



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 (ESR14) Exploring subgroups to inform personalized treatment strategies

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

ETH Zurich has come to symbolize excellent education, ground-breaking basic research and applied results that are beneficial for society. Founded in 1855, it today offers researchers an inspiring environment and students a comprehensive education as one of the leading international universities. ETH Zurich has more than 20,000 students and more than 500 professors. 21 Nobel Laureates have studied, taught or conducted research at ETH Zurich, underlining the excellent reputation of the university (www.ethz.ch).

The ETH Pharmacoepidemiology Group, headed by Prof. Dr. Andrea Burden is located on the Science Campus within the department of Chemistry and Applied Biosciences (D-CHAB). The research group focuses on the development and application of innovative methods in chronic disease pharmacoepidemiology to improve the understanding and management of the safety and effectiveness of medications (www.pharmacoepidemiology.ethz.ch). We are a young and enthusiastic research group that share a common goal – improve the lives of individuals living with chronic diseases by increasing the knowledge of medication safety. The primary clinical area of interest within the group is the association between metabolic diseases and bone, particularly the role of medications on the prevention/risk of fracture. Through collaborations with national and international partners, we use leading real-world healthcare databases from Denmark, Switzerland and the UK. Additionally, the close connections to leading research groups in chemistry, pharmaceutical sciences and machine learning within the D-CHAB, offers unique opportunity for innovation and collaboration.

Task description

Your PhD project:

At the ETH you will develop a refined classification of patients to individualize treatment regimens to minimize fragility fracture risk in patients with diabetes. You will have access to large real-world patient healthcare data to conduct observational analyses using traditional and machine-learning study designs. First, you will conduct data-driven (hypothesis generating) analyses to identify new patterns in comorbidities and medication utilization associated with fragility fractures in diabetes. Second, within patient clusters, you will conduct comparative effectiveness analyses of medications on fracture risk, to move towards improved patient-specific treatment strategies.

Secondments:

You will embark on secondments to other FIDELIO partners (USFD (UK), SDU (DK), SDCN (DK), IBM (CH)) to access training in data analysis and machine-learning methods not available at the home group. This will include examining clinical-insights of clusters and clinical knowledge dissemination at the USFD, collaboration on statistical analyses and training on Danish data at the SDU and SDSC, and statistical training and automatic generation/application of unsupervised model for clustering based on deep learning/machine learning to individual thesis projects at IBM. Total secondment time is 10 months.

Benefits of working in an ITN:

- You will be working within our international group of senior researchers with experience in a broad range of sciences, including pharmacoepidemiology, pharmacy, pharmacology and biostatistics.
- 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 biostatistics, pharmacoepidemiology, medical sciences, or a related discipline
- Applicants must have a solid knowledge of statistical programming in SAS, R or python. Additionally, previous experience conducting observational research in real-world data is strongly desired
- 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
- Proficiency in German is an asset
- 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 (Switzerland) 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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