Riegger lab at the Division of Experimental Orthopedics

PhD “Impaired Mechanotransduction as a Potential Key Driver of Senescence-Related Bone Loss in the Aging Skeleton”

Aging increases the risk of osteoporosis by promoting senescence in bone cells, which release inflammatory SASP factors and lose their ability to sense mechanical load (Riegger *et al*., 2023. DOI: 10.1186/s11658-023-00489-y). Moreover, senescent osteoblasts are believed to impair bone formation and mechanosensitivity through paracrine signaling. The project will investigate how senescent osteocytes and osteoblasts disrupt mechanotransduction in aged bone and influence healthy bone cells via SASP factor secretion. As a therapeutic approach, different senolytic compounds will be tested to restore bone responsiveness to mechanical stimuli (Maurer *et al.,* 2025: DOI: 10.1111/acel.14361).
The project combines human and murine cell culture models, immunofluorescence and confocal microscopy, flow cytometry/ cell sorting, secretome analysis, gene expression analysis, and bulk RNASeq to uncover the underlying molecular mechanisms. The project will thus contribute to a better understanding of the pathomechanisms underlying age-related osteoporosis and will help to combat the disease through targeted senolytic therapies.

We are looking for a highly motivated scientist (f/m/d) who is dedicated to performing fundamental research with direct clinical relevance. During the first months, the successful candidate will be based at the University of Ulm and receive comprehensive training in the experimental techniques required for the project. Subsequently, the doctoral research will be continued at Friedrich-Alexander University (FAU) Erlangen-Nürnberg. Therefore, willingness to relocate to Erlangen is essential.

We expect:

- Training in molecular biology, cellular biology or related fields.
- Strong interest in aging, skeletal diseases, and translational biomedical research.
- Excellent communication skills in spoken and written English.

Applications including a CV, a statement of research experience and interests (max. 2 pages) and contact data for 1-2 references should be emailed to PD Dr. Jana Riegger-Koch, jana.riegger@uni-ulm.de until 31.7.2026.