

Research Project Proposal
Academic year 2015-2016

Project Nº 17
Title: MicroRNAs as regulators of energy homeostasis in obesity
Department/ Laboratory Department of Food Science and Physiology (Faculty of Pharmacy)
Director 1 Silvia Lorente-Cebrián Contact: slorente@unav.es (Ext. 80 6225); Codirector: Pedro González-Muniesa Contact: pgonmun@unav.es (Ext. 80 6550)
Summary Background: Obesity is a multifactorial condition that has reached epidemic numbers worldwide. Obesity is characterized by a massive increase of adipose tissue and physiological alteration of other metabolic tissues such as muscle and liver. Dysfunctional interplay between these metabolic organs leads to an alteration in the regulation of energy balance. MicroRNAs are short non-coding RNAs that regulate gene expression. Recent studies have reported an altered miRNA expression pattern in many diseases such as cancer, inflammatory conditions or obesity. However, specific miRNA expression in metabolic tissues has not been fully addressed yet and little is known about their functional roles in the regulation of energy homeostasis and therefore, their influence in obesity. Hypothesis: A dysregulation in miRNA expression is directly linked to the development of obesity. The general aim of this project is: - Identify potential miRNAs that might be dysregulated in obesity. And the specific aims are: Determine specific miRNA expression levels in animal model(s) of obesity. 1. To characterize functional roles for miRNAs in obesity. Methodology: Methodological approach would include determination of individual miRNA expression levels in several tissue samples that are involved in regulation of metabolic



homeostasis such as liver, muscle, pancreas, heart, kidney and/or adipose tissue (in vivo).

If putative miRNAs are identified, functional experiments (in vitro) will be carried out in order to characterize the regulatory role of selected miRNAs on the regulation of energy homeostasis pathways (glycolysis, glycogénesis, lipogenesis, lipolysis) and/or regulation of hormone and adipokines production (insulin, leptin, adiponectin).

POSSIBILITY OF PhD

YES* N. B. Possibility to continue with PhD is open, depending on financial resources.

* (PhD grant required)