PhD student position at the Institute for Biomedical Aging Research

Project Title: The impact of metabolites of the intestinal microbiota on adipose tissue**.**

Project leader: Prof. Dr. Werner Zwerschke, Institute for Biomedical Aging Research, University of Innsbruck, Rennweg 10, A-6020 Innsbruck, Austria.

Project Description: Nutrition has significant impact on our intestinal microbiome and its metabolome. Bacterial metabolites can be detected in the blood, determine a wide range of physiological effects and play a role in obesity and a number of age-associated diseases. Previous studies of our collaboration partner at the Research Centre, Foundation Edmund Mach, Trento (Italy) showed differences between the metabolomes of the intestinal microbiota of obese and normal weight people. Similar changes can be achieved by weight loss interventions or dietary supplements. Relevant bacterial metabolites were identified. The aim of the present project is to better understand the impact of the metabolites on the physiology of the adipose tissue. The PhD student should study the impact of selected bacterial metabolites on proliferation and adipogenic differentiation of adipose stem cells and on signal transduction pathways regulating these processes. In adipocytes it should be analysed whether the metabolites influence lipogenesis/lipolysis and the adipokine profile. The PhD Student will be integrated of a PhD program.

References: Schroeder and Bäckhed, 2016, Nat Med. doi: 10.1038/nm.4185. López-Otín et al., 2016 Cell, doi: 10.1016/j.cell.2016.07.031. Mitterberger and Zwerschke, 2013 J Gerontol A Biol Sci Med Sci. doi: 10.1093/gerona/glt019.;18:533-45. Lechner et al., 2013, Differentiation. doi: 10.1016/j.diff.2012.11.001. Zwierzina et al., 2015, Stem Cell Res. doi: 10.1016/j.scr.2015.08.004. Ejaz et al., 2016, EBioMedicine. doi: 10.1016/j.ebiom.2016.03.030.

Methods that will be used: Cell culture with murine and human adipogenic stem cells, adipocytes and tumor cells. Employment of lentiviral vector for the expression of cDNAs, sh-RNAs (RNAi induced *gene silencing*) and gRNAs (CRISPR/CAS9 induced g*ene silencing*). FACS. Western blot. Methods to study proliferation, senescence, and differentiation of stem cells. Methods for characterization of adipocytes. Analyses of signal transduction and genexpression. The new student receives extensive training.

Profile of candidate's qualification: We are looking for enthusiastic and motivated students with a master degree in the life sciences (for example molecular biology, cell biology, biochemistry, molecular medicine, microbiology).

Start of PhD project: 01. April 2018 or later.

Duration: 3 Years

Source of Funding: Euregio Science Fund.

Salary: gross € 1.366 per month (paid 14-times per year)

Application: If you are interested in joining the Zwerschke group, please send an e-mail together with your CV and the necessary background information to Univ.-Prof. Dr. Werner Zwerschke, Institute for Biomedical Aging Research at the University Innsbruck Email: werner.zwerschke@uibk.ac.at.