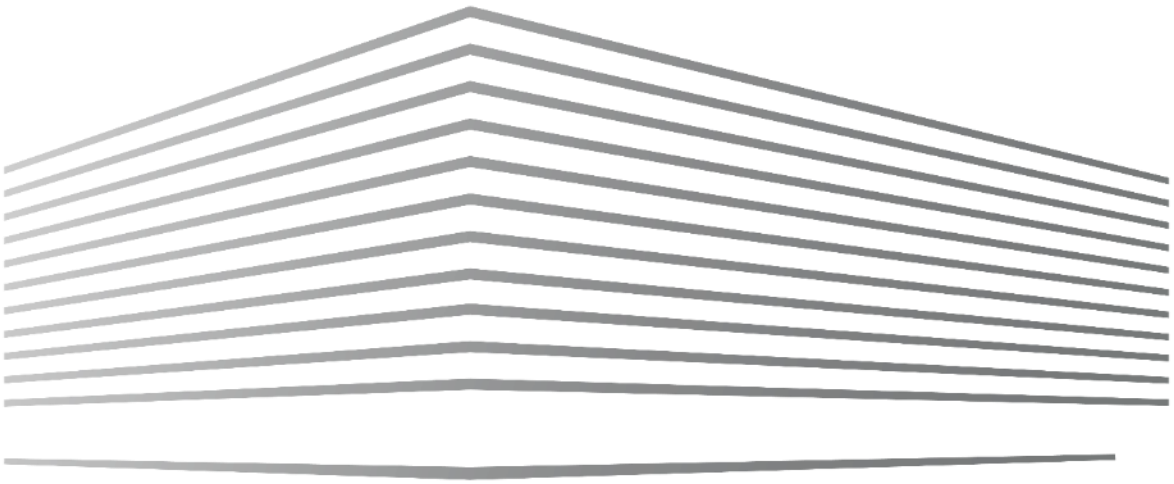
CBBM 2016–2021



The report has been compiled by the board of the Center of Brain, Behavior and Metabolism in September 2021. Address correspondence to Markus Schwaninger, E-Mail: markus.schwaninger@uni-luebeck.de.

A Foreword from the President

Even as a rather young university, we can now look back on almost 60 years of history. A time in which the medical academy became a profile life science university of Lübeck with a broad spectrum ranging from medicine, health sciences and psychology to mathematics, informatics, natural sciences and technology.
"Brain, Behavior and Metabolism" is one of our major and also oldest research foci, which since 2016 has also found a new home with the CBBM, the Center for Brain, Behavior and Metabolism. For more than 5 years now, research groups from all three sections of the university, medicine, life sciences and informatics/technology, were very successful in conducting research here under one roof.
Thematically, the focus is on the mutual control of brain, behavior and metabolic processes and their application in experimental and clinical medicine. In particular, the CBBM stands for cooperation between the participating institutions and facilities, the development of shared research-relevant infrastructures, and the joint acquisition of third-party funding by the participating institutions.
Looking through this report, I appreciate to see that CBBM continues its strong development. Top-class research on neuroscience, hormones, metabolism and behavior continues to be the focus, and the knowledge gained is important not only for the University of Lübeck, but also for society as a whole.

Prof. Dr. med. Gabriele Gillessen-Kaesbach

Contents

Five years ago in 2016, the **Center of Brain, Behavior and Metabolism** (CBBM) research building officially opened. It houses many of the research groups belonging to the CBBM. In its first five years, the building proved to be a game changer for the University as a whole and for the scientists working in the CBBM. On the occasion of its 5th anniversary, we would like to take stock of the past and devise plans for the future.

The CBBM Board

History

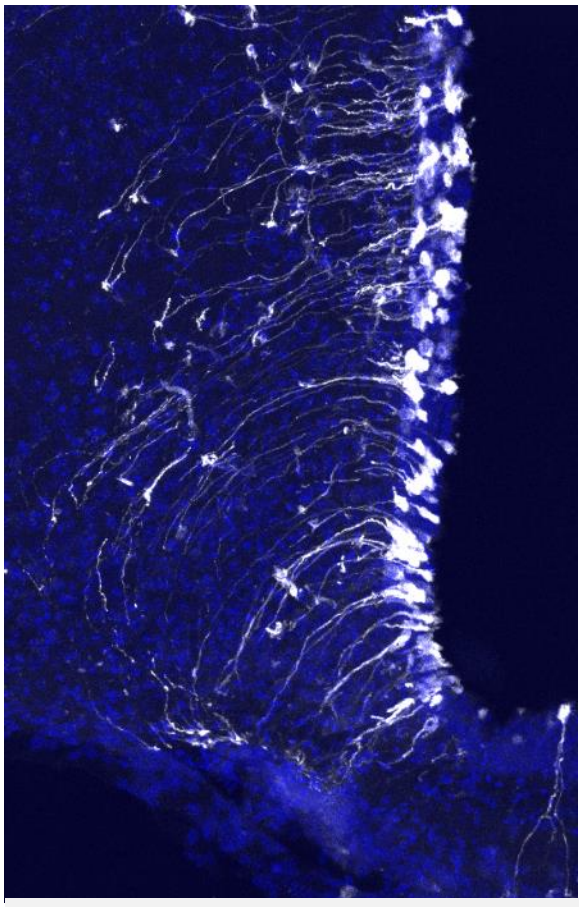
Research on the Lübeck campus has a long tradition in neuroendocrinology. In 1998, the medical faculty launched an internal funding scheme to support the research area "Endocrine Transmission". At the beginning, the program had a broad scope but soon focused on neuroendocrine regulation with intersexuality and obesity as medical anchors. Over the years considerable third-party funding was raised and helped to firmly root the research topic on campus. Past cooperative projects in the CBBM included the DFG FOR "Memory formation during sleep" (Spokesperson: Jan Born), DFG FOR "Intersexuality – from genes to sexual identity" (Spokesperson: Olaf Hiort), DFG CRC "Plasticity and sleep" (Spokesperson: Jan Born), DFG KFO "Selfish Brain: brain glucose and metabolic syndrome" (Spokesperson: Achim Peters), the BMBF consortium "NeuroImage Nord" (Spokesperson: Christian Büchel), and the DFG CRC "Ingestive Behavior: Homeostasis and Reward" (Spokesperson: Hendrik Lehnert).

On the organizational side, the research area "Gehirn, Hormone und Verhalten", which was loosely translated as "Center of Brain, Behavior and Metabolism", was formed in 2002. Founding members were several departments of the medical section of the University, including the departments of Internal Medicine, Neurology, Psychiatry, and Pharmacology. It was the seeding ground for an application to the DFG for a new research building in 2008 (see *The building*). In 2013, the University of Lübeck established the Institute of Psychology and study programmes in psychology. This department has significantly contributed to research in the field of cognitive and affective neuroscience and to the CBBM as a whole. Later, the CBBM was enriched by an Institute of Neurobiology and an Institute of Endocrinology and Diabetes.

Research topics

Neuroendocrine regulation is paradigmatic for the integration of brain and body functions. The periphery of the body is under control by the endocrine output of the brain. Conversely, peripheral organs signal back to the brain and influence brain function and endocrine axes. The constant dialogue between the two sides proves to be essential for normal physiology and, if disrupted, can be the source of common diseases.

Research at the CBBM has explored **neuroendocrine regulation of peripheral metabolism** in health and disease, under various conditions, and throughout the 24-hour day cycle. Key questions that are actively pursued deal with the way how hormones and brain functions interact. How does the brain control metabolic and endocrine effects in the periphery? How do peripheral metabolism and humoral factors feed back to the brain? How do circadian rhythms influence this interaction? In the context of metabolism, these questions are currently addressed by the DFG Graduate College Adipocyte-Brain-Crosstalk. They are also center stage in the ongoing DFG CRC Locotact, which focusses on local control of thyroid hormone function in the brain and in the periphery. In addition, the ERC-Synergy project WATCH deals with the role of tanycytes as mediators between humoral factors in the periphery and the hypothalamus.

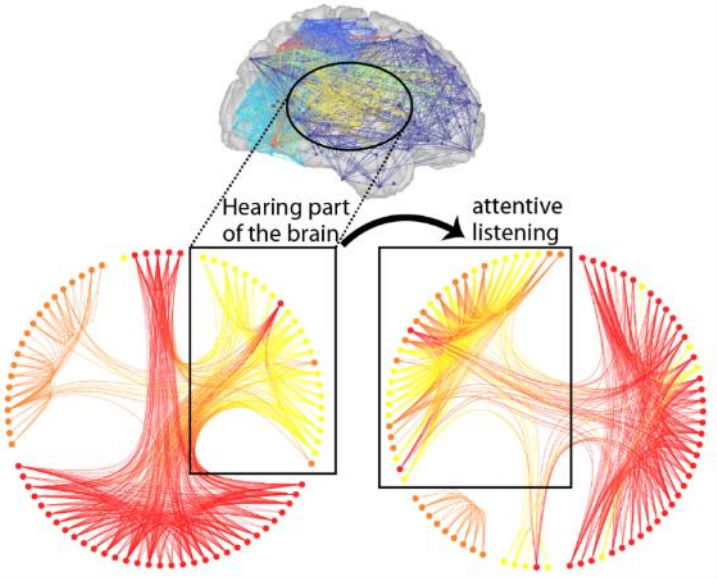


Tanycytes (white) are the protagonists of the WATCH project. They form the blood-brain barrier in the mediobasal hypothalamus.

Disturbances in the endocrine brain, the periphery or their interaction are major causes of obesity and endocrine disorders. Research groups at the CBBM investigate the activation of the brown adipose tissue as a site for energy consumption and its disorders. The crosstalk of brain and endocrine system is also pivotal for sex differentiation. Ongoing research at the CBBM studies how disorders lead to sex diversity. Translational research at the CBBM is integrated in the University Hospital Schleswig-Holstein (UKSH) and its obesity and type-2 diabetes clinics, the clinical Departments of Neurology, Pediatrics, as well as Psychiatry and Psychotherapy. The clinical infrastructure is supported by a dedicated Metabolic Core Unit in the CBBM.

Work in the CBBM had suggested that an impaired allocation of glucose to the brain may be a cause of obesity. Along this line of evidence, **brain metabolism** came into focus as a potential factor **determining peripheral metabolism**. Several approaches, including genetic, analytic and imaging techniques, have been developed at the CBBM to study CNS metabolism. The work supported by the DFG clinical research unit FOR 2698 and FOR 2488 has

important implications for neuronal metabolism and cell loss. This reflects that the group of endocrine and metabolic diseases expands and includes neurodegenerative diseases.



Individual, task-related reconfiguration of large-scale networks in the human brain predicts successful adaptation to a challenging listening task. Shown is a graph-theoretical analysis of functional MRI connectivity data, N=49, adapted from Alavash et al., PNAS 2019.

While the basic interaction between brain and periphery is a core theme, research at the CBBM has the ambition to evaluate the integration of these mechanistic and humoral aspects with **behavior**, reflecting the second "B" in the name. In this respect, CBBM projects have elucidated how sleep as a state controlled by the hypothalamus affects memory and cognition. Social cues and hedonic factors also influence the central regulation of metabolism by the brain. Several research groups working in the field of **social neuroscience** study at a systemic level how social behavior affects the metabolic and endocrine control by the brain and vice versa. This work is supported by an MRI core facility and sleep laboratories at the CBBM.

Social cues represent complex external stimuli acting on the endocrine brain and determining its interaction with peripheral metabolism. In addition, more elementary **sensory signals** coming from the auditory or nociceptive system as well as their computation in the brain **influence behavior and metabolic regulation**. Thus, the ERC-funded work on auditory cognition has direct implications for the endocrine brain.

In a nutshell, the CBBM is not simply a science center with neuroscience and metabolism departments. Rather, we follow the vision to investigate the role of the endocrine brain in metabolism and behavior. With this well-defined thematic focus, we dare to bridge molecular and systemic sciences as well as biological and medical research. The scientific focus puts the CBBM in a unique position in German science and academia.

The building

To house CBBM research groups under one roof, a proposal for funding was submitted to the the federal government based on Article 91b of the *Grundgesetz*. After a multi-step approval procedure in 2010 the *Wissenschaftsrat* recommended financial support for the CBBM research building under the condition was that the state of Schleswig-Holstein maintains the medical school in Lübeck.

After a Europe-wide call for tender, the Stuttgart-based architect office Hammeskrause was awarded the contract. The research building was completed and inaugurated in February 2016. The rectangular cubature of the building with its horizontal facade bands blends harmoniously into the campus and creates an identity-forming center. Two bright, light-flooded atriums form the communicative center of the four-story building. In the foyer area, the atrium with its grand staircase extends to the second floor. The atrium has established itself as the focal point for events like the annual reception of the University. The laboratory landscapes are glassed room-high and offer generous insights into the work of the scientists. Connecting paths and stairs lead past meeting points such as tea kitchens and seating areas, thus promoting informal, interdisciplinary exchange between the working groups. On 5,400 m², the CBBM offers space for 200 scientists and students. The more than 30 research groups at the CBBM from 12 departments have access to their allocated office and laboratory space and to core facilities.

The CBBM Research Building

Builder	State of Schleswig-Holstein
Architects	Hammeskrause, Stuttgart
Poperty size	Approx. 3,620 m²
Gross volume	55,200 m³
Gross floor area	13,200 m²
Net floor area	5,400 m²
Main types of use:	
Research	2,190 m²
Office	2,005 m²
Storage	360 m²
Technical areas	3,500 m²
Traffic area	2,055 m²
Total costs	38.3 million € (incl. € 7.3 million € initial setup)
Start of planning	Sept 2010
Construction time	March 2012 - February 2016

Source: Natascha von Herz, Hammeskrause Architects

Infrastructure

Metabolic Core Unit

The Metabolic Core Unit localized in the CBBM research building is coordinated by Britta Wilms. The following techniques are available:

- Dual energy x-ray absorptiometry (DEXA)

This technique is considered the reference method for determining body composition.

Air displacement plethysmography in the Metabolic Core Unit.

- Air displacement plethysmography (Bod Pod)

Based on air displacement, body composition (fat mass and fat-free mass) can be measured.

- Indirect calorimetry

Energy metabolism can be calculated from the amount of oxygen (O_2) consumed and carbon dioxide (CO_2) produced.

Magnetic Resonance Imaging

Martin Göttlich is responsible for the technical coordination of the unit.

The CBBM operates a 3-T Siemens MAGNETOM Skyra Magnetic Resonance Imaging scanner. The 70-cm open bore and short system design allow for comfortable examinations even of obese subjects. Since 2016, more than 30 PIs from 9 different departments have accumulated more than 4,500 hours of MRI recordings, which led already to numerous publications (in e.g., PNAS, Nature Communications, Elife, Neuroimage). Regarding neuroscientific research, the following equipment is provided for structural, functional and metabolic brain imaging:

- 64-channel head/neck coil for high SNR and accelerated imaging
- Simultaneous multi-slice EPI capability for DTI and BOLD imaging
- Recording of physiological parameters: ECG, breathing belt, pulse rate, skin conductivity

The MR scanner in the CBBM is dedicated to research projects

- MRI compatible 64-channel EEG system for simultaneous MRI and EEG acquisition
- Multiple MRI compatible response devices: response grips, keyboards, trackball, joystick, mouse, force grip
- Eye tracking
- Video recordings of the face
- Visual, acoustic and electric stimulation
- ^{1}H magnetic resonance spectroscopy imaging
- ^{31}P magnetic resonance spectroscopy (3-T dual tuned quadrature head coil $^{1}H/^{31}P$)
- Sodium-Imaging (3-T dual tuned quadrature head coil $^{1}H/^{23}Na$)
- BOLD imaging data is subject to a fully automated quality assurance procedure. Standardized phantom measurements are performed multiple times per week, automatically analyzed and published on internal webpages to assure long-term stability and reproducibility.

Bioanalytic Core Facility

The unit is operated by Julica Folberth and performs mass spectrometry analyses.

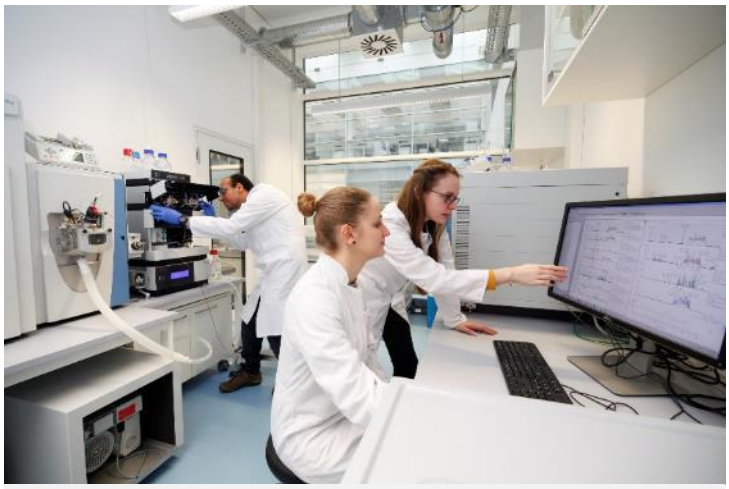
Untargeted analyses for metabolomics and lipidomics analyses involve the following research services

- Sample preparation (e.g., homogenization, extraction)
- Qualitative and semi-quantitative analysis of small molecules or lipids in biological samples
- Omics data analysis and help with the experimental design for omics studies.

In addition, the unit offers targeted analyses for α-dicarbonyls, glycated amino acids, monomethylfumarate, and D-/L-2-hydroxyglutarate as well as method development for compounds of interest.

The lab is equipped with two state-of-the art liquid chromatography–mass spectrometry (LC/MS) systems to cover both the targeted and untargeted metabolomics research questions.

- Triple Quad: Thermo TSQ Endura
- LC system 1: Dionex Ultimate 3000 RS with a Dionex degasser, auto-sampler and column oven
- Q-Orbitrap: Thermo Q-Exactive
- LC system 2: Dionex Ultimate 3000 SD with a Dionex degasser, auto-sampler and column oven
- Liquid handling devices, ultrasonic bath, heating oven, sample concentrator with gas chamber, lyophilisator and medium-throughput tissue homogenization device.



Mass spectrometry analysis in the Bioanalytic Core Facility of the CBBM

New faculty members

Science is made by scientists. The recruitment of new professors with neuroscience, neuroendocrine or metabolic research interests was instrumental for the development of the center. In the past five years the following professors started work in Lübeck and strengthened the research focus.

2021

Matthias Gräser – Professor of Imaging Instrumentation

This professorship was created in a joined initiative of University of Lübeck and Fraunhofer Research Institution for Individualized and Cell-Based Medical Engineering (IMTE), Lübeck. Matthias Gräser will focus his research on magnetic particle imaging, a new imaging modality based on a tracer containing superparamagnetic nanoparticles. This imaging method is anticipated to provide fast and quantitative in vivo imaging in clinical and biomedical applications. Matthias Gräser will also contribute to the field of additive manufacturing methods.

2020

Corinna Peifer – Professor of Work and Organizational Psychology

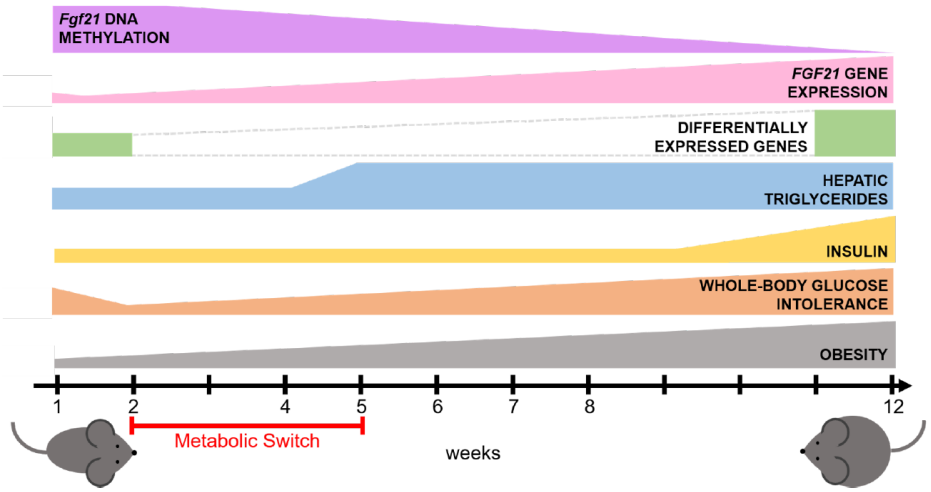
Corinna Peifer leads the Work and Health group at the Department of Psychology. The group conducts research at the interface between work and organizational psychology, psychobiology and health psychology. In their psychobiological research, the group is interested in physiological correlates (such as cortisol and heart rate variability) of flow experience, team flow and stress at work.

Malte Spielmann – Professor of Human Genetics

The main goal of Malte Spielmann is to understand the role of non-coding mutations and structural variants as the cause of human disease. His laboratory aims to understand the pleiotropic effects of mutations and structural variants during embryogenesis and investigate their influence on the 3D architecture of the genome. To achieve this goal, they are applying the latest high-throughput technologies during mouse embryonic development including single-cell analysis, chromosome conformation capture techniques and massively parallel reporter assays.

Henriette Kirchner – Professor of Epigenetic Regulation of Liver Metabolism

Henriette Kirchner's area of research is the molecular mechanisms underlying metabolic diseases, in particular obesity and type 2 diabetes. Her laboratory focusses on the dynamics of epigenetic marks to better understand the development of metabolic diseases and to find future treatment-options. Henriette Kirchner integrates perfectly into the metabolic research community of the CBBM and has joint projects with colleagues representing the brain and behavior research.

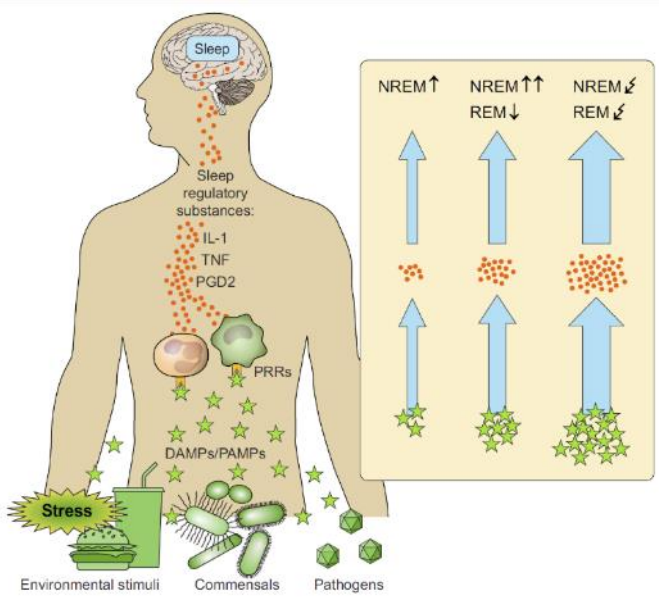


The laboratory of Henriette Kirchner investigates the time-resolved induction and reversal of epigenetically controlled insulin resistance. The figure was created by Dr. Cathleen Geißler.

Tanja Lange – Professor of Psychoneuroimmunology

Tanja Lange from the Department of Rheumatology and Clinical Immunology was appointed to the professorship of Psychoneuroimmunology in April 2020. Her research on brain-immune interactions in healthy individuals and in patients with systemic autoimmune diseases focuses on sleep, the circadian system and symptoms of sickness behavior such as fatigue or cognitive impairments.

The scheme has been published on the cover of Physiological Reviews (July 2019) and summarizes the research interests of Tanja Lange.



2019

Stefan Borgwardt – Professor of Psychiatry and Psychotherapy

Stefan Borgwardt is Director of the Department of Psychiatry, Psychosomatics and Psychotherapy at the Centre of Integrative Psychiatry, University Hospital Schleswig-Holstein. Furthermore, he is Head of the Translational Psychiatry Unit and Chair of Psychiatry and Psychotherapy at the University of Lübeck. His main research is transdiagnostic in its nature and cuts across different mental disorders and ages and different methodologies

including neuroimaging, neurocognition and gene-environment interactions. Clinical interests include the prevention and early invention of mental disorders. The use of digital technologies to translate research findings into mental health care that account for interactions between lifestyle, psychosocial contextual factors, physical and mental health are key components of his interdisciplinary clinical research approach. The CBBM enables a close cooperation with all researchers working in these research fields.

2018

Enrico Leipold – Professor of Neuroscience in Anesthesiology

The research focus of Enrico Leipold is on voltage-gated ion channels and their functions in neurons of the peripheral and central nervous system. Using electrophysiological methods, he studies the molecular mechanisms of nociception as well as functional alterations of central neuronal networks, which are associated with movement disorders such as Parkinson's disease or dystonia.

2017

Katja Lohmann – Professor of Molecular Genetics of Rare Diseases

Katja Lohmann is head of the research section Molecular Genetics of Rare Diseases within the Institute of Neurogenetics. Her research focuses on the molecular genetics of movement disorders such as Parkinson´s disease and dystonia and neurodevelopmental disorders. Major achievements include the identification and characterization of several novel disease genes.

Kerstin Lüdtke – Professor of Physiotherapy

Pain and Exercise Research Lübeck (PERL) are a group of physiotherapists focusing on central nervous system processing of acute and chronic pain. The main area of interest are endogenous pain modulation processes and how these can be influenced by exercise or other physical and psychological interventions.

CBBM research groups

Principal Investigator: Prof. Silke Anders
Group/Department: **Social and Affective Neuroscience (SAIL)**
Institute/Clinic: Department of Neurology

Current Members: Dr. Benjamin Sack, Nico Kohlmorgen, Mirjam Kehrer, Janne Broocks

Research Topic:
We strive to uncover the neural bases of interindividual relations. In this research, we take a between-brain perspective. This means we are not primarily interested in the structure and activity of brains of single individuals, but in the interaction between brains. We believe that the ease with which two or more brains can exchange information is an important determinant of the success of social relations. Importantly, this capacity seems to vary across dyads of brains (rather than single brains). One focus of our research has been the development of means that permit to analyze the flow of information between individuals at the neural and at the behavioral level. Techniques used by our lab include structural and functional magnetic resonance imaging (MRI) and a wide range of behavioral approaches.

Main discoveries (past 5 years):
Using pseudo-hyperscanning (a technique simultaneously invented by our and two other labs) we observed that there is a temporal succession in the flow of affective information between brains, and that the delay of this information in the receiver's brain (relative to the sender's brain) decreases over time, possibly reflecting some "tuning in" of the receiver with the sender. Building on data from this study, we showed that emotional understanding between communication partners is predicted by how well the sender's communication signals match the receiver's neural representation of the communicated state (in this case the sender's emotional state). The degree of this "neural match" is signaled by the brain's reward system, and led to changes in interpersonal attraction in our experimental paradigm. Currently, we examine the degree to which indices of nonverbal communication success predict real-life interindividual relations and social networks.

Theses (past 5 years):
MD: Katja Broer
MSc: Janina Lindmeyer
BSc: Annika Moeller, Laura Guteworth, Lena Vogelgesang, Julia Keddig, Beke Ralfs

5 selected publications (past 5 years):

- Anders S, Beck C, Domin M, Lotze M (2020). Empathic responses to unknown others are modulated by shared behavioural traits. **Sci Rep** 10: 1-9.
- Anders S, Verrel J, Haynes JD, Ethofer T (2020). Pseudo-hyperscanning shows common neural activity during face-to-face communication of affect to be associated with shared affective feelings but not with mere emotion recognition. **Cortex** 131: 210-20.
- Sack B, Broer K, Anders S (2019). Sleep deprivation selectively enhances interpersonal emotion recognition from dynamic facial expressions at long viewing times: An observational study. **Neurosci Lett** 694: 225-30.
- Anders S, de Jong R, Beck C, Haynes JD, Ethofer T (2016). A neural link between affective understanding and interpersonal attraction. **Proc Nat Acad Sci** 113: E2248-57.
- Brandt VC, Beck, C, Sajin V, Baaske MK, Bäumer T, Beste C, Anders S, Münchau A (2016). Temporal relationship between premonitory urges and tics in Gilles de la Tourette syndrome. **Cortex** 77: 24-37.

Principal Investigator: PD Dr. Christina Andreou,
Prof. Dr. med. Stefan Borgwardt
Group/Department: **Personalized Psychiatry**
Institute/Clinic: Department of Psychiatry & Psychotherapy

Current Members: Dr Mihai Avram, Dr Alexandra Korda, Dr Valerie Trulley, Dr Simon Schuster, Helena Rogg, Mai-Britt Rosengarten, Alena Nag, Alina Preuß

Research Topic:
A central goal of our interdisciplinary research is to improve transdiagnostic early detection and intervention in adolescents and adults at risk of developing severe mental disorders. Our mission is to better understand the neural mechanisms underlying emerging mental illness and to develop and test novel preventive interventions. Towards this goal, we investigate brain markers that may predict clinical outcomes or social and occupational impairments and treatment response in various mental disorders. We also investigate mechanisms of drug action and novel treatment approaches such as microbiome modifications and psychedelics. We apply methods such as machine learning, computational modelling, and meta-analyses on imaging data, derived from functional and structural MRI, imaging genetics and EEG.

Ongoing projects:
We investigate (1) neural mechanisms leading to the emergence of psychiatric disorders, with a particular focus on establishing robust biomarkers for prediction of clinical outcomes in young people at high risk and in patients with an established psychiatric disorder; (2) the efficacy and action mechanisms of established and novel treatments for psychotic disorders, including pharmacological agents, psychotherapeutic approaches, and therapeutic videogames; (3) the effects of gut microbiota on brain structure and function, and the relevance of interventions targeting the gut microbiota for the treatment of major depressive disorder; and (4) the effects of hallucinogens on brain function and the potential utility of LSD and ketamine for the treatment of affective and personality disorders.

5 selected publications (past 5 years): ~350

- Alexandra I.Korda, Christina Andreou, Stefan Borgwardt (2021). Pattern classification as decision support tool in antipsychotic treatment algorithms. **Exp Neurol** 339: 113635
- Andreou C, Borgwardt S (2020). Structural and functional imaging markers for susceptibility to psychosis. **Mol Psychiatry** 25: 2773-2785.
- Müller F, Holze F, Dolder P, Ley L, Vizeli P, Soltermann A, Liechti ME, Borgwardt S (2021). MDMA-induced changes in within-network connectivity contradict the specificity of these alterations for the effects of serotonergic hallucinogens. **Neuropsychopharmacology** 46: 545-553.
- Fusar-Poli P, Salazar de Pablo G, Correll CU, Meyer-Lindenberg A, Millan MJ, Borgwardt S, Galderisi S, Bechdolf A, Pfennig A, Kessing LV, van Amelsvoort T, Nieman DH, Domschke K, Krebs MO, Koutsouleris N, McGuire P, Do KQ, Arango C (2020). Prevention of Psychosis: Advances in Detection, Prognosis, and Intervention. **JAMA Psychiatry**. 77: 755-765.
- Mackintosh AJ, de Bock R, Lim Z,Trulley VN, Schmidt A, Borgwardt S, Andreou C (2021). Psychotic disorders, dopaminergic agents and EEG/MEG resting-state functional connectivity: A systematic review. **Neurosci Biobehav Rev** 120: 354-371.

Principal Investigator: Prof. Dr. Norbert Brüggemann
Principal Investigators: **Neurogenetics and imaging**
Institute/Clinic: Department of Neurology

Current Members: Dr. rer. nat. Julia Steinhardt, Dr. med. Jannik Prasuhn, Dr. med. Henrike Hanßen, Dr. med. Julia Henkel, Dr. med. Jan Uter, Nadine Sauerhering, Madita Grümmer, Dr. med. Magdalena Baaske, Dr. med. Johanna Junker, Dr. Vera Tadic

Research Topic:
Our group is interested in diagnostic, pathophysiological and therapeutic aspects of movement disorders. A special focus is placed to genetic forms of dystonia and Parkinson's disease. With regard to therapeutic interventions, we are interested in translational clinical trials in monogenic movement disorders and in the mode of actions of deep brain stimulation.

Main discoveries (past 5 years):
We demonstrated that deep brain stimulation is a highly effective treatment option in X-linked dystonia-parkinsonism (XDP), a neurodegenerative disorder mainly affecting the striatum. We found out that the basal ganglia volume is a predictor for the postoperative outcome. We showed for the first time in vivo, that neurodegeneration in XDP follows a gradient within the striatum and that the pallidum, white matter and cerebellum are also affected in addition to the striatum. Other research indicated that locus coeruleus pathology is associated with cognitive dysfunctions in Parkinson's disease. Another field of research concerned non- motor manifestations in dystonias and their impact on quality of life.

Theses (past 5 years)
PhD: Julia Steinhardt
MD: Janna Heeren, Pauline Plöttner, Henrike Hanßen

Awards:
Junior Award 2019 of the German Parkinson Foundation (DPG) to Dr. Jannik Prasuhn

5 selected publications (past 5 years): total >80

- Brüggemann N, Domingo A, Rasche D, Moll CKE, Rosales RL, Jamora RDG, Hanßen H, Münchau A, Graf J, Weissbach A, Tadic V, Diesta CC, Volkmann J, Kühn AA, Münte TF, Tronnier V, Klein C (2019). Association of pallidal neurostimulation and outcome predictors with X-linked dystonia parkinsonism. **JAMA Neurol** 76: 211-216.
- Hanssen H, Prasuhn J, Heldmann M, Diesta CC, Domingo A, Göttlich M, Blood AJ, Rosales RL, Jamora RDG, Münte TF, Klein C, Brüggemann N (2019). Imaging gradual neurodegeneration in a basal ganglia model disease. **Ann Neurol** 86: 517-526.
- Hanssen H, Heldmann M, Prasuhn J, Tronnier V, Rasche D, Diesta CC, Domingo A, Rosales RL, Jamora RD, Klein C, Münte TF, Brüggemann N (2018). Basal ganglia and cerebellar pathology in X-linked dystonia-parkinsonism. **Brain** 141: 2995-3008.
- Prasuhn J, Prasuhn M, Fellbrich A, Strautz R, Lemmer F, Dreischmeier S, Kasten M, Münte TF, Hanssen H, Heldmann M, Brüggemann N (2021). Association of locus coeruleus and substantia nigra pathology with cognitive and motor functions in patients with Parkinson disease. **Neurology** 10.1212/WNL.0000000000012444.
- Junker J, Berman BD, Hall J, Wahba DW, Brandt V, Perlmutter JS, Jankovic J, Malaty IA, Wagle Shukla A, Reich SG, Espay AJ, Duque KR, Patel N, Roze E, Vidailhet M, Jinnah HA, Brüggemann N (2021). Quality of life in isolated dystonia: non-motor manifestations matter. **J Neurol Neurosurg Psychiatry** jnnp-2020-325193.

Principal Investigator: Prof. Dr. Nico Bunzeck
Group/Department: **Life Span Psychology**
Institute/Clinic: Department of Psychology

Current Members: Dr. Tineke Steiger, Dr. Mushfa Yousuf, Alexandra Sobczak, Marthe Mieling, Anne Herrmann

Research Topic:
Our aim is to understand the psychological and neurobiological mechanisms underlying human learning and memory across the life span. We focus on the relationship between motivation, dopaminergic neuromodulation and age-related cognitive changes. Methodologically, we use typical psychological approaches, including questionnaires and behavioral measures, but also imaging methods, including fMRI and EEG, in combination with psychopharmacology.

