2014–15 FACTS

HelmholtzZentrum münchen
German Research Center for Environmental Health
Genetic makeup, lifestyle and the environment are key factors in the development of major common diseases and constitute the starting points for research at Helmholtz Zentrum München. We investigate the biological mechanisms that determine health and disease and analyze their interactions with internal and external influences. Our aim is to build on the results of our interdisciplinary basic research and to develop new therapy options for the benefit of patients.

Our research activities are focused on diabetes and metabolic syndrome, lung diseases and allergies. We have systematically expanded our scientific capacities in these areas and have attained a leading position both nationally and internationally.

From this position we are seeking to attract the world’s best scientists, and we are setting standards in the promotion of the young generation of researchers. Scientific excellence and exemplary training are reflected in the top rankings for publication performance and grant acquisition. We bring our expertise to bear in international collaborations and national associations. Helmholtz Zentrum München is the only center of the Helmholtz Association to participate in all six German Centres for Health Research, which were founded to strengthen the translation of research results into clinical applications.

Our research comprises part of the Helmholtz research areas Health and Earth and Environment. Encouraged by our top ranking in the evaluation of the area of Health within the framework of Program-Oriented Funding, we are continuing to focus on important common diseases at the interface of genetics-environment-lifestyle. As of 2014 our center is merging its scientific activities in the health area in one overall program entitled Genes and Environment in Common Diseases (GenCoDe). In the area of Earth and Environment we are participating in the program Terrestrial Environment. Both programs are closely linked via joint projects in the areas of allergy, microbiome and climate research.

In this brochure, we would like to present the future scientific orientation and strategic positioning of our center – for the first time also as a free app for tablets and smart phones, which is available for download at www.helmholtz-muenchen.de

Prof. Dr. Günther Wess, CEO
Dr. Nikolaus Blum, CFO
Dr. Alfons Enhse, CTO
The interactions between genes and the environment are the focus of our work. We explore the mechanisms that are pivotal for health and disease and develop approaches for future medicine.
Helmholtz Zentrum München studies the pathogenesis of major common diseases, placing special emphasis on diabetes mellitus, lung diseases and allergies. The focus of research is on the interaction between environmental and lifestyle factors and individual genetic makeup during disease development. Through this research to uncover the mechanisms underlying disease, the Center contributes significantly to a better understanding of other common diseases such as immunological and neuropsychiatric diseases and cancer.

With its excellent basic research programs and top-level scientific and technical infrastructure, the Center develops innovative approaches to personalized diagnostics, therapy and prevention. International cooperative projects and the active promotion of young scientists make the Center an attractive employer. The collaboration with outstanding partners in hospitals, research institutions and industry enables the bidirectional translation of new insights from basic research to clinical practice and from clinical observations back again to the research laboratory. Through translational research centers, clinical cooperation groups and collaborations with industry, advances in knowledge bring about rapid benefits to society. The goal is to develop an approach to medicine that addresses the cause of disease and provides personalized options for prevention, diagnosis and treatment.
Performance

In its research agenda, Helmholtz Zentrum München focuses on major common diseases in the areas of diabetes, lung diseases and allergies. It combines its expertise to elucidate gene-environment interactions that play a role in disease processes.

The research results of Helmholtz Zentrum München are published and cited in renowned international journals. Center scientists attain top rankings in their specialty areas and are awarded prestigious scientific and clinical research prizes. In recent years Center scientists have received two Gottfried Wilhelm Leibniz Prizes of the German Research Foundation, two Erwin Schrödinger Prizes conferred by the Donors’ Association for the Promotion of Sciences and Humanities in Germany, eight starting grants, two consolidator grants and two advanced grants of the European Research Council (ERC), one Alexander von Humboldt professorship and two m4 awards of the Munich elite cluster.

To implement and optimize innovative projects, the Center has been successful in acquiring third-party funding. With currently 12 grants of the European Research Council (ERC), it is the leader in the Helmholtz Association.

The Center carries on an active dialogue with the general public. With the online information services for diabetes and lung diseases, it places its expertise at the service of the public.

With the Helmholtz Graduate School Environmental Health (HELENA) and with graduate schools together with the Munich universities, the Center sets standards in the promotion of the young generation of scientists. Of 19 junior research groups established at the Center, 13 are headed by women.

The prioritization of translational research and technology transfer leads to rapid benefits to society. Various established diagnosis and therapy procedures for the treatment of leukemia, bone cancer, cancer complications, lung diseases and diabetes in children are based on research carried out at Helmholtz Zentrum München.

Research at Helmholtz Zentrum München is based on the rules of Good Scientific Practice.

Milestones of our publication performance

With currently 1056 international publications and more than 6000 impact points, the Center is among the leading research institutions in the world.

Successful grant acquisition

Acquired grants in millions of euros

The Center is successful in acquiring third-party funding from German and European funding programs.
Focus Areas within Strategic Programs

Excellent basic research is the foundation of scientific work at Helmholtz Zentrum München to which 40 scientific institutes and departments contribute. Their scientific competencies are linked with regard to content and thematically through strategic programs of the Helmholtz Association and are financed through program-oriented funding (POF). Thus, complex questions and problems relevant to science, society and the economy can be explored beyond the boundaries of institutions and disciplines.

Helmholtz Zentrum München is integrated into the research areas Health and Earth and Environment within the scope of program-oriented funding (POF) of the Helmholtz Association. Following a successful review in the area of Health, the Center is continuing to focus on the investigation of major common diseases. In the third POF phase beginning in 2014, the Center is pooling its resources in the health program GEnCoDe (Genes and Environment in Common Diseases). In the area of Earth and Environment, the Center is conducting research in the program Terrestrial Environment (TE).

In the research area Health, Helmholtz Zentrum München is involved in all cross-disciplinary activities. Helmholtz Zentrum München and four additional Helmholtz health centers have joined together in the association Personalized Medicine.

In the research area Earth and Environment, Helmholtz Zentrum München participates in cross-disciplinary topics and associations that focus on the bio-economy, climate research and water.

**CONTACT**

Dr. Martina Hansen  
Department Head  
Program Planning and Management  
m.hansen@helmholtz-muenchen.de  
T +49 89 3187 2335

**TOPICS**

1. Systemic analysis of genetic and environmental factors that impact health
2. Diabetes: pathophysiology, prevention and therapy
3. Chronic diseases of the lung and allergies
4. Mechanisms of genetic and environmental influences on health and disease
5. New technologies for biomedical discoveries

**CROSS-DISCIPLINARY ACTIVITIES**

<table>
<thead>
<tr>
<th>Personalized Medicine</th>
<th>Bioeconomics: Climate Research, Water</th>
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</table>

**POF**  
Program-Oriented Funding

**Strategic Partnerships**  
Allergy, Microbiome and Climate Research

**GENCoDe**  
Genes and Environment in Common Diseases

**TE**  
Terrestrial Environment
Genes and Environment in Common Diseases

Within the framework of program-oriented funding, Helmholtz Zentrum München is assuming a leading role in innovative health research with the program “Genes and Environment in Common Diseases” (GENCoDe). The aim of GENCoDe is to elucidate gene-environment interactions and their significance in the pathogenesis of common diseases, in particular diabetes, lung diseases and allergies.

The GENCoDe program is linked beyond the boundaries of various disciplines. It brings together the successful predecessor programs “Environmental Health” and “Systemic Analysis of Multifactorial Diseases” and generates additional synergies for the elucidation of the underlying mechanisms of major common diseases and their prevention, diagnosis and therapy.

Besides Helmholtz Zentrum München, which coordinates GENCoDe, the Helmholtz Centre for Environmental Research (UFZ), Leipzig, has a seven percent stake in the project. The scientific content of the program is divided into five topics.

### Topics

1. **Systemic analysis of genetic and environmental factors that impact health**
   - Combines epidemiological and human genetic data as well as systematic studies on the mouse model to elucidate the role of gene factors and environmental effects in the pathogenesis of common diseases. Through understanding these relationships, the aim is to develop new diagnostic methods and approaches for the individual treatment of patients.

2. **Diabetes: pathophysiology, prevention and therapy**
   - Elucidates the causes and biochemical mechanisms in the pathogenesis of diabetes. The objectives are to elucidate the role of genetic and environmental factors in type 1 diabetes and to evaluate therapies for immune modulation and to decipher the hormonal relationships between energy balance and glucose metabolism in type 2 diabetes.

3. **Chronic diseases of the lung and allergies**
   - Investigates the underlying pathomechanisms in order to develop effective measures for the safe prevention, diagnosis or therapy. Research activities focus on markers for early disease prediction and personalized approaches to prevention and treatment.

4. **Genetic mechanisms and environmental influences on health and disease**
   - Studies the molecular mechanisms underlying the degeneration and regeneration of cells and immune reactions. The aim is to develop new approaches to prevent cell degeneration and to initiate regeneration processes.

