

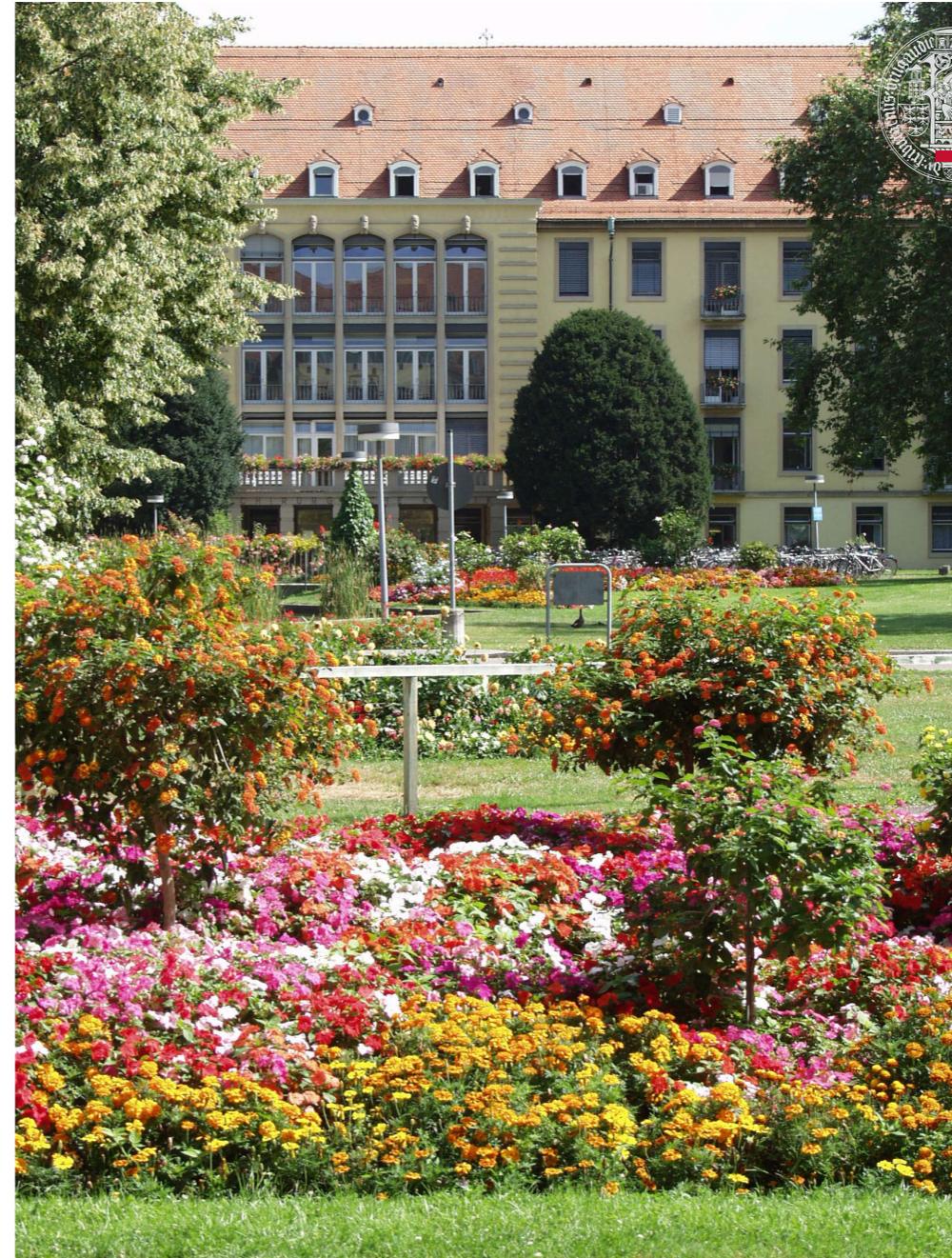


**UNIVERSITÄTS  
KLINIKUM** **FREIBURG**



# Medical Center – University of Freiburg

International Medical Services and  
International Business Development



# Table of Contents

<b>Medical Center – University of Freiburg, Germany</b>	<b>5</b>
<b>IMS – International Medical Services &amp; International Business Development</b>	<b>6</b>
Patient services	7
Telemedicine	8
Consulting	10
<b>Clinics and Departments</b>	<b>11</b>
Anesthesiology and Critical Care	12
Cardiology	13
Cardiology and Angiology Freiburg	14
Cardiology and Angiology Bad Krozingen	15
Cardiovascular Surgery	16
Congenital Heart Defects and Pediatric Cardiology	17
Chronic Immunodeficiency (CCI)	18
Complementary Medicine	20
Dental Medicine	21
Operative Dentistry and Periodontology	21
Oral and Maxillofacial Surgery Regional Plastic Surgery	22
Prosthetic Dentistry	23
Orthodontics	24
Dermatology	26
Gastroenterology, Hepatology, Endocrinology and Infectious Diseases	28
Diabetology and Endocrinology	30
General and Visceral Surgery	32
Gynecology and Obstetrics	34
Human genetics	36
Lipid Metabolism Center	38
Mental Health	39
Psychiatry and Psychotherapy	40
Psychosomatic Medicine and Psychotherapy	41

Nephrology and Primary Care	42
Neurocenter	43
Neurology and Neuroscience	44
Neurosurgery	46
Epilepsy Center	48
Neuroradiology	50
Stereotactic and Functional Neurosurgery	52
Interdisciplinary Pain Center	54
Nuclear Medicine	56
Oncology, Hematology and Stem-Cell Transplantation	58
Ophthalmology / Eye Center	60
Orthopedics and Trauma Surgery	62
Oto-Rhino-Laryngology (ENT)	64
Pathology	66
Pneumology	67
Pediatrics	68
General Pediatrics, Adolescent Medicine and Neonatology	70
Neuropediatrics and Muscle Disorders	71
Pediatric Hematology and Oncology	71
Plastic and Hand Surgery	72
Radiation Oncology	74
Radiology	76
Rheumatology and Clinical Immunology	78
Thoracic Surgery	80
Urology	82
<b>Contact Information</b>	<b>84</b>

## Medical Center – University of Freiburg

Germany



*Welcome to the Medical Center – University of Freiburg, one of the leading medical institutions in Germany and in Europe.*

### The Medical Center – University of Freiburg

- 97% of our patients recommend us to their family and friends
- Wide Experience in caring for foreign patients
- ≈ 95,000 inpatients and 868,000 outpatients per year
- ≈ 1,700 medical specialists and 14,000 employees

The **Medical Center – University of Freiburg** has a long and rich history. Some of the most famous doctors in the world have worked here, four of whom won Nobel Prizes for achievements in medical science. The medical center's faculty can be traced back to 1457, thus making us one of the oldest and most distinguished in Germany, with an over 560-year tradition.

The Medical Center – University of Freiburg offers ready access to world-class medical treatment. We focus on novel diagnostic procedures and therapies, and apply the latest discoveries in clinical and biomedical research. Our interdisciplinary specialist teams are committed to delivering top-quality, personalized care in a pleasant, patient-friendly atmosphere.

The international staff of our medical center is delighted to welcome you to Freiburg and is ready to provide you the finest medical care!!

*We welcome you to our international family!*

# IMS – International Medical Services & International Business Development



*Leaving home and visiting a foreign country can sometimes be confusing. Seeking medical help can make the experience even more stressful. To provide help in this situation, the Medical Center – University of Freiburg created the Department of International Medical Services and International Business Development (IMS) for international patients, physicians, foreign embassy employees and their families. Our service program ensures that you receive the highest quality medical care along with customer service that meets your medical and personal needs.*

## **Doris Haltmair**

Head of the International Medical Services and International Business Development (IMS)

IMS offers personalized service and top-level care for your convenience and comfort. We handle cost estimates, medical appointments, interpreters, transfer services and travel arrangements. But most importantly, we aim to make your health care stay in Freiburg as pleasant and easy as possible.

## Patient Services

- Answering patient enquiries
- Locating the right physician to meet the patient's specific needs
- Arranging second opinions based on the patient's medical record
- Processing medical cost estimates and billing
- Scheduling appointments, including consultations and follow-up care as well as check-up programs
- Organizing private nursing staff upon request
- Ensuring availability of female clinic staff upon request
- Facilitating communication with physicians, family and friends at home
- Assisting with the selection of rehabilitation clinics
- Helping to arrange translation and interpreter services in many languages
- Providing visa support via letter of invitation
- Arranging transportation, airport transfers and accommodation
- Accommodating religious and cultural needs
- ...Anything else that helps make your stay more comfortable.

Over the years we have achieved significant recognition, popularity and trust from our international patients. Should you have questions regarding your treatment, medical examinations or potential business cooperation with IMS, please contact us directly (see "Contact Information" section or visit our website: [www.ims.uniklinik-freiburg.de](http://www.ims.uniklinik-freiburg.de)).



## Checklist

- For your convenience, please make sure you have the following items ready before your departure:
- Passport (please be sure to get a Schengen visa)
- Copies of medical records, diagnostic images or CDs (CT scans, X-rays), pathology slides or other records
- Name, address, telephone number, fax number and e-mail of your referring physician
- Payment options: cash, credit card (VISA, MasterCard)
- Airline tickets (it's best to have an open date for your return trip in case extended treatment is required)
- List of your current medications





# Second Opinion

**Teleradiology**  
**Online consultations**  
**Written second opinion**



Would you like to receive a second opinion from a highly qualified senior medical specialist?  
It is vital to enquire about all possible treatment options before making a decision. The Medical Center - University of Freiburg offers an excellent opportunity to receive additional consultation while avoiding additional travel costs.  
You can ask our radiologists to confirm your diagnosis and discuss your treatment options with our senior specialists.

## Teleradiology Evaluation of radiological images (PET/CT, CT, MRI)

Our highly qualified team of radiologists and nuclear medicine specialists evaluates radiological images such as MRI, CT, PET-CT or mammography and provides a second opinion. The Departments of Radiology and Nuclear Medicine have worldwide research units and top expertise in evaluating highly complex cases.



## Online consultations Video consultation with our senior medical specialists

The Medical Center – University of Freiburg provides online consultation services with our senior medical specialists via a special teleconference system. Online consultations are ideal for follow-up care as well as for pre-treatment consultations as they can eliminate the extra costs and hassle of travelling.

### This service includes:

- Thorough examination of the patient's medical documents and the request form
- Live online consultation with a senior medical specialist
- Interpreter services during the teleconsultation
- A short written summary of the consultation in German

## Written second opinion Written report from a senior medical specialist

You can get a comprehensive written second opinion from one of our top specialists without having to leave your home country.

Your written second opinion will be ready in 4 to 8 weeks, depending on the diagnosis. Please note that evaluation of radiological images is not included in this service.

Please send us your medical reports in English or German in pdf or word format. Your written report will be sent to you in German. Translation of the report into English can be ordered additionally.

## Consulting



As one of Europe's leading medical institutions, the Medical Center – University of Freiburg offers not only world-class medical services and top-quality patient care but also extensive experience in providing a full range of consulting services for foreign medical institutions.



The Medical Center – University of Freiburg provides the following services:

- Telemedicine: teleteaching, teleradiology, online consultations
- Training of medical personnel (physicians, technical assistants, nurses)
- Conception, planning, and modernization of hospitals, rehabilitation units, ICUs and specific clinical departments
- Evaluation of a specific department by a senior consultant from the Medical Center – University of Freiburg
- Workshops and seminars for medical and administrative personnel, including teleteaching

We would be happy to discuss your needs and wishes in order to design an offer specifically tailored to your medical institution.

# Clinics and Departments



# Anesthesiology and Critical Care

Prof. Dr. med.  
**Hartmut Bürkle**  
Medical Director



- 32,000 anesthesia procedures per year
- 3,500 patients with chronic pain syndrome per year
- 1,200 patients in the intensive care unit per year
- 120 anesthetists

Anesthesiology is an integral part of health care delivery.

Our department's experienced team of highly qualified anesthetists will see to your well-being during your surgery and stay in the intensive care unit. Our team consists of physicians, nurses and support staff who have received the best training and have specialized knowledge, skills and experience. Their goal is to make your treatment as comfortable and easy as possible for you.

The Department of Anesthesiology and Critical Care is responsible for the well-being of more than 32,000 patients per year. We are also actively involved in scientific developments in the field of medical technology, and offer a distance learning Master's program called Physical-Technical Medicine (Physikalisch-Technische Medizin).

We provide medical services for every type of surgery or diagnostic intervention.

## Anesthesia

- General anesthesia (medically induced coma, full body anesthesia)
- Local anesthesia (specific parts of the body)
- Regional anesthesia (larger regions of the body, including epidurals, spinal anesthesia, and peripheral nerve blocks)

## Intensive Care Medicine

- Full range of intensive care services
- Extracorporeal Lung Assist System (ECLA)
- Every kind of organ-replacement treatment
- Air rescue and transport for intensive care patients

## Pain Therapy

- Chronic pain syndrome treatment
- Neuropathic pain
- Cancer pain syndrome treatment

## Research

- Molecular marker in myeloproliferative disorders
- Mechanics of breathing with controlled ventilation
- Tracheal pressure monitoring
- Molecular pharmacology of anesthetics
- Heme Oxygenase-1
- Neuroprotection

The Department of Anesthesiology and Critical Care of the Medical Center – University of Freiburg is actively involved in the Helsinki Declaration on Patient Safety in Anesthesiology.

# University Heart Center Freiburg · Bad Krozingen

- Germany's largest cardiovascular center
- Performs the most catheter procedures in Germany (coronary and valve interventions)
- 22,000 inpatients per year
- 1,700 employees
- More than 20 heart transplantations per year
- 424 beds

Welcome to the Heart Center of the Medical Center – University of Freiburg. We offer a full range of the most modern invasive and non-invasive treatments. Our center is the largest of its kind in Germany and one of the largest in Europe.

In 1999, Germany's first "drug-eluting stents" were implanted here. In 2012, the Heart Center was the first in Europe to implant a cardiac monitor and alert system. All of our departments are equipped with state-of-the-art diagnostic, surgical and treatment facilities.

Our center consists of five departments:

- Department of Cardiovascular Surgery
- Departments of Cardiology and Angiology I and II
- Department of Congenital Heart Defects and Pediatric
- Cardiology
- Institute for Experimental Cardiovascular Medicine

Our dedicated team of highly qualified doctors, nurses, dietary nurses and paramedical personnel use every means available to find and apply the best possible treatment for each patient.

We not only want our patients to be happy with their medical care and return home in good health, we also want them to feel as comfortable as possible during their stay in our hospital.

In addition to treating patients, our center conducts clinical trials as well as basic scientific research and trains future medical specialists.

## Freiburg Location Statistics

- 6 inpatient wards
- 3 Intensive Care Units (ICU)
- 6,000 catheter procedures per year
- 4 heart catheter laboratories, running 24 hours
- 3 operating rooms
- Over 2,000 surgeries per year
- Site of clinical and scientific research

## Bad Krozingen Location Statistics

- 10 inpatient wards
- 2 Intensive Care Units (ICU)
- 17,000 catheter procedures per year
- 9 heart catheter laboratories, running 24 hours
- 3 operating rooms
- Over 2,600 surgeries per year

## Research

Since 1999 we have supported research into special drug-eluting stents that release medicine into the arteries. Clinical research on completely dissolvable stents was launched in 2012. Other current research areas are clinical arteriogenesis, heart transplantation management, real-time three-dimensional echocardiography and cardio-MRI, as well as new developments in cardiac pacemaker implantations and the use of stem cells. Additionally, we carry out research on treating cardiac insufficiency as well as many other projects in diverse disciplines of cardiology and angiology.

In our recently-founded Institute for Experimental Cardiovascular Medicine, we take research one step further and focus on treatments that could shape clinical routine in the future. Research fields here include Bioinstrumentation (highly-specialized lab equipment), cardiac imaging over time, cardiac computational modeling, cardiac cell biophysics and cardiac optogenetics.

# Cardiology and Angiology I



Prof. Dr. med. Dr. h. c.  
**Christoph Bode**  
Medical Director  
Chairman of Medicine

## Diagnostic and Treatment Services

### Full Cardio Check-up

### Cardiac Catheterization

#### Methods

- Drug-eluting balloon dilatation
- Stent implantation
- Bifurcation stenting, recanalization & reconstruction of vessels
- Myocardial biopsy
- Renal nerve ablation (Hypertension treatment)

### Invasive Imaging and Physiology Techniques

- Optical coherence tomography (OCT)
- Intravascular ultrasound (IVUS)
- Intracoronary blood pressure measurement (FFR)

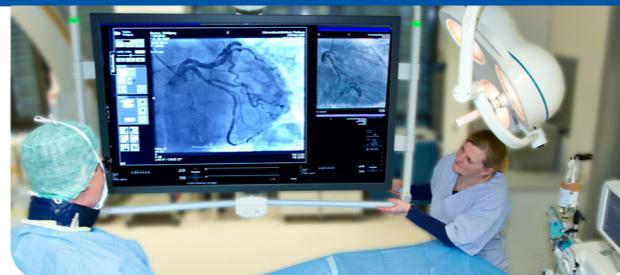
### Intervention for Structural and Congenital Cardiocirculatory Disease

#### Methods

- Transcatheter aortic valve implantation (TAVI)
- MitraClip procedure
- Valvuloplasty/dilatation of stenotic valves
- Tricuspid valve repair

#### Diseases

- Aortic valve disease (stenosis/ insufficiency)
- Mitral valve disease (stenosis/ insufficiency)
- Tricuspid valve disease
- Pulmonary valve disease
- Patent foramen ovale (PFO), atrial septal defect (ASD)



- Treatment of resistant hypertension
- Left atrial appendage (LAA) occlusion

### Electrophysiology

- Electrophysiological examination (EPE)
- Sclerotherapy (ablation)
- Device-based therapy
  - Pacemaker systems
  - Implantable defibrillators (ICD or "Defi")
  - Cardiac resynchronization therapy (CRT)
  - Cardiac contractility modulation (CCM)
  - Wearable defibrillator

### Echocardiography

- Transthoracic echocardiography (TTE)
- Transesophageal echocardiography (TEE)
- Stress echocardiography
- 3D echocardiography
- Tissue Doppler imaging

### Intensive Care Medicine

- Extra CoLife Support (ECLS)

### Heart failure Unit Interdisciplinary approach

#### Research

Approaches through clinical studies and translational basic science

# Cardiology and Angiology II



Prof. Dr. med.  
**Franz-Josef Neumann**  
Medical Director

Patients and their needs are the focus of our efforts. We offer you the best possible medical care. As part of this, it is important to us that our patients are treated in an open, friendly environment. Due to this aspiration and our achievements, we have risen to become the "TOP National Hospital 2018" in a survey conducted by the news magazine Focus. According to this, 96 percent of our patients are satisfied with their treatment in our clinic, the top spot when compared to other cardiological institutions in Germany.

