### Content

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Directors’ Message</td>
</tr>
<tr>
<td>02</td>
<td>Organization</td>
</tr>
<tr>
<td></td>
<td>Networks in the Munich Region</td>
</tr>
<tr>
<td></td>
<td>Cooperations with the Munich Universities</td>
</tr>
<tr>
<td></td>
<td>Global Networks</td>
</tr>
<tr>
<td></td>
<td>Helmholtz Association</td>
</tr>
<tr>
<td></td>
<td>Networks in German Centers for Health Research</td>
</tr>
<tr>
<td>03</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>Business Model and Organization</td>
</tr>
<tr>
<td></td>
<td>Research in Strategic Programs</td>
</tr>
<tr>
<td></td>
<td>Program Environmental Health</td>
</tr>
<tr>
<td></td>
<td>Program Systemic Analysis of Multifactorial Diseases</td>
</tr>
<tr>
<td></td>
<td>Program Terrestrial Environment</td>
</tr>
<tr>
<td></td>
<td>Programs, Institutes and Platforms</td>
</tr>
<tr>
<td></td>
<td>Translational Research</td>
</tr>
<tr>
<td></td>
<td>Technology Transfer</td>
</tr>
<tr>
<td></td>
<td>Achievements</td>
</tr>
<tr>
<td>04</td>
<td>Statistics</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
</tr>
<tr>
<td></td>
<td>Training and Qualification</td>
</tr>
<tr>
<td></td>
<td>HELENA – Helmholtz Graduate School Environmental Health</td>
</tr>
<tr>
<td></td>
<td>Finances</td>
</tr>
<tr>
<td></td>
<td>Project Funding</td>
</tr>
<tr>
<td></td>
<td>Chronology</td>
</tr>
<tr>
<td>05</td>
<td>Contacts</td>
</tr>
<tr>
<td></td>
<td>Locations and Addresses</td>
</tr>
<tr>
<td></td>
<td>Institutes, Research Units and Technology Platforms</td>
</tr>
<tr>
<td></td>
<td>Program Environmental Health</td>
</tr>
<tr>
<td></td>
<td>Program Systemic Analysis of Multifactorial Diseases</td>
</tr>
<tr>
<td></td>
<td>Program Terrestrial Environment</td>
</tr>
<tr>
<td></td>
<td>Translational Centers and Clinical Cooperation Groups</td>
</tr>
<tr>
<td></td>
<td>Administration</td>
</tr>
<tr>
<td></td>
<td>Imprint</td>
</tr>
<tr>
<td></td>
<td>Helmholtz Zentrum München at a Glance</td>
</tr>
</tbody>
</table>
The processes underlying common diseases such as diabetes, lung diseases, cardiovascular diseases, cancer, Alzheimer’s disease and depression are still not understood to a large extent. Many factors influence these processes, which generally take place over a long period and develop out of a complex interaction between individual genetic predisposition and environmental factors such as nutrition, lifestyle, stress or pollutants. Frequently, they are accompanied by pre-existing conditions or symptoms of old age.

Helmholtz Zentrum München is investigating these relationships with a special focus on diabetes and lung diseases. Understanding the complex causal relationships involved is crucial for the development of new therapies, diagnostic methods and prevention strategies. With the aid of our technological platforms, we are elucidating the biological mechanisms involved in these processes and are thus making important contributions to fighting diseases of the central nervous system, cancer, infectious diseases and cardiovascular diseases.

The foundation of our work is excellent basic research, which is carried out by well-managed institutes and scientific research units which undergo external expert review on a regular basis. Our expertise ranges from biomedicine to research on ecosystems and the preservation of the natural foundations of human life. Central state-of-the-art technological platforms are an integral part of our scientific-technical infrastructure.

Through intensive collaboration with clinical partners and a commitment to the German Centers of Health Research we ensure that research findings are rapidly translated into medical applications to benefit patients. The first drug developed by the German biotech sector and brought to market has its scientific origin in our center.

We are especially committed to training young scientists, and in this area we work closely with Munich’s elite universities. The many joint institutes with the universities and the integration of the center in national and international associations offer young scientists a stimulating academic environment and excellent career prospects. The first Graduate School of Environmental Health HELENA has been founded in 2010 and supports more than 430 graduate students at our center.