Main discoveries (past 5 years):
We were able to pinpoint age-related cognitive changes and their relationship to neurobiological markers within the dopaminergic mesolimbic system. For instance, iron levels and myelin content in the ventral striatum predict long-term memory performance and executive functioning in the aging brain. Working memory, on the other hand, relates to theta-alpha oscillations and is predicted by parahippocampal and striatal integrity. In another set of studies, we showed that semantic congruence increases long-term memory across the life span. This behavioral effect closely relates to neural oscillations in the theta, alpha and beta range, as well as functional coupling between CA3 and laterobasal amygdala. Finally, in cooperation with researchers from King's College London, we showed changes in activation and connectivity in a hippocampal–basal ganglia–midbrain circuit during salience processing in subjects at ultra-high risk for psychosis.

Theses (past 5 years):
PhD: Davina Biel, Alexandrina Guran, Tineke Steiger, Nora Herweg
MSc: > 15
BSc: > 25

5 selected publications (past 5 years): total 26

- Biel D, Steiger TK, Bunzeck N (2021). Age-related iron accumulation and demyelination in the basal ganglia are closely related to verbal memory and executive functioning. **Sci Rep** 11: 9438.
- Guran CA, Herweg NA, Bunzeck N (2019). Age-Related Decreases in the Retrieval Practice Effect Directly Relate to Changes in Alpha-Beta Oscillations. **J Neurosci** 39: 4344-4352.
- Clos M, Bunzeck N, Sommer T (2019). Dopamine is a double-edged sword: dopaminergic modulation enhances memory retrieval performance but impairs metacognition. **Neuropsychopharmacology** 44: 555-563.
- Herweg NA, Sommer T, Bunzeck N (2018). Retrieval Demands Adaptively Change Striatal Old/New Signals and Boost Subsequent Long-Term Memory. **J Neurosci** 38: 745-754.
- Herweg NA, Apitz T, Leicht G, Mulert C, Fuentemilla L, Bunzeck N (2016). Theta-Alpha Oscillations Bind the Hippocampus, Prefrontal Cortex, and Striatum during Recollection: Evidence from Simultaneous EEG-fMRI. **J Neurosci** 36: 3579-87.

Principal Investigator: Prof. Dr. Thorsten M. Buzug
Institute/Clinic: **Institute of Medical Engineering**
Current Members: Prof. Dr. Magdalena Rafecas, Prof. Dr. Martin Koch, Dr. Kerstin Lüdtke-Buzug, Dr. Maik Stille, Dr. Ksenija Gräfe, Dr. Alexander Neumann
Ascociated at Fraunhofer:
Prof. Dr. Matthias Gräser, Dr. Mandy Ahlborg, Dr. Thomas Friedrich, Dr. Svenja Ipsen

Research topic:
Research in the institute is focused on the field of medical imaging, comprising instrumentation, acquisition, and analysis of images for biomedical application. While a central research topic is the development of magnetic particle imaging and spectroscopy devices, we also develop new methods in computed tomography, magnetic resonance and nuclear imaging. Further research activities exist in the the fields of biochemical engineering (such as development of nanoparticles for magnetic particle imaging), radiolabeling, and modeling and analysis of flow in medical applications, and 3D printing. The institute has a strong link to Fraunhofer Research Institution for Individualized and Cell-Based Medical Engineering (IMTE), Lübeck.

Main discoveries (past 5 years):
The first MPI system for brain perfusion imaging on the human scale (Graeser et al, Nat Commun 2019) is currently being redesigned as a clinical device for monitoring stroke patients in an intensive care unit. Using magnetic particle imaging, we successfully imaged acute stroke in a mouse model (2017), and also hemorrhage with a commercial MPI system (Bruker) equipped with receive coils developed in-house (2020). We developed a magnetically steered millimeter-sized swimmer and demonstrated untethered navigation through an aneurysm phantom using controlled magnetic torque (2021). In nuclear imaging, new regularization functions for Bayesian reconstruction of Compton camera images were developed. A synthetic zebrafish phantom was built and integrated into a simulation platform. A new bimodel concept for a PET-Compton camera was presented. We implemented an approach to exploiting Compton scatter for improving image quality in PET. A dedicated chamber for in-vivo dynamic imaging of adult zebrafish was constructed. A new approach to improved CT image reconstruction in the presence of metal implants was developed, exploiting knowledge about the implant. New insight into extracellular contributions to size estimates based on twice diffusion-weighted magnetic resonance imaging in the human brain was obtained.

Theses (past 5 years)
PhD (Dr. rer. nat., Dr.-Ing.): Anselm von Gladiß, Jan Stelzner, Stefan Becker, Maik Stille, Fabian Isernhagen, Timo Sattel, Matthias Weber, Klaas Rackebrandt, Klaas Bente, Christian Kaethner, Alexander Weber, Matthias Gräser, Ksenija Gräfe, Gael Bringout
MSc: André Schu, Hannes Köhler, Xin Chen, Annika Böhme, Lena Landwehr, Maximilian Wattenberg, Steffen Bruns, Leyla Coscun, Julian Beer Theresa Gano, Kristin Müller, Alina Ibbeken, Nele Blum, Ann-Kathrin Steuer, Constantin Schareck, Steven Seeger, Georg Seidel, Lea Ebbrecht, Jan Magonov, David Weller, Pascal Stagge, Laura Hellwege, Andreas Bolke

5 selected publications (past 5 years):

- Bakenecker AC, von Gladiss A, Schwenke H, Behrends A, Friedrich T, Lüdtke-Buzug K, Neumann A, Barkhausen J, Wegner F, Buzug TM (2021) Navigation of a magnetic micro-robot through a cerebral aneurysm phantom with magnetic particle imaging. **Sci Rep** 11, 14082.
- von Gladiss A, Graeser M, Behrends A, Chen X, Buzug TM (2020) Efficient hybrid 3D system calibration for magnetic particle imaging systems using a dedicated device. **Sci Rep** 10, 18432.
- Szwargulski P, Wilmes M, Javidi E, Thieben F, Graeser M, Koch M, Grüttner C, Adam G, Gerloff C, Magnus T, Knopp T, Ludewig P. (2020) Monitoring Intracranial Cerebral Hemorrhage Using Multi-Contrast Real-Time Magnetic Particle Imaging. **ACS Nano** 14, 13913–13923.
- Peñate Medina T, Kolb JP, Hüttmann G, Huber R, Peñate Medina O, Ha L, Ulloa P, Larsen N, Ferrari A, Rafecas M, Ellrichmann M, Pravdivtseva MS, Anikeeva M, Humbert J, Both M, Hundt JE and Hövener, J-B (2021) Imaging Inflammation: From Whole Body Imaging to Cellular Resolution. **Front Immunol** 12, 692222.
- Malhotra A, von Gladiss A, Behrends A, Friedrich T, Neumann A, Buzug TM, Lüdtke-Buzug K (2019) Tracking the Growth of Superparamagnetic Nanoparticles with an In-Situ Magnetic Particle Spectrometer (IN-SPECT). **Sci Rep** 9, 10538.

Principal Investigators: Prof. Dr. Christoph Helmchen
PD Dr. Björn Machner, Dr. Andreas Sprenger
Group: **Sensorimotor systems**
Institute/Clinic: Department of Neurology

Current Members: PD Dr. Peter Trillenberg, Prof. Dr. Wolfgang Heide, Dr. Janina von der Gablentz, Imke Hagedorn, Lisa Möller, Lara Braun, Jonathan Imholz, Matthias Rother, Peer Spliethoff, Jini Choi, Philipp Koch

Research Topic:
Using electrophysiological and brain imaging techniques we are interested in studying basic sensori-motor mechanisms contributing to the control of gaze, visual exploration, postural balance and spatial orientation as well as cognitive processes (i.e. attention) which modulate their performance. We use various eye movements recording techniques to pursue these goals and apply different methods of sensory (i.e. vestibular, visual) and brain (transcranial magnetic stimulation) stimulation to investigate brain responsivity in health and disease.
Specifically, we study - disorders of the vestibular systems and central mechanisms of compensation, - visual search, spatial attention and its disorders (e.g., neglect), - spatial memory and orientation, - predictive mechanisms of action planning, - short and long term memory of oculomotor (saccadic) learning, and - body ownership.

Main discoveries (past 5 years):
Vestibular disease: We disclosed new mechanisms of vestibular activity and connectivity in patients with bilateral vestibular disease. Despite sensory deprivation they showed **stimulus intensity related and region-specific increase of activity with steep stimulus-response functions in visual and vestibular processing cortical regions that were related to** dizziness-related handicap scores and **may account for their visual dependency.** We unrevealed altered resting state activity in vestibular disease patients which was related to disease severity but could be modulated by **short-term galvanic vestibular stimulation.** Abnormal spatial attention: We investigated basic mechanisms of brain responsitivity and connectivity in spatial neglect patients. We identified a reduction of inter-hemispheric functional connectivity of the bilateral dorsal attention network, being spared from structural lesions, and fMRI-behavior correlations in the right superior parietal lobe. These results confirm a crucial role of this non-lesioned but dysfunctional right cortical structure for the emergence of spatial neglect and its behavioral consequences, in line with diachisis. Using visual, i.e. optokinetic stimulation, we tried to identify neural mechanisms that explain its beneficial effects on hemispatial neglect. As a potential neural substrate we found frontoparietal activations in regions involved in both oculomotor control and spatial attention following leftward stimulation.

Theses (past 5 years)
MD: Jann Frederik Wojak, Otte Voges, Jan-Birger Kirchhoff, Julia Knauss, Nico Maximilian Jandl, Thomas Naumann, Inga Könemund

5 selected publications (past 5 years): total 61

- Machner B, Imholz J, Braun L, Koch PJ, Bäumer P, Münte TF, Helmchen C, Sprenger A (2021). Resting-state functional connectivity in the attention networks is not altered by offline theta-burst stimulation of the posterior parietal cortex or the temporo-parietal junction as compared to a vertex control site. **Neuroimage: Reports** 1: 100013.
- Helmchen C, Machner B, Rother M, Spliethoff P, Göttlich M, Sprenger A (2020). Effects of galvanic vestibular stimulation on resting state brain activity in patients with bilateral vestibulopathy. **Hum Brain Mapp** 41: 2527-2547.
- Machner B, von der Gablentz J, Göttlich M, Heide W, Helmchen C, Sprenger A, Münte TF (2020) Behavioral deficits in left hemispatial neglect are related to a reduction of spontaneous neuronal activity in the right superior parietal lobule. **Neuropsychologia** 138: 107356.
- Machner B, Lencer MC, Möller L, van der Gablentz J, Heide W, Helmchen C, Sprenger A (2020) Unbalancing the attentional priority map *via* gaze-contingent displays induces neglect-like visual exploration. **Front Hum Neurosci** 14: 41.
- Helmchen C, Rother M, Spliethoff P, Sprenger A (2019) Increased brain responsivity to galvanic vestibular stimulation in bilateral vestibular failure. **Neuroimage Clin** 24: 101942.

Principal Investigator: Prof. Dr. Olaf Hiort
Group/Department: **Division of Paediatric Endocrinology and Diabetes**
Institute/Clinic: Department of Paediatrics and Adolescent Medicine

Current Members: Dr. rer. nat. Ralf Werner, Dr. med. Ulla Döhnert, Dr. med. Isabel Viola Wagner, Dr. hum. biol. Martina Jürgensen, Dr. med. Isabel Mönig, Dipl.-Psych. Louise Marshall, Dr. med. Julia Hoppmann, Ismail Mostafa Al-Sharkawi, M.Sc., Verónica Calonga Solis, Ph.D.

Research Topic:
We perform clinical, translational, and basic research to understand sex development and maturation. Clinically, we currently aim to develop "guideline-conform management for people with variants of sex development" in a national multi-centre study. As part of this, we try to investigate the molecular genetic causes affecting gonadal and phenotypic development in humans as well as in mammals and also develop laboratory analyses for proving functional effects.

Main discoveries (past 5 years):
In several clinical and translational networks, we have demonstrated that care for people with rare conditions affecting sex development (DSD) needs both a novel multi-disciplinary care approach in reference centres as well as highly specialized expertise for developing new diagnostic principles. We were able to identify novel causes of DSD, develop appropriate cell models for proof of principle and, together with other groups from the University of Lübeck, characterized a mouse model of CYP17A1 deficiency, which will allow further detailed studies on the influence of sex steroids for phenotype development and risk factor development in certain diseases.

Theses (past 5 years):
Habilitation: Dr. med. Susanne Thiele-Schmitz, Dr. med. Isabel Viola Wagner (in progress)
Ph.D.: Asma Tajouri (University of Tunis, Tunesia), Helena Fabbri Scallet (University of Campinas, Brazil), Ana Paula dos Santos (University of Campinas, Brazil), Juliana Gabriel (University of Campinas, Brazil)
M.D.: Jacqueline Köhler, Hanna Mallmann, Marlene Kunert, Ulla Döhnert, Ralf Lünstedt, Isabel Mönig

5 selected publications (past 5 years): total 33

- Wagner IV, Klöting N, Savchuk I, Eifler L, Kulle A, Kralisch-Jäcklein S, Dötsch J, Hiort O, Svechnikov K, Söder O (2021). Diabetes Type 1 Negatively Influences Leydig Cell Function in Rats, Which is Partially Reversible By Insulin Treatment **Endocrinology** 162: bqab017.
- Hiort O, Cools M, Springer A, McElreavey K, Greenfield A, Wudy SA, Kulle A, Ahmed SF, Dessens A, Balsamo A, Maghnie M, Bonomi M, Dattani M, Persani L, Audi L; COST Actions DSDnet and GnRH Network as well as the European Reference Network for Rare Endocrine Conditions (Endo–ERN) (2019). Addressing gaps in care of people with conditions affecting sex development and maturation. **Nat Rev Endocrinol** 15: 615-622.
- Birnbaum W, Marshall L, Werner R, Kulle A, Holterhus PM, Rall K, Köhler B, Richter-Unruh A, Hartmann MF, Wudy SA, Auer MK, Lux A, Kropf S, Hiort O (2018). Oestrogen versus androgen in hormone-replacement therapy for complete androgen insensitivity syndrome: a multicentre, randomised, double-dummy, double-blind crossover trial. **Lancet Diabetes Endocrinol** 6: 771-780.
- Aherrahrou R, Kulle AE, Alenina N, Werner R, Vens-Cappell S, Bader M, Schunkert H, Erdmann J, Aherrahrou Z (2020). CYP17A1 deficient XY mice display susceptibility to atherosclerosis, altered lipidomic profile and atypical sex development. **Sci Rep**. 10:8792.
- dos Santos AP, Meinel AJ, dos Santos Cruz Piveta C, Gabriel Ribeiro de Andrade J, Fabbri-Scallet H, Gil-da-Silva-Lopes VL, Guerra-Junior G, Kuenstner A, Kaiser FJ, Holterhus PM, Hiort O, Busch H, Trevas Maciel-Guerra A, Palandi de Mello M, Werner R (2020). Disruption of the topological associated domain at Xp21.2 is related to gonadal dysgenesis: A general mechanism of pathogenesis. **medRxiv** 2020.03.25.20041418.

Principal Investigator: PD Dr. Sarah Jessen
Group/Department: **Babylab**
Institute/Clinic: Clinic for Neurology

Current Members: Bernadette Hippmann, Sofie Schierbaum

Research Topic:
Our group studies the neural mechanisms underlying early social development. Using primarily electroencephalography but also behavioral measures and questionnaire data, we investigate how human infants respond to and process social signals from different sensory modalities such as vision, audition, and olfaction in the first year of life. Our goal is to achieve a better understanding of the neural basis of healthy social development in infancy and how it is influenced by environmental factors and interindividual differences.

Main discoveries (past 5 years):
One research focus in the past years was a series of studies investigating the impact of maternal odor on face and voice processing infants. We could show that 7-month-old infants who can smell their mother show a decrease in the age-typical neural response to fearful faces, demonstrating for the first time an impact of social odor on emotion processing in infancy. Furthermore, maternal odor modulates the neural processing of facial identity. In a second line of research, we investigated the processing of subliminal facial information in infancy, providing evidence for subliminal processing of salient social signals including emotional expressions and facial trustworthiness. Finally, in a more methods-focused project, we could successfully demonstrate the feasibility of using state-of-the-art encoding models to analyze infant EEG data, paving the way for the design of more ecologically valid experimental designs in the future.

Theses (past 5 years):
Habilitation: Sarah Jessen
MSc: Anja Smith, Verena Schaefer
BSc: Leonie Emmerich, Femke Johannsen, Jonathan Mortensen, Stella Becker, Antonia Bringe, Janina Ingwersen, Melanie Napierski, Cornelia Olhorn, Anna Irsch, Merle Henke, Léonie Pasquier, Sarah Katenhusen, Lena Schultz, Anne Berith Hassel, Jana Ahrens, Luise Martin

5 selected publications (past 5 years): total 17

- Hippmann B, Tzvi E, Göttlich M, Weiblen R, Münte TF, Jessen S (2021). Inferior frontal junction modulates neural dynamics underling motivation-control interactions. **Hum Brain Mapp** 42: 4555-4567.
- Jessen S (2020). Maternal odor reduces the neural threat responses in human infants. **Dev Cogn Neurosci** 45: 100858.
- Jessen S, Grossmann T (2020). The developmental origins of subliminal face processing. **Neurosci Biobehav Rev** 116: 454–460.
- Jessen S, Fiedler L, Münte TF, Obleser J (2019). Quantifying individual auditory and visual brain responses in 7- month-old infants from watching a four-minute cartoon movie. **Neuroimage** 202: 116060.
- Altvater-Mackensen N, Jessen S., Grossmann T (2017). Brain responses reveal that infants' face discrimination is guided by statistical learning from distributional information. **Dev Sci** 20: e12393.

Principal Investigator: Prof. Dr. Henriette Kirchner
Group/Department: **Epigenetics and Metabolism**
Institute/Clinic: Institute for Human Genetics

Current Members: Dr. Christin Krause,
Jan Hendric Britsemmmer,
Natalie Taege,
Alison Naujack,
Martina Grohs

Research Topic:
Our group studies the role of epigenetic alterations in the development of obesity and type 2 diabetes. Epigenetic marks regulate gene expression by linking a person's individual genetic makeup with the environmental exposure. We are especially interested in the dynamic regulation of DNA methylation and non-coding RNAs. Our overall aim is to understand why epigenetic marks become dysregulated in obese and diabetic subjects and to find ways to revert these marks to the healthy state.

Main discoveries (past 5 years):
An ongoing goal is to understand the epigenetic modifications that are associated with fatty liver disease and hepatic insulin resistance in obese subjects. We identified a complex network of a genetic variant, DNA methylation and the microRNA let-7e that co-regulates the expression of the gene for the insulin receptor substrate 2 *IRS2*. Using established mouse models of insulin resistance and non-alcoholic fatty liver disease we moreover identified dynamic DNA methylation that precedes the metabolic switch from normal hepatic glucose metabolism to hepatic insulin resistance.

Theses (past 5 years):
PhD: Cathleen Geißler, Christin Krause
BSc: Katja Rockschies, Hanna Erdmann, Katharina Iben, Sina Junge

5 selected publications (past 5 years): total 20

- Oelkrug R, Krause C, Herrmann B, Resch J, Gachkar S, El Gammal AT, Wolter S, Mann O, Oster H, Kirchner H, Mittag J (2020). Maternal brown fat thermogenesis programs glucose tolerance in the male offspring **Cell Rep** 33: 108351.
- Krause C, Schaake S, Grütz K, Sievert H, Reyes CJ, König I, Laabs BJ, Jamora RD, Rosales RL, Diesta CCE, Pozojevic J, Gemoll T, Westenberger A, Kaiser, FJ, Klein C, Kirchner H (2020). DNA Methylation as a Potential Molecular Mechanism in X-Linked Dystonia-Parkinsonism. **Mov Disord** 35: 2220-2229.
- Krause C., C. Geissler, H. Tackenberg ,A. T. El-Gammal, S. Wolter, J. Spranger, O. Mann, H. Lehnert, and H. Kirchner (2020). Multi-layered epigenetic regulation of *IRS2* expression in the liver of obese individuals with type 2 diabetes. **Diabetologia** 63: 2182-2193.
- Krause C, Sievert H, Geissler C, Grohs M, El Gammal AT, Wolter S, Ohlei O, Kilpert F, Kramer UM, Kasten M, Klein C, Brabant GE, Mann O, Lehnert H, Kirchner H (2019). Critical evaluation of the DNA-methylation markers ABCG1 and SREBF1 for Type 2 diabetes stratification. **Epigenomics** 11: 885-897.
- Oelkrug R, Herrmann B, Geissler C, Harder L, Koch C, Lehnert H, Oster H, Kirchner H, Mittag J (2017). Dwarfism and insulin resistance in male offspring caused by α1-adrenergic antagonism during pregnancy. **Mol Metab** 6: 1126-1136. (highlighted in *Nature Reviews Endocrinology* 2017 Sept; 13(9))

Principal Investigator: Prof. Dr. Christine Klein
Institute/Clinic: **Institute of Neurogenetics**

Current Members: Prof. Katja Lohmann, Prof. Anne Grünewald, PD Dr. Ana Westenberger, Dr. Philip Seibler, PD Dr. Aleksandar Rakovic, PD Dr. Joanne Trinh, Dr. Melissa Vos, Dr. Jelena Pozojevic, Dr. Max Borsche, Dr. Alexander Balck, Dr. Nathalie Schell, Dr. Eva-Juliane Vollstedt, Dr. Tatiana Usnich, Lara Lange, Dr. Franca Vulinovic, Dr. Karen Grütz, Bianca Räsenhöft, Sylwia Dankert, Katja Herrmann-Malzahn, Evelyn Knappe, Frida Mandik, Sokhna Haissatou Diaw, Karin Haisch, Frauke Hinrichs, Yuliia Kanana, Insa Lenz, Britta Meier, Heike Pawlack, Kirstin Plötze-Martin, Franziska Rudolph, Susen Schaake, Ronnie Tse, Karin Wiegers, Harutyun Madoev, Christoph Westenberger, Christoph Much, Carolin Gabbert, Theresa Lüth, Mirja Thomsen, Kerstin Tanzer

Research Topic:
Our Institute focuses its clinical and research activities on hereditary forms of movement disorders, mainly Parkinson's disease (PD) and dystonia. Discovering the genetic factors causing or contributing to movement disorders is the Institute's main aim of research.

Main discoveries (past 5 years):
We demonstrated that loss of WDR45 increased cellular iron levels and oxidative stress, accompanied by mitochondrial abnormalities, autophagic defects, and diminished lysosomal function. While investigating the mechanistic link between Parkin and PINK1 mutations and inflammation, we determined that human carriers of Parkin mutations have significantly elevated cytokine levels. mtDNA deep sequencing in a large cohort of PINK1 or Parkin mutation carriers, idiopathic PD, and control subjects indicated that Parkin and PINK1 mutations predispose individuals to an increased mtDNA variant load, which increases PD susceptibility and triggers inflammatory response. Finally, our work indicated the existence of three modifiers of age at onset (AAO) in X-linked dystonia-parkinsonism (XDP) that likely affect the DNA mismatch repair pathway and account for 13.0% of the overall AAO variance in XDP with the protective alleles delaying disease onset by seven years.

Theses (past 5 years):
PhD: Aloysius Domingo, Karen Grütz, Franca Vulinovic; MD: Anna-Lena Baasch, Friederike Borngräber, Katharina Kolk, Tobias Löchte, Christoph Max, Martje Pauly, Martha Pierstorff, Jannik Prasuhn, Thomas Schmidt; MSc: Eva-Maria Benhardi, Victor Krajka, Christine Krause, Sarah Konitzer, Theresa Lüth

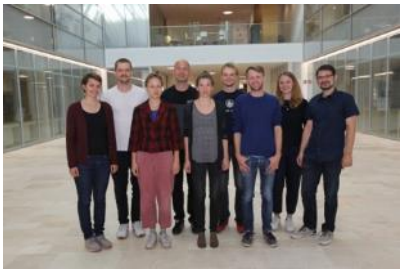
Habilitations (past 5 years):
Ana Westenberger, Joanne Trinh, Aleksandar Rakovic

5 selected publications (past 5 years): total >170

- Seibler P, Burbulla LF, Dulovic M, Zittel S, Heine J, Schmidt T, Rudolph F, Westenberger A, Rakovic A, Münchau A, Krainc D, Klein C (2018). Iron overload is accompanied by mitochondrial and lysosomal dysfunction in WDR45 mutant cells. **Brain** 141: 3052-3064.
- Sliter DA, Martinez J, Hao L, Chen X, Sun N, Fischer TD, Burman JL, Li Y, Zhang Z, Narendra DP, Cai H, Borsche M, Klein C, Youle RJ. Parkin and PINK1 mitigate STING-1 induced inflammation. **Nature** 2018;561: 259-262.
- Borsche M, König IR, Delcambre S, Petrucci S, Balck A, Brüggemann N, Zimprich A, Wasner K, Pereira SL, Avenali M, Deuschle C, Badanjak K, Ghelfi J, Gasser T, Kasten M, Rosenstiel P, Lohmann K, Brockmann K, Valente EM, Youle RJ, Grünewald A, Klein C (2020). Mitochondrial damage-associated inflammation highlights biomarkers in PRKN/PINK1 parkinsonism. **Brain** 143: 3041-3051.
- Laabs BH, Klein C, Pozojevic J, Domingo A, Brüggemann N, Grütz K, Rosales RL, Jamora RD, Saranza G, Diesta CCE, Wittig M, Schaake S, Dulovic-Mahlow M, Quismundo J, Otto P, Acuna P, Go C, Sharma N, Multhaupt-Buell T, Müller U, Hanssen H, Kilpert F, Franke A, Rolfs A, Bauer P, Dobričić V, Lohmann K, Ozelius LJ, Kaiser FJ, König IR, Westenberger A (2021). Identifying genetic modifiers of age-associated penetrance in X-linked dystonia-parkinsonism. **Nat Commun**. 12: 3216.
- Bloem BR, Okun MS, Klein C (2021). Parkinson's disease. **Lancet** 397: 2284-2303.

Principal Investigators: Prof. Dr. Sören Krach,
Prof. Dr. Frieder M. Paulus
Group/Department: **Social Neuroscience**
Institute/Clinic: Department of Psychiatry & Psychotherapy

Current Members: Dr. Laura Müller-Pinzler, Dr. Lena Rademacher, Dr. David Stolz, Dr. Annalina Mayer, Nora Czekalla, Johanna Voges, Clara Weber, Janine Baumann, Alexander Schröder, Finn Lübber



Research Topic:
Our research focuses on the neurocomputational mechanisms of how social interactions, and the feedback we receive during such interactions, affect the beliefs we form or construct about ourselves and others as well as impact our motivations and emotional experiences.

Main discoveries (past 5 years):
People's opinions and judgements about us are so important in our daily lives that they deeply influence how we feel, what we think and how we behave. In our research projects we develop novel approaches that allow us to quantify the effects of (social) feedback for processes of belief formation (see Müller-Pinzler et al., 2019; Czekalla et al., 2021), to understand the neural systems underlying self-efficacy beliefs and their affective consequences (see Stolz et al., 2020) or to estimate the impact of hormonal modulation of social processes (see Mayer et al., 2021). All these questions are relevant for basic neuroscience on socially embedded cognition, emotion and motivation with translational potential to clinical conditions such as social anxiety, addiction, autism or depression.

Theses (past 5 years):
PhD: Laura Müller-Pinzler, David Stolz, Annalina Mayer; MD: Robert Glosemeyer, Banafsche Sayyad, Konrad Whitaker, Maurice Cabanis; MSc: Katharina Ohm, Hendrik Möller, Lisa Kühne, Franca Schwesinger, Julia Klabunde, Alexander Schröder, Matthias Brattig, Malte Lünser, Maximillian Franz, Lisanne Hamschmidt, Daniela Lückel, Timo Schlesinger, Jana Uhlen, Nora Czekalla, Annalina Mayer, Janine Baumann, Viktor Wahner, Lina Beck, Julie Forster; BSc: Carlotta Zettlitzer, Hauke Lehna, Rebecca Motz, Lena Hielscher, Clara Gunzelmann, Kerewin Frick, Lisa Kühne, Justus Kröning, Alexander Schröder, Matthias Brattig, Anne Markowsky, Finn Lübber, Martje Bus, Anna Winkler, Lea Dotzauer, Renee Frigge, Anna Hahnemann, Ann-Kristin Schmidt, Elisa Koch

5 selected publications (past 5 years): total 41

- Czekalla N, Stierand J, Stolz, DS, Mayer AV, Voges JF, Rademacher L, Paulus FM, Krach S, Müller-Pinzler L (2021). Self-beneficial belief updating as a coping mechanism for stress-induced negative affect. **Sci Rep** 11: 17096.
- Martins D, Rademacher L, Gabay AS, Taylor R, Richey JA, Smith DV, Goerlich KS, Nawijn L, Cremers HR, Wilson R, Bhattacharyya S, Paloyelis Y (2021). Mapping social reward and punishment processing in the human brain: A voxel-based meta-analysis of neuroimaging findings using the social incentive delay task. **Neurosci Biobehav Rev** 122: 1-17.
- Stolz DS, Müller-Pinzler L, Krach S, Paulus FM (2020). Internal control beliefs shape positive affect and associated neural dynamics during outcome valuation. **Nat Commun** 11: 1230.
- Müller-Pinzler L, Czekalla N, Mayer AV, Stolz DS, Gazzola V, Keysers C, Paulus FM & Krach S (2019). Negativity-bias in forming beliefs about own abilities. **Sci Rep** 9:14416.
- Gallo S, Paracampo R, Müller-Pinzler L, Severo MC, Blömer L, Fernandes-Henriques C, Henschel A, Lammes BK, Maskaljunas T, Suttrup J, Avenanti A, Keysers C, Gazzola V (2018). The causal role of the somatosensory cortex in prosocial behaviour. **Elife**. 7:e32740.

Principal Investigator: Prof. Dr. Ulrike Krämer
Group/Department: **Cognitive Neuroscience**
Institute/Clinic: Department of Neurology

Current Members: Dr. Tatiana Goregliad Fjaellingsdal, Dr. Martin Göttlich, Ronja Weiblen, Pauline Petereit, Izabell Domoszlai, Susanne Schellbach

Research Topic:
We study the cognitive and affective processes that help us to understand and interact with others and how these processes are implemented in the brain. We use methods of experimental psychology together with functional imaging (fMRI) and EEG to identify relevant brain regions and electrophysiological signatures that are indicators of social cognition and empathy.

Main discoveries (past 5 years):
Using a novel interactive aggression paradigm and functional imaging, we could show that orbitofrontal cortex reactivity to angry facial expressions relates to aggressive retaliation after provocation. In a second study using the same paradigm, lower amygdala reactivity to angry faces was associated with less aggressive behavior and higher endogenous testosterone level in young women. At the same time, coupling of amygdala and orbitofrontal cortex was reduced, providing evidence for the relevance of this circuit for the control of aggressive behavior also in young, healthy people. Finally, in cooperation with the Clinic for Psychiatry, we could identify resting-state connectivity signatures of obsessive-compulsive disorder, which were found to be predictive for the response to cognitive behavioral therapy.

Theses (past 5 years):
PhD: Matthias Liebrand, Macià Buades, Elinor Tzvi
MD: Estelle Kleefisch, Christin Engelke
MSc: > 10
BSc: > 10

5 selected publications (past 5 years): total 37

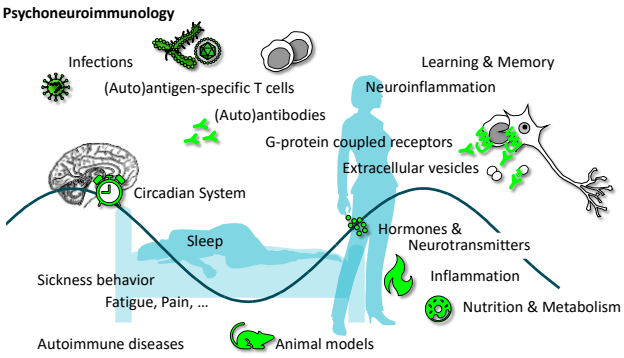
- Serfling G, Buades-Rotger M, Harbeck B, Krämer UM, Brabant G (2019). The corticosteroid prednisolone increases amygdala and insula reactivity to food approach signals in healthy young men. **Psychoneuroendocrinology** 99: 154-165.
- Tzvi E, Bauhaus LJ, Kessler TU, Liebrand M, Wostmann M, Krämer UM (2018). Alpha-gamma phase amplitude coupling subserves information transfer during perceptual sequence learning. **Neurobiol Learn Mem** 149: 107-117.
- Buades-Rotger M, Engelke C, Beyer F, Keevil BG, Brabant G, Krämer UM (2016). Endogenous testosterone is associated with lower amygdala reactivity to angry faces and reduced aggressive behavior in healthy young women. **Sci Rep**; 6: 38538.
- Beyer F, Münte TF, Göttlich M, Krämer UM (2015). Orbitofrontal cortex reactivity to angry facial expression in a social interaction correlates with aggressive behavior **Cerebral Cortex** 25: 3057-3063.
- Göttlich M, Krämer UM, Kordon A, Hohagen F, Zurowski B (2015). Resting-state connectivity of the amygdala predicts response to cognitive behavioral therapy in obsessive compulsive disorder. **Biol Psychol** 111: 100-109.

Principal Investigators: Prof. Dr. med. Tanja Lange,
Prof. Dr. med. Gabriela Riemekasten
Group/Department: **Psychoneuroimmunology**
Institute/Clinic: Department of Rheumatology and Clinical Immunology

Current Members: PD Dr. Antje Müller, Dr. Anja Schumann, Dr. Sebastian Jendrek, Hanna Graßhoff, Alexander Hackel, Finn Lübber, Konstantinos Fourlakis, Kristin Burkhard, Johanna Strobach, Philine Letz, Maximilian Hinsch

Research Topic:
Our research aims to unravel the bidirectional interactions between the brain and the immune system. In healthy controls, in patients with acute and chronic immune activation and in animal models we dissect several aspects of sickness behavior (e.g., fatigue) as well as neuroendocrine and immunological mechanisms of the brain-immune crosstalk (e.g., autoantibodies targeting hormone or neurotransmitter receptors).

Main discoveries (past 5 years):
Our studies demonstrated a regulatory role of sleep and the circadian system on immune cell traffic and function involving hormones (e.g., cortisol) and neurotransmitters of the autonomous nervous system (e.g., catecholamines). Regarding the immune-to-brain directionality we elucidated the effects of immunomodulatory drugs on sleep and memory and the role of autoantibodies targeting G-protein coupled receptors such as adrenoceptors in chronic fatigue syndrome and in Alzheimer's disease. In current studies we investigate symptoms of sickness behavior (e.g., fatigue, sleep disturbances, pain), inflammatory and metabolic markers, autoantibodies, as well as extracellular vesicles in patients with systemic autoimmune diseases and in animal models following immunization with G-protein coupled receptors such as angiotensin II receptor type 1 (AT1R).



