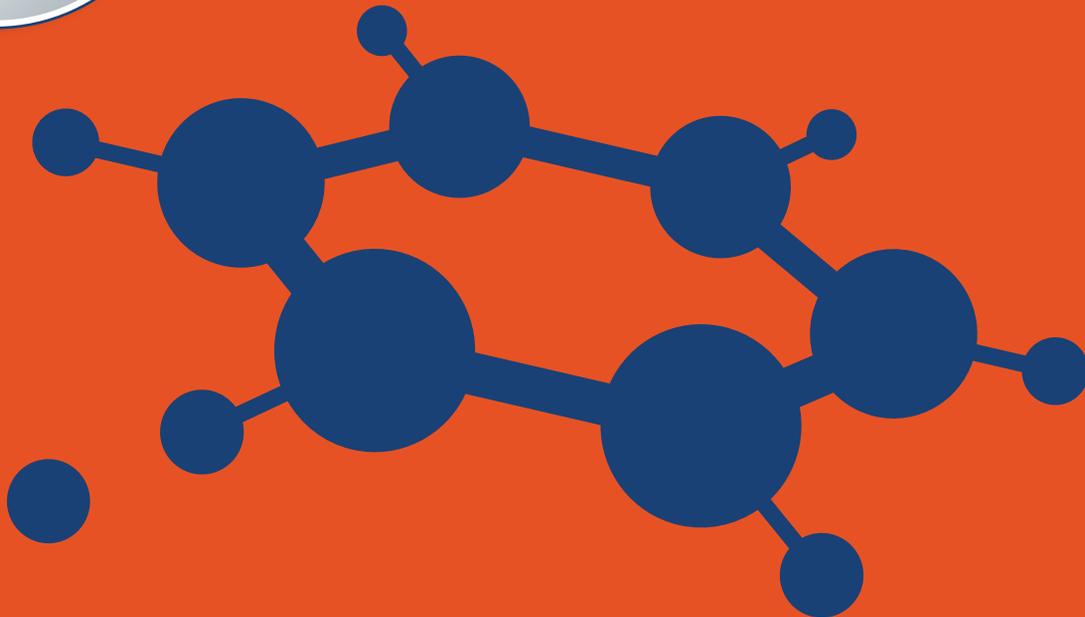


**SNEAK
PREVIEW**



Spot on Biotechnology Science 2021



Spot on Science
Biotechnology Universities and
Research Facilities in North Rhine-Westphalia

Editorial

Spot on Biotechnology Science (3rd Edition)

When we speak about research and education in North-Rhine Westphalia, you very often hear that North-Rhine Westphalia has the highest density of academic and research institutions in Germany. But since North-Rhine Westphalia is a polycentric federal state, it is important to connect the different academic and research institutions both with each other and with industry.

Why is this important?

We have seen in the past that the fastest and most innovative results in life science are generated when different research groups work together. The outbreak of the COVID-19 pandemic and the increasingly visible consequences of climate change highlight how important it is to be innovative and fast at the same time in order to answer the major questions of our century. To do excellent research, North-Rhine Westphalia needs inquisitive scientists and research collaborations across institutions, research fields, and between academia and industry.

To identify and connect with the right collaboration partners in life science, in this 3rd edition of the “Spot on Biotechnology Science” brochure we have compiled even more profiles of all the universities, universities of applied science, research institutes, and scientific clusters of excellence along with their institutes/departments that work in the wider field of biotechnology and bioeconomy in North-Rhine Westphalia.

To make searches easier, we have sorted the profiles into chapters based on research institution categories such as universities, universities of applied science, Fraunhofer Society,



Helmholtz Association, Leibniz Association, Max Planck Society, as well as other research centres and excellence clusters. Each chapter features a brief description and the relevant numbers of the respective category. In addition, we have included a list of keywords at the end of the brochure, which have been chosen by the institutions themselves.

In this year's edition, we have also incorporated a shortlist of all the medical faculties within North-Rhine Westphalia to acknowledge their usage of biotechnology tools to develop diagnostics and treatments not only for COVID-19 but also for other diseases.

