughout the whole of Germany. And, as one of the selected partners, we are delighted to be able to work on this project. But it is also vital not to lose sight of the perspective of the patients affected and to actively involve them – together with their families and relatives – in the future development of our Center. Our patient advisory board has devoted itself to this important task (more on page 26).

Find out more about new ways of treating blood cancer and how new treatment approaches can meanwhile be used to mobilise the immune system in the fight against cancer. A major topic of this annual report is digital networking within the WTZ: this ranges from the study of medicine through telemedicine to the virtual hospital.

We were able to jointly launch numerous developments in 2020 and take them forward. We look forward to continuing along this path as a strong Network and to supporting you in the years to come.

We wish you very interesting reading!

Yours,
Stefan Palm and Philipp Lenz

Essen General Manager WTZ Essen

General Manager, WTZ Network Partner Münster

Professor Dr. Annalen Bleckmann and Professor Dr. Dirk Schadendorf

BASIS FOR THE **SMART HOSPITAL**

The corona pandemic brought about a series of restrictions. Nevertheless, the first joint year in the WTZ Network was a success for all concerned. The highlight was the joint certification as cutting-edge oncological center by German Cancer Aid (Deutsche Krebshilfe) in December. This is the conclusion drawn by both spokespersons for the WTZ Steering Committee – Professor Dirk Schadendorf, Director of the WTZ Essen, and Professor Annalen Bleckmann, Director of the WTZ Münster.

How would you summarize the first year in the WTZ Network?

PROF. SCHADENDORF: *We have established crucial structures for our collaboration and, despite the restrictions facing us with the corona pandemic, we have coalesced with our expertise as a network.*

PROF. BLECKMANN: *One event in the second half of the year made a decisive contribution towards this. The intensive preparation undertaken for the audit by German Cancer Aid has considerably increased our understanding of each other. This has really fused us together.*

PROF. SCHADENDORF: *We are proud of the result. The WTZ Network was distinguished as a cutting-edge center of cancer medicine in December.*

PROF. BLECKMANN: *This is our first combined success - visible throughout the whole of Germany.*

You spoke at the beginning of important structures. What are they?

PROF. SCHADENDORF: *We reached four milestones in the last year. First of all, the harmonization of our clinical pathways within the 14 programs. We use them to define in detail what diagnostics and what treatments are to take place in each case for each type of tumor. This underlines our claim to cancer medicine of the highest standard.*

PROF. BLECKMANN: *What this means for patients is that no matter whether they are treated in Münster or Essen, the treatment is identical. Also contributing to our high standard are just under 40 multidisciplinary tumor boards meanwhile established within the Network. In these boards, oncologists, surgeons, radiologists and pathologists discuss specific treatment options for particularly complex or critical cases with experts from the relevant disciplines.*

PROF. SCHADENDORF: *The second milestone is the establishment of a patient advisory board. It enables us to ensure that we actively include the interests of patients from the outset in our future planning, for example, when it comes to using telemedicine and setting up the smart hospital. The third milestone is our joint privacy policy and the fourth is our database, the "outreach platform".*

PROF. BLECKMANN: *Both are indispensable for the work within the Network and specifically for the exchange of our knowledge and information. We store the entirety of our patient data in this database which is equipped with the highest security standards. Access to the information is governed by a highly differentiated concept of rights and roles which is in turn based on the data-protection concept. This ensures at all times that only the person with the relevant authorization can actually access the data.*

PROF. SCHADENDORF: *The database also contains a platform on which we store our active clinical studies and their evaluations. It offers interfaces to the Biobank, molecular tumor board and to telemedicine applications. In summary, it can be said that this platform represents the crucial keystone for our digital transformation and the setting up of the smart hospital.*

PROF. BLECKMANN: *Alongside these structural foundations, two other milestones are very important here in Münster. We opened a multidisciplinary outpatient department and a palliative care unit in 2020. As a result, both Network partners can now offer patients the same services.*

How has the corona pandemic affected the work of the Network?

PROF. BLECKMANN: *We had to cancel some patient events or postpone them until next year. That was highly regrettable. Some projects have been delayed. On top of that the pandemic, like everywhere else in the world, has very much changed the way we work. This begins with clinical pathways for the patients and by all means does not end with the video conferences which have meanwhile become a matter of routine.*

PROF. SCHADENDORF: *I agree with that wholeheartedly. There has been a great step forward in digitalization which has enormously benefited collaboration in our Network. We have been communicating almost purely digitally since March. Nevertheless, my impression is also that work has intensified as a result.*

You already mentioned the audit by German Cancer Aid. Why is it so important?

PROF. SCHADENDORF: *The WTZ Essen has subjected itself to this independent audit every four years since 2008. It means more than just the recognition of our expertise and capabilities. It is also linked to funding which we can use to finance our business areas but also use to test enhanced care and treatment options for cancer patients and then implement them on a wide scale.*

PROF. BLECKMANN: *We have been audited jointly as a Network for the first time this year. The hearing took place completely virtually using Zoom and we only had four hours. This made it all the more important to communicate as precisely as possible and to be well prepared for any questions from the experts. Looking back, we can see that our in-depth preparation for the hearing was extraordinarily important for coalescence within the Network.*

PROF. SCHADENDORF: *The distinction by German Cancer Aid is an important keystone of the excellence initiative used by the federal state of North Rhine-Westphalia for expansion of the network of cutting-edge oncological centers to fight cancer. Our WTZ Network covers the whole area of the Ruhr, Westphalia, parts of Lower Saxony and adjoining parts of the Netherlands. Our Rhineland counterpart is the Centre for Integrated Oncology (Centrum für Integrierte Onkologie, "CIO") which is made up of the university hospitals in Aachen, Bonn, Cologne and Düsseldorf. We already work together in highly networked manner and patients especially benefit from this by faster access to cancer medicine of the highest standard which is also closer to home. The patient advisory board also gives them the opportunity to actively shape processes themselves. As a result, an organization has emerged that is beyond comparison – it combines expert knowledge with the patient perspective.*

"We have laid important foundations for digital transformation and the setting up of the smart hospital."

Professor Schadendorf

PROFESSOR DR. ANNALEN BLECKMANN

Specialist in Internal Medicine, Hematology und Oncology

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2015 Head of interdisciplinary outpatient unit , University Medicine Göttingen

2016 Habilitation at the University Medicine Göttingen

2019 Full Professorship (W3) for Medical Oncology, University Hospital Münster
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1995 Habilitation at Humboldt-University Berlin, followed b< Heisenberg fellowship

1997 Department Head, Skin Cancer Unit DKFZ Heidelberg and University Hospital Mannheim

2008 Director, Deparetment of Dermatology, University Hospital Essen

2013 Director, West German Cancer Center Essen

ONE YEAR OF COLLABORATION **HARMONIZED**

The IT team is developing networking platforms which enable the digital exchange of patient data.

Health should not depend on where you live. Even outside suburban areas, patients must have access to cutting-edge oncological medicine - that is the idea behind the WTZ Network. In the first year of collaboration, both partners in Essen and Münster have created uniform structures and networked with external partners. This allows cancer treatment of the highest standard.

"We used the first joint year to harmonize the structures of both partners," reports Dr. Stefan Palm, WTZ Managing Director in Essen. "This concerns the specialist oncology departments and outpatient departments and also the administrative side," adds University Professor Annalen Bleckmann, Director of WTZ Network partner Münster.

As one of the two largest cutting-edge oncological centers in North Rhine-Westphalia, the WTZ Network cares for patients in the Ruhr area, Westphalia and beyond. Each party contributes its own quite unique expertise: from care close to home in the doctor's practice to the highly specialized care in a cutting-edge university facility. After diagnosis and initial treatment, cancer patients remain under medical supervision for many years thereafter, so that late consequences of the disease or relapses can be detected and treated early. To ensure that this functions seamlessly hand-in-hand, a strong network is required with a cleverly designed infrastructure that connects all partners to each other.

The two locations have coordinated their administrative structures and established a mutual networking platform, the "outreach platform" whose core element is shared patient records. This platform is used - in addition to the Biobank - to link up also external cooperation partners, for example regional hospitals and specialist practices. Patients thus are given access to present their case to one of the 40 multidisciplinary tumor boards in order to obtain, for example, a second opinion.

Two university centers have joined up in the WTZ Network. But that's not all. It is the express aim of both partners to expand the network and incorporate further partners.

“As part of the NCT, we are forging ahead with personalized cancer medicine in Essen.”

Professor Martin Schuler

Bild: MedizinFotoKöln

PERSONALIZED **CUTTING-EDGE MEDICINE**

The current decade is to be dedicated to fighting cancer - this is the idea driving the health and research policy of the federal government. As part of the initiative, it decided to expand the National Centre for Tumor Diseases (Nationale Centrum für Tumorerkrankungen (NCT)) which, until now, has been concentrated in two locations at Dresden and Heidelberg. The decision as to which universities were to become part of this comprehensive research initiative was made by an independent panel comprising 14 experts in an in-depth two-stage competition.

Federal Research Minister Anja Karliczek announced the decision in September 2020: the WTZ Essen and the Centre for Integrated Oncology (Centrum für Integrierte Onkologie (CIO)) of Cologne University Hospital together make up, as the Cancer Research Center Cologne Essen (CCCE), one of six future nationwide NCT locations. The three newly added NCT locations are Berlin, Tübingen (with partner cities Stuttgart and Ulm) and Würzburg (with partner cities Erlangen, Regensburg and Augsburg).

“The research funding for the CCCE associated with this decision in an amount of 13 million euros p.a. funded by the federal government and another 1.5 million euros funded by the federal state represents a major step forward for personalized cancer medicine,” explains Professor Martin Schuler, Deputy Director of the WTZ Network and Director of the Department of Interior Medicine (Tumor Research) of Essen University Hospital. “This support for the setting up of the NCT location will enormously facilitate the translation of our latest research results into their practical application. This gives rise to other highly interesting options for patients at all locations.”

The federal state of North Rhine-Westphalia has paved the way for establishment of the CCCE and its application to become a NCT location by providing research funding over 5 years of 20 million euros in total. It also actively monitored the application process. Science Minister Isabel Pfeiffer-Poensgen personally represented the application – together with scientists and patient representatives from Essen and Cologne – during questioning by the experts in September 2020.

