



Medical Center – University of Freiburg

International Medical Services and
International Business Development





Ladies and Gentlemen,

Providing for your health and well-being is our utmost priority. Our committed and experienced medical staff strives every day to make this happen. It is not only top medical care but also the personal contact and attention from our staff that foster patients' trust.

The Medical Center – University of Freiburg is a full-service hospital and one of the largest medical centers in Europe. We have specialized clinics and institutes dedicated to all fields of medicine.

This catalogue provides you with an overview of our entire range of medical services. Our IMS staff is always available to grant you requested information and answer all of your questions concerning your individual treatment and care.

On behalf of the entire staff and board of directors at the Medical Center – University of Freiburg, I wish you a quick recovery and all the best!

Yours sincerely,

Univ.-Professor Dr. Dr. h.c. mult. J. R. Siewert

Chief Medical Director

Chairman of the Board



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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:

- one of the **3** largest medical centers in Germany
- largest cardio center in Germany
- **91.000** inpatients and **717.000** outpatients per year
- **1.400** medical specialists and **11.000** 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 which were Nobel Prize winners 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 faculties in Germany with over 555 years of history.

The Medical Center – University of Freiburg offers ready access to world-class medical treatment. We focus on novel diagnostic procedures and treatments and apply the latest findings in clinical and biomedical research. Our interdisciplinary specialist teams are committed to delivering top-quality, personalized care in an ambience of comfort and convenience.

The international staff of our medical center is happy to welcome you to Freiburg and is ready to provide you with the best medical care!

We welcome you to our international family!

IMS – International Medical Services & International Business Development



Leaving home and visiting a foreign country can be at times confusing. Seeking medical help can make the experience even more stressful. To provide help in this situation, the Medical Center – University of Freiburg has 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 together with customer service that meets your medical and personal needs.”

Doris Haltmair

Head of the International Medical Services and
International Business Development Department

IMS offers personalized service and top-level care for your comfort and convenience. We handle cost estimations, medical appointments, interpreter and transfer services and travel arrangements. Most importantly, though, we aim to make your health care stay in Freiburg as pleasant and convenient as possible.

Patient Services

- Handling information requests for services, programs, and physicians
- Locating the right physician to meet the patient's specific needs
- Arranging formal "second opinions" based on the patient's medical record
- Scheduling appointments, including consultations and follow-up care as well as Executive 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
- Arranging translation and interpreter services in many languages
- Giving visa support via letter of invitation
- Processing medical cost estimations and billing
- Arranging transportation, airport transfers and accommodation
- Accommodating religious and cultural needs (for example specially prepared meals)
- Arranging technical equipment (such as laptop or fax) if required
- ...anything else that helps make your stay more comfortable.

Over the years we have achieved substantial recognition, popularity and trust with international patients. Should you have questions regarding your treatment, medical examinations, or potential business cooperation with IMS, please contact us directly. (see chapter "Contact Information" or visit our Website www.ims.uniklinik-freiburg.de)



Check list

For your convenience, please make sure you have the following items ready before your departure:

- Passport (please make sure to get a Schengen visa)
- Copies of medical records, diagnostic films or CDs (CT scan, 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 is best to have your return trip with an open date to avoid extra charges in case extended treatment is required)
- List of your current medication





Consulting



As one of the leading European 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: teleradiology, teleconsultations, teleteaching
- 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 of the Medical Center – University of Freiburg
- Workshops and seminars for medical and administrative personnel, including teleteaching.

We will be glad to discuss your needs and requests in order to design a more specific offer for your medical institution.



Telemedicine

Teleradiology
Teleconsultations
Teleteaching

Telemedicine utilizes reliable and efficient technology to put you in contact with a medical specialist of the Medical Center – University of Freiburg without having to leave your home country. All communication takes place through specially protected internet channels, securing your medical data and more importantly your confidentiality.



The Medical Center – University of Freiburg offers the following telemedical services:

Teleradiology

Our highly qualified team of radiologists and nuclear medicine specialists evaluates radiological images such as MRI, CT, PET-CT, X-ray or mammography and provides a “second opinion” in two working days. The Department of Radiology has a world renowned research department and top expertise in evaluating very complex cases.





Teleconsultations

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

Our teleconsultation services include:

- A thorough review of your submitted medical documents and request form by one of our senior medical specialists prior to your scheduled teleconsultation
- A live teleconsultation with a senior medical specialist (tele-second-opinion)
- Interpreter services upon request
- Technical support during the teleconsultation

Teleteaching

Seminars, lectures, and workshops can be conducted via teleconference with up to 5 medical institutions simultaneously.

Our teleteaching services include:

- Course curriculum according to the customer request
- Preparation of Power-Point slides and selection of medical cases
- Translation of Power-Point slides
- Interpreter services during teleconferences, technical support



Clinics and Departments

Anesthesiology and Critical Care

Cardiology

- Cardiology and Angiology
- Cardiovascular Surgery
- Congenital Heart Defects and Pediatric Cardiology

Center for Chronic Immunodeficiency (CCI)

Complementary Medicine

Dentistry

- Operative Dentistry and Periodontology
- Orthodontics
- Prosthetic Dentistry
- Oral and Maxillofacial Surgery

Dermatology

Gastroenterology, Hepatology, Endocrinology and Infectious Diseases

General and Visceral Surgery

Gynecology and Obstetrics

Endocrinology and Diabetology

Medical Intensive Care

Nephrology

Neurocenter

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

Oncology, Hematology and Stem Cell Transplantation

Ophthalmology

Orthopedics and Trauma Surgery

Oto-Rhino-Laryngology (ENT)

Palliative medicine

Pathology

Pediatrics and Adolescent Medicine

- General Pediatrics, Adolescent Medicine and Neonatology
- Neuropediatrics and Muscle Diseases
- Pediatric Hematology and Oncology

Plastic and Hand Surgery

Pneumology

Psychiatry

Diagnostic and Therapeutic Radiology

- Diagnostic and Therapeutic Radiology
- Nuclear Medicine
- Radiation Oncology

Rheumatology and Clinical Immunology

Thoracic Surgery

Urology

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
- 1200 patients in the intensive care unit per year
- 120 anesthetists

Anesthesiology is an integral part of health care delivery. An experienced team of highly qualified anesthetists in our department will care for 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 top training and have specialized knowledge, skills and experience. Their goal is to make your treatment as convenient and comfortable 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 technologies and offer a distance learning Master's program called Physikalisch-Technische Medizin.

Medical services are provided 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 therapy
- 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, University of Freiburg is actively involved in the Helsinki Declaration on Patient Safety in Anesthesiology.



Heart Center, University of Freiburg



- Germany's largest cardiovascular center
- Most catheter procedures in Germany (coronary and valve interventions)
- **22,000** inpatients per year
- More than **20** heart transplantations per year

Welcome to the Heart 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. Our dedicated staff of 1,500 employees treats 22,000 inpatients and performs the most catheter procedures in Germany per year.

In 1999, the first “drug-eluting stents” in Germany 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 therapeutic facilities.

The cardiovascular center consists of four departments:

- Department of Cardiovascular Surgery
- Departments of Cardiology and Angiology I and II
- Department of Congenital Heart Defects and Pediatric Cardiology

Our dedicated team of highly qualified doctors, nurses, dietary nurses and paramedical personnel strives to undertake all possible measures so that our patients are satisfied with his or her course of treatment. A satisfied patient is not only a patient happy with the medical care, but also someone who felt comfortable in our hospital and who returned home healthy. In addition to treating patients, the cardiovascular center conducts clinical trials as well as basic scientific research and trains future medical specialists.

Statistics Location Freiburg

- 6 inpatient wards
- 3 Intensive Care Units (ICU)
- 5,000 catheter procedures per year
- 106 beds
- 5 heart catheter laboratories/24 hours
- 3 operation rooms
- Over 2,000 surgeries per year
- Located on University Campus
- Site of clinical and scientific research

Statistics Location Bad Krozingen

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

Research

Our heart center conducts a broad range of scientific research. Since 1999, special stents designed to supply arteries with medicine (drug-eluting stents) have been a particular field of research. This innovation has been used worldwide in cardiology since 2002. Clinical research on absorbable stents that completely dissolve was launched in 2012. Currently, our center is conducting research in the fields of clinical arteriogenesis, heart transplantation management, three-dimensional echocardiography in real time and cardio-MRI, as well as new developments in cardiac pacemaker implantations and the usage of stem cells. We additionally carry out research on treating cardiac insufficiency and many other projects in diverse disciplines of cardiology and angiology.



Cardiology and Angiology



Prof. Dr. med.

Christoph Bode

Medical and Scientific Director
(Cardiology and Angiology I, focus on
cardiology and angiology, academic and
scientific work)

Prof. Dr. med.