5. **New technologies for biomedical discoveries**
   - Develops concepts and methods to elucidate the structure of proteins, for imaging methods, systems biology and health economics. The objectives are to develop new methods for improving analytical, diagnostic and therapeutic approaches.
Terrestrial Environment

Helmholtz Zentrum München concentrates its environmental research in the program “Terrestrial Environment” (TE). The Center focuses on the areas of plant defense and stress resistance, water quality, control of ecosystems and the prevention of environment-related diseases. Helmholtz Zentrum München collaborates closely with the Helmholtz Centre for Environmental Research (UFZ), Leipzig, which coordinates the program, and Forschungszentrum Jülich.

With a program share of 23 percent, Helmholtz Zentrum München is engaged in three of the five topics.

Topics

2 Sustainable plant production analyzes the molecular mechanisms of plant defense and stress resistance and studies the potential of microbial growth promotion. The aim is to develop sustainable plant production methods in the context of global climate and environmental changes.

3 Sustainable water management identifies key factors for an effective management of water resources. The focus is on criteria of water quality and ecology for highly industrialized regions in humid climate zones and sustainable water management for arid and semi-arid climate areas.

5 Terrestrial systems – from observation to prediction develops methods, technologies and models to detect and quantify material flows and interactions in terrestrial systems. The goal is to better assess and predict the effects of natural changes and use-related interventions.

CONTACTS

TOPIC 2
Prof. Dr. Jörg Durner
durner@helmholtz-muenchen.de
T +49 89 3187 3434

TOPIC 3
Prof. Dr. Rainer Meckenstock
rainer.meckenstock@helmholtz-muenchen.de
T +49 89 3187 2560

TOPIC 5
Dr. Eckart Priesack
priesack@helmholtz-muenchen.de
T +49 89 3187 3354
Translational Research

Translational research at Helmholtz Zentrum München seeks to translate scientific results into new therapeutic approaches for the benefit of patients and in turn to transfer clinical observations and insights into basic research.

Scientists and clinicians collaborate closely in three translational research centers in the areas of diabetes, lung diseases and allergies and in eleven clinical cooperation groups and the immune monitoring platform.

__Structured portfolio management at the Center optimizes information and transfer processes between developmental, preclinical and clinical projects.__

__In the Munich elite cluster “m4” the Center participates along with institutes and hospitals of the two elite universities and with biotechnology and pharmaceutical companies in the development of personalized medicine and targeted therapies.__

__In the Helmholtz cross-disciplinary network “Personalized Medicine”, the Center is working on projects of personalized diagnostics and therapy for diabetes and lung diseases in order to build up a national molecular systems medicine.__

__To expand personalized medicine at the Munich location, the Center is making important contributions in successful collaborations with university clinics in Munich.__

__As part of the National Health Survey, the Center is contributing to the implementation of comprehensive prevention research and new approaches to public health.__

Innovation Management

Helmholtz Zentrum München transfers results from basic research into specific innovations. The Center patents its inventions and licenses them for commercialization. Supported by an effective innovation management, findings from basic research are developed further in spin-offs and in cooperation with competent industrial partners into practical applications. Together with large pharmaceutical companies, the Center develops new approaches for the treatment of obesity-related diabetes and to improve the characterization of severe lung disease.

__In the area of drug development, the Center particularly promotes promising projects that are in the early stage of the value chain. These include projects in the area of drug discovery with innovative target structures and test systems in order to identify and develop safe and effective drugs for chronic diseases. The portfolio of Helmholtz Zentrum München currently encompasses development projects in the areas of diabetes, neurodegeneration, infectious diseases and cancer.__

__In recent years, 15 companies with approximately 400 employees have evolved out of Helmholtz Zentrum München. Via the Life Science Foundation, the Center receives a share of the value creation and/or license revenues from the research results. These are used to fund innovative research projects.__

**CONTACTS**

<table>
<thead>
<tr>
<th>Dr. Corinna Barz</th>
<th>Dr. Annette Janz</th>
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<tbody>
<tr>
<td>Head, Translational and Clinical Projects</td>
<td>Head, Innovation Management</td>
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<tr>
<td><a href="mailto:corinna.barz@helmholtz-muenchen.de">corinna.barz@helmholtz-muenchen.de</a></td>
<td><a href="mailto:janz@helmholtz-muenchen.de">janz@helmholtz-muenchen.de</a></td>
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<td>T +49 89 3187 3819</td>
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Benefit to Society

Helmholtz Zentrum München devotes its expertise to the service of society. Staff members of the Center belong to national and international bodies in the fields of health care, and their competence is used as a decision aid by policymakers and legislators. The Center supports new ways of communication and the publication of scientific results.

The newly established journal “molecular metabolism”, which was founded together with international university partners, provides a platform for the rapid and direct dissemination of research insights into the molecular basis of metabolism.

The online portal “Lung Information Service”, which is offered in collaboration with the German Centre for Lung Research and its partners, informs the public about the prevention, diagnosis and therapy of lung diseases as well as new research results.

With the Diabetes Information Service and the Diabetes Study Platform, the Center promotes dialog between patients, self-help groups, research and the general public.

Through the excellent research, competence and expertise of the staff members as well as through work in translational structures and targeted innovation management, Helmholtz Zentrum München contributes to the benefit of society and to shaping the future.

Close contact between lab and clinic: New insights are transferred into innovative prevention, diagnostic and therapy options.

Spin-offs and collaborations enable the development of the market potential of the research results to market maturity. Via the Life Science Foundation, the Center has a share in the value creation and/or the license revenues from the research results – in this way innovative research projects are promoted.
Technology Platforms

Helmholtz Zentrum München offers its scientists and cooperation partners a high-performance biomedical infrastructure for internationally competitive research. The offer ranges from access to large devices, routine examinations, introduction into the use of modern technologies, support during sample processing and even includes essential scientific and technical contributions. The close intertwining of services and science leads to synergy effects ensuring the highest level of research and accelerating the translation from basic research to medical applications. Helmholtz Zentrum München develops cutting-edge technologies as basis for personalized medicine and is a leader in the areas of mouse models, epidemiology and structural biology.

As central infrastructure for the German Health Study (National Cohort), which will begin in 2014, a biorepository is under construction at Helmholtz Zentrum München for the long-term storage of more than 20 million samples. Over a period of ten years these samples will be medically examined in 18 study centers within the scope of the national cohort. The study has the unique potential to develop strategies for better prevention and treatment of major common diseases.

- Genome Analysis Center
- German Mouse Clinic
- Laboratory Animal Breeding and Husbandry
- Assay Development and Screening
- Experimental Environmental Simulation
- Image Analysis and Statistics Consultancy Lab
- Immune Monitoring
- Monoclonal Antibodies
- Proteomics
- X-ray Crystallography
We translate our basic research findings into clinical applications. In doing so, we cooperate with the best partners in the world.
Cooperative Projects in the Munich Region

Helmholtz Zentrum München is an important partner for the research location Munich. The Center cooperates in four excellence clusters with the elite universities Ludwig-Maximilians-Universität (LMU) and Technische Universität München (TUM), Max Planck Institutes and industry partners on innovative projects in the areas of protein research, the use of photons in medical applications, nanosciences and neurological diseases. It develops new forms of strategic cooperation with universities and clinics in translational research centers and clinical cooperation groups. In the Munich biotech cluster “m4 – Personalized Medicine and Targeted Therapies” the Center is represented with several development projects and pools its strength with partners from industry, universities and clinics. In graduate research schools and in the graduate schools within the framework of the excellence initiatives, Helmholtz Zentrum München is involved in the training of outstanding young scientists within an excellent research environment.
Networks within the Helmholtz Association

Helmholtz Zentrum München is part of the largest German scientific organization, the Helmholtz Association of German Research Centres, which comprises 18 legally independent centers with almost 34,000 employees and which has an annual budget of EUR 3.4 billion. The Helmholtz Association is dedicated to pursuing the long-term research goals of state and society, and to maintaining and improving the livelihoods of the population.

Helmholtz Zentrum München and the Helmholtz centers active in the research areas Health and Earth and Environment are linked via program-oriented funding of the Helmholtz Association and other networks:

- Helmholtz Zentrum München is linked in the research areas Health and Earth and Environment with the Helmholtz Centre for Environmental Research – UFZ, Leipzig and Forschungszentrum Jülich in joint programs (1 – 4 – 13).
- Together with five other Helmholtz health centers, Helmholtz Zentrum München takes part in the cross-disciplinary network Personalized Medicine with the aim of developing a molecular systems medicine that spans several indications (1 – 10 – 12 – 8 – 7 – 4).
- The Center coordinates the Helmholtz Alliance ICEMED – Visualization and Therapy of Environmentally Related Metabolic Diseases (1 – 13 – 10 – 7) and the Helmholtz Virtual Institute HICE – Complex Molecular Systems in Environmental Health (1 – 9 – 7).
- The Center participates in all German Centres for Health Research, which since 2009 have been linking scientists from university and non-university research institutions in a network to bring research findings quickly into medical practice. The Center is a partner in five of the six newly founded centres and site of the head office of the German Center for Diabetes Research (A – F).

