



Research Project Proposal
Academic year 2020-2021

Máster en Investigación Biomédica

Project Nº 54	
Title: <i>Characterization of the role of PRDM1 and CDK2 in lipid and glucose metabolism in cultured adipocytes.</i>	
Department/ Laboratory <i>Department of Nutrition, Food Science and Physiology/Centre for Nutrition Research /Area of Molecular Nutrition and Metabolism (University of Navarra)</i>	
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<p>Diabetes and obesity (diabesity) are considered the epidemics of the XXI century. Diabesity is considered as a main risk factor for development of cardiovascular disease, non-alcoholic fatty liver disease, and even neurocognitive disorders and cancer. However, the molecular mechanisms underlying these complications are still poorly understood.</p> <p>Adipose tissue dysfunction contributes to the development of diabesity. Factors controlling adipocyte formation and lipid accumulation and therefore adipose tissue expansion might play a key role in the susceptibility to develop diabesity.</p> <p>Currently our research group has characterized two factors that could be relevant in the susceptibility to diabesity: 1) CDK2, a cyclin dependent kinase involved in the control of the cell cycle that regulates adipogenesis, and 2) PRDM1, a transcription factor that regulates the terminal differentiation of B lymphocytes.</p> <p>We have recently generated two novel mouse models with conditional deletion of Prdm1 or Cdk2 in adipocytes (Prdm1^{ATKO} and cdk2^{ATKO} mice). We aim to characterize the role of Prdm1 and Cdk2 in glucose and lipid metabolism in adipocytes. In this project we propose to characterize in cultured adipocytes the impact of Prdm1 and Cdk2 deficiency on: 1) adipocyte glucose uptake and oxidation; 2) lipogenesis, lipolysis and fatty acid oxidation and 3) oxygen consumption. We will further characterize the underlying mechanisms by analysing the expression levels of the main enzymes/proteins involved in these processes. The implementation of this project will allow the student to be initiated in the development of transgenic mice (adipocyte-specific knockout mice), genotyping protocols, adipocyte culture, RT-PCR and Western blot.</p>	
yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>
Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?	