Theses (past 5 years):
MD: Merle Corty, Kerstin Schnelle; BSc: Philine Letz; BSc: Maximilian Hinsch

5 selected publications (past 5 years): total > 100

- Ernst D, Westerbergh J, Sogkas G, Jablonka A, Ahrenstorf G, Schmidt RE, Heidecke H, Wallentin L, Riemekasten G, Witte T (2019). Lowered anti-beta1 adrenergic receptor antibody concentrations may have prognostic significance in acute coronary syndrome. **Sci Rep** 9: 14552.
- Besedovsky L, Lange T, Haack M (2019). The Sleep-Immune Crosstalk in Health and Disease. **Physiol Rev** 99: 1325-1380.
- Dimitrov S, Lange T, Gouttefangeas C, Jensen ATR, Szczepanski M, Lehnnolz J, Soekadar S, Rammensee HG, Born J, Besedovsky L (2019). Gαs-coupled receptor signaling and sleep regulate integrin activation of human antigen-specific T cells. **J Exp Med** 216: 517-526.
- Cabral-Marques O, Marques A, Giil LM, De Vito R, Rademacher J, Günther J, Lange T, Humrich JY, Klapa S, Schinke S, Schimke LF, Marschner G, Pitann S, Adler S, Dechend R, Müller DN, Braicu I, Sehouli J, Schulze-Forster K, Trippel T, Scheibenbogen C, Staff A, Mertens PR, Löbel M, Mastroianni J, Plattfaut C, Gieseler F, Dragun D, Engelhardt BE, Fernandez-Cabezudo MJ, Ochs HD, Al-Ramadi BK, Lamprecht P, Mueller A, Heidecke H, Riemekasten G (2018). GPCR-specific autoantibody signatures are associated with physiological and pathological immune homeostasis. **Nat Commun** 9: 5224.
- Giil LM, Vedeler CA, Kristoffersen EK, Nordrehaug JE, Heidecke H, Dechend R, Schulze-Forster K, Muller DN, von Goetze VS, Cabral-Marques O, Riemekasten G, Vogelsang P, Nygaard S, Lund A, Aarsland D (2017). Antibodies to Signaling Molecules and Receptors in Alzheimer's Disease are Associated with Psychomotor Slowing, Depression, and Poor Visuospatial Function. **J Alzheimers Dis** 59: 929-939.

Principal Investigator: Prof. Dr. Enrico Leipold
Group/Department: **Neuroscience in Anesthesiology**
Institute/Clinic: Department of Anesthesiology and Intensive Care

Current Members: Dr. Thorben Klee, Laura Teege, Samuel Kühs, Dorothea Voß, Jana Marx, Simon Loose, Frederic Beba, Ann-Katrin Hellberg-Schnieder

Research Topics:
Pain plays an important role in human life because it alerts to danger and thus has protective functions. Using a combination of electrophysiological, optical, and molecular biology techniques, we aim to understand how voltage-gated ion channels contribute to physiological and pathophysiological pain states and how the channel proteins are modulated by pharmacological and neurotoxic compounds. Furthermore, we investigate the effects of Parkinson's disease (PD)-associated gene mutations on the electrophysiological properties of dopaminergic neurons (DNs).

Main discoveries (past 5 years):
Gain-of-function mutations in *SCN11A*, the gene encoding nociceptor-specific $Na_V1.9$ channels, are associated with both neuropathic pain and congenital analgesia. The mechanisms underlying the opposing phenotypes have thus far not been precisely defined. Using standardized electrophysiological methods, we demonstrated that congenital analgesia is caused by mutations that enhance channel activation and impair channel inactivation, whereas neuropathic pain phenotypes are triggered by mutations that exclusively enhance activation but do not affect the channels' inactivation properties. We further showed that inflammatory mediators such as oxidized phospholipids require the activity of $Na_V1.9$ channels to cause nociceptor hyperexcitability. Molecular and cellular mechanisms of Parkinson's disease (PD) are another subject we study in our group. Here, we use induced pluripotent stem cell (iPSC)-derived dopaminergic neuron cultures, which contain typically only small proportions of PD-relevant tyrosine hydroxylase-positive (TH^+) dopamine-producing neurons (DNs). Using single-cell electrophysiology we showed that TH reporter iPSC-derived dopaminergic cultures are valuable models to analyze functional properties of select neuronal subpopulations such as TH^+ DNs.

Theses (past 5 years):
BSc: Vivien Kistmacher

5 selected publications (past 5 years): total 37

- Paul George AA, Heimer P, Leipold E, Schmitz T, Kaufmann D, Tietze D, Heinemann SH, Imhof D (2019). Effect of conformational diversity on the bioactivity of μ-conotoxin PIIIA disulfide isomers. **Mar Drugs** 17: 390.
- Peigneur S, Cheneval O, Maiti M, Leipold E, Heinemann SH, Lescrinier E, Herdewijn P, De Lima ME, Craik DJ, Schroeder CI, Tytgat J (2019). Where cone snails and spider meet: design of small cyclic sodium-channel inhibitors. **FASEB J**. 33: 3693–3703.
- Martin C, Stoffler C, Mohammadi M, Hugo J, Leipold E, Oehler B, Rittner H, Blum R (2018). $Na_V1.9$ potentiates oxidized phospholipids-induced TRP responses only under inflammatory conditions. **Front Mol Neurosci** 11: 7.
- King MK, Leipold E, Goehringer JM, Kurth I, Challman TD (2017). Pain insensitivity: Distal S6-segment mutations in $Na_V1.9$ emerge as critical hotspot. **Neurogenetics** 18: 179-181.
- Schink M, Leipold E, Schirmeyer J, Schönherr R, Hoshi T, Heinemann SH (2016). Reactive species modify $Na_V1.8$ channels and affect action potentials in murine dorsal root ganglion neurons. **Pflügers Arch** 468: 99–110.

Principal Investigator: Prof. Dr. Rebekka Lencer
Group/Department: **Transdiagnostic Neuroscience**
Institute/Clinic: Department of Psychiatry & Psychotherapy

Current Members: Dr. Claudia Lange, Dr. Inga Meyhöfer, Jan-Ole Radecke, Henrieke Hell, Hannah Stoeckler, Jannes Ewen, Benjamin Tari

Research Topic:
We aim at a better understanding of neural and functional disease mechanisms involved in major psychiatric disorders by studying familial neurobiological markers, e.g. alterations in eye movement control. We are using novel methodological approaches from neurophysiology, brain imaging (fMRI, EEG, MEG), brain stimulation (tDCS, TMS), and molecular genetics both in healthy individuals and clinical patient populations.

Main discoveries (past 5 years):
Including multi-site large sample studies (>2000 participants), we demonstrated distinct alterations of eye movement control in patients across psychotic disorders both in laboratory studies and in the natural environment while basic oculomotor control seems unimpaired. Implementing these oculomotor intermediate phenotypes in genetic studies we identified novel patterns of genetic variation relevant for brain systems subserving eye movement control known to be impaired in psychotic disorders. Furthermore, we use novel brain imaging techniques we demonstrated alterations of brain structure and function specific to first-episode and chronic unmedicated patients with schizophrenia. As part of the PRONIA consortium, we are involved in developing machine learning based algorithms to predict functional outcome in early stages of mental disorders. In our psychotherapy focused studies we identified specific aspects related to the multidimensional phenomenon of medication adherence including symptom expression, self-stigmatization, social support and therapeutic alliance.

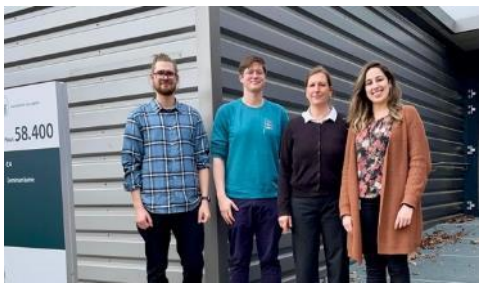
Theses (past 5 years):
PhD: Anne Meermeier, Hugh Ridell, Ima Trempler (all WWU), Ioannis Agtzidis (LMU); MD: Jessica Shakra (UzL), Lara von Gruchalla, Tobias Feldhaus, Johanna Silberg, Teresa Fasshauer, Svenja Brakemeier (all WWU); MSc: Kerstin Richert, Janina Triebsch, Johanna Rehder (all WWU)

5 selected publications (past 5 years): total 61

- Koutsouleris N, Dwyer DB, Degenhardt F, …. Andreou C, Hietala J, Schirmer T, Romer G, Walger P, …, Lencer R, Bertolino A, Borgwardt S, Noethen M, Brambilla P, Wood SJ, Upthegrove R, Schultze-Lutter F, Theodoridou A, Meisenzahl E; Writing Group for the PRONIA Consortium (2021). Multimodal Machine Learning Workflows for Prediction of Psychosis in Patients With Clinical High-Risk Syndromes and Recent-Onset Depression. **JAMA Psychiatry** 78: 195-209.
- Agtzidis, I., Meyhöfer, I., Dorr, M., Lencer, R. (2020). Following Forrest Gump: smooth pursuit related brain activation during free movie viewing. **Neuroimage** 7: 116491.
- Lencer R, Yao L, Reilly JL, Keedy SK, McDowell JE, Keshavan MS, Pearlson GD, Tamminga CA, Gershon ES; Clementz BA, Lui S, Sweeney JA (2019) Alterations in intrinsic fronto-thalamo-parietal connectivity are associated with cognitive control deficits in psychotic disorders. **Hum Brain Mapp** 40: 163-174.
- Lencer R, Mills LJ, Alliey-Rodriguez N; Shafee R, Lee A, Reilly JL, Sprenger A, McDowell JE, McCarroll SA, Keshavan MS, Pearlson GD, Tamminga CA, Clementz BA, Gershon ES, Sweeney JA, Bishop JR (2017). Genome-wide association studies of smooth pursuit and antisaccade eye movements in psychotic disorders: findings from the B-SNIP study. **Transl Psychiatry** 7: e1249.
- Trillenberg P, Sprenger A, Talamo S, Herold K, Helmchen C, Verleger R, **Lencer R** (2017). Visual and non-visual motion information processing during pursuit eye tracking in schizophrenia and bipolar disorder. **Eur Arch Psychiatry Clin Neurosci** 267: 225-235.

Principal Investigator: Prof. Dr. Kerstin Luedtke
Group/Department: **Department of Physiotherapy Pain & Exercise Research (P.E.R.L.)**
Institute/Clinic: Institute for Health Sciences

Current Members: Tibor M. Szikszay, PhD, Waclaw M. Adamczyk, PhD, Gabriela F. Carvalho, PhD



Research Topic:
Our group is conducting experimental pain research on healthy humans and patients with pain or headache. The main goal of undertaking research activities by research group members is to investigate mechanisms of the descending pain modulatory systems with special interest in temporal and spatial filtering in noxious processing. Our research involves experimental models of pain using variety of stimulation ranging from noxious heat, to electrocutaneous stimulation. Furthermore, we also investigate the clinical aspects related to headache burden, including vestibular symptoms, postural control impairment and the influence of the cervical spine.

Main discoveries (past 5 years):
In a series of studies on offset analgesia, a paradigm in which a slight decrease in noxious stimulus intensity leads to disproportionate pain reduction, our lab showed that it is a valid tool to quantify pain modulation. Our studies suggest that this effect is disrupted in chronic pain, acute pain and episodic pain. Furthermore, in a study conducted on healthy participants and migraineurs, we identified that the impairment in pain modulation is somatotopically organized, i.e. that clinical pain selectively impairs inhibitory processes. In the second line of research we investigated spatial aspects of the pain system, including spatial summation of pain, which is stronger pain when a larger body area is under noxious stimulation. Our studies showed that this facilitatory effect follows a nonlinear fashion and is independent of the type of input. Nonlinearity and a less pronounced effect when pain is of higher intensity led us to hypothesize that the spatial summation of pain is a centrally driven effect in humans. The headache line of research identified that neck endurance tests could trigger a migraine attack, especially in patients with greater sensitization within the neck region. This finding contributes to the knowledge regarding the role of peripherical inputs on attack occurrence, which is influenced by the presence of spreading neck pain after manual palpation of the cervical segments.

Theses (past 5 years):
PhD: Tibor M. Szikszay, Annika Schwarz, Waclaw M. Adamczyk
BSc: Christin Domeier, Alexandra Hoegner, Linn Manthey, Nelle Woermann, Denise Arendt

5 selected publications (past 5 years): total 36

- Adamczyk WM, Manthey L, Domeier C, Szikszay TM, Luedtke K (2021). The nonlinear increase of pain in distance-based and area-based spatial summation. **Pain** 162: 1771-1780
- Adamczyk WM, Szikszay TM, Kung T, Carvalho GF, Luedtke K (2021). Not as „blurred" as expected? Acuity and spatial summation in the pain system. **Pain** 162: 794–802.
- Szikszay TM, Adamczyk WM, Hoegner A, Woermann N, Luedtke K (2021). The effect of acute-experimental pain models on offset analgesia. **Eur J Pain** 25: 1150-1161.
- Szikszay TM, Adamczyk WM, Carvalho GF, May A, Luedtke K (2020). Offset analgesia: Somatotopic endogenous pain modulation in migraine. **Pain** 161: 557–564.
- Luedtke K, Schulte LH, May A (2019). Visual processing in migraineurs depends on the migraine cycle. **Ann Neurol** 85: 280–283.

Principal Investigator: Prof. Dr. Lisa Marshall
Group/Department: **Neuroplasticity and Rhythms**
Institute/Clinic: Institute for Experimental and Clinical Pharmacology and Toxicology

Current Members: Dr. Ping Chai Koo-Poeggel,
Sonat Aksamaz,
Esther Akinola

Research Topic:
Our research aims to disclose i) the interactions between brain electric rhythms and neuroplasticity, in particular sleep-associated learning and memory processes, ii) the underlying neurophysiological mechanisms, and iii) the susceptibility of these mechanisms and functions to non-invasive brain stimulation procedures. Closely comparative learning and memory tasks are employed in humans and rodents, and electrophysiological rhythms investigated. Human studies focus additionally on the impact of inter-individual properties.

Main discoveries (past 5 years):
Our studies in rodents revealed the functional relevance of an intact monosynaptic pathway from the ventral hippocampus to the medial prefrontal cortex, specifically during non-rapid eye movement sleep for the consolidation of *recent* spatial memory. A relatively unimpaired *remote* spatial memory suggested the occurrence of ongoing neuroplastic changes of the initial memory trace in absence of the optogenetic pathway inhibition. Our results in humans revealed the strong dependence of non-invasive weak electric cortical stimulation on individual cognitive confounds for both sleep-associated memory consolidation as well as brain rhythms of sleep. Findings lead the way to test for cognitive and electrophysiological biomarkers for stimulation susceptibility. Finally, we disclosed the strong susceptibility of cortical network activity to modulations in parameters of weak electric current stimulation revealing the importance to include concordant measures of behavioral and brain activity in non-invasive brain stimulation studies.

Theses (past 5 years):
PhD: Ping C. Koo-Poeggel, Dominic Aumann,
MD: Katja Laske, Karolina Berg, Marie K. Gessert, Julia Götz, Eva Korf
MSc: Maximilian Schumann, Katharina Schneider
BSc: Seraa Haider, Joana Weiler

5 selected publications (past 5 years): total 57

- Koo-Poeggel P, Böttger V, Marshall L (2019). Distinct Montages of Slow Oscillatory Transcranial Direct Current Stimulation (so-tDCS) Constitute Different Mechanisms during Quiet Wakefulness. **Brain Sci** 9: 324.
- Binder S, Mölle M, Lippert M, Bruder, R., Aksamaz S, Ohl F, Wiegert JS, Marshall L (2019). Monosynaptic Hippocampal-Prefrontal Projections Contribute to Spatial Memory Consolidation in Mice. **J Neurosci** 39: 6978-6991.
- Koo PC, Mölle M, Marshall L (2016). Efficacy of slow oscillatory-transcranial direct current stimulation on EEG and memory - contribution of an inter-individual factor. **Eur J Neurosci** 47: 812-823.
- Weigenand A, Mölle M, Werner F, Martinetz T, Marshall L (2016). Timing matters: open-loop stimulation does not improve overnight consolidation of word pairs in humans. **Eur J Neurosci** 44: 2357-2368.
- Westerberg CE, Florczak SM, Weintraub S, Mesulam MM, Marshall, L, Zee PC, Paller KA (2015). Memory improvement via slow-oscillatory stimulation during sleep in older adults. **Neurobiol Aging**. 36: 2577-2586.

Principal Investigator: Prof. Dr. Sebastian M. Meyhöfer, geb. Schmid
Group/Department: **Clinical and Experimental Endocrinology and Diabetology**
Institute/Clinic: Institute for Endocrinology and Diabetes

Current Members: PD Dr. Britta Wilms; Dr. Svenja Meyhöfer, Dr. Eleni Pappa, Agnetha Schulz, Dr. Georg Serfling, Dr. Julia Steinhardt, Binja Tams, Jessika Schmidt, Meike Thamm, Susanne Behling, Shirin Tabei, Franziska Richter, Xueqi Cheng, Maria Wild, Johannes Röben

Research Topic:
Our main research interest is on the regulation of human energy balance with a special focus of glucose homoeostasis as well as metabolic consequences of brown adipose tissue (BAT) activity. Further, chronobiological rhythms in the context of human energy balance play a major role in our research efforts. We also aim to understand underlying mechanisms of homeostatic versus hedonic control of hunger and satiety and consequently food intake.

Main discoveries (past 5 years):
Our data provide evidence that human BAT metabolism contributes to whole body glucose and lipid utilization in a coordinated manner. Our studies also impressively reveal a detrimental impact of short and disrupted sleep on circadian regulation of white adipose tissue transcriptome as well as on peripheral glucose and lipid homeostasis and spontaneous physical activity. Further, we were able to show an increased willingness to spend more money on food items after sleep deprivation and fMRI data paralleled this behavioral finding, revealing a food-reward-specific upregulation of hypothalamic valuation signals and amygdala-hypothalamic coupling. Data also indicate a functional role of VTA clocks in modulating palatable feeding behaviors. Finally, we identified that breakfasts with different macronutrient compositions modulates human social behavior and that these macronutrient-induced behavioral changes in social decision making are causally related to a lowering of plasma tyrosine levels. In sum, we have come one closer step to identify homeostatic, behavioral and endogenous mechanism impacting on humans´ metabolic health and energy expenditure. Our findings may provide deeper insights into mechanisms promoting obesity and may help to develop novel therapeutic strategies.

Theses (past 5 years):
PhD: J. Backhaus, B. Bertozzi
MD: C. Röhl, L. Lehner, E. Kleefisch, M. Kück, N. Forck, D. Trost, J. Ullrich, R. Zazai, R. Waldburger
BSc: A.-J. Pagels, M. Schröder, N. Kaluzny

5 selected publications (past 5 years): total 58

- Koch CE, Begemann K, Kiehn JT, Griewahn L, Mauer J, M E Hess, Moser A, Schmid SM, Brüning JC, Oster H (2020). Circadian regulation of hedonic appetite in mice by clocks in dopaminergic neurons of the VTA. **Nat Commun**11: 3071.
- Wilms B, Chamorro R, Hallschmid M, Trost D, Forck N, Schultes B, Mölle M, Sayk F, Lehnert H, Schmid SM (2019). Timing modulates the effect of sleep loss on glucose homeostasis. **J Endocrinol Diabetes**104: 2801-2808.
- Wilms B, Leineweber EM, Mölle M, Chamorro R, Pommerenke C, Salinas-Riester G, Sina C, Lehnert H, Oster H, Schmid SM (2019). Sleep loss disrupts morning-to-evening differences in human white adipose tissue transcriptome. **J Endocrinol Diabetes** 104: 1687-1696.
- Strang S, Hoeber C, Uhl O, Koletzko B, Münte TF, Lehnert H, Dolan RJ, Schmid SM, Park SQ (2017). Impact of nutrition on social decision making. **Proc Natl Acad Sci U S A** 114: 6510-6514.
- Iwen KA, Backhaus J, Cassens M, Waltl M, Hedesan OC, Merkel M, Heeren J, Sina C, Rademacher L, Windjäger A, Haug AR, Kiefer FW, Lehnert H, Schmid SM (2017). Cold-induced brown adipose tissue activity alters plasma fatty acids and improves glucose metabolism in men. **J Clin Endocrinol Metab** 102: 4226-4234.

Principal Investigator: Prof. Dr. Jens Mittag
Group/Department: **Molecular Endocrinology**
Institute/Clinic: Institute for Endocrinology and Diabetes

Current Members: PD Dr. Alexander Iwen, Dr. Rebecca Ölkrug, Dr. Riccardo Dore, Mehdi Pedaran, Sarah Sentis, Nuria Lopéz Alcantara, Julia Resch; Julia Maier

Research Topic:
Our research aims to unravel the actions of thyroid hormones in the regulation of body temperature, energy metabolism and cardiovascular functions. Using in vivo and in vitro model systems, we dissect the direct actions in peripheral tissues such as brown adipose tissue, heart, or liver from the indirect actions via the central nervous system.

Main discoveries (past 5 years):
Our studies dissecting the mechanisms underlying the elevated body temperature in hyperthyroidism revealed that this symptom is a combination of a centrally elevated set-point comparable to fever and a peripherally induced hyperthermia in muscle. In a second study, we identified that a group of hypothalamic neurons responsible for controlling blood pressure depends on maternal thyroid hormone during pregnancy, thus identifying a novel risk factor for hypertension susceptibility. Moreover, we identified CD5L as a new thyroid hormone dependent biomarker for hepatic – immune system crosstalk. Finally, we were able to show that even minor changes in ambient temperature during pregnancy can have severe consequences for the fetal programming of the male offspring's metabolic setpoint.

Theses (past 5 years):
PhD: Lisbeth Harder, Sogol Gachkar, Kornelia Johann, Sebastian Nock, Beate Herrmann; MD: Maike Byner
MSc: Marius Richter, Beke Kolms; BSc: Marlen Reis, Mai-Anh Van

5 selected publications (past 5 years): total 33

- Oelkrug R, Krause C, Herrmann B, Resch J, Gachkar S, El Gammal AT, Wolter S, Mann O, Oster H, Kirchner H, Mittag J (2020). Maternal brown fat thermogenesis programs glucose tolerance in the male offspring. **Cell Rep** 33: 108351.
- Herrmann B, Harder L, Oelkrug R, Chen J, Gachkar S, Nock S, Resch J, Korkowski M, Heuer H, Mittag J (2020). Central Hypothyroidism Impairs Heart Rate Stability and Prevents Thyroid Hormone Induced Cardiac Hypertrophy and Pyrexia. **Thyroid** 30: 1205-1216.
- Nock S, Johann K, Harder L, Wirth EK, Renko K, Höfig C, Kracke V, Hackler J, Engelmann B, Rauner M, Köhrle J, Schomburg L, Homuth G, Völker U, Brabant G, Mittag J (2020). CD5L constitutes a novel biomarker for integrated hepatic thyroid hormone action" **Thyroid** 30: 908-923.
- Johann K, Cremer AL, Fischer AW, Heine M, Pensado ER, Resch J, Nock S, Virtue S, Harder L, Oelkrug R, Astiz M, Brabant G, Warner A, Vidal-Puig A, Oster H, Boelen A, Lopez M, Heeren J, Dalley JW, Backes H, Mittag J (2019). Thyroid hormone induced browning of white adipose tissue does not contribute to thermogenesis and glucose consumption. **Cell Rep** 27: 3385-3400.
- Oelkrug R, Herrmann B, Geissler C, Harder L, Koch C, Lehnert H, Oster H, Kirchner H, Mittag J (2017). Dwarfism and insulin resistance in male offspring caused by α1-adrenergic antagonism during pregnancy. **Mol Metab** 6: 1126-1136 (highlighted in Nat Rev Endocrinol 2017 Sept; 13(9))

Principal Investigator: Prof. Dr. Andreas Moser
Group/Department: **Neurochemical Research**
Institute/Clinic: Department of Neurology

Current Members: Kevin Joseph,
Thomas Feuerstein,
Ute Petersson-Larsson

Research Topic:
Our research aims to give more insights into regulation and modulation of neurotransmitter release in the central nervous system. In *in vivo* and *in vitro* experiments we analyze the role of feedback mechanisms of inhibitory and excitatory transmitter systems in different brain structures and the effect of external modification by locally applied high frequency electrical stimulation.

Main discoveries (past 5 years):
Our studies dissecting the mechanisms of electrical deep brain stimulation in depression especially regarding the GABAergic neurotransmission. Animals, therefore, underwent social isolation and food deprivation to induce depressive-like symptoms, and performed FST to study possible changes in depressive behavior due to accumbens nucleus shell stimulation. With an unique procedural technique, stimulation electrodes and microdialysis probes were simulataneously and colocated implanted.
In a second study, we studies GABA release from human cortical synaptosomes at different electrolyte conditions of the medium. The absence of calcium amplified the sodium/calcium exchanger activity, leading to elevated intracellular sodium, which, together with the stimulation-evoked intracellular sodium increment, enhanced GABA transporter reversal. Sodium/calcium exchange inhibitors diminished GABA release. Thus, an important seizure-induced extracellular calcium reduction might trigger a transporter- and sodium/calcium exchanger-related anti-seizure mechanism by augmenting transporter-mediated GABA release, a mechanism absent in rats.

5 selected publications (past 5 years): total 19

- Tronnier VM, Domingo A, Moll CK, Rasche D, Mohr C, Rosales R, Capetian P, Jamora RD, Lee LV, Münchau A, Diesta CC, Tadic V, Klein C, Brüggemann N, Moser A (2015). Biochemical mechanisms of pallidal deep brain stimulation in X-linked dystonia parkinsonism. **Parkinsonism Relat Disord** 21: 954-959.
- Rassner MP, Moser A, Follo M, Joseph K, van Velthoven-Wurster V, Feuerstein TJ (2016). Neocortical GABA release at high intracellular sodium and low extracellular calcium: an anti-seizure mechanism. **J Neurochem** 137: 177-189.
- Schumacher A, Haegele M, Spyth J, Moser A (2020). Electrical high frequency stimulation of the nucleus accumbens shell does not modulate depressive-like behavior in rats. **Behav Brain Res** 378: 112277.
- Altenmüller DM, Hebel JM, Deniz C, Volz S, Zentner J, Feuerstein TJ, Moser A (2020). Electrocorticographical and neurochemical findings after local cortical valproate application in patients with pharmacoresistant focal epilepsy. **Epilepsia** 61: e60-e65.
- Capetian P, Roessner V, Korte C, Walitza S, Riederer F, Taurines R, Gerlach M, Moser A (2020). Altered urinary tetrahydroisoquinoline derivatives in patients with Tourette syndrome: reflection of dopaminergic hyperactivity? **J Neural Transm** 128: 115-120.

Principal Investigator: Dr. Helge Müller-Fielitz
Group/Department: **Tanycytes and Hormones**
Institute/Clinic: Institute for Experimental and Clinical Pharmacology and Toxicology

Current Members: Dr. Akila Chandrasekar, Vanessa Neve, Andreea Constantinescu

Research Topic:
Our research aims to unravel the physiological function of tanycytes in the regulation of hormonal axis, interactions with other cells of the hypothalamus and the role in the regulation in energy metabolism and food intake. Using in vivo and in vitro model systems in combination with different genetic manipulations, we investigate the direct actions of tanycytes in hormonal release and the transport over the blood brain barrier.

Main discoveries (past 5 years):
Our studies dissecting a new feedback mechanism in the hypothalamus pituitary thyroid axis by the thyrotropin releasing hormone (TRH) involving the tanycytes of the median eminence and the underlying mechanisms. Moreover. We identified a crucial role of tanycytes in the regulation of the feeding behavior in processes of peripheral inflammational processes involving the NF-kappa-B signaling pathway. Finally, we develop new genetically tools to unravel the intracellular pathways and the interaction with other cells using AAV mediated gene transfer in tanycytes for *in vivo* experiments.

Theses (past 5 years):
PhD: Mareike Böttcher
MD: Markus Stahr, Sebastian Abele
MSc: Luca Höhne, Natascha Klaus, Hannes Köpke
BSc: Marius Richter

4 selected publications (past 5 years): total 13

- Müller-Fielitz H, Schwaninger M (2020). The role of tanycytes in the hypothalamus-pituitary-thyroid axis and the possibilities for their genetic manipulation. **Exp Clin Endocr Diab** 128: 388-394.
- Böttcher M, Müller-Fielitz H, Sundaram SM, Gallet S, Neve V, Shionoya K, Zager A, Quan N, Liu XY, Schmidt-Ullrich R, Haenold R, Wenzel J, Blomqvist A, Engblom D, Prevot V, Schwaninger M (2020). NF-kappa B signaling in tanycytes mediates inflammation-induced anorexia. **Mol Metab** 39: 101022.
- Di Spiezio A, Sandin ES, Dore R, Müller-Fielitz H, Storck SE, Bernau M, Mier W, Oster H, Jöhren O, Pietrzik CU, Lehnert H, Schwaninger M (2018). The LepR-mediated leptin transport across brain barriers controls food reward. **Mol Metab** 8: 13-22.
- . Müller-Fielitz H, Stahr M, Bernau M, Richter M, Abele S, Krajka V, Benzin A, Wenzel J, Kalies K, Mittag J, Heuer H, Offermanns S, Schwaninger M (2017). Tanycytes control the hormonal output of the hypothalamic-pituitary-thyroid axis. **Nat Commun** 8: 484.

Principal Investigators: Prof. Dr. Alexander Münchau,
Prof. Dr. Tobias Bäumer
Institute/Clinic: **Institute of Systems Motor Science**

Current Members: Dr. Anne Weissbach, Dr. Julius Verrel, Dr. Julia Friedrich, Dr. Theresa Paulus, Dr. Martje Pauly, Dr. Sebastian Löns, Dr. Rebecca Herzog, Dr. Sinem Tunc, Tina Steinhagen, Ronja Schappert, Christian Himstedt, Maike Dümcke-Zilian, Silke Börke, Jenny Schmalfeld, Susanna Langeloh, Saruhi Surnaschjan

Research Topic:
The Institute of Systems Motor Science is dedicated to studies of brain systems engaged in the execution and control of human movements both in healthy subjects and patients with monogenic and genetically-undefined neurological and neuropsychiatric disorders of all ages combining different methods including psychophysical behavioral tasks and neurophysiological techniques such as electrical and transcranial current / magnetic stimulation (tCS and TMS), EEG, and brain imaging (structural and functional MRI).

Main discoveries (past 5 years):
Within the Sonderforschungsbereich (SFB936), we identified altered premotor-motor inhibition and sensorimotor integration in patients with monogenic dystonia-parkinson syndromes and showed reversibility of cerebellar-motor learning deficits after GABAergic stimulation in monogenic myoclonus-dystonia. Through the work within our DFG Research Unit Tec4Tic (FOR 2698), we demonstrated hyper-binding during perception-action processing in Tourette syndrome and that such alterations are central for the understanding of this common neuropsychiatric disorder. In patients with functional movement disorders, we could show that a multimodal treatment approach including metacognitive therapy and neuro-physiotherapy significantly reduces motor symptoms.

Theses (past 5 years)
Habilitation: Anne Weissbach, Simone Zittel
PhD: Valerie Brandt (completed), Tina Steinhagen
MD: Ursula Kahl, Luisa Harder-Fintelmann, Johanna Herrmanns, Iris Dittmann, Tom Reuter, Elisa Maria Werner, Annika Steinmeier
MSc: Mareika Ohlsen, Helen Seliger, Katja Herrmann, Rebecca Onken, Leonie Emmerich, Feline Hamami, Christina Bolte
BSc: Clara Ritter, Lina Schubert, Feline Hamami

5 selected publications (past 5 years): total >170

- Kleimaker M, Takacs A, Conte G, Onken R, Verrel J, Bäumer T, Münchau A*, Beste C* (2020). Increased perception-action binding in Tourette syndrome. **Brain** 143: 1934-1945. (*shared last authors)
- Friedrich J, Verrel J, Kleimaker M, Münchau A, Beste C, Bäumer T (2020). Neurophysiological correlated of perception-action binding in the somatosensory system. **Sci Rep** 10: 14794.
- Weissbach A, Steinmeier A, Pauly MG, Al-Shorafat DA, Saranza G, Lang A, Brüggemann N, Tadic V, Klein C, Lohmann L, Brown M, Beste C, Münchau A, Bäumer T (2021). Multimodal longitudinal neurophysiological investigations in Dopa-responsive dystonia. **Mov Disord** 36: 1986-1987.
- Weissbach A, Werner E, Bally JF, Tunc S, Löns S, Timmann D, Zeuner KE, Tadic V, Brüggemann N, Lang A, Klein C, Münchau A, Bäumer T (2017). Alcohol improves cerebellar-learning deficit in myoclonus-dystonia - a clinical and electrophysiological investigation, **Ann Neurol** 82: 543-553.
- Schmidt T, Ebersbach G, Oelsner H, Sprock A, König IR, Bäumer T, Münchau A, Weissbach A (2021). Evaluation of Individualized Multi-Disciplinary Inpatient Treatment for Functional Movement Disorders. **Mov Disord Clin Pract** 8: 911-918.

Principal Investigator: Prof. Dr. Thomas Münte
Group/Department: **Cognitive Neurology**
Institute/Clinic: Clinic for Neurology

Current Members: PD Dr. Anna Circel, PD Dr. Marcus Heldmann, Dr. Anja Fellbrich, Dr. Tobias Wagner-Altendorf, Dr. Daniel Wiswede, Carina Robert (M.Sc.), Lou Lütjohan (M.Sc.), Liana Okudzava (M.Sc.)

Research Topic:
Our research interest can be divided into three areas: the potential link between the regulation of food intake and brain structure and function, the influence of thyroid hormones on brain structure and function in humans, and the origins of movement disorders and their effects on cognitive functions. To characterize the neural bases, we use functional and structural MRI, EEG, local field potential recordings (LFPs) and functional near-infrared spectroscopy (fNIRS).

Main discoveries (past 5 years):
With respect to the understanding of neural processes associated with food intake we were able to show that the activation and connection strength of networks comprising cortical and subcortical areas and the pituitary gland varies as a function of homeostatic states. These networks' variability was associated with changes in endocrine profiles. Our research also provides evidence, that transcutaneous vagus nerve stimulation bears the potential to influence eating behavior in humans by changing neural activation patterns. To address the interaction of thyroid hormone levels and behavior different experimental approaches (e.g. induced mild thyrotoxicosis in healthy participants, patients with THRb mutation) were implemented. Our findings revealed changes in the availability of thyroid hormones linked to changes of cognitive functionality (e.g. memory, ADHD like behavior), which are reflected in both the function and structure of the brain. Our research efforts in the field of movement disorders show that in patients with idiopathic Parkinson's disease the subthalamic nucleus, in addition to its importance in movement control, has a central function in the regulation of cognitive processes, e.g., working memory or the awareness of auditory scenes.

Theses (past 5 years):
PhD: Arkan al Zubaidi
MD: Janis Nolde
MSc: 10
BSc: 3

5 selected publications (past 5 years): total 138

- Alicart H, Heldmann M, Göttlich M, Obst MA, Tittgemeyer M, Münte TF (2021). Modulation of visual processing of food by transcutaneous vagus nerve stimulation (tVNS). **Brain Imaging Behav** 15:1886-1897.
- Al-Zubaidi A, Iglesias S, Stephan KE, Buades-Rotger M, Heldmann M, Nolde JM, Kirchner H, Mertins A, Jauch-Chara K, Münte TF (2020). Effects of hunger, satiety and oral glucose on effective connectivity between hypothalamus and insular cortex. **Neuroimage** 217:116931.
- Göbel A, Heldmann M, Göttlich M, Goerges R, Nieberding R, Sartorius A, Brabant G, Münte TF. (2019). Partial withdrawal of levothyroxine treated disease leads to brain activations and effects on performance in a working memory task: A pilot study. **J Neuroendocrinol** 31:e12707.
- Nolde JM, Connor SG, Al-Zubaidi A, Laupenmühlen J, Heldmann M, Jauch-Chara K, Münte TF (2019). Endocrine profile dataset of fasting and normally eating young, healthy men and following activation of brain areas involved in ingestive behaviour. **Data Brief** 27:104676.
- Heldmann M, Teichmann S, Al-Khaled M, Brüggemann N, Münte TF (2019). Processing of Local and Global Auditory Deviants in Parkinson Disease: Electrophysiological Evidence for Enhanced Attention Capture. **Cogn Behav Neurol** 32:31-38.