Prof. Dr. Günther Wess
CEO

Dr. Nikolaus Blum
CFO
Business Model and Organization

Helmholtz Zentrum München is a research institution of the Federal Republic of Germany and the Free State of Bavaria. 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. It belongs to the Helmholtz Association of German Research Centers.

The bodies of Helmholtz Zentrum München are the Assembly of Partners, the Supervisory Board and the Board of Directors. On scientific questions, Helmholtz Zentrum München also obtains the advice of the Scientific Advisory Board, which consists of external members. Scientists on the Supervisory Board and in the Management Committee are elected by the Scientific-Technical Council, an internal communication and information body. A committee of experts, the Scientific Review Committee, advises the Board of Directors with respect to important scientific questions.

Helmholtz Zentrum München is divided into 33 research institutes and research units, which are interlinked and cooperate on various topics and in various research programs. The center has diverse technology platforms which function as central service units. To ensure rapid and efficient transfer of findings from basic research into medical applications, scientists of Helmholtz Zentrum München work closely in translational centers and clinical cooperation groups together with medical partners in the universities and hospitals in Munich.

Leading Science to Health — Promoting Health through Research

Benefit to Society

- Widespread diseases: lung diseases, diabetes, neuropsychiatric diseases
- New approaches for prevention, diagnosis and therapy

Translational Research, Technology Transfer

Guiding Principle

Environmental Health

Cooperations

- Excellent science
- Excellent training
- Excellent platforms

Excellence in science, training and infrastructure and goal-oriented cooperations are the basis for successful research in Environmental Health at Helmholtz Zentrum München and for the development of new approaches to effectively treat lung diseases and metabolic and neuropsychiatric diseases. Translational research and technology transfer make the findings rapidly applicable for the benefit of society.
Helmholtz Zentrum München is the German Research Center for Environmental Health. It investigates important common diseases which develop from the interaction of lifestyle, environmental factors and personal genetic background, focusing particularly on lung diseases, metabolic diseases and diseases of the nervous system.

The research mission of Helmholtz Zentrum München is to increase understanding of disease mechanisms which affect human beings and essential parts of their environment. The Center is developing the fundamental principles for the medicine of the future and for a personalized medicine focused on addressing the causes of disease.

Helmholtz Zentrum München contributes to the achievement of the goals of the Helmholtz Association of German Research Centers and to the successful implementation of the research strategy of the German Federal Government. The research programs of the Helmholtz Association are established by scientists from the Helmholtz centers within their respective research area and are reviewed and evaluated by internationally renowned experts with regard to their scientific excellence and strategic relevance. Program-oriented funding (POF) forms the basis for the positioning of the Helmholtz Association and its centers in the research landscape.

Helmholtz Zentrum München participates in the research areas Health and Earth and Environment of the Helmholtz Association with 3 strategic programs:
- Environmental Health
- Systemic Analysis of Multifactorial Diseases
- Terrestrial Environment – Strategies for a Sustainable Response to Climate and Global Change

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We are investigating how environmental factors and genetic disposition interact in the development of chronic diseases such as lung diseases. From our research, we shall develop individualized strategies for prevention, early diagnosis and therapy.

Prof. Dr. Martin Göttlicher, program spokesperson
The program Systemic Analysis of Multifactorial Diseases (SAM)
- combines functional genomics in model systems, i.e. studies in cell systems and animal models, with human genetics
- searches for »functional modules« – biological functional units which if dysfunctional can trigger diseases – using systems biology approaches
- operates a large-scale open-access mouse phenotyping center (German Mouse Clinic) and generates mutant mouse lines for the standardized analysis of mouse models to study human diseases
- is coordinated by Helmholtz Zentrum München

Special focus areas in the program Systemic Analysis of Multifactorial Diseases:

Diabetes mellitus: Helmholtz Zentrum München
- has established the Institute of Diabetes Research (type 1 diabetes) and is establishing another two new research institutes (type 2 diabetes)
- has entered a strategic partnership with Ludwig-Maximilians-Universität (LMU) and Technische Universität München (TUM) for diabetes research
- is a participant in the German Center for Diabetes Research, which seeks to utilize research competence Germany-wide to accelerate benefits for patients

Neuropsychiatric diseases: Helmholtz Zentrum München
- has two institutes with a research focus on the brain and the nervous system, neurological and psychiatric diseases, neuroregeneration (focus on Alzheimer’s and Parkinson’s disease as well as depression)
- coordinates the Helmholtz Alliance »Mental Health in an Aging Society« with a focus on the systemic analysis of Alzheimer’s and Parkinson’s Disease
- participates in the Munich partner site of the German Center for Neurodegenerative Diseases (DZNE) in Bonn

The great challenge for research today is to elucidate how genetic factors contribute to the development of multifactorial diseases and to determine under which prerequisites and environmental conditions systemic diseases arise. One of our main goals is to analyze the key genetic factors and biomolecular principles which are responsible for the development of diabetes.

