IMIBIC CALL FOR EXPRESSIONS OF INTEREST:
POST-DOCTORAL RESEARCHERS: Metabolism and Adipocyte Differentiation. Metabolic Syndrome

Reference: PostdocMSCA2017GC11

Description of IMIBIC

The biomedical research institute, IMIBIC, located in Cordoba, southern Spain, is a partnership between the University of Cordoba and the Reina Sofia University Hospital. IMIBIC offers a multidisciplinary environment focused on results-oriented research and based on precision medicine and excellence in science. IMIBIC is accredited with the Excellence distinction from the Carlos III Spanish National Institute of Health.

The Institute is structured in research groups that cooperate in the implementation of its various scientific programmes. Our major goal is to promote biomedical innovation as a powerful engine for economic and social development. To this end, the Institute offers an active environment in which to conduct high-level scientific research. Regular seminars and research events offer the opportunity to meet with national and international speakers covering a diverse range of topics in biomedicine.

The IMIBIC building is located within the University Health Sciences Campus, nearby the Reina Sofia University Hospital. It hosts a wide variety of core facilities for researchers, including the Biomedical Research Support Units that host brand new equipment and laboratories to support the technical needs of the IMIBIC community, as well as a Clinical Research Unit to support clinical trial research.

In 2015, IMIBIC managed to continue increasing its scientific output, with 359 papers and the total impact factor was 1303.75 points. Furthermore, 21 property registries were fostered at the heart of the Institute, and a total of 5 EU and international projects (private, FP7, H2020, IMI) were active in 2015.

Aim of the call

The Maimonides Biomedical Research Institute of Cordoba (IMIBIC) is seeking to develop proposals with **experienced researchers** for submission under the **Horizon 2020 Marie Skłodowska-Curie Actions.**
http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-if-2017.html

IMPORTANT: Applicants should check their CV against the eligibility and mobility conditions of Marie Skłodowska-Curie Actions.

Brief description of the Research Group

Metabolism and Adipocyte Differentiation. Metabolic Syndrome (GC-11)

Adipose tissue plays a crucial role in managing the body energy stores and constitutes an important endocrine organ. Adipose tissue deregulation in obesity strongly impacts on systemic homeostasis, often leading to the development of insulin resistance. Our research group investigates the cellular and molecular mechanisms underlying adipose tissue dysfunction in obesity and its contribution to metabolic diseases. This research is based on a two-pronged approach:

(a) Untargeted omics of adipose tissue/adipocytes. The group employs several proteomic techniques to analyze changes in both the quantity and quality (post-translational modifications of proteins, including phosphorylation and acetylation) of the proteins of the adipose tissue (human and murine) in relation to the development of insulin resistance and type 2 diabetes. Lipidomic studies, including MALDI Imaging to analyze the distribution of lipids in human adipose tissue sections, are also carried out.

(b) Targeted analyses to identify potential pathogenic biomarkers and/or mechanisms related to the dysregulation of insulin signalling, lipid storage and mobilization, or adipokine secretion in the obese preadipocyte/adipocyte. Molecules and pathways identified from omics data analysis are further characterized using a variety of cellular and molecular methodologies on cell lines (3T3-L1 cells) and/or primary adipocytes (human and murine). In addition, stress processes (oxidative stress, endoplasmic reticulum stress, inflammation, unbalanced proteostasis, mechanical stress, fibrosis, etc.) are explored in relation to organelle dysfunction and organelle interactions (lipid droplets, mitochondria, endoplasmic reticulum, etc.).

Project description:

Despite the huge attention that the adipose tissue has received during the past few decades, many factors and pathways mediating its dysfunction in obesity remain elusive. The adipose tissue is surprisingly flexible and efficient to respond to the ever-changing body energy demands. This reflects the capacity of adipocytes to adapt to altered nutrient environments, which has profound systemic implications. In conditions of overnutrition, adipose tissue adaptive responses help prevent fatty acid ectopic deposition and lipotoxicity, including changes in the interaction between the cellular and extracellular components of the adipose tissue. These changes activate cellular stress responses and impair adipocyte expansion, likely by altering the functionality of the lipid management hub in adipocytes, the lipid droplet, and its functional relationships with other intracellular organelles regulating lipid metabolism. However, the precise participation (mechanical and/or signalling) of the different extracellular matrix components in adipocyte function and their impact in the development of metabolic disease remain unknown. Furthermore, to date little information is available on the molecular mechanisms underlying the deregulation of lipid droplet expansion in obesity and its communication with other organelles.

In this context, one of our ongoing studies aims at 1) characterizing the impact of extracellular matrix composition in obesity-associated adipocyte dysfunction, and 2) identifying the molecular pathways involved in the control of lipid storage within lipid droplets and the contribution of other organelles to lipid droplet function. To achieve these goals, we employ a wide variety of cellular and molecular methodologies on adipocyte cell lines (3T3-L1 cells) and/or primary adipocytes (human and murine), including, among others, confocal microscopy and video-microscopy, electron microscopy, overexpression and silencing studies, activity assays (adipogenesis, lipogenesis, lipolysis, fibrogenesis, proteasome, etc), quantitative immunoblotting and RT-PCR, and proteomic techniques.

The results obtained will help decipher molecular mechanisms controlling adipose tissue homeostasis in normal and pathological states that would pave the way to devise effective therapies in obesity and metabolic disease.

Profile

Skills/Qualifications:

- PhD in Biological sciences, biochemistry or similar, with an outstanding academic track record and at least one first authored publication in an internationally recognised peer-reviewed journal.
- Capable of working in a team, but able to plan and work independently.
- Good communication skills.

Specific Requirements:

- Strong background in the molecular basis of metabolic diseases

- Strong background in cellular and/or molecular biology techniques

Required Languages:
-Excellent level of spoken and written English.

Benefits:

IMIBIC offers an active environment in which to conduct high-level scientific research. Regular seminars and research events offer the opportunity to meet with national and international speakers covering a diverse range of topics in biomedicine. IMIBIC provides an ideal environment to strengthen the skills and knowledge of young scientists, fostering translational research by facilitating the interface between experimental basic science and clinical medicine. By joining the Adipobiology group, applicants can acquire a solid background on the molecular basis of a highly prevalent disease, obesity, using different advanced methodological approaches and experimental models, including human studies. The group provides a supportive research environment wherein postdocs will be encouraged to develop their own scientific ideas.

Eligibility criteria:
The candidate must fulfil the eligibility and mobility conditions of Marie Skłodowska-Curie Actions.

Selection Process:
The process consists of an analysis, evaluation and ranking of all CVs received. Following the evaluation, the highest ranked applicants will be called for a personal interview in order to evaluate more precisely the skills of the candidate.

Additional comments:
How to Apply: Applicants should send their CV to the following address: personal@imibic.org stating clearly in the subject of the email the reference "**PostdocMSCA2017GC11**". Deadline for sending your CV: 30th April, 2017.
Warning: Application emails that do not include reference will not be considered.

For more information about the Marie Skłodowska-Curie actions, see:
http://ec.europa.eu/research/mariecurieactions/