You can find the online version of this brochure at bio.nrw.de or also in our [searchable online academic database](#). If you are interested in the start-up and industry landscape of biotechnology in North-Rhine Westphalia, feel free to also visit bio.nrw.de or our [searchable](#)

[online company database](#) and download our “Spot on Biotechnology Business” brochure, which lists biotech companies and start-ups in North-Rhine Westphalia with short profiles.

We hope that this brochure will help you to find the right institute/department or research group to feed your appetite for information and research or to identify the right partners to collaborate with to innovate and tackle the urgent questions and needs of the century.

Finally, this brochure will help you to discover the enormous scientific landscape and opportunities in North-Rhine Westphalia. Enjoy reading it and we look forward to seeing you contribute to the science and biotechnology community in North-Rhine Westphalia.

**Yours,
The BIO.NRW Team**



Other Research Institutions and Cluster of Excellence

Other Research Institutions and Cluster of Excellence

In addition to the universities, universities of applied sciences, and scientific organizations mentioned before, there are further research institutions and several Clusters of Excellence active in the field of life sciences. As a whole, this network of institutions emphasizes the outstanding NRW academic environment.

The **Bioeconomic Science Center (BioSC)** was founded in 2010 by RWTH Aachen University, the Universities of Bonn and Düsseldorf, and Forschungszentrum Jülich. It is based on a joint strategy involving numerous pre-existing scientific networks and collaborations for a sustainable supply of biomass and bio-based products or processes focusing on four key research areas: sustainable plant production, microbial/molecular transformation, process engineering of renewable resources as well as economic and social implications.

The **West German Cancer Centre Consortium (WTZ)**, founded in 1977 as a registered association, originally started in 1967 as the “Essen Tumour Hospital”. It was the first cooperative institution exclusively dealing with diagnostics and therapy for tumour patients. In 2009, the WTZ was awarded the title of “Oncology Centre of Excellence” by the non-profit-organization Deutsche Krebshilfe e. V. (German Cancer Aid), which is comparable to the American Comprehensive Cancer Centers. One and a half years later, WTZ became part of the “German Cancer Consortium” and now belongs to a network of 14 “Top Oncology Centres”. Today, several hundred physicians and medical scientists coming from different clinics and institutions work at WTZ.

Likewise, the **West German Heart and Vascular Center (WHGZ)** as well as the **West-German Center for Infectious Diseases**

(**WZI**) are located in Essen. Both are not only providing patient treatments but also have excellent research reputations.

In a similar integrated approach as WTZ, the Center for Integrated Oncology (CIO Cologne Bonn) started as a virtual centre in 2007. In 2018 the CIO enlarged and today it is located at four different university hospitals (CIO Aachen Bonn Cologne Düsseldorf). In 2019 the new CIO Cologne, which is Germany’s largest outpatient building for cancer patients, was opened. CIO is embedded in an extraordinarily rich life science landscape among these four universities, with the Center for Molecular Medicine Cologne (CMMC), the **West German Genome Center (WGGC)**, the Life & Medical Sciences Institute (LIMES), the **Cologne Cluster of Excellence Cellular Stress Responses in Aging-associated Diseases (CECAD)**, and the two Max-Planck-Institutes for Biology of Ageing and Metabolism Research all in the region.

The Protein Research Unit Ruhr within Europe (PURE), which launched in 2010, served as a platform for protein researchers and clinical researchers from Ruhr University Bochum (RUB) as well as the University of Duisburg-Essen (UDE) to pool their resources in the search for biomarkers that can provide an early indication of diseases such as cancer, Parkinson’s, multiple sclerosis, and Alzheimer’s. In the 2015 funding phase, PURE-scientists succeeded with their proposal for a research building for molecular protein diagnostics. In 2019, the new **Centre for Protein Diagnostics (PRODI)**, which was financed in equal parts by the federal government and the federal state with a total of around € 50 million, was finished. At PRODI innovative protein analytical methods are transferred into clinical application in order

to identify disease-specific protein alterations in biological samples from patients.