Prof. Dr. Martin Hrabé de Angelis, program spokesperson

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Neuropsychiatric Diseases: Prof. Dr. Wolfgang Wurst
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The program Terrestrial Environment focuses on the idea of ecosystem services. The most important question we face today is how to preserve the components soil, water and plants and at the same time utilize them for the benefit of humans.

Prof. Dr. Jörg Durner, program spokesperson

The environmental research of Helmholtz Zentrum München takes place within the program »Terrestrial Environment — Strategies for a Sustainable Response to Climate and Global Change« (TE), which is coordinated by the Helmholtz Center for Environmental Research Leipzig (UFZ) and carried out by the Helmholtz centers in Leipzig, Jülich (FZJ) and Munich.

In particular, the research objectives of Helmholtz Zentrum München are:
- to make innovative and effective contributions to the optimized use of microorganisms and plants
- to define and optimize ecosystem services, especially the production and preservation of food and drinking water
- to gain insights for the prevention of environmental diseases such as allergies or infectious diseases
- to elucidate biological mechanisms, the regulation of processes from the molecule to organisms and to environmental habitats, as well as the sensitivity to and/or disposition toward different environmental factors

A special focus is on the preservation of water quality. Together with the Technische Universität München and the University of Bayreuth, Helmholtz Zentrum München is building up a Bavarian Center for Water Research. The focus of Helmholtz Zentrum München here is on how water quality can be measured and maintained.

A second focus is to explore defence mechanisms of plants, as well as the efficient use of resources. Together with plant biology departments of both Munich universities specific emphasis is put on the molecular mechanisms that allow plants to respond and adapt to biotic and abiotic factors.

Contacts:

Program Terrestrial Environment at Helmholtz Zentrum München: Prof. Dr. Jörg Durner durner@helmholtz-muenchen.de · T +49 (0)89 3187 2331

Water Quality: Prof. Dr. Rainer Meckenstock rainer.meckenstock@helmholtz-muenchen.de · T +49 (0)89 3187 2560
Helmholtz Zentrum München provides its scientists and cooperation partners a state-of-the-art biomedical infrastructure for internationally competitive research. The center is leading in the fields of mouse models, epidemiology and structural biology.

Contacts for Platforms:

**German Mouse Clinic** – global leader in the phenotyping and diagnostics of mouse models for hereditary diseases • Prof. Dr. Martin Hrabé de Angelis · hrabe@helmholtz-muenchen.de · T +49 (0)89 3187 3502

**Protein Expression and Purification Facility** – overexpression and purification of proteins · Dr. Arie Geerlof · arie.geerlof@helmholtz-muenchen.de · T +49 (0)89 3187 4704

**European Mouse Mutant Archive EMMA** – European association for the systematic archiving of mouse mutants • Prof. Dr. Martin Hрабé de Angelis · hrabe@helmholtz-muenchen.de · T +49 (0)89 3187 3502

**Animal Husbandry** – breeding and keeping of experimental animals for biological-medical research • PD Dr. Markus Brielmeier · brielmeier@helmholtz-muenchen.de · T +49 (0)89 3187 2837

**Animals** – breeding and keeping of experimental animals for biological-medical research • PD Dr. Markus Brielmeier · brielmeier@helmholtz-muenchen.de · T +49 (0)89 3187 2837

**Genome Analysis Center** – genotyping, DNA sequencing, transcriptomics, proteomics, metabolomics • Prof. Dr. Jerry Adamski · adamski@helmholtz-muenchen.de · T +49 (0)89 3187 3155

**Proteomics** – development of qualitative and quantitative proteomics for proteome analysis • Dr. Hakan Sarigolu · proteomics@helmholtz-muenchen.de · T +49 (0)89 3187 3861