## Diagnostic and Treatment Services

- Interventional cardiology
  - Coronary angiography
  - Cardiac catheterization (percutaneous coronary interventions)
  - Catheter-assisted treatment of structural heart diseases (TAVI, MitraClip, PFO, ASD, and left atrial appendage occlusion)
- Rhythmology
- Clinical cardiology
- Angiology

Our Cardiology department offers every non-surgical diagnostic and treatment option and, if necessary, also prepares patients for heart surgery. Cardiology inpatients are looked after in six wards with various treatment focuses. We treat patients with heart valve diseases, cardiac insufficiency and all types of cardiac arrhythmias.

Interventional cardiology, as our largest specialized ward, performs all catheter diagnostic and treatment procedures that may be required in patients with coronary heart and valve diseases. In 2016, over 7,000 coronary angiograms, 3,300 coronary interventions (PCI) and 324 transfemoral aortic valve implantations were performed.

Our Angiology ward specializes in vascular problems outside the heart. In addition to the treatment of lymphatic and venous disorders, the ward has extensive experience in the treatment of various forms of arterial circulatory disorders.

## Research

We are currently participating in a number of national and international scientific projects. These include work on the subject of valve thrombosis after TAVI, platelet function in the context of coronary stent implantation, and the role of myocardial fibrosis in the development of atrial fibrillation.





Prof. Dr. med. Dr. h.c.  
**Friedhelm Beyersdorf**  
Medical Director

## Cardiovascular Surgery



Our team performs more than 4,500 procedures per year across the entire spectrum of cardiovascular surgery. The main procedures carried out in our department are coronary artery bypass grafting, heart valve replacements and cardiopulmonary bypass repairs. A special division of our department focuses on the correction of congenital heart diseases in children and adults, in close cooperation with the Department of Pediatric Cardiology. Key procedures in the field of vascular surgery are aortic aneurysm repairs, peripheral bypass grafting and carotid artery revascularization.

### Surgical Spectrum

- Coronary artery bypass grafting with and without cardiopulmonary bypass
- Valve repair and replacement
- Transcatheter aortic valve replacement
- Vascular surgery
- Endovascular and conventional aortic surgery (hybridtechnology)
- Correction of congenital heart disease (ASD, VSD, TGA, Tetralogy of Fallot, DORV)
- Rhythm surgery
- Heart transplantation
- Implantation of assist devices
- Peripheral vascular surgery
- Intensive care medicine

We have great expertise in the treatment of patients with end-stage heart failure. In the Department of Cardiovascular Surgery we treat these patients via heart transplantation and provide temporary or permanent heart support using assist devices. Over the last decade, we have performed transplantations in more than 200 patients and have implanted more than 400 assist devices. We employ temporary assist devices as a bridge to transplantation or to recovery. We also provide non-transplantable patients with a permanent assist device as destination therapy.

### Research

The main focus of research at the Department of Cardiovascular Surgery concerns short- and long-term mechanical cardiovascular support. The interdisciplinary project unites several groups from clinical, basic and engineering sciences. Other research areas are aortic surgery, valve surgery and cardiovascular imaging. Furthermore, we are developing technologies for cardiopulmonary bypass and an implantable sensor for blood pressure and oxygen saturation in close cooperation with partners from industry and from the Faculty of Engineering at the University of Freiburg, respectively. Our department participates in numerous national and international clinical trials.



## Congenital Heart Defects and Pediatric Cardiology

Prof. Dr. med.  
**Brigitte Stiller**  
Medical Director

Our team of attentive and helpful doctors and nurses ensures that your child is provided with individualized medical care. We treat a wide range of clinical conditions including complex syndromes and adult congenital heart diseases. Accordingly, we have well-established in-house collaboration with various disciplines in the Center for Pediatrics of the Medical Center – University of Freiburg, as well as with the other disciplines in the Heart Center.

We provide comprehensive evaluation and treatment of a full range of congenital and acquired heart diseases in our young patients. Besides standard diagnostics such as ECG and 2D echocardiography, we also use the latest diagnosis technologies such as transthoracic and transoesophageal 3D echocardiography, magnetic resonance imaging and cardiac catheterization. In addition, we offer prenatal cardiac diagnostics.

The broad spectrum of state-of-the-art medical services we render, including both invasive and non-invasive procedures, allows us to serve as a pediatric cardiology reference center in Germany. We are dedicated to continuously improving current treatment options and optimizing outcomes for all of our patients. Therefore, we use the latest innovative therapeutic approaches such as hybrid procedures and cardiac catheterization techniques: Interventional ASD and VSD closure, transfemoral pulmonary valve implantation techniques, stenting of stenotic vessels or shunts, and balloon dilatation of valves. Furthermore, we offer full cardiac check-ups for pediatric patients of other disciplines.

### Diagnostic and Treatment Services

- Echocardiography (transthoracic, fetal, and transoesophageal)
- Strain rate method for detailed examination of myocardial functions
- Congenital heart disease management
- Pulmonary hypertension
- Interventional catheterization
- Heart rhythm assessment and pacemaker implantation
- Marfan syndrome consultations
- Heart transplantation preparation
- Endomyocardial biopsy
- Pediatric cardiac intensive care
- Adult congenital heart disease patients
- Prenatal cardiac diagnostics

### Research

Research plays an essential role in constantly improving the diagnostic methods and treatment of our pediatric patients. Therefore we focus on a broad range of research topics, for example mechanical circulatory support for terminal heart failure. We are also looking into the long-term outcome of extracorporeal membrane oxygenation therapy. We are interested in exploring and extending the possibilities of novel imaging techniques such as magnetic resonance imaging. We aim to develop novel, less-invasive treatment approaches for patients with acquired and congenital heart disease.



Prof. Dr. med.  
**Stephan Ehl**  
Medical Director



## Center for Chronic Immunodeficiency (CCI)

- Interdisciplinary patient care for immunodeficient patients of all age groups
- German reference center for immunodeficiency diagnostics
- Wide expertise with international patients
- Bone marrow transplantation program

The Center for Chronic Immunodeficiency is the only immunodeficiency center in Germany, where immunologists, infectious disease specialists, hematologists and transplant physicians work in an independent center that integrates research and care for immunodeficient patients of all age groups. This innovative program allows medical specialists and researchers with a focus on immunodeficiency to work closely together and to coordinate efforts in transferring the results of basic research into patient treatment.

CCI provides clinical and laboratory services to the following pediatric and adult patients:

- Patients with inborn immune system defects
- Patients with recurrent unexplained infections
- Patients with certain “indicator” infections or signs of immune dysregulation (benign lymphoproliferation, eczema, colitis, autoimmunity, granuloma)
- Patients with suspected immunodeficiency
- Patients with recurrent fever or fever syndromes

We run outpatient clinics for adult and pediatric patients, and have an interdisciplinary CCI conference for discussing complex cases which is accessible to external physicians via videoconferencing. A key feature of the CCI is its diagnostic facilities. These include state-of-the-art immunology, pathology, and genetics laboratories, all of which are specialized in the diagnosis of immunodeficiencies.

### Diagnostic and Treatment Services

- Diagnosis evaluation of patients with suspected or proven immunodeficiency
- Reference center for diagnostic services in immunology, genetics and pathology
- Therapy of immunodeficiency - including bone marrow transplantation
- Instructing patients in subcutaneous immunoglobulin administration
- Consultations, second opinions
- Special family clinic for patients of different ages
- Immunodeficiency patient brochures in German, Turkish and Arabic

For further information please visit our homepage:

[www.uniklinik-freiburg.de/cci/live](http://www.uniklinik-freiburg.de/cci/live)

### Research

“Understand, recognize, treat”: the goal of the CCI research program is to improve our understanding of the mechanisms of the human immune system, and based on this to improve the diagnosis and treatment of immunodeficiency diseases. CCI is one of the leading immunodeficiency research centers in Europe. Integration of the diagnostic laboratories into our large research unit facilitates the swift application of scientific expertise to patient care.

# Complementary Medicine

The Center for Complementary Medicine at the Medical Center – University of Freiburg is one of the largest University-based institutions in this field in Europe, with patients from all over the world. We have an outpatient department and two research units (clinical and laboratory). Patients with chronic diseases receive expert complementary medicine recommendations and treatments. About 6,000 patient consultations are performed per year, mainly for people with cancer, autoimmune disorders, chronic diseases of the digestive tract, stress-related and allergic diseases. Subsequent treatments are adjusted to individual patient needs. Our doctors are experts in both conventional treatment (specialists in general medicine, internal medicine, gastroenterology, endocrinology, pain treatment) and complementary therapy.

- One of the largest University based institutions for complementary medicine in Europe
- 6,000 patient consultations per year



Prof. Dr. med.  
**Roman Huber**  
Medical Director

## Diagnostic and Treatment Services

- Phytotherapy
- Acupuncture and Chinese medicine
- Homeopathy
- Neural therapy injections
- Diet
- Anthroposophic medicine
- Advice on supplements and life style modification programs
- In cancer treatment: external local radio-frequency hyperthermia and mistletoe preparations
- Functional diagnostics: Muscle tension measurement, heart rate variability measurement

## Research

The clinical research unit investigates the efficacy and safety of herbal drugs in clinical studies. The laboratory research unit investigates the potential of plant-based substances, mainly for the treatment of cancer and disorders of the immune system in preclinical studies. Both aim to develop new and more effective plant-based treatments.

# Dental Medicine Operative Dentistry and Periodontology

Prof. Dr. med. dent.  
**Elmar Hellwig**  
Medical Director



Welcome to the Department of Operative Dentistry and Periodontology of the Medical Center – University of Freiburg. Our department provides services in general dental care for children and adults, concentrating primarily on the prevention, diagnostics and treatment of carious lesions, diseases of the periodontium (periodontology) and the pulp (endodontics). The practice of conservative restorative dentistry includes the treatment of malformed, discolored or fractured teeth and the replacement or repair of existing restorations, with special esthetic questions such as tooth-colored restorations (fillings) and bleaching.

## Diagnostic and Treatment Services

### Preventive and Restorative Dentistry

- Preliminary dental examination and treatment plan
- Tooth-colored composites or ceramics to treat carious and traumatic lesions and malformed teeth
- Bleaching upon request

### CAD/CAM Technology, CEREC System

- CAD/CAM system for individual all-ceramic restorations in a single appointment
- “CCEREC Omnicam, the latest innovation, is used to create digital optical impressions and precise 3D images

### Endodontics

- Treatment of tooth pulp to eliminate and protect against microbial invasion
- Root canal treatment via minimal pain procedures such as shaping, cleaning, and decontamination of the root canal system with tiny files and irrigating solutions

- Endodontic retreatment (secondary treatment) for complicated root canal treatment

### Periodontology

- Professional tooth cleaning combined with oral hygiene motivation, information and instruction
- Scaling and root planing to remove subgingival calculus
- Adjunctive systemic antibiotic therapy
- Periodontal surgery with regenerative materials to treat inflammations
- Post-op maintenance care program
- Periodontal plastic surgery and grafting procedures to treat marginal tissue recession

We also offer a broad range of pediatric dental treatments. We specialize in the dental treatment of patients with epidermolysis bullosa in collaboration with the Epidermolysis bullosa Center in the Department of Dermatology, including general anesthesia for these patients. In addition, we focus on the restorative treatment of genetic or acquired dental anomalies.

## Research

- Study of restorative materials
- Endodontics
- Periodontology
- Bioadhesion processes in oral cavity
- Hard tissue studies and cariology
- Cell culture

# Oral and Maxillofacial Surgery

## Regional Plastic Surgery

The Department of Oral and Craniomaxillofacial Surgery/Regional Plastic Surgery treats patients in the areas of modern implantology, bone augmentation and dentoalveolar surgery. We specialize in the surgical and interdisciplinary treatment of patients with craniomaxillofacial deformities, for example skeletal misrelationships of the mandible and the maxilla with or without occlusal disturbances. In orthognathic surgery, the latest, safest techniques are applied, with intraoperative imaging and the use of intraoral implants, allowing for a predictable, functionally and aesthetically perfect result. The department employs scientifically proven concepts for the longterm treatment and care of cleft lip and palate patients. Benign and malignant tumors of the oral and maxillofacial head and neck area are treated by highly experienced surgeons using the latest computer-assisted planning procedures, intraoperative imaging and navigation. Clinical decisions are made along with the patient, respecting his/her expectations and individual situation.

Minimally invasive treatments are applied with endoscopic techniques. Additionally, the clinic specializes in the treatment of patients with previous surgeries, for example in orbital enophthalmus cases following accidents.

The Department of Oral and Maxillofacial Surgery/Regional Plastic Surgery applies the latest, safest, most reliable treatment methods. Professor Dr. Dr. Rainer Schmelzeisen and his team are internationally known for their innovative research and scientific work. Our guideline is to give our patients individual attention in a highly professional health care atmosphere.



Prof. Dr. med.  
Dr. med. dent. (FRCS, London)  
**Rainer Schmelzeisen**  
Medical Director



## Diagnostic and Treatment Services

### Implantology

- Implantation of dental implants with computer planning and simulation techniques
- Digital workflow
- 3D printing of positioning guides for safe and prosthodontically-driven implant positions
- Minimally invasive surgery for bone augmentation procedures in patients with jaw atrophy
- Implant procedures following loss of inserted implants or implant treatment complications

### Tumors in the Oral and Maxillofacial Head and Neck Region

- Benign tumors of the oral mucosa and salivary glands
- Malignant soft tissue tumors of the mouth, face and the neck
- Interdisciplinary treatment following to guidelines of a head and neck tumor board
- Computer-guided tumor resection and reconstruction
- Complex reconstruction techniques including the use of microvascular bone and soft tissue grafts

### Secondary Surgery for the Correction of Trauma Sequela

- Minimally invasive bone corrections
- Endoscopic surgery
- Correction of eye globe malpositions in an interdisciplinary ophthalmologic center
- Treatment of facial palsy
- Aesthetic surgery



Prof. Dr. med. dent.  
**Benedikt Spies**  
Medical Director

## Prosthetic Dentistry

Are you worried regarding the health, appearance or condition of your teeth and want a beautiful smile or be able to chew properly again? Our team of board-certified prosthodontics will take care of it. No matter what the condition of your teeth is, we will help to restore your teeth according to your desires.

Treating multifaceted cases presents our daily clinical routine. Applying new and cutting-edge digital techniques like contact free intraoral scanning, face scanning, virtual and three-dimensional implant planning enables us to provide restorative dentistry, implant prosthodontics, aesthetic and functional interventions in a more precise and time-efficient manner.

Even in case of serious problems requiring for a multidisciplinary treatment approach we will find a solution to address your issues together with our neighboring departments for orthodontics, operative dentistry and maxillofacial surgery.

As a well-organized team, we offer much more than a makeover. Patients can be seen on an individual basis by the department chair and senior faculty members in a unique private practice setting employing the most advanced

diagnostic and technological procedures available.

## Diagnostic and Treatment Services

We treat our patients by means of a synoptic treatment concept which integrates the functional, aesthetic and restorative aspects of the patient as a whole.

After examination, data acquisition and consultation, an individual cost estimate will be provided depending on the scope of the required therapy.

Within this concept, we focus on:

- Dental hygiene and prophylaxis
- Periodontology/plastic periodontal surgery
- Functional diagnosis and therapy
- Aesthetic and cosmetic dentistry
- Implant prosthodontics with/without bone regeneration
- Fixed, combined and removable prosthodontics





# Orthodontics

Univ. Prof. Dr. med. dent.  
**Britta A. Jung**  
Medical Director



Welcome to the Department of Orthodontics! We offer you the finest customer service and personalized care spanning the entire field of orthodontics, including interdisciplinary treatment, in a warm and friendly atmosphere.

Our top priority is providing high quality medical orthodontic care from infancy to advanced adulthood. As a patient, you and/or your children will always receive customized diagnostics and treatment aligned to your special needs.

We can provide various treatment options thanks to innovative approaches and interdisciplinary cooperation with other specialists in dentistry and medicine (e.g. oral and maxillofacial surgery, periodontology, dental prosthetics, phoniatrics and pedaudiology, physiotherapy). These options include special corrections for complex dentofacial deformities, in young patients with skeletal and dental developmental disorders (e.g. displaced canines), as well as adults with degenerative changes (e.g. teeth compromised by periodontitis), including diagnostic procedures and treatment of the craniomandibular joint.

## Diagnostic and Treatment Services

One of our focal points is the clinical application of temporary skeletal anchorage devices (palatal implants, bone anchors, cortical screws) in critical anchorage situations. In this field as well, we have extensive clinical experience and a high level of national and international expertise.

## Orthodontic Treatment for Infants, Children and adolescents:

- Patients with cleft lip and palate
- Craniofacial diseases (syndromes)
- Early orthodontic treatment
- Functional orthodontics
- General shaping of dental arches - removable and fixed
- Alignment of impacted and displaced teeth
- Orthodontic space closure
- Orthodontic treatment after dentoalveolar trauma and/or trauma to the craniomandibular joint
- Prophylaxis and nutritional counseling

## Orthodontic Treatment in Adults – Aesthetics, Function and Prevention of Tooth Loss:

- Orthodontic treatment in combination with orthognathic surgery
- Correction of crowding in upper and/or lower front teeth
- Alignment of impacted and displaced teeth
- Orthodontic space closure
- Orthodontic treatment in the parodontally compromised dentition
- Pre-surgical, -prosthetic and -implantological shaping of dental arches
- Diagnostics and treatment of the craniomandibular joint
- Prophylaxis and nutritional counseling
- “Invisible” orthodontics (e.g. Lingual Orthodontics, Invisalign, Essix)

## Research

The main motivations for our scientific research activities are the development and implementation, in interdisciplinary cooperation, of modern technologies in orthodontics, innovative therapy procedures, and treatment concepts. Our primary objective is to establish and maintain the highest standard of orthodontic care.

The main subjects of research at our department are:

- Skeletal anchorage in orthodontics
- Clinical epidemiology and multicenter studies
- Prevention of tooth loss in the parodontally compromised dentition and long-term stability after orthodontic treatment
- Health-related quality of life
- Basic research (e.g. cell biology, hard tissue diagnosis)

Further aspects of research are comprehensibility of speech in cleft palate patients and others, wearing comfort of orthodontic appliances, and oral hygiene in orthodontic patients with fixed or removable appliances.



Prof. Dr. med.  
**Leena Bruckner-Tuderman**  
 Medical Director

# Dermatology

- Medical director is a member of the German National Academy of Sciences Leopoldina and the Berlin-Brandenburg Academy of Sciences and Humanities
- Largest center for epidermolysis bullosa treatment in Germany
- Certified skin cancer center
- **25,000** outpatients per year
- **2,300** inpatients per year
- **5,000** day clinic patients per year



The Department of Dermatology provides outpatient treatment to about 25,000 patients and day clinic treatment to approximately 5,000 patients annually. Our specialty is the treatment of diseases of the skin and mucous membranes, including cancer, melanoma and other malignant or benign tumors, allergies, inflammatory diseases such as psoriasis or autoimmune skin diseases, as well as hereditary skin disorders.