Cooperative Projects

Cooperation Program-Oriented Funding: 1 – 4 – 13
Cooperation Cross-sectional Association Personalized Medicine: 1 – 10 – 12 – 8 – 7 – 4
Helmholtz Virtual Institute HICE: 1 – 9 – 7
Helmholtz Alliance ICEMED: 1 – 13 – 10 – 7

German Centres for Health Research

- German Consortium for Translational Cancer Research (DKTK)
- German Centre for Infection Research (DZI)
- German Centre for Cardiovascular Research (DZHK)
- German Center for Lung Research (DZL)
- German Center for Neurodegenerative Diseases (DZNE)
- German Center for Diabetes Research (DZD)
Global Networks

Helmholtz Zentrum München is closely connected in networks with the best scientists worldwide and maintains a variety of intense scientific collaborations with among others the following institutions:

1. Germany: Ludwig-Maximilians-Universität München; Technische Universität München; RWTH Aachen University; University of Bonn; TU Dresden; Goethe University Frankfurt; University of Rostock; University of Tübingen; University of Göttingen
2. Finland: University of Helsinki; National Institute of Health and Welfare
3. Sweden: Karolinska Institute Stockholm; Uppsala University
4. Norway: University of Oslo
5. Denmark: University of Copenhagen; Technical University of Denmark; Geological Survey of Denmark and Greenland
6. The Netherlands: University Medical Center Groningen; University Medical Center Utrecht; Erasmus University Rotterdam
7. United Kingdom: The Wellcome Trust Sanger Institute; Medical Research Council; University College London; University of Oxford; University of Cambridge; King’s College London; Imperial College London
8. Belgium: KU Leuven; Ghent University
9. France: Commissariat à l’Énergie Atomique et aux Énergies Alternatives (CEA); Institut National de la Santé et de la Recherche Médicale (INSERM); Centre National de la Recherche Scientifique (CNRS); Université de Strasbourg
10. Spain: Autonomous University of Barcelona; Center for Genomic Regulation Barcelona
11. Switzerland: University of Zurich; University of Basel; ETH Zurich
12. Austria: University of Innsbruck; University of Vienna; International Atomic Energy Agency (IAEA)
13. Italy: National Research Council (CNR); European Molecular Biology Laboratory Monterotondo
14. Canada: University of Toronto; University of British Columbia; University of Alberta
15. USA: The Scripps Research Institute; The Jackson Laboratory; National Institute of Environmental Health Sciences (NIEHS); U.S. Environmental Protection Agency (EPA); Yale University; Broad Institute of MIT and Harvard; Cornell University; Florida State University; University of California; Harvard University; Pittsburgh University Medical Center
16. Brazil: University of São Paulo
17. Argentina: University of Buenos Aires
18. Israel: The Hebrew University of Jerusalem; Technion – Israel Institute of Technology Haifa; Weizmann Institute of Science Rehovot; Tel Aviv University
19. Qatar: Weill Cornell Medical College in Qatar, Doha
20. India: Bhaba Atomic Research Center; Indian Institute of Science Bangalore
21. Russia: Russian Academy of Sciences; Lomonosov Moscow State University
22. China: Chinese Academy of Sciences; Peking University; Tsinghua University
23. Japan: RIKEN Center for Developmental Biology; RIKEN BioResource Center; Osaka University
24. Australia: RIKEN Center for Developmental Biology
Promoting the advancement of our young scientists. Targeted talent management is part of our strategy.
HELENA
Helmholtz Graduate School Environmental Health

Due to its excellent research, training and networks, the Helmholtz Graduate School Environmental Health (HELENA) serves as an ideal springboard for graduate students considering careers in research, clinical practice, industry and management. In order to ensure optimal promotion, Helmholtz Zentrum München — together with Ludwig-Maximilians-Universität München (LMU) and Technische Universität München (TUM) — opened the Helmholtz Graduate School Environmental Health (HELENA) on November 1, 2010.

The orientation of HELENA is internationally unique: The focus is on the interaction of individual genetic predisposition, environmental factors and individual lifestyles and their impact on the pathogenesis of major common diseases. Under the auspices of HELENA, the Helmholtz Association supports two research schools, one in the area of lung biology (Research School Lung Biology and Disease) and another in the area of radiation research (Research School of Radiation Sciences).

HELENA qualifies a new generation of internationally competitive graduate students. The interdisciplinary training and the additional focus on the promotion of leadership skills prepare HELENA graduate students to fill lead positions in research, management and administration.

The doctoral program at a glance

| Dissertations in interdisciplinary research teams |
| Supervision and mentoring through a personal Thesis Committee |
| Intensive scientific training in one of eight thematic fields |
| Translational projects with close linkage to basic and clinical research |
| Access to cutting-edge platforms and the newest technologies |
| Promotion of international networks through the support of research stays and attendance at conferences |
| Doctoral degree from Ludwig-Maximilians-Universität München or Technische Universität München – both universities are among the winners of the excellence initiative |

CONTACTS

PD Dr. Christian Langebartels
Director of HELENA
langebartels@helmholtz-muenchen.de
T +49 89 3187 3042

Prof. Dr. Hans-Werner Mewes
Director of the Institute of Bioinformatics and Systems Biology
w.mewes@helmholtz-muenchen
T +49 89 3187 3580

Dr. Monika Beer
Scientific Education and Coordination HELENA, Program Planning and Management
monika.beer@helmholtz-muenchen.de
T +49 89 3187 3929

www.helmholtz-helena.de
Junior Research Groups
Career perspectives for young scientists

The aim of Helmholtz Zentrum München with its program for junior research groups is to attract excellent researchers with their scientific expertise to the Center and to promote networking with universities. With the opportunity to lead their own research groups, young scientists have the chance to establish an own competitive research profile with an own budget and with responsibility for personnel. Thus, the junior research groups are an ideal career springboard both within and outside Helmholtz Zentrum München.

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|1 | **FUNCTIONAL GENOMICS OF MITOCHONDRIA**  
Dr. Fabiana Perocchi, Institute of Human Genetics |
|2 | **IMMUNOLOGICAL TOLERANCE IN TYPE 1 DIABETES**  
Dr. Carolin Daniel, Institute of Diabetes Research Type 1 |
|3 | **MECHANISM OF GENE REGULATION IN T CELLS**  
Dr. Elke Glasmacher, Institute of Diabetes and Obesity |
|4 | **PRIMARY CILIA AND ENERGY METABOLISM**  
Dr. Jantje Gerdes, Institute of Diabetes and Regeneration Research |
|5 | **MOLECULAR ENDOCRINOLOGY**  
Dr. Nina Henriette Uhlenhaut, Institute of Diabetes and Obesity |
|6 | **LUNG EPITHELIAL CELL PLASTICITY**  
Dr. Melanie Königshoff, Institute of Lung Biology and Diseases |
|7 | **MOLECULAR MECHANISMS IN BRONCHOPULMONARY DYSPLASIA**  
Dr. Anne Hilgendorff, Institute of Lung Biology and Diseases |
|8 | **T CELL BIOLOGY IN HEALTH AND DISEASE**  
Dr. Stefanie Eyerich, Institute of Allergy Research |
|9 | **EPITHELIAL STEM CELLS AND CELLULAR PLASTICITY**  
Dr. Christina Scheel, Institute of Stem Cell Research |
|10 | **INDUCED PLURIPOTENT STEM CELLS**  
Dr. Micha Drukker, Institute of Stem Cell Research |
|11 | **HUMAN NEURONAL STEM CELL DIFFERENTIATION**  
Dr. Sabrina Desbordes, Institute of Developmental Genetics |
|12 | **INFLAMMATION INDUCED TISSUE DAMAGE AND CARCINOGENESIS**  
Prof. Dr. Mathias Heikenwälder, Institute of Virology |
|13 | **NOVEL PROBES FOR MOLECULAR FMRI**  
Dr. Gil Westmeyer, Institute of Biological and Medical Imaging |
|14 | **EPIGENETICS**  
Dr. Alexander Wolf, Institute of Molecular Toxicology and Pharmacology |
|15 | **MULTIDISCIPLINARY STRUCTURAL BIOLOGY OF TRANSCRIPTIONAL REGULATION**  
Dr. Tobias Madl, Institute of Structural Biology |
|16 | **FAST ALGORITHMS FOR BIOMEDICAL IMAGING**  
Dr. Stefan Kunis, Institute of Computational Biology |
|17 | **SYSTEMS BIOLOGY OF SMALL MOLECULES**  
Dr. Mónica Campillos González, Institute of Computational Biology |
|18 | **INDUCIBLE RESISTANCE SIGNALLING**  
Dr. Corina Vlot, Institute of Biochemical Plant Pathology |
|19 | **EXPLORE COMPLEX BIOLOGICAL SYSTEMS**  
Dr. Claudia Plant, Research Unit Scientific Computing |
We build on the expertise of our staff. We are an attractive employer for top scientists throughout the world.
Staff

Helmholtz Zentrum München currently has approximately 2200 employees who belong to 68 different nationalities. 26 percent of the positions are financed by third-party funding. 77 percent of the employees work in scientific areas. 13 percent belong to the technical staff, and ten percent work in administration.