Franz-Josef Neumann

Medical Director
(Cardiology and Angiology II, received
multiple awards as most preferred
specialized center for cardiac and
vascular patient care in Germany)

Diagnostic and Treatment Services

Full Cardio Check-up

Cardiac Catheterization

Methods

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

Imaging Techniques

- Optical Coherence Tomography (OCT)
- Intravascular Ultrasound (IVUS)
- Intracoronary blood pressure measurement (FFR)

Intervention for Structural and Congenital Cardiocirculatory Disease

Methods

- Catheter-based Aortic Valve Implantation (TAVI)
- The MitraClip procedure
- Valvuloplasty/dilatation of stenotic valves

Diseases

- Aortic valve disease (aortic valve stenosis, aortic valve insufficiency)
- Mitral valve disease (mitral valve stenosis, mitral valve insufficiency)

- Pulmonary valve disease
- Patent Foramen Ovale (PFO), Atrial Septal Defect (ASD)
- Treatment-resistant hypertension
- Left Atrial Appendage (LAA) occlusion

Electrophysiology

- Electrophysiological examination (EPE)
- Sclerotherapy (ablation)
- Instrument based therapy
 - Pacemaker system
 - Implantable defibrillators (ICD or "Defi")
 - Cardiac Resynchronization Therapy (CRT)
 - Cardiac Contractility Modulation (CCM)
 - Wearable "Defi"

Echocardiography

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

Intensive Care Medicine

- Extra Corporeal Life Support (ECLS)



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

Cardiovascular Surgery



Our team performs more than 4,500 surgical procedures per year across the entire spectrum of cardiovascular surgery. The main procedures carried out in our department are coronary artery bypass grafting and heart valve replacements or repairs with cardiopulmonary bypass. 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 operations in the field of vascular surgery are repair of aortic aneurysms and peripheral bypass grafting.

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 (Hybrid technology)
- 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

A focal point of our work at the Department of Cardiovascular Surgery is the therapy of end-stage heart failure with heart transplantation and temporary or permanent heart support with 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 bridge to recovery. In rare cases, we provide non-transplantable patients with a permanent assist device as destination therapy.

Research

A 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 individual medical care is provided to your child. We treat a wide range of clinical conditions including complex syndromes and adult congenital heart diseases. Therefore, we have well-established in-house collaboration with different disciplines of the Center for Pediatrics of the Medical Center – University of Freiburg as well as with the other disciplines of the Heart Center, University of Freiburg.

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

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

Diagnostic and Treatment Services

- Prenatal cardiac diagnostics
- Echocardiography (transthoracic, fetal, and transoesophageal)
- Strain Rate Method for the detailed examination of myocardial functions
- Congenital heart disease management
- Pulmonary hypertension
- Interventional catheterization
- Heart rhythm assessment and pace maker implantation
- Marfan syndrome consultations
- Preparation for heart transplantation
- Endomyocardial biopsy
- Pediatric cardiac intensive care
- Grown up congenital heart disease patients

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 like mechanical circulatory support for terminal heart failure. Furthermore, we want to explore 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 therapeutic approaches for patients with acquired and congenital heart disease.



Center for Chronic Immunodeficiency (CCI)

Prof. Dr. med.
Stephan Ehl
Medical Director

- Interdisciplinary patient care for immunodeficient patients of all age groups
- German reference center for diagnostics of immunodeficiencies
- 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 Medical Services

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

- Patients with inborn defects of the immune system
- Patients who have 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 of fever syndromes

We run outpatient clinics for adult and pediatric patients and have an interdisciplinary CCI conference for the discussion of complex cases that is open to external physicians by videoconference. A key feature of the CCI is its diagnostic facilities. These include state of the art immunology laboratories, pathology, and genetics, 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
- Education of patients for subcutaneous immunoglobulin administration
- Consultations, second opinion
- Special Family clinic for families with affected patients in different generations
- Immunodeficiency patient brochures in German, Turkish and Arabic

For further information please visit our homepage:

http://www.uniklinik-freiburg.de/ccilive/index_en.html

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 on the basis of this to improve the diagnosis and therapy of immunodeficiency diseases. CCI is one of the leading immunodeficiency research centers in Europe. Integration of the diagnostic laboratories into the large research unit facilitates the immediate benefit of scientific expertise for patient care.



Complementary Medicine

PD Dr.
Roman Huber
Medical Director

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 research, laboratory research). Patients with chronic diseases are provided expert based recommendations and treatments in Complementary Medicine. Annually, about 6,000 patient consultations are performed, mainly for patients with cancer, autoimmune disorders, chronic hepatitis, chronic diseases of the digestive tract and allergic diseases. Subsequent treatments are adjusted to individual patient needs. Our doctors are experts for both conventional therapy (specialists in general medicine, internal medicine, gastroenterology, endocrinology, pain treatment) and complementary therapy.

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
- Mistletoe preparations

- One of the largest University based institutions for Complementary Medicine in Europe
- **6,000** patient consultations per year



Research

The clinical research unit investigates the efficacy and safety of herbal drugs within 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 therapies.

Dentistry

Operative Dentistry and Periodontology

Prof. Dr. med.
Elmar Hellwig
Medical Director



Welcome to the Department of Operative Dentistry and Periodontology at 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 esthetical considerations 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 one single appointment
- “CEREC Omnicam”, the latest innovation, is used to scan 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-planning 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 Competence Center for Epidermolysis bullosa in the Department of Dermatology, including general anesthesia for these patients. Furthermore, 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



Orthodontics

Univ. Prof. Dr. med. dent.

Britta A. Jung

Medical Director

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

High quality medical orthodontic care from infancy to advanced adulthood is our highest priority. As a patient you will always receive customized diagnostics and treatment aligned to your special needs and/or those of your children.

We can provide various treatment options thanks to innovative approaches and interdisciplinary cooperation with other specialists of dentistry and medicine (e.g. Oral and Maxillofacial Surgery, Periodontology, Dental Prosthetics, Phoniatrics and Pedaudiology, Physiotherapy). These options take into account special corrections for complex dentofacial deformities, in growing patients with skeletal and dental developmental disorders (e.g. displaced canines), as well as in adults with degenerative alterations (e.g. teeth compromised due to 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.

We offer the following orthodontic medical services:

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 implementation and development of modern technologies in orthodontics, innovative therapy procedures, and treatment concepts in interdisciplinary cooperation are the principal motivations for our scientific activities. Our primary objective is to establish a high standard in patient orthodontic care.

The main subjects of research at our department are the following:

- 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 (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.

Prosthetic Dentistry



DDS, Prof. Dr. Med. Dent. Habil, Dr. h.c.
Jörg R. Strub
Chair and Associate Dean
for Clinical Affairs

You want the most beautiful smile? We have the expertise to make it come true. No matter what the condition of your teeth is, we can help restore your natural smile.

We are specialized in treating multifaceted cases and using new techniques in restorative dentistry, dental implants, periodontal treatments, orthodontics, aesthetic and cosmetic dentistry.

We strive to restore, rejuvenate and enhance the health, appearance and condition of your mouth. Even if you have serious problems we find a solution to make you smile. 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 within a synoptic treatment concept which integrates the functional, aesthetic and restorative aspects of the patient as a whole.

After examination 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
- Preprosthetic periodontology/plastic periodontal surgery
- Functional diagnosis and therapy
- Aesthetic dentistry
- Oral implantology with/without bone regeneration
- Fixed, combined and removable prosthodontics

Research

The Department of Prosthetic Dentistry and its School of Dentistry have been a strategic partner in reconstructive dentistry for public research institutions and national and international companies in the dental and health industries since 1988.

Our own research focuses on:

- Principles of oral bone and tissue biology
- Biological implantology
- Oral materials
- Dental CAD/CAM systems

Oral and Maxillofacial Surgery

The Department of Oral and Maxillofacial Surgery – Regional Plastic Surgery collaborates with the Center for Dental Medicine at the Medical Center – University of Freiburg. We engage in the fields of modern dentistry, implantology, dental orthopedics and orthodontics. With one outpatient and two inpatient departments we provide treatment for adults, children and newborn infants.

Our department carries out treatment for all maxillofacial diseases. Our range of services includes the correction of birth defects, such as deformation of the nose, palate, “cleft lip”, and occlusion defects. Such surgeries are performed at a rather early stage for infants from 3 to 9 months old. The use of tomography and Doppler sonography developed by us is well known for its up-to-date diagnostics. In addition to our histologic and hospital laboratories, we also have our own allergy laboratory where materials are checked for allergenic capacity.

The Department of Oral and Maxillofacial Surgery / Regional Plastic Surgery only applies the safest, most reliable and most current treatment methods. Professor Dr. Dr. Rainer Schmelzeisen is known all across Europe for his research and development work. Our experienced and professional healthcare staff aims to provide you with top quality care while utilizing modern technological advancements developed by our own clinic.