Skin diseases of all kinds can be diagnosed in our clinic, where highly specialized, scientifically proven treatments are employed in compliance with international standards.

Skin diseases are very diverse in terms of their clinical presentation. Skin lesions may be the outer manifestation of pathologies of the visceral organs, central nervous system or endocrine system.

Therefore, fundamental knowledge of the skin is essential in the daily work of any doctor regardless of his or her specialty. The Department of Dermatology makes extensive use of multimodal intensive dermatological treatment methods. Treatment procedures are optimized for each patient, depending on his or her skin type and disease, and encompass both systemic therapies and special topical treatments such as ointments and/or selective UV light. Each treatment can, upon request, be organized on an inpatient or outpatient basis.

The diagnostic unit, treatment unit, and operating rooms are equipped with state-of-the-art technical devices. This, combined with our highly qualified personnel, helps to guarantee the quality and success of the treatments performed, and thus is attracting more and more patients from all over the world.

## Diagnostic and Treatment Services

- Skin cancer, including melanoma
- Allergies
- Eczema
- Psoriasis
- Autoimmune skin diseases
- Epidermolysis bullosa
- Hereditary and congenital skin diseases
- UV light therapy and topical multimodal treatment of psoriasis and eczema, such as atopic dermatitis
- Photodynamic treatment of precancerous skin lesions (combination of a drug and red light)
- Treatment of varicose veins
- Treatment of chronic wounds
- Skin transplantations
- Modern laser techniques for removing benign neoplasms or precancerous lesions from the skin

- Laser removal of warts, hair, tattoos, and improvement of facial scars
- Multimodal methods of intensive dermatological treatment

## Research

Scientists in the modern and fully-equipped laboratories of the Department of Dermatology conduct world class research in the fields of hereditary skin diseases, wound healing, fibrosis and scar formation, immunology of the skin and allergies, autoimmune skin diseases, and phytotherapy.

# Gastroenterology, Hepatology, Endocrinology and Infectious Diseases

- Leading specialists in treatment of viral hepatitis, liver cirrhosis and hepatocellular carcinoma
- Experts in inflammatory bowel disease
- Leading specialists in gastrointestinal oncology
- More than 2,800 inpatients per year
- More than 10,000 patients in our outpatient centers

It is a pleasure to welcome you to our Department of Gastroenterology, Hepatology, Endocrinology and Infectious Diseases of the Medical Center – University of Freiburg. Our inpatient unit has room for more than 80 patients while our outpatient unit cares for 100-150 patients daily with diseases in the areas of gastroenterological oncology, hepatology, endocrinology and infectious diseases.

The department employs approximately 40 medical doctors and 200 paramedical personnel.

Our patients benefit from our extensive clinical experience, broad spectrum of medical services and state-of-the-art technical equipment which provides the most advanced preventive, diagnostic and therapeutic options. Our primary goal is to guarantee our patients the most prompt and effective medical assistance possible. We have long-standing experience in caring for patients from many countries, and our team does everything possible to meet the needs and expectations of all our patients.



Prof. Dr. med.  
**Robert Thimme**  
Medical Director

## Diagnostic and Treatment Services

Our clinic specializes in the diagnosis and treatment of diseases in the areas of gastroenterology, hepatology, endocrinology and infectious diseases.

We put special focus on the diagnosis and treatment of liver diseases and their various causes, e.g. viral hepatitis, obesity, diabetes mellitus, alcoholism, and others. We also specialize in the treatment of patients with liver cirrhosis and its complications, such as ascites, variceal bleeding and hepatocellular carcinoma (HCC). We have extensive experience in the treatment of primary and secondary liver tumors, e.g. by multidisciplinary approaches such as radiofrequency thermo-ablation, transarterial chemoembolization (TACE) and medicines. Our center is a world leader in the treatment of portal hypertension complications, e.g. by implantation of transjugular intrahepatic portosystemic shunts (TIPS) that have largely been developed at the Medical Center – University of Freiburg. A further major focus of our clinic is gastrointestinal diseases. For example we are leading experts in inflammatory bowel disease.

Another strong focus is gastrointestinal oncology. We have expertise in all gastrointestinal tract tumors, such as those of the esophagus, stomach, pancreas, gallbladder, liver and colon.

We are leading experts in the area of neuroendocrine tumors. Our department carries out every kind of diagnostic procedure and employs all the current state-of-the-art treatment strategies including chemotherapy, personalized antibody therapy and immunotherapy.

Our interdisciplinary gastrointestinal endoscopy unit has state-of-the-art equipment and offers all the latest endoscopic procedures, such as full thickness resections, endoscopic submucosa dissections and POEM (peroral endoscopic myotomy).

## Hepatology

Our Gerok Liver Center specializes in all the state-of-the-art diagnostic and treatment procedures dealing with acute and chronic liver diseases and their complications. These include:

- Viral hepatitis
- Autoimmune hepatitis
- Fatty liver disease
- Toxic liver disease
- Hereditary liver disease
- Primary biliary liver cirrhosis and their complications
- Benign liver tumors
- Malignant liver tumors:
  - Hepatocellular Carcinoma (HCC)
  - Cholangiocellular Carcinoma (CCC)
- Liver metastases
- Preparation to liver transplantation
- Radiofrequency thermo-ablation of HCCs and liver metastases
- Malignant tumors of the gallbladder and the biliary system
- TIPS procedures for liver cirrhosis
- Multidisciplinary treatment of hepatocellular carcinoma
- Sonography, duplex-sonography
- FibroScan
- Liver biopsy



## Gastroenterology

Our experience includes a wide range of gastroenterological diseases. In addition, we provide novel and state-of-the-art endoscopic procedures. Our special expertise lies in the following:

- Gastroenterological check-up
- Inflammatory bowel disease (colitis ulcerosa, Crohn's disease)
- Diagnosis and treatment of irritable bowel syndrome
- Helicobacter pylori infection
- Treatment of all kinds of cancers derived from the gastrointestinal tract
- Immunotherapy, chemotherapy
- Esophago-gastro-duodenoscopy
- Colonoscopy with the removal of polyps
- Endoscopic Retrograde Cholangiopancreatography (ERCP)
- Cholangioscopy
- Stent implantation in the esophagus, stomach, duodenum, colon, biliary tract
- Endoscopic and external drainage of the biliary system and pancreatic cysts
- Push enteroscopy and video capsule imaging of the small bowel
- Functional gastrointestinal analyses, helicobacter pylori breath test, lactose und glucose tolerance test
- Endosonography

## Research

Approximately 70 scientists (including clinical scientists) work in our research laboratories in the fields of viral hepatitis, liver cancer, colorectal cancer, pancreatic cancer and endocrinological and infectious diseases. We are involved in several studies testing new treatments for viral hepatitis and cancer, e.g. esophagus, liver and colorectal cancer. We are supported by funding from the German Research Foundation (Deutsche Forschungsgemeinschaft-DFG), the German Cancer Charity (Deutsche Krebshilfe), the European Framework Programme for Research and Innovation, as well as private foundations.

# Endocrinology and Diabetology

- Approximately 9,000 patients per year
- Certified diabetes treatment center of excellence
- TOP rated treatment center in Germany (FOCUS)
- TOP rated diabetologist in Germany (FOCUS)
- Several national and international research awards
- Prof. Seufert: Honorary Fellow of the Royal College of Physicians of Edinburgh
- Closed loop artificial pancreas and insulin pump development center
- Development of novel therapies including regeneration of insulin producing cells.



We welcome you sincerely and with open arms to the Medical Center – University of Freiburg and our specialized division for hormonal and metabolic diseases, bone disorders and diabetes mellitus.

We provide modern, innovative diagnostic treatment options of internationally renowned quality in both ambulatory (outpatient) care and in our specialized hormone and metabolic ward. Our patients are welcomed by highly-trained personnel dedicated to making your visit as smooth and efficient as possible.

In addition to Professor Dr. Jochen Seufert, head of the division and an internationally recognized specialist in hormone diseases and diabetes, several highly-trained and experienced senior physicians care for patients as consultants in endocrinology and diabetology. A hallmark of our service is dedicating time and effort to listen to and solve the health problems of our patients.

High-quality patient care is provided through interdisciplinary teamwork that makes use of the up-to-date equipment in our division and the whole Medical Center – University of Freiburg: state-of-the-art ultrasound, bone mineral density measurement (DEXA-Osteodensitometry), radiology (NMR, CT), nuclear medicine (scintigraphy, PET/CT), angiography and others.

We treat metabolic diseases (obesity) and diabetes mellitus using advanced medications and devices such as insulin pumps. In addition, our diabetes team comprising experienced dieticians, nutritionists, and diabetes counselors offer comprehensive patient counseling.

We aim to provide world class medical care to our patients in line with our philosophy:

*“Each patient is the most important patient”*

## Diagnostic and Treatment Services

### Metabolic Diseases

- Diabetes mellitus type 1
- Diabetes mellitus type 2
- Gestational diabetes
- All other forms of diabetes mellitus
- Advanced patient education (several international languages)
- Nutritional counseling
- Modern antidiabetic medications
- Continuous 24-h blood pressure monitoring
- Insulin pump therapy
- Closed loop artificial pancreas
- Continuous glucose monitoring (CGM)
- Pancreas transplantation (in collaboration with the Center for Surgery)

### Obesity

- Nutritional counseling
- Exercise counseling
- Latest medicinal obesity treatment
- EndoBarrier (<http://www.endobarrier.com>) for diabetes and obesity treatment
- Bariatric surgery (in collaboration with the Center for Surgery)

### Metabolic Bone Diseases

- Osteoporosis
- Osteodensitometry
- Latest medicinal treatment



### Hormone Diseases

- Thyroid diseases
- Hypothalamic diseases
- Pituitary diseases
- Adrenal diseases
- Sexual dysfunction and impotence
- Menopausal diseases
- Diseases of the parathyroid glands (hyperparathyroidism)
- Diseases of female and male reproduction

### Research

Our main research focus is the implementation of novel clinical treatment strategies for diabetes mellitus including new agents. We continuously run and participate in national and international clinical trials for developing new medications.

We also run an experimental diabetes research laboratory focusing mainly on pancreatic beta-cell research. In this laboratory, we develop novel treatment strategies for replacement of endogenous insulin production in patients with diabetes mellitus, such as:

- Beta cell replacement
- Pancreatic islet transplantation
- Stem cell therapy

Our research has been recognized through a number of awards including the Merck Senior Fellows Award (Endocrine Society, USA), the Schoeller-Junkmann Scientific Award (German Endocrine Society), the Theodor-Frerichs Award (German Association for Internal Medicine) and the Ernst-Friedrich-Pfeiffer-Award (German Diabetes Association).





Prof. Dr. med.  
**Stefan Fichtner-Feigl**  
Medical Director

## General and Visceral Surgery

- Robotic surgery with DaVinci
- State-of-the-art complex liver surgery
- HIPEC-method with cytoreductive surgery
- Minimally-invasive surgery in all organs esophagus, stomach, liver, pancreas, colon, rectum, spleen
- Single-incision laparoscopic surgery
- 3,250 inpatients per year
- 16,700 outpatients per year

Welcome to the Department of General and Visceral Surgery at the Medical Center – University of Freiburg. Our Department is dedicated to offer the newest minimally-invasive surgical procedures including robotic surgery in all organs systems of the abdomen. Our medical team consists of 45 physicians and 150 nurses along with our administrative employees. Our department attends to patients with a variety of cancer and functional diseases, injuries and developmental defects of the abdominal organs and the endocrine glands. Operations are performed on an in- and outpatient basis, with the examination of approximately 16,700 patients per year. Most of the operations are performed with the newest minimally-invasive techniques including DaVinci robotic system. In the more serious post-operative cases, patients are monitored in our highly specialized surgical Intensive Care Unit.

Our department is specialized in the surgical therapy of cancer of the esophagus, of the stomach and of the small and large bowel. We have special expertise in surgery of the liver, bile ducts and the pancreas. In addition, patients with metastatic disease in the liver or primary tumors in the liver and peritoneal carcinomatosis are treated with a variety of highly complex therapeutic procedures including hyperthermic intraperitoneal chemotherapy and intraoperative radiation therapy. The operation theatres are equipped with the most advanced technical facilities. Thus, many of the operations are performed using minimally-invasive or laparoscopic techniques.

Even patients who have been diagnosed elsewhere as incurable might be helped and enjoy a longer life. Therefore, we are regarded worldwide as an outstanding center for surgical therapy of hepato-biliary, pancreatic and peritoneal diseases. In rectal cancer surgery we developed surgical strategies to prevent bowel continuity and preserve the anal sphincter. Operative therapy of hernias of the groin and the abdominal wall with a range of meshes and surgical therapy of the thyroid and parathyroid are also performed in our clinic.

Many famous specialists work together in order to achieve the best possible results for our patients. We aim to ensure that every patient feels comfortable and safe in our clinic. Should you face any future medical problems, a group of highly qualified specialists and the latest medical technologies is at your disposal here at the Medical Center – University of Freiburg.



## Diagnostic and Treatment Services

- Robotic Surgery
- International Pancreatic Cancer Center
- Oesophagus and stomach surgery
- Gastric cancer surgery
- Hyperthermic interperitoneal chemotherapy (HIPEC)/ Pressurized intraperitoneal aerosol chemotherapy (PIPAC)
- Neuroendocrine tumors (NETs)
- Liver, gallbladder and bile duct surgery
- "Fast-track" method of colon surgery
- Minimally invasive colorectal surgery
- Modern bariatric surgery, incl. gastric balloon
- Hernia surgery
- Thyroid surgery
- Pediatric surgery
- Organ transplantation
- Wound management
- Second-opinion services

The Department of General and Visceral Surgery is also famous for its organ transplantation unit. We perform a large number of kidney and pancreas transplantations. Our surgeons specialize in the transplantation of kidneys from living donors.

Pediatric surgery is another area of proficiency in our department. The surgical spectrum includes all congenital as well as acquired diseases in newborns and infants.

Second opinions are another important service offered by the department. Patients can send all of their medical records to International Medical Services (IMS), receive consultation from one of our doctors on the best treatment options, and decide whether to be treated in Freiburg.

## Research

- Influence of the tumor microenvironment on treatment of liver tumors (hepatocellular carcinoma, cholangiocarcinoma, liver metastases)
- ESOPEC Study (DFG funded): Perioperative Chemotherapy Compared To Neoadjuvant Chemoradiation in Patients With Adenocarcinoma of the Esophagus (NCT02509286)
- InPaFis Study: Reduction of postoperative pancreatic fistula with Indomethacin treatment
- Influence of the microbiome on development of colorectal cancer and metastasis formation (DFG funded)
- Senescence of peritoneal carcinomatosis cells and its influence on therapy response (DFG funded)
- Circulating tumor cells in pancreatic cancer and esophageal cancer
- Techniques of bariatric surgery and their impact on systemic organ function



**Prof. Dr. med.**  
**Ingolf Juhasz-Böss**  
Medical Director

## Gynecology and Obstetrics



- One of the leading breast cancer centers in Germany
- Top ranked gynecologists
- 4,500 operations per year
- 33 medical doctors
- Specialists in fertility sparing surgery in gynecologic cancer
- Specialists in treatment of myomas / fibroids of the uterus
- Most of surgeries are performed by laparoscopy or robotic surgery (DaVinci)

The perinatal and obstetrics unit is specialized in high-end prenatal diagnosis and in high-risk pregnancy care.

The department was the first in Germany to be certified as a training center for gynecologic oncologists by the ESGO, and was named one of the leading in Germany in the field of diagnostics and treatment of gynecological and breast cancer. The Department of Obstetrics and Gynecology consists of three units:

- General Gynecology and Gynecological Oncology
- Perinatal Care and Obstetrics
- Endocrinology and Reproduction Medicine



The Department of Obstetrics and Gynecology of the Medical Center – University of Freiburg is one of the largest in

Germany. We perform all types of vaginal and abdominal surgeries, especially for cancer treatment. Minimally invasive surgery is performed whenever possible.

Laparoscopy and hysteroscopy are offered on a high technical level and are often part of cancer surgery. We also specialize in the diagnostics and treatment of infections, urinary incontinence, and endometriosis.



### Diagnostic and Treatment Services

- Gynecological cancers including breast cancer
- Infertility and artificial fertilization
- Minimally invasive surgery
- Childbirth and newborn care
- Ultrasonographic diagnostics
- Laser therapy of pathological changes of the external and internal genitalia
- Incontinence
- Endometriosis
- Hormonal disorders
- Infectology
- Chemotherapy

### Research

Scientists in our gynecological department have conducted research projects in the field of polymorphism diagnostics for oncological diseases. The recent point of interest is “liquid biopsy” in cancer prediction.

Obstetrical research concerns “premature rupture of membranes” and preterm delivery.

A scientific focus concerns the protection of fertility in cancer patients.



# Institute of Human Genetics

Prof. Dr. med. Dr.  
**Judith Fischer**  
Medical Director



## Diagnostic Services of Hereditary Diseases - Molecular Genetics (NGS)

### Hereditary tumor diseases (27 genes)

- Breast and ovarian cancer
- Colorectal carcinoma

### Skin diseases (102 genes)

- Ichthyoses
- Hyperkeratoses, peeling skin syndrome and palmoplantar keratodermas
- Epidermolysis bullosa

### Eye diseases (62 genes)

- Retinal diseases (retinopathies)
- Optic atrophies
- Corneal dystrophies

### Vascular and connective tissue diseases (36 genes)

- Marfan syndrome
- Ehlers-Danlos syndrome
- Thoracic aortic diseases

### Cardiovascular diseases (63 genes)

- Cardiomyopathies
- Arrhythmogenic diseases

### Neurological diseases (38 genes)

- Dystonias
- Parkinson's disease

### Dyslipidemias (35 genes)

- Hypercholesterolemia and hyperlipidemia
- Hypertriglyceridemia

### Rheumatic diseases (69 genes)

- Periodic fever/autoinflammatory syndromes
- Interferonopathies
- Immunodeficiencies

## Diagnostics Laboratories

The main task of the Institute for Human Genetics is to explain the genetic basis of hereditary diseases. We offer a wide range of genetic tests in our Diagnostic Laboratory for Cytogenetics and Molecular Genetics.

In our Molecular Genetics Department we investigate disease-specific sets of genes at the DNA level. Using Next-generation sequencing (NGS) we analyze specially designed gene panels in order to ensure swift and comprehensive testing and successfully resolve the highest possible percentage of patient cases at comparatively low cost. We employ the latest target enrichment techniques along with expert bioinformatics data evaluation using special software to deliver highly reliable findings. Interpretation of any variants detected is performed by bioinformaticians on the sequence level and biologists on the functional gene or protein level. In addition we offer Sanger sequencing when required.

- Diagnostic offer: **500** genes
- **1,500** analyzed samples per year (blood, tissues, amniotic fluid)
- **300** Next-generation sequencing samples per year

We currently offer gene panels for many different disease groups (see below) and are constantly expanding our diagnostic range.