Clusters of Excellence are part of the Excellence Strategy of the German Federal Ministry of Education and Research and the German Research Foundation. The Excellence Strategy provides funding for Clusters of Excellence and institutional strategies within the universities of excellence. In September 2018, the Grants Committee decided to support 57 Clusters of Excellence. The 34 universities will receive altogether around € 2.5 billion over seven years. Clusters of Excellence can receive up to € 10 million in funding, while universities with Clusters of Excellence can apply for additional subsidies. Clusters of Excellence aim to promote cutting-edge research and to create outstanding training and career conditions for young scientists at universities. They are intended to deepen cooperation between disciplines, institutions, and the business sector to enhance the international appeal of excellent German universities. Currently, 14 out of 57 cluster projects all over Germany are located in North Rhine-Westphalia and 5 of these clusters are associated specifically with biotechnology and life sciences:¹

- **Cologne Cluster of Excellence on Cellular Stress Responses in Aging-associated Diseases (CECAD)**, Cologne
- **ImmunoSensation²** – the immune sensory system, Bonn
- **Cluster of Excellence on Plant Sciences (CEPLAS)** – SMART Plants for Tomorrow’s Needs, Düsseldorf and Cologne
- **The Fuel Science Center** – Adaptive Conversion Systems for Renewable Energy and Carbon Sources, Aachen
- **PhenoRob** – Robotics and Phenotyping for Sustainable Crop Production, Bonn

[1] https://www.dfg.de/gefoerderte_projekte/programme_und_projekte/listen/index.jsp?id=EXSf
Accessed 14.08.2021



KEYWORDS
Bioeconomy

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Internet www.biosc.de

Founded (year) 2010

Number of employees 1,900

www.biosc.de



Bioeconomy Science Center – BioSC

Competence, Knowledge and Technology for a Sustainable Bioeconomy

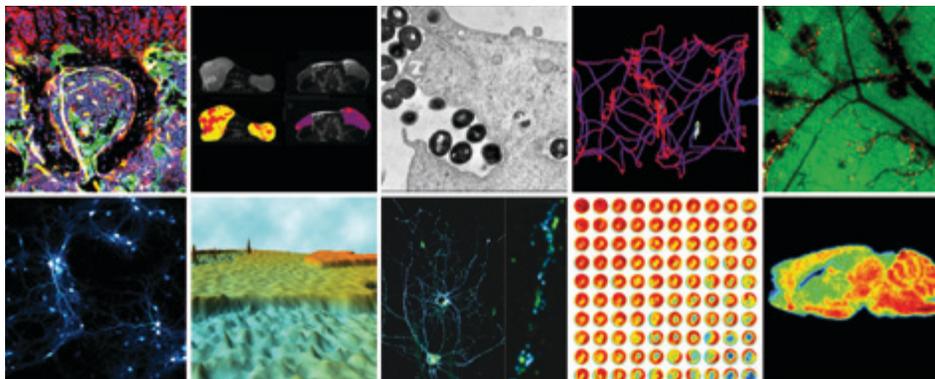
The generation and integration of knowledge about biological systems for the sustainable production of biomass and bio-based raw materials and its use for food, feed, bio-based materials and energy is an essential and emerging field within the development of the bioeconomy. Based on broad and excellent competencies in bioeconomy related research fields, the RWTH Aachen University, the Universities of Bonn and Duesseldorf, and the Forschungszentrum Juelich have established the Bioeconomy Science Center (BioSC).

The aim of the BioSC as a competence center for systemic research and education for a sustainable bioeconomy is to synergistically align existing scientific expertise and infrastructures of the partners in the fields of biotechnology, bio- and chemical science, plant and agricultural science, engineering science, and (socio-)economics in order to develop innovative concepts in the research fields as well in their interaction. The scientific and technological expertise in BioSC ranges from the sustainable production of plants for food/feed and as renewable feedstock, its molecular and microbial transformation

to bio-based products (i.e. fine chemicals, biopolymers, materials, pharmaceuticals, enzymes, biofuels) in innovative processes (i.e. modular and integrated biorefinery concepts, cascade use) under consideration of the economic impact and social implication for and of the bioeconomy. BioSC encompasses more than 1,900 staff members working at 67 member institutes. A multi- and interdisciplinary academic education within different topics of a sustainable bioeconomy is another aim of the BioSC.

The BioSC is also designed as a regional hub for national and international scientific cooperation with e.g. bioeconomy clusters and expert networks, excellence clusters, European technology platforms and network projects with industry.