Diagnostic and Treatment Services

Implantology

- Implantation of artificial roots as well as patient's own bone tissue
- Pre-implantation cellular engineering for patients with atrophy of the jaws
- Corrective surgery of malposition of the jaws



Prof. Dr. med.
Rainer Schmelzeisen
Medical Director

Surgeries to correct trauma effects

- Minimally invasive surgery with minimal scarring
- Intra-operative navigation systems to help surgeons simulate the course of the future surgery with highest precision and safety
- Endoscopic surgery without visible incisions
- Restorative surgery of damaged orbital cavities and frontal middle facial fractures
- Bone or tissue transplantation to restore patient's physiological functions
- Treatment of patients with facial palsy or injured facial nerves, including restoration of facial muscle functions after paresthesia and paralyses

Oral tumor removal aesthetic surgery

- Cosmetic surgery of the face and neck
- Chin corrections
- “Facelifts” and its special variation, “bio-lifts” (bio facelift), with invisible scars while maintaining patient's individual facial features
- Laser and corrective surgery of the nose and eyelids



Dermatology

- Medical director – an ordinary member of the German National Academy of Sciences Leopoldina and of the Berlin-Brandenburg Academy of Sciences and Humanities
- Largest Center for Epidermolysis bullosa treatment in Germany
- Certified Skin Cancer Center
- **15,000** outpatients per year
- **2,000** inpatients per year
- **5,000** patients in the day clinic per year

Prof. Dr. med.

Leena Bruckner-Tuderman

Medical Director

The Department of Dermatology provides outpatient treatment to about 15,000 patients and day clinic treatment to approximately 5,000 patients yearly. Our specialization is the treatment of diseases of the skin and the 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.

All skin diseases can be diagnosed at our clinic, and highly specialized scientifically valid treatments are used in compliance with international standards.

Skin diseases are very diverse in terms of their clinical presentation. Skin lesions may represent an outer reflection of a given pathology of visceral organs, the central nervous system and the endocrine system. Therefore, fundamental knowledge of the skin is essential in the everyday work of any doctor regardless of his or her specialty.

The Department of Dermatology extensively uses multimodal methods of intensive dermatological therapy. 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 technical facilities of the diagnostic unit, treatment unit, and operating rooms are equipped with state of the art devices. This combined with our highly qualified personnel, guarantee the quality and success of treatments given and, therefore, attract more and more patients from all over the world.



Diagnostic and Treatment Services

- Skin cancer, including melanoma
- Allergies
- 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 lesions of the skin (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, as well as phytotherapy.



Gastroenterology, Hepatology, Endocrinology and Infectious Diseases

Prof. Dr. med.

Robert Thimme

Medical Director



It is a pleasure to welcome you to our Department of Gastroenterology, Hepatology, Endocrinology and Infectious Diseases here at the Medical Center – University of Freiburg. Our inpatient unit has a capacity for about 80 patients and our outpatient unit cares for 100-150 patients with various liver diseases daily.

The department employs approximately 100 medical doctors and 250 paramedical personnel.

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

- Leading specialists in hepatitis treatment
- First TIPS procedure in Europe
- Leading specialists in radiofrequency thermoablation (RFA)
- **2,600** inpatients per year
- **4,800** patients in the "Liver Center" per year

Diagnostic and Treatment Services

We are specialized in the diagnostics and treatment of liver diseases and their various causes, especially hepatitis B, C and D as well as other causes, incl. alcohol, obesity, diabetes mellitus and others. We are further specialized in the treatment of patients with liver cirrhosis and its complications, such as ascites, variceal bleeding as well as hepatocellular carcinoma (HCC). In this context we have extensive experience in the treatment of primary or secondary liver tumors by radiofrequency thermoablation, transarterial chemoembolization (TACE) and drugs as well as the treatment of the complications of portal hypertension by the implantation of transjugular intrahepatic portosystemic stents (TIPS).

The treatment of gastrointestinal diseases, including biliary diseases, pancreatitis and colorectal carcinoma is a further clinical focus of our division. These diseases have unfortunately become more common in recent years. Our department carries out all diagnostic procedures and therapeutic strategies, including chemotherapies, antibody and drug therapies, radiofrequency thermoablation, gastrointestinal stent implantations and others.

Gastroenterology

Our experience includes a wide range of gastroenterological/ endoscopic, diagnostic as well as therapeutic interventions:

- Gastroenterological check-up
- 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
- Special consultations for patients with chronic inflammatory bowel diseases (CIBD)

Hepatology

Our "Liver Center" specializes in all state of the art diagnostic and therapeutic procedures in cooperation with the Comprehensive Cancer Center Freiburg, the Department of Radiology, the Department of Radiation Oncology, the Department of Surgical Oncology, the Department of Medical Oncology and others.

Diagnostic Procedures

- Sonography
- Endosonography
- Duplexsonography
- Contrast-enhanced sonography

- FibroScan
- Liver biopsy
- Endoscopy
- Computer Tomography (CT)
- Magnetic Resonance Tomography (MRT)
- Positron Emission Tomography
- Nuclear Medicine Analyses

Therapy of hepatobiliary diseases and their complications

- Viral hepatitis
- Autoimmune hepatitis
- Fatty liver
- Toxic liver diseases
- Hereditary liver diseases
- Primary biliary liver diseases
- Liver cirrhosis
- Benign liver tumors
- Malignant liver tumors:
 - Hepatocellular Carcinoma (HCC)
 - Cholangiocellular Carcinoma (CCC)
 - Liver metastases
- Implantation of stents to treat portal hypertension (TIPS)
- Preparation to liver transplantation
- Radiofrequency thermoablation of HCCs and liver metastases
- Malignant tumors of the gallbladder and the biliary system

Research

Approximately 70 scientists work in research laboratories in the field of hepatitis B and C, as well as esophagus, liver and colorectal cancer.



**Prof. Dr. Dr. h.c.
Ulrich Hopt**
Medical Director

General and Visceral Surgery

- 1st minimally-invasive surgical removal of the head of the pancreas in Germany
- HIPEC-method
- Fast-track surgery
- 2,800 inpatients per year
- 15,500 outpatients per year

Welcome to the Department of General and Visceral Surgery at the Medical Center – University of Freiburg. Our medical team consists of 45 physicians and 150 nurses along with our administrative employees. Our department attends to patients with a variety of 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 15,500 patients per year. Many of the operations are performed with the newest minimally invasive techniques. In the more serious post-operative cases, patients are monitored in a 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 as well as large bowel. We have special expertise in surgery of the liver, bile ducts and the pancreas. Patients with metastases in the liver or primary tumors in the liver and the pancreas are treated with a variety of highly complex therapeutic procedures. 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 and pancreatic diseases. 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 are at your disposal here at the Medical Center – University of Freiburg.



Diagnostic and Treatment Services

- The International Pancreatic Cancer Center
- The International Center for Surgery of Metastatic Tumors
- Center for Liver Surgery (liver cancer, liver metastases)
- Esophagus and stomach surgery
- Gastric cancer surgery
- Hyperthermic Interperitoneal Chemotherapy (HIPEC)
- Neuroendocrine Tumors (NETs)
- Gallbladder and bile duct surgery
- Peptic ulcers treatment
- “Fast-track” method of colon surgery
- Minimally invasive colorectal surgery
- Modern bariatric surgery-weight loss surgery
- Hernia surgery
- Thyroid surgery
- Pediatric surgery
- Wound management
- Organ transplantation
- 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 are specialized in the transplantation of kidneys from living donors.

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

Second opinions are another important service offered by the department. Patients can send all of their medical records to the International Medical Services (IMS), receive a paid consultation on the best therapeutic options from one of our Professors and decide whether or not to be treated in Freiburg.

Research

- Acute Pancreatitis: MMP-9 as promoter and predictive marker in the progression of acute pancreatitis
- DFG-Project: The Role of Wnt-signalling in Tumor Invasion
- The Role of microRNA 200 family in tumor invasion and metastasis
- EMT in malignant tumor progression
- EU-Project: Identification and Characterization of Migrating Cancer Stem Cells (MCSC)
- Role of PMN and peritumoral stroma inflammation for the angiogenesis of pancreatic cancer
- The Role of EMT Activator ZEB1 for Tumor Cell Motility and Accumulation of Cancer Stem Cells. (SFB-Project)



Prof. Dr. Dr. h.c.
Gerald Gitsch
Medical Director

The **Department of Obstetrics and Gynecology** at the Medical Center – University of Freiburg is one of the largest in Germany. We provide diagnostics and treatment for infertility, different types of artificial fertilization, particularly 'in-vitro' fertilization and intracytoplasmic sperm injection (ICSI), as well as obstetrics, pre- and perinatal medicine.

Our department performs all types of vaginal and abdominal surgeries, especially for treatment of cancer. 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.