Some diseases are caused by chromosomal defects, which are analyzed in our Cytogenetics Division. To this end we employ classical cytogenetic methods as well as molecular cytogenetic techniques such as array-CGH (comparative genomic hybridization) and FISH (fluorescence in situ hybridization).

In addition, the doctors in our Genetic Counseling Center can provide individual expert advice covering the entire range of human genetic issues.

## Telemedicine Service

For hereditary skin diseases we offer a telemedicine service for clinical co-assessment and support in diagnosis evaluation.

## Research

Research in our Molecular Genetics Division (Prof. Dr. med. Dr. Judith Fischer) is focused on the identification and functional characterization of genes associated with rare hereditary skin diseases (genodermatoses) such as ichthyoses and palmoplantar keratodermas. Prof. Fischer is an internationally recognized specialist on genetic skin disorders and was the first to identify many of the genes for ichthyoses and related skin disorders (e. g. Heinz et al., 2017). The group is also working on genetic factors in psoriasis, which is a complex, multifactorial disease.





Prof. Dr.  
**Karl Winkler**  
Medical Director

## Lipid Metabolism Center

Our lipid outpatient clinic is a highly specialized facility with more than 20 years' experience in treating patients with lipid disorders.

Lipid disorders are a major cause of cardiovascular diseases such as heart attack, stroke and peripheral arterial occlusive disease (PAOD), as well as other life threatening diseases like pancreatitis. The numerous causes and consequences of lipid disorders require specific diagnostic tools and differential, individually tailored therapies.

### Diagnostic and Treatment Services

An individual cardiovascular risk profile is compiled for each patient, based on their medical history, physical examination and laboratory test results. Because our lipid outpatient clinic is hosted by the Institute for Clinical Chemistry and Laboratory Medicine of the Medical Center – University of Freiburg, our specialists have ready access to various sophisticated analytical methods, which are necessary for a detailed diagnosis of the nature and cause of the disorder. Not only does our center offer regular measuring of the patient's lipid status (including total cholesterol, triglycerides, low-density lipoproteins (LDL), high-density lipoproteins (HDL) and lipoprotein(a)), but we also provide a qualitative assessment

of the lipid metabolism using highly specialized procedures such as lipid electrophoresis and preparative lipoprotein ultracentrifugation. These tests are crucial in assessing the level and quality of the patient's LDLs, which promote the development and progression of atherosclerosis. Also, the level and quality of triglycerides may substantially affect the patient's risk of developing metabolic syndrome and/or diabetes mellitus.

### Research

Our lipid outpatient clinic and research facilities are internationally recognized, and we have a history of numerous interventional trials, which have been published in well-respected scientific journals. Currently our center both initiates and actively participates in national and international scientific clinical trials related to lipid disorders. Thanks to the support of the German National Lipid Association (DGFF) our staff is committed to continuous professional training and quality assurance in the field of lipid disorders. This commitment results in up-to-date clinical and scientific expertise and superior medical care for our patients.



# Psychiatry and Psychotherapy

The Department of Psychiatry and Psychotherapy, Center for Mental Health, is considered one of Germany's leading institutions in the fields of psychiatry, psychotherapy and neuropsychiatry, and offers the latest evidence-based treatment options for the entire spectrum of mental disorders. It consists of eight specialized divisions with 120 beds, a day clinic and a sleep laboratory. The department offers in- and outpatient as well as second opinion services.

**Prof. Dr. Dr. med., M.A.**  
**Katharina Domschke**  
Medical Director



- Leading center in the field of depression treatment
- Leading center in the field of anxiety treatment
- Leading center in the field of adult high functioning autism and ADHD
- Leading center in insomnia treatments
- Leading center regarding the diagnosis of organic psychiatric syndromes
- English, Russian, Italian and Croatian speaking specialists are available

## Treatment Services

The department's Medical Director, Prof. Dr. Dr. Katharina Domschke, M.A. (USA), is internationally known for her clinical and scientific expertise in depression, burnout syndrome and anxiety disorders. Several more internationally acknowledged experts work in the department, specializing in sleep medicine, deep brain stimulation, autism, ADHD, obsessive-compulsive disorders as well as psychotic and organic psychiatric disorders.



**Prof. Dr. med.**  
**Claas Lahmann**  
Medical Director

- Leading center in Germany in the treatment of eating disorders and somatic symptom disorders including chronic pain
- Leading center for the treatment of stress-related syndromes
- Inpatient unit with 17 beds and a day clinic accommodating 18 patients
- Large consultation/liaison service with more than 6,200 consultations per year (e.g. in oncology, neurology, internal medicine, gynecology and neurology)
- Outpatient clinic (specialized services for eating disorders, somatic symptom disorders, stress-related syndromes and couple/ family therapy)
- Evidence-based treatment approaches with a focus on psychotherapy (patient-oriented, integrative model based on psychodynamic, cognitive-behavioral and systemic factors)

# Psychosomatic Medicine and Psychotherapy

The Department of Psychosomatic Medicine and Psychotherapy offers modern, innovative treatment approaches which combine evidence-based psychotherapy, pharmacotherapy and complementary therapies (e.g. physiotherapy, yoga, music and art therapy, mind-body-therapy). The department comprises an outpatient clinic (diagnostic), a consultation/liaison service, an inpatient unit and a day clinic.

## Research

Research focuses on somatic symptom disorders, eating disorders, psychotherapy process and outcome research, attachment, improving health care services, interventions addressing work-related stress syndromes, psycho-oncology and psycho-cardiology.

## Diagnostic and treatment services

- Somatic symptom disorders
- Eating disorders
- Stress-related and adjustment disorders
- Couple and family crisis
- Conversion disorder
- Personality Disorders
- Depression
- Anxiety Disorders



# Nephrology

- 1st ABO-incompatible kidney transplantation in Germany
- 18 round-the-clock dialysis stations
- 4,500 outpatients per year
- 7,000 dialysis, plasmapheresis and HELP procedures per year
- 250 kidney biopsies per year

We welcome you into our department and wish you a speedy recovery! Hospitalization brings stress and health worries for many patients. We take your concerns very seriously and will do everything in our power to ease your discomfort and facilitate a quick recovery.

Our department specializes in the treatment of general medical and kidney-related conditions. This often involves caring for patients in whom multiple organs are affected by disease, or who have recently left an intensive care setting.

## Treatment

- Hemodialysis
- Peritoneal dialysis (CAPD)
- Plasmapheresis
- Immunoabsorption
- Liver dialysis
- Preparation and aftercare of kidney transplantation
- Treatment of blood-related diseases, cancers and autoimmune diseases
- Preparing ABO-incompatible kidney transplantation
- Kidney biopsies

## Diseases

- Glomerulonephritis
- Vasculitis
- Cystic kidney diseases
- Von Hippel-Lindau (VHL) disease
- Pheochromocytoma (PCC)
- Autoimmune diseases (Lupus erythematosus)
- Hematological diseases with kidney involvement (Plasmacytoma)



Prof. Dr. med.  
**Gerd Walz**  
Medical Director

## Research

Renal disease is a silent killer, since only a small loss in renal function is fatal. However, in most cases the cause remains unknown. Novel techniques have generated lists of genes implicated in renal disease, but gene identification rarely provides the mechanistic insight required to understand and to treat it.

NephroLab in Freiburg has therefore developed a novel approach that leads from gene discovery to potential treatments: comparative analysis of gene function. Ten independently-funded research groups support this effort, exploring gene function in cell culture systems, C.elegans, Drosophila, zebrafish, Xenopus and genetically-modified mice in order to find new treatments for renal diseases.

### Our main research areas are:

- Hereditary kidney diseases with emphasis on cystic kidney disease
- Glomerular biology – Nephrotic syndrome
- Genetics of complex kidney disease

# Neurocenter



The Neurocenter of the Medical Center – University of Freiburg is one of the most modern and advanced institutions of its kind in Europe. Our center is based on the collaboration of specialists dealing with the diagnostics and conservative and surgical treatment of all diseases involving the nervous system.

### The Neurocenter comprises the following departments:

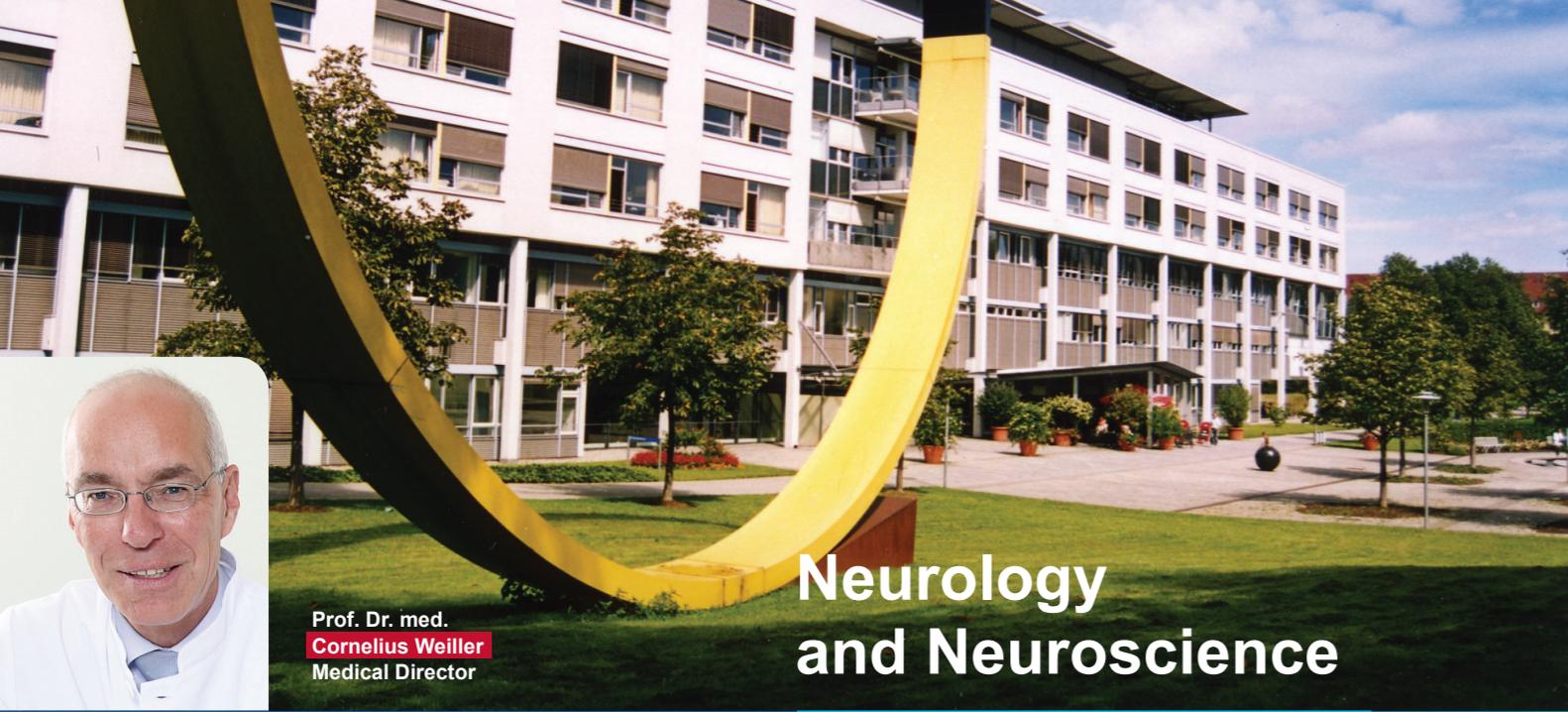
- Neurology
- Neurosurgery
- Epilepsy Center
- Neuroradiology
- Stereotactic and Functional
- Interdisciplinary Pain Center
- Neuropathology

At the Neurocenter we offer the entire spectrum of services from diagnostics to conservative and surgical treatment of diseases of the nervous system. There are special divisions for



stereotactic and functional neurosurgery, including targeted biopsy, the application of radiosurgical procedures and deep brain stimulation, as well as for the treatment of brain tumors, spinal, cranial base and cerebrovascular diseases, pain syndromes and epilepsy. We have extensive experience in novel immunomodulation inflammatory diseases (e.g. MS) and research-based rehabilitations.





Prof. Dr. med.  
**Cornelius Weiller**  
Medical Director

# Neurology and Neuroscience

- 1,000 patients per year in our specialized Stroke Unit
- 3,000 inpatients per year
- 10,000 outpatients per year
- 1st cervical artery examination in Europe

Our patients suffer from a wide range of disorders including motor dysfunction, stroke, epilepsy, multiple sclerosis, polyneuropathy, dementia, headaches, Parkinson's disease, other movement disorders, and rare neuropathological diseases. One of our department's fields of expertise is neurophysiology, which examines electronic signals in the brain and nerves, and uses modern brain imaging (MRI and PET) to assess the brain's restorative capabilities for neurorehabilitation. Many test protocols were developed and standardized in Freiburg.

All diagnostic procedures are performed in special laboratories with state-of-the-art equipment. The neurovascular ultrasound laboratory in the Department of Neurology and Neuroscience was founded in the 1970s, and is acknowledged as one of the leading laboratories in Germany for the examination of cervical and intracranial arteries, serving more than 5,000 patients every year. It was here that the first cervical artery examination in Europe was performed in 1978, using ultrasound. There are extensive facilities for electrophysiological assessment, gait analysis, tremor and vertigo testing as well as tests of the autonomic nervous system.

The department's Stroke Unit treats more than 1,000 acute ischemic stroke patients every year. We are a comprehensive stroke center with outstanding expertise in acute stroke treatment using various forms of thrombolysis and novel neuroprotective technologies. Neurologists at the Medical Center–University of Freiburg developed hospitalization and intensive care algorithms for stroke patients that today are used successfully in many other clinics in Germany. A dedicated Neurointensive Care Unit enables sophisticated invasive procedures such as plasmapheresis in inflammatory peripheral or central nervous disease or myasthenia gravis, and the treatment of patients with severe brain damage.

## Diagnostic and Treatment Services

- Neuroimmunological diseases: brain infection and Multiple Sclerosis (MS)
- Muscle and nerve disorders
- Movement disorders: tremors, Huntington's disease (HD)
- Parkinson's disease (PD)
- Aneurysm
- Epilepsy
- Dural arteriovenous fistula
- Headaches
- Dementia
- Strokes
- Brain tumors
- Arteriovenous malformations
- Cavernoma
- Cavernous Sinus thrombosis (CST)
- Neurovegetative disorders
- Vertigo
- Neuropsychology

**Neurorehabilitation** is a major scientific focus in our department. We employ cutting-edge techniques used in clinics with high-density programs (e.g. CIMT in motor stroke, intensive aphasia training, mirror training in dystonia) to treat both out- and inpatients.

## Research

Our research focuses on pathophysiology and the recovery of function in stroke, on migraine research and neuroimmunology. We also use imaging, electrophysiology and molecular biology to study motor system physiology and pathophysiology as well as neurodegenerative disorders.





**Prof. Dr. med.  
Jürgen Beck**  
Medical Director

# Neurosurgery

- Largest neurosurgical center in Germany
- Excellent trained highly specialized neurosurgeons
- No. 1 worldwide for minimal invasive surgery of CSF leak
- Leading expertise in brain tumor, epilepsy, skull base, vascular, pediatric and spine surgery and intraoperative neuromonitoring
- Dedicated programs in functional/ stereotactic neurosurgery and presurgical epilepsy evaluation
- Dedicated patient service
- Cutting edge research and neurosurgical AI

We treat patients with diseases of the brain, spine, and peripheral nerves and offer the whole spectrum of conservative and surgical treatments. We provide full-service health care and a wide range of diagnostic and therapeutic procedures with the latest developments in research and technology. Coordination of the treatment of each patient with his/her individual needs is important to us to facilitate recovery.

Comprehensive medical and nursing care is delivered in close proximity to and collaboration with other medical departments of the Neurocenter and the Medical Center of the University of Freiburg.

High quality service, patient safety and optimal outcome are our goals. Elaborate quality management systems are established in our department and are certified by DKG, TÜV and the EANS.

The Department of Neurosurgery has a strong focus on future-oriented research. It is our goal to bring safe, effective, patient tailored and innovative diagnostics and treatments to our patients.



## Neurooncology

- Microsurgical removal of tumors
- Neuronavigation, intraoperative ultrasound and CT, intraoperative neuromonitoring including awake surgeries
- Specialized brain tumor clinic coordinating adjuvant therapy and second opinions
- Interdisciplinary tumor boards to tailor patient treatment plans including adjuvant therapeutic measures such as radiotherapy and chemotherapy
- Treatment of phacomatoses, neurofibromatosis, von Hippel-Lindau-disease and other rare diseases

## Spinal Surgery

- Microsurgical techniques to treat degenerative and tumorous diseases
- Application of the whole spectrum of instrumentation, including dynamic and minimally invasive procedures

## Pain Surgery and Headache programm

- World leading neurosurgical program for spinal CSF leaks / orthostatic Headache
- Different techniques for surgical treatment of pain are available in close collaboration with the Interdisciplinary Pain Center's specialists in neurosurgery, neurology, anesthesiology, orthopedics, psychiatry, and psychosomatic medicine.

## Skull Base Surgery – Center of Skull Base and Craniofacial Surgery

- Multi-disciplinary treatment for complex skull base pathologies
- Innovative advances in the field of minimally invasive and endoscopic skull base and pituitary surgery

## Epilepsy Surgery – Comprehensive Epilepsy Center

- Pre-surgical diagnosis of epilepsy (video-EEG monitoring with non-invasive and invasive recordings)
- Patient tailored procedures
- Surgical treatment of complex epilepsies in children including hemispherotomy

## Neurovascular Diseases

- Interdisciplinary treatment of aneurysms, arteriovenous malformations and fistulas as well as cavernomas of the brain, brain stem and spinal cord

## Pediatric Neurosurgery

- Neurosurgical treatment of congenital and acquired malformations, tumors and treatment of hydrocephalus
- Multi-disciplinary treatment with the Center of Pediatrics and Adolescent Medicine

## Functional and Stereotactic Neurosurgery

- Deep brain stimulation
- Stereotactic biopsy and treatment
- Radiofrequency ablation of hypothalamic hamartomas

## Peripheral Nerve Neurosurgery

- Brachial plexus reconstruction
- Tumor excision procedures
- Minimally invasive decompression techniques

## Research

- Experimental and neurosurgical epilepsy
- Neurooncology, genetic tumor profiling, tumor angiogenesis, brain tumor stem cells
- Cellular neurophysiology
- Neuroelectronic systems
- Participation in international trials
- Cerebrovascular diseases
- Brain-Computer-Interfacing
- Neurosurgical artificial intelligence (AI)



Prof. Dr. med.  
**Andreas Schulze-Bonhage**  
Medical Director



# Epilepsy Center

- One of Europe's leading university-based centers
- Member of European Reference Network of Epilepsy Centers (EpiCare) since 2017 (one of only two German members)
- Primary focus on the differential diagnosis of seizures and the treatment of pharmacoresistant epilepsies in both children and adults
- Reference center for patients in need of advanced diagnostic procedures, including high resolution structural and functional imaging, and EEG diagnostics
- Complete spectrum of surgical and brain stimulation treatments available

Our Center offers a comprehensive program for the diagnostics and treatment of severe forms of epilepsy. Of special importance are the presurgical diagnostics using advanced anatomical and functional imaging methods, as well as electrophysiological techniques for long-term video-EEG monitoring using non-invasive and invasive recording. In addition to classical resective procedures, the surgical program for includes selected operation methods as well as various stimulation techniques. A major field of activity is the conservative early surgical treatment of complex epilepsies in childhood.