**Protein Expression and Purification Facility** – overexpression and purification of proteins • Dr. Arie Geerlof · arie.geerlof@helmholtz-muenchen.de · T +49 (0)89 3187 4704

**Screening and Assay Development Platform** – development of medium- and high-throughput cell-based assays • Dr. Kamyar Hadian · kamyar.hadian@helmholtz-muenchen.de · T +49 (0)89 3187 2664

**Systems Biology** – development of models and algorithms for biological processes in the context of the entire organism • Prof. Dr. Werner Mewes · wmewes@helmholtz-muenchen.de · T +49 (0)89 3187 3581

**Biological and Medical Imaging** – development of new, more powerful methods for research and diagnostics • Prof. Dr. Vasilis Ntziachristos · ntziachristos@helmholtz-muenchen.de · T +49 (0)89 3187 3852

**KORA / Epidemiology** – population-based investigation of effects of environmental factors, behavior and genes on human health and disease • Prof. Dr. Annette Peters · peters@helmholtz-muenchen.de · T +49 (0)89 3187 4566

**Immune Monitoring Platform** – immunotherapeutic monitoring of patients during clinical studies • Prof. Dr. Dolores Schenkel · schenkel@helmholtz-muenchen.de · T +49 (0)89 3187 301

**Center of Mass Spectrometry** – Mass spectrometry analyses • Prof. Dr. Ralf Zimmermann · ralf.zimmermann@helmholtz-muenchen.de · T +49 (0)89 3187 4048

**Environmental Simulation** – exposure chambers, sun simulators, research greenhouse • Prof. Jörg-Peter Schnitzler · jschnitzler@helmholtz-muenchen.de · T +49 (0)89 3187 2413

**Research Platform Scheyern** – research farm for studying effects of climate change at an ecologically relevant scale • Dr. Karin Pritsch · pritsch@helmholtz-muenchen.de · T +49 (0)89 3187 3487

**Lysimeter** – place for 48 weighable lysimeters, 1 m² bases and 2 m length • Prof. Dr. Jean Charles Munch · munch@helmholtz-muenchen.de · T +49 (0)89 3187 4064

The scientific work of Helmholtz Zentrum München is carried out in 33 institutes and research units. They are interlinked via 3 strategic programs. 13 clinical cooperation groups and 2 translational centers make up the interface to applications on the patient. Service platforms support the research by providing cutting-edge-technologies.
Translational research is an integral part of the research approach of Helmholtz Zentrum München. It enables the further development of knowledge to advance medical progress and to exploit the potential of theoretical insights for medical applications. The aim of the close collaboration with Munich’s university hospitals is to provide patients with new and improved therapies and diagnostic methods.

Successful translational research depends on a continual exchange between the clinic and the laboratory.

- Theoretical researchers and clinicians work together closely in the translational centers for lung and allergy research as well as in 13 clinical cooperation groups supported by the Immune Monitoring Platform.

- Furthermore, comprehensive preventive research will be realized with the National Cohort. The insights gained from this research will be used directly for the development of new preventive, diagnostic and therapeutic approaches.

- A comprehensive portfolio management with a structured flow of information and knowledge transfer between developmental, preclinical and clinical projects optimizes the development processes.

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**Technology Transfer:**
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Martin Reichel Head Legal & Technology Transfer
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To facilitate technology transfer, Helmholtz Zentrum München has developed a broad spectrum of new, innovative and competitive technologies in the fields of biotechnology, pharma and medical technology, and also in the field of environment analysis methods. Helmholtz Zentrum München patents its inventions and out-licenses these for commercialization. It utilizes findings from basic research in 14 spin-offs and joint venture companies with currently around 350 employees.

Excellent basic research generates results with high application potential. The proximity of laboratory and clinical activity facilitates the further development and transfer into clinical trials. Spin-offs and cooperations open up market potential and accelerate development to market maturity. Helmholtz Zentrum München and a partner technology company accompany and oversee the licensing and cooperation initiatives with industry partners. Through the Life Science Foundation the center participates in the value creation and/or the licensing revenues from the research findings. The revenues are used to fund innovative research projects.
The scientific excellence of Helmholtz Zentrum München and the high qualifications of its staff are reflected in numerous prizes and awards and appointments to superordinate scientific bodies. Further indications of scientific excellence include:

- **Above average number of publications and citation rates**: With 975 publications and a total impact factor score of nearly 5800 points in the Science Citation Index database Thomsom-Reuters (formerly ISI) as well as 170 non ISI reviewed publications and books Helmholtz Zentrum München is one of the world’s leading research institutions in the field of Environmental Health.

