



Universitätsklinikum
Hamburg-Eppendorf



Research in Focus

Welcome to the
University Medical Center
Hamburg-Eppendorf



A UKE researcher demonstrating the process of incubating liver tissue in a buffer solution

Some words of welcome

It is with great pleasure that I introduce the research and the core values of the University Medical Center Hamburg-Eppendorf (UKE). Well-founded research is the cornerstone of innovation, patient care, and teaching. The UKE, therefore, consistently strives to maintain its strong research community which has been cultivated since our inception 125 years ago.

Collaboration is the basis of our research culture. This is exemplified by our leadership and partner positions in Collaborative Research Centers (SFBs), which support outstanding nationally-funded interdisciplinary research. We are also proud of our many EU projects, the provision of externally funded graduate schools, our diverse research groups, and our newly designed integrated medical degree program (iMED).

Excellent patient care is central to our work at the UKE. We aim to help patients best by offering medical care of the highest quality and by addressing their physical, emotional, familial, and social needs. In an attempt to find solutions to modern medical challenges, the UKE implements a multi-faceted and interdisciplinary approach to patient care, teaching, and research.



Prof. Uwe Koch-Gromus, Dean

Our research team currently consists of over 1,800 members and our expertise is focused primarily in five key research areas: The Hamburg Center of Neuroscience, The Center for Inflammation, Infection and Immunity, The Center for Health Care Research, The Cardiovascular Research Center and The University Cancer Center Hamburg. The common aim of our research centers and institutes is to apply our innovative basic research in a translational approach in order to ultimately improve patient care.

I thank you for your interest and look forward to you joining our international research community.

A handwritten signature in blue ink, which appears to read "Dr. Uwe Koch-Gromus".

“Campus Forschung” at the UKE

Our “Campus Forschung” (campus research) building has been designed to facilitate interdisciplinary cooperation and to promote research synergy between the 17 medical departments, 9 institutes, and 7 core facilities that share this state-of-the-art center.







Research at the UKE

The UKE has a strong research tradition which underpins our teaching and clinical work. Our high level of research output is consistent. For example, in 2013 we had more than

- 68 million euros from third-party funding
- 1,800 publications and book chapters
- 300 doctoral students in medicine
- 130 professors
- 100 PhD students

We have over 80 departments, clinics, and institutes addressing a broad range of the issues facing modern medicine. Our team explores a wide range of research topics. However, our core competence is concentrated in five interdisciplinary centers.

- Hamburg Center of NeuroScience (HCNS), next page
- Center for Inflammation, Infection and Immunity (C3i), page 8
- Center for Health Care Research (CHCR), page 10
- Cardiovascular-Research-Center (CVRC), page 12
- University Cancer Center Hamburg (UCCH), page 14

We invite you to explore our website or to contact us for more information about our individual departments, clinics, or research institutes.

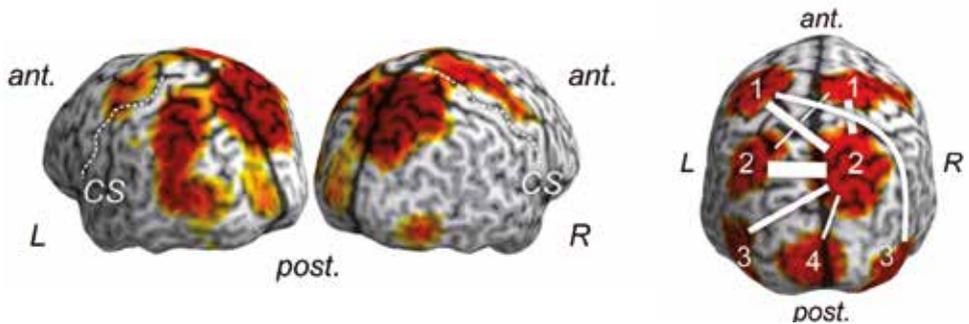
If you are not sure which center or department matches your research interests, please contact the Dean's office and we will try to find the appropriate point of contact for you.
Rainer Floigl,
floigl@uke.de

You can find more about our five research centers on our website





An experiment using magnetoencephalography: the magnetic field generated from brain activity is measured in a female participant integrating visual and acoustic information



Hamburg Center of NeuroScience

The Hamburg Center of NeuroScience (HCNS) has a diverse research profile ranging from the molecular level to clinical research. The center comprises more than 400 scientists and doctoral students in 18 institutes and clinical departments of the UKE and Universität Hamburg.

