UNIVERSITÀ DI SIENA 1240

DIPARTIMENTO DI MEDICINA MOLECOLARE E DELLO SVILUPPO — DMMS

Università degli Studi di Siena
Dottorato di Ricerca in Medicina Molecolare

Scheda Relazione Annuale Dottorando
(da redigere in lingua inglese)

luogo e data Pisa, 15/09/2025

Al Collegio Docenti del Dottorato in Medicina Molecolare

dr.ssa Arianna Sturlese Verduri
ciclo XL tutor Massimo Dal Monte

Attività scientifica svolta nel 1° anno di Dottorato, Anno Accademico 2024/2025

Adrenergic receptors are G protein-coupled receptors activated by norepinephrine and epinephrine. They are divided into three main groups, α1-, α2- and β-adrenergic receptors, based on the signaling pathways they activate. The adrenergic system plays an important role in regulating body homeostasis in health and disease and plays a pivotal role also in the initiation and promotion of tumors caused by stress. In fact, studies show that the expression of norepinephrine and epinephrine increases significantly when the body is in acute or chronic stress state. In my research I aimed to explore the involvement of the adrenergic system in human Glioblastoma (GB) cells proliferation. I investigated the effect of β3-adrenoceptor agonists BRL 33734 and Mirabegron on human GB U87 cells, cultured both in normoxia and in hypoxia, to better mimic tumor microenvironment. I evaluated if β3 stimulation with these two agonists has some effects on both cell viability, evaluated through MTT assay, and on cell cycle progression, by using flow cytometry. My data showed that BRL and Mirabegron, both under normoxia and hypoxia, have a cytotoxic effect at different dosages. Moreover, drug treatment with a dose of 50 µM results in an increased number of cells in G0 cell cycle phases and fewer dividing cells, suggesting that this treatment is able to delay tumor proliferation in vitro. Thanks to siRNA silencing of the different AR expressed in U87 cells, I found that most of the observed effects seems to be mediated not by an effectively β3-AR stimulation, but rather through an off target effect on α1B-AR. In conclusion, my results suggest an involvement of the adrenergic system in GB progression and open the way to the use of drugs targeting this system to counteract cellular proliferation. Further studies are needed to better elucidate the signaling cascade involved in the cell cycle alteration induced by drug treatment.

UNIVERSITÀ DI SIENA 1240

DIPARTIMENTO DI MEDICINA MOLECOLARE E DELLO SVILUPPO — DMMS

Attività didattica (seguire le indicazioni 1 e 2 online per il calcolo CFU. Deve essere congruente con le schede mensili)

- CFU **totali** conseguiti per le frequenze di didattica frontale: 10 con PhDay incluso

- Seminari (indicare relatore e data del/i seminario/i. Aggiungere righe se necessario)
  1. Dr. Krista Rantanen, 11/12/2024
  2. Elisa Adani, 17.1.2025
  3. Kenneth Oh, Deanna Woo, Lindsey Maccoux, 28.1.2025
  4. Martin Michel, 9/05/225

CFU conseguiti per questa attività: 2.5

- Soft Skills (indicare nome e data del/i corso/i. Aggiungere righe se necessario)
  1. English for Research Publication and Presentation Purposes, da gennaio ad aprile
  2. International Perspective on Teaching and Learning Center, 21/05/2025
  3. Le opportunità di finanziamento nel settore Salute: CL1, Mission Cancer, European Partnership, 19/05/2025
  4. Ricerche bibliografiche, bibliometria e open access & science, 9/07/2025
  5. The story of the European Union and how it funds research, 9/07/2025

CFU conseguiti per questa attività: 13

- Partecipazione a congressi (indicare nome e data del/i congressi/i, titolo della/e presentazione-i/poster/abstract, autori)

75th conference of italian physiology, 17-19 settembre, poster.

Agonism approach to unveiling the role of Beta 3 adrenoceptor in human glioblastoma: friend or foe?

Arianna Sturlese Verduri[1], S. Marracci[1], R. Amato[1], L. Filippi[2], M. Dal Monte[1]

[1]Department of Biology, University of Pisa, Pisa, Italy

[2]Department of Clinical and Experimental Medicine, University of Pisa, Pisa, Italy

CFU conseguiti per questa attività: 1

- Eventuali soggiorni in altri laboratori italiani o esteri

UNIVERSITÀ DI SIENA 1240

DIPARTIMENTO DI MEDICINA MOLECOLARE E DELLO SVILUPPO — DMMS

Tabella Riepilogativa CFU **primo anno**

Didattica	Seminari Webinar	Soft Skills	Congressi	PhD Day	**TOTALE I ANNO (Inclusi 35 CFU per la ricerca)**
9 CFU	2.5 CFU	13 CFU	1 CFU	1 CFU	**26.5 CFU**

Dipartimento di Medicina Molecolare e dello Sviluppo
Via A. Moro, 2 – 53100 Siena (Italia)
Tel. +39 0577/235466/235780/233104/233105 – http//www.unisi.it
CF 80002070524 – P.IVA 00273530527