Principal Investigator: Prof. Dr. Jonas Obleser
Group/Department: **Physiological Psychology and Research Methods**
Institute/Clinic: Department of Psychology

Current Members: Dr. Mohsen Alavash, Dr. Leon Franzen, Markus Kemper, Frauke Kraus, Dr. Hong-Viet Ngo, Ka-Yan Lui, Martin Orf, Lea-Maria Schmitt, Franziska Scharata, Dr. Sarah Tune, Dr. Malte Wöstmann

Research Topic:
Our group is interested in the brain dynamics of perception and behavior. We mainly leverage human audition and speech communication as our model system. Within individuals, we study electrophysiological (EEG), hemodynamic (fMRI), and endocrine determinants of moment-to-moment variability in perception and behavior. Between individuals, we ask which neural and psychological features make us adapt successfully to the challenges that come with sensory decline and healthy ageing.

Main discoveries (past 5 years):
In the domain of auditory attention, we have identified and mechanistically dissected a set of neural predeterminants that shape successful auditory attention.
We have shown that neural tracking (or "neural entrainment") as a phase-locked, domain-specific, auditory-cortical brain response that quasi-continuously reflects attended (and less so ignored) auditory input versus the magnitude of neural alpha (8–12-Hz) oscillations as a non-phase-locked, domain-general, mainly parietally-generated response fulfil distinct roles in attentive listening.
Not least, we have extended the tool kit of human cognitive neuroscience by further establishing and benchmarking (e.g., against established measures of pupil dilation) measures of cortical electrophysiological "variability" (i.e., entropy).
Using functional MRI, we have shown that domain-specific reconfigurations in the acoustic-feature processing in auditory cortex do take place in healthy ageing. Also, more widely-distributed, in fact brain-wide network dynamics of reconfiguring "modules" has been identified as a hallmark of a listener's successful adaptation to a challenging listening situation.

Theses (past 5 years):
PhD: Lorenz Fiedler, Leonhard Waschke, Lea-Maria Schmitt
MSc: > 5
BSc: > 20

5 selected publications (past 5 years): total 58

- Erb J, Schmitt LM, Obleser J (2020). Temporal selectivity declines in the aging human auditory cortex. **Elife** 9:e55300
- Waschke L, Tune S, Obleser J (2019). Local cortical desynchronization and pupil-linked arousal differentially shape brain states for optimal sensory performance. **Elife** 8:e51501
- Obleser J, Kayser C (2019). Neural entrainment and attentional selection in the listening brain. **Trends Cogn Sci** 23: 913-926.
- Alavash M, Tune S, Obleser J (2019). Modular reconfiguration of an auditory-control brain network supports adaptive listening behavior. **Proc Natl Acad Sci U S A**. 116: 660-669.
- Tune S, Alavash M, Fiedler L, Obleser J (2021). Neural attentional-filter mechanisms of listening success in middle-aged and older individuals. **Nat Commun** 12: 4533

Principal Investigator: Prof. Dr. Henrik Oster
Group/Department: **Chronobiology**
Institute/Clinic: Institute of Neurobiology

Current Members: Dr. Violetta Pilorz, Dr. Mariana Astiz, Dr. Iwona Oleijniczak, Dr. Isabel Heyde, Dr. Leonardo de Assis, Xenia Schmidt, Sarah Koop, Faheem Almughales, Brinja Leinweber, Ankita Galinde, Kimberly Begemann, Nadine Oster, Ludmila Skrum, Dorothea Brennecke

Research Topic:
Our research aims at unravelling the role of circadian clocks in the regulation of energy metabolism, immunity and behavior. Using in vivo and in vitro model systems, we analyze the mechanisms of temporal communication between internal clocks and the environment and within the circadian clock network. With genetic approaches we probe clock function in peripheral tissues and in the central nervous system.

Main discoveries (past 5 years):
We have analyzed the interaction of the circadian clock and stress axis regulation at different levels of organization. This led to the introduction of the concept of "temporal gating" to the chronobiological field and the development of the "federated model" of circadian timekeeping. We discovered new endocrine factors communicating time information across the clock system. Recently, we described a central circadian circuit controlling hedonic appetite regulation.

Theses (past 5 years):
PhD: Isabel Heyde, Jana T. Kiehn, Isa Kolbe
MD: Merle Brockmann, Pia Schöpfer, Julia Seemann,
MSc: Clara Ritter, Jacqueline Kaiser, Selin Öczakir, Isabel Heyde, Kimberly Begemann, C. Xenia Schmidt, Julia Auer, Alexandra Brod, Laura Griewahn
BSc: Merle Marquardt, Lea Rudzki, Frederic Beba, Oliver Scheer, Miriam v. Lampe, Juliana Peters, Celina Hoffmann, Anna Kabilka, Wiebke Evers, Katharina Remstedt, Anne-Sophie Gutt, Beke Kolms, Antje Rakisch, Anna-Lena Müller

5 selected publications (past 5 years): total 70

- Astiz M, Heyde I, Fortmann MI, Bossung V, Roll C, Stein A, Grüttner B, Göpel W, Härtel C, Obleser J, Oster H (2020). The circadian phase of antenatal glucocorticoid treatment affects the risk of behavioral disorders. **Nat Commun** 11: 3593.
- Koch CE, Begemann K, Kiehn JT, Griewahn L, Mauer J, M E Hess, Moser A, Schmid SM, Brüning JC, Oster H (2020). Circadian regulation of hedonic appetite in mice by clocks in dopaminergic neurons of the VTA. **Nat Commun** 11: 3071.
- Tsang AH, Koch CE, Kiehn JT, Schmidt CX, Oster H (2020). An adipokine feedback regulating diurnal food intake rhythms in mice. **Elife** 9: e55388.
- Druzd D, Matveeva O, Ince L, Harrison U, He W, Schmal C, Herzel H, Tsang AH, Kawakami N, Leliavski A, Uhl O, Yao L, Sander LE, Chen CS, Kraus K, de Juan A, Hergenhan SM, Ehlers M, Koletzko B, Haas R, Solbach W, Oster H, Scheiermann C (2017). Lymphocyte Circadian Clocks Control Lymph Node Trafficking and Adaptive Immune Responses. **Immunity** 46: 120-132.
- Landgraf D, Tsang AH, Leliavski A, Koch CE, Barclay JL, Drucker DJ, Oster H (2015). Oxyntomodulin regulates resetting of the liver circadian clock by food. **Elife** 4:e06253.

Principal Investigator: Prof. Dr. Corinna Peifer
Group/Department: **Work and Health**
Institute/Clinic: Department of Psychology

Current Members: Fabienne Aust,
Marek Bartzik,
Leonie Kloep,
Sabine Weiland

Research Topic:
We conduct research at the interface between industrial and organizational psychology, psychobiology and health psychology. The main focus is on flow experience, stress, and well-being at work. We examine various work-related stressors (e.g., time pressure, multitasking, and unfinished tasks) and resources and measure their effects on flow experience, well-being, and performance. Our studies take place in the lab and in the field, and we look at outcomes at both the individual and team levels. We use research findings to develop interventions that we implement and evaluate in the lab and in the field. For our studies, we often use physiological measures such as cortisol, heart rate variability, or skin conductance. In a new research focus, we use the flow concept for human-centered design of human-machine interaction. We also conduct research on the happiness of patients with chronic (dermatological) diseases.

Main discoveries (past 5 years):
In the field of flow research, we could show that self-efficacy mediates effects of positive feedback on flow experience; also, the personality factors locus of control and conscientiousness moderate how feedback shapes flow in cognitive tasks. While feedback was found to affect flow in future tasks, we could also show that flow is a fragile experience and that memorized flow can be affected post-hoc. Furthermore, we found that unfinished tasks and multitasking are stressors which negatively affect flow experience and that unfinished tasks at the end of the week impair employees' sleep on the weekend through rumination.
In another vein of research we found that in patients suffering from skin diseases, especially the wellbeing component positive affect is reduced. As positive affect is linked to desirable health outcomes, targeting positive affect could be a promising additional approach for the treatment of dermatologic patients.

Theses (past 5 years)
MSc: > 15
BSc: > 40

5 selected publications (past 5 years): total N = 32

- Hohnemann C, Schweig S, Diestel S, Peifer C (2021). How feedback shapes flow experience in cognitive tasks: The role of locus of control and conscientiousness. **Pers Indiv Dif** 184: 111166.
- Peifer C, Hagemann V, Claus M, Larra MF, Aust F, Kühn M, Owczarek M, Broede P, Pacharra M, Steffens H, Watzl C, Wascher E, Capellino S (2021). Low self-reported stress despite immune-physiological changes in paramedics during rescue operations. **EXCLI J** 20: 792-811.
- Schuster B, Ziehfreund S, Albrecht H, Spinner CD, Biedermann T, Peifer C*, Zink A* (2020). Happiness in dermatology: a holistic evaluation of the mental burden of skin diseases. **J Eur Acad Dermatol Venereol** 34: 1331-1339. (*shared last-authorship)
- Christandl F, Mierke K, Peifer C (2018). Time flows: Manipulations of subjective time progression affect recalled flow and performance in a subsequent task. **J Exp Soc Psychol** 74: 246-256.
- Syrek C, Weigelt O, Peifer C, Antoni CH (2017). Zeigarnik's sleepless nights: How unfinished tasks at the end of the week impair employees' sleep on the weekend through rumination. **J Occup Health Psychol** 19: 490-499.

Principal Investigator: Prof. Dr. med. Achim Peters
Group/Department: **Clinical Research Group 'Selfish Brain'**
Institute/Clinic: Department of Medicine I

Current Members: Dr. oec. troph. Britta Kubera, Marie Sprengell, Mattis Hartwig, Sabine Wittnebel

Research Topic:
The Selfish-Brain theory – founded by Achim Peters in 1998 – describes the ability of the human brain to regulate energy metabolism in such a way that it primarily covers its own high energy need. The brain behaves "selfishly" in this respect. The main rival position is the widely held gluco-lipostatic theory, which views the brain as being only passively supplied. In 2004, the DFG-funded Clinical Research Group "Selfish Brain" (KFO 126) was established. Since then, its researchers have tested the accuracy of the Selfish-Brain theory's predictions using evidence from their own experiments (e.g. Trier Social Stress Test or the Ultimatum Game during a glucose clamp), from re-analysis of large data sets (Whitehall Study II), and from work by other scientists.

Main discoveries:
First, a 2021 systematic review critically examined the opposing predictions of rival theories regarding the effects of caloric restriction. The systematic search shows that caloric restriction elicits smaller mass (energy) changes in brain than in body, confirming the predictions of the Selfish-Brain theory but violating those of the gluco-lipostatic theory. Second, together with stress research pioneer Bruce McEwen (ROCKEFELLER UNIVERSITY, NEW YORK), who developed the concept of 'allostatic load', we replaced the long-held explanatory models for obesity and cardiovascular mortality with the Selfish-Brain theory. Third, the term 'stress' – coined in 1936 – has many definitions, but until now has lacked a theoretical foundation. Together with the psychiatrist and physicist Karl Friston (UNIVERSITY COLLEGE LONDON), we have presented an information-theoretical approach – based on the 'Bayesian Brain Concept' – that defines the essence of stress, namely uncertainty. The potential utility of formulating stress and allostatic load in terms of a Selfish Bayesian Brain is that one might use the principles afforded by theoretical neurobiology to organize existing and future empirical results.

Theses (past 5 years):
MD: Jonas Eggeling, Christin Wagner, Christin Rädel, Hannah Berg
BSc: Veronika Dudek, Katrin Borof
MSc: Katrin Borof

5 selected publications (past 5 years):

- Sprengell M, Kubera B, Peters A (2021). Brain More Resistant to Energy Restriction Than Body: A Systematic Review. **Front Neurosci** 15: 639617.
- Hartwig M, Peters A (2020). Cooperation and Social Rules Emerging From the Principle of Surprise Minimization. **Front Psychol** 11: 606174.
- Kubera B, Leonhard C, Rößler A, Peters A (2017). Stress-Related Changes in Body Form: Results from the Whitehall II Study. **Obesity** 25: 1625-1632.
- Peters A, McEwen BS, Friston K (2017). Uncertainty and stress: Why it causes diseases and how it is mastered by the brain. **Prog Neurobiol** 156: 164-188.
- Peters A, McEwen BS (2015). Stress habituation, body shape and cardiovascular mortality. **Neurosci Biobehav Rev** 56: 139-150.

Principal Investigator: Prof. Dr. Georg Royl
Group/Department: **Stroke and neurovascular coupling**
Institute/Clinic: Department of Neurology

Current Members: Susanna Bluhm, Danial Charchinajad Amoey, Tsafack Judicael Fokou, Thies Frommholz, Dr. Carl Göbel, Sarah Karstedt, Susanne Riebau, Sarah Karstedt, Maria Marburg, Annika Stolze, Dr. Julia Thranitz , Dr. Jan Wojak

Research Topics:
Stroke ranks as third of the leading causes of death in Germany and it is the most common reason for disability and need of care. One topic of our group is the optimization of acute stroke therapy. Another subject is the role of renal function measurement in stroke patients who need anticoagulation because of atrial fibrillation. Additionally, we are a study centre taking part in many multi-center trials centering around acute therapy, diagnostic and secondary prevention of ischemic and hemorrhagic stroke. Together with Universitätsklinikum Gießen (Florian Roessler) we investigate the significance of thrombus histology in material gained from neurointerventional stroke treatment. Within the AKAIS study we studied whether patients with stroke develop neural autoantibodies and if the latter have an influence on stroke. Neurovascular coupling causes a local increase in cerebral blood flow upon neuronal activation. It is the basis of functional brain imaging with BOLD-fMRI. Using functional near infrared spectroscopy, we investigate how an increased intracranial pressure influences neurovascular coupling.

Main discoveries (past 5 years):
- Acute stroke does not induce antineural antibodies to a relevant degree. Pre-existing AA can be found in the serum of stroke patients, but they do not have a significant association with clinical features and outcome
- Early Dysphagia screening in acute ischemic stroke may reduce stroke-related pneumonia and improve stroke outcomes
- Recanalization results after endovascular treatment are not relevantly improved in patients receiving rt-PA.
- Explicit diagnostic criteria for transient ischemic attacks used in the emergency department are highly sensitive and specific
- Cardiac and arteriosclerotic smboli from individual stroke patients can be distinguished histologically
- Valsalva-induced elevation of intracranial pressures selectively decouples deoxygenated haemoglobin concentration changes from neuronal activation and functional brain imaging capability in motor cortex, while in sensory cortex a complete decoupling of oxygenation changes from neuronal activity is observed

Theses (past 5 years)
MD: Martin Knauth, Julia Thranitz, Sarah Karstedt

5 selected publications (past 5 years): total 13

- Al-Khaled M, Brüning T, Gottwald C, Roessler F, Royl G, Eckey T (2018). Comparing outcome and recanalization results in patients with anterior circulation stroke following endovascular treatment with and without a treatment with rt-PA: A single-center study. **Brain Behav** 8:e00974
- Royl G, Fokou TJ, Chunder R, Isa R, Münte TF, Wandinger KP, Schwaninger M, Herrmann O, Valdueza JM, Brocke J, Willkomm M, Willemsen D, Auffarth GU, Mindorf S, Brix B, Chamorro A, Planas A, Urra X (2019) Antibodies against neural antigens in patients with acute stroke: joint results of three independent cohort studies. **J Neurol** 266:2772-2779
- Thranitz J, Knauth M, Heldmann M, Küchler J, Münte TF, Royl G (2020). Elevation of intracranial pressure affects the relationship between hemoglobin concentration and neuronal activation in human somatosensory cortex. Hum Brain Mapp 41:2702-2716
- Göbel CH, Karstedt SC, Münte TF, Göbel H, Wolfrum S, Lebedeva ER, Olesen J, Royl G (2021). Explicit Diagnostic Criteria for Transient Ischemic Attacks Used in the Emergency Department Are Highly Sensitive and Specific. **Cerebrovasc Dis** 50:62-67.
- Roessler FC, Kalms N, Jann F, Kemmling A, Ribbat-Idel J, Stellmacher F, König IR, Ohlrich M, Royl G. (2021). First approach to distinguish between cardiac and arteriosclerotic emboli of individual stroke patients applying the histological THROMBEX-classification rule. **Sci Rep** 11:8433.

Principal Investigator: Prof. Dr. Walter Raasch
Group/Department: **Influence of RAAS on the metabolic syndrome**
Institute/Clinic: Institute for Experimental and Clinical Pharmacology and Toxicology

Current Members: Laura Nickel, Marco Freschi, Leonie Achner, Tobias Klersy, Luis Daniel Hernandez Torres, Sophia Rasch

Research Topic:
The renin-angiotensin system (RAS) influences blood pressure via its regulatory effect on fluid and electrolyte homeostasis and its vasoconstrictive effects. Beyond regulating blood pressure, the RAS is also linked to metabolic function, such as glucose control, and to obesity. Our current research aims to identify mechanisms, which are involved in anti-obese actions of angiotensin II receptor (type 1) blockers (ARBs).

Main discoveries (past 5 years):
Angiotensin receptor blockers (ARBs), such as telmisartan (TEL), lower the body weight of obese rats. To overcome the experimental disadvantage of a very long-lasting pre-phase for inducing obesity, most of our studies addressing the weight-lowering efficacy of ARBs have been performed by co-administering ARBs with high-caloric diet in a preventive setting. With this, weight gain was prevented in rats and mice. The anti-obese effects occurring only after high drug dosages are independent of the reduction in blood pressure that the drugs induce. The precise underlying mechanism is still not clear, although we have identified ACE2/Ang_{1-7}/Mas-, leptin-, brain- and gut-related pathways to be involved in preventing diet-induced obesity. Addressing these mechanisms, we found that a) Ang_{1-7} contributes to the TEL-induced weight loss; b) TEL at least partly lowers body weight via a CNS-driven mechanism; c) TEL preserves leptin transport and thereby prevents leptin resistance; d) TEL prevents lipid accumulation and lipotoxicity, which is accompanied by an anti-inflammatory effect in the murine hypothalamus; e) TEL normalized high-fat diet-induced reduction of cerebral blood flow, thus preventing a diet-induced anxiety-like behavior; and f) that TEL induces a specific gut microbiota signature which may mediate its antiobesity effect. By using transgenic mice with deficiencies in ACE2 or Mas, we now focus in current projects on the anti-atherosclerotic efficacy of TEL and whether this is linked to an improvement in cognitive dysfunction and whether this is mediated via an ACE2/Ang_{1-7}/Mas related mechanism.

Theses (past 5 years):
PhD: Gianna Huber, Katharina Olbrisch, Franziska Schuster, Martina Winkler; MD: Laura Beckmann, Carla Dapper, Elias Rawish, Viktorija Gustaityte, Martin Mildner, Stephan Werth, Johanna Schuchard
BSc: Tanja Fischer

5 selected publications (past 5 years): total 75

- Huber G, Ogrodnik M, Wenzel J, Stölting I, Huber L, Will O, Peschke E, Matschl U, Hövener J, Schwaninger M, Jurk D and Raasch W (2021). Telmisartan prevents high-fat diet-induced neurovascular impairments and reduces anxiety-like behavior. **J Cerebr Blood Flow Metab** in print
- Beckmann L, Künstner A, Freschi ML, Huber G, Stölting I, S.M. I, Freitag M, Langan EA, Matschl U, Galuska CE, Fuchs B, J.K. K, Busch H and Raasch W (2021). Telmisartan induces a specific gut microbiota signature which may mediate its antiobesity effect. **Pharmacol Res** in print.
- Rawish E, Nickel L, Schuster F, Stölting I, Frydrychowicz A, Saar K, Hubner N, Othman A, Kuerschner L and Raasch W (2020). Telmisartan prevents development of obesity and normalizes hypothalamic lipid droplets. **J Endocrinol** 244:95-110.
- Schuster F, Huber G, Stölting I, Wing EE, Saar K, Hubner N, Banks WA and Raasch W (2018). Telmisartan prevents diet-induced obesity and preserves leptin transport across the blood-brain barrier in high-fat diet-fed mice. **Eur J Physiol** 470: 1673-1689.
- Winkler M, Schuchard J, Stölting I, Vogt FM, Barkhausen J, Thorns C, Bader M and Raasch W (2016). The brain renin-angiotensin system plays a crucial role in regulating body weight in diet-induced obesity in rats. **Br J Pharmacol** 173: 1602-1617.

Principal Investigator: Prof. Dr. Markus Schwaninger
Group/Department: **Bridging Brain Barriers**
Institute/Clinic: Institute for Experimental and Clinical Pharmacology and Toxicology

Current Members: Dr. Surya Rai, Josephine Lampe, Julica Folberth, Joanna Kosinska, Nina Feller, Ümit Özorhan, Adriana Pereira, Wiebke Brandt, Riccardo Costalunga, Micha Pense, Jascha Schumann

Research Topic:
The brain depends on the supply of nutrients by other tissues. Vice versa, it controls all bodily functions. Therefore, a close interaction between the central nervous system and the periphery is required. In addition to classical communication channels provided by afferent and efferent nerve fibers, there is an exchange of messengers and metabolites at the interfaces of brain and periphery. The latter encompass the blood-brain barrier, the blood-CSF barrier and, less known, the tanycytic barrier between circumventricular organs and brain parenchyma. Our group investigates the structure and function of these barriers. Bridging brain barriers could be a key principle in the treatment of brain diseases.

Main discoveries (past 5 years):
Our research focused on two signaling pathways mediated by Gαq/11 proteins and NEMO. Both proved to be essential to maintain the integrity and function of brain barriers. To compensate for deficits of the two pathways or other genes, we have developed viral tools to bridge brain barriers.

Theses (past 5 years):
PhD: Sina Schultz, Yun Jiang, Julian Assmann, Kristin Müller, Mareike Böttcher, Alessandro di Spiezio, Maulana Ikhsan
MD: Rene Pflock, Jakob Vielhauer, Josefine Brands, Markus Stahr
MSc: Natascha Klaus, Luca Höhne, Cathrin Hansen, Nina Feller
BSc: Lisa Hill, Katja Grau, Kimberly Begemann

5 selected publications (past 5 years): total 33

- Wenzel J, Hansen CE, Bettoni C, Vogt MA, Lembrich B, Natsagdorj R, Huber G, Brands J, Schmidt K, Assmann JC, Stölting I, Saar K, Sedlacik J, Fiehler J, Ludewig P, Wegmann M, Feller N, Richter M, Müller-Fielitz H, Walther T, König GM, Kostenis E, Raasch W, Hübner N, Gass P, Offermanns S, de Wit C, Wagner CA, Schwaninger M (2020). Impaired endothelium-mediated cerebrovascular reactivity promotes anxiety and respiration disorders in mice. **Proc Natl Acad Sci U S A** 117: 1753-61.
- Böttcher M, Müller-Fielitz H, Sundaram SM, Gallet S, Neve V, Shionoya K, Zager A, Quan N, Liu X, Schmidt-Ullrich R, Haenold R, Wenzel J, Blomqvist A, Engblom D, Prevot V, Schwaninger M (2020). NF-κB signaling in tanycytes mediates inflammation-induced anorexia. **Mol Metab** 39: 101022.
- Müller-Fielitz H, Stahr M, Bernau M, Richter M, Abele S, Krajka V, Benzin A, Wenzel J, Kalies K, Mittag J, Heuer H, Offermanns S, Schwaninger M (2017). Tanycytes control the hormonal output of the hypothalamic-pituitary-thyroid axis. **Nat Commun** 8: 484.
- Dogbevia GK, Töllner K, Körbelin J, Bröer S, Ridder DA, Grasshoff H, Brandt C, Wenzel J, Straub BK, Trepel M, Löscher W, Schwaninger M (2017). Gene therapy decreases seizures in model of incontinentia pigmenti. **Ann Neurol** 82:93-104.
- Körbelin J, Dogbevia G, Michelfelder S, Ridder DA, Hunger A, Wenzel J, Seismann H, Lampe M, Bannach J, Pasparakis M, Kleinschmidt J, Schwaninger M*, Trepel M* (2016). A brain microvasculature endothelial cell-specific viral vector for the treatment of neurovascular and neurological diseases. **EMBO Mol Med** 8: 609-625 (*these authors contributed equally to this work).

Principal Investigator: Prof. Dr. Malte Spielmann
Group/Department: **Human Molecular Genomics**
Institute/Clinic: Institute for Human Genetics

Current Members: Dr. Kristian Händler, Dr. Varun Sreenivasan, Kristin Schultz, Saranya Balachandran, Verónica Yumiceba Corral, Jana Henck, Nathalie Kruse, Joshua Kim

Research Topic:
The main goal is to understand the role of non-coding mutations and structural variants as the cause of human disease. We aim to understand the pleiotropic effects of mutations and structural variants during embryogenesis and investigate their influence on the 3D architecture of the genome. In order to achieve this goal, we are applying the latest high-throughput technologies during mouse embryonic development including single cell analysis, chromosome conformation capture techniques and massively parallel reporter assays

Main discoveries (past 5 years):
We have shown that deletions, duplications and inversions can alter the cis-regulatory 3D architecture of the non-coding genome by altering the positions of Topologically associating domain (TADs) and boundaries, leading to misregulation of genes and congenital malformation. With our studies on the role of TADs in human congenital disease, we were able to demonstrate a new mutation mechanism termed 'TAD shuffling, which has also been recognized as an important cause of cancer development. Another focus of our work is on the development of new functional high throughput analysis for non-coding variants and single-cell genomics technologies. We developed a new single-cell RNA sequencing technology called "combinatorial indexing" to investigate millions of single-cells and a high throughput functional analysis method for the evaluation of non-coding variants from whole genome sequencing data by massively parallel reporter assays.

Theses (past 5 years):
PhD: Bjort Katrinardottir Kragesteen, Naeimeh Tayebi, Magdalena Socha,
MD: Jonas Elsner, Julius Jungnitsch, Laure Bosquillon de Jarcy, Johann Hüttner
MSc: Izabella Harabula

5 selected publications (past 5 years): total 59

- Sosha M, Sowinske Sailder A, … Spielmann M*, Jamsherr A* (2021). Position effects at the FGF8 locus are associated with femoral hypoplasia. **Am J Hum Genet** 108: 1725-1734 *co-corresponding authors.
- Melo US, Schöpflin R, Acuna-Hidalgo R, Mensah MA, Fischer-Zirnsak B, Holtgrewe M, Klever MK, Türkmen S, Heinrich Matoso E, Spielmann M*, Mundlos S* (2020). Hi-C identifies complex genomic rearrangements and TAD-shuffling in developmental diseases. **Am J Hum Genet** 106: 872-884. *Corresponding authors
- Cao J*, Spielmann M*, Qiu X, Ibrahim DM, Huang X, Hill AJ, Zhang F, Mundlos S, Christiansen S, Steemers ST, Trapnell C, Shendure J (2019). The dynamic transcriptional landscape of mammalian organogenesis at single cell resolution. **Nature** 566: 496-502 *Co-first authors.
- Kragesteen BK*, Spielmann M*, Paliou C, Heinrich V, Schöpflin R, Esposito A, Annunziatella C, Bianco S, Chiariello AM, Jerković I, Harabula I, Guckelberger P, Pechstein M, Wittler L, Chan WL, Franke M, Lupiáñez DG, Kraft K, Timmermann B, Vingron M, Visel A, Nicodemi M, Mundlos S, Andrey G (2018). Dynamic 3D chromatin architecture contributes to enhancer specificity and limb morphogenesis. **Nat Genet** 50: 1463-1473 *Co-first authors.
- Spielmann M, Lupiáñez DG, Mundlos S (2018). Structural variation in the 3D genome. **Nat Rev Genet** 19: 453-467.

Principal Investigator: Prof. Dr. Hendrik Ungefroren
Group/Department: **Experimental Oncology**
Institute/Clinic: Department of Medicine I

Current Members: Heike Albrecht

Research Topic:
Our group is interested in the molecular mechanisms of invasion and metastasis in pancreatic ductal adenocarcinoma (PDAC), a cancer type that is associated with obesity and type 2 diabetes mellitus. Our focus here is on epithelial-mesenchymal transition (EMT), a developmental program highjacked by cancer cells to increase their aggressiveness, and its regulation by transforming growth factor (TGF)-β and environmental stimuli such as hyperglycemia. Since the EMT process is associated with cancer stem cell generation and cellular plasticity, we are currently investigating whether metastatic cancer cells with mesenchymal EMT phenotypes can be converted/transdifferentiated into benign pancreatic endocrine precursors and insulin-producing cells. Our overall aims are to understand the molecular links between obesity/diabetes and PDAC development and to evaluate EMT-based transdifferentiation as a novel and highly innovative biological therapy for PDAC patients.

Main discoveries (past 5 years):
We have shown in pancreatic cancer cells that TGF-β1 acts as a strong inducer of EMT, migration and invasion and that exogenous and endogenously produced/autocrine forms of this growth factor can have different and even opposite functions. In addition, the cellular signaling activities of TGF-β and its oncogenic responses are regulated in an antagonistic fashion by the small Rho-like GTPases, Rac1 and Rac1b. We were also involved in studies showing that hyperglycemia promotes EMT and stem cell properties in pancreatic ductal epithelial cells.

Theses (past 5 years)
MD: Franziska Zeeh, Thomas Gädeken, Benjamin Rosien, Anne Flindt, David Witte, Rabea Zinn
BSc: Sofie Joline Fromm, Nadja Leinung, Marie Vogt, Maria Förster, Juliane Peter, Ann-Katrin Ziehe, Anu Kumarasinghe, Melina Musfeldt, Shauni Belana Biedermann, Jessica Christl, Clara Volz, Caroline Eiden, Paula Marie Schmidtlein, Lea Kubetzko

5 selected publications (past 5 years): total 20

- Ungefroren H, Christl J, Eiden C, Wellner UF, Lehnert H, Marquardt JU (2021).Autocrine TGFβ1 opposes exogenous TGFβ1-induced cell migration and growth arrest through sustainment of a feed-forward loop involving MEK-ERK signaling. **Cancers** 13:1357.
- Ungefroren H, Otterbein H, Wellner UF, Keck T, Lehnert H, Marquardt JU (2020). RAC1B regulation of *TGFB1* reveals an unexpected role of autocrine TGFβ1 in the suppression of cell motility. **Cancers** 12:3570.
- Ungefroren H, Kumarasinghe A, Musfeldt M, Fiedler C, Lehnert H, Marquardt JU (2020). RAC1B induces SMAD7 via USP26 to suppress TGFβ1-dependent cell migration in mesenchymal-subtype carcinoma cells. **Cancers** 12:1545.
- Luley KB, Biedermann SB, Künstner A, Busch H, Franzenburg S, Schrader J, Grabowski P, Wellner UF, Keck T, Brabant G, Schmid SM, Lehnert H, Ungefroren H (2020). A comprehensive molecular characterization of the pancreatic neuroendocrine tumor cell lines BON-1 and QGP-1. **Cancers** 12:691.
- Rahn S, Zimmermann V, Viol F, Knaack H, Stemmer K, Peters L, Lenk L, Ungefroren H, Saur D, Schäfer H, Helm O, Sebens S (2018). Diabetes as risk factor for pancreatic cancer: Hyperglycemia promotes epithelial-mesenchymal-transition and stem cell properties in pancreatic ductal epithelial cells. **Cancer Lett** 415:129-150.

Principal Investigator: Dr. Jan Wenzel
Group/Department: **Cerebral Perfusion and Metabolism**
Institute/Clinic: Institute for Experimental and Clinical Pharmacology and Toxicology

Current Members: Beate Lembrich, Ines Stölting, Dorothea Ziemens, Dimitrios Spyropoulos, Geza Curkey

Research Topic:
The research of our group is focused on the role of brain endothelial cells in health and disease. Endothelial cells in the brain are specialized for their unique gatekeeper role at the blood-brain barrier and interact with many other cell types in the brain. We use *in vivo* and *in vitro* techniques to dissect the functions of these cells in maintaining the blood-brain barrier, affecting cerebral blood flow, and acting on peripheral tissues by influencing brain function.

Main discoveries (past 5 years):
We identified specific factors and pathways that regulate endothelial functions in the brain. For example, we could show that thrombomodulin that is known as an anticoagulant factor of the endothelium acts as mediator of ischemia-induced angiogenesis and its deletion worsens stroke outcome in an animal model. Additionally, we identified $G\alpha_{q/11}$ signaling as crucial for CO_2-induced blood flow changes and loss of this function in endothelial cells leads to changes of physiological and CO_2-stimulated behavior. Notably, we found that mechanisms mediated by endothelial cells differ between different regions of the brain.

Theses (past 5 years):
PhD: Marius Richter, Julian Assmann
MD: Josefine Brands
MSc: Nina Feller, Cathrin Hansen

5 selected publications (past 5 years): total 11

- Wenzel J*, Lampe J*, Müller-Fielitz H*, Schuster R, Zille M, Müller K, Krohn M, Körbelin J, Zhang L, Özorhan Ü, Neve V, Wagner JUG, Bojkova D, Shumliakivska M, Jiang Y, Fähnrich A, Ott F, Sencio V, Robil C, Pfefferle S, Sauve F, Ferreira-Coêlho CF, Franz J, Spiecker F, Lembrich B, Binder S, Feller N, König P, Busch H, Collin L, Villaseñor R, Jöhren O, Altmeppen HC, Pasparakis M, Dimmeler S, Cinatl J, Püschel K, Zelic M, Ofengeim D, Stadelmann C, Trottein F, Nogueiras R, Hilgenfeld R, Glatzel M, Prevot V, Schwaninger M (2021). The SARS-CoV-2 main protease M^{pro} causes microvascular brain pathology by cleaving NEMO in brain endothelial cells, accepted in **Nat Neuroscience** (*these authors contributed equally to this work).
- Wenzel J, Hansen CE, Bettoni C, Vogt MA, Lembrich B, Natsagdorj R, Huber G, Brands J, Schmidt K, Assmann JC, Stölting I, Saar K, Sedlacik J, Fiehler J, Ludewig P, Wegmann M, Feller N, Richter M, Müller-Fielitz H, Walther T, König GM, Kostenis E, Raasch W, Hübner N, Gass P, Offermanns S, de Wit C, Wagner CA, Schwaninger M (2020). Impaired endothelium-mediated cerebrovascular reactivity promotes anxiety and respiration disorders in mice. **Proc Natl Acad Sci U S A** 117: 1753-61.
- Wenzel J, Spyropoulos D, Assmann JC, Khan MA, Stölting I, Lembrich B, Kreißig S, Ridder DA, Isermann B, Schwaninger M (2020). Endogenous THBD (Thrombomodulin) Mediates Angiogenesis in the Ischemic Brain. **Arterioscler Thromb Vasc Biol** 40: 2837–2844.
- Jiang Y, Müller K, Khan MA, Assmann JC, Lampe J, Kilau K, Richter M, Kleint M, Ridder DA, Hübner N, Schmidt-Supprian M, Wenzel J*, Schwaninger M* (2020). Cerebral angiogenesis ameliorates pathological disorders in Nemo-deficient mice with small-vessel disease. **J Cereb Blood Flow Metab** 41: 219-235 (*these authors contributed equally to this work).
- Müller-Fielitz H, Stahr M, Bernau M, Richter M, Abele S, Krajka V, Benzin A, Wenzel J, Kalies K, Mittag J, Heuer H, Offermanns S, Schwaninger M (2017). Tanycytes control the hormonal output of the hypothalamic-pituitary-thyroid axis. **Nat Commun** 8:484.