As a scientific core, the BioSC contributes significantly to the development of a model region for resource-efficient, bio-based economy in the Rhineland. In cooperation with the BioökonomieREVIER initiative, innovative solutions and concepts explored at the BioSC are further developed there, for regional implementation and value creation.



Cells in Motion (CiM) Interfaculty Centre

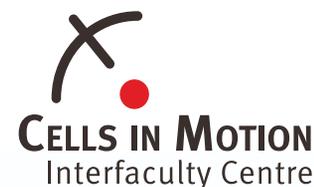
Imaging to understand cellular behaviour in organisms

In the Cells in Motion Interfaculty Centre (CiM), researchers from the fields of medicine, biology, chemistry, pharmacy, mathematics, computer science and physics join forces and carry out research relating to topics in cell dynamics and imaging – which is a research focus at the University of Münster.

In order to understand dynamic cellular processes in organisms scientists investigate which biochemical and biophysical properties of a cell influence its behaviour, how the molecular mechanisms in an organism remain in healthy balance, and what happens in the body in different diseases. A main focus is on cellular processes in the blood and lymphatic vessel system, and on inflammation. In tackling biomedical questions, researchers incorporate different imaging technologies – from light microscopy to whole-body imaging – into their investigations and integrate information gathered from the individual cellular level up to the level of the entire organism. This “multiscale imaging” strategy allows to identify links between cellular mechanisms and the function of organs and promotes the transfer of methods applied to animal models

to clinically established imaging methods for exploitation in patient diagnosis. The approach requires new chemical-biological strategies to label the same cell type, or even the same cell, with different signal transmitters that can be employed in different imaging methods with different resolution. New challenges are also posed by the need to integrate data sets from different imaging techniques using mathematical models and artificial intelligence.

Embedded in the network is a graduate programme, the Imaging Network which promotes the joint use and sustainable further development of research infrastructure at Münster University, and the Multiscale Imaging Centre, a new research building where research groups from different faculties are based and bring together a core of the wide range of expertise in biomedical imaging, as well as the corresponding technologies.



KEYWORDS

Cell Dynamics, Inflammation, Biomedical Imaging

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KEYWORDS

Crop Science, Plant Breeding, Genomics,
Synthetic Biology, Bioeconomy

Name Cluster of Excellence
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(CEPLAS) - EXC 2048

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Funding Period II. 2019 – 2025

www.ceplas.eu



Cluster of Excellence on Plant Sciences CEPLAS SMART Plants for Tomorrow's Needs

Plants enable life on Earth through the conversion of solar energy into chemical energy. Beginning with the Neolithic Revolution, the domestication of plants provided the basis for human population growth and, subsequently, the evolution of highly developed civilizations. However, the growing food demands imposed by an increasing population and the effects of anthropogenic climate change pose huge challenges for sustainable food production and ecosystem maintenance.

The Cluster of Excellence on Plant Sciences CEPLAS addresses these grand challenges through world-class fundamental research on complex plant traits of agronomic relevance that impact on yield and adaptation to limited resources. Hence this knowledge is essential for designing and breeding plants that react in a predictable way to future challenges (SMART plants).

CEPLAS integrates the resources of the Universities of Cologne and Düsseldorf, the Max Planck Institute for Plant Breeding Research, and the Forschungszentrum Jülich into an internationally leading plant science

center that attracts world-class faculty and junior researchers.

Beyond its research mission, we aim for the Cologne/Düsseldorf area to become the location of choice for talented early career researchers wishing to develop their careers. To support this aim, CEPLAS provides novel forms of training for undergraduate and graduate researchers and postdoctoral scientists at the interface of plant and microbial biology, systems and synthetic biology, and theoretical biology.



Cluster of Excellence PhenoRob

PhenoRob – Robotics and Phenotyping for Sustainable Crop Production – is the only Cluster of Excellence in agriculture in Germany.

Here, the University of Bonn together with Forschungszentrum Jülich conducts research to change crop production by optimizing breeding and farming management with the help of new technologies.

Our research approach focuses on improving the fundamental understanding of all relevant parameters like plant growth, soil, biodiversity, or atmosphere.