The two partners undertook the first steps towards the CCCE as early as 2017. At that time, Professor Schuler together with Professor Michael Hallek, Director of Department I for Internal Medicine and of the CIO, developed the concept of how to combine the expertise of both cancer centers. Their idea was to establish a joint excellence initiative with cooperation between different locations in North Rhine-Westphalia. The intention was, according to the two initiators, based on the idea of “cooperation not competition” to devote themselves jointly to patient-oriented research, teaching and further medical training in the field of applied cancer medicine. The key research areas defined for the first phase at the new NCT location are lung cancer, lymphomas and leukemias, skin cancer, cancer in children, hereditary breast and ovarian cancer and sarcomas. Other key focuses are the use of data sciences in

cancer research, innovative molecular pathological and imaging diagnostics, state-of-the-art radiotherapy procedures and the inclusion of patients at all levels of the research and treatment process.

As a result of the data science research, which was additionally facilitated at Essen University Hospital by the foundation of the Institute of Artificial Intelligence in Medicine (Institut für Künstliche Intelligenz in der Medizin, "IKIM"), solutions were to be developed and made available in the medium-term as support systems for physicians and nursing staff within the WTZ Network. Another topic was the question of whether data sciences "contribute additional knowledge to oncology," according to Professor Schuler. To find out, artificial intelligence methods are to be deployed. They could also help to discover whether completely new knowledge – beyond the usual hypothesis-based scientific procedures – can be gained from the knowledge and extensive data already available at the WTZ. "All our efforts are aimed at achieving advances for our patients through the combined implementation of expertise from the most varied specialist disciplines," emphasizes Professor Schuler.

CCCE OFFERS ACCESS TO CUTTING-EDGE MEDICINE

The aim of the CCCE is to bring cancer medicine in North Rhine-Westphalia up to an international cutting-edge standard that also benefits patients outside the metropolitan areas. The networking of currently six university hospitals means that 18 million people – and, therefore, every fifth person in Germany – have access to the CCCE. This is made possible by the regional networks of the partners involved. The WTZ Network with Essen und Münster university hospitals covers the regions of the Ruhr and Westphalia whereas the Rhineland is covered by the Cologne University network that includes the university hospitals in Aachen, Bonn, Cologne and Düsseldorf.

Access to cutting-edge medicine – for patients that also means that they are given the opportunity, via the CCCE Network and no matter where they live, to take part in the active studies of the participating university hospitals. Research into new treatments, diagnostic procedures and techniques is currently being done in more than 540 clinical studies by the partners in Essen and Cologne. New opportunities for patients arise as a result, especially for particularly complex but also very rare tumor diseases. The advantage to science is clear: the more study participants, the greater the expertise and growth in the evidence base. This allows findings gained from research to be translated all the more quickly into new treatments.

The joint application to become an NCT was not the only success in the first year of cooperation within the CCCE. First milestones were also reached with the appointment of two professors. In Essen, Professor Jens Kleesiek was appointed to the Chair of Translational Imaging Oncology (Lehrstuhl für Translationale Bildgestützte Onkologie) in August 2020 and Professor Christin Seifert to the Chair of Medical Data Sciences in Oncology (Lehrstuhl für Medizinische Datenwissenschaften in der Onkologie) in November 2020.

First joint projects have already been realized. They demonstrate, for example, what characteristics are needed by the IT infrastructure and the network to allow effective cooperation between the CCCE locations and also the exchange of data from the most diverse sources. Alongside information from clinical studies, these also include data from imaging techniques, moreover molecular analyses and results from studies and research projects.

The most important task for the coming year is the detailed conception of the CCCE as NCT location, emphasizes Professor Schuler. "This will require us to coordinate with the other five centers in Berlin, Heidelberg, Dresden, Tübingen and Würzburg and their respective cooperation partners."

www.ccce.nrw

NEW PROFESSORSHIPS **EXCELLENT MEDICINE WITH PERSPECTIVES**

Cutting-edge medicine is based on the networked expertise of the professors who work in the WTZ. By establishing new professorships for future-oriented subjects of oncology, the WTZ Network is consistently furthering its expertise in basic research and in the development of innovative individual treatments. Thanks to the excellent reputation of the WTZ and the excellent preconditions prevailing there, it has been successful in attracting internationally accredited experts to Essen and Münster. Three examples:

PROFESSOR CHRISTIAN REINHARDT

At WTZ Network partner Essen, Professor Christian Reinhardt is founding director of the newly established Department of Hematology and Stem Cell Transplantation resulting from two merged clinics. Born in Hamburg, after completing his studies with best results, he did research as post-doctoral student, inter alia, at Massachusetts Institute of Technology (MIT) in Cambridge and qualified as university lecturer in Cologne in 2008. Before coming to Essen, he worked in a variety of different positions at Cologne University Hospital.

Professor Reinhardt is an internationally recognized expert in hematology, oncology and stem cell transplantation who has received many awards. With him, the WTZ Network now has outstanding expertise in the basic research into aggressive lymphoma. Patients benefit fr om the development of innovative treatment concepts like, for example, individual cellular immune therapies against lymphomas.

PROFESSOR STEPHAN HAILFINGER

The signal paths of immune cells are the major research topic of Professor Stephan Hailfinger. In 2020, the expert for biosciences took up his first professorship at WTZ Network partner Münster where he works in the Department of Hematology, Oncology and Pneumology under its Director, Professor Georg Lenz. After obtaining his doctorate in Switzerland, he previously worked, inter alia, at the University of Tübingen, where he headed research groups at the Institute of Molecular Medicine (Institut für Molekulare Medizin).

Information about how immune cells control and regulate their activity is valuable in the treatment of cancers like, for example, lymphomas. Professor Hailfinger sees his main tasks in translational oncology. Here attempts are made to implement the knowledge gained from research promptly and enable the patients to benefit.

PROFESSOR MARTIN BÖGEMANN

The WTZ Network has established one of the first professorships in Germany for uro-oncology at Münster University Hospital (UKM): Professor Martin Bögemann, as internationally renowned expert, has taken up this professorship. The urology specialist has worked for many years at UKM and has in-depth experience in research and in the treatment of cancer of the prostate, kidney and bladder. With him, the Network is expanding its leading position in the treatment of urological cancers.

The continued development of individually optimized treatments is a central task of Professor Bögemann in the course of his endowment professorship. This involves, among other things, the further development of drugs in clinical trials and exploring their efficacy in different types of cases in clinical practice. Another important topic is the research into biomarkers in the blood of cancer patients. These are to allow forecasting with greater precision of the most promising treatment for the patient in the individual case.

Picture: busracavus

AML EXPERTISE **TAILOR-MADE TREATMENT PLAN**

The WTZ Network has one of the leading centers for the treatment of acute myeloid leukemia (AML) in Germany. “And we will continue to expand this center”, announces Professor Georg Lenz.

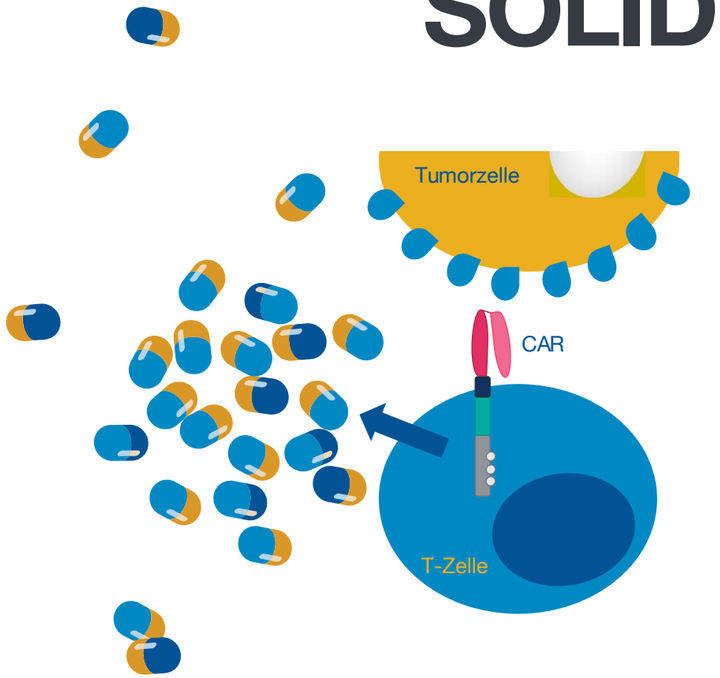
The head of the Department of Medicine A at Münster University Hospital and scientific director of the WTZ Network partner Münster is aware that he is continuing a great tradition here. His unit has decades of experience in the treatment of AML and enjoys international repute. A famous patient treated here in the 1990s was Raisa Gorbacheva, wife of the soviet president Michael Gorbachev.

“Collaboration with our Network partner Essen enables us to coordinate our portfolio and benefit from joint research projects,” Professor Georg Lenz explains. The Director of the Department of Hematology and Stem Cell Transplantation at Essen University Hospital confirms this assessment, “We and Münster complement each other excellently,” said Professor Christian Reinhardt. “Together we treat many patients in the context of research studies and this enables us to further expand our outstanding expertise.” The added value resulting from this cooperation is illustrated by a single number: one in five stem cell transplantations in Germany is performed in the WTZ Network.

A central topic of the future would be the use of novel treatment substances, explains Professor Lenz. Several Phase II/III studies on primary treatment of AML and on the treatment of relapses are currently ongoing.

Acute myeloid leukemia is an aggressive cancer which develops from immature precursor stages of bone marrow cells. Without treatment, it is usually fatal within a few weeks. The crucial step in finding the right treatment is establishing the exact subtype of AML. This in turn requires a most profound understanding of the biology of the different forms of AML. Only then is it possible to design an individually tailored treatment plan with optimized prospects of success for each patient.

CAR T CELLS **GENE THERAPY FOR SOLID TUMORS**



The immune system normally only recognizes assailants from outside – viruses for example. It is usually blind to malignant cells of the own body. The Department of Pediatric Oncology in Münster – as one of the first hospitals in Europe – is able to track down cancer cells in the body using CAR T cells. Autologous immune cells (T cells) are harvested from the patient and genetically modified to equip them with what is called a chimeric antigen receptor (CAR). With this receptor, the immune system is able to recognize cancer cells and thus attack them.

