Al collegio docenti del Dottorato in Medicina Molecolare

Dr.ssa Sara Roccabianca

Ciclo XXXVII

Tutor: prof.ssa Daniela Rossi

Attività scientifica svolta nel I anno di Dottorato, Anno Accademico 2021/2022

Introduction. The structural integrity of the triadic juntion is crucial for the excitation-contraction coupling (ECC). The formation and maintenance of the triad, formed by two terminal cisternae of the junctional sarcoplasmic reticulum (j-SR) and the invagination of the plasmatic membrane known as the transverse tubule (T-tubule), is due to the concerted interaction of structural proteins. In particular, junctophilin 1 (JPH1) forms a molecular bridge between the membranes of the T-tubule and the j-SR, allowing the mechanic interaction of DHPR and RyR1 receptors and thus the release of Ca^{2+} necessary for muscle contraction. Previous studies conducted in our laboratory identified cytoskeleton-linking membrane protein 63 (CLIMP-63), a well-known spacer of endoplasmic reticulum (ER) cisternae and microtubular cytoskeleton linker, as one of JPH1 and JPH2 interactors, leading us to hypothesize a crucial function for this protein in triad biogenesis and maintenance. During my first year of PhD, I focused my research on characterizing the interaction between CLIMP-63 and JPH1.

Methods. To characterize the domain of CLIMP-63 responsible for the interaction with JPH1, I performed co-immunoprecipitation (co-IP) studies using recombinant proteins. To identify the region of CLIMP-63 responsible for interaction with JPH1, plasmids cording for either full length mCherry-tagged CLIMP-63 or CLIMP-63 proteins deleted in their cytosolic or luminal domains were designed and synthetized by an external company. Proteins were expressed in HEK293T cells and co-IPs were performed by selectively precipitating recombinant proteins with magnetic beads conjugated with antibodies directed against mCherry. The obtained samples were analyzed by SDS-Page/Western Blot analysis.

Results. The results obtained from the co-IP studies confirmed that CLIMP63 interacts with JPH and that the region of CLIMP63 responsible for the interaction with JPH1 is contained within the cytosolic domain of the protein.

Spin Offe Start up della ricerca: Il modello di business e i regolamenti (07/06/2022)

Spin Off e Start up della ricerca: L'ecosistema di innovazione a supporto delle start up (13/06/2022)

Creating value from large archive and big data (15/06/2022)

I rapporti tra scienza e società: tra persistenze e cambiamenti (20/06/2022)

Lavoro editoriale per l'editoria scolastica e universitaria (scienze e lettere) (05/09/2022)

Il ruolo della standardizzazione nei processi di innovazione (07-08/09/2022)

How to exploit your research idea: a quick introduction to EU project design and management (22-23/09/2022)

Congressi:

19th IIM Meeting - Assisi (Italy), 20-23 Ottobre 2022

Pubblicazioni

Feliciano Protasi, Barbara Girolami, Sara Roccabianca and Daniela Rossi. 2022. StoreOperated Calcium Entry: from physiology to tubular aggregate myopathy. Current Opinion in Pharmacology. Under review.