PhenoRob is moving toward sustainable crop production, spanning from monitoring and understanding to assessment and identification of promising solutions to optimize breeding and farming management. We systematically monitor all essential aspects of crop production using sensor networks as well as ground and aerial robots. This enables a more targeted management of inputs (genetic resources, crop protection, fertilization) for optimizing outputs (yield, growth, environmental impact). We develop novel technologies to enable real-

time and automated control of weeds and selective fertilization. We apply modern machine learning techniques to analyze large amounts of acquired crop data to improve the understanding and models of plant growth, and of nutrient and water use efficiency. And we predict the expected impacts of novel approaches on management decisions at the farm level.



KEYWORDS

Digital Technologies, Environmental Research, Machine Learning, Phenotyping, Plant Breeding

Name	Cluster of Excellence PhenoRob
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Internet	www.phenorob.de
Funding Period	2019-2025
Number of employees	50+ (PhD students, Postdocs & Junior Research Group Leaders)
Funding	5 (administrative employees) 100% DFG - Deutsche Forschungsgemeinschaft

www.phenorob.de



KEYWORDS

Ageing, Metabolomics, Neurodegenerative Diseases, Regenerative Medicine, Systems Biology

Name	Cellular Stress Responses in Aging-associated Diseases (CECAD)
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Number of employees	over 600 (including PhD students) ca. 100 (administrative employees)
Founded	2007

www.cecad.uni-koeln.de



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Cologne Cluster of Excellence Cellular Stress Responses in Aging-Associated Diseases (CECAD) Together for Healthy Aging

CECAD is a globally leading research center for aging and aging-associated diseases. As consortium of the University of Cologne, the University Hospital, the two Max Planck Institutes (Biology of Ageing and Metabolism Research), and the DZNE, CECAD has made great progress in scientific output and visibility of this rather young research field. The aim of CECAD is to elucidate the molecular, cellular and systemic mechanisms of aging to identify novel common therapy opportunities that target a range of aging-associated diseases.

In an interdisciplinary approach, scientists communicate and exchange their findings of the aging process on three levels: intracellular, tissue and organ communication, and environment interaction. CECAD scientists are aiming at translating their results into new therapeutic approaches in the clinic. Conversely, clinical data are implemented into fundamental research programs to gain deeper understanding of disease mechanisms.

The demographic change will lead to a further increase of elderly that are affected by multimorbidity. CECAD's research mission is thus addressing a pressing societal challenge.

Preventing disease and increasing the healthy lifespan is the overarching goal.

CECAD is supported equally by the Medical Faculty and the Faculty of Mathematics and Natural Sciences and promotes scientific research and academic education in the field of the biology and biomedicine of aging.

Key facts:

- CECAD is funded by the DFG as part of the federal and state Excellence Initiative since November 1, 2007
- Third seven-year funding period began in January 2019
- 54 Principal investigators (2021)
- Central office for scientific administration
- 6 Central technology facilities:
 - bioinformatics and data analysis, imaging, *in vivo* research, proteomics, lipidomics and metabolomics, systems neuroscience
- Translational Platform
- Cologne Graduate School of Ageing research (CGA) and platform for Career Development & Diversity
- 43 % international staff
- > 50 % female scientists



ImmunoSensation² The Immune Sensory System

The ImmunoSensation² Cluster of Excellence is a joint collaborative project of the Medical Faculty and the Faculty of Mathematics and Natural Sciences of the University of Bonn and the German Center for Neurodegenerative Diseases (DZNE) of the Helmholtz-Society. Immune sensing receptors represent the core of innate immunity. These receptors detect foreign microbial molecules or altered self-molecules. Activation of immune sensing receptors initiates defense and repair mechanisms that protect the host. Dysregulation of these responses can cause a range of inflammatory diseases like atherosclerosis, metabolic syndrome and diabetes, neurodegeneration, autoimmune diseases and cancer. With the concept of an immune sensory system, which integrates the sensing functions of immune and non-immune cells, ImmunoSensation² has become one of the leading centers for immunological research. Seminal contributions include the identification of novel receptor ligands, a new second messenger, new paradigms of cell-to-cell communication, a new classification of macrophage activation, insights into

immunopathogenesis of cancer, a new target to restore cognitive function, and the impact of Western diet on trained immunity.