Our research is innovative yet based on our previous landmark results e. g. the advancement of neuroimaging and neurostimulation in health and diseases like stroke or multiple sclerosis, or the creation of new molecular diagnostic tests for dementia, Alzheimer's, and prion diseases. The HCNS applies the general philosophy that modern neuroscientific methods facilitate understanding of normal and pathological functions of the brain. By understanding disease mechanisms, the HCNS is able to develop novel and enhanced treatment.

We welcome enquiries regarding collaborative projects or exchanges.

To find out more information, please see our website



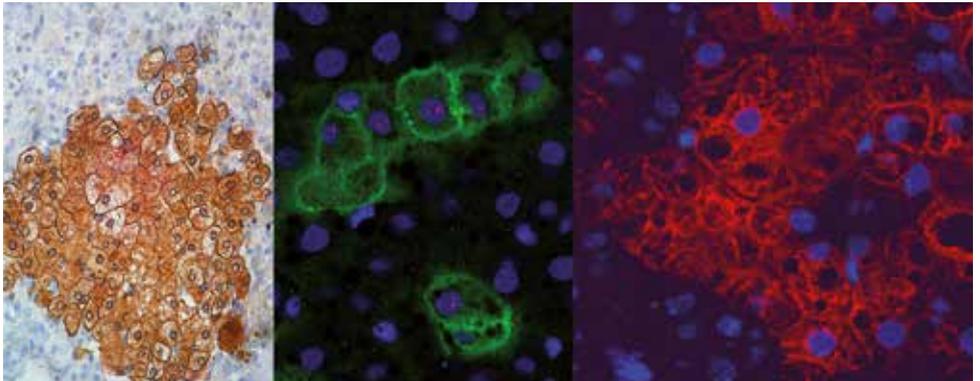
HCNS research includes:

- Neuronal plasticity, including learning and memory and regeneration
- Mechanisms of signal transmission and network communication in the brain
- The neuroscience of sensorimotor control, emotion and cognition
- Mechanisms of neurodegeneration
- Diagnostics and therapy of neurological and psychiatric disease

The HCNS emphasizes the importance of student training and employee career development. An example of joint research and student training is the German Research Foundation-funded (DFG) collaborative research center 936 (www.sfb936.net). Here, a multi-level approach combining state-of-the-art techniques is used to investigate the processing and dynamics in distributed networks. There are three aims: first, to characterize multi-site neuronal communication underlying cognitive functions; second, to study changes of multi-site interactions during development, plasticity, and learning; and third, to investigate alterations of multi-site communication in brain disorders. In addition, the HCNS receives significant support from the EU and the Federal Ministry of Education and Research (BMBF).



A professor and a colleague examining the behavior of infected cells



8 Images showing the integration of human liver cells into the liver of immune incompetent mice

Center for Inflammation, Infection and Immunity

The Center for Inflammation, Infection and Immunity (C3i) comprises a wide network of UKE and external institutes and departments with the common aim to research inflammatory and infectious diseases. Our common goal is to develop new options for diagnosis and treatment through advanced understanding of the etiology and the pathogenesis of inflammatory and infectious processes.

We balance research, teaching, and clinical work in a way which is conducive to the creation of a dynamic and stimulating working environment. In the research arena, our work ranges from basic laboratory studies to a translational approach for implementing our results into everyday practice to improve the prognosis of our patients.

C3i research includes:

- Autoimmune diseases of the liver, kidney, and central nervous system
- Clinical infectiology, tropical medicine, and molecular infection diagnostics
- Molecular infection biology of emerging and global bacteria and viruses
- Infection research from a biochemistry and structural biology approach
- Immunological programming of the fetus and interaction with the mother

We have German Research Foundation-funded (DFG) research consortia focused on liver inflammation (SFB841 “Liver inflammation: infection, immune regulation and consequences”) and kidney inflammation (KFO228: “Immuno-pathogenesis and Therapy of Glomerulonephritis”). The C3i also has a strong track record in clinical research and emerging viral infections. We emphasize the importance of supporting young researchers and providing opportunities for career development. Young graduate students of medicine and the basic sciences are trained in the Research Training Group “Inflammation & Regeneration”.