- **Regular top ranking**: for scientists of the center with respect to awards and third-party grants

- **Excellent scientific training**: Helmholtz Graduate School Environmental Health (HELENA) and 6 additional graduate schools together with the Munich universities

- **Health research in national networks** – Participation in 5 German Centers for Health Research: German Center for Diabetes Research, German Center for Lung Research, German Center for Neurodegenerative Diseases German Center for Cardiovascular Research, German Center for Infection Research

- **Applications to benefit society**: Removab is the first approved antibody which resulted from German research. It is a drug designed to combat malignant ascites, a complication of cancer. The production methods and underlying active principle are based on the immunological research work performed at what is today Helmholtz Zentrum München.

**Successful spin-offs:**

- **Activaero GmbH**: inhalation technology, aerosol medicine
- **Biomax Informatics AG**: bioinformatics software
- **eADMET GmbH**: activity prediction of pharmaceutical ingredients
- **Genomix Software GmbH**: software elucidating mechanisms and pathways in biological systems
- **Inamed Research GmbH & Co. KG**: studies on drug inhalation
- **Ingenium Pharmaceuticals GmbH**: treatment approaches for inflammatory diseases - in 2007 integrated into Probiodrug AG
- **iThera Medical GmbH**: non-invasive Imaging using molecular laser technologies
- **Isodetect GmbH**: environmental isotope analyses
- **MedTherm GmbH**: heat-shock/hyperthermia for cancer treatment
- **Photonion GmbH**: Analysis device for the direct detection of complex organic gases, liquids and materials
- **Sirenaide Pharmaceuticals AG**: in 2005 taken over by KeyNeurotek AG - focus on neurodegenerative diseases
- **TRION Pharma GmbH & TRION Research**: trifunctional antibodies for cancer immunotherapy
- **Vaegene GmbH**: drug therapy for cancer/infection diseases
- **Vivacs GmbH**: taken over by Emergent BioSolutions with the rights to vaccine vector technologies
Networks in the Munich Region

Helmholtz Zentrum München is an important partner of the Munich region. It is represented with several projects in the excellence cluster »m4 – Personalized Medicine and Targeted Therapies: A New Dimension in Drug Development« biotech and pharma companies, institutes and hospitals of the two Munich universities and institutes of Helmholtz Zentrum München have joined together in an excellence cluster, in order to rapidly transfer research results into practical applications.

Helmholtz Zentrum München is closely networked with Munich’s two elite universities and clinical institutions in Munich. This is apparent

- in the joint appointments with Ludwig-Maximilians-Universität, Munich (LMU) and Technische Universität München (TUM)
- in the establishment of clinical cooperation groups
- in the joint training of graduate students in graduate schools
- in new models of scientific cooperation in translational centers (Comprehensive Pneumology Center, Munich Allergy Research Center) and joint research centers (diabetes focus, neurodegenerative diseases, Center for Integrated Protein Research – Munich)

Cooperations with the Munich Universities

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<td>Joint appointments</td>
<td>4</td>
<td>15</td>
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<td>Clinical Cooperation Groups</td>
<td>6</td>
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Translational Center Comprehensive Pneumology Center (CPC)
Cooperative Health Research in the Augsburg Region (KORA; KORA Age)
Pettenkofer School of Public Health, Munich

Munich Center for Bioactive Compound Research and Profiling (MZWP)
Bavarian NMR Center
Munich Allergy Research Center (MARC)
Scheyern Research Farm
Water Research Center (in planning)
Collaborative Research Centers

Graduate schools
EU agreements

Helmholtz Alliance

Projects in which both LMU and TUM participate

- Diabetes research (German Center for Diabetes Research – DZD)
- German Centers for Health Research: DZL, DZNE, DZI, DZHK
- Excellence cluster »Center for Integrated Protein Science Munich«
- German Mouse Clinic
- Bavarian Research Association Adult Neural Stem Cells
- Helmholtz Graduate School Environmental Health (HELENA)

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<td>Helmholtz Virtual Institutes</td>
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Helmholtz Zentrum München participates in networks with top-level scientists across the globe and has entered into approximately 400 research cooperation agreements.