To support the next generation of scientists, the Bonn International Graduate School (BIGS) Immunosciences and Infection provides world-class training in the life sciences. With the recruitment of excellent scientists and the establishment of cross-institutional technological platforms, ImmunoSensation² contributes to a better understanding of immune sensing receptors, their ligands, their regulation by the local and systemic environments, the integration of sensory input and its consequences for inflammation in vivo.

Participating institutions:

- Medical Faculty, University of Bonn
- Faculty of Mathematics and Natural Sciences, University of Bonn (LIMES Institute, Mathematics)
- German Center for Neurodegenerative Diseases (DZNE)



KEYWORDS

Antibody, Immune Modulation, Neurodegenerative Diseases, Innate Immunity, Inflammation

Name	ImmunoSensation ² Cluster of Excellence - EXC 2151
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Internet	www.immunosensation.de
Funding Period	II. 01.2019 – 12.2025

www.immunosensation.de



Center for Protein Diagnostics

KEYWORDS

Biomarker, Diagnostic Systems, Neurodegenerative Diseases, Oncology, Platform Technology



Ruhr-University Bochum / Center for Protein Diagnostics (PRODI)

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Internet	www.prodi.rub.de
Number of employees	120 (including PhD students) 4 (administrative employees)
Founded	2019

www.prodi.rub.de

In order to meet the challenges of an ageing society, the primary goal at the Centre for Protein Diagnostics (PRODI) is the development of new, minimally invasive methods for diagnostics and therapy prediction. The focus is on neurological and oncological diseases. In particular, innovative methods are being developed that provide precise information about diseases and individual therapy responses already at early stages of the disease.

Practically all oncological and neurodegenerative diseases are associated with protein alterations. Alterations in a single protein are often sufficient to trigger severe diseases. However, macroscopically visible, morphological changes in the tissue often only occur many years after the protein alterations have occurred. Therefore, in PRODI we analyse macroscopic changes in tissue, changes in cells as well as protein alterations on the molecular level across scales. The investigations of proteins on the molecular level complement the work at the Chair of Biophysics at the Ruhr-Universität Bochum.

The protein alterations mentioned can serve as biomarkers to detect diseases phenotypically in early, still symptomless disease stages (principle of secondary prevention). If certain proteins are identified as “key players”, it is possible to intervene specifically in the causative factors as well as in the disease process itself - in the sense of early therapy. Once these protein biomarkers have been validated, they can also be used to monitor the course of therapy and even predict the success of therapy. This enables personalised, precise medicine with new therapeutic approaches.

We have established a highly efficient workflow in PRODI, which ranges from sample collection and characterisation in the competence area Experimental Medicine and in cooperating clinics to detailed analyses in the competence areas Biospectroscopy and Medical Proteome Analysis to cross-platform evaluation of the data obtained in the competence area Bioinformatics.



The Fuel Center @ RWTH Aachen University

One of our greatest challenges today is the increasing demand for energy and the need to replace our current fossil energy supply. The Fuel Science Center therefore wants to replace today's static fossil fuel-based scenario with adaptive production and propulsion systems based on renewable energies and carbon resources. The aim is to integrate renewable electricity with the shared use of bio-based carbon raw materials and CO₂ to provide high-density liquid fuels ("bio-hybrid fuels") that enable innovative engine concepts for highly efficient and clean combustion. To do so, the FSC brings together researchers from different disciplines, especially from the natural sciences, engineering and social sciences as well as the participating institutes of RWTH Aachen University, Forschungszentrum Jülich, the Max Planck Institut für Kohlenforschung and the MPI for Chemical Energy Conversion as cooperation partners.