The C3i is housed in several locations in Hamburg, i.e. the UKE, the Leibniz Institute, the Heinrich-Pette-Institute (HPI), the Bernhardt-Nocht-Institute (BNI), and in the Deutsches Elektronen Synchrotron (DESY). In addition, we receive significant support from the DZIF (German Centre for Infection Research).

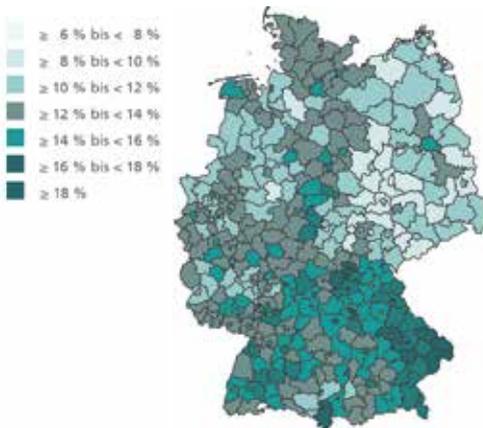
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Researcher and physician discussing different strategies to optimize the provision of health care from an interdisciplinary perspective



Regional variation of cases of depression in Germany, 2011.

Source: Healthcare Fact Check 2014, www.faktencheck-depression.de

Center for Health Care Research

The work of the Center for Health Care Research (CHCR) addresses highly relevant topics and uses innovative methodology to make the interdisciplinary health care research at the UKE and the Universität Hamburg internationally competitive. Our approach includes epidemiological, metaanalytic, and observational techniques as well as health economic research expertise and methods. Our center is part of an excellent regional, national, and international network including practices, clinics, acute and rehabilitation hospitals, as well as other research institutions with which we collaborate.

CHCR research includes:

- The prevention and care of chronic diseases (e.g. diabetes, cancer, cardiovascular diseases, multiple sclerosis)
- The prevention and care of neuropsychiatric and mental illnesses (e.g. somatoform disorders, eating disorders, dementia, depression, addiction)
- Health care research based on large-scale primary and secondary data from routine care

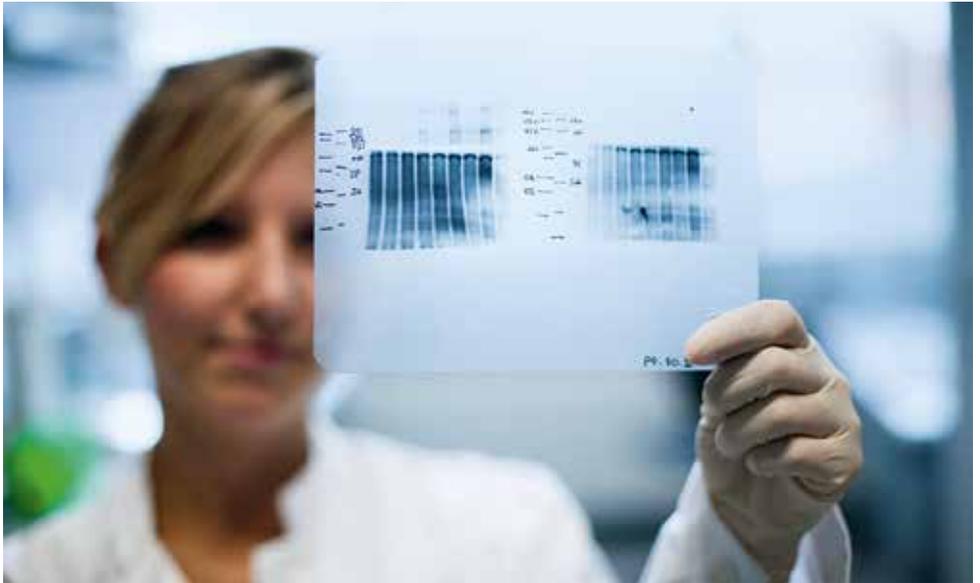
The main funders and sponsors of the research activities comprise important national research funding agencies such as the Federal Ministry of Education and Research (BMBF), the Federal Ministry of Health (BMG), and the German statutory pension insurance scheme (DRV Bund), important health insurance funds, and the German Research Foundation (DFG), as well as international institutions, in particular, the European Commission. Key network projects include “psychnet – the Hamburg Network for Mental Health” (www.psychnet.de), “MultiCare – Multimorbidity in Primary Care”, and “Chronic Diseases and Patient Orientation” (www.forschung-patientenorientierung.de), all funded by the BMBF.

