Within a DFG funded project
the research group of Prof. Dr. Franziska Jundt

at the Comprehensive Cancer Center Mainfranken in Würzburg invites applications for a

Postdoctoral position in Cancer Research (m/f/d)

to conduct research on the project

“Impact of obesity and hyper/hypo-mechanical loading on myeloma bone disease”

commencing on 01.03.2025. The position is initially limited to 3 years. We offer a full-time position 100%.

Project:
Bone lesions, bone fractures and impaired bone remodeling occur in myeloma bone disease (MBD), a debilitating skeletal condition developing in patients suffering from the plasma cell disorder multiple myeloma (MM). In MBD bone marrow derived mesenchymal stromal cells (MSC) display a shift towards adipogenic differentiation, while osteogenic differentiation is impaired. With its increased bone marrow adipose tissue (BMAT), obesity is a risk factor for MM, as increased adipogenic differentiation may support tumor growth and dampen osteogenesis. Mechanical loading of bone induces mechanotransduction in MSC and osteoblasts, being a stimulus for osteogenic differentiation and bone growth. In a mouse model for MBD we have shown that mechanical loading of a MM-bearing hindlimb is a countermeasure for tumor growth and induces bone regeneration. In this new project we will investigate whether mice with MM and high BMAT similarly benefit from mechanical loading (2g hypergravity) and whether mechanical unloading, leading to an osteoporotic bone phenotype, is an additional risk factor in this context. We will characterize bone microarchitecture, analyze tumor growth and size, measure serum parameters, validate our results in 2D and 3D cell culture models and correlate our findings to patient data. The following hypotheses will be addressed: in obese mice suffering from MBD, mechanical loading (a) restores the bone phenotype (b) reduces MM tumor burden and (c) has an altered transcriptional and epigenetic signature in bone cells. This binational project combines the complementary expertise of three French PI’s (bone, mouse loading and unloading models, metabolism, epigenetics) and two German PI’s (MBD/MM, mechanical loading, bone cell biology, mechanotransduction). Overall our results will contribute to the understanding of MBD progression in compromised bone and bone marrow and the impact of mechanical up- versus un-loading in metabolically challenged conditions.

Your responsibilities:
- Contribute to the development of project direction, as the project evolves.
- Produce written reports and draft papers.
- Present your results at local meetings and national and international conferences.
- Assist with training other researchers, including Masters’ and undergraduate project students.
- Contribute to maintaining the friendly, welcoming and collaborative environment within the group.

Your profile:
- A PhD in Life Sciences (e.g. Biology, Biochemistry, Veterinary Medicine) or related discipline.
- Extensive experience with conditional knockout or transgenic mice or mouse tumour models
- Experimental background in one or more of the following subjects is beneficial: Molecular Biology, Cell Biology, Biochemistry.
- Highly motivated individuals with an interest in joining an interdisciplinary research group (collaboration with Prof. Dr. Maura Strigini, UJM University Saint-Etienne, Prof. Regina Ebert, University Würzburg)
- The ability to work creatively and independently towards developing your own research project
- English communication skills, both written and spoken

We offer:
- A highly communicative atmosphere within an energetic scientific network
- Cutting-edge research in an international team
- A comprehensive mentoring program and soft skill courses for early career researchers at the Graduate School of Life Sciences at the University of Würzburg
- Würzburg with the UNESCO World Cultural Heritage Site Residence Palace
- A family-friendly working environment with a variety of offers for families
- A wide range of university sports activities

The three-year full-time postdoctoral researcher position (100% TV-L E13) will be funded through the German Research Foundation (DFG). To promote gender equality in science, applications by woman are especially welcome. Candidates with severe disabilities will be given preference in the case of equal qualifications and suitability.

Applications in English should comprise a letter of motivation with a description of scientific achievements and academic goals (2 pages), your CV, abstract of Bachelor / Master theses, contact information of two academic references, copies of academic certificates. Please submit your application via email (jundt_f@ukw.de) to Prof. Franziska Jundt by 31st of October 2024.

Scientific video with Franziska Jundt:

Is Physical Activity an Effective Treatment for Bone Cancer?
https://www.youtube.com/watch?v=6jWNOKFBLYk

Selected references:

Rummler M, Ziouti F, Snyder L, Zimmermann EA, Lynch M, Donnelly E, Wagermaier W, **Jundt F**, Willie BM. Bone mechanical properties were altered in a mouse model of multiple myeloma bone disease. Biomater Adv. 2024 Sep 15;166:214047.
Moreno-Jiménez I, Heinig S, Heras U, Maichl DS, Strifler S, Leich E, Blouin S, Fratzl P, Fratzl-Zelman N, **Jundt F***, Cipitria A*. 3D osteocyte lacunar morphometry of human bone biopsies with high resolution microCT: From monoclonal gammopathy to newly diagnosed multiple myeloma. Bone. 2024 Aug 14;189:117236. *contributed equally.
Rindt WD, Krug M, Yamada S, Sennefelder F, Belz L, Cheng WH, Azeem M, Kuric M, Evers M, Leich E, Hartmann TN, Pereira AR, Hermann M, Hansmann J, Mussoni C, Stahlhut P, Ahmad T, Yassin MA, Mustafa K, Ebert R, **Jundt F**. A 3D bioreactor model to study osteocyte differentiation and mechanobiology under perfusion and compressive mechanical loading. Acta Biomater. 2024 Aug;184:210-225.
Ziouti F, Rummler M, Steyn B, Thiele T, Seliger A, Duda GN, Bogen B, Willie BM, **Jundt F**. Prevention of Bone Destruction by Mechanical Loading Is Not Enhanced by the Bruton's Tyrosine Kinase Inhibitor CC-292 in Myeloma Bone Disease. Int J Mol Sci. 2021 Apr 7;22(8):3840.
Rummler M*, Ziouti F*, Bouchard AL, Brandl A, Duda GN, Bogen B, Beilhack A, Lynch ME, **Jundt F***, Willie BM*, Mechanical loading prevents bone destruction and exerts anti-tumor effects in the MOPC315.BM.Luc model of myeloma bone disease. Acta Biomaterialia, 2021, 119:247-258. *contributed equally