



A PhD student fellowship is available to study the molecular mechanisms underlying the organization of specialized membrane domains in the sarcoplasmic reticulum and in the sarcolemma in striated muscle cells.

To apply send a CV and a letter of presentation by email to:

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#### *Research activities description*

We are interested in studying the molecular mechanisms underlying the organization of specialized membrane domains in the sarcoplasmic reticulum and in the T-tubules / sarcolemma system in striated muscle cells.

The sarcoplasmic reticulum is an organelle found in striated muscles that is dedicated to  $Ca^{2+}$  signalling in connection with activation of myofilaments contraction. The sarcoplasmic reticulum appears as a network of tubules and cisternae that surrounds the myofilaments with a repetitive specific pattern that is aligned with the underlying sarcomere.

The junctional-SR, the domain of the sarcoplasmic reticulum containing the proteins involved in regulating  $Ca^{2+}$  release, is engaged with the T-tubules in forming specialized Junctional Membrane Complexes (also called triads and diads), which are necessary for transducing membrane depolarization on the sarcolemma into activation of  $Ca^{2+}$  release from the sarcoplasmic reticulum and hence into stimulation of muscle contraction.

Our past work has contributed to define the complexity of the isoforms of ryanodine receptors, the specialized  $Ca^{2+}$  release channels of the sarcoplasmic reticulum, and to discover proteins involved in tethering the sarcoplasmic reticulum to the myofibrillar apparatus.

The current position is available to work on one of the following projects:

1) *interactions between obscurin, cytoskeletal proteins, and the dystrophin glycoprotein complex in the organization of specialized domains on the sarcoplasmic reticulum and the plasma membrane.*

2) *molecular basis of the organization of proteins at junctional domains in the sarcoplasmic reticulum.*

To address these questions we use different experimental approaches that range from cellular and molecular biology, biochemistry, confocal microscope imaging of cells to transgenic / knockout mouse models.

*For references see:*

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- 3) Giacomello E & Sorrentino V. Histochem Cell Biol. 2009; 131: 371-382.
- 4) Ayalon G et al. Cell. 2008; 135: 1189-1200.
- 5) Bagnato et al. J. Cell Biology. 2003; 160, 245-253