In addition to coordinating strategically important research projects, the CHCR is actively involved in teaching (including a specific PhD-program). The center organizes joint events such as seminars, guest lectures, and international symposia. The CHCR supports young scientists in their research careers.

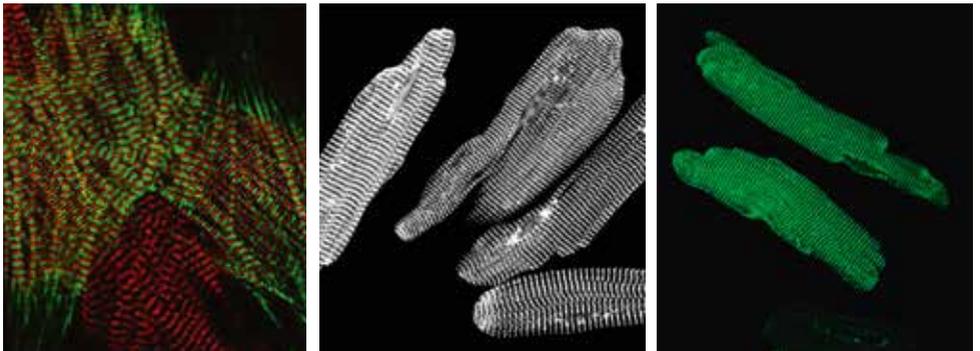
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Western Blot analysis for disease-related proteins



12 Neonatal and adult rat cardiomyocytes viewed by confocal microscopy

Cardiovascular Research Center

The Cardiovascular Research Center (CVRC) Hamburg comprises groups with a strong interest in cardiovascular mechanisms in health and disease as well as their clinical translation. Interdisciplinary cooperation, large-scale cohort studies, and innovative technologies form the basis of this translational research. The CVRC has recruited 17 individual groups including the University Heart Center (General and Interventional Cardiology, Electrophysiology and Heart Surgery), the Center of Experimental Medicine (Institutes of Pharmacology, Cellular and Integrative Physiology), the Clinic of Anaesthesiology and the Medical Clinic III (Nephrology). In addition, the CVRC closely links expertise derived from theory, scientific bases, and clinical perspectives, and has created topic-related work groups to facilitate collaboration.

We welcome enquiries regarding collaborative projects or exchanges.

For more information please see our website



CVRC research includes:

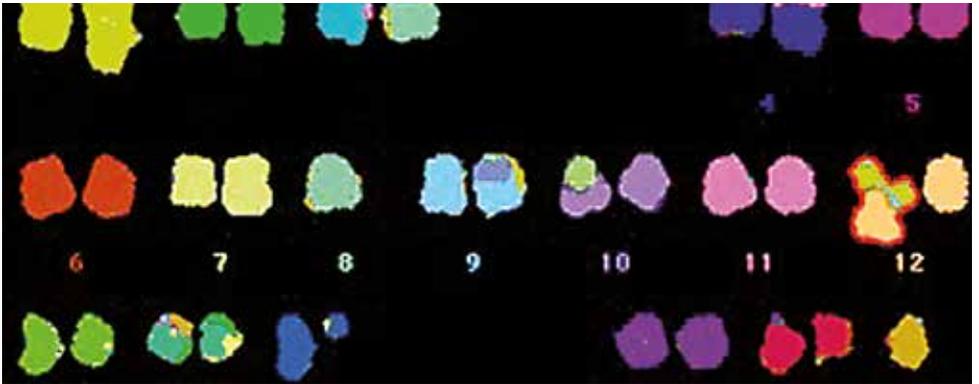
- The pathophysiology of cardiovascular and inflammatory diseases, (e.g. cardiomyopathy and coronary heart disease)
- Molecular biomarkers and epidemiology in large-scale cohorts
- Cardiovascular genomics and systems biology
- The use of induced pluripotent stem cells and engineered heart tissues
- The use of cardiovascular-related small and large animal models

From an overall perspective, the CVRC aims to enhance the understanding of the mechanisms of cardiac and cardiovascular diseases in order to create a basis for translational and personalized approaches.