KEYWORDS

Bioeconomy, Circular Economy, Environmental Research, Fuel Science, Renewable Resources

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Number of employees	100 (including PhD students) 10 (administrative employees)
Founded	2019

www.fuelcenter.rwth-aachen.de



west german
cancer center consortium

KEYWORDS

Biomarker, Drug Discovery/ Drug Delivery, Oncology, Personalized Medicine, Early Clinical Trials

Name	West German Cancer Center Network
Internet	www.wtz.nrw
Founded (year)	1967 (Essen Tumor Hospital)
Number of employees	University Hospital Essen: 8,000, University Hospital Münster: 11,500
Funding	State Government NRW 50% Federal Government (Germany) 20% Other 30% Deutsche Krebshilfe (Program "Oncology Centers of Excellence"), NRW, other peer reviewed funding org.

www.wtz.nrw



West German Cancer Center Consortium

Medical Excellence and Humanity

As Germany's first and one of its largest comprehensive cancer centers, the WTZ is based on the visionary concepts of C.G. Schmidt and E. Scherer, who created interdisciplinary facilities in Essen as early as 1967. Since then, the WTZ developed into one of the first European centers to combine cancer care and research. Today, it is one of 7 partner sites in the German Cancer Consortium and has recently taken the next step to evolve into a CCC Consortium connecting Essen and Münster. Funded by the German Cancer Aid, the WTZ fosters clinical translation and enhances access to highest quality cancer care for 40,000 patients per year. Early detection, precise diagnostics, individualized therapies and access to clinical trials that focus on patient need are hallmarks of care at the WTZ. Its mission - to progressively understand, control and cure cancer - and its continued efforts to develop innovative therapies, place it at the forefront of scientific research.

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West German Genome Center (WGGC)

The West German Genome Center (WGGC) is one of four national Next Generation Sequencing (NGS) Competence Centers funded by the DFG, the national research council. The WGGC takes a leading role in harmonizing standards to serve the scientific community by providing excellent NGS services.

The WGGC is a collaborative network of universities and institutes located in the west of Germany. Its activities started in January 2019. The WGGC unites three core facilities (Production Sites) where sequencing is performed. They are located in Cologne, Bonn and Düsseldorf. Together, their NGS portfolio includes nearly all applications currently known from genomics, epigenomics, transcriptomics to single-cell sequencing. Based on its long-lasting expertise in using NGS technologies, the CCG (Cologne Center for Genomics) has been selected as major production site of the WGGC. It offers a wide portfolio of all kinds of NGS applications, including single-cell genomics. The Life & Brain Center is the WGGC production site in Bonn and provides services for short-read based sequencing projects. The Genomics

and Transcriptomics Lab in Düsseldorf specializes in long-read NGS technology. The production sites count on additional NGS expertise from Aachen, Duisburg/Essen and Saarbrücken. Centralized NGS services are complemented with existing decentralized NGS- and bioinformatics expertise of further partners. WGGC's expertise covers most aspects of NGS research, encompassing strong capabilities in human and medical genetics as well as onco- and plant genomics. Thus, you can connect with our network of WGGC experts working on a wide range of topics and with different organisms, from bacteria to plants to humans. To identify the expert you are looking for, please have a look at our profiles' page on our website (<https://wggc.de>). The WGGC experts work in five Special Interest Groups (SIGs) that focus on key topics relevant to NGS technology. Their goal is to tackle common and pressing issues and develop solutions that will benefit NGS users and service providers alike.



WEST GERMAN
GENOME CENTER

KEYWORDS

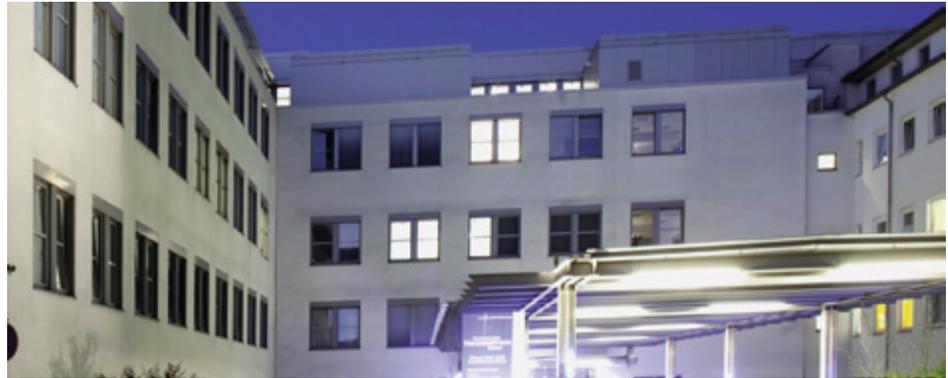
Genomics, Microbial Genomics, mRNA, Platform Technology, Sequencing (Facility)

