Uniklinikum
Erlangen

FAPESP BAYLAT-Workshop

Neuro–Immune–Metabolic Interfaces in Inflammation and Pain

June 30 to July 3, 2026

Anästhesiologische Klinik

FAPESP

BAYLAT

Workshop Venue
Senatssaal, Kollegienhaus, Universitätsstraße 15,
91054 Erlangen

Jointly organized by
FAU Erlangen–Nürnberg & University of São Paulo (USP), Ribeirão Preto

Part I of a German–Brazilian Tandem Workshop Series
Erlangen 2026 → Ribeirão Preto 2027

Katharina Zimmermann (FAU)
Thiago Mattar Cunha (USP Ribeirão Preto)

Tuesday, 30.06.2026

08:15 **Welcome address**

Scientific Session I: Inflammation Across Organ Systems
How inflammation shapes tissue and organ function — from sensory neurons, the gut, and joints to regeneration and tissue damage.

08:30 **Prof. Thiago Mattar Cunha**
Decoding neuroimmune checkpoints in chronic pain
Title: The DRG Border as a Neuroimmune Interface in Pain
How do immune cells surrounding sensory ganglia shape chronic pain? This lecture explores neuroimmune interactions at the dorsal root ganglion and their role in driving neuropathic pain through inflammatory and metabolic signalling pathways.

09:15 **Prof. Mario Zaiss**
Connecting gut health to systemic inflammation
Title: The Gut–CNS–Joint Axis in Autoimmunity: Microbiota and Nutritional Immunology
Microbiota-derived metabolites and intestinal barrier function profoundly influence immune responses. This lecture highlights how gutderived signals shape inflammation, pain sensitivity, and autoimmune diseases such as rheumatoid arthritis.

10:00 **Prof. Kerstin Galler**
Engineering regeneration at the interface of biology and biomaterials

Title: Regeneration and Tissue Engineering of Dental Pulp – Basic and Translational Aspects
Discover how dental stem cells, biomaterials, and tissue engineering approaches are advancing regenerative dentistry. The lecture will showcase translational strategies for restoring pulp vitality and function.

10:45 **Coffee Break**

11:15 **Prof. Sandra Yasuyo Fukada Alves**
Metabolism as a driver of bone destruction
Title: Metabolic Reprogramming in Osteoclasts Drives Bone Resorption
Cellular metabolism is increasingly recognized as a key regulator of immune function. This lecture focuses on how metabolic rewiring of osteoclasts controls bone erosion and inflammatory bone disease.

12:00 – 13:30
Oral Flash Talks I
Student project talks with focused discussion of ongoing research.

14:00 **Poster and Pizza Session**
Students showcase their research, exchange ideas with faculty and fellow participants, and compete for the workshop poster prize.

Location: Ulmenweg 18, Foyer

18:00 **Beer Garden Networking Evening**
Steinbach Bräu, Vierzigmannstraße 4

Wednesday, 1.07.2026

Scientific Session II: Cellular Mechanisms and Disease Modeling
Exploring the cellular, immune, and molecular drivers of disease through advanced phenotyping, experimental models, and translational research approaches.

08:30 **Prof. Benjamin Frey**

High-dimensional immune profiling for translational medicine

Title: Immunophenotyping of Peripheral Blood – A Flow Cytometric Biomarker Generation for Neuro-Immune-Metabolic Interfaces

Advanced immune profiling technologies provide powerful tools for biomarker discovery. Learn how flow cytometry can uncover immune signatures associated with inflammation, pain, and metabolic disease.

09:15 **Prof. Aline Bozec**

Understanding osteoimmunology through systems biology

Title: Basic Osteoimmunology and the Metabolic Rewiring of Osteoclasts under Inflammation in Rheumatoid Arthritis

This lecture examines how immune signalling and cellular metabolism converge to regulate osteoclast function and drive chronic inflammatory joint destruction.