The CVRC is also committed to the promotion of young researchers in cardiovascular medicine and offers a framework to jointly implement research ideas. A structured training program for both young researchers as well as medical and life sciences students has been established. This includes the possibility for research-free (experimental) time for physicians as well as monthly joint seminars and workshops. The CVRC Graduate School has been implemented for medical students, offering 12-months of laboratory work, method seminars, and journal clubs.



Extraction of DNA for production of gene therapeutic vectors – transporters that allow efficient transfer of therapeutic genes into diseased cells



Set of chromosomes of a prostate cancer cell. Chromosomes are visualized with a multi-color FISH technique to identify mutated genes in malignant tumor cells

University Cancer Center Hamburg

The University Cancer Center Hamburg (UCCH) - Hubertus Wald Tumor Center combines 34 research and medical departments and several additional external partners with complementary expertise to offer comprehensive cancer care for patients and to pursue innovative multidisciplinary research at basic, translational, and clinical levels. UCCH's strength in both research and patient care is acknowledged by "Deutsche Krebshilfe" (German Cancer Aid), the country's major independent funding organization in the field of cancer, which, in a stringent peer review process, has designated UCCH a "Center of Excellence in Oncology".

UCCH research includes:

- Large scale epidemiologic studies to identify risks and preventive factors of cancer
- Identification of biological markers to aid early detection of cancer
- Investigations of sociological, psychological, and mental health factors in cancer care
- Exploration of the biological underpinnings of cancer and metastasis
- Preclinical research to develop novel cancer treatment options
- Clinical trials to test the effectiveness and safety of new therapies

UCCH scientists have ready access to state-of-the-art clinical and basic research technological resources and equipment, and benefit from expert technical support and shared interdisciplinary knowledge. A comprehensive clinical cancer registry contributes to the optimization of patient treatment and fuels epidemiological and translational research.

The vibrant UCCH research and medical community conducts information and education events, including lectures for patients, relatives, patient advocacy and self-help groups, as well as doctors and nurses. The sustainability of our research is guaranteed by the UCCH medical departments and laboratories providing a wide array of training opportunities for medical and PhD students, postdoctoral fellows and technical specialists.

We welcome enquiries regarding collaborative projects or exchanges.

For more information please see our website





Welcome to the UKE

The University Medical Center Hamburg-Eppendorf has the ideal combination of research, teaching, and clinical work. Since its establishment in 1889, the UKE has always been one of the most modern hospitals in Europe. We have developed expertise in the co-ordination of our over 80 clinics and institutes and over 1,600 beds to enable collaborative, patient-centered care.



Additional Support for Researchers

The UKE has comprehensive infrastructure of the highest standard to assist in conducting all aspects of research.

More information about our instruments and services for researchers can be found on our website



Impressive Core Facilities

Central research facilities at the UKE, the “core facilities”, offer all members of the Medical Faculty (and external users by special request) access to instruments, technologies, and services. The mission is to provide comprehensive technical support, training, and consultation. Such services mean that scientists at the UKE benefit from the latest scientific know-how which would otherwise demand long periods of training and/or large investments.

Available technologies include stem cell and virus vector production, bioinformatics support, and the use of state-of-the-art microscopes and FACS machines. Core facilities regularly offer workshops covering key technologies.

More information about MediGate and the EU Office can be found on our website



MediGate

MediGate offers UKE researchers and their collaborators professional assistance in technology transfer, funding advice, drafting of research contracts, and the design and conduction of clinical studies. Our goal is to ensure the sustainability and strength of science and research at the UKE. This includes increasing our third-party funding (both national and international) and best utilizing UKE-generated intellectual property.