## Diagnostics

Careful consideration of the medical history can elicit an initial hypothesis about the focus localization. We document causal risk factors such as head injury or encephalitis, infantile febrile convulsions or a family history of epileptic seizures, age of onset of first signs of epilepsy, and additional cognitive impairments reported by the patient. A more precise idea of the seizure origin location can often be achieved with a detailed assessment of the seizure semiology based on the patient's self-assessments and reports of those who have witnessed the seizures. Seizures that are always preceded by an aura reliably indicate which eloquent symptomatogenic brain areas are first involved in the seizure events. Other semiological aspects can provide information about the lateralization or localization of the focal zone. The duration of the seizure, its occurrence during the course of the day and possible continued postictal impairments of the patient can provide valuable information about the brain areas involved in the seizure events.

## Advanced diagnostics

- EEG-fMRI for localization of epileptogenic networks
- Electroencephalography with recordings of up to 256 channels
- Stereo-EEG and subdural EEG recordings
- High-resolution magnetic resonance imaging
- Functional imaging, including magnetic resonance spectroscopy
- Imaging of Brain metabolism (PET)
- Imaging of Brain perfusion, also during seizures (SPECT)
- Neuropsychology
- Wada test
- fMRI to localize language, motor functions, and memory

## Treatment

Aside from of the art medical treatment, pre-surgical epilepsy assessment has a wide range of procedures at its disposal. These are used to gather information about the precise location of epileptogenic zones in focal epilepsies and to correspondingly plan a surgical intervention. This aim at keeping resected tissue as small as possible, which allows to best preserve the functionality of the brain and minimize the risk of neuropsychological deficits resulting from the intervention. Up to 80% of pharmacoresistant patients who undergo surgery become entirely seizure-free, depending on the etiology of the epilepsy and on the localization of the epileptogenic zone, and the remaining patients often achieve a considerable reduction in the frequency of seizures and seizure severity.

For patients who are not candidates for surgical resections, modern brain stimulation therapies are available, including vagus nerve stimulation, trigeminal nerve stimulation, deep brain stimulation and transcranial focus stimulation.

Patients benefit not only from the advanced diagnostic methodology and surgical treatment options available at the Medical Center – University of Freiburg, but also from the extensive expertise gathered from large patient populations diagnosed and operated on. All of these factors combine in make Freiburg as a tertiary referral center.

## Research

- Detection and localization of dysplastic brain regions, including 3D imaging and MR postprocessing
- Source localization in high resolution EEG recordings
- Focus localization using stereo-EEG and subdural EEG, including analysis of new biomarkers of epileptogenicity to improve surgical treatment
- Functional imaging to identify memory-processing brain areas
- Treatment of hypothalamic hamartomas
- Clinical development of new brain stimulation techniques

# Neuroradiology

- Up-to-date diagnostic and multimodal treatment of brain tumors
- Center of minimally invasive therapy in diseases of the arteries and veins
- High specialization in diseases of the central nervous system
- Approximately **30,000** examinations per year

Our Department of Neuroradiology offers every kind of diagnostic examination, computed tomography, magnetic resonance imaging (MRI), angiography (examining the vessels), and myelography (examining the vertebral canal). Our caring staff performs these diagnostics with state-of-the-art technology, which contributes to the patients' fast recovery and return to normal life. We also perform all the modalities of minimally-invasive treatment of the brain, head and spine.

## Diagnostic and Treatment Services

We use catheters to treat defects in the vessels of the brain, head, neck and vertebral spine. In addition, aneurysms (bulging vessel wall) in brain arteries are treated non-surgically through occlusion with platinum coils admitted via catheter. In the same manner, narrowed arteries are expanded with the help of a balloon catheter and stabilized using a metal prosthesis known as a stent. This treatment prevents strokes. Even cancerous tumors can be treated with the help of intra-arterial chemotherapy or vessel-occluding substances applied directly via catheters into the tumor vessels. Further vascular arterial and venous malformations of the brain, head, skin and spine are treated through a minimally invasive treatment called embolization.

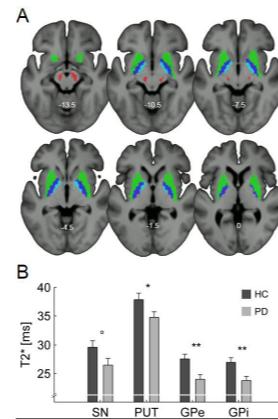


Prof. Dr. med.  
**Horst Urbach**  
Medical Director

Another sphere of expertise of our department is the treatment of chronic pain in the vertebral spine, pelvis, and limbs. Assisted by computed tomography, medicine is administered with the help of a narrow needle into the pain area. Through this puncture, substitute bone substances are injected, thus stabilizing the vertebrae affected by osteoporosis. This not only reduces pain, but also prevents fractures and eliminates the need for vertebral spine surgery.

## Diagnostics

- Diagnostic radiology
- Computed tomography
  - CT perfusion
  - CT angiography
  - CT myelography
  - 3D imaging
- Magnetic resonance tomography
  - Functional MRI (fMRI)
  - Diffusion and perfusion imaging
  - MR angiography
  - MR spectroscopy
  - 3D imaging
- Angiography (vascular imaging)
  - Functional angiography
  - Wada-test
  - Venous blood samples in the cavernous sinus
- Myelography



## Treatment

- Endovascular Interventions/Minimally:
  - Vasoocclusive therapies
    - Embolization of aneurysms ("Coiling")
    - Embolization of vascular malformations
    - Embolization of venous deformities
    - Embolization of vascularized tumors
  - Vessel-widening therapies
    - Recanalization of acute vessel occlusion
    - Reopening of a constricted vessel (stent supported PTA, vasodilatation)
    - Reopening of constricted veins
- CT-controlled pain treatment:
  - Blockages of the facets
  - Blockage of the root
  - Sympathetic blocks
  - Vertebroplasty/kyphoplasty
  - CT-controlled punctures of lesions of the spinal column

## Research

- Endovascular therapy of patients with arteriovenous malformations
- MR-angiography
- Animal experimental laboratory
- Development and testing of endovascular devices (stents, vessel occlusion set, retrievers, blood cooling systems)
- Endovascular treatment of aneurysms
- AVMs
- Endovascular treatment of stenoses with stents





**Prof. Dr. med.  
Volker Coenen**  
Medical Director

## Stereotactic and Functional Neurosurgery

The Department of Stereotactic and Functional Neurosurgery offers a wide range of diagnostic and treatment services for neurological diseases, especially movement disorders, brain tumors, pain, epilepsy and unidentified intracranial lesions. The stereotactic department has served local residents as well as international patients for more than 60 years. Interdisciplinary conferences involving several departments are offered when treating brain tumors and functional disorders.

Due to our proven expertise, the services offered by the Department of Stereotactic and Functional Neurosurgery are used by patients from all over the world. Treatment methods are tailored to each individual patient's needs. Quality assurance and risk minimization are the most important factors when providing high-end medicine.

- Around 150 stereotactic biopsies per year
- Around 50 deep brain stimulations per year
- Around 50 generator replacements for DBS per year
- Around 20 implantations of depth electrodes for epilepsy per year
- Around 20 cyst punctures per year
- Around 10 implantations of vagus nerve stimulators (epilepsy/depression) per year
- Around 10 implantations of Rickham catheters per year
- Around 10 radiofrequency ablations (trigeminal neuralgia/ hypothalamic hamartomas) per year

### Diagnostic and Treatment Services

In the field of neuro-oncology, there is special emphasis on the treatment of craniopharyngeomas, gliomas of the optic nerve, primary cerebral lymphomas, low-grade and high-grade gliomas, brain stem gliomas, cerebral metastases and cranial base meningiomas.

Functional neurosurgery includes deep brain stimulation for the treatment of various kinds of movement disorders (e.g. Parkinson's disease, essential tremor, dystonia) and epilepsy.

We perform the following procedures:

- Deep brain stimulation (DBS) for movement disorders (Parkinson's, tremor, dystonia), psychiatric disorders (depression, OCD) and pain syndromes
- PET-assisted, stereotactic serial biopsies of unclear cerebral lesions
- Stereotactic puncture of tumor cysts and implantation of catheters with Rickham reservoirs
- Interstitial radiosurgery by means of temporary implants



- Iodine 125 seeds in low-grade tumors
- Stereotactic ventriculocisternostomy in tumor related occlusive hydrocephalus
- Percutaneous radiofrequency ablation for trigeminal neuralgia
- Chemotherapy of brain tumors (first, second and third line, including individual therapies) in cooperation with the Comprehensive Cancer Center Freiburg (CCCF)
- Treatment of pediatric brain tumors in cooperation with the Center for Child and Adolescent Medicine of the Medical Center-University of Freiburg and CCCF
- Preparation of a structured treatment concept (including chemotherapy plans) and determination of the required follow-up examinations

### Research

- Further development of the latest diagnostics and therapeutic processes
- Deep brain stimulation for the treatment of refractory psychiatric diseases (OCD, depression, anorexia)
- Deep brain stimulation for movement disorders
- Deep brain and vagus nerve stimulation for epilepsy
- Vagus Nerve Stimulation for Depression
- Depth electrodes for stereo EEG in epilepsy (along with the Epilepsy Center of the Medical Center – University of Freiburg)

# Interdisciplinary Pain Center



Dr. med.  
**Kristin Kieselbach**  
Medical Director

The Interdisciplinary Pain Center gives special attention to the diagnostics and treatment of patients with chronic pain, and boasts one of the widest ranges of highly qualified pain specialists in Germany, brought together “under one roof”:

- Medical specialties include anesthesia, internal medicine, neurosurgery, neurology, orthopedics and psychiatry, chirotherapeutic and manual medicine
- Medical and psychological psychotherapy
- Occupational therapy and social medicine
- Qualified pain nurses
- Specially established “Pain Center” in central physiotherapy

All of our therapists are qualified in specific pain treatments. Additional competencies offered include palliative care, emergency and intensive care medicine as well as pain-specific psychotherapy.

## Diagnostic and Treatment Services

Backed by many years of experience, our doctors and therapists are dedicated to providing effective and lasting relief from suffering for patients with chronic pain.

Comprehensive, multimodal diagnostics and therapies have become invaluable in the latest, scientifically-based treatment of chronic pain diseases. These diagnostics are also used as second opinion procedures before deciding on treatments and surgeries.

Before coming to the Interdisciplinary Pain Center, each patient receives a detailed questionnaire. This, along with the patient’s medical records, are then carefully assessed by our team of specialists. In case of signs of a complex pain disease, a multimodal assessment is first conducted. This full-day assessment is followed then by an interdisciplinary team meeting to discuss a range of treatment options and a therapy plan.

We can provide a 3-4 week multimodal treatment program (a combination of medical, psychological, and physiotherapeutic procedures) in our Interdisciplinary Pain Center on an inpatient basis. We are one of only a few centers in Germany to offer such comprehensive diagnostics and treatment.



## Special Treatment Fields

The Interdisciplinary Pain Center uses state-of-the-art pain treatment methods such as medication regimens especially tailored to meet the individual patient’s needs, including opioid therapy. Interventional procedures for the temporary or long-term blocking of pain in the joints or nerves are mainly used for the spinal column region. Neuromodulatory techniques use drugs directly applied into the cerebrospinal fluid, or electrical impulses, to impact pain-triggering and pain-aggravating structures.

We specialize in the treatment of the following diseases and pain syndromes:

### Pain in the Spinal Column and Osteoarthritis/Osteoarthritis

- Caused by protruding or slipped intervertebral disks
- Degenerative changes, also osteoporosis
- Residual pain after spinal and intervertebral disk operations
- Pain from rheumatic – (non) inflammatory diseases

### Musculoskeletal Pain

- Fibromyalgia syndrome and chronic widespread pain

### Headache and Facial Pain

- Migraines
- Tension headache
- Headache induced by overmedication
- Cluster headache
- Trigeminal neuralgia/chronic idiopathic facial pain
- Residual pain after surgery in the oral, dental and jaw area, after brain and skull operations (also shunt operations)

### Pain Caused by Neuropathy

- Herpes zoster neuralgia
- Stump and phantom pain
- Diabetes and other metabolic disorders
- Complex regional pain syndrome Types I and II, sympathetically maintained pain syndromes (formerly Sudeck’s atrophy and causalgia)
- Infections
- Post chemotherapy pain

### Central Pain

- Post stroke
- Post spinal cord injuries

### Pain with restless legs syndrome (RLS)

### Cancer pain

**Visceral Pain Syndromes e.g. urogenital, inguinal, pelvic (floor) pain**

**Pain associated with spastic syndromes**

**Pain associated with depression and anxiety**

## Special Interventional / Invasive Treatment Techniques

### Cryoneurolysis/(cooled) radiofrequency therapy,

computer tomography- and fluoroscopy-assisted cold and heat denervation treatment in chronic back pain with disorders of the small vertebral and the iliosacral joints

### Neuromodulation:

- Implantation of pump systems for intrathecal therapy (e.g. morphine, baclofen and ziconotide) for severe pain syndromes and spastic disorders
- Spinal cord stimulation (SCS) as a therapeutic procedure to treat severe, neuropathic pain and blood flow disorders
  - Severe neuropathic pain of the locomotor system
  - Refractory peripheral vascular disease
  - Refractory angina in coronary heart disease
  - Cluster headaches
  - Other therapy-resistant headaches
- Occipital nerve stimulation
  - Cluster headaches
  - Other therapy-resistant headaches

## Special Medication Treatment Procedures

- Readjustment of drug dosages
- Withdrawal treatment for overuse of painkillers/opioids
- Baclofen therapy for chronic migraines

## Research

- Health Care Research: Analysis of patient care administered via multimodal therapy concepts
- Analysis of both surgical and interventional treatment options
- Scientific collaboration on pain therapies with numerous departments of the Medical Center – University of Freiburg (Department of Psychosomatic Medicine and Psychotherapy; Institute for Medical Ethics and History; Department of Obstetrics and Gynecology) as well as with external hospitals (e.g. Pain Center at the University Hospital Heidelberg)

# Nuclear Medicine

- Clinical and scientific focus on oncology, neurology and endocrinology
- More than 3,000 PET/CT scans per year
- In-house development and production of innovative radio-pharmaceuticals
- Innovative radionuclide treatments (e.g. in neuroendocrine, liver and prostate tumors)
- 14 medical doctors
- 12 basic scientists



Prof. Dr. Dr.  
**Philipp T. Meyer**  
Medical Director



The Department of Nuclear Medicine uses radiopharmaceuticals for diagnostics and treatment of various diseases with particular emphasis on oncological, neurological and endocrine diseases. While diagnostic procedures can be performed on an outpatient basis, most treatments with radioactive substances are performed on an inpatient basis to achieve optimal results and to comply with German radiation protection laws. The ward can accommodate up to 12 patients.

Our therapeutic facility is named after George von Hevesy, a Hungarian pioneer of nuclear medicine and Noble Prize winner, who worked as Professor for Physical Chemistry at the University of Freiburg.

## Diagnostic and Treatment Services

- Specialized clinic for benign and malignant thyroid diseases, offering the full spectrum of modern diagnostic and therapeutic options.
- Innovative treatments, e.g. peptide receptor radionuclide therapy (PRRT) for neuroendocrine tumors, radioligand therapy targeting the Prostate-Specific Membrane Antigen (PSMA) in prostate cancer, and selective internal radiation therapy (SIRT) for liver tumors.
- Scintigraphy, SPECT and SPECT/CT for diseases of the thyroid, skeleton, myocardium, lungs, kidneys and brain. Visualization of lymphatic drainage for sentinel lymph node resection. Support of radioguided surgery.
- State-of-the-art PET/CT technology (e.g. full-digital and time-of-flight PET imaging) with numerous molecular imaging probes for:



## Oncology

Detection, staging and treatment monitoring of cancer, in particular lung cancer, lymphoma, gastrointestinal malignancies, prostate cancer, melanoma, neuroendocrine tumors and brain tumors. Molecular imaging targets include glucose metabolism, amino acid transport, prostate-specific membrane antigen (PSMA), hormone synthesis and receptors, and hypoxia. PET-based radiation treatment planning, especially for stereotactic and intensity modulated radiotherapy.

## Neurology

State-of-the-art diagnostics, differential diagnostics and follow-up of neurodegenerative disorders, most notably mild cognitive impairment (MCI), dementia (e.g., Alzheimer's disease) and movement disorders (e.g., Parkinson's disease). Localization of epileptogenic foci in patients with seizures. Molecular imaging targets include glucose metabolism, perfusion, a variety of neurotransmitter receptors and transporters (e.g., dopaminergic) and neuropathology imaging (amyloid-beta and tau).

## Cardiovascular Imaging

Diagnosis, follow-up and prognostication of coronary heart disease. Detection of viable myocardium prior to revascularization. Diagnosis of acute and chronic lung embolism; presurgical assessment of lung function.

## Molecular Therapy

- Radioiodine therapy of hyperthyroidism and goiter.
- Radioiodine therapy and targeted therapies in thyroid cancer.
- PRRT of neuroendocrine tumors (e.g., with [177Lu]DOTA-TATE and other ligands).
- PSMA-targeting radio ligand therapy in prostate cancer.
- Treatment of primary and secondary liver tumors with SIRT.
- Radionuclide therapy of symptomatic bone metastases (e.g., 223Radium and other ligands).

## Second opinion service

## Research

- Detection, staging and treatment monitoring of cancer with PET/CT (personalized cancer treatment), including biological imaging for radionuclide therapy (theranostic) and radiation treatment planning.
- Molecular neuroimaging in dementia, movement disorders and basic neurosciences.
- Development, preclinical validation and clinical translation of molecular probes for diagnosis, treatment and intraoperative detection of tumors.
- New detector systems, reconstruction algorithms and quantification methods for PET & SPECT.



Prof. Dr. med.  
**Justus Duyster**  
Medical Director



# Hematology, Oncology and Stem Cell Transplantation

The objective of the Department of Hematology, Oncology and Stem Cell Transplantation is the diagnostics and treatment of patients with benign or malignant blood diseases or solid tumors in accordance with world standards and the most up-to-date methods.

We are dedicated to providing the highest quality of care for people with cancer and hematologic diseases to improve their quality of life. Over 90 doctors and scientists work in our department with more than 10,000 people undergoing inpatient treatment each year.