14 Greece: Biomedical Sciences Research Center »Alexander Fleming«, Foundation for Research and Technology Hellas
15 Algeria: Univ. of Bejaja
16 Qatar: Joan and Sanford I. Weill Medical College, Doha
17 Canada: Toronto Center for Phenogenomics
18 USA: Univ. of Michigan, Lawrence Berkeley National Laboratory, Scripps Research Institute, Joint Genome Institute, Jackson Laboratories, Univ. of Utah, Massachusetts General Hospital, National Institute of Environmental Health Science (NIHES), U.S. Environmental Protection Agency (EPA)
19 Brazil: Univ. Estadual de Clinica Medica, Campinas, Univ. Rio de Janeiro, Univ. Sao Paulo
20 Chile: Catholic Univ. Santiago de Chile
21 Argentina: Univ. Buenos Aires, Univ. Cordoba
22 Russia: Univ. Apatity, Moscow State Univ., Russian Academy of Sciences, Moscow, Univ. Novosibirsk, Mayak Production Association, Siberian State Medical Univ., Tomsk
23 China: National Analysis Center for Iron and Steel (NACIS), Center for Bioinformatics Technology
24 Japan: RIKEN Center for Developmental Biology
25 Germany: Technische Univ. München, Ludwig-Maximilians-Universität, Munich, Asklepios Pulmonary Hospital Munich-Gauting, RWTH Aachen, Charité Berlin, Univ. Bonn, Technical Univ. Dresden, Heinrich-Heine-Universität Düsseldorf, Heidelberg Univ. Hospital, Fritz Lipmann Institute, Jena, Philips-Universität Marburg, Goethe-Universität Frankfurt, Univ. of Rostock, Eberhart-Karsl Univ. Tübingen, Helmholtz Center for Infection Research, German Cancer Research Center, Max Delbrück Center for Molecular Medicine, Max Planck Institute of Psychiatry, several Max Planck Institutes
Helmholtz Association of German Research Centers

Helmholtz Zentrum München is part of the Helmholtz Association, Germany’s largest research organization, which pursues long-term research goals on behalf of the state and society. The Association’s research findings contribute to preserving and improving the foundations of human life.

The Helmholtz Association of German Research Centers has 17 legally independent research centers with 31,000 employees and an annual budget of 3.3 billion euros.

The centers in the Helmholtz Association perform research in 6 core fields: Energy, Earth and Environment, Health, Key Technologies, Structure of Matter and Transport and Space.

Helmholtz Association of German Research Centers:

1 Helmholtz-Zentrum Geesthacht Center for Materials and Coastal Research www.hzg.de
2 Deutsches Elektronen-Synchrotron DESY www.desy.de
3 Alfred Wegener Institute for Polar and Marine Research www.awi.de
4 German Aerospace Center www.dlr.de
5 Research Center Jülich www.rz-juelich.de
6 German Center for Neurodegenerative Diseases www.dzne.de
7 GSI Helmholtz Center for Heavy Ion Research www.gsi.de
8 German Cancer Research Center www.dkfz.de
9 Karlsruhe Institute of Technology www.kit.edu
10 Helmholtz Center for Infection Research www.helmholtz-hzi.de
11 Max Delbrück Center for Molecular Medicine Berlin-Buch www.mdc-berlin.de
12 Helmholtz Zentrum Berlin for Materials and Energy www.helmholtz-berlin.de
13 Helmholtz Zentrum Potsdam National Research Center for Geosciences GFZ www.gfz-potsdam.de
14 Helmholtz Center for Environmental Research – UFZ www.ufz.de
15 Max Planck Institute for Plasma Physics (Associate Member) www.ipp.mpg.de
16 Helmholtz Zentrum München – German Research Center for Environmental Health www.helmholtz-muenchen.de
17 Helmholtz-Zentrum Dresden-Rossendorf (HZDR) www.hzdr.de
18 Helmholtz Association, Bonn Office www.helmholtz.de
19 Helmholtz Association, Berlin Office www.helmholtz.de
The Federal Government establishes German Centers for Health Research to pool university and non-university research into particularly important common diseases and to accelerate the application of its results. Helmholtz Zentrum München participates in 5 out of 6 German Centers for Health Research and is thereby connected with the German top-level scientists:
Highly qualified and highly motivated staff members account for the claim to leadership of Helmholtz Zentrum München in the field of Environmental Health. The center places special value on training and advanced training, supporting the young generation of scientists and the attainment of equal opportunity.

