



FIDELIO
Bone health in diabetes

Training network for research into bone Fragility In Diabetes in Europe – towards a personaliSed medicine approach

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PhD student – Early Stage Researcher (ESR12) Bone matrix characterization and analysis of AGE accumulation in diabetic bone

About FIDELIO

The EU-funded Innovative Training Network FIDELIO (<https://www.fidelio-project.eu>) aims to train the next generation of scientists in order to tackle the challenges of diabetic bone disease from various angles and with the newest technologies available. Interdisciplinary training and implementation of innovative approaches are key. Within this consortium, we will comprehensively unravel the genetic and environmental mechanisms that contribute to bone fragility in diabetes, identify predictors and clinical markers for patient stratification, decipher the underlying molecular mechanisms of bone fragility in diabetes, and establish potential interventions through a personalised medicine approach.

The research programme will address different aspects of diabetic bone disease from the viewpoints of epidemiology, genetics, miRNAs, microbiome, bone biology, bone biomechanics and microstructure, preclinical and clinical research. It will utilise advanced imaging and computational approaches, diabetes mouse models and access to clinical cohorts and registry data to obtain a comprehensive overview of how these mechanisms combine in diabetes to cause increased fracture risk.

With this interdisciplinary approach, we can explore the impact of biological pathways in mouse models and/or humans, and interactions with diet, exercise and other exposures. Collaborations with industry will allow early identification of IP, access to state of the art technologies, and will complement the academic ESR training programme with entrepreneurship and industrial mentoring.

About the host organization

The **Universitätsklinikum Hamburg-Eppendorf (UKE)** is one of Europe's most modern clinics. Here specialists from all fields of medicine and life sciences are brought together under one roof. State-of-the-art medical technology, innovative information technology, and architecture created with the provision of medical care at the forefront, all with the aim of optimally supporting doctors, nursing staff, and therapists. With a strong focus on research, ideal conditions for the interlinkage between modern medicine, translational research, and teaching are found at the UKE. More than 11,000 employees work around the clock with the singular aim of providing the best medical care to our patients. Webpage: <https://www.uke.de/english/index.html>

The Heisenberg Research Group (Busse lab) at the Department of Osteology and Biomechanics focusses on bone quality assessment. Basic, translational and clinical research is performed on multiple aspects of musculoskeletal health. Webpage: <https://www.uke.de/english/departments-institutes/institutes/osteology-and-biomechanics/index.html>

The P.I., Dr. Katharina Jähn, has expertise in bone histology, bone histomorphometry, and functional characterizations of the osteocyte network. Further research topics include **osteoporosis, musculoskeletal disorders, bone matrix quality analysis, high-resolution imaging and biomechanical testing**. The group consists of an international, multidisciplinary team with backgrounds in the fields of biology, chemistry, medicine, bioengineering and computational analysis all working together to address key questions in musculoskeletal health.

Task description

Your PhD project:

The candidate will be working in a team of highly motivated young researchers. In-depth bone matrix characterization and analysis of crosslinks in diabetic bone will be key tasks. Therefore, the candidate will work on the following aspects: i) performing micro-scale analysis of diabetic bone to characterize diabetes-induced changes with clinical and lab-based tools. ii) the candidate will correlate bone matrix characteristics of human bone and murine disease models. iii) the candidate will perform biomechanical characterization and 2D/3D imaging of bone tissue. Your results will provide further insight into how diabetes-induced changes affect bone quality and fracture risk.

Secondments:

You will embark on secondments to other FIDELIO partners (TUD (DE), USFD (UK), Phillips (DE)) to access experimental models and tools or receive additional training not available in the home laboratory. This will include animal experiments, obtaining clinical data for correlation of bone matrix to clinical parameters as well as scans and image processing. Total secondment time is 6 months.

Benefits of working in an ITN:

- You will be working within our international, interdisciplinary group of >30 researchers with experience in a broad range of sciences
- You will get in contact with the other members of this international consortium and will benefit from the joint training platform to develop skills necessary for developing a thorough understanding of the diabetic bone disease, bone metabolism, while also obtaining skills for industry.

Profile and requirements

- Applicants must hold an MSc or equivalent in the field of biomedical engineering, materials science, biomedical technology, physics, biology or related life science disciplines
- Applicants must have a solid knowledge of bone biology and biomechanics. Experience in microscopic imaging is desired. Willingness to work with bone specimens from animals and humans is a prerequisite
- Applicants can be of any nationality
- Applicants must have an ability to understand and express themselves in both written and spoken English to a level that is sufficiently high for them to derive the full benefit from the network training
- Applicants must be eligible to enroll on a PhD program at the host institution (or a designated university in case the host institution is a non-academic organization)

In addition:

H2020 MSCA Mobility Rule: researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of the host organization (Germany) for more than 12 months in the 3 years immediately before the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status are not taken into account.

Eligible researchers must not have spent more than 12 months in the 3 years immediately prior to the date of selection in the same appointing international organisation.

H2020 MSCA eligibility criteria: Early Stage Researchers (ESRs) must, at the date of recruitment by the host organization, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. Full-Time Equivalent Research Experience is measured from the date when the researcher obtained the degree entitling him/her to embark on a doctorate (either in the country in which the degree was obtained or in the country in which the researcher is recruited, even if a doctorate was never started or envisaged).

Benefits

- You will be employed by the host organization for 36 months.
- A competitive salary plus allowances. Moreover, funding is available for technical and personal skills training and participation in international research events.
- You will benefit from the designed training program offered by the host organization and the consortium.
- You will participate in international conferences and secondments to other organizations within the FIDELIO network and in outreach activities targeted at a wide audience

Please find additional information in the [Information package for Marie Curie fellows](#)

Application

Interested candidates are invited to apply online at <https://www.fidelio-project.eu/contact/>

Planned key dates:

25 November 2019: Recruitment event in Rome, Italy

Expected start date: January 2020

More information and other vacant positions can be found on <https://www.fidelio-project.eu>

Additional information

We in the FIDELIO consortium value diversity and we commit to equal treatment of all applicants irrespective of gender, sexuality, health status as well as social, cultural or religious background.

For additional information about the research project and this individual position, please contact:

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