- Leading specialists in treatment for hematologic malignancies and solid cancers
- One of the largest oncology departments in Germany
- One of the largest stem cell transplantation centers in Europe
- More than **200** bone marrow/peripheral stem cell transplantations per year
- More than **10,000** patients annually
- **25,000** chemotherapies per year
- **90** medical specialists and research assistants

The Department of Hematology, Oncology and Stem Cell Transplantation is part of the Comprehensive Cancer Center Freiburg (CCCF), which in 2013 was named one of the best oncological centers of excellence in Germany by German Cancer Aid (Deutsche Krebshilfe). The focus of the CCCF is coordination of the highest quality interdisciplinary care and translational cancer research possible.

Treatment options include “classical” standard chemotherapy, hormonal therapy, immunotherapy, autologous and allogeneic stem cell transplantation and new drugs such as tyrosine kinase inhibitors. Every patient receives comprehensive information about their disease, the prognosis and possible treatment options. We cooperate with other departments of the Medical Center – University of Freiburg, and therefore initiate an individual treatment plan for each patient as part of a centralized tumor board decision. We have great experience in supportive care which includes sports therapy, pain management, nutrition or diet therapy, physiotherapy and psychological counseling. We strive to apply all of the latest and most effective methods for treating patients. Additionally, we focus on clinical research to develop new methods in the battle against cancer.

## Diagnostic and Treatment Services

The Department of Hematology, Oncology and Stem Cell Transplantation cares for patients with benign and malignant blood diseases, including bone marrow, as well as those with solid tumors. We offer inpatient and outpatient services with state-of-the-art diagnostics and treatment. We offer tailored, personalized treatment plans that take individual needs into account. In addition, our patients and their families have access to a wide range of support services.

### Diseases

- Malignant lymphomas
- Multiple myeloma
- Leukemias and myelodysplastic syndrome
- Myeloproliferative syndromes
- Solid tumors, especially patients with lung cancer, gastrointestinal tumors, urogenital tumors, breast cancer, malignant melanoma and sarcoma
- Bleeding disorders and thrombosis
- Benign blood disorders

### Treatments:

- Chemotherapy
- Autologous and allogeneic transplantation of bone marrow or peripheral blood stem cells including elderly patients (up to 75 years old)
- Hormonal therapy
- Immunotherapy
- Targeted therapy
- Supportive therapy

These treatments are carried out according to GCP (good clinical practice) standards, which comprise the department’s collection of treatment protocols (the “Blue Book” and GCP manual). In cooperation with other departments of the Medical Center – University of Freiburg, we plan a combination of various treatments that will lead to the best possible outcome for each patient.

## Research

Our experts take part in a variety of multidisciplinary research projects investigating malignant lymphomas, multiple myeloma, acute leukemias, myeloproliferative disorders, an especially lung cancer and gastro-intestinal tumors. Our research topics include but are not limited to:

- Acute myelogenous leukemia (AML) / myelodysplasia syndrome
- Hemopoiesis / blood formation
- Change of the chemokine receptors signal
- Special immunotherapy
- Biology of stem cells
- Chronic myelogenous leukemia (CML)
- Conventional immunotherapy
- Immunology and active immunotherapy of malignant lymphomas
- Cell cycle regulation



**Prof. Dr. med.**  
**Thomas Reinhard**  
Medical Director

## Eye Center

- 77,500 outpatients per year
- 5,300 inpatients per year
- 27,000 operations per year
- LIONS Cornea Transplant Bank
- About 4,000 corneal transplantations performed 2003-2016

The Eye Center of the Medical Center – University of Freiburg spans almost 150 years of history and tradition. 5,300 patients undergo inpatient treatment every year with another 77,500 treated as outpatients. More than 27,000 surgical procedures a year are carried out, half of which are performed on an outpatient treatment basis.

### Diagnostic and Treatment Services

- Laser scanning tomography
- Analysis of ocular motility
- Angiography of the retinal vessels
- Cataract microscopy of the cornea
- Corneal topography
- Electro-oculography
- Electroretinography
- High-quality ultrasound bio-microscopy
- Laser measurement of perfusion
- Microscopy of the cornea endothelium
- Optical coherence tomography imaging of retina
- Plus many other diagnostic methods for eye diseases

### Treatment

#### Keratoplasty/Corneal Surgery

Ophthalmologists of the University Eye of the Medical Center – University of Freiburg have made outstanding contributions to the treatment of corneal diseases. Emergency and scheduled keratoplasty is performed on a daily basis. Via corneal topography, a map of the patient's cornea may be created. This method ensures the most accurate selection of contact lenses, glasses, and surgical procedures of the cornea.

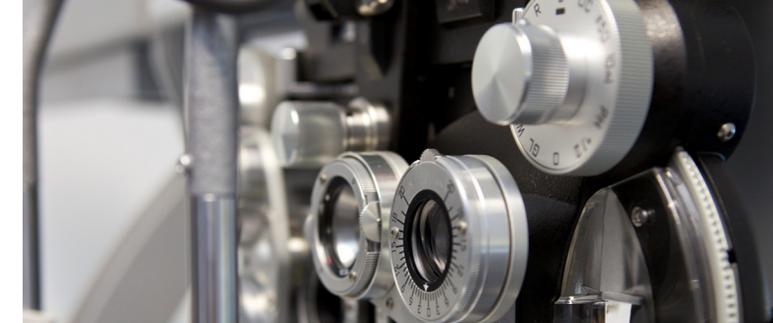
The Baden-Wuerttemberg LIONS Cornea Transplant Bank was established by the Eye Center. This transplant bank preserves and prepares about 600 donor corneas per year and conducts scientific research on corneal diseases.

#### Refractive Surgery (Femto-LASIK, PRK)

Our refractive surgery unit can assist with problems of up to -10 diopters myopia and up to +4 diopters hyperopia, as well as astigmatism of up to 3 diopters. Surgery is performed on an outpatient basis with pain-free, modern laser surgical methods which allow the patient to regain full eyesight soon after surgery. For severe myopia (-10 up to -30 diopters) an artificial lens for the posterior chamber of the eye is developed and successfully implanted.

#### Pediatric Ophthalmology, Strabismology, Neuro-ophthalmology

Our pediatric ophthalmology, strabismology and neuro-ophthalmology section, headed by Professor Dr. Wolf Lagrèze, specializes in the treatment of strabismus, optic nerve and brain diseases related to vision. For babies and children we offer treatment for all kinds of eye problems, for example childhood cataracts or glaucoma.



#### Interdisciplinary center for orbital diseases

In close cooperation with colleagues from other departments we diagnose and treat illness such as orbitopathy in Graves disease or complex orbital tumors. We have developed innovative and minimally invasive procedures to treat such conditions.

#### Additional treatment options available include:

- Glaucoma surgery
- Cataract surgery, including extra-capsular cataract surgery with the implantation artificial intraocular lenses
- Plastic and reconstructive surgery
- Surgery of retinal and vitreal diseases
- Eyelid surgery, including the correction of abnormal eyelids, removal of malignant tumors, and cosmetic surgery such as the lifting of the upper or lower eyelids
- Retinopathy of premature infants
- Retinoblastoma
- Uveitis and abnormal development of eyesight

### Research

The Eye Center of the Medical Center – University of Freiburg has been active and successful in many scientific and research fields, including corneal diseases (especially corneal transplantation), stem cell therapy, retinal angiogenesis, ocular blood circulation and neuroprotection.



# Orthopedics and Trauma Surgery

- One of the leading orthopedic and traumatology centers in Germany
- 104 inpatient beds
- 5,000 operations per year
- 5,500 inpatients per year
- 50,200 outpatients per year
- 7 operation theatres
- 45 medical doctors



Prof. Dr. med.  
**Hagen Schmal**  
Medical Director



The Department of Orthopedics and Trauma Surgery at the Medical Center – University of Freiburg was established in 1970 and is one of the longest-standing in Germany. It consists of three divisions:

- Division of Orthopedics
- Division of Trauma Surgery
- Division of Sports Orthopedics and Sports Injury

Additionally there are several subdivisions like Shoulder Surgery, Knee Surgery, Spine Surgery, Hip Surgery, Prosthetic Replacements, and Pediatric Orthopedics.

We treat over 50,000 patients annually on an outpatient basis and we perform about 5,000 operations per year.

Successful treatment is guaranteed through many years of experience in this field, well established surgical techniques, and post-operative follow-up methods. Additionally, modern computer aided navigation techniques are applied for pelvic surgery, spinal surgery and correctional osteotomies. We apply minimal invasive operational methods wherever possible.

The entire team of the Department of Orthopedics and Trauma Surgery is committed to providing the very best care to our patients in a both professional and compassionate manner. We offer the most current treatments and surgical techniques for any orthopedic problem. We are dedicated to excellent clinical care.

Our sub-specialties work as an integrated service within the Department Orthopedic and Trauma Surgery, as well as with other disciplines such as Radiology, Physical Medicine, Rehabilitation, and others.

It is our foremost goal to provide you with a comprehensive medical approach.

## Diagnostics and Treatment

### Shoulder

#### Arthroscopic Procedures:

- Rotator cuff repair
- Shoulder stabilization
- Surgery of the long head of the biceps (SLAP lesions)
- Stabilization of the AC-Joint
- Removal of calcifying deposits
- Assisted fracture treatment (glenoid fractures, coracoid fractures, fractures of the greater tuberosities, Hill- Sachs-Lesions)

#### Shoulder Arthroplasties for Degenerative and Trauma Situations

- Resurfacing total shoulder arthroplasty
- Short stemmed shoulder arthroplasty
- Reversed shoulder arthroplasty
- Revision shoulder arthroplasty

#### Fracture Treatment:

- The whole shoulder girdle (SC-Joint, clavicle, AC-Joint, Scapula)
- The proximal humerus including all kinds of treatment
- Sequelae of the proximal humerus, AC-joint and clavicle

### Hip

- Minimal invasive remodeling of the femoral neck
- Minimal invasive hip arthroplasty
- Pelvic osteotomies

### Knee

- Ligamentous injuries and chronic instabilities of the knee and ankle
- Correction of lower limb alignment, cartilage defects and OCD with strong scientific focus on cartilage repair, including autologous chondrocyte implantation, microfracture, osteochondral autografts
- Pathologies of the meniscus, including arthroscopic meniscus surgery, reconstruction technique and partial meniscus replacement
- Patellofemoral instability
- Patellofemoral osteoarthritis
- Navigated implantations of endoprosthetic joint replacement



### Spine

- Disc herniation
- Intervertebral disk prosthesis
- (Degenerative) deformity correction
- Spinal stenosis
- Intervertebral fusion (TLIF, PLIF, ALIF, XLIF)
- Spinal tumors (interdisciplinary with oncology, nuclear medicine, etc.)
- Inflammatory diseases spondylitis/spondylodiscitis
- Fractures, incl. the treatment of osteoporotic fractures

### Foot and ankle

- Hallux valgus
- Arthrodesis – also using arthroscopic techniques
- Flatfoot
- Clubfoot
- Achilles tendon lesions and tendinopathies
- Charcot foot and diabetic foot syndrome
- Fracture treatment
- Amputations

Treatment of injured children is a further focus in our department. The medical care of young children, depending on their age, is carried out together with the Center for Pediatrics, which has special consulting hours for children.

Furthermore, a specialized interdisciplinary department was opened in 1998, which manages treatment and diagnostics of talocrural joint disease as well as infectious inflammations of the leg in the context of diabetic microangiopathies.

# Oto-Rhino-Laryngology (ENT: Ear, Nose, Throat)



Prof. Dr. med.  
**Andreas Knopf**  
Medical Director



Welcome to the Department of Oto-Rhino-Laryngology (ENT) of the Medical Center – University of Freiburg. The Department provides medical assistance for all ear, nose, and throat diseases. In particular, we perform operations on tumors in the ear, nose, throat, and paranasal sinus areas. Modern diagnostics and therapy, as well as ultramodern equipment, help us to create a favorable atmosphere for the treatment of all our patients.

State of the art technological equipment and a highly qualified medical staff is the secret of success for the ENT Department.

Unique technological facilities, combined with the scientific and clinical experience and expertise of our medical staff, enable us to provide a broad spectrum of services to our patients.

- One of the largest ENT departments in Germany
- Member of the CCCF oncology center of excellence
- One of the largest Cochlear Implant Centers in Europe
- More than 3,800 cochlear implant operations performed
- 30,000 outpatients per year
- 6,500 inpatients per year
- 34 medical specialists

These include intensive tinnitus treatment, voice treatment, minimally-invasive sinus surgery, and reconstructive microsurgery of the ear to improve hearing in cases of chronic middle ear inflammations and otosclerosis as well as minimal-invasive to extensive reconstructive tumor surgery.

## Diagnostic and Treatment Services

### Allergy and paranasal sinuses

- Endoscopic minimal invasive surgery
- CT-navigation
- Frontal skull base surgery
- Aesthetic nose surgery
- Laser and Radiofrequency surgery
- Biologics

### Ear

- Hearing improvement microsurgery
- Glomus tumor (paraganglioma)
- Cochlear implantation
- Auditory brainstem implantation
- Lateral skull base surgery
- Auricle correction
- Vertigo diagnosis, drug and surgical treatment

### Pediatric ENT

- Adenotomy
- Tonsillectomy
- Choanal atresia
- Removal of branchiogenic cysts

### Phoniatrics

- Stroboscopy
- Comprehensive voice diagnostics
- Larynx and vocal cord microsurgery
- Vocal cord augmentation
- Laser therapy

### Sleep medicine

- Comprehensive diagnostics
- Watch Pat and Polysomnography
- CPAP
- Hypoglossus stimulator



### Tumors

- Tumors of throat, larynx, salivary glands, lymph nodes, face, nose and paranasal sinuses
- Laser and Radiofrequency surgery
- Minimal invasive surgery
- Extensive reconstructive tumor surgery
- Ultrasound-guided surgery

### Innovative methods

- HR and Contrast-enhanced ultrasound
- Ultrasound-guided surgery
- Laser and Radiofrequency surgery
- Laser-assisted middle ear surgery
- CT-navigated surgery
- 3D-microcopy
- Full-digital microscopy

### Research

- Processor technology in Cochlea Implants
- Surveillance after middle ear surgery
- Middle ear implants
- Surveillance after endoscopic microsurgery
- Molecular differentiation of chronic sinusitis
- Contrast-enhanced ultrasound and elastography in tumors
- Narrow-band spectroscopy in early tumor detection
- Molecular detection of tumor recurrency and metastasis
- Artificial intelligence in salivary gland diseases
- Diagnosis and treatment of head and neck autoimmunity

# Surgical Pathology



- One of the largest and most comprehensive surgical pathology institutes in Germany
- 50,000 surgical specimens examined per year
- 5,000 cases reviewed per year

The Institute for Surgical Pathology is one of the largest and most comprehensive in Germany, and provides a full range of diagnostic services in this field. We use state-of-the-art technology and the most advanced diagnostic techniques available to analyze thousands of tissue samples every year. Expert consultation is available in every area of surgical pathology, predominantly the microscopic and molecular diagnostics performed on tissues, such as biopsies, cellular aspirates and resections, as well as liquid biopsies. Our pathologists collaborate with other medical specialists in multidisciplinary teams to customize the treatment of each patient we care for, based on their individual diagnosis.

Prof. Dr. med.  
**Martin Werner**  
Medical Director



## Diagnostic Services

- Extensive clinical and interpretative advice on prevention, diagnosis, and treatment of human disease
- Precise histologic and cytologic classification
- Second opinion regarding pathology diagnoses
- Testing for clinically useful genetic alterations in tumors and liquid biopsies
- Many highly specialized RfB-certified procedures such as:
  - Immunohistochemistry
  - In situ hybridization
- Gene sequencing, including next generation gene sequencing, quantitative and digital PCR technologies as well as methylation and gene expression analyses

The Institute of Surgical Pathology includes specialized teams of pathologists and molecular biologists. They are supported by a dedicated core of staff and technicians. The pathologists are vital team members of the Medical Center – University of Freiburg for diagnosis and treatment of cancer involving the breast, lung, gastrointestinal tract, head and neck, prostate, urinary tract, and female reproductive system as well as lymph node, bone marrow and blood. They are also involved in interdisciplinary teams for diseases of the immune system as well as inflammatory diseases of various organs such as kidney, lung and liver.

## Research

Departmental research is focused around three major fields: Molecular Oncology, Hemato-/Immunopathology and Translational Proteomics. We bring together researchers and clinicians with an integrated, multidisciplinary approach in order to advance our understanding of disease for the benefit of patients.

# Pneumology

- 22 medical specialists
- 18 beds
- Specialized sleep laboratory
- Specialization in cystic and pulmonary fibrosis

The Department of Pneumology deals with prophylaxis, detection and conservative treatment of diseases of the respiratory system and the lungs. Thanks to our intensive collaboration with the Department of Thoracic Surgery, we provide the most advanced treatment to our patients. Our specialists also actively take part in numerous international clinical research projects.

## Diagnostic and Treatment Services

### Diagnostics

- Preventive pulmonology check-ups Spirometer und bodyplethysmography
- Blood analysis
- Measuring of diffusion capacity
- (Spiro)-ergometry
- Force of the breathing muscles
- Sonography of the thorax organs, echocardiography
- Bronchoscopy incl. autofluorescence process and endobronchial ultrasound
- Differential- und immunocytology of Bronchoalveolar Lavage (BAL)
- Allergy diagnosis (in vivo, in vitro)
- Lymphocyte proliferation test
- Cardiorespiratory polygraphy, polysomnography
- Right heart catheter examination including medication testing



Prof. Dr. med.  
**Joachim Müller-Quernheim**  
Medical Director

### Treatment

- Interstitial lung diseases (Idiopathic Pulmonary Fibrosis, sarcoidosis and chronic Berylliosis)
- Chronic obstructive pulmonary disease (COPD)
- Non-invasive ventilation
- Weaning
- Sleep laboratory
- Mucoviscidosis
- Pulmonary hypertension
- Allergological immunotherapy
- Lung cancer
- Lung transplantation

### Research

Our specialists are currently involved in numerous international clinical research programs on:

- Diffuse interstitial lung diseases
- Pulmonary fibrosis
- Sarcoidosis
- Chronic berylliosis

# Pediatrics and Adolescent Medicine

- Center of Excellence
- One of the largest children's medical centers in Germany
- 7,000 inpatients per year
- 40,000 outpatients per year

Situated in pleasant surroundings within walking distance of downtown Freiburg, the Center for Pediatrics at the Medical Center – University of Freiburg is one of the largest of its kind in Germany. Examinations can be performed on an outpatient, day-patient or inpatient basis. For accommodation, parents can choose from several high-quality hotels nearby. For emotional comfort, one parent can be accommodated in the child's room.

Medical care for children is a delicate matter. It requires state-of-the-art technology, advanced knowledge in the field, and a dedicated staff working in a child-friendly environment. Most importantly, you need to be able to trust the physicians and nurses who take care of your child.



