

INTRODUCTION

Carbonic anhydrases (CAs) are a family of metalloenzymes involved in ion transport, acid-base regulation and gas exchange. The isoforms IX and XII are important in maintaining pH in hypoxic conditions and are over expressed in tumors, such as breast cancer (BC) and melanoma. The aim of this first year of PhD was focused on analyzing the effects of newly synthetized CA IX and CA XII inhibitors on BC and melanoma cell lines in terms of viability, proliferation, migration and invasion.

MATERIAL AND METHODS

Within this year I performed *in vitro* cell cultures, vitality and proliferation assays (trypan blue exclusion, Cyquant, Fluorescein diacetate), wound healing scratch assay, Boyden chamber assay, proteins and RNA extraction and measuring, quantitative reverse transcription PCR (qRT-PCR) and Western Blots with ChemiDoc XRS imaging system (BIORAD). Moreover, I used the hypoxic Workstation INVIVO (Ruskinn), in order to recreate the patho/physiological environment of cancer cells.

RESULTS

From our preliminary data emerges that the newly CAs inhibitors do not afflict cell viability and proliferation but they significantly impair cell migration in both tumor models. They also afflict BC invasion. Their effects on melanoma invasion have been already under investigation. Further studies will be necessary.

SEMINARS FOLLOWED (at Università degli Studi di Siena)

- 11-26-2018 MedBiotech HUB e Competencer center presentation day.
- 3-12-2018 “The impact of hypoxia on inflammation, immunity and infection”, Prof. Cormac Taylor.
- 12-10-2018/12-11-2018 “La ricerca dell’informazione su internet. Metodologie e strumenti”, prof.ssa Laura Bianciardi.
- 01-24-2019 “The power of partitioning QX200 ddPCR”, dott.ssa Lara Rossini.
- 04-19-2019 “Pathogenesis of juvenile idiopathic arthritis”, dott. Rolando Cimaz, direttore della Reumatologia pediatrica dell’Ospedale Pediatrico Meyer, Firenze, Italia.
- 05-21-2019 “Molecular dynamics simulations as a tool to investigate the structure-function relation in molecular biology”, prof. Simone Furini.
- 07-23-2019 “Neutropenia in GSDIb and in G6PC3 deficiency is caused by a deficit of metabolite repair”, prof. Emile van Schaftinger (Welbio e de Duve Institute UCLouvain).

In September, I attended the complementary soft skills lessons, as provided by the Doctoral School program.