



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 (ESR13) miR-203a functions as regulator of type-2 diabetic bone disease

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

TAmiRNA GmbH (www.tamirna.com) was founded in 2013 in Vienna in order to drive the discovery, validation and commercialization of microRNA biomarkers in liquid biopsies. The co-founders of TAmiRNA have >20 years of experience in basic, translational and clinical microRNA research, contributed to over 130 publications, and filed for 8 patents. TAmiRNA has been granted a range of national and international awards for its miRNA R&D projects in the area of musculoskeletal, cardiovascular and liver disease.

The R&D team of TAmiRNA is headed by Dr. Matthias Hackl and has developed and implemented assays for high-throughput genome-wide transcriptomic and bioinformatic analyses in various types of biological matrices including liquid biopsies, exosomes, cells and tissues. In addition, various bioassays for studying the functional roles of microRNAs in vitro have been developed. These tools enable TAmiRNA to discover and validate novel biomarker candidates, and to explore underlying disease mechanisms. Dr. Hackl and Dr. Grillari have an excellent track record in research regarding **microRNA biology, disease mechanisms and biomarker development, thereby providing the best conditions for conduction clinical, translational and basic research.**

Task description

Your PhD project:

miR-203a has been recently identified as a key regulator of bone formation and potential biomarker candidate for type-2 diabetic bone disease. In order to complete our understanding of the biological functions of this miRNA, you will characterize expression levels of miR-203a in different compartments of bone tissue from type-2 diabetic and non-diabetic animals obtained in collaboration with the Technical University Dresden (TUD), and apply RNAs sequencing technology in primary (like) human bone cells (osteoprogenitors and osteoclast progenitors) under ectopic up- and down-regulation of miR-203a to identify novel mRNA targets. In silico and in-vitro CHIP assays will be used to predict and experimentally confirm the interaction of transcription factors with miR-203a promoter region, and to characterize miR-203a transcription in response to parathyroid hormone, sex hormones, and glucose. Finally, this project will take advantage of clinical human sample material within the FIDELIO consortium (via partners at the University of Sheffield (USFD) and Roma (UCBM)) to investigate tissue expression as well as circulating levels of miR-203a together with its validated target mRNA levels in the context of onset and progression of type-2 diabetic bone disease.

Secondments:

You will embark on secondments to other FIDELIO partners (TUD (DE), UCBM (IT), USFD (UK)) to access experimental models or tools or receive training not available in the home laboratory. This will include animal models for T2D bone disease, analysis of microRNA levels in human bone biopsies and serum samples from T2D patients with and without fractures, association of miR-203a with sclerostin expression and identification of novel microRNA biomarkers for T2D bone disease. Total secondment time is 8 months.

Benefits of working in an ITN:

- You will be working within our international group of > 8 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, biotechnology, biochemistry or a related discipline.
- Applicants must have a solid knowledge of cell and molecular biology as well as biochemistry. Experience in working with RNA and basic bioinformatic skills are 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.
- 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 (Austria) 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 within 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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