10:00 **Coffee Break**

10:30 **Dr. Iryna Prots**

Human stem-cell models for translational disease modelling

Title: Stem Cell-Based Cellular Models for Unraveling Disease Mechanisms

Patient-derived stem cells and organoid systems are transforming disease research. This lecture demonstrates how advanced cellular models help uncover mechanisms underlying neurodegenerative and inflammatory disorders.

Career Development Session

11:15 **Dr. Marcelle Danelon**

From Brazil to Germany: Building International Research Careers

Title: The CAPES–Humboldt Fellowship Funding Opportunity

Discussion on international mobility programmes, fellowships, and research careers between Brazil and Germany.

Dr. Marcelle Danelon is a former CAPES–Humboldt Fellow and current Professor at TU Dresden. Drawing on her own funding and career path between Brazil and Germany, she will discuss international mobility programmes and fellowship opportunities and share practical insights for early-career researchers aiming to build collaborative scientific careers.

12:00 – 13:30
Oral Flash Talks II
Student project talks with focused discussion of ongoing research.

13:15 **Lunch**
Location: Department of Anesthesiology, University Hospital Erlangen, Building D, 4th Floor Library

14:00 – 18:00
Practical Training for Students I

18:30 **Beer Garden Networking Evening**
Thalermühle, Thalermühle 1

Thursday, 2.07.2026

Session III: Sensing, Adaptation and Translational Perspectives

How organisms sense environmental and inflammatory signals, adapt metabolic and immune responses, and translate these mechanisms into models of human disease.

09:00 **Prof. Stephan Rosshart**
Bringing the wild back into translational research
Title: Born to be Wild – Wildlings, a Novel Translational Research Model for Human Diseases

Laboratory mice differ profoundly from humans in their microbial and environmental exposures. This lecture introduces wildling mice as a powerful translational model that better reflects human immunity and disease.

09:45 **Prof. José Carlos F. Alves Filho**

Targeting metabolism to control immune-mediated disease

Title: Immunometabolism as a Target for Immune-Mediated Diseases

Immune cells continuously adapt their metabolism to environmental cues. This lecture discusses how metabolic pathways can be exploited therapeutically to modulate inflammation and chronic disease.

10:30 **Prof. Luiz Osório Silveira Leiria**

Sensory neurons meet adipose metabolism

Title: Neural Control of Adipose Metabolism by Nociceptive Sensory Pathways

Sensory neurons influence far more than pain perception. This lecture explores how nociceptive circuits regulate adipose tissue biology, thermogenesis, and systemic metabolic homeostasis.

11:15 **Prof. Katharina Zimmermann**

Decoding how the body senses danger

Title: Molecular Sensors of Danger: TRP Channels Linking Pain, Inflammation and Metabolism

TRP ion channels detect cold, tissue injury, and inflammatory signals. Using examples from dental pain, inflammatory disease, and thermogenic adaptation, this lecture explores how TRPA1, TRPC5, and TRPM8 connect sensory signalling with inflammation and metabolic regulation.

12:15 **Lunch**

Location: Department of Anesthesiology, University Hospital Erlangen, Building D, 4th Floor Library

13:00 – 17:00

Practical Training for Students II

16:00 **Collaborative Futures Round Table**
Discussion of shared scientific priorities, future bilateral projects, and long-term structures for German–Brazilian research and training collaborations.
Location: Department of Anesthesiology, Krankenhausstrasse 12, 4th Floor Library

18:00 **Collaborative Futures Dinner (Invited Faculty & Guests)**
Alter Simpl, Bohlenplatz 2

Cultural Excursion and Networking Friday, 3.07.2026

Bus & Boat Excursion to Kloster Weltenburg
Exploring the world's oldest monastery brewery and the spectacular Danube Gorge – one of Bavaria's most iconic cultural landscapes.