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Internet	www.wggc.de
Number of employees	56 (including PhD students)
	4 (administrative employees)
Founded	2019
Funding	50% DFG

www.wggc.de



KEYWORDS



West German Heart and Vascular Center University Duisburg-Essen

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Internet	www.whgz.de
Founded (year)	2014
Number of employees	176 (including PhD students) 77 (administrative employees)

www.whgz.de

The West German Heart and Vascular Center (WHGZ) was founded in 2014 and has evolved from the former West German Heart Center. The WHGZ comprises the Clinics of Cardiology and Vascular Medicine and Thoracic and Cardiovascular Surgery, the clinical units of Pediatric Cardiology, Nuclear Cardiology, and Emergency Care, the Herzzentrum Huttrop as well as the Institutes for Pathophysiology and for Pharmacology. The main purpose of the WHGZ is to provide the best possible patient care and to translate innovations as quickly as possible to patients' benefit. Research at the WHGZ is supported by the German Research Foundation and several other funding agencies. Research focusses on arrhythmias, heart failure, myocardial ischemia and reperfusion injury, and protective interventions. In patients with structural heart diseases, interventional strategies to treat valve and congenital heart diseases are developed and evaluated. Aging, including subclinical atherosclerosis and aortic diseases, but also atrial fibrillation is a clinical focus and research topic. Heart failure as the terminal state of most cardiac diseases is a focus of

both basic research and clinical care, including biotechnical support and ultimately transplantation. At the WHGZ, researchers benefit from an excellent infrastructure, combining mechanistic basic research, interdisciplinary core facilities and an active university clinic, which offers maximum medical care for its patients. Close communication between research and clinical facilities enhances the interaction of scientists in all fields of the WHGZ, thus facilitating translational projects. Training of young scientists and continuous education are a key mission of the WHGZ, which is reflected by the high number of evolving highly productive working groups. By its interactive basic science and clinical research, the WHGZ will break new ground in cardiovascular medicine and improve patient care.



West German Center for Infectious Diseases – excellent collaboration and bundled expertise –

Due to the advances in medicine in recent years, the number of patients with acquired immunodeficiency has increased significantly. These immune disorders can occur after immunosuppressive therapy for transplants or autoimmune diseases, chemotherapy for the treatment of tumor diseases, as well as in patients with HIV infections or severe diseases of kidney or liver. Infections pose a particularly serious threat to these patients. The research, prevention, diagnostic and therapy of infectious diseases in patients suffering from immunodeficiency therefore require special expertise and should be carried out in centers where interdisciplinary teams are active. For this purpose, the West German Center for Infectious Diseases (WZI) was founded in 2013 and bundles interdisciplinary expertise at the highest medical and scientific level. The interdisciplinary teams include infectious disease specialists, microbiologists, virologists, immunologists, internists, pediatricians and dermatologists. The focus is on the Department of Infectious Diseases (Prof. Dr. Oliver Witzke), the Institute for Medical Microbiology and Hygiene (Prof.

Dr. Jan Buer), and the Institute for Virology (Prof. Dr. Ulf Dittmer). Further specialists, such as the HIV Institute, the HIV outpatient unit of the Department of Dermatology, the Department of Pneumology, the Department of Anesthesiology and Intensive Care Medicine and the Department of Gastroenterology are also significantly involved in fundamental understanding of the cause-and-effect interaction of infectious disorders. The research is practice-led and linked into international network and has the main goal to allow basic research findings to be adopted in clinical care settings as soon as possible. The WZI intensively supports highly motivated young scientists in these disciplines. The research work is currently devoted to a wide variety of topics, such as: the antiretroviral therapy of HIV infection or infective hepatitis, infectious diseases in immunosuppressed patients, vaccines or the importance of herpes virus infections.



KEYWORDS

Anti-infective Research, Diagnostic Systems, Infectious Diseases, Therapeutics, Vaccines

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Number of employees	more than 600 scientists (>30 PhD students) and 470 physicians distributed over 12 clinics and institutes of the WZI
Founded	2013

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