Until now, CAR T cells have been used successfully only in the treatment of certain forms of leukemia and lymphomas. In these disorders, tumor cells circulate in the blood or bone marrow or multiply in lymphatic tissue. Solid tumors, on the other hand, surround themselves with a protective barrier which prevents T cells from entering. To do this, the tumor cells exploit mechanisms used by the healthy body to safeguard itself against excessive reactions of its own immune system.

So that CAR T cells can effectively fight the cancer, they have to penetrate this barrier. The strategy of the research group coordinated at the WTZ is based on providing the CAR T cells with a messenger substance which allows them to breach the tumor’s protective barrier.

CAR T cells have already proved to be effective against blood cancer – but can they also be mobilized against tumors in solid tissue? The WTZ Network is investigating this in a research group coordinated by Professor Claudia Rössig, Director of the Department of Pediatric Hematology and Oncology at Münster University Hospital.

“We are developing innovative strategies to breach the barriers of solid tumors and thus optimize the impact of CAR T cells.”

Professor Claudia Rössig

Other participants are the university hospitals of Regensburg, Hanover and Erlangen as well as a partner from industry. The research *proposal was successful in a national competition for funding the development of highly innovative cell therapies.*

COLLABORATION WITH THE WTZ ESSEN

After completion of a preliminary lead time of about two years, the WTZ Essen will also participate in the clinical trial funded by the Federal Ministry of Education and Research. In practize this will mean testing the safety and efficacy of this combination of immunotherapy and gene therapy in the treatment of sarcomas and neuroblastomas in children and in the treatment of certain types of breast cancer.

EXPANSION OF THE "KMT"

By expanding the bone marrow transplantation center (KMT), the WTZ Network underlines its leading position throughout Europe in the transplantation of donor stem cells. This treatment is required by many patients with leukemia or lymphomas. In future, they can receive treatment according to the latest scientific standards even more quickly.

The bone marrow center established at Münster University Hospital in 1999 occupies an international top position with its expertise and the high number of annual transplants. It cooperates closely in the WTZ Network with the merged Department of Hematology and Stem Cell Transplantation of Essen University Hospital under its Director, Professor Christian Reinhardt, internationally renowned expert for research into aggressive lymphomas.

Following the structural expansion of the bone marrow center in Münster, 40 beds are forecast to be available in the second half of 2021 – twice as many as before. "With 38 single rooms and one twin room, our bone marrow transplantation center will be one of the largest of its kind in Europe," explains Professor Georg Lenz, Director of Department of Medicine A (Hematology, Hemostasology, Oncology and Pneumology).

"The extension is urgently needed," concludes the head of the bone marrow center, Professor Matthias Stelljes. Because there is great demand, not least because there are ever better and more successful treatments, also of older patients especially.

The higher number of cases associated with the expansion of capacity in the bone marrow center simultaneously means growth in expertise. "Treatment in our center, which is certified by the European Society for Blood and Marrow Transplantation (EBMT), promises maximum success because we can draw on the widest possible spectrum of experience," explains the Medical Director and Management Board Chairman of Münster University Hospital, University Professor Hugo Van Aken.

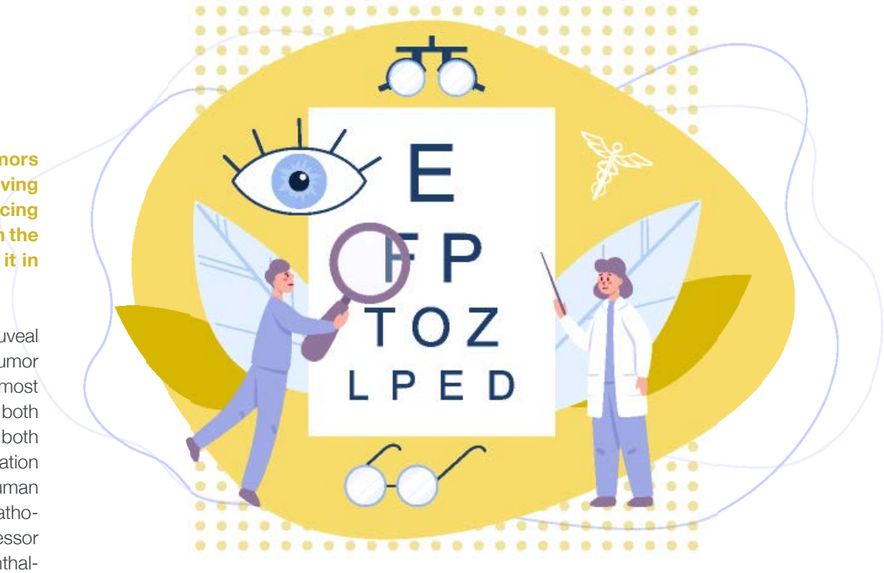
Transplantation of donor stem cells requires strict precautions to be taken for the protection of the hospitalized patient. In order to prevent rejection of the transplanted cells due to the body's natural immune response, the immune system has to be almost completely shut down. As a result, there is a sharp rise in the risk of infection. For this reason, the bone marrow center must create a wholly germ-free environment for its patients.

"Our bone marrow transplantation center will be one of the largest of its kind in Europe."

Professor Georg Lenz

EYE TUMORS **PRESERVING VISION**

Successfully treating eye tumors while saving the eye and preserving vision is the central challenge facing the Ophthalmology Department in the WTZ Network. Its expertise puts it in a top position internationally.



The main tumors treated are uveal melanoma, the most common eye tumor in adults, and retinoblastoma, the most common eye tumor in children. "For both diagnosis and therapy, we rely in both cases on interdisciplinary collaboration between oncologists, radiologists, human geneticists, pediatricians and pathologists," explains University Professor Nikolaos Bechrakis, head of the Ophthalmology Department at Essen University Hospital. "This enables us to offer our patients unique therapies."

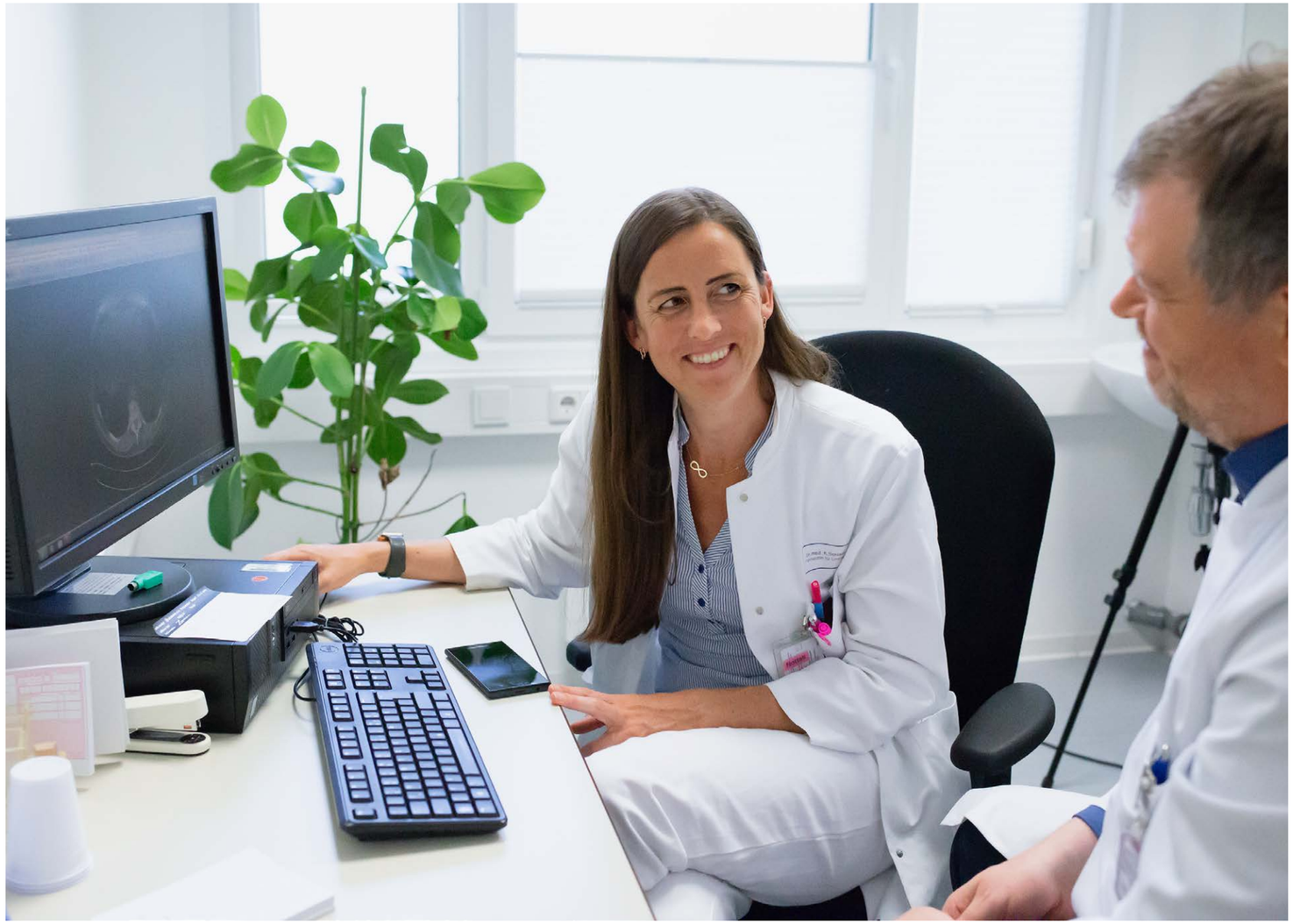
For example, the uveal melanoma, which develops in the choroid of the eye from mutated melanocytes, is usually treated with radiation therapy. In collaboration with the West German Proton Therapy Center Essen (Westdeutsches Protonenentherapiezentrum Essen (WPE)), we have been using proton therapy additionally in 2021. This has the advantage of less radiation compared to conventional radiation therapies, which means less potentially harmful effects on the optic nerve and the macula.