The Center for Pediatrics is renowned for excellence in the diagnostics and management of diseases in children and adolescents. As an academic teaching hospital, we are committed to scientific research and top-level medical care. Our medical team is complemented by specialist consultants in Pediatric Surgery, Pediatric Cardiac Surgery, Pediatric Cardiac Interventional Therapy (Catheter Lab), Pediatric Neurosurgery, Maxillary and Facial Surgery, Plastic Surgery, Pediatric Urology, Pediatric Orthopedics, Medical Genetics, Pediatric Nutrition, and Psychology. We provide diagnostics and expert treatment advice for many severe and rare disorders.

This broad range of medical expertise and treatment options has made us a Center of Excellence, and a referral hospital for other pediatric medical facilities.

Your child is in good hands in our Center, and we value the trust you place in us.

## The Center for Pediatrics of the Medical Center – University of Freiburg consists of four departments:



**Pediatrics** (including neonatology, growth disturbances, congenital, metabolic disorders, etc.)

Medical Director  
**Prof. Dr. Ute Spiekerkötter**



**Pediatric oncology**

Medical Director  
**Prof. Dr. Charlotte Niemeyer**



**Congenital Heart Defects and Pediatric Cardiology** (see the chapter "Cardiology")

Medical Director  
**Prof. Dr. Brigitte Stiller**

**Neuropediatrics and Muscle Disorders**

Medical Director (interim)  
**Prof. Dr. Charlotte Niemeyer**



## Pediatrics

**including Neonatology, Growth Disturbances, Congenital and Metabolic Disorders, Nephrology, Gastroenterology, Pulmonology, Allergology, Rheumatology and Infectious Diseases**

- **Diagnostics and treatment of metabolic disorders (including detoxification procedures in collaboration with our Pediatric Intensive Care Unit for children of any age)**
- **Advanced genetic diagnostics (especially skeletal malformations and inborn errors of metabolism)**
- **Diagnostics and treatment of lung diseases (pulmonary functions tests for children of any age)**
- **Special expertise in rheumatology, chronic inflammatory and infectious diseases**

The Section for Metabolism, Endocrinology and Diabetes employs the latest developments in the treatment of inborn metabolic disorders, type 1 and 2 diabetes, and congenital and acquired hormonal disorders. Our Laboratory of Metabolic Diseases specializes in the diagnostics of inborn errors of metabolism, and we receive samples for examination from around the world.

Our team also consists of pediatric geneticists performing both genetic testing in our laboratory and genetic counseling.

The Section of Allergology and Pulmonology is engaged in the diagnostics and treatment of pulmonary and allergic diseases as well as the management of cystic fibrosis.

Our clinical range consists of diagnostics and treatment of gastrointestinal tract diseases, kidney and urinary system diseases, artificial dialysis, follow-up examinations before and after kidney transplantation, and rheumatic and autoimmune diseases. We also have extensive expertise in the management of infectious diseases

**We Offer Specialized Children's Check-ups, Vaccinations, and Diagnostic Work-ups and Treatment of:**

- Inborn metabolic disorders (including detoxification procedures in collaboration with our Pediatric Intensive Care Unit for children of all ages)
- Growth disorders and short stature
- Endocrine disorders and diabetes
- Rheumatic and inflammatory diseases, infectious diseases
- Lung diseases (i.e. childhood asthma) and cystic fibrosis (including pulmonary functional testing in babies)
- Allergic disposition
- Obesity and nutritional disorders
- Lymphadenopathy (national study group nontuberculous mycobacteria)
- Gastrointestinal and liver disease
- Renal disorders
- Advanced genetic diagnostics (skeletal malformations)

## Neuropediatrics and Muscle Disorders

- **Diagnosis and pharmacological treatment of epilepsy**
- **Diagnosis and treatment of neuromuscular diseases**
- **Diagnosis and counseling in neurometabolic and neurodegenerative disorders**
- **Diagnosis and counseling in genetic and developmental disorders**

Our Center for Pediatrics staff has extensive hands-on experience and a well-earned reputation in the field of pediatric neurology. It is officially recognized as a **European reference center for neuromuscular disorders and epilepsies**. Surgical interventions are performed in cooperation with the Department of General Neurosurgery of the Medical Center – University of Freiburg. Postoperative rehabilitation activities are carried out in specialized rehabilitation hospitals in the surrounding area.



## Pediatric Hematology and Oncology

- **Study Coordinating Center for the European Working Group of rare leukemias and aplastic anemia in childhood**
- **Treatment and research for children with immunodeficiencies**
- **Multidisciplinary approach to patients with solid tumors, brain tumors and vascular anomalies**

The Department of Hematology and Oncology cares for children and adolescents with blood diseases, leukemias, solid tumors and other forms of cancer. It is also specialized in immunodeficiency and coagulation disorders. Outpatient and inpatient services are available for diagnostic and therapeutic procedures. Allogeneic stem cell transplants are performed on patients with inborn defects and leukemias.

## Research

Our research is carried out in genetics and metabolic congenital diseases, as well as kidney and immune system diseases of newborn infants. Our scientific work in the field of leukemias, bone marrow failure and stem cell transplantation has become well recognized all over the world.



**Prof. Dr. med.  
Björn Stark  
Medical Director**

# Plastic and Hand Surgery



- 3,000 operations per year
- 10,000 outpatients per year
- Top quality plastic surgery
- 14 plastic surgeons
- Private clinic for aesthetic surgery

Aesthetics, beauty, the traditions of German medicine, and advanced technologies are inseparably bound in the everyday practice of the Department of Plastic and Hand Surgery. We are a young team of 14 plastic surgeons. Pediatric and adult reconstructive procedures and complex microsurgeries after various traumas, burn injuries, and tumors constitute the main specializations of our department. Our specialists offer the most advanced treatment approaches and use unique technologies which allow us to meet many of our patients' demands and requirements.

Our department is in charge of an area with a population of 2 million people. Over 10,000 people undergo outpatient treatment and about 3,000 operations are performed here annually. Our highly qualified medical personnel and special plastic surgery operating rooms, along with the newest equipment for a variety of aesthetic procedures, account for the success and reputation of the Department of Plastic and Hand Surgery, with Professor G. Björn Stark being well-known among aesthetic surgeons worldwide.

Hand surgery, one of the most interesting specializations in our department, has especially developed during the last ten years. We perform hand microsurgeries, which require the most highly professional and competent surgeons.



## Diagnostic and Treatment Services

The Department of Plastic and Hand Surgery offers an entire range of aesthetic surgical services, such as reconstructive breast operations after cancer diseases, lifting, breast enlargement or reduction, and face lifting. Naturally, every person wants to be good looking. In the course of an individual, objective consultation, our department's health professionals will help you specify and choose the optimal methods for improving your appearance.

For purposes of aesthetic surgery, the Medical Center – University of Freiburg also established the Erich Lexer Clinic, a special private facility offering additional luxury medical care services.

Transplantations, endoscopic decompression (relieving pressure), surgery of nerve compressions, as well as the interdisciplinary treatment of lymphatic diseases, are also among the skills in our department. Many operations are conducted on an outpatient basis.

We also partner with specialized hospitals providing treatment of lymphatic diseases. One of these is the Földi Clinic where patients undergo rehabilitation. This clinic is located in Hinterzarten, one of the most popular tourist towns in southern Germany.

## Research

Our Department of Plastic and Hand Surgery is one of the founders of the European Tissue Engineering Society (1997). We actively carry out scientific research in the fields of regenerative medicine and gene therapy.

Our highly professional, experienced, attentive staff would be happy to advise you on your individual questions and concerns. Our training, clinical experience and scientific research are driven by a sincere dedication to excellent medical care. We want to improve your quality of life.



**Prof. Dr. med.**  
**Anca-Ligia Grosu**  
Medical Director

# Radiation Oncology

The Department of Radiation Oncology at the Medical Center – University of Freiburg is equipped with the newest technology for individual treatment planning and implementation of all radiooncological methods in external beam radiotherapy, brachytherapy and intraoperative radiation therapy.

We have extensive experience in high-precision (radiosurgery, stereotactic and image guided radiotherapy) as well as intensity modulated radiotherapy (IMRT). The TrueBeam STx with ExacTrac IGRT control system for radiosurgery and stereotactic radiotherapy shortens treatment times, increases patient comfort, and enables high-precision treatment for patients with difficult-to-treat cancers of the brain, spine, lungs, liver, pancreas and prostate.

We have many years of experience in brachytherapy (HDR, seed implantation) and intraoperative radiotherapy (IORT), and achieve excellent treatment results.

In addition to CT and MRI, we also use biological imaging (e.g. PET/CT) for treatment planning.

Our participation in interdisciplinary tumor boards provides the choice of the best treatment method for all patients.

In our radiobiology laboratory, we explore new treatment approaches such as radio-immunotherapy.

We carry out many multicentric clinical trials that demonstrate our expertise and innovative orientation.



- 3,000 patients per year: one of the biggest Radiation Oncology departments in Germany
- Long tradition: radiation therapy at the Medical Center – University of Freiburg since 1899
- Research focus: high precision radiation therapy, biomarkers and bio-imaging for radiotherapy planning and monitoring, interplay between radiation and the immune system

## Diagnostic and Treatment Services

- 3D- and 4D-conformal external beam radiotherapy (EBRT)
- Radiosurgery (SRS) and fractionated stereotactic radiotherapy (SFR)
- Intensity-Modulated Radiotherapy (IMRT, VMAT)
- 3D- and 4D-image-guided radiotherapy (IGRT, Gating)
- 3D- and 4D-surface image-guided positioning and verification
- Intraoperative radiotherapy (IORT): Intrabeam system and linear accelerator with electrons
- HDR (afterloading) and LDR (low dose-rate) brachytherapy
- 3D- and 4D-Computed Tomography (CT), MRI- and PET/CT-based radiotherapy planning
- Surface hyperthermia in combination with external beam radiotherapy



## Equipment

### Teletherapy (5 linear accelerators)

- Equipped with photon and electron beams, 3D-control systems and cone-beam CT for image-guided radiotherapy (Elekta and Varian), all with multileaf collimators
- 1 accelerator with a high-definition multileaf-collimator enabling high-resolution and high-precision (stereotactic) radiotherapy / radiosurgery
- Tomotherapy system (Accuray) delivering helical intensity-modulated radiotherapy
- 4D surface-scanning system (C-Rad) for respiratory-gated treatment delivery, especially for the treatment of breast cancer

### Brachytherapy

- HDR afterloading device (Elekta) with Iridium-192

### Intraoperative radiotherapy (IORT)

Intraoperative radiotherapy facilities with:

- A dedicated operating room equipped with an electron linear accelerator and HDR afterloading device
- A dedicated operating room equipped with an Intrabeam device (Zeiss), especially used for breast cancer treatment

### Hyperthermia

- Surface hyperthermia, using a TWH 1500 (Hydrosun)



## Research

- Development of new technology for high-precision radiation therapy
- Biological imaging for radiation treatment planning and monitoring
- Combination of radiation therapy with new drugs for radiosensitization or radioprotection
- Radiobiology research: focus on cancer stem cells, combined immunotherapy and radiation therapy





**Prof. Dr. med.**  
**Fabian Bamberg**  
Director and Chair

Welcome to the Department of Diagnostic and Interventional Radiology at the Medical Center – University of Freiburg!

Our Department is one of the premier medical imaging facilities in Europe with more than 50 physicians with subspecialized expertise in oncologic, cardio-thoracic, musculoskeletal, abdominal or breast imaging, as well as image-guided intervention. They are supported by more than 80 specialist technicians. Our physicians are part of integrated, patient-centered teams, in which we are providing our colleagues with the diagnostic information, required for your therapy.

To deliver the medical imaging you need, we are working with latest imaging technology, state-of-the-art computed tomography (CT) and magnetic resonance imaging (MRI) scanners. Together with our clinical partners, we tailor the diagnostic pathway according to your requirements, following personalized CT and MRI examination protocols, specific for your disease.

As a leading academic center for imaging research, innovative techniques find immediate translation into our clinical imaging



# Radiology

- Siemens Reference Center
- 6 CTs and 13 MRIs with state-of-the-art technology
- 80 technicians, 50 radiologists
- Teleradiological services

routine, utilizing our facilities to continuously advance diagnostic medicine.

Adapted for the specific requirements of your therapy, the Department of Diagnostic and Interventional Radiology offers you access to whole-body MRI and CT imaging including non-invasive, virtual angiography, tissue mapping and dynamic imaging.

Our CT scanners operate with dramatically reduced radiation doses while at the same time enabling highest contrast and time-resolved dynamic imaging. Latest MRI methodology allows for non-invasive tissue characterization and radiation-free evaluation of abdominal organs as well as vascular structures and functional imaging of the heart.

Our specialists for minimally invasive therapy use CT and conventional x-ray angiography to guide biopsy or local therapy in malignant diseases of the breast as well as the abdomen and moreover use endovascular techniques to aid in vascular disorders.

Whether you are coming for your first diagnostic examination, are receiving image-guided therapy or ask for a second expert opinion on already acquired imaging scans, our department's staff is devoted to meet your needs and making your medical imaging experience as comfortable as possible.

We do our best to ensure that you are not rushed into or out of our department, that you feel safe, and that all of your questions and needs are given full attention.

We adhere to the highest safety and quality standards.



## Diagnostic and Treatment Services

### Diagnostic Radiology

- Cardiovascular imaging
- Modern vascular diagnostics
- Musculoskeletal imaging and sport injuries
- Breast imaging
- Gastrointestinal imaging incl. virtual colonoscopy
- Oncologic staging and therapy monitoring
- Thoracic imaging
- Child-friendly MRI-scanner
- Brain and spine imaging

### Interventional Radiology and Treatment

- Angioplasty and stenting for peripheral vascular disease
- Tumor ablation
- Myoma embolization
- Transjugular Intrahepatic Portosystemic Shunts (TIPS)
- Abscess management
- CT-guided biopsies
- TACE - Transcatheter Arterial Chemoembolization
- SIRT - Selective Internal Radiation Therapy for Liver Tumors

## Teleradiology

Second expert opinion on examinations, already performed on you.

## Research

Research carried out in the Department of Radiology in Freiburg is setting important trends in:

- Innovative MRI Technology
- Whole-body MR imaging
- Digital mammography and breast MRI
- Low-dose CT Technology
- Non-invasive CT imaging of cardiovascular disease
- Minimally invasive tumor management





**Prof. Dr. med.**  
**Reinhard Voll**  
**Medical Director**

## Rheumatology and Clinical Immunology

Thanks to experienced specialists as well as state-of-the-art diagnostic and treatment facilities, our department is well-equipped to handle any immunologic disease ranging from rheumatism and inflammatory systemic diseases of connective tissue and blood vessels to immunodeficiencies. The Department of Rheumatology and Clinical Immunology is specialized in the diagnostics and treatment of autoimmune diseases and other disorders of the immune system, i.e. rheumatic diseases as well as primary and secondary immunodeficiencies. Our main goal is to understand the pathogenesis of the disease and find ways to re-establish and maintain the balance of the immune system – tolerance to one's own body and reaction against "foreign" pathogenic microorganisms.

### Diagnostic and Treatment Services

#### Inflammation of Joints and Tendons

- Rheumatoid arthritis
- Spondyloarthropathies
- Reactive arthritis
- Bechterew's disease (Ankylosing spondylitis)
- Psoriatic arthritis
- Gout and pseudogout syndrome
- Activated osteoarthritis
- Infectious arthritis

- Lyme disease
- Tendon pain, tendinitis, enthesitis
- Inflammation of the tendon sheath (tenosynovitis).
- Soft tissue rheumatic disorders/fibromyalgia syndrome
- Polymyalgia rheumatica

#### Connective Tissue Diseases

Connective tissue diseases are characterized by systemic autoimmunity and inflammation of the connective tissue. In addition to joints, tendons and muscles, the blood vessels, kidneys, lungs, heart, skin and nervous system may also be affected and can become severely damaged. One such disease is systemic lupus erythematosus (SLE), which mostly affects women of childbearing age. Other connective tissue diseases include systemic sclerosis, inflammatory muscle diseases (immune-mediated myositis), and Sjögren's syndrome.

Our department has special expertise in the treatment of:

- Systemic lupus erythematosus (SLE)
- Mixed connective tissue disease (MCTD)
- Overlap syndrome
- Anti-phospholipid syndrome
- Sjogren's syndrome
- Dermato- and poliomyositis

### Vasculitides and Inflammatory Diseases of the Blood Vessels

While the prevalence of immune vasculitides – e.g. giant cell arteritis, granulomatosis with polyangiitis (Wegener's disease), microscopic polyangiitis, eosinophilic granulomatosis with polyangiitis (Churg-Strauss syndrome), panarteritis nodosa, cryoglobulinemia – is rather low (5-10 cases per 100,000 people per year), they affect the blood vessels, connective tissues and internal organs and are often life threatening..

The Department of Rheumatology and Clinical Immunology with its Section for Immune-mediated Vasculitides (Head: PD Dr. Jens Thiel) is part of the Freiburg Vasculitis Center, jointly led by PD Dr. Nils Venhoff (Department of Rheumatology) and Elke Neumann-Haefelin (Department of Nephrology).

We offer diagnostics and treatment for the following diseases:

- Giant cell arteritis/polymyalgia rheumatica
- Takayasu arteritis
- Granulomatosis with polyangiitis (GPA, Wegener's disease)
- Eosinophilic granulomatosis with polyangiitis (EGPA, Churg-Strauss syndrome)
- Panarteritis nodosa
- Cryoglobulinemic vasculitis
- Henoch-Schonlein purpura
- Behcet's disease
- IgG4-related diseases such as Ormond's disease
- Winiwarter-Buerger disease
- Urticaria vasculitis

### Other Autoimmune and Autoinflammatory Diseases

- Autoimmune hemolytic anemia
- Cold agglutinin disease
- Cryoglobulinemia
- Immune-mediated thrombocytopenia
- Sarcoidosis, Löfgren's syndrome
- IgG4-related diseases such as Ormond's disease
- Still's disease
- Periodic fever syndromes including mediterranean fever, TRAPS, cryopyrin-associated syndromes

### Primary Immunodeficiencies

Primary immunodeficiencies represent a heterogenous group of disorders of the immune system resulting in susceptibility to infections. By definition, primary immunodeficiencies are not caused by another disease, environmental influences or immunosuppressive treatment. Most primary immunodeficiencies are genetic disorders and become apparent early in life. Common variable immunodeficiency (CVID) often manifests in adults. Primary immunodeficiencies are treated in the Center for Chronic Immunodeficiency (CCI). The Department of Rheumatology and Clinical Immunology makes an important contribution to the care of adult primary immunodeficiency patients within the CCI (Prof. Dr. Klaus Warnatz, Prof. Bodo Grimbacher).