- **Attractive employer** for over a dozen scientific disciplines
- Training of the **young generation of scientists**: approximately 430 graduate students in conjunction with the Munich universities (of whom 307 are employed at Helmholtz Zentrum München). Excellent cooperation network with universities, hospitals and other Helmholtz centers.
- Optimal guidance in the Center’s own graduate program, the Helmholtz Graduate School Environmental Health (HELENA) with a globally unique training focus
- Junior research groups: 8 **excellent young researchers** lead an independent research group, partly in connection with a university
- **Expert training**: 2 Marie Curie training networks of the European Union (Initial Training Network, ITN): ITN GOODWATER for sustainable groundwater use and environment-friendly reclamation methods as well as Environmental Chemoinformatics (ECO) for assessing the risks of chemicals in Europe
- **Vocational training**: 46 trainee positions for young people in 7 technical-administrative vocations in the fields of research, industry and trade
- **Equal opportunity**: two-time winner of the Total-E-Quality certificate for equal opportunity. Focus on the compatibility of work and family. 56% of the employees are women; 30% of the leadership positions are held by women. Since 2008 member of the Munich Dual Career Office
- **Further training**: Human resources development using ultra-modern techniques

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**Employees at the center**

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<th>1879</th>
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<tr>
<td><strong>Scientists and postdocs</strong></td>
<td>607</td>
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<tr>
<td>In accordance with the thematic orientation of the Center we employ scientists from various disciplines: biology 41%, chemistry/biochemistry 14%, physics/biophysics 10% and medicine 7%.</td>
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<tr>
<td><strong>Graduate students</strong></td>
<td>307</td>
</tr>
<tr>
<td><strong>Technical staff and other employees</strong></td>
<td>824</td>
</tr>
<tr>
<td><strong>Trainees</strong></td>
<td>46</td>
</tr>
<tr>
<td><strong>Student assistants, interns, temporary personnel</strong></td>
<td>95</td>
</tr>
</tbody>
</table>

As of: January 31, 2011

Helmholtz Zentrum München employs approximately 1900 people of 50 different nationalities. 33% of their positions are financed with third-party funds. 77% of the employees work in the scientific area, 14% in the technical area and 9% in administration.
HELENA — an investment in the future: The Graduate School Environmental Health serves as an ideal career springboard through excellent research, training and networks.

Today’s doctoral students are our future leaders – in research, clinical work, industry and management. In order to ensure optimal promotion, Helmholtz Zentrum München – together with Ludwig-Maximilians-Universität Munich (LMU) and Technische Universität München (TUM) – opened the first Helmholtz Graduate School Environmental Health (HELENA) on November 1, 2010.

Environmental Health – Tomorrow’s Research Focus

Within the unique focus on Environmental Health, the graduate student projects concentrate on the interaction between individual genetic predisposition, environmental factors and individual lifestyle habits, thus illuminating the pathogenesis of common, complex diseases such as diabetes mellitus and chronic lung diseases.

HELENA qualifies a new generation of internationally competitive graduate students in the field of environmental health research. The interdisciplinary training and the emphasis of additional education in transferable skill, prepares our graduate students to fill lead positions in research, management and administration.

The Graduate School at a Glance

- Doctoral work in interdisciplinary research teams at one of the leading centers for health and environment research
- Intensive scientific training in one of eight thematic fields
- Translational projects with close links between basic and clinical research
- Access to state-of-the-art platforms and training in the latest technologies
- Networking on an international scale, with financial support for attending conferences and for research stays at other institutions
- Intensive guidance and mentoring by a personal Thesis Committee
- Career promotion and training in management, leadership and communication
- Conferral of a doctorate from either Ludwig-Maximians-Universität (LMU) or Technische Universität München (TUM) – both universities are among the winners of Germany’s Excellence Initiative competition

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- Prof. Dr. Hans-Werner Mewes Spokesperson
- Bioinformatics and Systems Biology
- Dr. Monika Beer General Coordination
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In the year 2010 Helmholtz Zentrum München had a total budget of approximately 173 million euros at its disposal, of which 120 million euros came from the Federal Government and the State of Bavaria. These funds provide the basic operational funding of the center according to a fixed ratio of 90:10 percent. More than 50 million euros are third-party funds from national and international sponsors, which the center was able to acquire additionally within the scope of project funding.