However, this treatment is not suitable for particularly large tumors. Therefore the Opthalmology Department offers affected patients a procedure in which the tumor is surgically removed. "In 80 percent of cases, we are able to preserve peripheral vision," says Bechrakis.

Retinoblastoma, a tumor which occurs almost only in small children, arises from gene mutations in the retina. The treatment strategy is defined in an interdisciplinary case conference. In collaboration with the children's hospital, treatment begins with chemotherapy, which is administered either locally or systemically. In addition, or also primarily, the young patients can be given radiation therapy, laser therapy, cryotherapy or proton therapy. "This enables us to save the eye in 70 percent of cases," emphasizes Bechrakis.

Another unique feature in the treatment of eye tumors in the WTZ Network is the Research Group on Ophthalmological Oncology and Genetics (Forschergruppe zur Ophthalmologischen Onkologie und Genetik) led by University Professor Dietmar Lohmann. One of its achievements is the development of a procedure for determining the risk factors for second tumors in retinoblastoma patients. For uveal melanoma patients, it offers tests which can be used to diagnose impending metastasis. Testing of this kind is another factor that contributes to the international renown of the eye unit.

UROONCOLOGY
RESEARCH DRIVES INNOVATION



With cutting-edge research for innovative diagnostic and therapeutic methods, the WTZ Network partners complement each other in optimising the treatment of genitourinary cancers, i.e. cancers of the kidneys and bladder and testicular and prostate cancer. Two outstanding examples of this are the DISCO study of Professor Viktor Grünwald in Essen and the further development of PSMA theranostics in Münster.

The starting point of the interdisciplinary DISCO study of the WTZ Network partner Essen is the checkpoint inhibitor therapy (CPI therapy). This is one of the most advanced treatment methods used, inter alia, in the treatment of renal cell carcinoma. The treatment activates the body's own immune system against the cancer and is, in principle, conceived as a life-long treatment. Whether it can be terminated earlier in suitable patients is not yet clear.

In the DISCO study, the aim of the Essen researchers is to use positron emission tomography (PET) to determine in each patient individually whether the CPI therapy can be successfully terminated. This means that the duration of treatment and, with it, the burden on the patients can be reduced. "This individualisation of the treatment duration will considerably improve the patients' quality of life," says Professor Grünwald.

Quality of life is also a major concern in prostate cancer, which is the most common cancer in men. This cancer is not always so dangerous that an aggressive treatment, with the attendant side-effects, would be necessary. "In the large-scale PRIAS study, we monitor the patients closely in order to distinguish between cancers that are harmless and those that are not, and to spare the affected men unnecessary stress," explains Professor Axel Semjonow, head of the prostate centre at the WTZ Network partner Münster. Where an operation is nevertheless necessary, use of a novel intraoperative imaging method funded by the German Research Foundation (Deutsche Forschungsgemeinschaft) can help to ensure clear surgical margins.

At the other extreme of this disease are metastases which can still develop in the body even after prostate surgery as well as hormonal and chemotherapy. A treatment option in this case is PSMA therapy in which the WTZ Network partners are cooperating closely. The WTZ Network has here two nuclear medicine specialists of international renown, Professor Ken Herrmann (Essen) and Professor Kambiz Rahbar (Münster).

The treatment uses a binding molecule – a ligand – which attaches to the prostate specific membrane antigen (PSMA), a typical protein structure on the cancer cells. For diagnosis, this ligand is fitted with a radioactive nuclide which emits gamma radiation and renders the metastases visible in positron emission tomography. If a second radionuclide emitting high-energy beta radiation is attached to the same ligand, the cancer cells identified by the diagnostic nuclide can then be destroyed.

The WTZ Network is conducting studies, some of which are already very advanced, to investigate different ligands as well as drugs which can be used to administer them. "In 2020, in the context of the VISION study, we started with the Phase-III testing of a drug based on the radioligand 177Lu-PSMA-617," reports Professor Rahbar.

"PSMA therapy is a good example of theranostics – the combination of diagnostics and therapy," explains Professor Martin Bögemann, who has taken up a dedicated professorship of urooncology at the WTZ Network Partner Münster. (For more about theranostics, see pages 30-33).

DERMATO-ONCOLOGY
WANTED: BIOMARKERS

Malignant melanoma is one of the most aggressive cancers. The dermatology units in the WTZ Network therefore offer their patients highly specialized top-level immunotherapies at the Essen and Münster locations. One of the main focuses of their joint research is searching for the genetic signatures of tumors. Identifying these biomarkers is an important step towards a tailor-made therapy.

With the establishment of the WTZ Network, the two dermatology units agreed in 2020 on a common clinical pathway for skin cancers. This ensured that patients have the same access to cutting-edge treatments according to highest international standards no matter where they lived, emphasize University Professor Dirk Schadendorf, Director of the Essen Clinic and Polyclinic for Dermatology (Essener Klinik und Poliklinik für Dermatologie) and Dr Carsten Weishaupt, Head of the Skin Cancer Centre of Münster University Hospital (Hauttumorzentrum des Universitätskrankenhaus Münster (UKM)). In addition, the combined course of action ensures that patients from one hospital location can take part in trials of the other.

Depending on the size of the tumor and the metastatic situation, the clinical pathways specify in detail which diagnostic procedures are to be performed and which treatments should then follow in order to permit optimal chances of cure and survival.

For advanced cancers especially, the immunotherapies approved five years ago have proved effective. Melanoma patients classified as stage IV have already developed metastases in other organs. Here the WTZ Network deploys immunotherapy with the aim of stopping the tumor growth or even being able to remove the tumor completely. In patients for whom complete surgical removal of the tumor tissue was possible, the immunotherapy can also be used adjuvantly, i.e. as a supplementary treatment, in order to prevent recurrence (relapse) of the cancer in the long term.

Immunotherapy works by using drugs called immune checkpoint inhibitors. These antibodies stimulate the immune system and thus suppress the tumor growth, a treatment principle which was awarded the Nobel prize for medicine in 2019. “Our studies have shown that the risk of a relapse decreases significantly and the likelihood of survival increases,” explains Schadendorf. The downside of the treatment: the side effects can be so severe that patients have to discontinue the treatment.

A possible variant of the adjuvant immunotherapy is what is called neo-adjuvant therapy. Here patients are treated with checkpoint inhibitors for several weeks prior to the operation. “Studies on this are currently taking place,” reports Weishaupt.

The experience obtained with immunotherapy to date makes one thing very clear: the more differentiated the knowledge on the genetic profile of cancers and the interaction of the immune system with cancers, the easier it is to classify melanomas into subcategories and the more targeted the treatment of melanoma patients will be in the future. Dermato-oncologists expect to gain new insights into the genetic profiles in particular through two further studies currently in progress in the WTZ Network.

The first study is looking at cutaneous metastases. This study centers on tissue analysis to find out which genetic and biological features are exhibited by tumors which primarily produce metastases in the skin.

In the second study, the genetic profiles of primary melanomas in stage II are analyzed with the aim of verifying an algorithm as biomarker which indicates a higher relapse risk and thus allows the selection of patients who are potential candidates for adjuvant therapy. “Should we succeed in finding answers to this highly complex question, we will be treading entirely new ground,” emphasizes Schadendorf, “and not only for dermato-oncology but for oncology as a whole”.

PEOPLE & **MOMENTS**

18

Joint Cancer Day in Essen

20

Harmonization of 14 treatment programs

16

1st meeting of the Steering Committee

15

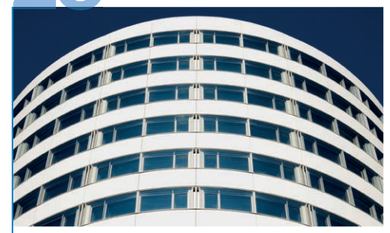
Commissioning of the outreach platform for data exchange for the combined treatment of patients

01

Picture: Rocco-Herrmann

Joint declaration on collaboration under Art. 26 GDPR

28



2nd Münster Autumn Symposium – Joint Virtual Meeting

20

December – 1st feedback on the further funding of the cutting-edge center as WTZ Consortium

JANUAR JANUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

Essen Translational Oncology Symposium (ETOS) – joint event

11

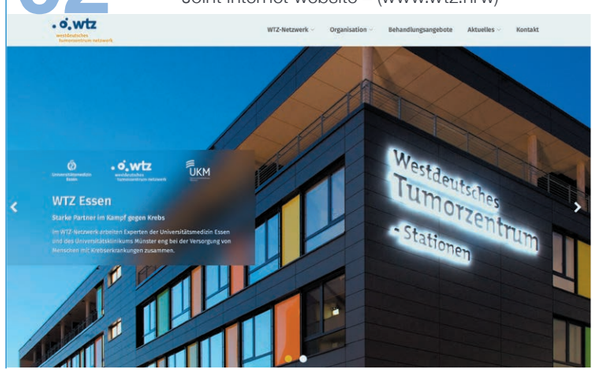
01 Opening of the new palliative care unit in Münster

21 1st inaugural meeting of the Patient Advisory Board

Opening of the new oncological outpatient unit based on the Essen model

12

02 Joint internet website – (www.wtz.nrw)



10 Hearing of Deutsche Krebshilfe (German Cancer Aid) – 8th call

CREATING **NEW PERSPECTIVES USING ART**

Picture: UKM/ Wilfried Gerharz

Art creates new perspectives and can help cancer patients and their relatives to express fears and deal with anxieties. Art can often be used to give creative expression to the frequently negative feelings and deliver new strength as a result. Creating art together with others not only gives encouragement to the person affected but also strengthens faith in his or her own abilities and promotes social cohesion.

There has been close cooperation between the brain tumor center of Münster University Hospital (UKM) and the Pablo Picasso Museum of Art in Münster since 2012. The city-center museum celebrated its inauguration in 2000. It accommodates more than 800 exhibits from diverse creative periods of Picasso, including lithographs and other works that use a variety of artistic techniques. The entire exhibition undergoes a complete changeover every three months so that, for example, also works by contemporaries or artist friends of Picasso can be seen. Accordingly, there are always new ideas, materials and topics to be discovered during each visit.