Gynecology and Obstetrics



- One of the **3** leading Breast Cancer Centers in Germany
- **3** top ranked gynecologists in Germany
- **4,000** operations per year
- **33** medical doctors

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

Prof. Dr. Dr. h.c. Gerald Gitsch is ranked among the leading German specialists, according to the magazine „Focus“. He was president of the [European Society of Gynaecological Oncology \(ESGO\)](#) for years. In 2004 our department was the first in Germany to be certified by the ESGO, and in 2012 it was named one of the leading in Germany in the field of diagnostics and treatment of breast cancer.

The Department of Obstetrics and Gynecology consists of three divisions:

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



Diagnostic and Treatment Services

- Treatment of gynecological cancers including breast cancer
- Treatment of infertility and artificial fertilization
- Minimally invasive surgery
- Childbirth and newborn care
- Ultrasonographic diagnostics
- Laser therapy of pathological changes of the external and internal genitalia
- Treatment of incontinence
- Endometriosis
- Diagnostics and treatment of hormonal disorders
- Infectology
- CARL-Therapy (removing a superfluous amount of chemotherapeutic agents from the blood)

Research


In recent years, scientists in our gynecological department have conducted a number of interesting research projects in the field of polymorphism diagnostics for oncological diseases.

Obstetrical research concerns “premature rupture of membranes”.

A model of transplanting ovarian tissues was developed. Scientists took the ovarian tissue, cryopreserved it, and then transplanted the heterotope to the abdominal wall. The purpose of this model was to improve the chances of successfully treating ovarian cancer, as well as to preserve the endogenous function of the ovaries after radiation treatment.

Endocrinology and Diabetology

- Approximately **7,000** patients per year
- Certified treatment center of excellence
- Special prize for high level patient care by the state of Baden-Württemberg
- Several national and international research awards in recent years
- Prof. Seufert - honorary fellow of the Royal College of Physicians of Edinburgh
- Introduction of “**Endobarrier**” as antidiabetic and antiobesity treatment in 2012



Prof. Dr. med.
Jochen Seufert
Medical Director

We sincerely welcome you to the Medical Center – University of Freiburg and in our specialized Division for hormone diseases, metabolic disturbances and diabetes mellitus.

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

In addition to Professor Dr. Jochen Seufert, Director of the Division and an internationally recognized specialist for hormone diseases and diabetes, several well-trained and experienced senior physicians take care of the patients as consultants in endocrinology and diabetology. Dedication of time and effort to listen and solve the health problems of our patients is a cornerstone of our service.

The highest quality of patient care is further ensured by interdisciplinary teamwork that makes use of our division's modern equipment and the entire Medical Center – University of Freiburg: state of the art ultrasound, bone mineral density measurement (DEXA-Osteodensitometry), radiology (NMR, CT), nuclear medicine (scintigraphy, PET-CT) .

We treat metabolic diseases (obesity) and diabetes mellitus by 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

Diagnostics and treatment of 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
- Continuous Glucose Monitoring (CGM)
- Pancreas transplantation (in collaboration with Department of Surgery)
- Pancreatic Islet transplantation

Obesity treatment

- Nutritional counseling
- Exercise counseling
- Modern drug treatment of obesity
- “Endobarrier” (<http://www.endobarrier.com>) for diabetes and obesity treatment
- Bariatric surgery (in collaboration with Department of Surgery)

Diagnostics and treatment of metabolic bone 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

Diagnosis and treatment of hormone diseases

- Osteoporosis
- Osteodensitometry
- Modern drug treatment



Research

Our main research focus is the implementation of novel clinical treatment strategies for diabetes mellitus including novel agents. We sit on steering committees of several national and international clinical trials in the pharmaceutical industry.

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).

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 in our department and wish you a speedy recovery. For many patients, hospitalization involves stress and worries about their health. We take your concerns very seriously and will do everything on our part to alleviate your suffering and facilitate an expeditious recovery.

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

We cooperate closely with all other medical and surgical departments at the Medical Center – University of Freiburg.

Treatment

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

Diseases

- Glomerulonephritis
- Vasculitis
- Cystic kidney diseases
- Von Hippel–Lindau (VHL) disease
- Pheochromocytoma (PCC)



Prof. Dr. med.
Gerd Walz
Medical Director

- Autoimmune diseases (Lupus erythematosus)
- Hematological diseases with kidney involvement (Plasmacytoma)

Research

Renal disease is a silent killer as only a small loss in renal function causes mortality. 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 that is required to understand and to treat renal disease.

NephroLab in Freiburg has therefore developed a novel approach that leads from gene discovery to potential therapies: comparative analysis of gene functions. Ten independently funded research groups support this effort, exploring the function of genes in cell culture systems, *C. elegans*, *Drosophila*, zebrafish, *Xenopus* and genetically modified mice to find new therapies 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 all of Europe. Our center is made up of specialists dealing with the diagnostics and the conservative and surgical treatment of all diseases involving the nervous system.

The Neurocenter comprises the following departments:

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

The Departments of Neurology, Neurosurgery, Neuroradiology, Neuropathology and the Interdisciplinary Pain Center are all housed in one building complex. The Neurocenter is supported by numerous neuroscientific workgroups that ensure a closer cooperation between basic research and the Medical Center – University of Freiburg.



We, at the Neurocenter, offer the whole 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

Our patients suffer from a dysfunction of the motor apparatus, 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 researches the electronic signals of the brain and nerves and the use of modern brain imaging (MRI and PET) to assess restorative capabilities of the brain for neurorehabilitation. Many test protocols were developed and standardized in Freiburg.

All diagnostic procedures are performed in special laboratories equipped according to the most recent developments. The neurovascular ultrasound laboratory of 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 with more than 5,000 patients every year. It was here that the first examination of the cervical artery in Europe was performed with the help of ultrasound in 1978. There are extensive facilities for electrophysiological assessment, gait analysis, tremor and vertigo testing as well as tests of the autonomic nervous system.

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

The department's Stroke Unit treats more than 1,000 patients with acute ischemic stroke 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 have developed hospitalization and intensive care algorithms of stroke patients, which are today successfully used in many other clinics in Germany. A dedicated Neurointensive Care Unit ward enables sophisticated and 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: infection of the brain 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 of our department. We feature 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.
Josef Zentner
Medical Director



Neurosurgery

- One of the largest academic neurosurgical departments in Germany
- One of German`s leading departments in the field of stereotactic and functional neurosurgery
- Epilepsy Center – one of the three best in Germany
- Leading expertise in treatment of brain tumors
- Leading spine surgeons

We treat patients with diseases of the brain, spine, spinal and peripheral nerves and offer the whole spectrum of conservative and surgical treatment. 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 rendered possible by the close proximity to and the collaboration with the other neuromedical departments of the Neurocenter.

High quality service is our primary goal. To achieve this high quality standard and meet the requirements of optimal patient care, efficiency, and future-oriented research and teaching, we have established an elaborate quality management system in our department.

The Department of Neurosurgery has a strong focus on future-oriented research. It is our goal to bring innovative diagnostics and treatments to our patients as soon as possible.

Neurooncology

- Microsurgical removal of tumors using methods of computer-assisted neuronavigation, intraoperative ultrasound, and intraoperative electrophysiological monitoring
- Specialized brain tumor clinic coordinating adjuvant tumor therapy and offering second opinions
- Participation in international clinical trials for brain tumor treatment
- Interdisciplinary tumor boards to tailor patient treatment plans including adjuvant therapeutic measures such as radiotherapy and chemotherapy
- Treatment of rare diseases such as phacomotoses, neurofibromatosis, von Hippel–Lindau-disease and others

Spinal Surgery

- Microsurgical techniques to treat degenerative and tumorous diseases of the cervical, thoracic and lumbar spine
- Program for the treatment of instabilities using the whole spectrum of stabilization methods including dynamic and minimally invasive procedures

Skull Base Surgery – Center of Skull Base and Craniofacial Surgery

- Multi-disciplinary treatment methods for complex skull base lesions including tumors, vascular malformations, congenital and traumatic deformities
- Cutting edge advances in the field of minimally invasive and endoscopic skull base and pituitary surgery

Epilepsy Surgery – Comprehensive Epilepsy Center

- Pre-surgical diagnosis of epilepsy using advanced imaging methods and electrophysiological techniques of long-term video-EEG monitoring with non-invasive and invasive recordings
- Classical resective procedures, selective operation methods, techniques of stimulation
- Surgical treatment of complex epilepsies in children including hemispherotomy

Neurovascular Diseases

- Microsurgical operations for aneurysms, arteriovenous malformations and fistulas as well as cavernomas of the brain and the spinal cord
- Diagnostic work-up and multi-disciplinary endovascular procedures
- Multi-disciplinary techniques of stereotactic radiation

Pediatric Neurosurgery

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

Peripheral Nerve Surgery

- Wide range of diagnostic and surgical treatment modalities for peripheral nerve pathologies
- minimally invasive decompression techniques
- Brachial plexus reconstruction and tumor excision procedures
- Treatment of neurofibromatosis and other inherited peripheral nerve tumor syndromes

Pain Surgery

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.