Young scientists in the CBBM

The CBBM aims to promote young scientists. The success of young scientists is reflected by the numerous habilitations in the departments that belong to the CBBM.

Habilitations in the CBBM

2016	
Medicine	Schmidt, Dr. med. Alexander Genetische und umweltbedingte Ursachen der Musikerdystonie und anderer Dystoniesyndrome 12.1.2016 Experimentelle Neurologie
	Westenberger, Dr. Sc. (Universität Belgrad) Ana Genetic factors causing dystonia 5.7.2016 Neurogenetik
MINT	Seeger, Dr. rer. nat. Karsten Verleihung nach Juniorprofessur 24.10.2016 Biophysikalische Chemie
2017	
Medicine	Derad, Dr. med. Inge Angiotensin II in der Blutdruckregulation: Ein System mit Herz und Hirn 19.12.2017 Innere Medizin
	Harbeck, Dr. jur. Dr. med. Birgit Optimierung der Glucocorticoidsubstitutionstherapie bei Patienten mit Nebennierenrindeninsuffizienz 5.12.2017 Innere Medizin
	Iblher, Dr. med. Peter Methodische Ansätze zur Lehrevaluation in der anästhesiologischen Lehre und Weiterbildung 9.5.2017 Anästhesiologie
	Kellner, Dr. med. Patrick Neue Strategien in der Behandlung kritisch kranker Patienten: Evaluation, Monitoring, Sedation und Immunmodulation 25.4.2017 Anästehsiologie
	Kemmling, Dr. med. André Quantitative Imaging Features of Acute Ischemic Stroke for Prediction of Tissue- and Clinical outcome 14.11.2017 Radiologie
	Klein, Dr. med. Jan Philipp Differenzielle Ansätze zur Optimierung der Psychotherapie Depressiver Störungen 10.7.2017 Psychiatrie und Psychotherapie
	Müller, Dr.-Ing Antje Molekulare und zelluläre Muster in der mit Proteinase 3-spezifischen anti-Neutrophilen zytoplasmatischen Autoantikörpern-assoziierten nekrotisierenden Granulomatose mit Polyangiitis 25.7.2017 Molekulare Rheumatologie
	Rasche, Dr. med. Dirk Moderne Diagnostik und Neurochirurgische Therapie von chronischen Gesichtsschmerzen 21.11.2017 Neurochirurgie

2017 (continued)	
	Stichtenoth, Dr. med. Guido PhD Pulmonales Surfactant als Träger für topische Antiinfektiva 19.12.2017 Kinder- und Jugendmedizin
	Zittel-Dirks, Dr. med. Simone Exzitabilität und Konnektivität des motorischen Systems bei Patienten mit Bewegungsstörungen und gesunden Personen 30.5.2017 Neurologie
MINT	Schwudke, Dr. rer. nat. Daniel Development and Application of Shotgun Lipidomics in Biomedical Research 1.11.2017 Biochemie
2018	
Medicine	Hägele, Dr. med. Julian Kardiovaskuläre Bildgebung und Interventionen Innovationen durch Magnetic Particle Imaging 24.4.2018 Radiologie
	Iwen, Dr. med. Alexander Neuroendokrine Regulation der Fettzellbiologie-Neue physiologische und pathophysiologische Implikationen 19.6.2018 Innere Medizin
	Nitschke, Dr. med. Martin Auswirkungen viraler und bakterieller Infektionen auf die Niere: Klinische und experimentelle Studien im humanen Modell 24.4.2018 Innere Medizin
2019	
Medicine	Bär, Dr. med. Florian Differentielle Therapie der Volkskrankheit Divertikulose/ -itis 11.06.2019 Innere Medizin
	Hoellen, Dr. med. Friederike Sophie Der Abschied vom Skalpell? Aktuelles zur Therapie des Uterus myomatosus 09.07.2019 Frauenheilkunde und Geburtshilfe
	Steinlechner, Dr. med. Susanne Zwangsmaßnahmen in der Psychiatrie 12.11.2019 Psychiatrie und Psychotherapie
MINT	Hansen, Dr. rer. nat. Guido Regulation proteolytischer Aktikvität: Einblicke in Strukturen und Mechanismen 03.07.2019 Biochemie
	Rahmanzadeh, Dr. rer. nat. Ramtin Optical cell manipulation with molecular targeting 02.04.2019 Biomedizinische Optik
2020	
Medicine	Bartscht, Dr. med. Tobias GvHD und GvL - Folgen der Übertragung fremder Stammzellen 28.01.2020 Hämatologie und Onkologie
	Baum, Dr. med. Ralph Sascha HPV - ein globales Problem 10.11.2020 Frauenheilkunde und Geburtshilfe

2020 (continued)	
	Breer, Dr. med. Stefan Der Knochen im Stress 14.07.2020 Orthopädie und Unfallchirurgie
	Gebauer, Dr. med. Niklas Hämatologisches Niemandsland - Klassifikation und Therapie aggressiver Lymphome im Wandel 14.01.2020 Innere Medizin
	Göbel, Dr. med. Anna Gehirndoping ... mit Schilddrüsenhormonen?! 19.05.2020 Experimentelle Neurologie
	Küchler, Dr. med. Jan Nils Von seltsamen Zufällen und organischem Leben - Zur Geschichte der Hirntodkonzeption 15.12.2020 Neurochirurgie
	Menrath, Dr. med. Ingo Chronisch krank und Schule – wie passt das zusammen? 14.07.2020 Kinder- und Jugendmedizin
	Neumann, Dr. med. Kay Sinn und Unsinn des Aneuploidiescreenings im Rahmen einer assistierten Reproduktion 17.11.2020 Frauenheilkunde und Geburtshilfe
	Thiele-Schmitz, Dr. med. Susanne Störungen des G-Protein gekoppelten Signalwegs" oder "Wie kommt die Botschaft in die Zelle 12.05.2020 Kinder- und Jugendmedizin
	Trinh, Dr. med. Joanne Genetic and environmental age-at-onset modifiers of monogenic forms of Parkinson´s disease 17.11.2020 Neurogenetik
	Weißbach, Dr. med. Anne Netzwerkstörungen bei monogenen Dystonie-Parkinson-Syndromen 21.01.2020 Neurologie
2021	
Medicine	Andreou, PD Dr. med. Christina Translationale Forschung bei der Früherkennung und -behandlung psychotischer Störungen 20.04.2021 Umhabilitation - Psychiatrie und Psychotherapie
	Offermann, Dr. med. Rafael David Frauenheilkunde und gesellschaftliche Verantwortung – drei „Denkanstöße" 15. 06.2021 Frauenheilkunde und Geburtshilfe
	Rakovic, Dr. rer. nat. Aleksandar Mitochondrial Hygiene for Healthier Movements 09.02.2021 Neurogenetik
	Tzabazis, Dr. med. Alexander Zacharias Perioperative Schmerztherapie - zwischen Enhanced Recovery After Surgery (ERAS) und Precision Medicine 02.02.2021 Umhabilitation - Anästhesiologie
MINT	Jessen, Dr. phil. Sarah The Developmental Origins of Unconscious Face Processing - a Neurocognitive Approach 04.06.2021 Psychologie

Junior Program, Habilitation Program, Clinician Scientist

The University of Lübeck supports young scientists in three programs, the junior program (JP) for postdocs, the clinician scientist program (CS) for clinicians who do research in addition to the clinical training , and the habilitation program (HP) that is specifically directed to young female scientists. The following young scientists in the CBBM were awarded one of these grants.

Name	Department	Thema	Funding (€)	Duration	Program
Balck Alexander	Neurogenetics	Neue mitochondriale Biomarker bei genetisch stratifizierten Parkinson-Patienten	75,000	01.01.2019 31.12.2020	CS
Cakirolglu Figen	Medicine I	Generierung eines renalen Organoids aus humanen induzierten pluripotenten Stammzellen als Modell zur Charakterisierung der Pathogenese polyzystischer Nierenerkrankungen	74,080	01.01.2016 31.12.2017	JP
Derer Stefanie	Medicine I	Deciphering the impact of disturbed mucosal energy homeostasis in inflammation- driven carcinogenesis	30,000	01.12.2020 31.11.2021	HP
Föh Bandik	Medicine I	Postbiotische Modulation der Darm-B-Zell Achse bei Morbus Crohn	75,000	01.01.2021 31.12.2022	CS
Göbel Carl	Neurology	Neue Behandlungsmethoden therapieresistenter Adipositas: Tiefe Hirnstimulation (THS) und transkutane Vagusnervstimulation (tVNS)	75,000	01.01.2017 31.12.2018	JP
Grütz Karen	Neurogenetics	Elucidating the molecular and cellular basis of ε-sarcoglycan-associated myoclonus-dystonia: insights from genetics and an iPSC-derived neuronal model	69,180	01.01.2019 31.12.2020	JP
Herzog Rebecca	Neurology	Sonifikation von Bewegungen beim M. Parkinson	75,000	01.01.2020 31.12.2021	CS
Koo-Poeggel Ping Chai	Pharmacology	Assessing the impact of cognitive ability on information transfer between learning and memory consolidation in sleep	72,060	01.01.2021 31.12.2022	JP
Lill Christina Maria	Neurogenetics	Untersuchung von Gen-Umwelt-Wechselwirkungen und Entwicklung eines klinischen Algorithmus zur Vorhersage der idiopathischen Parkinson-Krankheit	74,796	01.01.2016 31.12.2017	JP
Lill Christina	Neurogenetics / Cardiogenetics	Identifizierung und Charkterisierung von neuen Parkinson-Risikovarianten mittels X-Chromosom-weiter Analyse (XWAS) und Update der GWAS-Metaanalyse	30,000	01.08.2019 31.07.2020	HP
Müller-Pinzler Laura	Psychiatry	Neuronale Mechanismen der Antizipation und Angst vor peinlichen sozialen Situationen bei sozialer Ängstlichkeit	67,100	01.01.2018 31.12.2019	JP
Oechtering Thekla	Radiology	Etablierung der 4D Fluss MRT zur Bestimmung der Pulswellengeschwindigkeit als kardiovaskulärer Biomarker	74,698	01.01.2018 31.12.2019	CS

Name	Department	Thema	Funding (€)	Duration	Program
Ölkrug Rebecca	Medicine I	Schilddrüsenhormone und „Browning" - Induziert Thyroxin eine Thermogenese im beigen Fettgewebe?	75,000	01.01.2018 31.12.2019	JP
Pozojevic Jelena	Neurogenetics	Understanding disease mechanisms elicited by alterations in the TAF1 gene	74,800	01.01.2021 31.12.2022	JP
Schuster Simon	Psychiatry	Psychopathologie und ereigniskorrelierte Potentiale im EEG post-NMDA-Rezeptor-Autoimmunenzephalitis	75,000	01.01.2021 31.12.2022	CS
Trinh Joanne	Neurogenetics	Integrative omics approaches to investigate the reduced penetrance of Parkinson disease	75,000	01.01.2019 31.12.2020	JP
von der Gablentz Janina	Neurology	Veränderung der zerebralen Erregbarkeit bei Patienten mit episodischer Ataxie Typ 2	75,000	01.01.2017 31.12.2018	JP
Vos Melissa	Neurogenetics	The implication of lipids in Parkinson's disease pathogenesis	75,000	01.01.2016 31.12.2017	JP
Vulinovic Franca	Neurogenetics	Mitochondrial function in a pure culture of dopaminergic neurons of PINK1 and Parkin-mutation carriers using reporter lines	75,000	01.01.2020 31.12.2021	JP
Weißbach Anne	Psychiatry	Neuromodulation motorischer Netzwerke bei Patienten mit genetischen Parkinsonsyndrom	44,100	01.02.2017 31.07.2017	HP
Wilhelm-Groch Ines	Psychiatry	Schlaf und die nachträgliche Verarbeitung von traumatischen Erlebnissen	30,000	01.08.2020 31.07.2021	HP

Scientific awards for members of the CBBM

2017

Best Lecture award, 41st Hypertension Congress / 11. Diabetes autumn conference in Mannheim – **Elias Rawish**
Otto Roth prize of the University of Lübeck - **Johanna Schuchard**

2018

Wissenschaftspreis der Universität zu Lübeck - **Rebecca Ölkrug**
Harrington-deVisscher Award of the ETA - **Jens Mittag**
Basedow Award of the DGE - **Lisbeth Harder**
Renate Maaß Award for Neuroscience – **Sarah Jessen**
Renate Maaß Award for Neuroscience – **Malte Wöstmann**
Inclusion in Clarivate Analytics's list of Highly Cited Researchers - **S. Borgwardt**
Best Lecture, 42nd Hypertension Congress - **Laura Nickel**

2019

Basedow Award of the DGE - **Kornelia Johann**
Wissenschaftspreis der Universität zu Lübeck – **M. Alavash, S. Tune**
Bernd Fischer-Preis der Universität zu Lübeck – **Lisbeth Harder**
Salus medal of the Chamber of Pharmacists Schleswig-Holstein - **Walter Raasch**
Fritz Külz Prize of the German Society for Experimental and Clinical Pharmacology and Toxicology - **Elias Rawish**
Dieter Klaus Award of the German Society for Hypertension - **Jan Wenzel**
Otto Roth prize of the University of Lübeck – **David Witte**

2020

Bruno-Allolio Award of the DGE - **Beate Herrmann**
Werner Forßmann Junior Scholarship awarded by the Medical Faculty of the Ruhr University Bochum from the "Stiftung Kardiologie 2000- **Laura Nickel**

2021

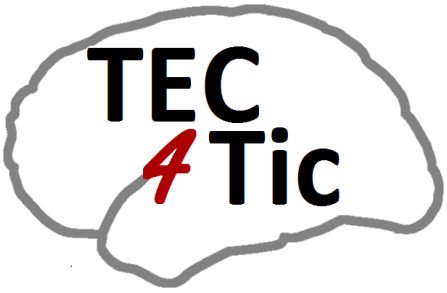
Vortragspreis der Wissenschaftliche Arbeitstage Schmerzmedizin, Dt. Gesellschaft Anästhesiologie und Intensivmedizin e. V. – **Laura Teege**
Otto Roth prize for the best doctoral thesis of the medical section of the University of Lübeck - **Elias Rawish**
Elevation to IEEE Senior member (professional recognition for technical and professional excellence, Institute of Electrical and Electronics Engineers) – **Magdalena Rafecas**

Cooperate funding

The CBBM has been successful in raising cooperate funding. On the next pages, we provide an overview about the following ongoing projects that involve more than one group in the CBBM:

- DFG FOR 2698_TEC4Tic
- DFG CRC LocoTact
- DFG GRK 1957 ABC
- DFG FOR 2488
- Horizon 2020 ITN ENTRAIN
- DMG DSDCare

FOR 2698 - Cognitive theory for Tourette syndrome – a novel perspective



Theory of Event Coding (TEC) for Tic disorders (Tic)

Funding organization: Deutsche Forschungsgemeinschaft
Spokesperson: Alexander Münchau (Lübeck)
Involved CBBM groups: Bäumer, Friedrich, Krämer, Krach Münchau, Münte, Weissbach
Status of funding: 1st funding period ongoing, resubmission of proposal for 2nd funding period Sept 2021, onsite review planned for March 2022

Summary:
Tourette syndrome (GTS) is a common multifaceted neuropsychiatric disorder with motor and phonic tics as cardinal and defining clinical features. Despite an abundance of neuroscientific studies, no generally accepted concept of tics or GTS has emerged. In the first funding period, we examined the suitability the Theory of Event Coding to conceptualize tics and other associated phenomena in GTS. We could confirm our major hypothesis that GTS can be characterized by a hyperbinding of perception and motor processes and that such alterations in the processing of event files are central for the understanding of GTS. In the upcoming funding period, we will build on these results and will address important open questions that are related to three major research fields examined in complementary projects: (i) the feasibility to modulate perception-action bindings as part of (novel) treatment approaches; (ii) how binding is modulated in remitting vs. persisting GTS; (iii) what role binding vs. retrieval processes play in perception-action integration in patients with GTS. In all projects we put a special emphasis on the examination of neurophysiological processes underlying the examined dynamics. The next funding phase is intended to establish the basis for a transfer of a cognitive-theoretical conceptualization of GTS into clinical applications.

SFB TR 296 - Local Control of Thyroid Hormone Action (LocoTact)

Funding organization: Deutsche Forschungsgemeinschaft
Spokesperson: Dagmar Führer (Essen), Heiko Krude (Berlin), Jens Mittag (Lübeck)
Involved CBBM groups: Göbel/Münte, Oster, Müller-Fielitz, Schwaninger, Kirchner, Mittag
Status of funding: ongoing first funding period
Starting and end dates: 01.07.2020 – 30.06.2024 (first funding period)

Summary:
Circulating concentrations of thyroid hormones (TH) are routinely used for diagnosis of thyroid disorders. However, the recent discoveries of patients with mutations in TH transporters or receptors have demonstrated that circulating hormone levels can be insufficient. In fact, tissues or cells can be in a hyper- or hypothyroid state discordant to serum TH concentrations, which is due to several cellular layers controlling TH action, including TH transport, intracellular TH in/activation and TH receptors (TRs). These findings challenged the importance of systemic TH and have shifted the focus to the regulation of TH action at the organ or cell level. To date, however, it is poorly understood how these local control mechanisms are organized under (patho)physiological conditions. Moreover, there is evidence that restoration or modulation of TH action in a specific tissue can be beneficial in certain pathologies such as non-alcoholic steatohepatitis, myocardial infarction, or stroke. In the CRC/TR296 LocoTact we aim to dissect this local control of TH action, focusing initially on brain, heart and liver as prominent targets of TH. Furthermore, we will evaluate possible therapeutic TH action benefits in these tissues, employing pharmacological tools such as hormone conjugates, genetic models and targeted viral gene delivery.

GRK 1957 ABC

Funding organization: Deutsche Forschungsgemeinschaft
Spokesperson: Henrik Oster
Involved CBBM groups: Brüggemann, Heldmann, Iwen, Jöhren, Kirchner, Mittag, Raasch, Münte, Oster, Müller-Fielitz, Schwaninger, Kirchner, Mittag, Schmid, Wenzel, Wilms
Status of funding: ongoing second funding period
Starting and end dates: 01.10.2019 – 30.04.2023 (second funding period)

Summary:
While it has long been regarded as a pure energy storage organ, its endocrine activity has put the adipose tissue into the focus of intensive research in the field of energy homeostasis. An important function of adipocyte-derived hormones, the so-called adipokines, is the modulation of appetite and energy expenditure via the regulation of central nervous system (CNS) circuits. At the same time, adipose tissue morphology and function - from energy storage to thermogenesis - are influenced centrally by neuroendocrine and autonomous signaling pathways. Disorders of this adipocyte-brain crosstalk are essential to the development of metabolic pathologies such as obesity, diabetes, and cardiovascular disease. Research on the communication pathways between CNS and adipose tissues is at the center of the research training group (RTG) "Adipocyte-Brain Crosstalk". Built around an interdisciplinary team of scientists and physicians the RTG focusses on: (a) the mechanisms of adipokine action in the CNS, (b) central control of functions of white and brown adipose tissues as well as (c) the modulation of adipocyte-brain crosstalk as a therapeutic approach in obesity. In the team of the RTG, a unique blend of basic scientific as well as clinical expertise on campus is now also spatially concentrated in the CBBM research building. Under the umbrella of a joint university research focus ("Brain, Hormones & Behavior"), the individual projects are also well connected on campus beyond the RTG. The PIs of the RTG team interact to a large extent not only through the training group, but also through seminars, workshops, retreats, and conferences, which are organized together with the doctoral students, thus offering a highly interdisciplinary, practice-oriented, strucutred environment for the training, qualification, and career development of young scientists in a field of high scientific, clinical, and social relevance.

FOR 2488 - Reduced penetrance in hereditary movement disorders

Funding organization: German Research Foundation (DFG)
Spokesperson: Christine Klein
Involved CBBM groups: Klein, Westenberger, Lohmann, Brüggemann, Seibler, Kasten
Starting and end dates: 01.07.2020-30.06.2023

Summary:
The importance of reduced penetrance has been substantially underestimated as large numbers of mutation carriers remain asymptomatic. This phenomenon represents one of the most central questions currently faced in the field of hereditary movement disorders, medical genetics and personalized medicine.
In the first funding period, 'ProtectMove' has formed an interdisciplinary network and already serves as a national and international hub for the study of reduced penetrance of movement disorders. Furthermore, the main hypotheses have been confirmed by numerous findings: i) Penetrance and expressivity represent a continuum across disease manifestation and expression. ii) It is possible with limited numbers of mutation carriers to identify strong and biologically plausible modifiers of disease penetrance and expressivity. iii) These findings start impacting on patient counseling and hold translational potential for targeted treatment.
In the second funding period, we are planning to i) follow up on findings in large-scale replication and functional validation studies; ii) leverage the full potential of longitudinal population-based and new international cohorts of mutation carriers; iii) expand to a systems biomedicine approach; iv) add a strong mechanistic focus to modifier identification; v) strengthen ProtectMove as a hub of networking and career development to lay the foundation for a Collaborative Research Center/Transregio.

ITN ENTRAIN

Funding organization: EU (Horizon 2020)
Spokesperson: Markus Schwaninger
Involved CBBM groups: Wenzel, Schwaninger
Starting and end dates: 01.05.2018 – 30.04.2023

Summary:
Neurological diseases cause enormous suffering and a great economic burden. Almost 20 million Europeans are affected by the most frequently occurring and disabling disease entities, such as stroke, Alzheimer's disease (AD), or multiple sclerosis (MS), and these numbers do not include the large group of rare diseases that affect the CNS. Common features of many neurological diseases are a vascular pathology with impaired blood-brain barrier (BBB) function or with reduced blood flow and inflammatory changes. As the two are often associated, disentangling their intricate and mutual relationship is a major task for translational neuroscience that could improve the treatment of many neurological diseases. At the cellular level, key players are brain endothelial cells as the building blocks of cerebral vessels and macrophages as the main inflammatory cells of the brain. Recent discoveries indicate that endothelial cells and brain macrophages are in intimate contact and closely interact. However, there is a huge gap of knowledge regarding the specific mode and the consequences of these interactions. Therefore, in-depth analyses of the molecular mechanisms involved are essential to identify and understand key features of macrophage-endothelial cross-talk, and exploitation of this information for the development of treatments of neurological diseases. ENTRAIN undertakes this task, using novel and emerging technologies, such as cutting-edge chemoproteomics, unique genetic and viral tools for targeting of defined cell populations, and high resolution intravital imaging. By characterising the pas de deux of endothelial cells and macrophages at the functional and morphological level, the consortium lays the foundation for better therapies for neurological diseases. The results may impact on the understanding of neuroinflammation, but also on the rarefaction of vessels.

DSDCare – Standardized centre-orientated care for people with differences of sex development over the life-span

Funding organization: Germany Ministry of Health
Spokesperson: Olaf Hiort
Involved CBBM groups: Section for Pediatric Endocrinology and Diabetology, Center for Rare Diseases, Institute for Social Medicine and Epidemiology, Department of Pediatrics and 12 Institutions nationwide.
Starting and end dates: 01.05.2020 until 30.04.2023

Summary:
Differences or Disorders of Sex Development (DSD) describe a group of rare to ultra-rare clinical entities with a discrepancy of chromosomal, gonadal, and phenotypic sex. While some are genetically characterized, while others cannot be clearly defined. Depending on the aetiopathogenesis, the phenotypic presentation and the time of diagnosis, a variety of medical and socio-cultural management issues must be addressed. This includes the disclosure of diagnosis, psychosocial support, endocrine therapies, surgical management, sexuality and reproduction. DSDCare is funded to improve the structure and process quality of psychosocial and medical care of DSD people with implementation and optimization of the S2K-guide line "variants of sex development" as well as the statements of the German Ethical Council and the German Chamber of Physicians. To achieve this, we have created a network of 4 EU accredited centres at five sites, two state accredited centres, as well as three centres with special surgical expertise. Patient advocacy groups are integrated. Quality indicators were defined and integrated into a newly developed registry DSDreg based on the open-source registry for rare conditions. Evaluation of patient care and benchmarking of centres for quality indicator achievements is pursued. Diagnostic procedures both in genetics and endocrine laboratories are streamlined and structured. An operational helpdesk for hierarchical management across the nation is implemented and evaluated.

Third party funding

The following Table provides an overview about third party funding within the CBBM.

Scientist	Funding by	Title	Period	Amount €
Alavash, Mohsen	Deutsche Forschungsgemeinschaft	„Network identification and characterization of spatial attention in the listening brain“	2020–2023	380,000
Andreou, Christina	Swiss National science Foundation (SNF) Grant	EEG resting-state connectivity and psychosis: Dopaminergic influences	2017-2019	91,870
Andreou, Christina Borgwardt, Stefan	Promotion Santé Suisse Grant	PsyYoung	2020-2024	1,997,556
Astiz, Mariana	Deutsche Forschungsgemeinschaft	AS547/1-1:Circadian control of prenatal stress effects	2018-2021	443,800
Astiz, Mariana	International Society for Neurochemistry	Career development grant 2020: Cell-specific developmental programs of the central circadian pacemaker	2021-2022	10,000
Astiz, Mariana	Deutsche Forschungsgemeinschaft	AS547/1-2: Circadian control of prenatal glucocorticoid programming effects	2021-2024	395,550
Borgwardt, Stefan	EU FP7 Grant	PRONIA	2013-1209	893,000
Borgwardt, Stefan	ERA-NET (European Research Area Networks) Grant	SYNSCHIZ	2017-2019	260,730
Borgwardt, Stefan	Gertrud Thalmann-Fonds Grant	LAD-Study‘	2019 – 2022	624,840
Borgwardt, Stefan	Swiss National Science Foundation (SNF)	Sinergia Grant	2019-2022	512,970
Bunzeck, Nico	Deutsche Forschungsgemeinschaft	Sachbeihilfe BU 2670/7-1	2016-2019	307,312
Bunzeck, Nico	Deutsche Forschungsgemeinschaft	Sachbeihilfe BU 2670/7-2	2019-2022	335,900
Bunzeck, Nico	Stiftung Innovation in der Hochschule	„Gesund(heit) lehren und lernen in hybriden Skills-Labs“, Teilprojekt „Gesund lernen“	2021-2024	123,050
Buzug, Thorsten	Bundesministerium für Bildung und Forschung	13GW0069A Samba Pati	2014–2020	5,393,000
Buzug, Thorsten	Bundesministerium für Bildung und Forschung	Lumen II - FKZ 13GW0172A	2016–2018	200,000
Buzug, Thorsten	Bundesministerium für Bildung und Forschung	SKAMPI - FKZ 13GW0071D	2017–2020	456,000
Buzug, Thorsten	Bundesministerium für Bildung und Forschung	FMT - FKZ 13GW0230B	2017–2021	519,400
Buzug, Thorsten	Bundesministerium für Bildung und Forschung	IMAGINE - FKZ 01DL17010A	2017–2021	321,400
Buzug, Thorsten	Bundesministerium für Bildung und Forschung	I-SLEEP - FKZ 13GW0276B	2018–2022	661,000
Buzug, Thorsten	Bundesministerium für Bildung und Forschung	TOMEDEX - FKZ: 13GW0371C	2019–2022	455,600
Buzug, Thorsten	Bundesministerium für Bildung und Forschung	IMT - MDLMA, FKZ: 031L0202B	2020–2022	421,235
Buzug, Thorsten	Deutsche Forschungsgemeinschaft	Bu 1436/7-1 Optimierte Datenakquisition für die Compressed-Sensing-basierte Bildrekonstruktion bei Magnetic Particle Imaging	2015–2018	141,030
Buzug, Thorsten	Deutsche Forschungsgemeinschaft	Bu 1436/9-1 Axial unbeschränkt elongierte, volumenabdeckende Abtasttrajektorie für einen neuartigen 3D-MPI-Scanner mit zylindrischem Messfeld	2016–2020	153,900
Buzug, Thorsten	Deutsche Forschungsgemeinschaft	Bu 1436/10-1 Entwicklung eines neuartigen MPI-Scanners auf Basis einer feldfreien Linie	2015–2018	258,950
Buzug, Thorsten	Deutsche Forschungsgemeinschaft	Bu 1436/11-1 Projektakademie	2016–2018	64,000
Buzug, Thorsten	Deutsche Forschungsgemeinschaft	Bu 1436/16-1 Int. Konferenz zur Additiven…	2020–2021	20,000

Scientist	Funding by	Title	Period	Amount €
Herbst, Sophie	Deutsche Forschungsgemeinschaft	„One clock? Investigating the Neurocognitive Mechanisms of Implicit and Explicit Timing“	2016–2019	150,000
Herrmann, Björn	Deutsche Forschungsgemeinschaft	„Assessment of the dynamic exertion of listening effort: A lifespan perspective“	2021–2024	450,000
Kirchner, Henriette	Deutsche Forschungsgemeinschaft	Emmy Noether Programm KI1887/2-1 and 2-2	2016-2022	2,102,265
Kirchner, Henriette	Deutsche Forschungsgemeinschaft	GRK-1957 “Adiopcyte-Brain-Crosstalk“ Project 8	2016-2023	181,308
Kirchner, Henriette	Deutsche Forschungsgemeinschaft	TR-134 „Ingestive Behavior“ Project Z2“ (with Dr. Meike Kasten, Prof. Ulrike Krämer, Prof. Christine Klein, Prof. Marc Tittgenmeyer)	2018	63,000
Kirchner, Henriette	Deutsche Forschungsgemeinschaft	NGS-Sequencing call KI 1887/3-1	2019	506,607
Kirchner, Henriette	Deutsche Forschungsgemeinschaft	TR/CRC-296 „LocoTact“ Project 14 (with Jens Mittag)	2020-2024	392,300
Kirchner, Henriette	Bundesministerium für Bildung und Forschung – Deutsches Zentrum für Diabetesforschung	DZD-Next Grant	2021-2022	50,000
Koch, Martin	Deutsche Forschungsgemeinschaft	Ko 3389/2-1 Bestimmung der Porengrößenvert. ….	2016-2019	271,000
Krach, Sören	Bundesministerium für Bildung und Forschung	Autismus-Netz	2015-2018	300,000
Krach, Sören	Deutsche Forschungsgemeinschaft	FOR2698 „Tec4Tic“ Project 4	2019-2021	190,000
Krach, Sören	Deutsche Forschungsgemeinschaft	Sachbeihilfe “Schlaf”	2020-2023	240,000
Krämer, Ulrike	Deutsche Forschungsgemeinschaft	Sachbeihilfe KR3691/5-1	2013-2016	193,000
Krämer, Ulrike	Deutsche Forschungsgemeinschaft	TR-134 „Ingestive Behavior“ Project Z2“	2014-2018	550,000
Krämer, Ulrike	Deutsche Forschungsgemeinschaft	FOR2698 „Tec4Tic“ Project 5	2019-2021	380,000
Lange, Tanja	Deutsche Forschungsgemeinschaft	TR/SFB 654 ‚Plasticity & Sleep‘, project #C6	2013-2017	2015-17: 269,000
Lange, Tanja	Bundesministerium für Bildung und Forschung	COVID-19 SH	2019-2020	40,000
Lange, Tanja	Bundesministerium für Bildung und Forschung	Professorinnenprogramm III	2020-2025	2020: 165,000
Lange, Tanja, Riemekasten, Gabriela	Bundesministerium für Bildung und Forschung	MESINFLAME, project #5	2020-2023	2020 50,000
Leipold, Enrico	Deutsche Forschungsgemeinschaft	LE2338/3-1 „Modulation der elektrischen Erregbarkeit sensorischer Neurone durch Funktionsveränderungen von NaV1.9-Kanälen“	2015-2019	337,300
Leipold, Enrico	Deutsche Forschungsgemeinschaft	LE2338/3-2 „Modulation der elektrischen Erregbarkeit sensorischer Neurone durch Funktionsveränderungen von NaV1.9-Kanälen“	2020-2023	286,700
Leipold, Enrico, Carla Nau	Deutsche Forschungsgemeinschaft	CSSL-Teilprojekt: „Excitability of nociceptors and the impact of oxidative stress“	2020-2022	117,000
Lencer, Rebekka	EU-FP7	PRONIA, Grant agreement 602152	2013-2019	40,000
Lencer, Rebekka	Deutsche Forschungsgemeinschaft	Sachbeihilfe LE 1122/7-1	2021-2024	310,000
Lüdtke, Kerstin	Bundesministerium für Bildung und Forschung	Multimodale Plattform zum Schmerzmonitoring in der Physiotherapie (PainMonit) (FKZ 01DS19008B)	2019-2021	124,200
Lüdtke, Kerstin	Erasmus+	Smart learning for gait physiotherapy – a standardized tool for health higher education in Europe (SMARTherapy) (FKZ 2020-1-PL01-KA203-082292)	2020-2022	253,260
Marshall, Lisa	Bundesministerium für Bildung und Forschung	Deutsch-US Kooperation 01GQ1008: „Wirkungen von schwachen elektrischen Strömen auf die Gedächtniskonsolidierung im Schlaf“ (Projects 01 and 04)	2010-2015	289,700
Marshall, Lisa	Deutsche Forschungsgemeinschaft	SFB654TR „Plastizität und Schlaf“ Project A6	2013-2017	297,467
Marshall, Lisa	Deutsche Forschungsgemeinschaft	SPP1665 „Resolving and manipulating neuronal networks in the mammalian brain - from correlative to causal analysis” MA 2053/4-1 and MA 2053/4-2	2013-2020	359,560 301,731
Marshall, Lisa	Deutsche Forschungsgemeinschaft	Aufbau internationaler Kooperationen, MA 2053/6-1: „Beziehung zwischen dem Anstieg der „Slow	2018-2019	8,165,00