In the course of the collaboration, the unique project entitled “Art as food / art as a means of survival” was initiated for brain tumor patients of the UKM. During the two-hour event with guided tour followed by a workshop, new angles and perspectives emerge from both the creative process and the mutual exchange.

The art program is funded solely by charitable donations and allows patients and their relatives to take part free of charge.

Creative pictorial design can help to restore order when life gets out of control. For patients with brain tumors especially, it offers the opportunity to activate certain areas of the brain and thereby enhance concentration and functioning ability. “The creative process additionally promotes patients’ self-esteem, and being part of the group offers an opportunity for exchange, diversion and fun,” says University Professor Walter Stummer, Director of the Neurosurgery Department at UKM. “Art therapy can play an essential role in the process of convalescence,” he continues.

Dr. Dorothee Wiewrodt is private lecturer and specialist physician for neurosurgery and psychotherapy and is psycho-oncologist. She conducts in-depth psychotherapy discussions after the operation, provides assistance to those affected in coping with everyday life and always accompanies the group when it goes to the museum. “I recommend that patients consider themselves capable of doing something different and to give the museum therapy a try,” she explains. Sometimes patients are surprised to discover that they have a “creative streak” as sometimes emerges when they exchange new perspectives of art and sometimes also of the disease and find that feelings can also be expressed without words. Or how good it feels to be preoccupied with something that is completely detached from illness.

GROUP WORKSHOPS TAKE PLACE IN THE MUSEUM

The guided tour and workshops for brain-tumor patients in the Picasso Museum have been conducted right from the outset by museum education officer, Britta Lauro. After a guided tour of the exhibition, all participants first of all receive valuable inspiration for their later creative efforts. There are no limits to fantasy and participants can gain inspiration from a wide range of materials. All workshops are prepared in such a way that, at the end of the afternoon, every participant can take home his or her own work of art with the theme of the exhibition.

“We would like to give assistance. People in situations of illness experience art more intensively than healthy persons,” explains Museum Director Professor Markus Müller and adds: “Even world-famous artists like Vincent van Gogh and Henry Matisse used art as a form of therapy”.

The brain-tumor patients and their relatives also experience art as a therapy during the visits to the museum. The protected space inside the museum and the company of the familiar team offers the necessary reassurance to enable them to open up to new topics and ideas. In the joint creative activity and dialoguer, participants experience different ways of looking at the same work of art.
This can transfer to the illness situation and help in coping with the disease.

Münster University Hospital

Tumorassoziierte Fatigue belastet Körper, Geist und Seele.

FIGHTING FATIGUE
BETTER QUALITY OF LIFE

Worn out, unable to concentrate, depressed, no energy: almost every cancer patient suffers from these symptoms. They are an ever-present cloud and have a profound impact on the quality of life. The medical term for these symptoms is cancer-related fatigue. The WTZ Network offers a range of activities and therapies for these patients, from exercise programs to counselling.

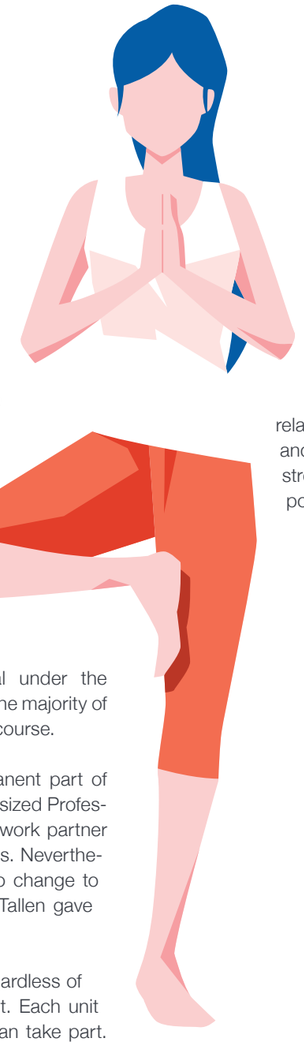
A possible starting point is the Palliative Care Clinic of the Department of Internal Medicine (Cancer Research) in the outpatient department at the Essen location. This is where patients get information about the condition, can fill in a questionnaire for diagnosis and find out what help is available. “The crucial thing is that the patients are made aware of this condition. This in itself brings them very great relief. Together we develop individual treatment strategies to help them regain their strength and energy,” explains the oncologist and palliative care specialist Dr. Mitra Tewes. “This multiprofessional approach enables us to work with our patients to actively improve their quality of life.”

The various departments of the WTZ and the Department of Physiotherapy offer a wide range of exercise programs depending on the patient’s individual situation, age, sports experience and stage of cancer. On the basis of scientific knowledge, available activities include moderate endurance training under the supervision of sports scientists or physiotherapists as well as special programs for children, adolescents and palliative care patients.

The mind-based interventions offered for fatigue address the widest range of patient personalities. They range from mindfulness training and neuro-feedback to art therapy and self-management programs to psycho-oncological counselling or therapy for couples or families. During the lockdown phases, the online program “Make it” enjoyed great popularity. This web-based coaching program offers participants practical exercises on the topic of mindfulness and coping strategies.

A special education program for patients with fatigue provides additional information on the topic and the possible treatment approaches.

YOGA
GAINING CONFIDENCE



People who get cancer go through emotions like fear, despair and anger. Many patients lose faith in their own body. It is crucial for their quality of life for them to regain a positive feeling about their body and support the treatment measures at the same time. “Yoga offers unique opportunities for this,” explains Claudia Branss-Tallen, a yoga teacher who has additionally qualified as yoga therapist.

This theory is supported by a study done by the WTZ Network Münster. It uses the WHO-5 test of the World Health Organization to evaluate the well-being of cancer patients who attended a ten-week yoga course of the university hospital under the instruction of the yoga therapist. The result was that the majority of participants said that they felt much better after the course.

The yoga course had meanwhile become a permanent part of the support service of the university hospital, emphasized Professor Phillip Lenz, Managing Director of the WTZ Network partner Münster. The course is free of charge for participants. Nevertheless, during the lockdowns, patients were forced to change to a digital alternative. Course leader Claudia Branss-Tallen gave them a DVD with exercises for this purpose.

The yoga course is offered to all cancer patients regardless of their type of disease or the stage of their treatment. Each unit lasts 90 minutes and a maximum of ten persons can take part.

“This allows me to look after each one individually,” underlines Branss-Tallen. Before the course begins, she familiarizes herself in depth with the physical and medical history of the participants and tailors the exercises to suit them. The focus is on relaxation, breathing and meditation exercises and asanas (static body postures in yoga) which stretch but also strengthen and enhance the positive body image of the participants.

WTZ PATIENT ADVISORY BOARD **ON EQUAL TERMS**

Personalized oncology and digital transformation result in new challenges. For the WTZ Network, this raises the question, inter alia, of how cutting-edge medicine and the smart hospital can be organized with even greater orientation on patients. This is one of the reasons why the steering committee established a patient advisory board at the beginning of 2020.

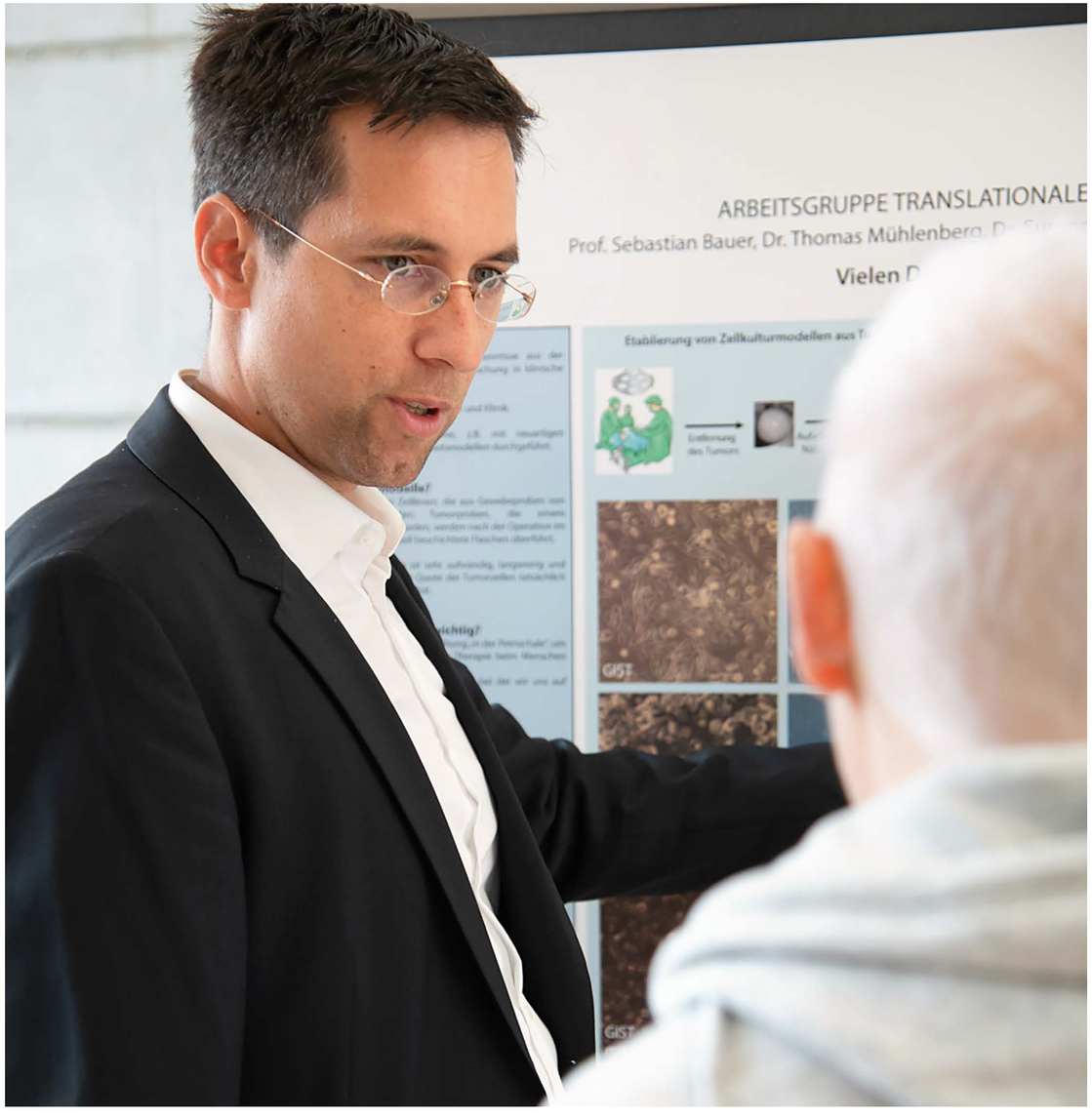
“Patients are the experts when it comes to living with cancer. Their needs, experiences and points of view are very important to achieve improvements in research and care. We see each other as a partners on equal terms who provide strategic support to the WTZ,” explains Markus Wartenberg, spokesman for the advisory board.