Research

- Experimental and neurosurgical epilepsy
- Neurooncology, genetic tumor profiling, tumor angiogenesis, brain tumor stem cells
- Cellular neurophysiology
- Neuroelectronics systems
- Brain-Computer-Interfacing
- Deep brain stimulation



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

Epilepsy Center

- Epilepsy Center – one of the leading European university-based centers
- Main focus on the differential diagnosis of seizures and on the treatment of pharmacoresistant epilepsies, both in children and adults
- Reference center for patients in need of advanced diagnostic procedures, including high resolution structural and functional imaging, and EEG diagnostics
- Availability of the complete spectrum of surgical and brain stimulation treatments

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

Diagnostic Methods

Careful consideration of the medical history of a patient can deliver the first hypothesis about the localization of a focus. We document causarisk factors such as head injury or encephalitis, infantile febrile convulsions or 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 location of seizure origin can often be achieved with a detailed assessment of the seizure semiology based on patient's self-reports and on reports of those who have witnessed the seizures. Seizures always preceded by an aura are a reliable indicator of which eloquent symptomatogenic brain areas are the first to be 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

- 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

Beyond state 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 aims 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 are operated 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 and deep brain stimulation of thalamus and hippocampus.

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 making Freiburg 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

- Modern 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

Prof. Dr. med.
Horst Urbach
Medical Director



Our Department of Neuroradiology offers all diagnostic examinations, computed tomography, magnetic resonance imaging (MRI), angiography (examination of the vessels), and myelography (examination of 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 treatment modalities of minimal invasive therapy of the brain, head and spine.

Diagnostic and Treatment Services

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

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 area of pain. 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.

Diagnostic Spectrum

- Diagnostic radiology
- Computer 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

Therapeutic Spectrum

- Endovascular interventions/minimally:

Vasooocclusive therapies

- Embolization of aneurysms
- Embolization of arteriovenous vascular deformities
- 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 therapy of aneurysm
- Endovascular therapy of angiomas
- Endovascular therapy of stenoses with stents





Stereotactic and Functional Neurosurgery

Prof. Dr.
Volker Coenen
Medical Director

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

Due to our proven expertise, services of 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.

Treatment and Diagnosis Services

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

Functional neurosurgery includes deep brain stimulation for the treatment of different kinds of movement disorders (e.g. Parkinson's disease, Essential tremor, Dystonia), epilepsy (deep brain stimulation and vagus nerve stimulation) deep brain electrodes for presurgical determination of epileptic foci, and the treatment of trigeminal neuralgia by percutaneous thermal coagulation.

- °ca. 170 stereotactic biopsies per year
- °ca. 70 LINAC surgeries per year
- °ca. 23 Deep Brain Stimulations per year
- °ca. 25 Seed Implantations per year
- °ca. 20 Depth Electrode Implantations per year
- °ca. 25 Stereotactic Cyst Aspirations per year
- °ca. 30 INS exchanges per year

We perform the following procedures:

- Motor cortex and deep brain stimulation in pain syndromes
- PET-controlled, stereotactically-guided serial biopsies of unclear cerebral lesions
- Stereotactic puncture of tumor cysts and implantation of catheters with Rickham reservoirs
- Interstitial radiosurgery by means of implanting temporary iodine
- 125 seeds in low-grade tumors and cerebral metastases
- Stereotactically-guided ventriculocisternostomy in tumor-related occlusive hydrocephalus
- Chemotherapy of brain tumors (first, second and third line, including individual therapies)
- Treatment of pediatric brain tumors in cooperation with the Center for Child and Adolescent Medicine of the Medical Center - University of Freiburg
- Preparation of a structured treatment concept (including chemotherapy plans) and determination of the required follow-up examinations

Research

Our research activities aim at the further development of the latest diagnostics and therapeutic processes, even for rare diseases. The key aspects of research in the Department of Stereotactic and Functional Neurosurgery are in the field of deep brain stimulation for the treatment of refractory psychiatric diseases (OCD, depression, addiction).



Prof. Dr. med.
Marco Prinz
Medical Director



Neuropathology

The Institute for Neuropathology covers all aspects of diagnostics, with the main focus on the examination and evaluation of biopsy samples taken from the central and peripheral nervous system (brain, spinal marrow, skeletal muscles, and peripheral muscles). Our close proximity to other neurological departments facilitates close collaboration as well as fast and ideal evaluation processes.

Our diagnostic range includes histopathological examinations, special stains and immunohistochemistry, electron microscopy and molecular neuropathology. Furthermore, scientific research is a key focus of the institute, with special emphasis on neurodegeneration, tumor research, and neuroimmunology.

Diagnostic and Treatment Services

The focus of the diagnostic activities at the Institute for Neuropathology is the evaluation of bioptic tissue specimens from the central and peripheral nervous system, covering the microscopic and molecular examination of CNS and PNS tissues.

Diagnostic neuropathology comprises the entire spectrum of histopathological, ultrastructural, and molecular evaluation of tissues from the central and peripheral nervous system, including skeletal muscle. Methods commonly used and available in the Institute for Neuropathology include:

- Histopathological Examination
- Additional Staining Methods and Tissue Processing including Immunohistochemistry
- Electron Microscopy
- Molecular Analyses

Research

Our research activities comprise projects in the area of innate immunity of the brain, such as autoimmune inflammation (EAE model), neurodegeneration and general immunity (see research activities). Clinical and scientific work is being carried out in close collaboration with colleagues from the Departments of Neurology, Neurosurgery, other specialized disciplines within the Neurocenter and from additional partner institutions.

Interdisciplinary Pain Center



Dr. med.
Kristin Kieselbach
Medical Director

The Interdisciplinary Pain Center pays 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 consolidated “under one umbrella”:

- Medical specialties include Anesthesia, Neurosurgery, Neurology, Orthopedics and Psychiatry, Chiropractic 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 within special pain therapies. Additionally provided qualifications 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 valuable in modern, scientific-based therapies to treat chronic pain diseases. These diagnostics are also used as second opinion procedures before deciding on therapies and operations.

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 therapy 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 therapy.

Special Treatment Fields

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

In detail, we specialize in the treatment of the following diseases and pain syndromes:

Pain in the whole 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, e.g.

- Herpes zoster neuralgia
- Stump and phantom pain
- Diabetes and other metabolic disorders
- Complex Regional Pain Syndrome Type I and II, sympathetically maintained pain syndromes (formerly Morbus Sudeck and Causalgia)
- Infections
- Post chemotherapy pain

Central pain e.g.

- 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
- Development of a treatment algorithm for patients with vascular diseases in collaboration with the multidisciplinary vascular center at the Heart Center Freiburg University
- Scientific collaboration on pain therapies with numerous departments of the Medical Center – University of Freiburg (Dept. of Psychiatry and Psychosomatic Medicine; Institute for Medical Ethics and History; Dept. of Gynecology) as well as with external hospitals (e.g. Pain Center at the University Hospital Heidelberg)



Prof. Dr. med.
Justus Duyster
Medical Director

Oncology, Hematology 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 Tumorzentrum Freiburg - Comprehensive Cancer Center Freiburg (CCCF), which in 2013 was named by the German Cancer Aid (Deutsche Krebshilfe) one of the best oncological centers of excellence in Germany. The focus of the CCCF is the 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. All patients receive comprehensive information about the disease, the prognosis and possible therapeutic options. We cooperate with other departments at 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 most recent and effective treatment methods to treat patients. Furthermore, we focus on clinical research to develop new methods in the battle against cancer.

Diagnostic and Treatment Services

The Department of Internal Medicine I – Hematology, Oncology and Stem Cell Transplantation – takes care of patients with benign and malignant blood diseases, respectively bone marrow, as well as those with solid tumors. We offer inpatient and outpatient service with state of the art diagnostics and therapy. We offer tailored, personalized therapy plans that take individual needs into account. In addition, our patients and their families have access to a wide range of supportive services.

What we treat:

- 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 experience with elderly patients (up to 75 years old)
- Hormonal therapy
- Immunotherapy
- Targeted therapy
- Supportive therapy

These therapies are carried out according to GCP-standards (“Good-Clinical-Practice”), which comprises the department’s own collection of therapy protocols (The “Blue Book“, GCP manual). In cooperation with other departments of the Medical Center – University of Freiburg we plan a combination of different treatments that lead to the best possible outcome for our patients.

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

Ophthalmology

- 58,000 outpatients per year
- 5,000 inpatients per year
- 20,000 operations per year
- LIONS Cornea Transplant Bank
- About 2,500 corneal transplantations performed 2003-2013



The University Eye Center at the Medical Center – University of Freiburg comprises more than 140 years of history and tradition. 5,000 patients undergo inpatient treatment every year with another 58,000 treated as outpatients. Almost 20,000 surgical procedures are performed a year, half of which are carried out on an outpatient treatment basis.