Scientist	Funding by	Title	Period	Amount €
		Oscillation" (langsame Oszillation) und Gedächtnis-konsolidierung im Schlaf - die Wirkung von schwach elektrischer Stimulation"		
Marshall, Lisa	Bundesministerium für Bildung und Forschung	Deutsch-US Kooperation 01GQ1706: „Beeinflussung von Hirnrhythmen zur Förderung des Gedächtnisses"	2018-2022	641,610
Marshall, Lisa	Deutsche Forschungsgemeinschaft	MA 2053/8-1: „Der Beitrag des kortikalen Neuron-Glia-Netzwerks zur Gedächtnisbildung im Schlaf"	2020/21-2023/24	269,661
Mittag, Jens	Deutsche Forschungsgemeinschaft	Heisenberg Professur	2014-2017	465,100
Mittag, Jens	Deutsche Forschungsgemeinschaft	Sachbeihilfe Schilddrüsenhormone und zentrale Kontrolle peripherer Funktionen	2014-2017	339,400
Mittag, Jens	Deutsche Forschungsgemeinschaft	SPP Thyroid TransAct Schilddrüsenhormone und Regulation der Körpertemperatur	2015-1208	211,950
Mittag, Jens	Deutsche Forschungsgemeinschaft	GRK Adipocyte Brain Crosstalk Nachbeantragung Einzelprojekt	2015-2018	195,765
Mittag, Jens	Deutsche Forschungsgemeinschaft	SPP Thyroid TransAct Biomarker für die Wirkung von Schilddrüsenhormonen (mit G.Brabant, Lübeck)	2015-2018	328,200
Mittag, Jens	Deutsche Forschungsgemeinschaft	SPP Thyroid TransAct Rolle der Schilddrüsenhormontransporter für kardiovaskuläre Funktionen und Temperatur (mit H.Heuer, Essen)	2015-2018	407,800
Mittag, Jens	Deutsche Forschungsgemeinschaft	GRK1957 „Adiopcyte-Brain-Crosstalk" Project 5	2017-2023	408,000
Mittag, Jens	Deutsche Forschungsgemeinschaft	Heisenberg Professur Verlängerung	2018-2020	249,900
Mittag, Jens	Deutsche Forschungsgemeinschaft	Sachbeihilfe Verlängerung Schilddrüsenhormone und zentrale Kontrolle peripherer Funktionen	2018-2022	540,500
Mittag, Jens	Deutsche Forschungsgemeinschaft	SFB296 „LocoTact" (total 13,36 Mio) Standortsprecher Lübeck und PI P12, P14, Z04	2020-2024	1,150,000
Mittag, Jens	Deutsche Forschungsgemeinschaft	Sachbeihilfe Schilddrüsenhormone und zentralnervöse Regulation der Körpertemperatur	2021-2024	220,550
Müller-Fielitz, Helge	Deutsche Forschungsgemeinschaft	SPP1629 „Thyroid TransAct" MU3743/1-1	2015-2018	330,000
Müller-Fielitz, Helge	Deutsche Forschungsgemeinschaft	SFB296 „LocoTact" Project 2	2020-2024	430,000
Müller-Fielitz, Helge	Deutsche Forschungsgemeinschaft	SFB296 „LocoTact" Z-Project 2	2020-2024	130,000
Müller-Fielitz, Helge Schwaninger, Markus	Deutsche Forschungsgemeinschaft	GRK1957 „Adiopcyte-Brain-Crosstalk" Project 3	2015-2022	300,000
Müller-Pinzler, Laura	Deutsche Forschungsgemeinschaft	Eigene Stelle	2019-2022	333,000
Obleser, Jonas	European Researc Council (ERC)	ERC-CoG-2014-646696 „The listening challenge: how ageing brains adapt"	2016–2021	1,970,000
Obleser, Jonas	Widex Sivantos Audiology Inc.	„Attending and ignoring in normal-hearing and hearing-impaired listeners"	2019–2022	180,000
Obleser, Jonas Hartwigsen, Gesa	Deutsche Forschungsgemeinschaft	„Modulating neural network dynamics of speech comprehension: The role of the angular gyrus"	2017–2021	370,000
Obleser, Jonas Hartwigsen, Gesa	Deutsche Forschungsgemeinschaft	„The impact of domain-general networks on natural language comprehension"	2021–2014	630,000
Obleser, Jonas Wöstmann, Malte	Cochlear Inc.	„Modelling bimodal benefit"	2019–2022	100,000
Oelkrug, Rebecca	Deutsche Forschungsgemeinschaft	Sachbeihilfe „Eigene Stelle"	2020-2024	348.905
Oster, Henrik	Deutsche Forschungsgemeinschaft	OS353-7/1	2017-2021	310,000
Oster, Henrik	Deutsche Forschungsgemeinschaft	GRK1957-2	2017-2023	1,700,000
Oster, Henrik	Volkswagenstiftung, Possehlstiftung etc.	Lichtenberg Endowment	2018	4,000,000
Oster, Henrik	Deutsche Forschungsgemeinschaft	OS353-10/1	2020-2023	440,000
Oster, Henrik	National Health & Medical Research Council, AUS	ClockPark	2020-2023	50,000
Oster, Henrik	Deutsche Forschungsgemeinschaft	SFB296 „LocoTact", Project 13	2020-2024	400,000
Oster, Henrik	Michael J. Fox Foundation	FoxPark I & II	2020-2025	75,000

Scientist	Funding by	Title	Period	Amount €
Paulus, Frieder	Bundesministerium für Bildung und Forschung	Sachbeihilfe	2021-2024	80,000
Raasch, Walter	Pfleger-Stiftung	Mechanistische Untersuchungen zur antiadipösen Wirksamkeit von AT1-Blockern	2013-2018	65,000
Raasch, Walter	Deutsche Forschungsgemeinschaft	GRK1957, Involvement of the angiotensin system in the regulation of adipogenesis, TP11	2014-2023	370,000
Raasch, Walter	Bundesministerium für Bildung und Forschung – DZHK	Gene expression profiling im Hypothalamus und Endothel von zerebraler Gefäße sowie in Adipozyten von ARB behandelten Mäusen sowie schlanken und adipösen Kontrolltieren	2017-2018	30,000
Raasch, Walter	Bundesministerium für Bildung und Forschung – DZHK	Gewichtsentwicklung nach unter AT1-Rezeptorblockade in MAS knock out Mäusen	2017-2018	22,000
Raasch, Walter	Bundesministerium für Bildung und Forschung – DZHK	Treatment of mice with an AT1-receptor blocker reduces hypothalamic lipids which contributes to weight loss and improvement of energy homeostasis	2017-2018	27,000
Raasch, Walter	Bundesministerium für Bildung und Forschung – DZHK	The effects of tissue specific Mas expression on development of obesity and atherosclerosis	2020-2021	55,000
Raasch, Walter	Bundesministerium für Bildung und Forschung – DZHK	The effects of ACE2 expression on vascular function in obesity and atherosclerosis	2021-2023	60,000
Raasch, Walter	Deutsche Forschungsgemeinschaft	GRK 2633/1, Defining and Targeting Autoimmune Pre-Disease, TP B1	2021-2026	290,000
Raasch, Walter	Boehringer Ingelheim Int	Metabolic outcome study after RAAS interventions	since 2009	330,000
Raasch, Walter	Deutsche Bank/ Universität Kiel	Absorption and metabolism of various prodrugs in rats	since 2013	125,000
Rademacher, Lena	Else-Kröner Fresenius Stiftung	Sachbeihilfe "Alkoholismus"	2019-2022	180,000
Rademacher, Lena	Deutsche Forschungsgemeinschaft	Eigene Stelle	2019-2023	200,000
Riemekasten, Gabriela	Deutsche Forschungsgemeinschaft	Sachbeihilfe RI1056/11-1	2015-2018	277,000
Riemekasten, Gabriela	Deutsche Forschungsgemeinschaft	Clinician Scientist School Lübeck, CS04-2019	2019-2020	70,000
Riemekasten, Gabriela	Bundesministerium für Bildung und Forschung	COVID-19 SH	2019-2020	40,000
Riemekasten, Gabriela	Deutsche Forschungsgemeinschaft	Sachbeihilfe RI1056/11-3	2019-2022	2019-20: 100,000
Schmid, Sebastian	Deutsche Forschungsgemeinschaft	TR-SFB 654 Plasticity & Sleep (TPB01)	2005-2017	56,000 (2016-2017)
Schmid, Sebastian	Deutsche Forschungsgemeinschaft	TR-SFB 134: Zirkadiane Uhren und hedonische Appetitkontrolle (B01) (Co PI)	2014-2018	90,000 (2017-2018)
Schmid, Sebastian	Deutsche Forschungsgemeinschaft	TR-SFB 134: Charakterisierung der neuronalen Determinanten von Essverhalten mit maschinellem Lernen (Co PI)	2014-2018	36,000 (2017-2018)
Schmid, Sebastian	Deutsches Zentrum für Diabetesforschung	Zentralnervöse Kontrolle von menschlichem Energiestoffwechsel und Essverhalten (Brain Insulin II)	2016-2021	1,471,000
Schmid, Sebastian	Deutsche Forschungsgemeinschaft	GRK 1957: Neuroendocrine mechanisms controlling cold-induced BAT activity (TP06)	2017-2020	198,000
Schmid, Sebastian	Deutsche Forschungsgemeinschaft	GRK 1957: Effects of subchronic activation of BAT in humans (TP06)	2020-2023	198,000
Schmid, Sebastian	Deutsches Zentrum für Diabetesforschung	Zentralnervöse Kontrolle von menschlichem Energiestoffwechsel und Essverhalten (Brain Insulin III)	2021-2025	2,388,000
Schwaninger, Markus	European Commission	Marie Skłodowska Curie network nEUROinflammation	2013-2017	650,000
Schwaninger, Markus	Deutsche Forschungsgemeinschaft	GRK1957 „Adiopcyte-Brain-Crosstalk" Project 1 and 3	2015-2017	480,000
Schwaninger, Markus	Deutsche Forschungsgemeinschaft	Sachbeihilfe SCHW 416/11-2	2018-2022	354,330
Schwaninger, Markus	Deutsche Forschungsgemeinschaft	Großgeräteinitiative INST 392/135-1	2019-2021	1,728,500
Schwaninger, Markus	European Commission	Marie Skłodowska Curie network ENTRAIN	2019-2023	739,576
Schwaninger, Markus	European Research Council	ERC Synergy grant WATCH GA 810331	2019-2025	2,8750,000
Schwaninger, Markus	Deutsche Forschungsgemeinschaft	Sachbeihilfe SCHW 416/5-3	2020-2023	370,950
Schwaninger, Markus	Deutsche Forschungsgemeinschaft	SFB296 „LocoTact" Project 01	2020-2024	262,00

Scientist	Funding by	Title	Period	Amount €
Schwaninger, Markus	Deutsche Forschungsgemeinschaft	Sachbeihilfe SCHW 416/12-1	2021-2024	253,055
Schwaninger, Markus	Bundesministerium für Bildung und Forschung	DZHK Standortprojekt 81Z0700104	2021-2025	355,400
Silke, Anders	Bundesministerium für Bildung und Forschung	Selbständige Forschungsgruppen in den Neurowissenschaften (01GQ1105)	2011-2020	1 600,000
Spielmann, Malte	Deutsche Forschungsgemeinschaft	SP 1532/3-1, Position effects in the 3D genome as the cause of neurodevelopmental disorders	2019–2022	252,000
Spielmann, Malte	Deutsche Forschungsgemeinschaft	SP 1532/5-1, Single-cell human genetics: effects of structural variants and mutations during embryonic development at single cell resolution	2020-2023	360,000
Spielmann, Malte	Deutsches Zentrum für Luft- und Raumfahrt	01GM1925, Solve-RET	2020-2023	223,000
Szikszay, Tibor	Novartis Pharma / Soyka Förderpreis für Schmerzforschung:	Schmerzmodulation und Migräne	2018-2020	30,000
Voges, Johanna	Studienstiftung	Promotionsstipendium	2017-2020	100,000
Wenzel, Jan	Bundesministerium für Bildung und Forschung – DZHK	81X2700127 "Transcriptional compensation of impaired CO2-vasoreactivity"	2017-2018	10,000
Wenzel, Jan	Bundesministerium für Bildung und Forschung – DZHK	81X2700132 "Microvascular shear stress-mediated NF-κB activation and its role in activity-induced hyperemia"	2019-2020	40,000
Wenzel, Jan	Deutsche Forschungsgemeinschaft	WE6456/1-1 „Shear stress-mediated vascular survival in the brain	2021-2024	330,000
Wenzel, Jan, Schwaninger, Markus	Bundesministerium für Bildung und Forschung – DZHK	81X2700118 "Cerebral blood flow changes after stroke in brain endothelial thrombomodulin knockout mice"	2015-2016	4,000
Wenzel, Jan, Schwaninger, Markus	Deutsche Forschungsgemeinschaft	GRK1957 "Adipocyte-Brain-Crosstalk", Project 1	2017-2023	300,000
Wilms, Britta	Deutsche Forschungsgemeinschaft	GRK 1957: Adipocyte-brain communication after deep brain stimulation (TP04) (Co PI)	2017-2020	99,000
Wilms, Britta	Deutsche Forschungsgemeinschaft	1957: Parkinson`s Disease as a model for mechanisms of body weight regulation (TP04) (Co PI)	2020-2023	99,000
Wöstmann, Malte	Deutsche Forschungsgemeinschaft	„Understanding the temporal dynamics of the auditory attentional filter"	2019–2022	220,000

Scientist	Funding by, Title and Period	Amount €
Hiort, Olaf	EU, COST Association: COST Action DSDnet; A systematic elucidation of differences of sex development, BM1303, 2014-2018 BMBF: Vergleich der klinischen und metabolischen Effekte von Estradiol und Testosteron bei erwachsenen gonadektomierten Patienten mit 46,XY DSD bei kompletter Androgenresistenz - CAIS-Studie, 01KG1003, 2010-2016 Stiftung Kindness for Kids: Neue Versorgungselemente für Besonderheiten der Geschlechtsentwicklung – DSD, 2016-2017 BMBF: Verbesserung der Diagnose und des Managements angeborener seltener Erkrankungen aus dem Bereich der Besonderheiten der Geschlechtsentwicklung DMDSDIndia, 01DQ17004, 2017–2020 EU INEA, CEF: Operational Helpdesk for Endo-ERN to ensure structured and tailored Use of Collaborative Platform and CPMS, 2017-EU-IA-0106, 2018–2019 EU, CHAFEA: European Registries for Rare Endocrine Conditions EuRRECa, 777215, 2018-2022 Kyowa Kirin: Advancing XLH diagnosis - Establishing of a novel NGS tool for XLH diagnosis, 2018-2020 Innovationsfonds: Entwicklung und Evaluation interdisziplinärer Informations- und Schulungskonzepten für Kinder/Jugendliche mit Varianten der Geschlechtsentwicklung Empower-DSD, 01VSF18022, 2019–2022 EU INEA, CEF: Operational Helpdesk for Endo-ERN to optimise structured and tailored Use of CP and CPMS for all members, 2018-EU-IA-0175, 2020-2021 BMG: Standardisierte Zentren - zentrierte Versorgung von DSD über die Lebensspanne DSDCare, 2519FSB503, 2020–2023	2,740,000
Klein, Christine	The International Parkinson and Movement Disorder Society "MDS Gene Tool" (2014-2022) Else Kröner Fresenius Stiftung 2017_A56 (2017-2021) Else Kröner Fresenius Stiftung 2017_HA17 (2017-2021) Else Kröner Fresenius Stiftung 2018_A55 (2018-2021) Else Kröner Fresenius Stiftung 2019_A109 (2020-2023) Parkinson´s Foundation PF-CRA-1893 Research Award (2018-2021) Parkinson`s Foundation 875333 "ClinGen" (2021-2022) Dt. Gesellschaft für Parkinson und Bewegungsstörungen e.V., Nachwuchsförderung J. Prasuhn (2019) Dystonia Medical Research Foundation "Myoclonus Dystonia" (2019-2021) Centogene "LIPAD" (2019-2022) CCXDP "TAF1" (2019-2021) CCXDP "Mechanistic insights into the role of a proposed novel genetic modifier of XDP" (2021 Peter und Traudl Engelhorn Stiftung "Deep characterization of mitochondial DANN to discover penetrance modifiers of monogenic Parkinson´s disease" (2020-2021) Retromer "Aktivierung Retromer" (2021-2023) Michael J Fox Foundation "The global monogentic Parkinson´s disease cohort" (2018-2021) Michael J Fox Foundation "The Edmond J. Safra Fellowship in Movement Disorders 2018" (2018-2020) Michael J Fox Foundation "Novel mitochondrial biomarkers…" (2018-2020) Michael J Fox Foundation GP2 Working Group Lead Christine Klein (2020-2021) Michael J Fox Foundation GP2 Working Group Lead Katja Lohmann (2020-2021) Michael J Fox Foundation GP2 Working Groups 18802 (2020-2021) Michael J Fox Foundation PPMI (2020-2024) Michael J Fox Foundation MSA Biomaterials and clinical data (2020-2022) Bundesministerium für Bildung und Forschung "Dystract" (2016-2019) Bundesministerium für Bildung und Forschung, DLR „B-Fast" (2020-2021) Deutsche Forschungsgemeinschaft Sonderforschungsbereich SFB 936 (2011-2023) Deutsche Forschungsgemeinschaft Forschergruppe FOR2488 (2017-2022) Deutsche Forschungsgemeinschaft Cluster of Excellence (2017-2018) Deutsche Forschungsgemeinschaft WE 5919/2-1 (2020-2024) Deutsche Forschungsgemeinschaft KL1134/18-1 (2020-2023) Deutsche Forschungsgemeinschaft LO1555/16-1 (2020-2023) Deutsche Forschungsgemeinschaft LO1555/12-1 (2021-2024) Deutsche Forschungsgemeinschaft TR1714/4-1 (2021-2024)	19,000,000
Rafecas, Magdalena	Deutsche Forschungsgemeinschaft RA 2830/1 2 (2021-2024) Deutsche Forschungsgemeinschaft RA 2830/1-1. (2018-2020) Deutsche Forschungsgemeinschaft, collaborative subproject RTF VII-/ Exzellenzcluster 2167 (2019-2022) State Goverment of Schleswig-Holstein/EU - Operational Programme EFRE, SAIL. (2020-2022) German Federal Ministry for Environment, Nature Conservation and Nuclear Safety, KI-INSPIRE (2020-2023) ATTRACT Consortium (EU), MERMAID (2019-2020) North-German Supercomputing Alliance, shp00018 (2021-2022) North-German Supercomputing Alliance, shp00016 (2017-2021)	2,001,000

Outreach

Title: Twitter CBBM

Starting Date: 01.08.2020

Organized by: CBBM Steering Committee

Moderator: Jens Mittag

Summary:
CBBM has started on twitter in August 2020 with the handle @cbbm20 to improve its outreach activities and promote its research and other activities. We aim to maintain an average of three tweets per week, using the hashtag #cbbmrocks. After one year, we currently have around 800 followers with a monthly outreach of around 12,000 impressions. In addition to information on recent publications or research grants, we tweet on scientific activities within the CBBM, started a mini movie series “My research in 15 seconds”, and provide information on conferences with CBBM participation.

Doctoral theses in the CBBM

MD theses

2016

Institute for Anatomy

Kröger, Friederike
Wie hoch ist mein Krankheitsrisiko? Analogstudie zur Wahrnehmung genetisch vermittelter Risiken

Institute for Human Genetics

Jahnke, Philipp
Funktionelle Interaktion des "Cohesin-loading" Proteins NIPBL mit chromatin-assoziierten Faktoren

Institute for Pharmacology and Toxicology

Hobrack, Florian
Gedächtnisreaktivierung und Interferenz im Schlaf

Mai, Stefanie
Expression der zentralen Opioid-Rezeptoren in spontan hypertensiven Ratten: Mögliche Beteiligung an der Pathogenese der Hypertonie und Beeinflussbarkeit durch antihypertensive Medikamente

Schuchard, Johanna
Ein Angiotensin(1-7)-abhängiger Mechanismus trägt zur Prävention einer Gewichtszunahme unter AT_1-Rezeptor-Blockade bei Ratten bei

Werth, Stephan
Rolle von Sphingosin-1-phosphat (S1P) in der Biosynthese von Aldosteron im Metabolischen Syndrom

Department of Radiology and Nuclear Medicine

Jafari, Azin
Systematische Analyse der CT-Scanparameter für die Optimierung der Bildgebung bei unterschiedlichen Metallimplantaten

Department of Anaesthesiology

Grusnick, Christiane
Zusammenhang der globalen respiratorischen Compliance und regionaler Verteilung der Ventilation während einer individuellen deszendierenden PEEP-Titration

Jansen, Peter
Lebensqualität nach Nierentransplantation durch Lebend- oder post mortem Spende - Ergebnisse einer Untersuchung von Nierentransplantierten in Lübeck (1994-2011)

König, Katharina
Messung der Propofolkonzentration im Atemgas Ionen Molekül Reaktion-Massenspektrometrie und Sensoren

Marquetand, Christoph
Photoplethysmographische Bestimmung der Hämoglobinkonzentration am Finger

Ottens, Janne
Schmerzbeeinflussung nach Operationen durch Patienteninformation bei der Analgetikagabe

Department of Orthopedics and Surgery

Brüning GT Wolter, Felix
Hydroxylapatit bei traumatischen Knochendefektbrüchen anwendungsbeobachtende Studie

Hintze, Thorben
Funktionelles Ergebnis nach Gelenkinfektionen bei vorderer Kreuzbandchirurgie

Weiche, Sophie
Langfristige Ergebnisse der Versorgung per- und subtrochantärer Femurfrakturen mittel Titannagel - Eine prospektive Knorpelstudie

Department of Gynecology

Barop, Claudia
Stellenwert der gynäkologischen Exfoliativzytologie in der Prävention des Zervixkarzinoms bei schwangeren Patientinnen – eine Vergleichsstudie an der Universitätsfrauenklinik Lübeck

Beckmann, Annika
Entscheidungsparameter für das prä- und perinatale Management von Schwangeren mit früher, schwerer intrauteriner Wachstumsverzögerung

Gertz, Alma
Endometriumkarzinom: Therapieabhängige Überlebensanalyse und Lebensqualität

Indorf, Ineke
Geburtshilfliches und peripartales Outcome bei mütterlicher Adipositas – Eine retrospektive Kohortenanalyse der Universitätsfrauenklinik zu Lübeck der Jahre 2000 bis 2011

Reichert, Kathrin
Zusammenhang von Vitamin D- und Prostaglandin-Metabolismus beim Mammakarzinom

Schaller, Martin
Untersuchung der Auslöser und der Ausprägung von Behandlungsängsten von Frauen und Männern während der reproduktionsmedizinischen Behandlung mit In-vitro-Fertilisation (IVF)

Stepien, Anita
Analyse zur Häufigkeit und pränatalen Erkennbarkeit von Herzfehlbildungen und Softmarkern in Abhängigkeit vom BMI und Alter der Patientinnen

Wagner, Julian
Behandlungsängste bei Brustkrebspatientinnen

Woeste, Alena
Kombination von Calcitriol bzw. Vitamin D-Analoga und Cyclooxygenase-2-Inhibitoren als mögliche Behandlungsoption bei Ovarialkarzinomen

Department of Neurosurgery

Cramer, Hergen
Einfluss von zyklischem Adenosinmonophosphat (cAMP) und Histamin auf Proliferation und Vitalität von Stammzell-ähnlichen Gliomzellen aus Glioblastomen und Gliosarkomen

Department of Neurology

Fritzmannova, Michaela
Lösung eines visuell induzierten interhemisphärischen Konflikts in den motorischen Kortexarealen. Eine EEG-basierte Studie mit transkranieller Magnetstimulation

Hamann, Lin
Überprüfung der S-R Link Hypothese der P3b: Der Oddball-Effekt auf die S1-evozierte P3 wird reduziert durch die erhöhte Aufgabenrelevanz von S2

Koerbs, Alexander
Parkinsonpatienten werden in visuellen Suchaufgaben weniger als gesunde Probanden von ablenkenden Warnreizen beeinflusst

Könemund, Inga
Computerisierte Diagnostik des akuten Neglect-Syndroms und Behandlung mittels halbseitiger Gesichtsfeldabdeckung und optokinetischer Stimulation

Meyen, Jens
Der Vorteil des linken visuellen Feldes bei schneller Reizpräsentation: Abhängig vom verwendeten Reizmaterial?

Otte, Caroline
Auswirkung verschiedener visueller Konditionen auf die Konsolidierung von Sakkadenadaptation

Rein, Marlitt
Präattentive auditive Verarbeitung - Eine neue Untersuchungslogik zur Erfassung neuronaler Korrelate abweichender Informationen

Schmidt, Jennifer
Charakterisierung der EBV-spezifischen humoralen Immunantwort bei Patienten mit Multipler Sklerose

Institute for Neuroradiology

Schregel, Katharina
Magnetresonanz-Elastographie zur objektiven Quantifizierung der zerebralen Biomechanik in einem Maus-Modell der Multiplen Sklerose

Department of Pediatrics

Döhnert, Ulla
Charakteristika von Hormonprofilen bei Adoleszenten und Erwachsenen mit kompletter Androgenresistenz

Domke, Katja
Operationen bei sehr kleinen Frühgeborenen - Einflussfaktoren, Häufigkeit, Mortalität und Outcome im Alter von 2 Jahren

Esselborn, Hannah
Katecholamintherapie sehr kleiner Frühgeborener am ersten Lebenstag. Eine Genomweite Assoziationsstudie

Schmidt, Julia
Erwachsenwerden mit einer chronischen Erkrankung – ein Vergleich von Patienten mit Diabetes mellitus Typ 1, Mukoviszidose und Chronische entzündlicher Darmerkrankung

Schmauck Gomez, Josephleeng
Einschränkungen der Lungenfunktion und fraktioniertes exhaliertes Stickstoffmonoxid (FeNO) bei Kindern und Jugendlichen mit Übergewicht und Adipositas in Deutschland

Schultheiß, Christiane
Einfluss von Medikamenten in der Therapie der Cystischen Fibrose auf die Aktivität von Chitotriosidase in humanen Neutrophilen Granulozyten

Department of Psychiatry and Psychotherapy

Dickmann, Laura
Voraussetzungen für die Implementierung eines Disease- Management-Programms Depression und Integrierter Versorgung in die hausärztliche Praxis – eine Untersuchung zur Praktikabilität existierender Modelle und Entwürfe

Hamm, Anna
GABAerge Neurotransmission bei der Panikstörung – psychophysische und neurochemische Korrelate

Götsch, Evamarie
Veränderung der Skelettmuskelmasse und der kardiorespiratorischen Leistungsfähigkeit bei Depression

Whittaker, Konrad
Einfluss selektiver REM-Schlaf-Deprivation auf Emotionsregulations-Prozesse und deren neurale Korrelate

Department of Medicine I

Asselborn, Niels/
Klinische Charakterisierung positiv und negativ getesteter Notaufnahmepatienten mit Verdacht auf eine STEC O104:H4 Infektion

Blochwitz, Nina
Langzeiteffekt einer Therapie mit Tacrolimus allein oder in Kombination mit Thiopurinen bei steroidrefraktärer Colitis ulcerosa

Föh, Bandik
Carboxypeptidase E moduliert die immunologische Homöostase des Darms und hat protektive Effekte im Rahmen einer experimentellen Colitis

Forck, Nelli
Chronobiologische Aspekte verkürzter Schlafdauer in der neuroendokrinen Regulation von Hunger, Appetit und Nahrungsaufnahme

Hacker, Henrike
Expression des Mannoserezeptors durch Intestinale Epithelzellen bei chronisch entzündlichen Darmerkrankungen

Heitmann, Jana
An Evaluation of Poly(ADP-Ribose)Polymerase Inhibitor Efficacy in Head and Neck Cancer Cell Lines

Rohfleisch, Anna
Praktikabilität der Bestimmung von Ciclosporin A aus Trockenblut im ambulanten Bereich

Schulz, Julia
Retrospektive Analyse zu Epidemiologie, Behandlung und Prognosefaktoren von Lebermetastasen neuroendokriner Tumore - Untersuchung anhand eines Patientenkollektivs aus der Klinik für Chirurgie aus dem Zeitraum 1988-2013

Department of Rheumatology

Wolters, Steffen
Phänotypische Veränderung von NK-Rezeptoren und IL-15 Beeinflussung von T-Zellen bei der Granulomatose mit Polyangiitis (GPA, Wegener)

2017

Institute for Anatomy

Dethlefsen, Johanna
Lymphangiogenese und Blutgefäßveränderungen unter hypoxischen und entzündlichen Bedingungen in der murinen Lunge

Schmidt, Friederike
Der Einfluss des microfibrillar-associated protein 4 (MFAP4) auf die Entwicklung sekundär lymphatischen Gewebes während der Ontogenese und im adulten Organismus

Institute for Nutritional Medicine

Ebbert, Karen
Regulation der epithelialen Expression des Komplementfaktors C3 im Intestinum – Relevanz für die Pathophysiologie von Chronisch Entzündlichen Darmerkrankungen

Institute for Neurogenetics

Asmuß, Luisa-Catharina
Die Wahrnehmung einer bewussten Handlungsentscheidung: Einflussfaktoren auf die Willenswahrnehmung bei Kindern und Jugendlichen mit Gilles de la Tourette Syndrom

Baasch, Anna-Lena
Identifikation von *SCN2A*- und *C12orf35*-Mutationen bei Epilepsie und Entwicklungsstörung mittels Exom-Sequenzierung

Borngräber, Friederike
Identifizierung genetischer Ursachen der Musikerdystonie

Hermanns, Johanna
Dranggefühle bei Zwangspatienten in Bezug zu auftretenden Zwangsgedanken und deren Unterdrückung

Löchte, Tobias
Untersuchungen zur Identifizierung genetischer Ursachen des Parkinson-Syndroms

Pierstorff, Martha
Molekulare Mechanismen der Neurodegeneration bei Morbus Parkinson

Kahl, Ursula
Tic-Phänomenologie und Bewusstsein über Tics bei Erwachsenen mit Autismus

Institute for Pharmacology and Toxicology

Heitmann, Birte
Die Wirkung von Oxytocin auf die Regulation der Nahrungsaufnahme und des Energiemetabolismus des Menschen

Mildner, Martin
Der Einfluss von Angiotensin II auf die Glukagonsekretion in-vivo und in-vitro/& Ex.

Institute for Physiology

Reher, Dominik
Entwicklung von Blutdruck und Connexinexpression nach zeitlich determinierter Ausschaltung von Connexin40 in der adulten Maus

Section for Psychoneurology

Schöning, Sigrid
Effekte anodaler Gleichstromstimulation des motorischen Kortex auf den Energiemetabolismus des menschlichen Gehirns und des Gesamtorganismus

Department of Radiology and Nuclear Medicine

Oechtering, Thekla
4D Fluss- MRT zur Analyse der thorakalen Aortenflusscharakteristika bei Patienten mit Sinusprothese

Pfeiffer, Julia
Strahlendosis und Bildqualität einer peripheren computertomographischen Angiographie im Vergleich zwischen einem BMI-angepassten Protokoll mit 80/100 kV und dem ehemaligen Standardprotokoll mit 120 kV

Wirth, Liane
Experimentelle Radiofrequenzablation (RFA): Evaluierung der Gewebemodulation mit Kochsalz, Essigsäure, Alkohol und Lipiodol® an einem extrakorporal perfundierten ex vivo Rinderlebermodell

Department of Anaesthesiology

Guder, Janina
Der Einfluss von Vasopressin auf den postoperativen Verlauf kardiochirurgischer Patienten

Hübner, Mirko
Auslöser, Trigger, Dauer und Häufigkeit verschiedener Schmerzarten im Kindes- und Jugendalter – eine große Kohortenstudie an Lübecker Schulkindern

Krüger, Sandra
Risikoevaluation mittels Kardioimpedanz, Bioimpedanz und Trail Making Test bei geriatrischen Patienten vor kleinen chirurgischen Eingriffen

Michelsen, Ina
Pulsoximetrische Patientenüberwachung mit einem Gehörgangssensor in der Chirurgie

Nowak, Yvonne
Der Einfluss der Beatmungsdauer auf postoperative Nierenfunktionsstörungen bei herzchirurgischen Patienten

Department of Gynecology

Bauer, Julia
Mammakarzinom: Auswirkung der Diagnose und Therapie auf das Endokrinum, die Sexualität und den Kinderwunsch junger Mütter

Bohlig, Magdalena
Peripartale Hysterektomie – Ursachen, Geburtsverlauf, Outcome und Analyse der Fälle im Zeitraum 2000-2014 an der Klinik für Frauenheilkunde und Geburtshilfe der Universität zu Lübeck

Lohmann, Inga
Hämodynamische Charakteristika zweier biologischer Aortenklappen und einer Kontrollgruppe in Ruhe, bei Belastung und in der Erholungsphase im Vergleich

Schmidt, Natalie
Evaluation definierter kolposkopischer Parameter zur Früherkennung des Zervixkarzinoms und seiner Vorläuferläsionen – eine Vergleichsstudie der Universitätsfrauenklinik zu Lübeck 2009-2013

Department of Neurology

Baur, Nikolas
Effekte der schwierigen Antwortauswahl auf die Stimulus-abhängige P3 und auf Antwort-abhängige negative Potentiale im Elektroenzephalogramm

Beckmann, Imke
Die Unabdingbarkeit des rostro-frontalen Cortex für hochkomplexe kognitive Kontrollfunktionen - Eine MRT-basierte TMS-Studie

Bolstorff, Inga
Intertemporal Choice und Sprachverständnis bei Morbus Parkinson und dem Restless Legs Syndrom

Breitkopf, Katharina
Mangelnde Fehlersensitivität als Mechanismus bei der konstitutionellen Dyslexie – eine elektrophysiologische Studie

Dienel, Cora
Neuronale Korrelate emotionaler Wörter – ein neuartiger Ansatz mit ereigniskorrelierten Hirnpotentialen

Herold, Kirsten
Charakterisierung von intermediären Phänotypen für Schizophrenie und bipolare Störungen: eine Untersuchung zu den Augenbewegungen

Jandl, Nico
Virtuelle räumliche Navigation bei Patienten mit chronischer bilateraler Vestibulopathie – eine fMRT Studie

Naumann, Thomas
Differentielle Wirkung von 4-Aminopyridin auf die verschiedenen Komponenten des Downbeat-Nystagmus-Syndroms

Scheef, Björn
Diagnostische und prognostische Evaluation der transitorischen ischämischen Attacke nach der neuen gewebebasierten Definition

Skeries, Valentina
Ein neuartiger Ansatz zur Untersuchung der aufmerksamkeitsunabhängigen auditiven Verarbeitung beim Menschen

Wendt, Tina
Quantifizierung von Tau, Phospho- Tau und ß-Amyloidfragmenten zur Diagnostik von Demenzerkrankungen

Werner, Lucas
Evozierte Potentiale im EEG: Der Einfluss der Vorhersage auf die P3-Potentialkomponente, untersucht in einem Glücksspielexperiment

Meyer, Jasmin
Objektattribute beim Sprachverstehen: Untersuchung mit ereigniskorrelierten Hirnpotentialen

Department of Neurosurgery

Dorenberg, Anna
In vitro Effekt ionisierender Strahlung auf die Proliferation und Vitalität von Stammzell-ähnlichen Gliomzellen in Abhängigkeit von der adjuvanten Behandlung mit Temozolomid

Herzog, Julia
Operative Versorgung des idiopathischen Normaldruckhydrozephalus mit besonderer Berücksichtigung des infratentoriellen intrazisternalen Obstruktionshydrozephalus

Tidow, Ulrike
Erfassung, Analyse und Darstellung von Risikofaktoren für das Auftreten von Infektionen nach Implantation einer Kranioplastik zur Defektdeckung nach dekompressiver Kraniektomie

Zech, Lotta
Morbiditäts- und Mortalitätskonferenz in der Neurochirurgie der Universitätsklinik Lübeck: Analyse der Datenakquise und –qualität sowie Auswertung der erfassten Komplikationen und Risikofaktoren

Department of Orthopedics and Surgery

Arndt, Finja
Chronische Schmerzen bei Patienten mit einem Ehlers-Danlos-Syndrom - eine klinische Analyse von 131 Patienten -

Dehoust, Julius
Die posttraumatische Syringomyelie. Eine seltene Komplikation bei traumatischer Querschnittlähmung

Kudernatsch, Nils
Einfluss der kniegelenknahen passageren Hemiepiphyseodese mit der “eight-Plate™” auf die frontale Kniegelenkebene

Department of Pediatrics

Degner, Mareike
Potenzial des Einsatzes modularer Patientenschulungen zur gezielten Unterstützung von Kindern und Jugendlichen mit seltenen chronischen Erkrankungen und deren Familien

Fasel, Laura
Ein Vergleich klinischer und genetischer Risikofaktoren für die Entwicklung einer intraventrikulären Hämorrhagie bei Frühgeborenen