Employees at the Center
As of September 30, 2013

33.3 %
738 scientists

2.8 %
63 trainees

14.7 %
325 doctoral students

13.9 %
307 other employees

6.5 %
143 work students, student assistants, interns

28.8 %
635 technical employees

Working Conditions, Training and Qualification

Development of the number of employees

<table>
<thead>
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<th>Year</th>
<th>Number</th>
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<tbody>
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<td>2010</td>
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<tr>
<td>2011</td>
<td>1969</td>
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<tr>
<td>2012</td>
<td>2148</td>
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<tr>
<td>2013</td>
<td>2211</td>
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Helmholtz Zentrum München is an attractive employer for a broad spectrum of scientific disciplines. Through optimal working conditions and a motivating work environment, the Center is in a position to compete for the most talented scientists – both for renowned researchers and promising young scientists.

Besides promoting the young generation of scientists, the Center also offers a wide range of vocational training. Sixty vocational training places are available in eight professions for technical-administrative trainees in research, industry and trade. The Department of Human Resources Development promotes the achievement potential of employees by offering further training courses especially geared to the career level and the professional situation. To improve the compatibility of work and family for young employees, the Center is continually expanding the offering of child care options for employees’ children on the research campus. Helmholtz Zentrum München promotes the careers of female employees and creates the same framework conditions for professional success. For its commitment to equal opportunity, the Center has been awarded the Total Equality Prize for the third time. Since 2008 the Center has been a member of the Munich Dual Career Office.
In 2012, the overall budget of Helmholtz Zentrum München amounted to approximately 211 million euros, with approximately 165 million euros coming from institutional funding provided by the German Federal Government and the Free State of Bavaria at a ratio of 90:10. Third-party research funding of national and international origin amounts to 45.9 million euros.

Overall financing and source of funds
in millions of euros as of December 31, 2012

Helmholtz Zentrum München participates in a number of important national and international cooperative projects. In 2012, the Center acquired third-party grants from these amounting to almost 46 million euros.

- Participation in all six German Centres for Health Research, partner in five of these/Site of the head office of the German Center for Diabetes Research.
- Coordination of 12 large European network projects (including INFRAFRONTIER, EpiRadBio, EUCOMMTOLLS, GOODWATER).
- Partner in four consortia of the Innovative Medicine Initiative (IMI).
- Eight Starting, two Consolidator and two Advanced Grants of the European Research Council (ERC).
- Second place among more than 140 non-university research institutions in the acquisition of funds from the German Research Foundation (DFG) in the area of the life sciences.
- A total of 43 subprojects in five Collaborative Research Centers, one Transregio, seven priority programs and six DFG research groups.
- Coordination of the Helmholtz Alliance ICEMED – Visualization and Therapy of Environmentally Related Metabolic Diseases and the Helmholtz Virtual Institute for Complex Molecular Systems in Environmental Health (HIICE) within the framework of the Helmholtz Initiative and Networking Fund (IVF).
### Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2013</td>
<td>Establishment of Helmholtz Diabetes Center / Expansion of program for young scientists / Launch of German Health Study / ERC Advanced and Consolidator Grants / Gottfried Wilhelm Leibniz Prize</td>
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<tr>
<td>2012</td>
<td>Helmholtz Alliance ICEMED / Launch of Diabetes Information Service Munich / Humboldt Professorship / Eight ERC Starting Grants at the Center</td>
</tr>
<tr>
<td>2011</td>
<td>Diabetes Research Department / Erwin Schrödinger Prize / Launch of Lung Information Service / Helmholtz Virtual Institute for Complex Molecular Systems in Environmental Health (HICE)</td>
</tr>
<tr>
<td>2010</td>
<td>Helmholtz Graduate School Environmental Health (HELENA) / Participation in all six German Centres for Health Research</td>
</tr>
<tr>
<td>2009</td>
<td>First therapeutic antibody for cancer treatment based on research of the Center</td>
</tr>
<tr>
<td>2008</td>
<td>Establishment of the lung translational center Comprehensive Pneumology Center (CPC) / Center is renamed: Helmholtz Zentrum München — German Research Center for Environmental Health</td>
</tr>
<tr>
<td>2007</td>
<td>World’s first phase III study on hypothermia-chemotherapy / Helmholtz Alliance for Mental Health in Old Age (HelMa) / Gottfried Wilhelm Leibniz Prize / Erwin Schrödinger Prize</td>
</tr>
<tr>
<td>2005</td>
<td>Studies on the effects of particulate matter on the cardiovascular system</td>
</tr>
<tr>
<td>2004</td>
<td>First institute of stem cell research in Germany / Immune monitoring platform</td>
</tr>
<tr>
<td>2000</td>
<td>Erwin Schrödinger Prize / Expansion of molecular gene research</td>
</tr>
<tr>
<td>1999</td>
<td>Genome Analysis Center for genome studies, metabolomics, transcriptomics</td>
</tr>
<tr>
<td>1997</td>
<td>Establishment of clinical cooperation groups</td>
</tr>
<tr>
<td>1996</td>
<td>Beginning of the KORA population studies</td>
</tr>
<tr>
<td>1995</td>
<td>Research platform monoclonal antibodies</td>
</tr>
<tr>
<td>1992</td>
<td>Gottfried Wilhelm Leibniz Prize for molecular biological research</td>
</tr>
<tr>
<td>1990</td>
<td>as largest German center for environmental sciences, Center is renamed: GSF – Research Center for Environment and Health</td>
</tr>
<tr>
<td>1989</td>
<td>Philip Morris Research Prize / European prize for alternatives to animal testing</td>
</tr>
<tr>
<td>1988</td>
<td>Adoptive immunotherapy used successfully for the first time</td>
</tr>
<tr>
<td>1986</td>
<td>Beginning of lung research in Neuherberg</td>
</tr>
<tr>
<td>1985</td>
<td>External advisory board to control scientific success / Technology Transfer Prize</td>
</tr>
<tr>
<td>1984</td>
<td>Epidemiological research in the Augsburg region with WHO Cardiovascular Study</td>
</tr>
<tr>
<td>1982</td>
<td>Establishment of research on damage to Bavarian forests in cooperation with universities</td>
</tr>
<tr>
<td>1979</td>
<td>Completion of the re-orientation regarding the environment and health care, outsourcing of biotechnological research</td>
</tr>
<tr>
<td>1978</td>
<td>Models for assessment of the radiation-induced genetic risk</td>
</tr>
<tr>
<td>1976</td>
<td>Method for laser treatment of skin diseases</td>
</tr>
<tr>
<td>1975</td>
<td>Together with Munich clinicians, the first successful bone marrow transplantation in Germany</td>
</tr>
<tr>
<td>1971</td>
<td>Health risk assessment of environmental chemicals / Microbe bank becomes the German Collection of Microorganisms</td>
</tr>
<tr>
<td>1970</td>
<td>Studies on the use of holography and lasers for medical problems / immunological issues of bone marrow transplantation</td>
</tr>
<tr>
<td>1969</td>
<td>World’s first institute of ecological chemistry</td>
</tr>
<tr>
<td>1968</td>
<td>Aerosol research: uptake and distribution of particles in the lung</td>
</tr>
<tr>
<td>1967</td>
<td>New research approaches for groundwater protection</td>
</tr>
<tr>
<td>1964</td>
<td>Independent Society for Radiation Research – Study of the biological effects of radiation and transfer behavior in the environment</td>
</tr>
<tr>
<td>1960</td>
<td>Founding of test and training center for radiation protection – nucleus of today’s Helmholtz Zentrum München</td>
</tr>
<tr>
<td>2013</td>
<td>Establishment of Helmholtz Diabetes Center / Expansion of program for young scientists / Launch of German Health Study / ERC Advanced and Consolidator Grants / Gottfried Wilhelm Leibniz Prize</td>
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<td>2012</td>
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</table>
We contribute to the acquisition of knowledge and medical progress. To this purpose, we place our resources at the service of research and society.
Institutes and Research Units

HELMHOLTZ RESEARCH PROGRAM
“GENES AND ENVIRONMENT IN COMMON DISEASES”