09:00 **Departure from Erlangen**
Meeting Point: Jakob Herz Monument (Intersection of Universitätsstraße and Krankenhausstraße)

12:00 **Lunch at Kloster Weltenburg Beer Garden**

17:00 **Departure from Kloster Weltenburg**

19:00 **Estimated arrival in Erlangen**

Practical Training Modules

Gut Organ Culture and Host–Microbiota Interactions

From microbial communities to immune regulation

Discover how ex vivo gut culture systems enable the study of host–microbiota interactions in a physiologically relevant setting. Participants will gain insight into live imaging, intestinal physiology, and experimental approaches used to identify microbial pathways that shape immune responses and inflammation.

Time: Wednesday 14:15, Thursday 13:15
Location: Optical Imaging Centre Erlangen (OICE), Cauerstrasse 3, Central Entrance
Teachers: Shiying Liu, Mario Zaiss

GCaMP Imaging for Sensory Profiling and Pain Research

From surgery to single-neuron activity maps

Obtain a complete overview of modern in vivo calcium imaging in pain research. Participants will learn how sensory activity is recorded using GCaMP reporters, observe key steps of laminectomy surgery and imaging acquisition, and explore analytical pipelines that transform raw imaging data into functional maps of neuronal populations involved in nociception and sensory coding.

Time: Wednesday 14:15, Thursday 13:15
Location: Department of Anesthesiology, Krankenhausstrasse 12, 4th Floor Library (Lunchroom)
Teachers: Roberto Cadeddu, Katharina Zimmermann

Immunophenotyping for Biomarker Discovery

From immune cell patterns to reproducible biomarker signatures

This practical introduces multiparameter flow cytometry as a tool to identify immune cell signatures at neuro-immune-metabolic interfaces in inflammation and pain. Participants will learn how circulating immune cell populations can be characterized and how standardized semi-automated analysis workflows support reproducible biomarker discovery while reducing operator-dependent variability.

Time: Wednesday 14:15, Thursday 13:15
Location: Strahlenklinik – Forschungsbau, Glücksstraße 4A, 1st Floor, room 01.018
Teachers: Anna-Jasmina Donaubauer, Benjamin Frey

LC–MS/MS Stable-Isotope Fluxomics and Targeted Metabolomics

From metabolic pathways to molecular biomarkers

Learn how targeted mass spectrometry can be used to quantify metabolites, track 13C-labelled substrates through metabolic pathways, and identify biomarkers associated with pain, inflammation, and therapeutic responses. Participants will gain insight into modern LC–MS/MS workflows for translational metabolomics and pharmacological research.

Time: Wednesday 16:15, Thursday 15:15
Location: Department of Anesthesiology, Krankenhausstrasse 12, 4th Floor Library (Lunchroom)
Teachers: Stefanie Schmidt

Osteoclast Culture and Bone MicroCT Imaging

From inflammatory signalling to bone destruction

Learn about experimental approaches used to study bone remodelling and inflammatory bone loss in arthritis. Participants will observe osteoclast differentiation from precursor cells, assess bone-resorbing activity, and explore high-resolution microCT imaging workflows used to quantify structural changes in bone and joints. Together, these methods provide insight into how inflammation drives osteoclast activation and pathological bone erosion.

Time: Wednesday 16:15, Thursday 15:15
Location: Nikolaus-Fiebiger-Zentrum, Glückstraße 6, room 02.032
Teachers: Rene Pfeifle, Aline Bozec

Dental Pulp Stem Cell Isolation and Characterization:

From dental tissue to stem-cell-based disease models.

Learn how stem and progenitor cells can be isolated from human dental pulp and expanded for basic cell culture-based research. Participants will gain insight into human dental pulp tissue processing, primary cell culture, and the development of cellular models used to study physiology, inflammatory reactions, pain and cold detection, and disease mechanisms in human dental pulp.

Time: Wednesday 16:15, Thursday 15:15
Location: Nikolaus-Fiebiger-Zentrum, Glückstraße 6, room 00.075
Teachers: Majida Al-Abboodi, Iseline Cardon, Iryna Prots

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