### Secondary Immunodeficiency

Secondary immunodeficiencies are caused by immunosuppressive treatment and chemotherapy of malignancies or infections such as HIV. Secondary immunodeficiencies caused by immunosuppressive treatment of autoimmune and inflammatory diseases are handled in the Department of Rheumatology and Clinical Immunology.

### Diagnostic Procedures

- Expert ultrasound diagnostics of joints, tendons, entheses and soft tissues including ultrasound-guided joint punctures for biopsies and injections.
- Our high-end ultrasound machines allow for fusion imaging, enabling us to overlay MRIs or CTs with ultrasound.

### Research

The Department of Rheumatology and Clinical Immunology performs clinical, translational and basic research focusing on normal immune function as well as disorders of the immune system causing inflammatory and autoimmune diseases.

Our clinical trial unit (Head: Dr. Stephanie Finzel) participates in phase I - IV clinical trials for many rheumatic diseases. Basic and translational research foci are vasculitis, rheumatoid arthritis, systemic lupus erythematosus and systemic sclerosis.



Prof. Dr. med.  
**Bernward Passlick**  
Medical Director

# Thoracic Surgery

It is our pleasure to welcome you to the Department of Thoracic Surgery of the Medical Center – University of Freiburg. The Department of Thoracic Surgery is one of the largest centers for thoracic diseases in Europe. **More than 3,000 surgeries are performed every year**, primarily complex surgical thoracic interventions. Surgeries for lung cancer and other thoracic malignancies, including lung metastases and mesothelioma, represent the main focus of our department. Our operating theaters are equipped with the latest technical facilities including the state-of-the-art lung laser which allows us to perform complex surgeries. In addition, specialists such as pneumologists, cardiovascular surgeons, and oncologists provide interdisciplinary support. Furthermore, we work in close cooperation with our team of thoracic anesthesiologists to perform complex thoracic interventions, even for patients with limited pulmonary reserve.

**Our department is equipped with the newest technical support** for precise diagnostics of all thoracic diseases including lung diseases and other respiratory problems. Among these diagnostic tools are computed tomography (CT), magnet resonance imaging (MRI), angiography, positron emission tomography (PET), ventilation- and



- Best clinic for complex pulmonary resections among German university-based medical centers
- Among the top five German centers for lung transplantation
- 1,500 inpatients per year
- 3,800 outpatients per year
- 3,000 operations per year
- More than 1,400 bronchoscopies per year

perfusion scintigraphy, bronchoscopy including fluorescence bronchoscopy, endobronchial ultrasound examination (EBUS), endoesophageal ultrasound examination (EUS), video assisted thoracic surgery (VATS), video mediastinoscopy (VAMLA) and lung function tests.

Our department has gained vast experience in the field of invasive surgical bronchiology with exceptional know-how in stent implantations, cryotherapy (cold cauterization), laser treatment for tracheal and bronchial stenosis, esophagotracheal fistulas, and endotracheal and endobronchial tumors.

We perform every thoracic oncological procedure in order to treat lung cancer and mediastinal tumors as well as lung metastases, and other tumors of the chest. In addition, we also perform minimally invasive procedures, such as video-assisted (VATS) lobectomies and thymectomies. We provide multidisciplinary support in cooperation with the Comprehensive Cancer Center Freiburg (CCCF).



In collaboration with the Department of Pneumology, we have performed more than 100 lung transplantations for various pulmonary diseases such as lung fibrosis, lung emphysema and mucoviscidosis since 2004.

Another focus of our work is pediatric thoracic surgery. We treat more than 50 children with chest tumors, chest deformities, funnel chests, and pigeon chests every year.

## Research

We conduct numerous clinical trials in order to provide our patients with the latest medication on the market. Furthermore, we are currently involved in several surgical trials in order to improve surgical techniques and reduce perioperative pain. Our research work is supported by various grants from German Cancer Aid and the German Research Foundation.

We have strong collaboration with numerous research groups from all over the world. We hold international meetings and workshops on a regular basis, in order to provide other teams with our latest technologies.

## Diagnostic and Treatment Services

- Lung Check-up
- Diagnostics of thoracic diseases
- Bronchoscopy
- Thoracoscopy
- Lung cancer treatment
- Lung metastases surgery
- Laser surgery
- Lung transplantation
- VATS lobectomies and minimally invasive thymectomies
- Cryotherapy, coagulation
- Lung volume reduction surgery for emphysema
- Pediatric thoracic surgery
- Pneumothorax
- Thymoma

# Urology

- 13 medical specialists
- 22,000 outpatients per year
- 2,500 inpatients per year
- Over 4,000 operations per year
- 45 beds



Prof. Dr. med.  
**Christian Gratzke**  
Medical Director

## Diagnostic and Treatment Services

### Robotic Surgery

We offer the most advanced robotically assisted procedures using a daVinci Xi robotic system. The benefits to the patient may include a faster recover, shorter hospital stay, less bleeding, less pain, smaller scars, and quicker return to normal daily life.

### Prostate Treatment

The Prostate Center of the Medical Center – University of Freiburg is a contact point for all patients who suffer from prostate illnesses. Immunotherapy and genetic therapy have become two important disciplines for the treatment of prostate carcinoma. In cooperation with the Departments of Radiation Oncology and Hematology and Oncology, we offer various methods of prostate carcinoma treatment, while new methods are continually being developed in our research department.

In addition to routine operations with peritoneum or perineum incisions, our specialists also use well-known laparoscopic prostate excision. For benign prostatic hyperplasia treatment, we rely on a wide range of conservative and operational methods, including laser therapy.

The Department of Urology offers complete urological examinations for prostate health, potency and lifestyle problems – especially designed for foreign patients. About 2,500 inpatients and 22,000 outpatients undergo treatment in our department each year. We take pride in consulting our patients. Complex treatments are only administered after thorough prophylactic examinations have been conducted. After an extensive collection of information, the patient is offered an individual treatment plan.

Our department has been assisting patients for over 40 years and enjoys an excellent reputation both within and beyond German borders. We offer a broad range of prophylactic examinations, including a check-up program, diagnostics, and the treatment of various urologic diseases.

Our team of specialists is ready to help solve patients' most difficult health issues, including a variety of sexual

disturbances for young and older men, hormonal problems, and prostate diseases.

## Kidney Surgery

Our department is one of the leading European centers for kidney surgery, particularly in the area of tumor operation and preservation of organs. For complete kidney resection the laparoscopic technique is standard.

## Treatment of Testis Tumor

Together with specialists of the Departments of Radiation Oncology and Hematology and Oncology, our experienced team of urologists is involved in the treatment of testis tumors.

## Treatment of Bladder Carcinoma

Endoscopic operations and transurethral resections are performed to treat superficial urinary bladder tumors. Photodynamic tumor detection is done routinely. Reconstructive urology, which is the formation of an artificial urinary bladder, is one of the main progressions in our work.

## Treatment of Urolithiasis

We apply the most modern methods for treating urolithiasis, using endourological, extracorporeal (shockwave lithotripsy) and other non-invasive methods. Special expertise is provided for the new minimal invasive techniques, i. e. flexible ureteroscopy or Mini-Percutaneous Nephrolitholapaxy (Mini-PCNL). Using these methods we can offer a safe and quick treatment with excellent stone free rates and minimal complications.

## Treatment of Incontinence

The treatment of urinary bladder incontinence and hyperesthesia incorporates various conservative and operative treatment methods which are selected for each patient on an individual basis. In 2005, the Department of Urology was recognized as one of the best centers for incontinence in men and women in Germany. In severe cases of stress incontinence operative treatment with the artificial sphincter (AMS 800) is a standard procedure in our center.

## Pediatric Urology

Our Section of Pediatric Urology is well known beyond Freiburg. Any kind of urological procedure is performed by extremely experienced pediatric urological surgeons. Our particular fields of expertise include hypospadias and genital repair as well as vesicoureteral reflux. In cooperation with the Center for Pediatrics, we provide our patients with optimal medical care.

## Benign Prostatic Hyperplasia (BPH)

All modern operative and non-operative treatment options for BPH are available in our department. The "Gold Standard" transurethral resection of the prostate (TUR-P) is done more than 200 times per year. We also offer green light laser vaporization for selected cases. As one of the first centers

in Europe we have the possibility to perform the brand new minimally-invasive "Urolift"-treatment, which allows most patients to have a retrograde ejaculation.

## Andrology Consultations

Our andrological subunit offers top quality diagnostic and therapeutic procedures for all andrological problems. Male infertility, erectile dysfunction, ejaculatory dysfunctions, hormonal disturbances (aging male) and male contraception are covered. In cooperation with our well known Center of Reproductive Medicine, all modern therapies (testicular biopsy with sperm extraction, insemination and intracytoplasmic sperm injection [ICSI]) are performed to help couples with unfulfilled pregnancy wishes.

## Penile Implants

The andrological subunit is a well-known center of excellence for penile prostheses. We have two experts in the field of penile implant surgery and are recognized as a reference center in Europe by the world market leader American Medical Systems (AMS). For men with severe erectile dysfunction (for example after radical prostatectomy or radiation therapy) penile implants offer a good solution to restore sexual function.

Results from evidence based scientific publications show extremely high satisfaction rates for these patients and their partners.

# Contact Information

## Management



**Doris Haltmair**

Head of the Department

Phone: +49 761 270 19300

E-mail:  
doris.haltmair@uniklinik-freiburg.de



**Maria Onyshchenko-Dubow**

Deputy Head of the Department /  
Head of Project Management and

Marketing  
Phone: +49 761 270 19000

E-mail:  
maria.onyshchenko@uniklinik-freiburg.de

## Office Management / Assistance



**Eileen Schreiber**

Team Leader, Quality Management

Phone: +49 761 270 18110

E-mail:  
eileen.schreiber@uniklinik-freiburg.de



**Katharina Hillert**

Assistant to Ms. Haltmair, Secretary

Phone: +49 761 270 19300

E-mail:  
katharina.hillert@uniklinik-freiburg.de



**Irina Miller**

Information, Assistant

Phone: +49 761 270 21310

## Your inquiries are answered by



**Elena Huber**

Team leader

Phone: +49 761 270 18115

E-mail:  
elena.huber@uniklinik-freiburg.de



**Aksana Huber**

Phone: +49 761 270 84240

E-mail:  
aksana.huber@uniklinik-freiburg.de



**Anastasya Kazhan**

Second Opinion

Phone: +49 761 270 18112

E-mail:  
anastasya.kazhan@uniklinik-freiburg.de



**Iryna Roizen-Voloshyn**

Phone: +49 761 270 18120

E-mail:  
iryna.roizen-voloshyn@uniklinik-freiburg.de



**Tatjana Aman**

Phone: +49 761 270 18750

E-mail:  
tatjana.aman@uniklinik-freiburg.de



**Olesya Polevaya**

Second Opinion

Phone: +49 761 270 84820

E-mail:  
olesya.polevaya@uniklinik-freiburg.de

For general information and treatment inquiries at the Medical Center – University of Freiburg, please call our information hotline at **+49 761 270 21310** or email us at **info-ims@uniklinik-freiburg.de**

## Patient managers during your stay in Freiburg



**Aleksandra Kirtadze**

Phone: +49 761 270 19306

E-mail:  
aleksandra.kirtadze@uniklinik-freiburg.de



**Dzmityr Babak**

Phone: +49 761 270 84520

E-mail:  
dzmityr.babak@uniklinik-freiburg.de



**Alexander Roizen**

Phone: +49 761 270 85250

E-mail:  
alexander.roizen@uniklinik-freiburg.de



**Elena Dajcman**

Phone: +49 761 270 18124

E-mail:  
elena.dajcman@uniklinik-freiburg.de



**Timur Kaufmann**

Phone: +49 761 270 85140

E-mail:  
timur.kaufmann@uniklinik-freiburg.de



**Anna Zerr**

Phone: +49 761 270 19270

E-mail:  
anna.zerr@uniklinik-freiburg.de



**Johann Polkin**

Phone: +49 761 270 84390

E-mail:  
johann.polkin@uniklinik-freiburg.de



**Sviatlana Kimmel**

Phone: +49 761 270 19305

E-mail:  
sviatlana.kimmel@uniklinik-freiburg.de



## Project Management / Marketing



**Maria Onyshchenko-Dubow**

Deputy Head of the Department /  
Head of Project Management and  
Marketing

Phone: +49 761 270 19000  
E-mail:  
[maria.onyshchenko@uniklinik-freiburg.de](mailto:maria.onyshchenko@uniklinik-freiburg.de)



**Olesya Oshchepkova**

Project Management, Marketing

Phone: +49 761 270 19311  
E-mail:  
[olesya.oshchepkova@uniklinik-freiburg.de](mailto:olesya.oshchepkova@uniklinik-freiburg.de)



**Ksenia Muromova**

Project Management, Marketing

Phone: +49 761 270 19302  
E-mail:  
[ksenia.muromova@uniklinik-freiburg.de](mailto:ksenia.muromova@uniklinik-freiburg.de)



Accounting



**Simone Kritzler**



**Ulrike Weise**



**Beate Zehner**



**Elsa Biswurm**



**Katja Schipanski**



**Daniel Hunn**



**Georgii Danko**

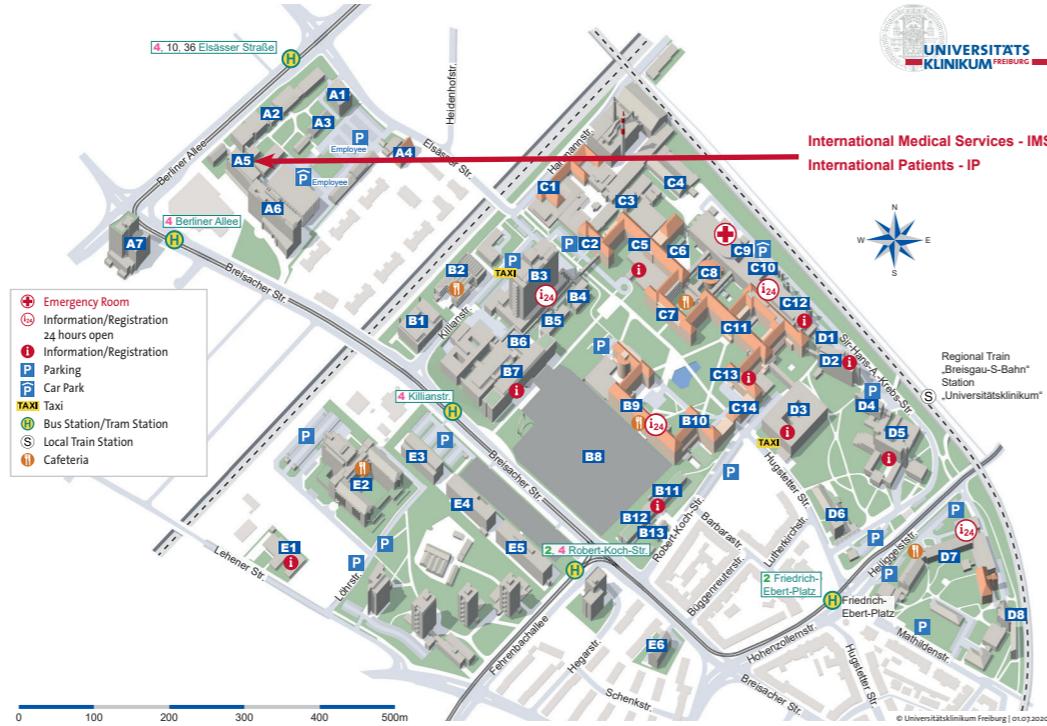


**Simone Kienzle**



## The Central Area

- Medical Facilities
- Breast Center A5
- Center for Chronic Immunodeficiency - CCI E5
- Complementary Medicine - UZN E3
- Comprehensive Cancer Center Freiburg - CCCF D6
- Dental Medicine - ZMK D5
- Emergency Center - UNZ C9
- Emergency Practice C10
- Endocrinology and Diabetology C4
- Experimental Cardiovascular Medicine A1
- Eye Center B3
- Haus Langerhans D4
- Haus Theodor von Frerichs C4
- Human Genetics E6
- Hotel „Stadt Freiburg“ A6
- Implant Centrum Freiburg - ICF A2
- Interdisciplinary Tumor Center - ITZ D3
- Internal Medicine C5
- International Medical Services – IMS
- Musicians' Medicine A3
- Neurocenter - NZ B7
- Neuroradiology B7
- Nuclear Medicine C4
- Obstetrics and Gynecology B9
- Orthopedics C13
- Oto-Rhino-Laryngology - HNO B3
- Outpatient Anesthesiology C10
- Outpatient Palliative Care B10
- Outpatient Surgery C12
- Pain Center - ISZ E2
- Palliative Care Unit B12
- Pathology E4
- Pediatrics (under construction) B8
- Pediatrics D7
- Phoniatics and Pediatric Audiology E1
- Prevention and Cancer Epidemiology A4
- Radiation Oncology B11
- Radiology C11
- Robert-Koch-Clinic D2
- Sports Orthopedics C3
- Surgery C11
- Thoracic Surgery D2
- Transplant Center C2
- Trauma Surgery C12
- Tumor Biology - KTB E2
- Urology C13



## The Outside Area

- Information/Registration 24 hours open
- Information/Registration
- Parking
- Tram Station
- Cafeteria



### The Outside Area

- 1 Hospital School Freiburg Hauptstraße 8
- 2 Center for Mental Health Department of Child and Adolescent Psychiatry, Psychotherapy and Psychosomatics Hauptstraße 8
- 3 Center for Mental Health Department of Psychosomatic Medicine and Psychotherapy Hauptstraße 8
- 4 Center for Mental Health Department of Psychiatry and Psychotherapy Hauptstraße 5
- 5 Center for Mental Health Hauptstraße 5a
- 6 Department of Dermatology Hauptstraße 7
- 7 Center for Mental Health Hauptstraße 18
- 8 Lecture Hall Karlstraße



# Imprint

**Publisher and Editor:**  
IMS, Medical Center – University of Freiburg

**Legal address:**  
Universitätsklinikum Freiburg, IMS  
Hugstetter Str. 49  
Freiburg, D-79095  
Germany

**Responsible for content:**  
IMS, Medical Center – University of Freiburg

**Pictures:**  
© Medical Center – University of Freiburg  
© Britt Schilling  
© Ioana Davies (Drutu) - fotolia.com  
© balein - shutterstock.com  
© AshLM - pixabay.com  
© StockSnap - pixabay.com  
© Meerim Abekova  
© Markus Herb  
**Design:** Antonina Kljutschnikova

**Printed in Germany, 2020**



### IMS address:

Universitätsklinikum Freiburg, IMS  
Breisacher Str. 86b,  
Freiburg, D-79110  
Germany

**Tel:** +49 761 270 21310

**Fax:** +49 761 270 19310

**E-mail:** [info-ims@uniklinik-freiburg.de](mailto:info-ims@uniklinik-freiburg.de)

**Web:** [www.ims.uniklinik-freiburg.de](http://www.ims.uniklinik-freiburg.de)