TOPIC 1
Systemic analysis of genetic and environmental factors that impact health

Institute of Epidemiology II/EPI II
Research focus: Development of population-based studies. Objective: To elucidate the relationships between the environment, lifestyle and genetics in the pathogenesis of diabetes and cardiovascular diseases as well as the preservation of health in old age.
Director: Prof. Dr. Annette Peters
peters@helmholtz-muenchen.de
T +49 89 3187 4566

Institute of Genetic Epidemiology/IGE
Research focus: Gene mapping projects for complex diseases and the development and implementation of new statistical methods. Objective: To contribute to the study of the genetic causes of complex diseases.
Director: Prof. Dr. Konstantin Strauch
strauch@helmholtz-muenchen.de
T +49 89 3187 2838
Chair of Genetic Epidemiology at LMU

Research Unit Molecular Epidemiology/AME
Research focus: Analysis of population-based cohorts and case studies of specific diseases with the aid of genomics, epigenomics, transcriptomics, proteomics, metabolomics and functional analyses. Objective: To elucidate the molecular mechanisms of complex diseases such as type 2 diabetes or obesity.
Head (acting.): Prof. Dr. Annette Peters
peters@helmholtz-muenchen.de
T +49 89 3187 4566

Institute of Experimental Genetics/IEG
(also Topic 2) Research focus: The design and implementation of systemic investigations of mouse models for human diseases to elucidate the involved genes, with special emphasis on metabolic diseases and diabetes. Objective: To understand the causes and pathogenesis of human diseases.
Director: Prof. Dr. Martin Hrabě de Angelis
hrabe@helmholtz-muenchen.de
T +49 89 3187 3302
Chair of Experimental Genetics at TUM

Research Unit Genome Analysis Center/GAC in the Institute of Experimental Genetics
Research focus: The development of complex diseases and the influence of the environment on their pathogenesis.
Head: Prof. Dr. Jerzy Adamski
adamski@helmholtz-muenchen.de
T +49(89) 3187 3155

Institute of Human Genetics/IHG
Research focus: The identification and functional characterization of genes which cause diseases of the endocrine system, cardiac arrhythmias, neurological disorders and mitochondriopathies. Objective: To gain insight into the disease-causing gene variants in order to develop concepts for therapy approaches.
Director: Prof. Dr. Thomas Meitinger
meitinger@helmholtz-muenchen.de
T +49 89 3187 3294
Chair of Human Genetics at TUM

Institute of Developmental Genetics/IDG
(also Topic 4) Research focus: Investigation of age-related, environment-related and socio-logically related alterations to the DNA. Objective: To identify gene functions and cellular processes and to evaluate the influence of environmental and aging processes, especially in neurological and psychiatric diseases.
Director: Prof. Dr. Wolfgang Wurst
wurst@helmholtz-muenchen.de
T +49 89 3187 4110
Chair of Developmental Genetics at TUM

Research Unit Comparative Medicine/AVM
Research focus: Coordination of the breeding and keeping of laboratory animals. Objective: To comply with the scientific requirements and the specifications of animal protection laws.
Head: PD Dr. Markus Brielmeier
brielmeier@helmholtz-muenchen.de
T +49 89 3187 2837

TOPIC 2
Diabetes: pathophysiology, prevention and therapy

Helmholtz Diabetes Centrum/HDC
Speaker: Prof. Dr. Matthias Tschöp

Institute of Diabetes Research/IDF
Research focus: Elucidation of the pathogenesis and prevention of type 1 diabetes and gestational diabetes. Objective: To identify markers for early diagnosis and the development of prevention strategies and new treatments to cure diabetes.
Director: Prof. Dr. Anette-Gabriele Ziegler
ziegler@helmholtz-muenchen.de
T +49 89 3187 3405
Chair of Diabetes and Gestational Diabetes at TUM

Institute of Diabetes and Obesity/IDO
Research focus: Elucidation of the disease mechanisms of the metabolic syndrome with systems biological and translational approaches. Objective: The interdisciplinary development of innovative therapy approaches for the personalized prevention and treatment of obesity, diabetes and their concomitant diseases.
Director: Prof. Dr. Matthias Tschöp
matthias.tschöp@helmholtz-muenchen.de
T +49 89 3187 2103
Chair of Diabetes Research/Insulin Resistance at TUM

Institute of Diabetes and Regeneration Research/IDR
Research focus: The biological and physiological study of the pancreas and/or the insulin-producing beta cells. Objective: To elucidate the pathogenesis of diabetes, to contribute to the discovery of new risk genes of the disease and to develop solutions for regenerative approaches to diabetes therapy.
Director: Prof. Dr. Heiko Lickert
heiko.lickert@helmholtz-muenchen.de
T +49 89 3187 3760
Chair of Diabetes Research/Beta Cell Biology at TUM

Institute of Diabetes Research and Metabolic Diseases of Helmholtz Zentrum München at the University of Tübingen/IDM
Director: Prof. Dr. Hans-Ulrich Häring
hans-ulrich.haering@helmholtz-muenchen.de
T +49 7071 298 3670
Medical Director of Medical Clinic IV of the University of Tübingen

TOPIC 3
Chronic diseases of the lung and allergies

Institute of Epidemiology/EPI I
Research focus: Elucidation of the importance of environmental and lifestyle factors, the genetic makeup and metabolism in respiratory, metabolic and allergic diseases, as well as specific types of cancer. It is the responsible coordinating institute for the planning and establishment of the National Cohort.
Director (acting.): Dr. Joachim Heinrich
heinrich@helmholtz-muenchen.de
T +49 89 3187 4150
Institute of Lung Biology/iLB
Research focus: Elucidation of the cellular, molecular and immunological mechanisms of chronic lung diseases. Objective: To develop new diagnostic and therapeutic strategies.
Director: Prof. Dr. Oliver Eickelberg
oliver.eickelberg@helmholtz-muenchen.de
T +49 89 3187 4666
Chair of Experimental Pneumology at LMU

Institute of Allergy Research/IAF
Research focus: Study of the molecular developmental mechanisms underlying allergies. Objective: To develop individual prevention approaches and new therapies tailored to the individual patient.
Director: Prof. Dr. Carsten Schmidt-Weber
schmidt-weber@helmholtz-muenchen.de
T +49 89 3187 3081
Chair of Molecular Allergology and Environmental Research at TUM

TOPIC 4
Mechanisms of genetic and environmental influences on health and disease

Institute of Stem Cell Research/ISF
Research focus: Elucidation of the underlying molecular and cellular mechanisms of stem cell maintenance and differentiation; development of approaches to replace defective cell types. Objective: To develop methods to enable the new formation of injured, diseased, altered or destroyed tissue.
Director: Prof. Dr. Magdalena Götz
magdalena.goetz@helmholtz-muenchen.de
T +49 89 3187 3750
Chair of Physiological Genomics at LMU

Research Unit Stem Cell Dynamics/SCD
Research focus: Analysis of the molecular regulation of the stem cell behavior of different tissues – in particular the hematopoietic system – through imaging techniques. Objectives: To gain an improved understanding of the underlying mechanisms and ultimately to develop new stem cell-based methods for clinical use.
Head: Dr. Timm Schroeder
timm.schroeder@helmholtz-muenchen.de
T +49 89 3187 3758

Research Unit Sensory Biology and Organogenesis/SBO
Research focus: Study of the cellular, molecular and physiological reactions to mechanical stimuli and sensory interference using the zebrafish as a model system. Objective: To elucidate the control mechanisms of development, self-regulation and regeneration of the sensory system and the evolution of the sensory organs.
Head: Dr. Hernan Lopez-Schier
hernan.lopez-schier@helmholtz-muenchen.de
T +49 89 3187 2187

Department Radiation Research
Speaker: Dr. Peter Jacob

Research Unit Medical Radiation Physics and Diagnostics/AMSD
Research focus: Development of methods to quantify medical radiation doses and techniques to optimize NMR- and X-ray-based imaging technologies. Objective: To contribute to the optimization of medical diagnostics and to reduce the radiation burden of patients.
Head: Dr. Christoph Hoeschen
christoph.hoeschen@helmholtz-muenchen.de
T +49 89 3187 4560

Institute of Radiation Biology/ISB
Research focus: Analysis of the effects of radiation exposure in the low-dose range; development of approaches to increase the effectiveness and specificity of the radiation therapy of tumors. Objective: To optimize the medical use of radiation, taking into consideration the genetic predisposition and individual factors.
Director: Prof. Dr. Michael Atkinson
atkinson@helmholtz-muenchen.de
T +49 89 3187 2983
Chair of Radiation Biology at TUM