### Institutional Funding 2010

**119.8 m euros**

1. Personnel costs **58.2 m euros**
2. Material costs **31.3 m euros**
3. Grants and subsidies to third parties **11.0 m euros**
4. Investments, construction < 2.5 Mio Euro **7.8 m euros**
5. Investments, constructions > 2.5 Mio Euro **10.0 m euros**

Helmholtz Zentrum München participates in a number of important national and international cooperation projects and receives project funding for these amounting to more than 50 million euros.

- Participation in more than 40 joint projects, funded by the Federal Ministry of Education and Research, including highlights like Infrafrontier, NGFN-Plus, KORA-Age 2, Medical Systemic Biology, initial phase of DZD, excellence cluster »m4 – Personalized Medicine and Target-Oriented Therapies«
- Participation in more than 80 EU projects (2010: 7.1 Mio Euro) including 9 coordinations: 5 cooperation projects in health and radiation protection, 2 infrastructure projects, 2 Marie Curie Training Networks
- 5 Starting Grants of the European Research Council (ERC), 1 ERC Advanced Grant with the TUM
- Participation in the EU Joint Technology Initiative »Innovative Medicines« (IMI)
- German Research Foundation (DFG): projects in 7 Collaborative Research Centers (SFB), 7 Priority Programmes, and 5 Research Units
- Helmholtz Alliances: Coordination of »Mental Health in an Aging Society«, participation in »Systems Biology«, and »Immunotherapy of Cancer Diseases«
- Helmholtz Graduate School Environmental Health (HELENA) and Research School Lung Diseases
- Platform Chemical Biology funded by the Life Science Foundation
- 24 projects funded by international institutions, including 9 projects with U.S. partners

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Chronology

1960

- 1960: Founding of the experimental and training facility for radiation protection in Neuherberg
- From 1965: Research in the biomedical field
- From 1964: Independent Society for Radiation Research

1970

- 1975: Together with the Munich university hospitals, first successful bone marrow transplantation in Germany
- From 1977: Focus on radiation, environmental research and preventive health care
- 1978: Models to estimate the genetic risk of radiation

1980

- From 1984: Research on forest damage in cooperation with the Munich universities; Epidemiological research in the Augsburg region begins with the WHO study on cardiovascular risks
- 1986: Beginning of lung research in Neuherberg

1990

- 1990: As largest German center for environmental science, the name is changed to GSF – Research Center for Environment and Health
- 1995: End of research on permanent radioactive waste disposal
- From 1993: Clinical translational research
- From 1999: Expansion of activities in the field of genome research, functional genomics and mouse genetics; Genome Analysis Center

2000

- 2006: Strategic new orientation on Environmental Health
- 2004: Establishment of the first institute of stem cell research in Germany; expansion of research on neurodegenerative diseases
- 2008: New name: Helmholtz Zentrum München – German Research Center for Environmental Health; Establishment of the translational lung center, Comprehensive Pneumology Center (CPC)

2009

- 2009: Partner institute in the German Center for Neurodegenerative Diseases (DZNE); Founding of the German Center for Diabetes Research with four partners; Approx. 800 publications substantiate the international leadership in the field of Environmental Health; Approval of Removab by Trion, a spin-off of the Center

2010

- 2010: Partner in the excellence cluster m²; Graduate School Environmental Health (HELENA); Participation in 5 German Centers for Health Research
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- **CPC – Comprehensive Pneumology Center**  
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- **Official Personal Dosimeter Service**  
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- **Institute of Virology**  
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- **KORA Study Center and Heart Infarct Registry**  
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- **EVA-Study Center**  
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Programm Systemic Analysis of Multifactorial Diseases

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Helmholtz Zentrum München
at a Glance

| 3 | program-oriented funding (POF) research programs of the Helmholtz Association of German Research Centers |
| 975 | publications in international scientific journals |
| 131 | patent families |
| 14 | spin-offs and joint venture companies with 350 employees |
| 1879 | employees |
| 430 | graduate students, of whom 307 are employed at Helmholtz Zentrum München |
| 46 | trainee positions |
| 33 | independent scientific institutes and departments |
| 173 | million euros finance volume (2010) |
| 400 | scientific cooperation agreements |