Köhler, Jacqueline
Vervollständigung und Auswertung einer Datenbank zu seltenen genetisch bedingten Besonderheiten der Geschlechtsentwicklung (DSD)

Petersen, Lynn
Auswirkungen genetischer Risikofaktoren für Erkrankungen Erwachsener bei Frühgeborenen

Prüßmann, Marie
Die Wirksamkeit der Lebenskompetenzprogramme „Fit und Stark fürs Leben“ und „Erwachsen Werden“ im Hinblick auf das Rauchverhalten von Schülern der 5.und 6. Klasse einer Hochrisikogruppe

Department of Psychiatry and Psychotherapy

Cieplinska-Legge, Ewa
Delirdiagnostik in der akuten Phase des Schlaganfalls. Erhebung der Delirinzidenz unter Einsatz eines figuralen Delirscreeninginstruments

Eisenbeis, Stefan
Dialektisch Behaviorale Therapie für Adoleszente (DBT-A) - Therapieverlauf, Prädiktoren und Komorbidität bei Jugendlichen mit Symptomen einer Borderline-Persönlichkeitsstörung

Gernhardt, Christian
Risikofaktoren des postoperativen Deliriums in der Herzchirurgie. Eine prospektive Longitudinalstudie an 241 Patienten

Haßfurther, Jan
Oraler Glukosetoleranztest und gestufter hyperinsulinämischer Glukose-Clamp bei Patienten mit depressiver Störung

Manneck, Sebastian
Einfluss der repetitiven transkraniellen Stimulation auf die humorale Stressantwort sowie die neuronale Hirnaktivierung durch essensbezogene Bilder - Eine fMRI-Studie

Meyen, Ulrich
Der Einfluss von repetitiver transkranieller Magnetstimulation (rTMS) auf die kognitiv-exekutiven Funktionen Alkoholabhängiger und deren Konsolidierung im Schlaf

Rezmer, Magda
Intranasal appliziertes Insulin reduziert die Nahrungsaufnahme durch Steigerung des zerebralen Energieniveaus bei männlichen Probanden

Schwarz, Marianka
Einfluss der repetitiven transkraniellen Gleichstromstimulation auf die Nahrungsaufnahme und den zerebralen Energiemetabolismus

Stoll, Anne
Traumatisierung und Körperzusammensetzung. Eine Untersuchung zur Körperfettanalyse mittels Bioimpedanzanalyse an stationär behandelten Patienten mit psychischen Erkrankungen

Department of Medicine I

Finkl, Elisabeth
Der Einfluss von Bildungshintergrund und Sprachkenntnis auf das Krankheitswissen bei Typ 2 Diabetikern in Deutschland -Ein Vergleich zwischen Migranten und Nicht-Migranten

Pfeil, Ines
Optimierung und Evaluation eines neuen Immunoblots im Hinblick auf die Antigenauswahl und -konzentration unter Verwendung vorklassifizierter Seren zur Diagnose einer EBV-Infektion

Rädel, Christin
Der Einfluss von Körpergewicht und Blutglukose auf Vertrauen und Risikoverhalten

Seemann, Julia
Zirkadiane Rhythmen der Adipozytenfunktion

Stenzel geb. Hesse, Inga/erste Version der Arbeit wurde zurückgezogen/aus der Sitzung 18.9.2017
Isolation gerinnungsaktiver Mikropartikel aus malignen Ergüssen mithilfe Annexin-V-beschichteter *„Magnetic Microbeads“*

Tonner, Philipp
Endoskopische und histopathologische Diagnostik des Barrettösophagus am Universitätsklinikum Schleswig-Holstein Campus Lübeck 2001-2010

Wagner, Christin
Der Einfluss von Körpergewicht und Blutglukose auf ökonomisches Entscheidungsverhalten im Ultimatum-Spiel

Wollbrink, Thomas
Offene zweiarmige, randomisierte, multizentrische Studie zur präemptiven intravenösen Therapie von Zytomegalievirus - Infektionen ohne versus mit zusätzlicher oraler Ganciclovir - Prophylaxe bei Nierentransplantierten unter Monitoring der CMV Viruslast

Zeeh, Franziska
Die Rolle des Proteinase-aktivierten Rezeptors 2 in der Transforming Growth Factor-β-vermittelten Signaltransduktion

2018

Institute for Nutritional Medicine

Illner, Julia
Einfluss von Uhrengendefizienzen auf die Entstehung einer nicht-alkoholischen Steatohepatitis unter Hochfettdiät

Michaels, Maike
Autoantikörper gegen die pankreatischen Glykoproteine GP2 und CUZD1 bei chronisch entzündlichen Darmerkrankungen- Eine Phänotypen-Analyse –

Institute for Neurobiology

Schöpfer, Pia
Untersuchungen zum Einfluss einer transienten Glukokortikoid-Suppression auf die endokrine Tagesrhythmik beim Menschen

Institute for Neurogenetics

Kolk, Katharina
Die Autoregulation der PINK1- und Parkin-gesteuerten Mitophagie in humanen Fibroblasten und aus induzierten pluripotenten Stammzellen (iPS) generierten Neuronen

Pauly, Martje
Einfluss der Kulturmethode auf die neurale Induktion von induzierten pluripotenten Stammzellen

Prasuhn, Jannik
Genomeditierte Neuroblastomzellen als dopaminerges Krankheitsmodell neurodegenerativer Erkrankungen
Bioenergetische Störungen der Mitochondrienfunktion als möglicher pathogenetischer Faktor bei hereditärem Parkinsonismus

Institute for Pharmacology and Toxicology

Giehl, Esther
Cardioprotective Effect of Polycystin 2 Revealed in Isoproterenol-Induced Cardiac Hypertrophy

Hölscher, Charlotte
Untersuchungen zur Pharmakologie spannungsabhängiger Natriumkanäle aus Skelett- und Herzmuskel

Korf, Eva
Modifikation der Slow wave-Aktivität nach Unterdrückung des visuellen Inputs

Rapp, Christina
Intranasal appliziertes Oxytocin verbessert akut die Betazellfunktion und Glucosetoleranz gesunder Männer

Department of Anaesthesiology

John, Mira
Beeinflussung des postoperativen Delirs durch Orientierungsinterventionen bei kardiochirurgischen Patienten auf der Intensivstation: Eine randomisierte kontrollierte Studie

Käbler, Jan-Hendrik
Risikostratifizierung bei herzchirurgischen Patienten mittels präoperativer Bestimmung des hochsensitiven Troponin T

Schmidt, Christian
Der Einfluss von Änderungen des systemischen Sauerstoffangebots auf das cerebrale Oxymetriesignal und den Zusammenhang zur gemischtvenösen Sättigung unter Verwendung verschiedener Cerebraloxymeter

Department of Gynecology

Schulze geb. Delzer, Simone
Einfluss der antibiotischen Therapie auf die Frühgeburtenrate bei einer durch Enterobakterien bedingten Kolpitis

Golakov, Manja
Vergleich zweier Kryokonservierungsmethoden von 2 PN-Eizellen: eine retrospektive Datenanalyse

Kostara, Athina
Evaluierung von TFF3 (Trefoil Faktor 3) beim Ovarialkarzinom – eine retrospektive Analyse von 91 Fällen

Kukuschkin, Viktoria
Vergleich von TLH mit und ohne Verschluss des Peritoneums

Zinn, Wolfgang
Untersuchung zum Stellenwert der HIPEC Chemotherapie bei gynäkologischen Malignomen mit Peritonealkarzinose unter besonderer Berücksichtigung von peri - und postoperativen Komplikationen

Department of Neurology

Engelke, Christin
Die resting state-Konnektivität der basolateralen Amygdala in Abhängigkeit von Testosteron und Aggression

Grauhan, Nils
Über die Verbindung zwischen Reiz und Reaktion im EEG: Eine Analyse der Abhängigkeit der P3 von Parametern der Handlungsanforderung

Haake, Mechthild
Zeit für die nächste Bewegung: ist das Bereitschaftspotential abhängig von zeitlichen Rahmenbedingungen oder beinhaltet es gar innere Taktgebung?
Eine EEG-gestützte Studie

Heeren, Janna
Diffusion Tensor Imaging und neuropsychologische Testungen zur Diagnostik des idiopathischen Parkinson-Syndroms während der prämotorischen Phase

Kirchhoff, Jan-Birger
Multisensorische Determinanten der Standkontrolle bei cerebellären Ataxien mit Downbeat-Nystagmus

Knauth, Martin
Einfluss des intrakraniellen Drucks auf die neurovaskuläre Kopplung im humanen motorischen Kortex: Studien mit funktioneller Nahinfrarotspektroskopie

Metzner, Marvin
P3b im Spannungsfeld zwischen Reiz und Reaktion - Brückenmetapher als Erklärungsmodell

Rautenberg, Catharina
Neuronale Korrelate der Sprachproduktion bei Patienten mit M. Parkinson - Eine elektroenzephalographische Studie

Simmer, Julia
Grenzen der visuellen Aufmerksamkeit von Patienten mit psychotischen Erkrankungen

Wolff, Simone
Epidemiologie und klinische Charakteristik Parkinson-assoziierter Schlafstörungen am Beispiel des Restless-Legs-Syndroms und der REM-Schlaf-Verhaltensstörung in einer Lübecker Bevölkerungskohorte

Wojak, Jann
Untersuchungen zum beidseitigen Gleichgewichtsausfall: Über den Einfluss prädiktiver Mechanismen auf den vestibulookulären Reflex und die Kontexabhängigkeit gravizeptiver, vestibulärer und propriozeptiver Einflüsse auf Standschwankungen

Department of Neurosurgery

Abusamha, Abdulkareem
Kritische Untersuchung der perkutanen Dilatationstracheotomie in einem gemischten neurochirurgischen Patientenkollektiv – eine retrospektive Studie an 291 Patienten

Limpert, Anna
Effekte von Chloroquin auf stammzellähnliche Gliomzellen aus Glioblastomen und Gliosarkomen in An- und Abwesenheit von Temozolomid

Wach, Johannes
Intraoperatives MRT in der Gehirntumorchirurgie: Resektionsradikalität und histologische Ergebnisse in der Therapie des Glioblastoms und die Sicherheit eines intraoperativen MRTs in dualer Nutzung

Simon, Martin
Charakterisierung intracranieller Tumoren durch viskoelastische Parameter mittels Magnetresonanz-Elastographie (MRE)

Department of Orthopedics and Surgery

Fiebag, Kai
Klinische Besonderheiten des Harnblasenkarzinoms bei querschnittgelähmten Menschen:
Eine Analyse der Hamburger Daten 04/1998 - 03/2017

Northmann, Markus
Ursachen, Lebenserwartung und Todesursachen bei Menschen mit erworbener Querschnittlähmung: Eine qualitative und quantitative Analyse von 469 Todesfällen

Reimers, Nils
Morphologische Untersuchungen des menschlichen Femurs mittels dreidimensionaler Knochenmodelle

Department of Pediatrics

Brunn, Iris
Das Phänomen der Kognitiven Fusion und die Validierung des Thought- Fusion- Instruments in deutscher Übersetzung

Fortmann, Mats
Empirische antimykotische Therapie bei sehr kleinen Frühgeborenen mit einem Geburtsgewicht von unter 1500g – Risikoprofil und Outcomes

Gminder, Angelika
Gewichtsverlauf, gesundheitsbezogene Lebensqualität sowie Gesundheitsverhalten 6 Jahre nach Teilnahme an einem ambulanten Adipositastherapieprogramm für Kinder und Jugendliche

Heidemann, Mathias
Staphylococcus epidermidis-Infektionen bei Neugeborenen:
Einfluss von Wirtsfaktoren, Erregermerkmalen und prophylaktischer Teicoplanintherapie

Henderson, Julian
Die Problematik sozialmedizinischer Begutachtung bei depressiven Erkrankungen durch Fachärzte für Psychiatrie und Psychotherapie sowie Allgemeinmediziner – Reliabilität im Kontext der sozialen Sicherungssysteme

Mallmann, Hannah
Vitamin D Status und seine Auswirkungen auf Knochenstoffwechselparameter bei Kindern und Jugendlichen - eine retrospektive Studie an der Universitätskinderklinik Lübeck

Mittermayer-Vasallo, Kirstin
Übergewicht und Adipositas bei Einschülern im Bundesland Schleswig-Holstein zum Schuljahresbeginn 2014/15

Mönig, Isabel
Funktionelle Analysen definierter Mutationen im Transkriptionsfaktor Steroidogenic Factor-1

Sell, Kerstin
Populationsbezogene Untersuchung der Partizipation und Funktionsfähigkeit extrem frühgeborener Kinder in der Adoleszenz

Department of Psychiatry and Psychotherapy

Cabanis, Maurice/kumulativ
Gesellschaftliche Implikationen kognitiver Neurowissenschaften

Gamon, Carla
Einfluss der Rekrutierungsquelle auf Stichprobeneigenschaften und Symptomverlauf im Rahmen einer randomisierten Studie einer onlinebasierten Selbsthilfe-Intervention für depressiv Erkrankte

Voigt, Karen
Die Auswirkungen intravenöser Alkoholgabe auf Schlaf und Hormonsekretion bei gesunden männlichen Probanden. Ergebnisse aus der SAM-Studie.

Department of Radiology and Nuclear Medicine

Beldoch, Michael
4D Fluss MRT zur Analyse der aortalen Wandschubspannung auf Basis verschiedener Software-Lösungen

Lücke, Anna
Histologie korrelierte CAD-gestützte Konturanalyse von peripheren Lungenrundherden in der Multidetektor-Computertomographie

Department of Medicine I

Aulinger-Stöcker, Karola
Autoantikörper gegen exokrines Pankreas bei Morbus Crohn: Nachweis unter Verwendung der rekombinanten Zielantigene CUZD1 und GP2

Diehl, Alexandra
Epidemiologische Untersuchung zur Häufigkeit eines Vitamin D-Mangels in Norddeutschland

Eikenbusch, Katrin
Entwicklung eines neuen duplexsonographischen Index zur Differenzierung von zellularer und vaskularer Rejektion nach Nierentransplantation

Gädeken, Thomas
Eine Analyse der Rolle des G-Protein-gekoppelten Rezeptors Protease-Activated Receptor 2 bei der TGF-β1-abhängigen Smad Phosphorylierung, Transkriptionsaktivierung und Proliferationsinhibition im Zellmodell des duktalen Pankreasadenokarzinoms

Gamperl, Hans
Hemmung der Mikrovesikel-induzierten Tumorzellmigration durch das niedermolekulare Heparin Tinzaparin

Gerke, Sara
Untersuchungen zu Regulationsmechanismen endothelialer
Vorläuferzellen und deren Implikation auf Tumorangiogenese und –wachstum

Lehne, Walter
Analyse zur Langzeitfunktion getunnelter Dialysekatheter in Abhängigkeit vom Design der Katheterspitze

Pohlenz, Inga
Die Bedeutung der Renal Tubulären Azidose Typ IV in der Entstehung einer Hyperkaliämie

Posselt, Jana
Stressanalyse der Belastungssituation niereninsuffizienter Patienten ein Ansatz mit physiologischen, biochemischen und psychologischen Stressparametern bei Hämodialyse- und nierentransplantierten Patienten

Rosien, Benjamin
Wirkung klinisch eingesetzter Tyrosinkinaseinhibitoren auf die TGF-β-induzierte Tumorprogression des duktalen Pankreaskarzinoms

Woitalla, Julia
Verlaufsbestimmende Determinanten bei der akuten Pankreatitis – Eine retrospektive Analyse von 391 konsekutiven Fällen

Department of Rheumatology

Corty, Merle
Effekte des antiinflammatorisch wirksamen Antibiotikums Minocyclin auf die deklarative und prozedurale Gedächtniskonsolidierung unter Schlafdeprivation bei gesunden männlichen Probanden

2019

Institute for Nutritional Medicine

Degenhardt, Wiebke
Der Einfluss mitochondrialer Genpolymorphismen auf intestinale Entzündungsprozesse

Institute for Human Genetics

Ibing, Eva
Funktionelle Analysen des Transkriptionsfaktors TRPS1 mit Bezug auf das Tricho-Rhino-Phalangeale-Syndrom und die Pathogenese von Mammakarzinomen

Kötter, Lucas
Charakterisierung der Interaktion zwischen THAP1 und HCFC1

Moser, Ana
Einfluss von KCNJ5 und KCNK1 Mutationen auf den klinischen und histologischen Phänotyp Aldosteron produzierenden Adenomen

Institute for Neurogenetics

Brinkmann, Siegmar
Eine Untersuchung zum menschlichen Essverhalten im Zusammenhang mit der Anthropometrie

Engelbart, geb. Dittmann, Iris
Stimulus-Reaktion Kopplung beim Gilles de la Tourette Syndrom

Schmidt, Thomas
Genetische und funktionelle Analyse X-chromosomaler neurodegenerativer Erkrankungen

Institute for Pharmacology and Toxicology

Gessert, Marie
Hippocampal corticosterone impairs memory consolidation during sleep but improves consolidation in the wake state
Running title: hippocampal memory consolidation and corticosterone

Gustaityte, Viktorija
Einfluss der AT1-Blocker auf die CD-Aufnahme und auf die diätinduzierte Adipositas nach chronischem Stress

Ventzke, Kathrin
Die zirkadiane Regulation des Orexin-Systems

Institute for Physiology

Speiser, Jakob
Charakterisierung endothelabhängiger arteriolärer Dilatationen in vivo und des Blutdrucks in der Maus nach Deletion des muscarinergen Rezeptors M3 oder des G-Proteins Gq/11 im Endothel

Section Psychoneurobiology

Hyzy, Franziska
Auswirkungen von Slow Wave Sleep-Suppression auf den menschlichen Glukosemetabolismus

Department of Radiology and Nuclear Medicine

Duschka, Robert
Digitale Tomosynthese in der muskuloskelettalen Bildgebung – Einflussnahme verschiedener Akquisitionsparameter auf die Bildqualität und Quantifizierung ossärer Läsionen unter optimierten Aufnahmeparametern im Vergleich zum konventionellen Röntgen und zur CT

Sieren, Malte
Die Fluss-sensitive 4D MRT im pulmonalen Kreislauf: Technische und klinische Validierung an einem MR-System mit digitaler Breitbandtechnologie – Vergleich zwischen Patienten mit pulmonalem Hypertonus und gesunden Probanden

Wegner, Franz
Evaluation des Erwärmungsverhaltens von Stents in Magnetic Particle Imaging

Department of Anaesthesiology

Kükenshöner, Sarah
Patientenmerkmale und Behandlungserfolg chronischer Schmerzpatienten in unterschiedlichen Behandlungssettings - Eine Auswertung auf Basis des KEDOQ-Schmerz-Dokumentationsregisters

Sultansei, Laila
Postoperative Schmerzchronifizierung– Risikofaktoren für Patienten ohne präoperative Schmerzen

Vahldieck, Carl
Hohe Schmerzerwartung und Beeinträchtigung durch vorbestehende Schmerzen sind Risikofaktoren für hohe postoperative Schmerzen - Ergebnisse einer Untersuchung mit dem Lübecker „Schmerzrisiko-Fragebogen"

Department of Gynecology

Amarteifio, Kerstin
Retrospektive monozentrische Datenanalyse zur Häufigkeitsverteilung HER2/neu positiver Mammakarzinome und therapeutische Implikationen

Chafii-Badavi, Ramin
Der Einfluss der Dosis der adjuvanten vaginalen Brachytherapie beim Endometriumkarzinom auf die strahlenbedingten Nebenwirkungen

Fernandes, Theresa
Fetale Echokardiographie im klinischen Einsatz – Validität und Reproduzierbarkeit eines semiautomatischen volumetrischen Ansatzes

Friemert, Luisa
HPV- Infektionen bei Patientinnen mit Vulvakarzinom und dessen Vorstufen

Welge, geb. Jungmann, Vivien
Theorie in den Leitlinien und Handlungsablauf in der Praxis: Studie zum Vorgehen bei drohender Frühgeburt am Beispiel eines geburtshilflichen Maximalversorgers, der Frauenklinik des Johannes Wesling Klinikums Minden

Department of Pediatrics

Brüning genannt Wolter, geb. Hohmann Ebbers, Michelle
Einsatz von komplementärer und alternativer Medizin bei Kindern und Jugendlichen mit Asthma bronchiale

Knollmann, Carla
Der Einfluss des Besuchs einer Kindertagesstätte (Kita) auf den Entwicklungsstand von Vorschulkindern in Schleswig-Holstein vor dem Hintergrund unterschiedlicher sozialer Determinanten

Kunert, Marlene
Die embryonale Entwicklung des äußeren männlichen Genitals: Identifizierung und funktionelle Analyse von Koregulatoren des Androgenrezeptors

Nissen, Gyde
Einflussfaktoren der ex vivo-Migration neutrophiler Granulozyten

Department of Neurology

Bruns, Eike
Widerspiegelung von Lernen im Schlaf-EEG im Zusammenhang mit implizitem und explizitem Wissen

Eggers, Larissa
Qualitätsindikatoren und Prognosefaktoren in der Frührehabilitation nach Schlaganfall (Phase B)

Keppeler, Magdalena
Kognitive Prozesse in komplexen Situationen Über den Einfluss einer zweiten Stimulus-Dimension mit wechselnder Relevanz auf die P3b

Knauß, Julia
Einfluss der Schwindelanamnese auf die Bewertung des klinischen Kopf-Impuls-Tests bei Erkrankungen mit dem Leitsymptom Schwindel

Landmesser, Johannes
Einfluss der Händigkeit auf den Vorteil des linken visuellen Halbfeldes bei schneller visueller Reizpräsentation

Langner, Bettina
Symptomatische intrazerebrale Blutung nach einer systemischen intravenösen Thrombolyse beim ischämischen Hirninfarkt
Validierung des SEDAN-Scores in einer monozentrischen Studie

Priester, Lea
Ist die N2-Komponente sensitiv für automatische, distraktorgesteuerte Abrufprozesse?

Rodeck, Jens
Lernen im Schlaf? Die Änderung einer visuo-motorischen Fähigkeit zwischen dem Ende des Übens und dem erneuten Ausführen nach einer Zeit des Nichtstuns

Schumacher, Sabrina
Thrombusstrukturveränderungen unter dem Einfluss von Aspirin® in der Prämedikation führen in-vitro zu einer erhöhten Thrombolyserate unabhängig der (Sono-) Thrombolysestrategie

Seitz, Annemarie
Wie entsteht explizites Wissen? Zwei unterschiedliche Wege zum Erlangen von verbalisierbarem Wissen und die Rolle der assoziierten ereigniskorrelierten Potentiale

Department of Neurosurgery

Bähr, Laura
Stammzellähnliche Tumorzellen aus malignen Gliomen: phänotypische Unterschiede und Sensitivität gegenüber Temozolomid (TMZ)

Briesenick, Luisa
Bedeutung und Transduktion des cAMP- (zyklisches Adenosinmonophosphat) Signals in stamm-zellähnlichen Gliomzellen

Lichthardt, Sven
Epigenetische Regulation der Sox2- (sex determining region Y (SRY)- box 2) Expression in stamm-zellähnlichen Gliomzellen

Loy, Mira
Charakterisierung stammzellähnlicher Zellen aus humanen malignen Gliomen

Department of Orthopedics and Surgery

Kuhlwilm, Valentin
Multidirektional-winkelstabile Doppelplattenosteosynthese zur Behandlung komplexer distaler Humerusfrakturen Durchführung einer klinischen Studie mit Komplikationsanalyse

Department of Rheumatology

Schnelle, Kerstin
Der Einfluss von Hydrocortison auf die schlafassoziierte Konsolidierung deklarativer und prozeduraler Gedächtnisinhalte

Department of Psychiatry and Psychotherapy

Lehnert, Ina
Das Arbeitsgedächtnis bei Patienten mit Typ 2 Diabetes mellitus im Vergleich zu Normalprobanden - fMRT-Studie -

Kranich, Annika
Umsetzbarkeit ambulanter kombinierter Gruppen- und Einzelschematherapie bei Patienten mit schwerer Borderline-Persönlichkeitsstörung in Deutschland

Department of Medicine I

Brünjes, Kerstin
Vena-Cava-Inferior-Durchmesser als Prädiktor für die Gesamtmortalität bei Patienten mit Akut Dekompensierter Herzinsuffizienz: eine Retrospektive Kohortenstudie

Byner, Maike
Die Rolle des Schilddrüsenhormon-Rezeptors β in der Thermogenese in murinen braunen Adipozyten

Dirk, Anna-Luise
Experimentell induzierte Hyperthyreose - Eine umfassende Untersuchung physiologischer und biochemischer Parameter unter kontrollierten in vivo Bedingungen

Eggeling, Jonas
Der Einfluss von Körpergewicht und Blutglukose auf Delay Discounting, Kalorienaufnahme und hormonelle Gegenregulation

Flindt, Anne
Die Effekte ionisierender Strahlung auf die epitheliale-mesenchymale Transition (EMT) von Pan-kreaskarzinomzellen in vitro

Pundy, Florian
Effekte einer unverzüglichen Intensivtherapie auf einer Kurzzeitintensiveinheit im Notfallzent-rum eines städtischen Maximalversorgers

Winkelmann, Philipp
Ganglioneurome – systematischer Review und Metaanalyse zu Klinik, Diagnostik und Behandlung

Winkler, Britta
Pilotstudie: FKBP5 Methylierung als Biomarker der Cortisolexposition bei gesunden Probandinnen und Probanden

Witte, David/kumulativ
Regulation der TGF-β1-Signaltransduktion in Zellen des duktalen Adenokarzinoms des Pankreas durch Rac1b und PAR2

2020

Institute of Biomedical Optics

Ha, Man Linh
Fractional Ablation of Skin using a Carbon Dioxide Laser, a Carbon Monoxide Laser, and a Thuli-um Fiber Laser: A Comparison Study

Institute for Endocrinology and Diabetes

Lehner, Louisa
Familiär oder nicht? Differentialdiagnostik der schweren Hypercholesterinämie in der Praxis

Rautenberg, Patrick
Die Wirkung von intranasal appliziertem Oxytocin auf die Nahrungsaufnahme und den Energie-verbrauch übergewichtiger Männer

Institute for Neurogenetics

Gigla, Bettina
Assoziative Plastizität im SMA-M1-Netzwerk bei Patienten mit Gilles de la Tourette Syndrom

Maksimovic, Ana
Psychiatric and lifestyle determinants of gait in a community-dwelling population

Max, Christoph
Molekulargenetische Untersuchungen des ANO10- und des ADCY5 Gens zur Erforschung komplexer, seltener Bewegungsstörungen genetischer Ursache

Steinrücke, Sofia
Suche nach genetischen Ursachen bei Dystonien ausgehend von Exom-Sequenzierungs-Datensätzen

Ziegler, Jonathan
Analyse der Rolle des Ubiquitin-Proteasom-Systems und des lysosomalen Systems in der PTEN-induzierte putative Kinase 1/Parkin-vermittelten Mitophagie

Institute for Neuroradiology

Rudolf, geb. Aulmann, Linda
Infrarotbildgebung des Gesichts in der Akutdiagnostik des Schlaganfalls: Ergebnisse einer prospektiven klinischen Studie

Institute for Pharmacology and Toxicology

Berg, Karolin
Einfluss der transkraniellen schwach elektrischen Stimulation auf das hippokampusabhängige Gedächtnis der Ratte

Dapper, Carla
Der gewichtsreduzierende Effekt von AT1-Rezeptorblockern in Mäusen mit einem ubiquitären Mas Knockout

Götz geb. Rawohl, Julia
Einfluss transkranieller langsam oszillierender Hirnstimulation in NREM-Schlaf auf das Kopplungsverhal-ten endogener Schlafspindeln und das Erlernen der Orientierung im Radial-ArmMaze bei Ratten

Laske, Katja
Der Einfluss schwacher transkranieller Gleichstromstimulation auf eine visuell-prozedurale Ge-dächtnisaufgabe

Rawish, Elias
Die Prävention einer Diät-induzierten Adipositas durch den AT1-Rezeptorblocker Telmisartan ist mit einer verminderten Lipotoxizität im Hypothalamus assoziiert

Stahr, Marcus
Untersuchung der Responsivität hypothalamischer Tanyzyten gegenüber TRH- und Acetylcholin-Agonisten

Institute for Physiology

Boeckel, Göran
Neuronal Calcium Sensor 1 in Chemotherapy Induced Peripheral Neuropathy and Characterization of a Second Variant

Nagel, Marie
Strahlenresponsivität von Tumorzellen und Modifikation der subzellulären Lokalisation von zellulären Sauerstoffsensoren als kritische Parameter der molekularen Sauerstoffsensorik

Sax, Florian
Einfluss unterschiedlich wertiger Proteine auf die Proteinsynthese und Muskelzelldifferenzie-rung

Department of Radiology and Nuclear Medicine

Allmendinger, Ann-Christin
Nachdilatation von selbstexpandierenden Nitinolstents mittels Paclitaxel-freisetzender Ballons: Sicherheit und Effektivität bei der endovaskulären Therapie komplexer atherosklerotischer Gefäßläsionen

Berlin, Clara
Vierdimensionale Fluss-MRT der Arteria pulmonalis - Validierung und Fehlerquantifizierung an einem 3T-Scanner mit gesunden Probanden und Phantom

Haenel, Alexander
Evaluation des Outcomes nach Stammzelltherapie des chronischen Myokardinfarks mittel kardialer MRT im Großtiermodell

Seidl, Sebastian
Transarterielle Chemoembolisation bei hepatisch metastasierten Mamma- und kolorektalen Karzinomen ergänzend zu der chirurgischen und der systemischen Therapie. Ergebnisse, Einfluss der Leberreserve und Diskussion von Parallelen zu STATE, START und ART-Score etabliert für das hepatozelluläre Karzinom

Department of Anaesthesiology

Bremer, Johann
Einfluss einer Maze-Prozedur mittels Kälte oder hochfrequentem Ultraschall auf den peri- und unmittelbar postoperativen Verlauf von hochsensitivem Troponin T im Vergleich mit Patienten ohne begleitenden rhythmuschirurgischen Eingriff

Department of Gynecology

Adamiak, Dorothea/Verbesserung vor Kommission
Evaluation klinisch apparenter Differenzen simultaner versus sequentieller Docetaxel enthaltender Chemotherapieregime beim primären Mammakarzinom

Mitzlaff, Katharina
Chemosensitivität unterschiedlicher triple-negativer Mammakarzinomsubtypen gegenüber Eribulin

Pervan, Mascha
Immunhistochemische Analyse der Immuncheckpoints PD-1/PD-L1 und deren prognostische Bedeutung beim tripel-negativen Mammakarzinom

Schäfer, Judith
Erfassung von Gestationsalterdiskrepanzen im Rahmen des Ersttrimesterscreenings und deren Auswirkungen auf Geburtsparameter

Sommerfeld, Julia
Stellenwert verschiedener Biomarker und Prognosefaktoren sowie Therapie abhängiges Outcome bei Patientinnen mit triple-negativem Mammakarzinom

Department of Neurology

Baur, Alexandra
Abhängigkeit des Bereitschaftspotentials vom zeitlichen Rahmen und der Aufmerksamkeit

Broer, Katja/Verbesserung vor Kommission
Gutachten hochladen
Kann die Wahrnehmung emotionaler Gesichtsausdrücke durch Training verbessert werden? Untersuchungen zur Rolle von unüberwachtem perzeptuellem Lernen und schlafabhängiger Konsolidierung

Kleefisch, Estelle
Der Zusammenhang von Impulsivität, Externalem Essverhalten und Ernährungszustand - Untersuchung einer Lübecker Kohorte –

Kruse, Lena
Die Hemisphärenasymmetrie der räumlichen und zeitlichen Aufmerksamkeit - Eine EEG-gestützte Studie

Nolde, Janis
Association of central nervous activity and peripheral endocrine messenger substances in the context of physiological energy homeostasis

Siller, Bastian
Die Auswirkung der zeitlichen Trennung von Reaktion und Reiz auf die P3-Komponente im Elektroenzephalogramm

Uter, Jan
Einfluss von Mutationen und Polymorphismen in Genen der Schilddrüse auf kognitive Funktionen

Department of Neurosurgery

Carl, Cecil
Induktion und subzelluläre Lokalisation von Rad51 in stammzellähnlichen Gliomzellen nach Bestrahlung

Chehade, Yehia
Intraabdomineller Druck in Abhängigkeit von der Körperposition: ein notwendiger Parameter zur Optimierung der Hydrozephalus-Shunttherapie

Department of Orthopedics and Surgery

Apelmann, Hans-Christian
Strahlenbelastung der Augenlinse durch radiologische Bildgebungsverfahren am OP-Arbeitsplatz bei unfallchirurgischen Eingriffen

Frese, Jasper
Erprobung eines Registers für Frakturbehandlungen und deren Komplikationen am Universitäts-klinikum Lübeck

Pelster, geb. Köbrich, Tobias
Funktionelle Unterschiede in der Ganganalyse nach vorderer Kreuzbandersatzplastik in Abhängigkeit von der Transplantatwahl Semitendinosus-Gracilissehnen- vs. Quadrizepssehnen-Transplantat

Pospiech, Thomas
Analyse von Lebensqualität, Energieverbrauch und Gangbild nach osseointegrierten Endo-Exo Prothesen sowie Exoprothesen nach transfemoraler Amputation

Wagenmann, Lars/Dr. med. dent.
Versagensmechanismen von Osteosynthesen des Humerusschaftes

Department of Pediatrics

Beyssell, Lena
Laktase-Persistenz und Frühgeburtlichkeit
Über die Auswirkungen des Laktase-Persistenz-Gens auf die kurzund
langfristige Entwicklung sehr kleiner Frühgeborener

Buma, Janne
Untersuchung eines möglichen Zusammenhangs zwischen Probiotikagabe, Mikrobiom und Wachstum von sehr kleinen Frühgeborenen

Günther, Nele
Verhaltensauffälligkeiten im Alter von drei bis fünf Jahren bei Frühgeborenen mit einem Geburtsgewicht von unter 1500 Gramm

Lünstedt, Ralf
Phanotypische Variabilität von 46,XY Differences of Sex Development bei Patienten mit neu entdeckten NR5A1-Mutationen

Mannhardt, Clara
Vitamin D und die Prognose sehr kleiner Frühgeborener

Schulz, Sören
Der Einfluss von Polymorphismen im Apolipoprotein E Gen auf die Entwicklung intraventrikulärer Hämorrhagien und neonataler Septitiden bei sehr kleinen Frühgeborenen

Westermann, Eva
Der genetische Einfluss auf den Hämatokrit sowie die eosinophilen Granulozyten und seine klinischen Auswirkungen bei Frühgeborenen

Wiedling, Theresa
Epigenetische Modifikation epithelialer DNA durch die Infektion mit Humanem Rhinovirus und ihre Auswirkung auf die Expression des Ceramid-Transferproteins

Department of Psychiatry and Psychotherapy

Hauer, Luisa
Internetabhängigkeit, internetbezogene Symptome und Beeinträchtigung im Geschlechterver-gleich – eine interviewgestützte Studie

Kluge, Sophie
Untersuchung des Einflusses von postoperativer nächtlicher Lärmreduktion auf die Delirrate herzchirurgischer Intensivpatienten

Piecha, Fabian
Einfluss von hoch- versus niederkalorischer Ernährung auf Glukosestoffwechsel, Appetitempfin-den und Schlafprofil bei ungestörtem Nachtschlaf

Gintzel, Annika
Das Erleben der Aufnahmesituation in einer Klinik für Psychiatrie und Psychotherapie - Zusammenhang mit dem Behandlungserfolg

Sayyad Motahayyer, Banafsche
Geschlechtertheoretische und gesellschaftliche Implikationen neurowissenschaftlicher fMRT-Forschung

Department of Medicine I

Beier, Laura
Die Wirkung von transdermalem Östrogen und intranasalem Insulin auf die kognitiven Leistungen junger Männer

Berg, Hannah
Zerebraler Energiestoffwechsel und Wachheit bei psychosozialem Stress

Blacha, Antje
Einfluss einer Substitutionstherapie mit Hydrocortison auf die kognitive Leistungsfähigkeit von Patienten mit Nebenniereninsuffizienz

Freund, Annika
Tissue-Factor-Aktivität auf Mikrovesikeln aus dem Plasma von Tumorpatienten und gesunden Probanden - Quantifizierung und molekularer Effekt

Podszus, Tabea
Die Wirkung subchronischer Liraglutid-Gabe auf Essverhalten, Stoffwechsel und Befindlichkeit gesunder männlicher Probanden

Serfling, Georg
Die Evaluation der intravenösen Wirkung des Glukokortikoids Prednisolon auf die neuronale Reaktivität bei der Präsentation visueller Essenstimuli: Eine fMRT Studie

Spellmann, Anne
Langzeit-Outcome der Lübecker STECHUS-Erkrankten 2011

Witte, Hanno
Klinisch-pathologische Betrachtung simultan-sekundärer und de novo diffus großzelliger B-Zell-Lymphome (DLBCL) unter besonderer Berücksichtigung der therapeutischen Kombination aus Rituximab und Trofosfamid für multimorbide und/oder ältere Patienten

Zazai, Runa/Dr. rer. hum. biol.
Anthropometrie, metabolische Risikomarker, Bewegungs- und Schlafverhalten bei ausgeprägter Adipositas

Zinn, Rabea
RAC1B: Wächter des epithelialen Phänotyps und Protektor gegen epitheliale- mesenchymale Transition

Section for Psychoneurobiology

Baumann, Thalke
Die zirkadiane Rhythmik von Glukosestoffwechsel und Hypothalamus-Hypophysen-Nebennierenrinden-Achse gesunder junger Männer unter dem Einfluss der Nahrungsaufnahme

Department of Rheumatology

Luo, Jiao
The role of IL-16 in systemic sclerosis and granulomatosis with polyangiitis

2021

Institute for Endocrinology and Diabetes

Hermsteiner, Astrid
Die Bedeutung von Dopamin für Entscheidungsvariabilität und Regulation der Nahrungsaufnahme

Röhl, Clara
Einfluss von moderater nächtlicher Lichtexposition auf die menschliche Energiehomöostase

Institute for Neurobiology

Brockmann, Merle
Beeinflussung der zirkadianen Uhr durch die Fettsäure Palmitat

Institute for Neurogenetics

Imhoff, Sophie
Mitochondrial disorders and deep sequencing of mitochondrial DNA

Vernik, Tamara
Transgenerationelle Suszeptibilität gegenüber einer Schädigung des dopaminergen Systems im MPT-PMausmodell

Vollstedt, Eva-Juliane
Klinische und elektrophysiologische Untersuchung bei Patienten mit genetisch-gesicherter Myoklo-nus-Dystonie; Erfassung von Modifikationen des Lidschlussreflexes unter Alkoholeinfluss

Warrlich, Anna
Häufigkeit, Verlauf und Prädiktoren von Fatigue bei Morbus Parkinson in einer bevölkerungsbasierten Kohorte

Institute for Physiolology

Poley, Philip
Rolle der Regulatoren des Zytoskeletts VASP und EVL bei der endothelialen Kommunikation über Gap Junctions im Gefäß

Institute for Pharmacology and Toxicology

Baum, Timo
Einfluss des Dopaminagonisten Pramipexol auf die Gedächtniskonsolidierung

Graßhoff, Hanna
Vektorbasierte Genexpression in Gehirnendothelzellen

Hilger, Simon
Auswirkungen langsamer Schlafoszillationen auf topographische Muster im Wach-EEG

Pflock, René
Besitzen Dimethylfumarat und Nikotinsäure gemeinsame, potenziell Hydroxycarboxylic acid receptor 2-vermittelte unerwünschte Arzneimittelwirkungen?

