



**MASTER'S DEGREE IN BIOMEDICAL RESEARCH**

**Research Project Proposal**

Academic year 2023-2024

**Project Nº 03**

**Title:** Implication of adipo-myokines in the onset of sarcopenic obesity and its associated comorbidities in preclinical models and patients with obesity and type 2 diabetes

**Department/ Laboratory**

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**Summary** Short summary of the project with a **maximum extension of 250 words**, including the goals and the methodology that will be used

Sarcopenia, defined as loss of skeletal muscle mass and function, is common in obesity due to metabolic changes induced by adipose tissue dysfunction, comorbidities and ageing process. Adipo-myokines are bioactive factors secreted by the skeletal muscle during contractions and by the adipose tissue, which play an important role in controlling muscle growth, function and whole-body metabolism. The aim of the present study is to analyze the circulating concentrations of adipo-myokines (myostatin, follistatin, FNDC4 or FNDC5) in the context of sarcopenic obesity and study the impact of weight loss achieved by bariatric surgery in patients with obesity classified according to their insulin resistance (normoglycemia, impaired glucose tolerance and type 2 diabetes) and absence/presence of sarcopenia as well as in an experimental model of diet-induced and genetic (*ob/ob* and *fa/fa*). obesity. To gain further insight into the mechanisms involved in the onset of sarcopenia and associated metabolic derangements, the effect of treatment with adipo-myokines on the inflammation, mitochondrial dysfunction and fibrosis of human differentiated adipocytes and in factors involved in muscle atrophy in C2C12 myocytes in co-culture with human adipocytes will be evaluated. The study of the interaction of adipose tissue and skeletal muscle is of great interest, since adipo-myokine dysfunction might cause and aggravate sarcopenic obesity as well as the onset of associated pathologies, such as insulin resistance and nonalcoholic fatty liver disease (NAFLD).

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?