Diagnostics

- High-quality ultrasound bio-microscopy
- 'Laser scanning' tomography
- Laser measurement of perfusion
- Optical coherence tomography images of the retina
- Electroretinography
- Electrooculography
- Angiography of the retinal vessels
- Microscopy of the cornea endothelium
- Corneal topography
- Cataract microscopy of the cornea
- Many other diagnostic methods for eye diseases



Treatments

Keratoplasty / Corneal Surgery

Ophthalmologists of the University Eye Center Freiburg have made outstanding achievements in the treatment of corneal diseases. Emergency and scheduled keratoplasty is performed in the clinic 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 University Eye Center Freiburg. This transplant bank preserves and prepares about 600 donor corneas per year and conducts scientific research of 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.

Neuroophthalmology, Strabismology and Pediatric Ophthalmology

Our sections of neuroophthalmology, strabismology and pediatric ophthalmology, headed by Professor Dr. Wolf Lagreze, specialize in the treatment of strabism and neuro-ophthalmological diseases such as optical nerve inflammation, scotoma, infarction of the optical nerve, and brain tumors. Pediatric ophthalmology offers treatment for all eye problems of our young patients, for example children's glaucoma.

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 University Eye Center Freiburg has been successfully active 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
- 109 inpatient beds
- 6,000 operations per year
- 5,500 inpatients per year
- 50,200 outpatients per year
- 7 operation theatres
- 45 medical doctors



Prof. Dr. med.
Norbert Südkamp
Medical Director



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.

Univ.-Prof. Dr. med. **N. P. Südkamp**

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 6,000 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 prosthetic joint replacement, spinal surgery and correctional osteotomies.

Shoulder procedures/surgeries

Arthroscopic procedures for:

- 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 for:

- 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 surgeries

- Arthroscopic remodeling of the femoral neck
- Navigational endoprosthesis replacement of the hip

Knee diagnostics and treatment for:

- 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 of the knee

Spinal surgeries, diagnostics and treatment for:

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

The treatment of injured children is a further focus in our department. The treatment of young children, depending on their age, is carried out together with the Center for Pediatrics, which have 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)



Prof. Dr. Drs. h.c.
Roland Laszig
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. Professor Roland Laszig, medical director of ENT, holds two medical doctorates, honorary doctorates, the Badge of Honor in Gold, and the German Cross of the Order of Merit. He is



- One of the largest Cochlear Implant Centers in Europe
- More than **2,800** cochlear implant operations performed
- **30,000** outpatients per year
- **6,500** inpatients per year
- **34** medical specialists

well-known throughout the world for his innovative treatment methods and is an honorary member of scientific ENT-societies in several countries.

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.

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.

Exceptionally equipped inpatient wards at the Department of Oto-Rhino-Laryngology have comfortable rooms with wonderful views of the dormant volcano at the Kaiserstuhl and the French mountain range of the Vosges. A pleasant hotel atmosphere and our friendly, hardworking staff contribute to the well-being of our patients.

Diagnostic and Treatment Services

Treatment of throat diseases

- Diseases of throat, larynx, salivary glands, and lymph nodes
- Tonsillectomy
- Removal of cysts
- Frenulum of tongue and lip correction
- Larynx and vocal cord microsurgery
- Anti-snoring therapy
- Laser skin polishing
- Scar corrections

Treatment of nose diseases

- Paranasal sinus operations
- Removal of adenoids
- Aesthetic nose surgery
- Nose-shape correction
- Laser surgery

Treatment of ear diseases

- Hearing improvement microsurgery
- Cochlear implantation
- Auricle correction

Treatment of tympanic membrane diseases

- All types of middle ear surgery
- Glomus tumor (paraganglioma)

Innovative methods

The best results are achieved when applying innovative treatments, for example systems for navigated surgery in the head and throat area, which maximize the precision of surgical intervention and allow for the removal of tumors otherwise



inaccessible. In addition, the application of navigational systems minimizes the risk of causing damage to adjacent tissues. The combination of systems for navigated surgery and lasers is also possible.

Cochlear implantation

Cochlear implantation inserts an auditory prosthesis into the cochlea in cases of severe hearing impairment. As a result of successful scientific research, the Freiburg ENT-Department uses the best cochlear implant systems in the world.

More than 90% of our cochlear implant patients have recovered their sense of hearing. The Freiburg Implant Center is one of the largest in Europe.

As of 2013, we have performed more than 2,800 cochlear implant operations.

Providing a 4-month old child with two cochlear implants in 2005 was an historic achievement. This child is the youngest patient worldwide to have received two cochlear implants.

Research

Current scientific research in the Department of Oto-Rhino-Laryngology is aimed at improving systems for navigated surgery and robotics, molecular-genetic diagnostics of hearing impairment and malignant tumors, as well as clinical neurobiological research of the maturation of the auditory pathway.

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 in walking distance from downtown Freiburg, the Center of 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 or day-hospital basis as well as on an inpatient basis. For accommodation, parents can choose from several high-class 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 in a child-friendly environment. Most importantly, you need to trust the physicians and nurses who take care of your child.



The Center of Pediatrics Freiburg 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 therapeutic advice for many severe or rare disorders.

The broad range of medical expertise and treatment options renders our Center as a Center of Excellence and as a referral hospital for other pediatric medical establishments.

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



The Center of 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



Congenital Heart Defects and Pediatric Cardiology (see the chapter “Cardiology”)

Medical Director
Prof. Dr. Brigitte Stiller



Neuropediatrics and Muscle Diseases

Medical Director
Prof. Dr. Rudolf Korinthenberg



Pediatric Hematology and Oncology

Medical Director
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 of Metabolism, Endocrinology and Diabetes uses the most up-to-date developments in the treatment of inborn metabolic disorders, diabetes type 1 and 2, congenital and acquired hormonal impairments. The Department's 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 and also in the management of cystic fibrosis (cystic fibrosis).

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

We offer specialized children health check-ups, vaccinations, and the diagnostic work-up and treatment of:

- Growth disorders and short stature
- Inborn errors of metabolism
- Endocrine disorders and diabetes
- Rheumatic and inflammatory 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

Neuropediatrics and Muscle Diseases

- **Diagnostics and pharmacological treatment of epilepsy**
- **Diagnostics and counseling in muscular dystrophy and neuromuscular disorders**
- **Diagnostics and counseling in neurometabolic and neurodegenerative disorders**
- **Diagnostics and counseling in genetic and developmental disorders**

Our Center for Pediatrics staff has extensive hands-on experience and a well proven reputation in the field of neuropediatrics and epileptology. Operations are performed in cooperation with the Department of General Neurosurgery of the Medical Center – University of Freiburg. Final post-operative 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 scientific research is carried out in genetics and metabolic congenital diseases, as well as kidney and immune system diseases of newborn infants. Our scientific findings in the sphere of leukemias, bone marrow failure and stem cell transplantation have become famous all over the world.

Plastic and Hand Surgery



Prof. Dr. med.
Björn Stark
Medical Director



- **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, being one of the most interesting specializations in our department, has particularly developed in the last ten years. We perform hand microsurgeries, which require extremely 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. It is natural that every person wishes to be good looking. In the course of an individual and objective consultation, our department's health professionals will help you specify and choose the optimal methods for improving your appearance.

For the purpose of aesthetic surgery the Medical Center – University of Freiburg also established the Erich-Lexer-Klinik, a special private clinic offering additional luxury services to medical care.

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

We 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 (founded in 1997). We actively carry out scientific research in the fields of regenerative medicine as well as gene therapy.

Our professional, experienced and attentive staff would be happy to consult 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 wish to improve your quality of life.

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

Treatment

- Preventive pulmonology check-up
- 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

Diagnostics

- Spirometer und bodyplethysmography
- Blood analysis
- Measuring of diffusion capacity
- (Spiro)-ergometry
- Force of the breathing muscles



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

- 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 incl. medication testing

Research

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

- Diffuse interstitial lung diseases
- Pulmonary fibrosis
- Sarcoidosis
- Chronic Berylliosis
- Chronic Obstructive Pulmonary Disease (COPD)
- Respiratory physiology
- Artificial lung ventilation
- Apnoea
- Sleep disorders

Psychiatry



- Leading center in Germany in the field of depression treatment
- Leading center in Germany in the field of adult high functioning autism and ADHD
- Leading German and International center in diagnosis of organic psychiatric syndromes
- English- and Russian speaking specialists are available
- 120 beds
- 20 units in the day clinic

The Center for Mental Disorders is one of the leading German psychiatry and psychotherapy centers and offers the newest treatment possibilities for all kinds of mental disorders. It consists of 8 specialized divisions with 120 beds, a day clinic and a sleep laboratory.