The first projects launched by the board are already underway. One example is a published guide to make physicians more aware of the patient’s viewpoint.
“Our advisory board has almost 70 years of patient experience. We have experienced many talks given by physicians in these years: ranging from the exceptional to the useless. We want to give doctors tips on how to ensure that their talks are better received and, above all, better understood by non-expert patients and their relatives,” summarizes Wartenberg.

Two other projects are of strategic importance: the initiative “Patients as research partners” and the patient-expert academy. “Patients as research partners” concerns the involvement at an early stage of patient representatives in clinical research. This is becoming ever more often an important factor in successful cancer research. Including the patient perspective in the planning and performance of studies frequently results in much more effective and patient-oriented treatments.

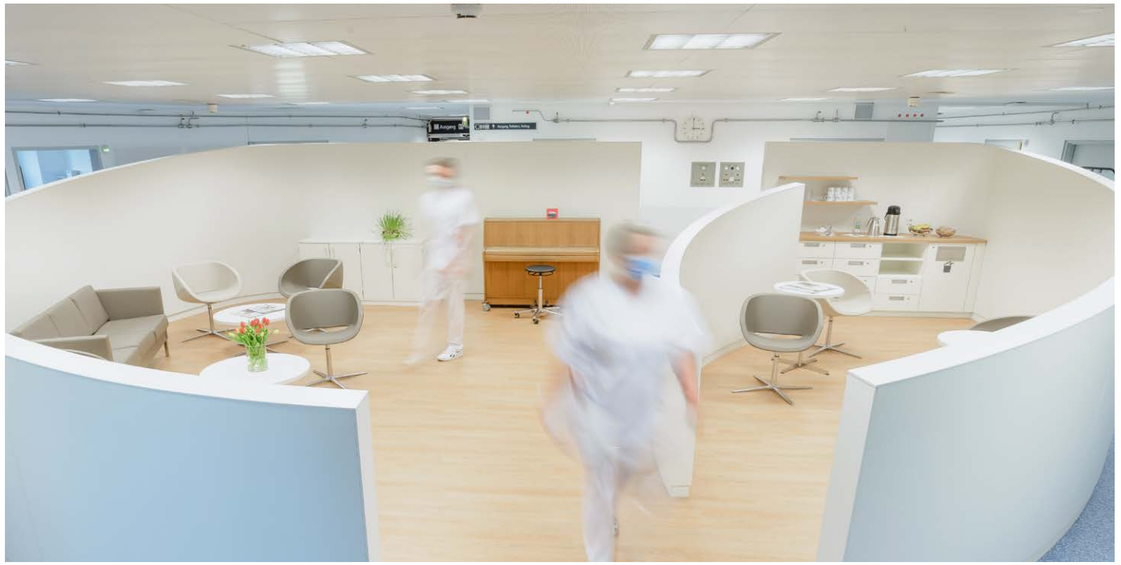
“We have identified many aspects as to how WTZ clinical research can be organized to focus more on patients,” says Stefanie Frenz, deputy spokesperson of the advisory board. “For example: how can patients find studies more easily and better understand them in the future? We recommended that the WTZ develop a database for the website, together with us as patients, in which WTZ studies are listed and, above all, presented in a way that patients can understand them,” explains Frenz.

In order for “patients as research partners” to be successful, there is an urgent need to educate patient representatives. The advisory board is planning a supraregional “patient-expert academy” to this end. It will begin in the first half of 2021 with an online course organized in the form of modules. “We would like to convey in the courses the way cancer research is organized and do so in a manner that is easy to learn for non-experts. If patient representatives wish to be partners in discussions and research in future, they should understand the language spoken by researchers,” explains Wartenberg.



"Patients as research partners": The patient perspective will become even more important in the future - already in the planning phase of clinical trials.

NEW **PALLIATIVE CARE UNIT**



In April 2020, the palliative care unit of Münster University Hospital (UKM) moved to its new, completely renovated premises. In addition to an attractive common room and meeting room, there is also a treatment room for music therapy or physiotherapy. Moreover, great store was placed on a digital infrastructure which now also extensively networks the multi-professional team.

"Palliative care requires in-depth exchange and smoothly functioning collaboration between the different disciplines," emphasizes Professor Philipp Lenz, Medical Director of Palliative Care at the UKM. The new care unit allows optimum care to be given to up to nine patients. A total of seven single rooms and one two-bed room are available. If desired, relatives and friends can stay overnight in the palliative care unit in a homely atmosphere. "For us in WTZ, we are very concerned with being there for our patients and their relatives at every stage of their illness," says Lenz.

The team of specialists comprises physicians and nursing staff, social workers, chaplains, physiotherapists, occupational therapists and music therapists all trained in palliative medicine. Together, they take care of patients with incurable diseases. They make a point of tailoring medical care to individual needs to enable these patients to return to their customary or desired living situation as soon as possible.

"A large number of patients receiving palliative care suffer from cancer. For us as oncological center, palliative care has major importance," concludes University Professor Hugo Van Aken, Medical Director of the UKM.

OPENING OF OUTPATIENT **UNIT IN MÜNSTER**

In May 2020, during the coronavirus pandemic, the WTZ Network Partner Münster opened its interdisciplinary oncological outpatient clinic. As central hub for cancer patients at the University Hospital (UKM), it offers interdisciplinary and multi-professional counselling and guidance – from expert consultations and diverse support programs to patient education and information events.

"The interdisciplinary outpatient clinic acts as a superordinate patient portal and sets new standards for the care of oncological patients at the hospital," explains University Professor Hugo Van Aken, Medical Director of the UKM.

Specialist nurses and therapists such as physiotherapists, psycho-oncologists and nutrition counsellors work here alongside the interdisciplinary medical team. "We offer a multi-professional range of services which is tailored optimally to the patients' personal needs," explains University Professor Annalen Bleckmann, Director of the WTZ Network Partner Münster. "People with cancer usually need extensive advice and guidance with regard to treatment options and support programs."

The new outpatient clinic directly adjoins the central hospital and consists of a modern waiting area, five consultation rooms and a large multipurpose room. "It provides enough space for staff training sessions, nursing consultations, diverse patient events and self-help groups," says Professor Philipp Lenz, Managing Director of the WTZ Network partner Münster. The social services department of the UKM is also part of the outpatient clinic. It offers patients assistance and arranges for rehabilitation measures.

PERSONALIZED **TREATMENT (BIT)**

Imaging procedures play an important role not only in diagnosis. They are also gaining ever greater significance in the treatment of tumors. In 2020, the WTZ Network founded two new institutes in order to drive the relevant research forward.

The Institute for Developmental Cancer Therapeutics (Brückeninstitut für Experimentelle Tumortherapie (BIT)) has made it its task to combine innovative treatment approaches, such as cancer theranostics, with the development and testing of new substances. “The goal of our interdisciplinary clinical research is to further develop image-supported procedures in personalized cancer therapy and at the same time to intensify early translational research,” explains Professor Jens Siveke. As head of the Department of Solid Tumor Translational Oncology of the German Cancer Consortium (Abteilung für Translationale Onkologie Solider Tumore des Deutschen Konsortiums für Translationale Krebsforschung (DKTK)) at the WTZ Essen, he has also assumed leadership of the BIT.

The main area of research in theranostics is radioligand therapy in which the BIT is cooperating closely with the Department of Nuclear Medicine. This treatment introduces radioactive substances into the cancer cells to deliver targeted radiation. The Department of Nuclear Medicine and the BIT have set up a dedicated Phase I unit for this and want to offer the entire spectrum of clinical trials, from early Phase I to Phases II and III. “This means that there is no institution comparable to BIT in the whole of Germany,” emphasizes Professor Ken Herrmann, Director of the Department of Nuclear Medicine. The first trials have already started. As the treatment involves administration of radioactive substances, the study design is more complex than in other clinical trials and the regulatory requirements for protection of the patients more demanding (see also pages 32-33).

UNIQUE **BASIC RESEARCH**

The Multiscale Imaging Center (MIC) devotes itself to fundamental questions in biomedicine, as well as in cancer research, and develops appropriate imaging techniques. At the end of 2021, the unique institute will start work on the campus of the University of Münster with 250 staff from a diverse range of scientific and medical disciplines. It represents an innovative component of the WTZ Network.

Multiscale imaging – this is the term used by the specialists to refer to a novel research strategy: the visualization of cellular processes at different scales and over time. This holistic view enables diagnoses to be even more precise and treatments even more individual.

The researchers label cells with signal transmitters which generate light, sound or radioactive waves. These signals can be measured and converted into images. Microscopy, nuclear medicine techniques and magnetic resonance imaging are used at the MIC. There is even a particle accelerator for producing radioactive substances. Funding for the new building and its technical equipment has come from the federal government and the government of North Rhine Westphalia.

“All together these techniques help us to understand diseases such as cancer or inflammation on the cellular level,” explains Professor Michael Schäfers, director of the Department of Nuclear Medicine at the University Hospital of Münster (UKM) and spokesperson of the MIC. “For example, we can visualize how cells behave during immunotherapy.”

Bild: UME/Heinle Wischer Gesellschaft für Generalplanung mbH

Bild: Michael Kuhlmann

THERANOSTICS
SIGHTS SET ON CELLS

Personalization of cancer treatment is one of the big promises of 21st-century medicine. One of the building blocks is known as theranostics. As a multidisciplinary approach of oncology and nuclear medicine and, depending on the cancer entity further specialties such as endocrinology or urology for example, theranostics is one of the main areas in translational oncology in the WTZ Network. Initial therapeutic successes have already been achieved in the treatment of thyroid and prostate cancer. Attention is now focused on brain tumors, lung cancer, breast cancer and lymphomas.

