Dott.ssa Lucrezia Puccini
Ciclo XXXVIII
Tutor Professor Vincenzo Sorrentino

Attività scientifica svolta nel 1° anno di Dottorato, Anno Accademico 2022/2023

Introduction

miR486 is a striated muscle-enriched microRNA whose sequence is embedded in the *ANK1* locus and has been linked to the PI3K/Akt metabolic pathways (Small et al., 2010; Croce et al., 2013). As the PI3K/Akt pathway is involved also in glucose handling, we hypothesized that miR486 might have a role in regulation of metabolic responses in skeletal muscle. Accordingly, we decided to evaluate if different diet regimens may have an influence on miR486 expression in skeletal muscle, aiming to verify its involvement in metabolic adaptation in this tissue. The expression levels of the uncoupling protein 3 (Ucp3), known to increase in fasting and in high fat diet conditions, were measured as control (Pohl et al, 2019).

Methods

Dietary protocol

Two different protocols were applied: 1) mice fed a high fat diet for 12 weeks and a control group fed a standard diet; 2) a fast-refed paradigm was tested by fasting mice for either 24h or 48h and then fed for 6h or 24h with a standard chow, or a carbohydrate rich diet, or a high fat diet.

Organ isolation

Tibialis anterior, extensor digitorum longus, soleus and gastrocnemius muscles, liver and spleen were isolated for subsequent RNA extraction.

Gene expression analysis

Total RNA was extracted and miR486 and UCP3 relative expression levels were evaluated by Real Time PCR, using TaqMan microRNA assay and SYBR system respectively.

Results

Preliminary results show a trend towards a decreased miR486 expression in muscles of mice fed a high fat diet, with a statistically significant difference observed in gastrocnemius. Experiments to determine miR486 expression levels in skeletal muscles from mice from the fast-refed group are currently ongoing.

PARTECIPAZIONE A CORSI I ANNO

Soft skills:

- Introductory concepts and requirements for the birth of a company; Prof. Lorenzo Zanni; 15/05/2023
- The business model and university regulation on spin-offs and startups; Dr. Niccolò Fiorini; 16/05/2023
- Europrogettazione: programmi, progetti e rendicontazione; Europedirect.unisi.it; 18/05/2023
- The innovation ecosystem in support of startups; Dr. Francesco Maria Senatore; 18/05/2023
- Science and Society: continuity and change; Dr.ssa Agnes Allansdottir; 29/05/2023

- PhD and then? Overview on career paths inside and outside the academia; Prof. Gennaro Prota e Dott.ssa Aida Ribera Navarro; 12/06/2023

Lezioni PhD:

- How to study genetics in complex diseases; Prof. Stefano Landi, Università di Pisa; 19/01/2023-26/01/2023
- Microvescicles in cell-to-cell communication; Dott.ssa Laura Governini, Università di Siena; 27/02/2023
- Biomarkers discovery in precision medicine; Dott.ssa Alice Luddi, Università di Siena; 27/02/2023
- Through thick and thin…and titin: Defining titin's role to muscle function; Dr. Anthony Hessel, University of Muenster Germany; 4/04/2023
- Advanced optical methods to monitor and control the cardiac electrical activity; Dr. Leonardo Sacconi; 4/04/2023
- Cellular mechanism of heart failure; Prof. Pieter de Tombe, University of Illinois at Chicago; 4/04/2023
- Drug development, sex-dependent difference, pharmacovigilance; Prof. Elisabetta Cerbai e Dott.ssa Elisabetta Bigagli, Università di Firenze; 4/04/2023

Congressi:

- PhD Day, Firenze; 17/01/2023
- XXI Convention scientifica Fondazione Telethon, Riva del Garda; 13-14-15/03/2023
- Esame finale di Dottorato in Medicina Molecolare XXXV ciclo; 17/05/2023
- 50° European Muscle Conference, Firenze; 2/09/2023

Soggiorni in altri laboratori:

- Dipartimento di Biologia (DiBio), Università di Padova; Collaborazione con il gruppo di ricerca del Prof. Stefano Cagnin