EU Office

The EU Office is part of MediGate and is, in particular, dedicated to supporting UKE researchers in their preparation and implementation of successful international projects within the EU framework. As well as providing intensive support in administrative processes and project coordination, the office shares relevant information regarding application possibilities and assists in the optimization of applications.



A bone sample is embedded in a block of plexiglas and cut into slices thousandths of a millimeter thick by a microtome which is part of our core facilities

PhD Programs

The Medical Faculty offers two interdisciplinary PhD programs that prepare students for future scientific challenges. There is a two-year MD/PhD program for medical and dentistry students who seek to gain a more in-depth scientific education. Talented young students acquire comprehensive scientific competencies as well as important key skills that they need to pursue a career in patient-oriented and basic research.

The three-year PhD program for non-medical students comprises a strong research-oriented and interdisciplinary education within clearly defined support structures. Young scientists are offered a motivating research environment which allows them to build professional scientific expertise and accrue subject-specific knowledge. We support both medical and non-medical PhD candidates in their applications for scholarships granted by external funding bodies e.g. from the German Academic Exchange Service (DAAD).

More information about the medical or dental two year MD/PhD program can be found on our website



More information about the PhD program for non-medical students can be found on our website





View of the entrance hall of the modern “Neues Klinikum” (New Clinic) which contains 16 operating rooms and nine intensive care units.

Who and what make up the UKE?

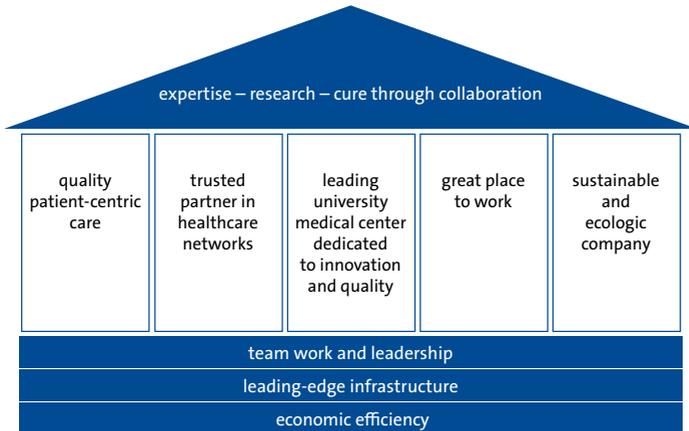
The UKE is constantly improving its already innovative information technology and infrastructure to enhance the workflow. In addition to being innovative, we aim to be both environmentally and economically sustainable to face modern healthcare challenges now and in the future. We aim to provide excellent interdisciplinary teaching and patient care which is securely based on our high-quality research. Every year we treat:

270,000 out-patients It is known by local, national, and international physicians that the UKE provides high-quality out-patient care

88,000 in-patients Our interdisciplinary medical and surgical in-patient care is highly appreciated by patients and their families and friends

115,000 emergency patients We offer reliable and collaborative care to patients in emergency situations and in acute distress

UKE mission statement



Please see our website for more information:
www.uke.de





Good reasons to work at the UKE

With approximately 10,000 employees, the UKE is the fourth largest employer in Hamburg and it is committed to providing equal opportunities regardless of age, gender, national origin, or disability. This strength in numbers brings a real sense of belonging within the UKE community as well as many additional benefits for employees and the environment.

Career Development

In addition to career development opportunities offered by individual departments or clinics, the UKE has many courses and programs for employees to improve their skills. These include the development of skills in leadership, various computer programs, and research-specific skills.

UKE INside

The importance of, for example, a good work-life balance has been emphasized by our highest level of management. This is evident in all aspects of work at the UKE, including the continually growing range of sports courses, discounts on a wide range of products and services, family services or retirement plans offered by UKE INside. In addition, the UKE has a dedicated child daycare center and hosts the annual UKE summer party.

Green UKE

Ecological, social and economic sustainability is central to the ethos of the UKE. This is evident in our initiatives to reduce waste, our sophisticated management of recyclable material, and our efficient combined heat and power system.

