



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

This project has received funding from the European Union's Horizon 2020 research and innovation program under the MARIE SKŁODOWSKA-CURIE grant agreement no. 860898



PhD student – Early Stage Researcher (ESR5) Bioenergetics of human osteoblasts

About FIDELIO

The EU-funded Innovative Training Network FIDELIO (<https://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

University of Southern Denmark: With the main campus in Odense and six campuses around the country, the University of Southern Denmark is the third largest university in Denmark, with more than 30.000 students enrolled. SDU offers a wide range of traditional disciplines but focuses on information technology, and biotechnology. The Clinical Institute at SDU provides research facilities for most aspects of medical and biomedical research, covering basic, translational and clinical research, and the institute hosts more than 100 professors. The clinical research is conducted in collaboration with clinical units at Odense University Hospital. The **SDU facility OPEN** (Odense patient Data Exploratory Network) is extensively involved in registry-based research, providing support for data management, biobanks, statistical analyses and epidemiological research. Access to national registries covering sociodemographics, prescriptions, diseases and mortality.

The Department of Molecular Endocrinology headed by Professor Moustapha Kassem and associate Prfoessor Morten Frost focuses on mechanisms of bone formation and bone cell differentiation, metabolism and activity as well as differentiation of skeletal (mesenchymal) stem cells into bone. The group is also examining the contribution of gut hormones in regulation of glucose and bone metabolism in humans and in rare metabolic bone diseases. These goals are explored by use of cell and molecular methodologies and comprise basic, translational and mechanistic research. The **SDU PhD programme** includes a number of core courses, e.g. on ethics, statistics, oral and written communication, as well specific courses on research in animals, advanced epidemiological statistics. The department is compromised of around 18 scientists, students and technical staff (1/3 from Denmark, 2/3 internationals).

Task description

Your PhD project:

One PhD project will examine the cellular and molecular phenotype of human skeletal (MSC) and osteoblastic cultures established from bone marrow aspirates obtained from patients with T1D/T2D and healthy, age-matched controls and include *ex vivo* cell proliferation, osteoblastic and adipocytic differentiation, molecular phenotyping using RNA-seq. *Ex vivo* metabolic studies of bioenergetics will be included e.g. measuring glycolysis and OXPHOS. The role of miRNA species in regulating energy metabolism will be determined using either global miRNA gene expression analysis or focused analysis of miRNAs.

One PhD project is based on epidemiological analysis of the effect of metformin in bone outcomes and fracture. Metformin use in relation to fracture risk will be examined in the registry of Statistics Denmark and compared with the findings in the Rotterdam Study.

Secondments:

You will embark on secondments to other FIDELIO partners TamiRNA (AT) or ERASMUS to access experimental models or tools or receive training not available in the home laboratory. Total secondment time is 3 months.

Benefits of working in an ITN:

- You will be working within our international 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 mechanisms of Diabetes and the bone metabolism and for obtaining industry skills.

Profile and requirements

- Applicants must hold a MSc or equivalent in the field of biology, medicine, chemistry or a related discipline
- Applicants must have a solid knowledge of cell and molecular biology as well as biochemistry. Experience with animal experimentation is desired. Willingness to work with animals is a prerequisite
- For epidemiological studies, having a medical degree is very relevant
- 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 SDU
-

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 (Denmark) 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:

Prof. Moustapha Kassem

E-Mail: mkassem@health.sdu.dk

Associate Prof. Morten Frost

mmfnielsen@health.sdu.dk



University of
Southern Denmark



Region Syddanmark

OUH
Odense Universitetshospital
Svendborg Sygehus