Institute of Radiation Protection/ISS
Research focus: Development of the basic principles for recording the professional, medical and environmentally related radiation exposure; analysis of the radiation risks for cancer and cardiovascular diseases. Objective: To contribute to a better understanding of the effects of radiation and to optimize the use of radiation in industrial and medical settings.
Director (acting): Dr. Peter Jacob
jacob@helmholtz-muenchen.de
T +49 89 3187 4020

Research Unit Radiation Cytogenetics/ZYTO
Research focus: Study of radiation-induced chromosome aberrations and DNA damage in cell systems and human tumors. Objective: To find biomarkers to detect radiation-induced tumors for personalized radiation therapy.
Head: Prof. Dr. Horst Zitzelsberger
zitzelsberger@helmholtz-muenchen.de
T +49 89 3187 3421

Institute of Pathology/PATH
Research focus: Study of microscopic and molecular tissue structures that are involved in the pathogenesis and progression of diseases. Objective: To gain a better understanding of gene-environment interaction and to discover starting points for new therapeutic interventions.
Director: Prof. Dr. Heinz Höfler
hoefer@helmholtz-muenchen.de
T +49 89 4140 4161
Chair of General Pathology and Pathological Anatomy at TUM

Research Unit Analytical Pathology/AAP in the Institute of Pathology
Research focus: Translation of the findings of experimental and molecular pathology into methods of disease phenotyping. Objective: To develop predictive tissue diagnostics.
Head: Prof. Dr. Axel Karl Walch
axel.walch@helmholtz-muenchen.de
T +49 89 3187 2739

Institute of Molecular Toxicology and Pharmacology/TOXI
Research focus: Study of the basic reactions of the organism to chemical environmental factors. Objective: To achieve a better understanding of the importance of such active mechanisms and to gain new insights into signaling networks and genetic programs for the development and progression of complex diseases such as cancer, diabetes, neurodegenerative diseases and disorders of the cardiovascular system.
Director: Prof. Dr. Martin Göttlicher
martin.goettlicher@helmholtz-muenchen.de
T +49 89 3187 2446
Chair of Toxicology and Environmental Hygiene at TUM

Research Unit Cellular Signal Integration/AZS in the Institute of Molecular Toxicology and Pharmacology
Research focus: Elucidation of signaling networks. Objective: To understand the dysregulation of signaling complexes in the immune system in inflammatory diseases and the development of lymphomas and to target these pharmacologically.
Head: Dr. Daniel Krappmann
daniel.krappmann@helmholtz-muenchen.de
T +49 89 3187 3461
**Institute of Clinical Molecular Biology and Tumor Genetics/KMOLBI**

Research focus: Study of signaling pathways that control the growth and survival of cells and the functions of hematopoietic stem cells. Objective: To gain a better understanding of the mechanisms of so-called oncogenes and tumor suppressor genes and to identify genetic alterations, which are involved in tumorigenesis.

**Director (acting.): Prof. Dr. Wolfgang Hammerschmidt**
hammerschmidt@helmholtz-muenchen.de
T +49 89 3187 1506

Research Unit Molecular Epigenetics/MEG in the Institute of Clinical Molecular Biology and Tumor Genetics

Research focus: Mechanisms of epigenetics for gene regulation. Objective: To achieve a better understanding of epigenetics and its role in the pathogenesis of diseases.

**Head: Prof. Dr. Dirk Eick**
eick@helmholtz-muenchen.de
T +49 89 3187 1512

**Institute of Virology/VIRO**

Research focus: Study of viruses that chronically infect humans and can lead to life-threatening diseases such as HIV, endogenous retroviruses and hepatitis B and C viruses. Objective: To identify new diagnostic and therapeutic concepts by means of molecular studies.

**Director: Prof. Dr. Ulrike Protzer**
protzer@helmholtz-muenchen.de
T +49 89 3187 3004
Chair of Virology at TUM

**Research Unit Gene Vectors/AGV**

Research focus: Study of the Epstein-Barr-Virus (EBV), which is associated with numerous tumor and autoimmune diseases. Objective: To decipher the molecular mechanisms of EBV and to identify immune reactions in order to develop new therapy concepts and vaccination and prevention strategies.

**Head: Prof. Dr. Wolfgang Hammerschmidt**
hammerschmidt@helmholtz-muenchen.de
T +49 89 3187 1506

**TOPIC 5**

**New technologies for biomedical discoveries**

**Institute of Structural Biology/STB**

Research focus: Elucidation of the spatial structure of biological macromolecules; analysis of their interaction of structure and dynamics; development of NMR spectroscopy methods to analyze the structure of complex biological systems. Objective: To elucidate the biological function of molecules and their involvement in diseases and to generate structural data for the design and development of small molecule inhibitors.

**Director: Prof. Dr. Michael Sattler**
sattler@helmholtz-muenchen.de
T +49 89 289 13418
Chair of Biomolecular NMR Spectroscopy at TUM

**Institute of Biological and Medical Imaging/IBMI**

Research focus: Development of in-vivo imaging technologies for the biosciences. Objective: To provide innovative tools for the biomedical laboratory, for diagnosis and to monitor therapy of human diseases.

**Director: Prof. Dr. Vasilis Ntziachristos**
vt.ntziachristos@helmholtz-muenchen.de
T +49 89 3187 3852
Chair of Biological Imaging at TUM

**Institute of Bioinformatics and Systems Biology/IBIS**

Research focus: Genome annotations, expression patterns and proteomics. Management of the Munich Information Center for Protein Sequences (MIPS), which contains genetic data sets and comparative analyses of microbiotic and plant genomes. Objective: To develop bioinformatic methods for a systematic analysis of genetic information.

**Director: Prof. Dr. Hans-Werner Mewes**
w.mewes@helmholtz-muenchen.de
T +49 89 3187 3580
Chair of Genome-Oriented Bioinformatics at TUM

**Research Unit Genome and Systems Biology/PGSB in the Institute of Bioinformatics and Systems Biology**

Research focus: The study of model plant genomes and large grain genomes. Objective: To develop and apply mathematical methods for numerical analyses and simulations in biological models.

**Head: PD Dr. Wolfgang Graf zu Castell-Rüdenhausen**
castell@helmholtz-muenchen.de
T +49 89 3187 2946

**Institute of Computational Biology/ICB**

Research focus: Development of methods for the model-based abstraction of biological systems. Objective: To capture complex biological systems in their structure and dynamics using mathematical models.

**Director: Prof. Dr. Fabian Theis**
fabian.theis@helmholtz-muenchen.de
T +49 89 3187 2211
Chair of Mathematical Modeling of Biological Systems at TUM

**Research Unit Scientific Computing/ASC in the Institute of Computational Biology**

Research focus: Scientific computing and the management of the central data processing of Helmholtz Zentrum München. Objective: To develop and apply mathematical methods for numerical analyses and simulations in biological models.

**Head: PD Dr. Wolfgang Graf zu Castell-Rüdenhausen**
castell@helmholtz-muenchen.de
T +49 89 3187 2946

**Institute of Health Economics and Health Care Management/IGM**

Research focus: Approaches to improve the efficiency and cost-effectiveness as well as the structures and processes of health care. Objective: To create the scientific conditions to ensure high-quality and financially sustainable health care.

**Director: Prof. Dr. Reiner Leidl**
leidl@helmholtz-muenchen.de
T +49 89 3187 4168
Chair of Health Economics and Health Care Management at LMU

**Research Unit Protein Analytics/PROT**

Research focus: The composition of protein complexes and their integration into cellular processes and protein networks. Objective: To recognize biological systems and disease-related disorders at the systemic level and thus to contribute to the molecular understanding of diseases.

**Head: Prof. Dr. Marius Ueffing**
marius ueffing@helmholtz-muenchen.de
T +49 89 3187 3567
Chair of Experimental Ophtalmology at the University of Tubingen
Research focus:
Study of the molecular mechanisms plants use to adapt to their environment. Objective: To achieve a better understanding of the basic principles and mechanisms of the interaction between plants and their environment and to develop sustainable strategies for the cultivation and use of plants to protect natural resources.
Director: Prof. Dr. Jörg Durner
durner@helmholtz-muenchen.de
T +49 89 3187 3434
Chair of Biochemical Plant Pathology at TUM

Research Unit Experimental Environmental Simulation/EUS
Research focus: The molecular ecophysiology of plants and biosystems and the biological and ecological functions of volatile organic compounds (VOCs). Objective: To study, under experimental conditions, the effects of environmental parameters on the entire involved ecosystem.
Head: Prof. Dr. Jörg-Peter Schnitzler
jp.schnitzler@helmholtz-muenchen.de
T +49 89 3187 2413

Cooperation Group Comprehensive Molecular Analytics/CMA
Research focus: The health effects of anthropogenic aerosols from combustion processes. Objective: To capture the effects of exposure on different biological levels in order to elucidate the mechanisms of aerosol-related diseases.
Head: Prof. Dr. Ralf Zimmermann
ralf.zimmermann@helmholtz-muenchen.de
T +49 89 3187 4544