Theranostics is a neologism composed of the terms therapy and diagnostics and describes an image-guided treatment approach. It is used at both locations of the WTZ Network. “Theranostics enables us to address a wide range of different cancers individually with a targeted, and at the same time particularly sparing, radiotherapy with radioactive substances,” explains Professor Jens Siveke, head of the Institute for Developmental Cancer Therapeutics (Brückeninstitut für Experimentelle Tumortherapie (BIT)) at the Essen location. Professor Michael Schäfers, director of the Department of Nuclear Medicine at Münster University Hospital adds: “These multidisciplinary research approaches allow advances in personalized treatment across a range of different cancers.”

The novel approach is possible on the one hand, because knowledge about the molecular properties of cancer cells as well as the heterogeneity of tumors and their microenvironment – i.e. the cells in which they are embedded – is becoming more and more differentiated. This gives us insights into how the cancer cells inhibit the immune system and what proteins play a role in this.

On the other hand, diagnostic imaging procedures provide new options. They permit more and more precise insights into the cellular processes. Procedures like PET-CT can make tiny secondary tumors and thus the actual extent of metastasis visible.

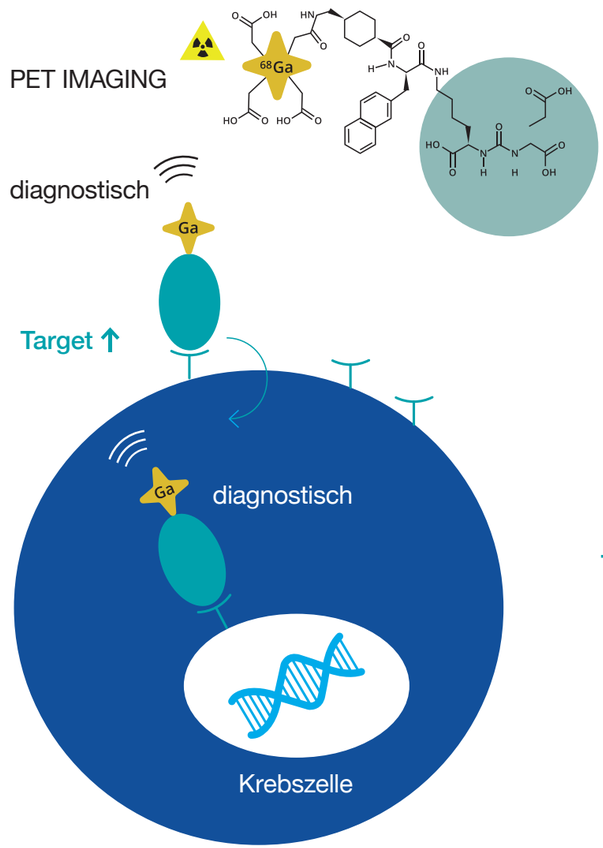
For cancer therapy, this means that if a protein specific to the tumor can be identified, it may be possible to use this as a receptor for introducing radioactive substances into the cancer cells and labelling the cells for targeted radiation.

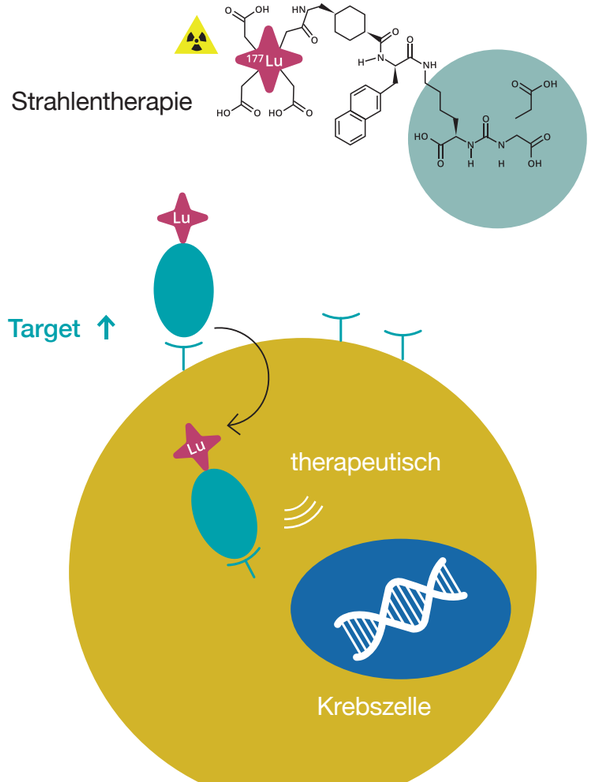
For the precise delivery of radiation, a molecule called a ligand is required which docks onto the target protein. “This works by the lock and key principle,” explains Professor Ken Herrmann, Director of the Department of Nuclear Medicine at the WTZ Essen location. In the case of prostate cancer, oncologists use a specially developed ligand (key), which attaches to the prostate specific membrane antigen (PSMA) of the cancer cells (lock).

For the treatment of further types of cancer, the crucial challenge is to identify individual target proteins that can be used as receptors. Only after such a marker has been identified, is it possible to define the matching radioligand which will fit the lock and destroy the tumor. It is also conceivable that influencing the microenvironment might alter the tumor heterogeneity and vulnerability of tumor cells and make patients more responsive to combination therapies. This is one of the tasks of the WTZ research institutes BIT in Essen and MIC in Münster (see also pages 30-31).

“In image-guided cancer treatment, we label tumors and metastases with radioactive substances. This permits the individual assessment of tumor properties and targeted radiation of the malignant cells, sparing the surrounding tissue. In this way individual properties of tumors and metastases both within a patient and between different patients can be made visible and utilized for personalized cancer treatments.”

Professor Jens Siveke





The common goal is to further accelerate the implementation of new scientific findings in improved therapy procedures: University professor Dr. Georg Lenz with professor Dr. Philipp Lenz, University Professor Dr. Annalen Bleckmann andUniversity professor Dr. Andreas Pascher (from right), who together form the directorate of the WTZ Münster.

CANCER RESEARCH
INNOVATIVE THERAPIES FOR LYMPHOMAS

Research on aggressive lymphomas requires not only outstanding competence and experience but also international collaboration in research groups and consortiums. The bigger the patient sample, the better sound information even about relatively rare variants of this cancer can be obtained. The WTZ Network is participating in numerous studies for the development of innovative treatment strategies.

"Our aim is to gain a better understanding of these diseases," explains Professor Georg Lenz, Director of the Department of Medicine A at Münster University Hospital. One of the topics under investigation by the researchers of the WTZ Network are the molecular mechanisms involved in the development of aggressive lymphomas. This will permit more precise classification and diagnosis of these cancers of which there are numerous variants. The WTZ Network partner Münster is participating in an international research consortium whose members also include university hospitals in Spain, for example. The team in Essen is also collaborating closely with partners from Austria, Italy and France in the context of EU-funded international consortiums in order to improve the treatment of patients with lymphomas.

The understanding of molecular markers or signatures on the surface of the cancer cells can help to weigh up the chances of success of different treatment strategies. This means that it should be possible to develop individually optimized treatments for patients in the future. The innovative treatments include procedures which stimulate the body's own immune system to fight the cancer. Targeted therapies with drugs which block the signal pathways of the malignant cells and thus lead to their death are also being researched.

Cooperation within the WTZ Network concentrates resources and skills for the clinical and translational research in Essen and Münster. "We complement each other very well," says Professor Christian Reinhardt, Director of the Department of Hematology and Stem Cell Transplantation of Essen University Hospital.

"One of our focuses in the treatment of aggressive lymphomas is the further development of treatment with CAR T cells," explains Reinhardt. In this treatment, autologous immune cells are harvested from the patient and genetically modified in the laboratory to enable them to recognize and effectively fight the tumor. This treatment is particularly promising in the case of relapses, that is recurrence of the disease after successful primary treatment.

CANCER AND THE CORONAVIRUS **OPTIMUM PROTECTION**

The corona pandemic was – and still is – a huge challenge to the health system. When Germany entered its first lockdown, many cancer patients fearfully asked themselves: how will that affect my diagnostics and treatment – and therefore my life or survival? In the WTZ Network, it was ensured at all times that patients received the appropriate treatment for their disease and at the same time were also protected to the best possible extent against a corona infection.

"Our priority aim was – and is – the maximum possible protection of our patients," said Professor Philipp Lenz, Managing Director of WTZ Network partner Münster, describing the combination of organizational and technical measures.

Optimum organization represents the basis for protection. This includes, for example, the admission systems in outpatient departments and the duty to wear a mask everywhere on the grounds of both university hospitals. Patients receive no access to the outpatient department in Münster without an invitation, which is either sent by post or deposited at reception. Additionally, patients with appointments are previously asked by telephone about any symptoms or have to verify by answering questionnaires on medical history that they exhibit no corona symptoms.

Patients with symptoms similar to those of a corona infection, or who have had contact with infected persons, must report this in Münster prior to attendance in order to then be tested there. In Essen, patients are required to bring a negative test result. Persons accompanying patients may gain access only in exceptional circumstances; nevertheless, relatives at the Essen location can be connected by telephone in order to participate in counselling sessions.

Hospitalized patients are asked daily about potential corona symptoms like fever, and the corresponding data are stored in the electronic patient system. "A traffic-light system enables us to see at a glance whether we need to take action," explains Professor Lenz.

Technical measures represent the second column of patient protection. The WTZ Network offers virtual consulting hours at the Münster location. "Especially during follow-up treatment, these video-chats reduce the effort for patients and relatives and also enhance their safety," reports Professor Lenz. "Moreover, telemedicine allows palliative patients to stay in touch with their relatives," he underlines. This was particularly important at a time where visits are at least restricted. Hospitalized patients in Essen are given tablets so that they can stay in touch with relatives.

The WTZ Network also uses virtual facilities to discuss results. The best example is the Molecular Tumor Board (Molekulares Tumorboard (MTB)) which the Network has been offering patients since 2019 for interdisciplinary discussions of the diagnosis and treatment recommendations for molecular changes of tumors. Many other tumor conferences are currently also conducted digitally.