Vielhauer, Jakob
Therapeutic effects mediated through the hydroxycarboxylic acid receptor 2 in an autoimmune disease of the skin

Werner, Friederike
Wirkung rhythmisch akustischer Stimulation im Tiefschlaf auf langsame Oszillationen, Schlafspindeln und deklaratives Gedächtnis

Department for Radiology and Nuclear Medicine

Schultz, Victoria
Untersuchung der Wandschubspannung der thorakalen Aorta bei Patienten mit Sinusprothese mittels 4D Phasenkontrast-MRT

Department of Anaesthesiology

John, Caroline
Postoperative Patientenzufriedenheit, Schmerzstärke und schmerzbedingte Beeinträchtigungen nach Einführung einer Wochenendbetreuung durch den Akutschmerzdienst

Koopmann, Dorothee
Posttraumatische Belastungsstörung und gesundheitsbezogene Lebensqualität nach intensivmedizi-nischer Versorgung - Eine Untersuchung unter Mitberücksichtigung einer experimentellen Orientie-rungsintervention

Reinberger, Marlene
Belastungen für Patienten auf der Intensivstation – Bestimmung mit einem neuen Verfahren unter Berücksichtigung der Kontrollierbarkeit

Wahjudi, Tatjana
Entwicklung von Selbstwirksamkeitserwartung und Selbstwertschätzung bei Grundschülern und Beeinflussung durch ‚fit und stark'-Präventionsprogramme - Analyse unter Berücksichtigung von Geschlechtsunterschieden

Weber, Mirka
Untersuchung zum Patientenbefinden nach ambulanten Operationen mit Hilfe des Anästhesiologischen Nachbefragungsbogen für Patienten (ANP)

Department of Gynecology

Drosos, Zacharias
Die prognostische Bedeutung der Expression von Acid-Ceramidase (ASAH1) und Sphingosin-Kinase 1 (SPHK1) bei Patientinnen mit Ovarialkarzinom

Garke, Madlen
Prädiktive und prognostische Bedeutung tumorinfiltrierender Lymphozyten am Beispiel des triple-negativen Mammakarzinoms im Rahmen der ADAPT-Studie

Kabore-Wolff, Elodie
Inhibitoren von PD-1/PD-L1 und ERK1/2 inhibieren das Wachstum rezeptorexprimierender und triple-negativer Mammakarzinom-Zelllinien

Sommer, Soteris
Zervixkarzinom – Retrospektiver Vergleich prä-, intra- und postoperativer Parameter bei Laparoskopie und Laparotomie

Welp, Amrei
Retrospektive Datenanalyse zur Validität eines semiautomatischen volumenbasierten Ansatzes zur Evaluation zerebraler Strukturen im klinischen Einsatz

Department for Hematology and Oncology

Ketzer, Julius
Genomische Einblicke in die Pathogenese des Epstein-Barr-Virus-assoziierten diffus großzelligen B-Zell Lymphoms

Department of Neurology

Cäsar, Stephanie
Wie werden P3b-Amplituden während Rateaufgaben evoziert? Eine entsprechende Anwendung der S-R-Link-Hypothese auf Vergleichsaufgaben

Hanßen, Henrike
Bildgebung von Neurodegeneration beim X-chromosomalen Dystonie-Parkinson-Syndrom als striatale Modellerkrankung

Karstedt, Sarah
Prospektive Studie zur Differenzierung transitorischer ischämischer Attacken (TIA) von Migräne mit Aura mittels ICHD-3 und TIA Diagnosekriterien

Müller-Miny, Louisa
Die Auswirkungen des Sättigungszustandes auf die selektive Aufmerksamkeit bei der Präsentation von Nahrungsabbildungen

Plöttner, Pauline
Stellenwert der optischen Kohärenztomographie als Biomarker der Parkinson-Erkrankung

Thranitz, Julia
Einfluss des intrakraniellen Drucks auf die neurovaskuläre Kopplung im humanen primärsomatosen-sorischen Kortex: eine funktionelle Nahinfrarotspektroskopie-Studie

Department of Neurosurgery

Strey, Markus
Der Einfluss der Blutgruppe auf den Verlauf und das Outcome bei Subarachnoidalblutungen - Unter-suchung anhand eines Patientenkollektivs aus der Klinik für Neurochirurgie aus dem Zeitraum 01.01.2007 bis 31.12.2017

Department of Orthopedics and Surgery

Backes, Lea
Untersuchung von Oberflächenstrukturierungen mittels ultrakurzer Laserpulse zur Verringerung von Verschleiß von Hüftgelenksendoprothesen

Galle, Ludwig
Korrelation von MRT und Histologie in der semiquantitativen Bewertung von Knorpelreparaturgewebe im Schafmodell

Meyer, Matthias
Funktionelle Ergebnisse und Komplikationen nach cervicaler Querschnittlähmung durch Kopfsprung in flache Gewässer. Eine Analyse von 160 Fällen.

Department of Pediatrics

Auerswald, Gesa
Einfluss von Hyaluronsäure auf die Funktion von natürlichem Surfactant

Borgmann, Johannes
Neurokognitive und motorische Entwicklung bei fünfjährigen sehr kleinen Frühgeborenen im Kontext blutdruckverändernder genetischer Polymorphismen

Drese, Josephine
Genetisch veränderter Eisenstoffwechsel und sein Einfluss auf das Risiko der nekrotisierenden Enterokolitis bei Frühgeborenen unter 1500 g - Eine Mendelsche Randomisierungs-Studie

Eyvazzadeh, Leila
Ernährung von Frühgeborenen mit Muttermilch – Makronährstoffanalyse und Einfluss auf die Morbidität

Liboschik, Lena
Zytokinkonzentrationen im Serum von Kindern und Erwachsenen mit Asthma bronchiale unterliegen saisonalen Schwankungen am Beispiel der ALLIANCE Kohorte

Marißen, Janina
Vancomycin-Ototoxizität bei Frühgeborenen

Müller, Mirja
Die genetische Prädisposition für die Höhe des Blutdrucks und ihre Auswirkungen bei Frühgeburtlich-keit

Schwarz, Sarah
Missstände in der Versorgung von Menschen mit Varianten in der Geschlechtsentwicklung innerhalb Europas

Siegmund, Mira
Ex-vivo Zytokinexpression unter bakterieller Stimulation bei Kindern mit Fieber in Neutropenie

Sütterlin, Anna
Perioperative Brachytherapie im Kindesalter - Outcome, Langzeittoxizitat und Lebensqualität

Department of Psychiatry and Psychotherapy

Müseler, Jana
Vergleich von acht Instrumenten zur Erfassung von Depressivität bei Patienten/Patientinnen in stationärer geriatrischer Krankenhausbehandlung bezüglich diagnostischer Güte, Zeitbedarf, Verständlich-keit und Patientenakzeptanz

Petersen, Anke
Subjektives Erleben und Krankheitsverarbeitung bei Herzinfarkt-Patienten mit belastenden Kindheits-erlebnissen

Pulwitt, Anja
Änderung der rechtlichen Voraussetzungen zur Durchführung von Zwangsmaßnahmen: klinische Auswirkungen

Sondermann, Stefan
Beitrag des Präoperatorischen Denkens zur Entstehung und Aufrechterhaltung Depressiver Störungen

Department of Medicine I

Busch, Johanna
Der Einfluss des Nachweises von donorspezifischen HLA-Antikörpern auf die immunsuppressive Therapie, die Transplantatfunktion und den Krankheitsverlauf der Patienten nach Nierentransplantation

Krekeler, Clarissa
Einfluss der Substitutionstherapie mit Plenadren auf die kognitive Leistungsfähigkeit von Patienten mit Nebenniereninsuffizienz

Lutzke, Birte
Effekte visueller Nahrungsreize auf den postprandialen Glukosemetabolismus bei adipösen Männern

Phan, Huong Lan
Second-generation visually guided laser balloon ablation system for pulmonary vein isolation: Learning curve, safety and efficacy

Simon, Paul
Akuter Einfluss von Leptin und Ghrelin auf den Glukose- und Lipidstoffwechsel beim Menschen

PhD theses in the CBBM

Title	Name	Title of dissertation	Institute	Supervisor
2016				
Dr. rer. nat.	Maass, Sebastian	Das passive Antikörpertransfermodell der Epidermolysis Bullosa Acquisita: Die Produktion endogener Antikörper gegen injizierte Fremdproteine und die Anwesenheit aktivierter T-Zellen in der Haut führen zu verstärkter Blasenbildung	Anatomy	Westermann, Jürgen
Dr. rer. nat.	Klingbeil, Jens	Charakterisierung der ph abhängigen Konformation und Multimerisierung des Influenze-A-Virus M1-Proteins	Biochemistry	Redecke, Lars
Dr. rer. nat.	Horstmann, Jens	Kontaktlose Photoakustische Tomographie	Biomedical Optics	Hüttmann, Gereon
Dr. rer. nat.	Weißbach, Sophie	Einfluss der Ligandenbindung auf Struktur und Dynamik von Glycosyltransferasen und Norovirus-Kapsidproteinen	Chemistry	Peters, Thomas
Dr.-Ing.	Ahlborg, Mandy	Bildgebungskonzepte und Rekonstruktionsansätze für große Bildgebungsvolumen bei Magnetic Particle Imaging	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Bringout, Gael	Field free line Magnetic Particle Imaging	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Gräfe, Ksenija	Magnetic Particle Imaging mit einer asymmetrischen Spulentopologie	Medical Engineering	Buzug, Thorsten M.
Dr. rer. nat.	Weidinger, Thomas	Computertomographie mit quantenzählenden Detektoren	Medical Engineering	Buzug, Thorsten M.
Dr. rer. nat.	Hocke, Jens	Representation Learning: From Feature Weighting to Invariance	Neuro- and Bioinformatics	Martinetz, Thomas
Dr. rer. nat.	Tvzi-Minker, Elinor	Neural networks underlying implicit motor sequence learning	Neurology	Krämer, Ulrike
Dr. rer. nat.	Herzog, Nina	Schlaf, Energiehomöostase und Kognition – Eine experimentelle Untersuchung	Psychoneurology	Oltmanns, Kerstin
Dr. rer. hum. biol.	Rackebrandt Klaas	Messung der venösen Sauerstoffsättigung in den ableitenden zerebralen Gefäßen im Oxygenierungs- und Perfusionsmodell	Anaesthesiology	Gehring, Hartmut
Dr. rer. hum. biol.	Roninger, Antje	Comparing Chronic Depression and Episodic Depression and The Interplay of Childhood Trauma and Personality Disorder with Chronic Depression	Psychiatry and Psychotherapy	Schweiger, Ulrich
2017				
Dr. rer. nat.	Hoffmann, Franziska	Distribution and Interaction of Pulmonary Phagocytes in the Murine Lung under Steady-State Conditions and after Allergen Challenge	Anatomy	König, Peter
Dr. rer. nat.	Klein, Sebastian	Modulation of the TH1/TH2 differentiation by B cells, C5aR1 and CD 154 in antigen dose dependent mouse models	Anatomy	Kalies, Kathrin
Dr. rer. nat.	Kunz, Natalia	Dissecting the immunomodulatory roles of cell-derived nanoparticles (CDNPs) in infectious diseases	Anatomy	Kalies, Kathrin
Dr. rer. nat.	Linz, Barbara	Untersuchung des Einflusses von IL-1β auf den Schlaf und die schlafassoziierte Gedächtnisbildung beim Menschen	Anatomy	Westermann, Jürgen
Dr. rer. nat.	Zhang, Linlin	Proteases of Emerging Viruses as Targets for Broad-Spectrum Inhibitors	Biochemistry	Hilgenfeld, Rolf
Dr.rer. nat.	Eschweiler, Simon	Development of differentially glycosylated igG antibodies	Nutritional Medicine	Ehlers, Marc

Title	Name	Title of dissertation	Institute	Supervisor
Dr. rer. nat.	Leonhard, Claudine	Derivate-Free Numerical Schemes for Stochastic Partial Differential Equations	Institut für Mathematik	Rößler, Andreas
Dr. rer. nat.	Bente, Klaas	Echtzeitbildgebung mittels Magnetic Particle Imaging	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Gräser, Matthias	Partikeldynamik in Magnet-Partikel-Spektroskopie und -Bildgebung	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Kaethner, Christian	Strategien zur effizienten Nutzung und Erweiterung des Messfeldes in Magnetic Particle Imaging	Medical Engineering	Buzug, Thorsten M.
Dr. rer. nat.	Weber, Alexander	Behandlung von Imperfektionen bei Magnetic-Particle-Imaging mit Hilfe mathematischer Methoden	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Weber, Matthias	Neuartige Bildgebungskonzepte mit einer feldfreien Linie im Bereich Magnetic Particle Imaging	Medical Engineering	Buzug, Thorsten M.
Dr. rer. nat.	Schellenberger Costa, Michael	Neural mass models of the sleeping brain	Neuro- and Bioinformatics	Claussen, Jens Christian
Dr.-Ing.	Weigenand, Arne	Thalamocortical dynamics and the effects of sensory stimulation during sleep	Neuro- and Bioinformatics	Claussen, Jens Christian
Dr. rer. nat.	Domingo, Aloysius	Molecular Genetic Mechanisms Surrounding X-Linked Dystonia-Parkinsonism	Neurogenetics	Westenberger, Ana
Dr. rer. nat.	Grütz, Karen	Towards unraveling the pathogenesis of dystonia: Genetic analyses and functional characterization ofcellular models	Neurogenetics	Westenberger, Ana
Dr. rer. nat.	Vulinovic, Franca	Molecular characterization of DYT-TOR1A dystonia and TUBB4A-linked diseases	Neurogenetics	Klein, Johannes
Dr.rer. nat.	Hirseland, Eileen	Zelluläre und molekularre heterogenität stammzellähnlicher Gliomzellen und Bedeutung für die Therapiesensibilität	Neurosurgery	Zechel, Christina
Dr. rer. hum. biol.	Winkler Martina	Einfluss des zerebralen Renin-Angiotensin-Systems auf die Gewichtsregulation und die Glucosekontrolle	Pharmaco-logy and Toxicology	Raasch, Walter
2018				
Dr. rer. nat.	Eibl, Matthias	Multiphotonenmikroskopie mit einem aktiv modulierten Faserlaser	Biomedical Optics	Huber, Rober
Dr. rer. nat.	Kolb, Jan Philip	Verbesserung und Anwendung der ultraschnellen optischen Kohärenztomographie am menschlichen Auge	Biomedical Optics	Huber, Rober
Dr. rer. nat.	Schulz-Hildebrandt, Hinnerk	Mikroskopisch optische Kohärenztomographie für die Darstellung von Mukustransport	Biomedical Optics	Hüttmann, Gereon
Dr. rer. nat.	Hobusch, Juliane	Allergenspezifische Immuntherapie (SIT) induziert sialylierte immunsuppressive IgG-Antikörper	Nutritional Medicine	Ehlers, Marc
Dr. rer. nat.	Assmann, Julian	Die Rolle der Aktivierung des Hydroxycarboxylsäurerezeptors 2 in Autoimmunerkrankungen	Pharmacology and Toxicology	Schwaninger, Markus
Dr. rer. nat.	Bernau, Mareike	Einfluss des NF-κB Signalwegs in Tanyzyten des Hypothalamus bei systemischer Inflammation	Pharmacology and Toxicology	Schwaninger, Markus
Dr. rer. nat.	Di Spiezio, Alessandro	The role of brain endothelial cells in leptin transport into the brain	Pharmacology and Toxicology	Schwaninger, Markus
Dr. rer. nat.	Frevel, Eva	Interaction of adipokines with orexin signaling	Pharmacology and Toxicology	Jöhren, Olaf
Dr. rer. nat.	Jiang, Yun	Cerebral angiogenesis in the brain endothelial Nemo deleted mouse as a small vessel disease model	Pharmacology and Toxicology	Schwaninger, Markus

Title	Name	Title of dissertation	Institute	Supervisor
Dr. rer. nat.	Schuster, Franziska	Einfluss von Angiotensin II Rezeptor Antagonisten auf die Entwicklung von ernährungsinduzierter Adipositas und Leptinresistenz	Pharmacology and Toxicology	Raasch, Walter
Dr. rer. nat.	Hollstein, Ronja	Die vielen Facetten hereditärer Bewegungsstörungen - molekularer und klinischer Natur	Human Genetics	Kaiser, Frank
Dr. rer. nat.	Pozojevic, Jelena	Functional and genetic analyses of coding and non-coding variants causing Cornelia de Lange Syndrome (CdLS)	Human Genetics	Kaiser, Frank
Dr. rer. nat.	Stolz, Inga	Symbolic-based analysis techniques and their information contents	Mathematics	Keller, Karsten
Dr. rer. nat.	Wülker, Christian	Schnelle Fourier-Transformationen für sphärische Gauß-Laguerresche Basisfunktionen	Mathematics	Prestin, Jürgen
Dr.-Ing.	Gräsel, Melanie	Entwicklung und Validierung eines Ultraschallgerätes zur Messung Kortikaler Eigenschaften der menschlichen Tibia	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Isernhagen, Fabian	Optimierte Rekonstruktion für die Röntgendiffraktionsbildgebung	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Sattel, Timo	Scannertopologien und Optimierung von Feldsequenzen für Magnetic-Particle-Imaging	Medical Engineering	Buzug, Thorsten M.
Dr. rer. nat.	Scheel, Norman	Gehirn im Ruhezustand - Signal oder Rauschen?	Neuro- and Bioinformatics	Madany Mamlouk, Amir
Dr. rer. nat.	Schütze, Henry	On the Learning of Orthogonal Dictionaries for Sparse Coding and the Adaptive Hierarchical Sensing of Sparse and Compressible Signals	Neuro- and Bioinformatics	Martinetz, Thomas
Dr.-Ing.	Werner geb. Burciu, Irina	Efficient Bio-Inspired Sensing	Neuro- and Bioinformatics	Barth, Erhardt
Dr. rer. nat.	Kolbe, Isa	The inderplay of central and peripheral circadian cloocks in white adipose function and metabolic homeostasis	Neurobiology	Oster, Henrik
Dr. rer. nat.	Buades Rotger, Macià	Understanding aggression edpisodes: Novel experimental approaches	Neurology	Krämer, Ulrike
Dr. rer. nat.	Liebrand, Matthias	Neural mechanisms of proactive and reactive motor inhibition	Neurology	Krämer, Ulrike
Dr. rer. nat.	Backhaus, Jenny	Metabolic Relevance of cold-activated Brown Adipose Tissue in healthy normal weight and obese Men	Medicine I	Schmid, Sebastian
Dr. rer. nat.	Cherradi, Mona Lisa	Site-specific Modulation of Adipogenesis - Regulation by microRNAs miR-193a and miR-708	Medicine I	Brabant, Georg
Dr. rer. nat.	Kohlie, Rose	Dopamine directly increases mitochondrial mass and thermogenesis in brown adipocytes	Medicine I	Klein, Johannes
Dr. rer. nat.	Levata, Luka	Centrally acting nesfatin-1 elicits sympathetic flow on brown adipose tissue to induce non-shivering thermogenesis	Medicine I	Lehnert, Hendrik
Dr. rer. hum. biol.	Dahlke, Markus	Radio- und Chemosensitivität stammzellähnlicher Gliomzellen und Aspekte der strahleninduzierten DNA-Schadensantwort	Neurosurgery	Zechel, Christina
Dr. rer. hum. biol.	Bretin, Annette	Local anisotropic material laws for patient specific finite element modelling of the human femur	Orthopedics and Surgery	
Dr. rer. hum. biol.	Stahl, Jörg	Evaluation eines interaktiven Testsystems zur Erfassung interpersonellen Verhaltens – "Interactive Test of Interpersonal Behaviour"	Psychiatry and Psychotherapy	Klein, Jan Philipp

Title	Name	Title of dissertation	Institute	Supervisor
2019				
Dr. rer. nat.	Niebuhr, Markus	Assessment of the T-lymphocyte Receptor Repertoire in the Experimental Model of Epidermolysis Bullosa Acquisita	Anatomy	Kalies, Kathrin
Dr. rer. nat.	Evers, Michael	Enhanced metabolic quantification of cells and tissue by label-free fluorescence lifetime imaging microscopy	Biomedical Optics	Reginald Birngruber
Dr. rer. nat.	Kern, Katharina	Reaktionen von Zellen des retinalen Pigmentepithels auf transiente Hyperthermie	Biomedical Optics	Yoko Miura
Dr. rer. nat.	Rudnitzki, Florian	Linking biological effects of laser irradiated gold nanoparticles with temperature increase and formation of vapor bubbles	Biomedical Optics	Hüttmann, Gereon
Dr. rer. nat.	Spahr, Hendrik	Detektion von retinalen Mikrobewegungen mit phasensensitiver optischer Kohärenztomografie	Biomedical Optics	Hüttmann, Gereon
Dr. rer. nat.	Flügge, Felix	Investigation into Substrate Binding and Structural Dynamics of Human Blood Group A and B Glycosyltransferase by NMR Spectroscopy	Chemistry	Peters, Thomas
Dr. rer. nat.	Schöne, Tobias	Virus Receptor Identification via Click Chemistry and Fragment-based Drug Discovery using NMR Spectroscopy	Chemistry	Peters, Thomas
Dr. rer. nat.	Bartsch, Yannic	The role of IL-6 in vaccine-induced IgG Fc glycosylation	Nutritional Medicine	Ehlers, Marc
Dr. rer. nat.	Lilienthal, Gina-Maria	Untersuchungen zur antigenspezifischen, anti-inflammatorischen Wirkung des murinen IgG FC N-Sialylierung	Nutritional Medicine	Ehlers, Marc
Dr. rer. nat.	Petry, Janina	The role of IgG sialylation in the attenuation of anaphylactic reactions	Nutritional Medicine	Ehlers, Marc
Dr. rer. nat.	Müller, Kristin	Bedeutung von NF-kB essential modulator (Nemo) in Gehirnentothelzellen für die Blut-Hirn-Schranke	Pharmacology and Toxicology	Schwaninger, Markus
Dr. rer. nat.	Schultz, Sina	Die Bedeutung von α-Dicarbonylen in zerebrovaskulären Erkrankungen	Pharmacology and Toxicology	Schwaninger, Markus
Dr. rer. nat.	Shabbir, Muhammad	Approximation of Chirp Functions by Fractional Fourier Series	Mathematics	Prestin, Jürgen
Dr. rer. nat.	Stille, Maik	Die Reduktion von Metallartefakten in der Computertomographie durch einen Optimierungsalgrorithmus mit Nebenbedingungen	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Semeniuta, Stanislau	Recurrent Neural Networks for Discriminative and Generative Learning	Neuro- and Bioinformatics	Barth, Erhardt
Dr. rer. nat.	Kiehn, Jana-Thabea	Central circadian regulation of leptin signalling	Neurobiology	Oster, Henrik
Dr. rer. nat.	Fiedler, Lorenz	Neural signatures of auditory selective attention under dynamic listening conditions	Psychology I	Obleser, Jonas
Dr. rer. nat.	Al-Zubaidi, Arkan	Modulatory impact of metabolic states on the connectivity of the resting human brain	Neurology	Münte, Thomas
Dr. rer. nat.	Yousuf, Mushfa	Neural processing of food stimuli: Influence of reward, homeostasis, habit, and attention	Neurology	Münte, Thomas
Dr. rer. nat.	Weppner, Gesche	Autoantikörperproduktion von gewebsständigen Plasmazellen bei der Granulomatose mit Polyangiitis	Rheumatology	Lamprecht, Peter
Dr. rer. nat.	Gachkar, Sogol	Game of TH'ones - a Tale of Ice and Fire - Role of Thyroid Hormones in Body Temparature Regulation	Medicine I	Mittag, Jens
Dr. rer. nat.	Harder, Lisbeth	Layered Interactions of Systemic and Brain Effects by Thyroid Hormones	Medicine I	Mittag, Jens
Dr. rer. nat.	Johann, Kornelia	Mechanism of Thyroid Hormone Induced Hyperthermia in Mice	Medicine I	Mittag, Jens

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Dr. rer. hum. biol.	Olbrisch, Anna	Untersuchungen zur Dosisoptimierung von Piperacillin bei Schwerbrandverletzten	Pharmacoloy and Toxicology	Raasch, Walter
Dr. rer. hum. biol.	Bomba, Franziska	Unterstützung der Transition von Jugendlichen mit chronischem Erkrankungen durch eine empowermentbasierte Patientenschulung	Pediatrics	Thyen, Ute
Dr. rer. hum. biol.	Schaich, Anja	Psychische Gesundheit, psychosoziales Funktionsniveau und Inanspruchnahme von Versorgungsleistungen für psychische Erkrankungen von Patienten mit koronarer Herzkrankheit	Psychiatry and Psychotherapy	Schweiger, Ulrich
Dr. rer. hum. biol.	Späth, Christina	Participant characteristics, short and long-term results of the EVIDENT study ("EffectiVeness of Internet-based DEpressioN Treatment"). A multicenter randomized controlled study	Psychiatry and Psychotherapy	Klein, Jan Philipp
2020				
Dr. rer. nat.	Flügge, Ulrike	Structural and biochemical characterization of chlamydial HtrA proteases	Biochemistry	Hansen, Guido
Dr. rer. nat.	Port, Julia	Implications of T-lymphocyte homing in Lassa fever pathogenesis and transmission	Biochemistry	Redecke, Lars
Dr. rer. nat.	Creutznacher, Robert	On the Interaction of Norovirus Capsid Protein with Glycans and Bile Acids	Chemistry	Peters, Thomas
Dr. rer. nat.	Nock, Sebastian	The good, the bad and the ugly - identification and characterzization of thyroid hormone-dependent biomarkers	Endocrinology and Diabetes	Mittag, Jens
Dr. rer. nat.	Nitzsche, Thomas	Autoimmunreaktionen gegen Proteine des exokrinen Pankreas im diagnostischen Umfeld von chronisch entzündlichen Darmerkrankungen	Nutritional Medicine	Sina, Christian
Dr. rer. nat.	Pagel, René	Die Bedeutung zirkadianer Rhythmen für das Darmepithel bei chronisch-entzündlichen Darmerkrankungen	Nutritional Medicine	Sina, Christian
Dr. rer. nat.	Koo-Poeggel, Chai Ping	Use of Non-Invasive Brain Stimulation to Modulate Endogenous Cortical Activity Across Brain States - a glimpse into a secret garden	Pharmacology and Toxicology	Marshall, Lisa
Dr. rer. nat.	Pleis, Jan	L^p and Pathwise Convergence of the Milstein Scheme for Stochastic Delay Differential Equations	Mathematics	Rößler, Andreas
Dr. rer. nat.	Becker, Stefan	In-silico-Modellierung der Progression und Radiotherapie maligner Hirntumoren	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Kusche, Roman	Mehrkanal-Bioimpedanz-Instrumentierung zur zeitaufgelösten Messung physiologischer Ereignisse	Medical Engineering	Buzug, Thorsten M.
Dr.-Ing.	Stark, Christian	Polarimetrische Bestimmung von Glucose in Anwesenheit von Störstoffen	Medical Engineering	Buzug, Thorsten M.
Dr. rer. nat.	Baumann, Hauke	Identification and characterization of novel genetic causes of dystonia	Neurogenetics	Lohmann, Katja
Dr. rer. nat.	Biel, Davina	Neural and psychological mechanisms of cognitive training in older adulthoods	Psychology I	Bunzeck, Nico
Dr. rer. nat.	Guran, Catherine	The psychological and neural foundations of the retrieval practice effect in young and older adulthood	Psychology I	Bunzeck, Nico
Dr. rer. nat.	Waschke, Leonhard	Dissociable electrophysiological brain states in perception	Psychology I	Obleser, Jonas
Dr. rer. nat.	Wegerich, Philipp	Optische Messung der Hämoglobinkonzentration	Anaesthesiology	Gehring, Hartmut
Dr. rer. nat.	Pech, Martin	Rhinovirus-Infektionen induzierten Modifikationen des epigenetischen Genregulationsmechanismus der DNA	Pediatrics	Kopp Matthias

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		Methylierungen im Zusammenhang mit Asthma im Kindesalter		
Dr. rer. nat.	Twisselmann, Nele	Immune responses of preterm macrophages and their role for the development of bronchopulmonary dysplasia	Pediatrics	Härtel, Christoph
Dr. rer. nat.	Geißler, Cathleen	Resistance is futile - A collective of epigenetically reprogrammed genes leads to diet-induced hepatic insulin resistance	Medicine I	Kirchner, Henriette
Dr. rer. nat.	Krause, Christine	Gene expression in Liver is Altered by DNA methylation and miRNAs in Obese Subjects	Medicine I	Kirchner, Henriette
Dr. rer. hum. biol.	Zeleny, Natividad	Einfluss der individuellen Lebensführung auf das Outcome von Hüftendoprothesen-OPs	Orthopedics and Surgery	Schulz, Arndt Peter
Dr. rer. hum. biol.	Assmann Nele	Moderatoren der Wirksamkeit von CBASP im Vergleich zu Supportiver Psychotherapie bei Patienten mit persistierender depressiver Störung. Eine multizentrische, randomisiert kontrollierte Studie	Psychiatry and Psychotherapy	Klein, Jan Philipp
Dr. rer. hum. biol.	Frenademetz, geb. Ullrich Jennifer	Essverhalten & Geschmack bei Adipositas	Medicine I	Schultes, Bernd
Dr. rer. hum. biol.	Zazai, Runa	Antropometrie, metabolische Risikomarker, Bewegungs- und Schlafverhalten bei ausgeprägter Adipositas	Medicine I	Schultes, Bernd
2021				
Dr. rer. hum. biol.	Schwarz, Annika	Vorhersage des Effekts einer anästhetischen Blockade des Nervus occipitalis major auf die Migrä-nefrequenz – Stratifizierung durch die manuelle Untersuchung der oberen Halswirbelsäule in einer Beobachtungsstudie	Physiotherapy	Lüdtke, Kerstin
Dr. rer. hum. biol.	Rath, Tino	Einfluss von Stimulusparametern und Untersuchungsbedingungen auf die Quantifizierung der lang-samen Augenfolgebewegung	Neurology	Trillenberg, Peter
Dr. rer. hum. biol.	Schorler, Hendrik	Standardisierte Testung von Knochenplatten-Schrauben-Konstrukten für die Osteosynthese	Orthopedics and Surgery	Jürgens, Christian
Dr. rer. hum. biol.	Arndt, Ann	Psychometrische Validierung der deutschen Version des "Detached Mindfulness Questionnaire" (DMQ-D)	Psychiatry and Psychotherapy	Schweiger, Ulrich
Dr. rer. hum. biol.	Hauer von Mauschwitz, Andrea	Wirksamkeit und Sicherheit von priovi, einem internetbasierten Selbstmanagementprogramm zur Un-terstützung der Behandlung der Borderline-Persönlichkeitsstörung (BPS) - Ergebnisse einer Fallbe-schreibung, einer Pilotstudie und einer randomisiert-kontrollierten Studie	Psychiatry and Psychotherapy	Jacob, Gitta
Dr. rer. hum. biol.	Kaiser, Paul	Wie integrieren sich junge Muslim*innen in Deutschland? Zum psychodynamischen Verhältnis von Subjekt und Struktur	Psychiatry and Psychotherapy	Götzmann, Lutz