The Medical Director of the Center is widely known in Europe as the author of the book **Psychische Erkrankungen – Klinik und Therapie** – a widely acknowledged student textbook about diagnostics and treatment of psychic disorders.

Treatment Services

- Chronic depressions (CBASP)
- IPT — interpersonal psychotherapy
- Sleep disorders, including apnoea and restless-legs syndrome
- Autism spectrum disorder in adults
- Attention-Deficit Hyperactivity Disorder (ADHD) in adults



Prof. Dr. med.
Mathias Berger
Medical Director

- Burnout-syndrome
- Anxiety disorders and panic attacks
- Borderline personality disorders (Dialektisch Behaviorale Therapie, DBT)
- Cognitive disorders
- Obsessive compulsive disorders
- Alcohol, medicine and drug dependency
- Bipolar disorder
- Psychotic disorders (schizophrenia)
- Age-related psychic disorders
- Posttraumatic disorders
- Neuropsychiatry
- Sexual disorders

Complementary therapies

- Ergotherapy
- Physiotherapy and therapeutic exercises
- Music therapy

Research

The Center for Mental Disorders conducts scientific research in the fields of sleep disorders and electrophysiology, affective disorders and molecular biology, geriatric psychiatry, neurobiological aspects of psychotherapy, clinical epidemiology and visualization in neuropsychiatry.



Prof. Dr. med., MBA
Mathias Langer
Medical Director

Welcome to the Department of Radiology at the Medical Center – University of Freiburg. As one of the largest radiology departments in Germany, we exclusively use state of the art radiology equipment and employ 35 physicians and more than 80 research specialists.

Radiology in the Medical Center – University of Freiburg means state of the art computed tomography and magnetic resonance imaging, performed with the latest generation of CT and MRI scanners. Magnetic Resonance Imaging not only enables us to detect the slightest changes within the human body without exposure to X-rays or radiation, but it also makes non-invasive angiography – the examination of blood vessels without the use of catheters - possible. These procedures allow for a highly detailed examination of the heart and coronary vessels.



Radiology

- Siemens Scientific Center
- 6 CTs, 11 MRIs
- 70 physicists, 35 radiologists
- 1st CBCT for limb diagnostics in Europe
- Teleradiology services

Modern angiography is a safe and highly informative diagnostic method for the assessment of vessel patency, and for obtaining high quality images with excellent contrast to the surrounding tissue. Digital mammography results in excellent breast imaging with a minimum of x-rays for the detection of breast cancer.

We also have extensive experience in carrying out CT and MR tomography for the diagnosis of a wide spectrum of diseases affecting the brain, spinal cord, vertebral column, heart and vessels, chest and abdominal organs, the small pelvis, joints, and many more.

Equipment

- 11 MRI-scanners (from 1,5 to 3 Tesla)
- 6 CT-scanners (including 2 Toshiba Aquilion 320 slices CT and latest low-dose protocols)
- 3 angiography suites
- 3 very modern mammography units with flat panel detectors, including tomosynthesis
- 2 PET-CT scanners
- digital volume tomography (DVT)

Special Equipment

- Child-oriented MRI
- Mini-MRI for examination of limbs
- CBCT (cone beam computed tomography scanner) for ultra-low-dose examination of extremities



Diagnostic and Treatment Services

Diagnostic Radiology

- Cardiovascular imaging
- Modern vascular diagnostics
- Musculoskeletal imaging and sport injuries
- Breast imaging
- Gastrointestinal imaging
- Virtual colonoscopy
- Thoracic imaging
- Child-oriented 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

Research

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

- Development of MRI
- Digital mammography
- Minimally invasive tumor management
- Development of non-invasive coronary artery assessment



Nuclear Medicine

- One of the leading centers in Europe for treatment of thyroid diseases
- More than **3,000** PET/CT scans annually
- In-house production of innovative PET radiopharmaceuticals
- Innovative radionuclide therapies (e.g. SIRT and PRRT)
- Licensed training center for nuclear medicine and medical physics
- **11** medical doctors
- **11** 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 cancerous, 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.

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. The ward is able to accommodate 12 patients. Moreover, we are licensed as a training center for nuclear medicine by the European Board of Nuclear Medicine.

Diagnostic and Treatment Services

- Specialized clinic for benign and malignant thyroid diseases, offering the full spectrum of modern diagnostic and therapeutic options
- 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
- Selective Internal Radiation Therapy (SIRT) of liver tumors and Peptide Receptor Radionuclide Therapy (PRRT) for neuroendocrine tumors
- PET/CT (64-slice and big bore CT 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, protein and cell membrane metabolism and transport, hormone receptors, perfusion 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 including mild cognitive impairment (MCI), dementia (e.g., Alzheimer's disease) and movement disorders (e.g., Parkinson's disease, Huntington's disease). Localization of epileptogenic foci in patients with seizures. Molecular imaging target include glucose metabolism, dopamine synthesis and storage, cerebral perfusion, a variety of neurotransmitter receptors and transporters (dopaminergic and serotonergic neurotransmission) and amyloid-beta imaging (Alzheimer's disease).

Cardiology

Detection of viable myocardium in patients with coronary artery disease prior to revascularization.

Molecular therapy

- Radioiodine therapy of hyperthyroidism and goiter
- Radioiodine therapy and targeted therapies in thyroid cancer
- Targeted radionuclide therapy of neuroendocrine tumors, including [177Lu]DOTATATE (PRRT)
- Treatment of primary and secondary liver tumors with SIRT
- Treatment of lymphoma with radiolabeled anti-CD20 antibodies
- Treatment of bone pain secondary to metastases

Second opinion service

Research

- Detection, staging and treatment monitoring of cancer with PET/CT (personalized cancer treatment)
- Peptide-based molecular imaging probes for biological characterization and treatment of tumors
- Biological imaging for radiation treatment planning
- Molecular neuroimaging in movement disorders and dementia
- New detector systems, reconstruction algorithms and quantification methods for PET, SPECT and CT



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

The Department of Radiation Oncology at the Medical Center – University of Freiburg is equipped with the newest technology and equipment for individual planning and implementation of all radiooncological methods in teletherapy and brachytherapy.

We have extensive experience in high-precision (stereotactic radiotherapy, radiosurgery and image guided radiotherapy) as well as intensity modulated radiotherapy (IMRT). In January 2012 we were the first in Europe to introduce the new linear accelerator TrueBeamTM STx with Novalis[®] Radiosurgery, a joint offering from Varian and BrainLab. This linear accelerator can be utilized to perform highly precise radiotherapy even for irradiation of tumors smaller than 1cm. The IGRT control system ExacTrac enables continuous tracking of patient and tumor movements. This allows us to minimize exposure to the surrounding healthy tissue while more than doubling the radiation strength compared to previous generation devices with a dose rate of up to 2,400 monitor units per minute. The TrueBeam STx with Novalis Radiosurgery shortens treatment time, increases patient comfort, and enables high precision treatment for patients with difficult-to-treat cancers of the brain, spine, lung, liver, pancreas and prostate.

Radiation Oncology



- First linear accelerator in Europe True Beam STX Novalis Radiosurgery
- 3,000 patients per year
- 25 medical specialists
- 10 medical physicists
- High precision radiotherapy
- Long tradition: 1st radiation therapy at the University of Freiburg: 1899

Diagnostic and Treatment Services

- Three-dimensional conformal radiotherapy
- Radiosurgery and fractionated stereotactic radiotherapy
- Intensity Modulated Radiotherapy (IMRT, VMAT)
- Three-dimensional radiotherapy (IGRT, Gating)
- Intraoperative Radiotherapy (IORT)
- HDR (Afterloading) brachytherapy and LDR (low dose-rate) brachytherapy
- 3D- and 4D-Computed Tomography (CT), MRT and PET/CT radiotherapy planning
- Interstitial hyperthermia in combination with brachytherapy



Equipment

Teletherapy

- Five linear accelerators with photon and electron beams with dual focus multileaf collimators
- The accelerators are equipped with 3-D control systems and cone-beam CT (image guided radiotherapy).
- The accelerators are equipped with additional micro-multileaf-collimators enabling high precision (stereotactic) radiotherapy / radiosurgery.

Brachytherapy

- Nucletron afterloading device, equipped with IR192

Intraoperative radiotherapy (IORT)

- Intraoperative radiotherapy device in a separate operating room equipped with an electron linear accelerator and afterloading equipment

Research

- Development of new technology for high precision radiation therapy
- Biological imaging for radiation treatment planning and monitoring
- Radiation therapy combined with new drug for radiosensibilization or radioprotection
- Radiation biology: cancer stem cells, immunotherapy and radiation therapy





Prof. Dr.
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 best-equipped to handle any immunologic disease ranging from rheumatism and inflammatory systemic diseases of connective tissue and blood vessels to congenital immunodeficiency and AIDs.