Institute of Soil Ecology/IBOE
Research focus: Detection, prognosis and evaluation of anthropogenic and climate-change-related structural changes and biotic processes in the soil. Objective: To derive options for action from the study of the effect of land use and climate on the habitat soil, its nutrients and other environmental areas such as the atmosphere or bodies of water.
Director: Prof. Dr. Jean Charles Munch
munch@helmholtz-muenchen.de
T +49 89 3187 4064
Chair of Soil Ecology at TUM

Institute of Groundwater Ecology/IGOE
Research focus: The study of the degradation- and distribution processes of contaminants in groundwater and the development of ecological criteria to assess groundwater fauna. Objective: To elucidate the microbial processes which lead to self-purification of groundwater and thus to contribute to the protection of our most important sources of drinking water.
Director: Prof. Dr. Rainer Meckenstock
rainer.meckenstock@helmholtz-muenchen.de
T +49 89 3187 2561
Chair of Groundwater Ecology at TUM

Research Unit Microbe-Plant Interactions/AMP
Research focus: The molecular mechanisms of signal substances between bacteria and plants in the root area, but also in the interactions with animals and humans. Objective: To understand these signal substances as important control factors of the interaction between human pathogenic and probiotic bacteria with their hosts (plants, animals, humans,) and to find a way to put them to practical use.
Head: Prof. Dr. Anton Hartmann
anton.hartmann@helmholtz-muenchen.de
T +49 89 3187 4109
Translational Research and Clinical Cooperation

Translational Research Centers

Treatment Center for Diabetes Prevention Studies
Head: Prof. Dr. Annette-Gabriele Ziegler
anette-g.ziegler@helmholtz-muenchen.de
T +49 89 3187 3405

Translational Center for Lung Research/CPC
Scientific head: Prof. Dr. Oliver Eickelberg
oliver.eickelberg@helmholtz-muenchen.de
T +49 89 3187 4666
Institute of Lung Biology; clinical partner:
Hospital of LMU, Asklepios Specialist Hospital, Munich-Gauting

Munich Allergy Research Center/MARC
Head: Prof. Dr. Carsten Schmidt-Weber
schmidt-weber@helmholtz-muenchen.de
T +49 89 4140 3081
Institute of Allergy Research; clinical partner:
Department of Dermatology and Allergology of TUM, ZAUM – Center for Allergy and Environment

Clinical Cooperation Groups Diabetes

Biomarkers for the Subclassification of Type2 Diabetes Mellitus
Head: Prof. Dr. Jochen Seißler
jochen.seissler@helmholtz-muenchen.de
T +49 89 3187 3502
Institute of Experimental Genetics; clinical partner: Hospital of LMU, inner city campus

Interaction of Diet and Genetics in Type2 Diabetes Mellitus
Head: Prof. Dr. Hans Hauner
hans.hauner@helmholtz-muenchen.de
T +49 89 3187 3502
Institute of Experimental Genetics; clinical partner: Else Kröner Fresenius Center for Nutritional Medicine, TUM

Clinical Cooperation Groups Pathomechanisms and Therapeutic Target Structures

Pathogenesis of Acute Myeloid Leukemia
Head: Prof. Dr. Wolfgang Hiddemann
wolfgang.hiddemann@helmholtz-muenchen.de
T +49 89 7095 2551
Institute of Clinical Molecular Biology and Tumor Biology; clinical partner: Department of Internal Medicine III of LMU; Hospital of the LMU Campus Großhadern

Osteosarcoma
Head: PD Dr. Michaela Nathrath
michaela.nathrath@helmholtz-muenchen.de
T +49 89 3187 2312
Institute of Pathology; clinical partner:
Children's Hospital, Department of Child and Adolescent Medicine of TUM, Schwabing Hospital StKM GmbH

Molecular Neurogenetics
Head: Prof. Dr. Wolfgang Wurst
wurst@helmholtz-muenchen.de
T +49 89 3187 4111
Institute of Developmental Genetics; Clinical partner: Max Planck Institute of Psychiatry

Clinical Cooperation Groups Innovative Therapies

Pediatric Tumor Immunology
Head: Prof. Dr. Uta Behrends
uta.behrends@helmholtz-muenchen.de
T +49 89 3187 1519
Institute of Clinical Molecular Biology and Tumor Biology; Clinical partner: Children's Hospital, Department of Child and Adolescent Medicine, TUM, Schwabing Hospital StKM GmbH

Antigen-Specific Immunotherapy
Head: Prof. Dr. Dirk Busch
dirk.busch@helmholtz-muenchen.de
T +49 89 4140 4120
Institute of Virology; Clinical partner:
Institute of Medical Microbiology, Immunology and Hygiene, TUM

Innate Immunity in Tumor Biology
Head: Prof. Dr. Gabriele Multhoff
gabriele.multhoff@helmholtz-muenchen.de
T +49 89 4140 4514
Institute of Pathology; Clinical partner:
Department of Radiation Oncology, TUM

Immune Oncology
Head: Dr. Andreas Moosmann
andreas.moosmann@helmholtz-muenchen.de
T +49 89 3187 1231
Research Unit Gene Vectors; Clinical partner:
Department of Internal Medicine III of LMU; Hospital of the LMU Campus Großhadern

Immunotherapy
Head: PD Dr. Marion Subklewe
marion.subklewe@helmholtz-muenchen.de
T +49 89 3187 1412
Institute of Molecular Immunology; Clinical partner:
Department of Internal Medicine III of LMU; Hospital of the LMU Campus Großhadern

Personalized Radiation Therapy
Head: Dr. Anna Friedl
friedl@helmholtz-muenchen.de
T +49 89 3187 2447
Research Unit Radiation Cytogenetics; Clinical partner: Department of Radiation Oncology of LMU; Hospital of LMU
## Technology Platforms

**German Mouse Clinic** – the world’s leading facility for phenotyping and diagnostics of mouse models for hereditary diseases.  
**Prof. Dr. Martin Hrabě de Angelis**  
hrabe@helmholtz-muenchen.de  
T +49 89 3187 3302

**Central Inorganic Analytics** – analyses of mineral- and trace elements and anions; mass spectrometry.  
**Prof. Dr. Bernhard Michalke**  
bernhard.michalke@helmholtz-muenchen.de  
T +49 89 3187 4206

**Structural Biology** – Bavarian NMR Center – investigation of structural-functional relationships of biological systems.  
**Prof. Dr. Michael Sattler**  
sattler@helmholtz-muenchen.de  
T +49 89 289 13418

**Fragment-Based Drug Discovery (FBDD)** – screening platform for molecule fragments with potential biological and therapeutic activity.  
**Dr. Grzegorz Popowicz**  
grzegorz.popowicz@helmholtz-muenchen.de  
T +49 89 3187 3727

**Protein Expression and Purification Facility** – overexpression and purification of proteins.  
**Dr. Arie Geerlof**  
arie.geerlof@helmholtz-muenchen.de  
T +49 89 3187 4707

**Screening und Assay Development Platform** – development of medium- and high-throughput cell-based assays.  
**Dr. Kamyar Hadian**  
kamyar.hadian@helmholtz-muenchen.de  
T +49 89 3187 2664

**Immune Monitoring Platform** – immunotherapeutic monitoring of patients during clinical trials.  
**Prof. Dr. Dolores Schendel**  
schendel@helmholtz-muenchen.de  
T +49 89 3187 1301  
Clinical partner: Medical Clinic III of LMU

**X-ray Crystallography Platform** – high-resolution determination of large protein complexes.  
**Dr. Robert Janowski**  
robert.janowski@helmholtz-muenchen.de  
T +49 89 3187 2619

**Center for Mass Spectrometry** – mass spectrometry analyses.  
**Prof. Dr. Ralf Zimmermann**  
ralf.zimmermann@helmholtz-muenchen.de  
T +49 89 3187 4544

**Environmental Simulation** – exposure chambers, solar simulators, “green house” research.  
**Prof. Jörg-Peter Schnitzler**  
jp.schnitzler@helmholtz-muenchen.de  
T +49 89 3187 2413

**Research Platform Scheyern** – research farm for climate change and ecosystems.  
**Dr. Karin Pritsch**  
pritsch@helmholtz-muenchen.de  
T +49 89 3187 3487

**Animal Husbandry** – breeding and keeping of experimental animals for biological-medical research.  
**PD Dr. Markus Brielmeier**  
brielmeier@helmholtz-muenchen.de  
T +49 89 3187 2298

**Proteomics** – development of qualitative and quantitative strategies for proteomics analyses.  
**Prof. Dr. Marius Ueffing**  
proteomics@helmholtz-muenchen.de  
T +49 89 3187 3155