"The corona pandemic has made us implement virtual meetings much more quickly than originally planned," reports Professor Jens Siveke, Director of the Institute for Experimental Tumor Treatment (Institut für Experimentelle Tumortherapie). One advantage of the virtual technology: alongside experts from Essen and Münster, contact can be made to other external participants, for example, the treating physicians from the specialist practices or partner hospitals.

On the whole, the entire interdisciplinary exchange between experts had benefited from the virtual opportunities. "For this reason, the MTB will remain virtual even after the pandemic and will be consistently further developed using the knowledge then currently available," announced Professor Siveke.

TELEMEDICINE **DIGITALLY NETWORKED**

The digitalization of medicine creates added value for the patient," explains Professor Philipp Lenz, Managing Director of Münster WTZ and Medical Director of the Department of Palliative Medicine at Münster University Hospital (UKM). "For this reason, we placed great emphasis right from the start on the digital linking of partners in the WTZ Network." We were able to build on already existing infrastructures. Essen University Hospital has been a nationwide trailblazer in digitalization with the "smart hospital" initiative. A post was established at UKM for telemedicine in the same year. "We have gained experience with telemedicine in intensive care over many years," emphasized the Medical Director of UKM, University Professor Hugo Van Aken.

Digital networking facilitates access to information and communication beyond spatial borders. For example, there is no need to request and physically send data from the biobank or patient records; instead they can be retrieved on the computer screen without any great effort. Thus WTZ specialists can discuss complex individual cases in-depth and in all detail in virtual tumor boards and, if necessary, as far as the molecular structures.

This requires comprehensive data security. "We assign very great importance to this," underlines Lenz. "We use certified systems exclusively that conform in full to all data-protection law requirements."

Another requirement is compatibility of the systems within the WTZ Network. Where this is not already the case – as in browser-supported applications – the partners upgrade accordingly. Essen and Münster university hospitals are also involved in supraregional initiatives and projects like the virtual hospital NRW.

Telemedicine opens up new opportunities for personal contact between doctor and patient. Lenz quoted as an example that "a seriously ill patient in Münster wishing to take part in a study in Essen can present directly to the specialist there by videoconference without having to suffer the stress of travelling." "As a result of telemedicine, patients and physicians or other medical personnel outside expert medical centers have access at all times to optimum diagnostics, treatment and the board of experts. This will be further expanded in years to come," emphasizes private lecturer Dr. Christian Juhra, head of the Telemedicine Office at UKM.

Patient welfare requires not just cutting-edge medicine as offered by the WTZ Network, but also human warmth and attention. Telemedicine allows personal communication while satisfying the requirements of strict infection protection as required by the Corona pandemic but also for stem cell transplantation and other treatment methods. Even a pastoral discussion is possible by video meeting in the Palliative Care Department..

"Telemedicine means added value for patients."

Professor Philipp Lenz

TEACHING DURING THE PANDEMIC
100 PER CENT DIGITAL

Bild: WWU/ Erik

The WTZ was well prepared when the coronavirus forced the digitalization of university studies in the spring of 2020. The pandemic further accelerated the already commenced expansion of virtual learning. Digitalization will continue to be hugely significant – in-class teaching nevertheless remains important. For development of the student's personality, direct communication with lecturers is indispensable.

Lectures, seminars, practicals: 17,000 dates per semester had to be organized by the WTZ Network partner in Münster alone. "We have digitalized the study of medicine 100%," concluded Dean of Studies, Professor Bernhard Marschall.

"Virtual learning, as the year has shown, offers many possibilities, but also has its limits," said University Professor Joachim Fandrey, Vice Dean for Study and Teaching of the Faculty of Medicine at the University of Duisburg-Essen. "It requires additional commitment on the part of lecturers and high motivation and self-organization on the part of students."

In the WTZ Essen, even before the pandemic, a project sponsored by the federal state of North Rhine-Westphalia in 2020 had focused on the digitalization of the study of medicine. According to Fandry, the concept developed by the Trauma Surgeon, Professor Stephanie Herbstreit, "Digitalization in the context of the study of medicine" (Digitalisierung im Kontext des Medizinstudiums, DiKoMed)) was to be expanded to all subjects of the Faculty of Medicine.

"Digitalization was already a permanent component of in-class teaching," explains Marschall. "Because of the pandemic, we quickly and successfully changed to distance learning using Zoom. These are not just any video recordings retrievable at any time, but teaching events performed synchronously and in real time, made possible not least by the support of our Münster e-docs." This student initiative at the Institute of Education and Student Affairs (Institut für Ausbildung und Studienangelegenheiten (IFAS)) of Münster University Hospital has been driving digitalization and technical skills at the Faculty of Medicine for many years now.

Was remains of the corona-related boost to digitalization? "We will continue to make recordings of all lectures available online in future," announced Fandrey. Also the preparation and review of internships could take place in digital form. The WTZ Network partner Münster will even convert its lecture building for digital learning: "We will create three types of rooms there – for in-class events, for online screenings with partial attendance, and rooms for pure broadcasting."

But Marschall also emphasized: "Medicine cannot be learned solely on the computer screen. In order for their personality to develop, students need the direct feedback of the people around them."

EXCELLENCE IN NUMBERS

UNIVERSITY HOSPITALS ESSEN/MÜNSTER	
Number of institutes	104
Employees	19.600
Beds	3.500
Hospitalized patients	80.300
Outpatients	304.700
Surgery patients	50.500
Oncology inpatients	14.400
Oncology outpatients	31.600

ONCOLOGY	Number of patients 2020
Surgical oncology	7.300
Radio-oncology	3.800
Hemato-oncology	3.900
Medical oncology	30.000
Pediatric oncology	2.000

CANCER PATIENTS	2018 CCC site 2020
Newly diagnosed patients	12.000

THIRD PARTY FUNDS	
Newly approved in 2020	21 Mio. €

The WTZ Network in total

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Published by
Westdeutsches Tumorzentrum Netzwerk
www.wtz.nrw

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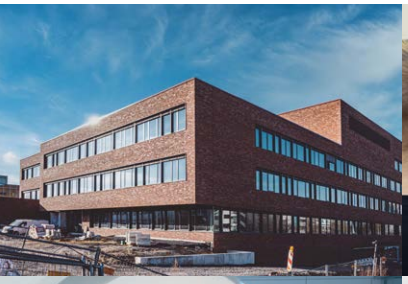
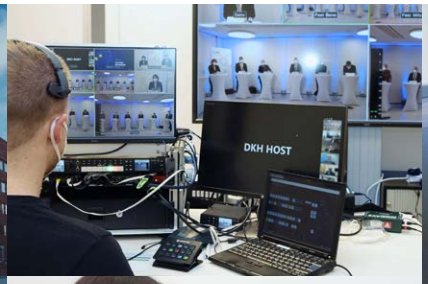
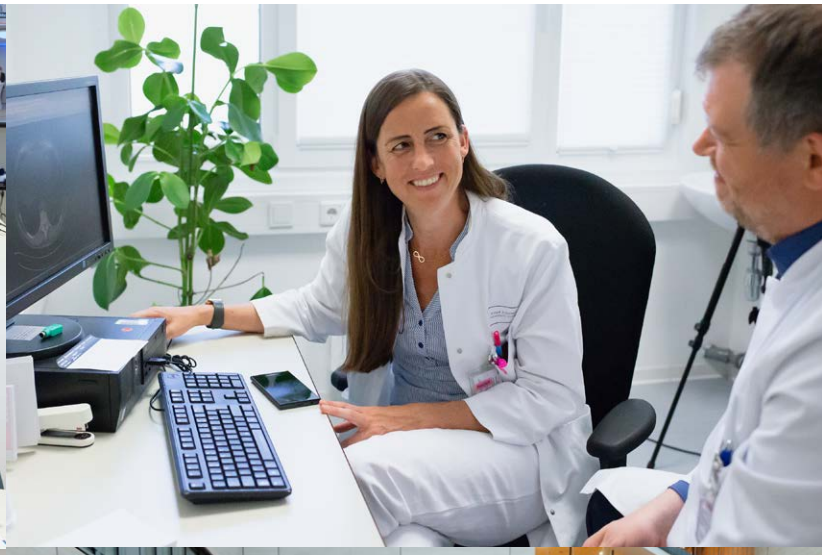
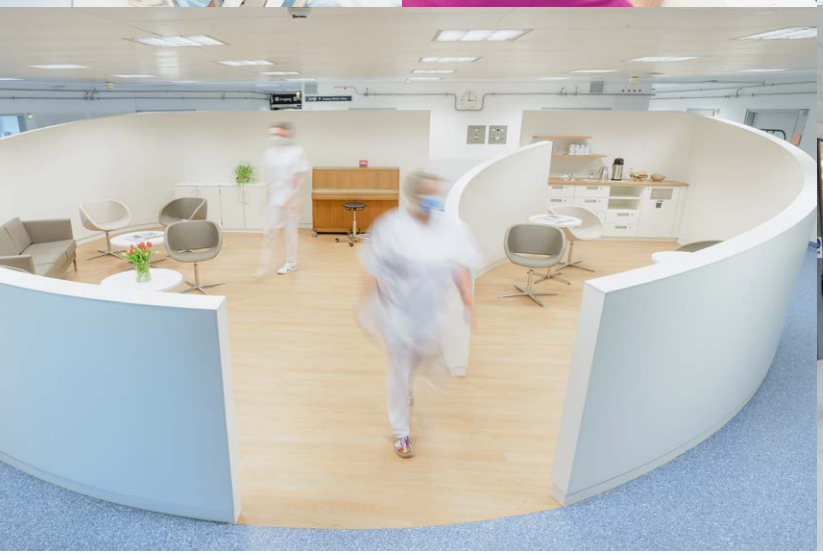
Editing, graphics, digital imaging, and artwork:
ENGELMANN & KRYSCHAK
Werbeagentur GmbH | Düsseldorf

Print
WOESTE DRUCK + VERLAG GmbH & Co. KG | Essen

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west german cancer center consortium

Herausgeber
Westdeutsches Tumorzentrum Netzwerk

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