The UKE is working towards being a paperless hospital and has introduced a secure and fully electronic patient record information system. Not only does this save tons of paper per year, it enables the efficient exchange of vital information. We also encourage healthy and environmentally friendly commuting to work by providing a dedicated bicycle repair shop “Dr. Bike” and subsidized public transport tickets.

More information about UKE INside can be found on our website



More information about Green UKE can be found on our website





The distinctive “Hafen City” which is a new district of ecological and modern development of Hamburg close to the city center and the vibrant harbour.

The City of Hamburg

The charming architecture, parklands, vibrant music scene, and waterfront setting make Hamburg an exciting and beautiful place to live and work.

Hamburg is Germany's second largest city and is often described as one of the most dynamic cities in Europe. Hamburg's long history as an important port city has created a remarkable international atmosphere that is definitely still present today. Some 250,000 residents from 185 nations have chosen to come to Hamburg to live and work. Given the beauty and the quality of life that Hamburg offers, it is easy to understand why.

Hamburg is a cosmopolitan city with an exceptional choice of museums, galleries, and exhibition centers. The distinctive redbrick buildings are beautifully contrasted against refined white residential apartments, all within striking distance of downtown.

Transport and Green Spaces

The city is modern, easily accessible, and well-connected to Europe and the rest of the world. Within the city, 99% of the population live within 300 meters of a public transport stop. For those who wish to travel by bicycle, the city has established a bicycle rental system "StadtRAD" which has more than 1,200 bicycles at 82 rental stations.

Hamburg is not only a port city, it is also a green one. A notable feature of Hamburg is the 1,460 public parks which extend over an area of 3,000 hectares. These green areas make for a relaxing environment where it is easy to forget that you are in the center of such an exciting city.

The Hamburg Welcome Center provides initial information about living and working in Hamburg and can assist in immigration and registration processes.

You can find more information about the Hamburg Welcome Center at





Hamburg: A city by the water

Life in Hamburg is centered around the water, and the city welcomes ships of many kinds, hosts music festivals and other celebrations on the shores of the river Elbe. The distinctive skyline of





the harbor and the surrounding area create a stunning backdrop for relaxing at the weekend, shopping in the beautiful arcades and centers, or spending time paddling on the many canals that traverse this remarkable city.



We look forward to you joining us!

You can find more information on our website: www.uke.de/international



The UKE community always welcomes new highly-motivated and qualified members. We hope we have been able to provide a brief insight into our strength in research and life at our modern university hospital. We look forward to working with you.

Researchers

If you would like assistance in deciding which research group to contact or would like help in finding a suitable partner for collaboration, please contact Rainer Floigl floigl@uke.de.

If you are not a researcher but are interested in finding out more information, please use the following points of contact for:

For more information please contact the Human Resources – Legal & Organizational Department international.guest@uke.de

International Guest Staff

The UKE offers a range of options for physicians from all over the world including advanced training and residency opportunities. On a yearly average, we welcome 50 guest physicians and 120 other guest staff per year into our international community.

For more information please contact the Dean's Office for Student Affairs auslandsberatung@uke.uni-hamburg.de

International Students

Medical students are very welcome to complete one or two semesters of their undergraduate studies (e.g. via ERASMUS+) or parts of their final practical year at the UKE. Our staff can assist in all steps of the application process.

International Patients

For more information please contact the International Office patients@uke.de

The International Office has been established to support international patients in all aspects of patient care including treatment enquires, organizing appointments, obtaining visas, arranging interpreters, and preparing medical reports in various languages.



Some of our approximately 10,000 employees in front in front of the New Clinic

The UKE Consult and Management (UCM)

The UCM offers a service catalogue ranging from consulting to project development and management in Germany and abroad. Customers can benefit from our extensive experience from the operation of the UKE and developing future-oriented concepts to guarantee expertise regarding the planning and operation of hospitals and other healthcare facilities.

For more information please contact the UCM ucm@uke.de

Universität Hamburg

The Universität Hamburg (UHH) is the largest research institution in northern Germany and offers a wide range of courses to enhance research and other essential skills. The key research areas include climate, earth and environment, matter and the universe, multilingualism, governance, heterogeneity and education, and structural biology. The international office of UHH also provides support and opportunities for members of the UKE.

Please contact the UHH International Office for more information international.office@verw.uni-hamburg.de

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