**Cell Sorting Service** – sterile high-speed sorting and multiparameter analyses.  
**Dr. Joachim W. Ellwart**  
ellwart@helmholtz-muenchen.de  
T +49 89 3187 2208

**Antibody Platform** – development of monoclonal antibodies.  
**Dr. Elisabeth Kremmer**  
kremmer@helmholtz-muenchen.de  
T +49 89 3187 1321

**European Mouse Mutant Archive EMMA** – European association for the systematic archiving of mouse mutants.  
**Prof. Dr. Martin Hrabě de Angelis**  
hhrabe@helmholtz-muenchen.de  
T +49 89 3187 3302

**Structural Biology** – Bavarian NMR Center – investigation of structural-functional relationships of biological systems.  
**Prof. Dr. Michael Sattler**  
sattler@helmholtz-muenchen.de  
T +49 89 289 13418

**Fragment-Based Drug Discovery (FBDD)** – screening platform for molecule fragments with potential biological and therapeutic activity.  
**Dr. Grzegorz Popowicz**  
grzegorz.popowicz@helmholtz-muenchen.de  
T +49 89 3187 3727

**Protein Expression and Purification Facility** – overexpression and purification of proteins.  
**Dr. Arie Geerlof**  
arie.geerlof@helmholtz-muenchen.de  
T +49 89 3187 4707

**Screening und Assay Development Platform** – development of medium- and high-throughput cell-based assays.  
**Dr. Kamyar Hadian**  
kamyar.hadian@helmholtz-muenchen.de  
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schendel@helmholtz-muenchen.de  
T +49 89 3187 1301  
Clinical partner: Medical Clinic III of LMU
Contact Information

Press Inquiries
Sonja Opitz
Head: Communication Department (AKO)
presse@helmholtz-muenchen.de
T +49 89 3187 2986

Research Programs
Dr. Martina Hansen
Head: Program Planning and Management (PPM)
m.hansen@helmholtz-muenchen.de
T +49 89 3187 2335

Cooperative Projects and Project Funding
Dr. Jürgen Ertel (PPM)
erTEL@helmholtz-muenchen.de
T +49 89 3187 3022

Central Library
Astrid Uerlichs (ZB)
astrid.uerlichs@helmholtz-muenchen.de
T +49 89 3187 1811

HELENA – Helmholtz Graduate School
Environmental Health
Dr. Monika Beer (PPM)
monika.beer@helmholtz-muenchen.de
T +49 89 3187 3929

Translational and Clinical Projects/TKP
Head: Dr. Corinna Barz
corinna.barz@helmholtz-muenchen.de
T +49 89 3187 3819

Innovation Management/INNO
Head: Dr. Annette Janz
janz@helmholtz-muenchen.de
T +49 89 3187 4271

Official Personal Dosimeter Service/AWST
Head: Markus Figel
awst-service@helmholtz-muenchen.de
T +49 89 3187 2902

Purchasing and Supply Department/EK
Head: Magdalene Pils
einkauf@helmholtz-muenchen.de
T +49 89 3187 2727

Finance Department/FA
Head: Gerolf Schmidl
schmidl@helmholtz-muenchen.de
T +49 89 3187 2699

Administration/Staff Positions
Head Office
Head: Dr. Markus Reuther
reuther@helmholtz-muenchen.de
T +49 89 3187 3692

Internal Revision
Head: Ingrid Balzer
balzer@helmholtz-muenchen.de
T +49 89 3187 2451

Company Medical Services
Head: Dr. Werner Kirchinger
Contact: Nermin Hirlik
nermin.hirlik@helmholtz-muenchen.de
T +49 89 3187 2785

Operations and Support/OS
Head: Dr. Stefan Echinger
stefan.echinger@helmholtz-muenchen.de
Neuherberg:
T +49 89 3187 4650

Administrative Departments
Controlling/CO
Head: Dr. Hein Osenberg
hein.osenberg@helmholtz-muenchen.de
T +49 89 3187 3440

Commercial Data Processing/KDV
Head: Ludwig Schmidbauer
schmidbauer@helmholtz-muenchen.de
T +49 89 3187 4068

Personnel Department/PA
Head: Renate Schlusen
renate.schlusen@helmholtz-muenchen.de
T +49 89 3187 2824

Human Resources Development/PE
Head: Dr. Uwe Bott
uwe.bott@helmholtz-muenchen.de
T +49 89 3187 4723

Legal Department/RA
Head: Dr. Daniel Lahne
daniel.lahne@helmholtz-muenchen.de
T +49 89 3187 2374

Scientific Infrastructure, Technical Safety and Safety at Work/ISA
Head: Dr. Andrea Kleinschmidt
britta.timm-hoffmann@helmholtz-muenchen.de
T +49 89 3187 3921

Central Technical Facilities/ZT
Head: N. N.
2222@helmholtz-muenchen.de
T +49 89 3187 2222
Locations and Addresses

The campus of Helmholtz Zentrum Munchen is located in Neuherberg to the north of Munich. Here are most of the institutes, research units and technology platforms. The institutes and research units located outside the main campus area are in continual contact with the campus institutes, and many are closely linked with hospitals.

1. Helmholtz Zentrum München –
   German Research Center or
   Environmental Health
   Campus Neuherberg
   Ingolstädter Landstr. 1
   85764 Neuherberg
   Germany

2. Hämatologikum of Helmholtz
   Zentrum München
   Marchioninistr. 25
   81377 Munich
   Germany

3. CPC – Comprehensive
   Pneumology Center
   Max-Lebsche-Platz 31
   81377 Munich
   Germany

4. Institute of Diabetes and
   Obesity and Institute of Diabe-
   tes and Regeneration Research
   Business Campus Munich
   Parkring 11 – 13
   85748 Garching
   Germany

5. Treatment Center for
   Diabetes Prevention Studies
   Ungererstr. 25
   80802 Munich
   Germany

6. Munich Allergy
   Research Center (MARC)
   Biedersteiner Str. 29
   80802 Munich
   Germany

7. Institute of Virology
   Trogerstr. 30
   81675 Munich/
   Schneckenburgerstr. 8
   81675 Munich
   Germany

8. KORA Study Center and
   Coronary Event Registry
   Fuggerstadt Center Augsburg
   Viktoriastr. 3
   86150 Augsburg
   Germany

9. Examination Center
   Augsburg
   German Health Study
   Klinikum Augsburg
   Stenglinstr. 2
   86156 Augsburg
   Germany

10. Official Personal Dosimeter
    Service
    Otto-Hahn-Ring 6
    81739 Munich
    Germany

11. Institute for Diabetes Research
    and Metabolic Diseases
    of Helmholtz Zentrum München
    at the University of Tübingen
    Otfried-Müller-Str. 10
    72076 Tübingen
    Germany
### Helmholz Zentrum München in Numbers

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<td>15</td>
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<td>511</td>
<td>doctoral students in joint programs with Munich universities, of these</td>
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As of September 2013

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### Organization

Helmholtz Zentrum München is a research institution of the Federal Republic of Germany and the Free State of Bavaria and belongs to the Helmholtz Association of German Research Centres. The partners of Helmholtz Zentrum München are the Federal Republic of Germany, represented by the Federal Minister of Education and Research, and the Free State of Bavaria, represented by the Bavarian State Minister of Finance.

The bodies of Helmholtz Zentrum München are the Assembly of Partners, the Supervisory Board and the Board of Directors. In scientific questions, the Center is advised by the Scientific Advisory Board, which consists of external members. Through the program and topic speakers, scientists are represented in the Management Committee. As expert body, the Scientific Review Committee advises the Board of Directors with regard to important scientific questions.

### Members of the Board of Directors
- Prof. Dr. Günther Wess, CEO
- Dr. Nikolaus Blum, CFO
- Dr. Alfons Enhsen, CTO for the scientific-technical infrastructure

### Chair of the Supervisory Board
- MinDir’in Bärbel Brumme-Bothe, Federal Ministry of Education and Research

### Chair of the Scientific Advisory Board
- Prof. Dr. Hillel Koren, Environmental Health, LLC Durham, North Carolina, USA

Helmholtz Zentrum München is made up of 40 scientific institutes and autonomous research units, which are linked through programs and topics. To transfer findings from basic research into medical applications, scientists of Helmholtz Zentrum München work closely in translational centers and clinical cooperation groups together with partners in the Munich clinics.
Facts 2014/2015 is available as free app at
http://www.helmholtz-muenchen.de/en/apps/facts2014

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Helmholtz Zentrum München –
German Research Center
for Environmental Health
Ingolstädter Landstr. 1
D-85764 Neuherberg
Germany
T +49 89 3187-0
F +49 89 3187-3324

www.helmholtz-muenchen.de
presse@helmholtz-muenchen.de

Editorial Office: Communication Department
Sonja Opitz, Sonja Duggen, Cordula Klemm
presse@helmholtz-muenchen.de

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