The Department of Rheumatology and Clinical Immunology specializes in the clinical correlation of autoimmune diseases and immune system disorders, i.e. with diagnostics and treatment of rheumatic diseases as well as primary and secondary immunodeficiency. The main goal is to maintain immune system balance – tolerance to one's own body and intolerance towards the “foreign” pathogenic cells.

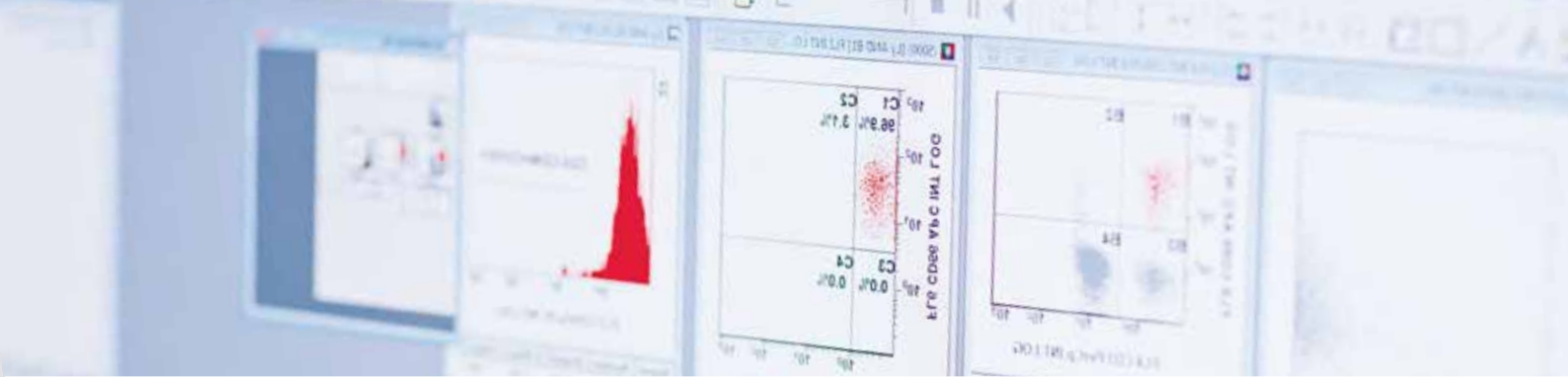
Diagnostic and Treatment Services

Joint, tendon, and muscle inflammations

- Rheumatoid arthritis
- Spondyloarthropathy
- Reactive arthritis
- Bekhterev's disease
- Psoriatic arthritis
- Gout and pseudogout syndrome
- Active arthrosis
- Infectious arthritis
- Tendon pain
- Inflammation of the tendon sheath.
- Soft tissue rheumatic disorders / fibromyalgia syndrome
- Myopathy
- Polymyalgia rheumatica

Collagenoses

Collagenoses is a group of diseases characterized by systemic connective tissue disorders. In addition to joints, tendons and muscles being affected, blood vessels, kidneys, skin, and the nervous system may also be affected by pathological processes.



One such disease is systemic lupus erythematosus, which commonly affects women between 20 and 40 years old. Other diseases in this group include scleroderma, inflammatory muscle diseases, and pancreatic inflammatory disease.

Our department specializes in the treatment of:

- Systemic lupus erythematosus
- Mixed collagenosis
- Anti-Phospholipid Syndrome
- Sjogren disease
- Dermato/poliomyositis

Vasculitides and inflammatory diseases of the blood vessels

Immune vasculitides

While the prevalence of immune vasculitides (e.g. arteritis temporalis, Wegener's disease, panarteritis nodosa, Churg-Strauss disease, cryoglobulinemia) is rather low (5-10 cases per 100,000 people per year), they do affect blood vessels, connective tissues and internals and can often be life threatening.

Our department offers diagnostics and treatment for the following diseases:

- Horton's disease / polymyalgia rheumatica
- Takayasu arteritis
- Wegener's Disease
- Panarteritis nodosa
- Cryoglobulinemia vasculide
- Henoch-Schonlein purpura

- Behcet's Disease
- Ormond's Disease
- Winiwarter-Buerger Disease
- Urticaria Vasculitis

Other autoimmune diseases

- Autoimmune hemolytic anemia
- Cold agglutinin disease
- Cryoglobulinemia
- Immune platelet deficiency
- Monoclonal gammopathy
- Sarcoidosis and other granulomatosa
- Anemia perniciousa
- Bullous pemphigoid

Primary immunodeficiency

Secondary immunodeficiency

Research

The Department of Rheumatology and Clinical Immunology specializes in research in the field of immune system disorders. The most common are inflammatory diseases of joints, connective tissue and blood vessels.

These are the so called autoimmune diseases which lead to inflammation processes (e.g., rheumatoid arthritis, systemic lupus erythematosus, vasculitis).

Our specialists analyze congenital and acquired immunodeficiencies leading to the incidence and development of hypersensitivity to infections (e.g. HIV infection, antibody deficiency syndrome).



Prof. Dr. med.
Bernward Passlick
Medical Director

It is my pleasure to welcome you to the Department of Thoracic Surgery at 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 interventions are performed every year**, primarily complex surgical thoracic interventions. Operations 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 newest technical facilities including the newest lung laser which allows us to perform complex operations. 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 tomography (MRI), angiography, positron emission tomography (PET), ventilation- and

Thoracic Surgery

- Best clinic for complex pulmonary resections among German university-based medical centers
- Among the top five German centers for lung transplantation
- **3,000** operations per year
- **1,400** inpatients per year
- **3,500** outpatients per year
- More than **1,000** 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 all thoracic oncological procedures 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. In cooperation with the Comprehensive Cancer Center Freiburg (CCCF) we provide multidisciplinary support.



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

Another focus of our work is pediatric thoracic surgery. Every year, we treat over 50 children with chest tumors, chest deformities, funnel chests, and pigeon chests.

Research

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

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

Diagnostic and Treatment Services

- 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.
Ulrich Wetterauer
Medical Director

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.

Diagnostic and Treatment Services

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.

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.

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 intracytoplasmatic sperm injection [ICSI]) are performed to help couples with unfulfilled pregnancy wishes.

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.

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 female partners.

Research

Hormone Dependent Cancer and Molecular Gynecology

The research of the Schüle Lab focuses on the genetic control of transcriptional regulation, particularly on nuclear hormone receptors, cofactors and chromatin modifications, with emphasis on their roles in human diseases. We are using molecular analyses in vitro and genetic approaches such as transgenic and knockout mouse models. The European Research Council (ERC) awarded Roland Schüle, the Scientific Director at the Department of Urology at the Medical Center – University of Freiburg, an ERC Advanced Grant in November 2012. Professor Schüle will receive €2.5 million for a period of 5 years for his research proposal to identify and characterize the molecular and physiological functions of the epigenetic enzyme LSD1 and to explore its role in prostate cancer.



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The Central Area

- 1 Parents Guesthouse
- 2 Center for Pediatrics
- 3
- 4 Center for Dental Medicine
- 5 Blood Donation Center/Registration „Haus Langerhans“
- 6 Robert-Koch-Clinic/
Comprehensive Cancer Center Freiburg - CCCF
- 7 Transplant Center
- 8 Surgical Ambulances
- 9 Center for Surgery/Urology/Department of Radiology
- 10 Emergency Center
- 11 Center for Medicine
- 12 „Theodor von Frerichs Haus“ Department of Nuclear
Medicine
- 13 Department of Movement Therapy and Sport/
Orthopaedic Sports Medicine
- 14 Section of Nutrition and Dietetics
- 15 Eye Center/Department of Oto-Rhino-Laryngology
- 16 Dialysis
- 17 Department of Obstetrics and Gynecology
- 18 Department of Radiation Oncology
- 19 Department of Palliative Care
- 20 Institute for Musicians' Medicine
- 21 Neurocenter
- 22 Lecture Hall „Killianstraße“
- 23 Casino
- 24 Central Clinical Research
- 25 Clinical Trials Unit/NAKO/Institute for Prevention and
Cancer Epidemiology
- 26 Deanery
- 27 Institute for Experimental Cardiovascular Medicine
- 28 Implant Center Freiburg (ICF)
- 29 Company Medical Services
- 30 International Medical Services (IMS)
- 31 Hotel "Stadt Freiburg"
- 32 Board of Directors/Administration/Management/
Training Center
- 33 Institute for Environmental Health Sciences and Hospital
Infection Control/Center for Naturopathy
- 34 Center for Pathology
- 35 Center for Translational Cell Research
- 36 Klinik für Tumorbologie
- 37 Center for Geriatrics and Gerontology Freiburg/Phoniatrics
and Pediatric Audiology
- 38 Institute for Human Genetics
- 39 Medical Computer Department



The Outside Area







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