

# Structural studies of adaptor proteins in the cell-cell junctions

## Biochemistry/Biophysics

### Activities for participating students:

Students will utilize molecular biological, biochemical, protein chemistry, biophysical and bioanalytical techniques to characterize the structure and function of proteins. The students will learn PCR and cloning techniques, protein expression, protein isolation, protein purification and characterization using column chromatographic methods and gel electrophoretic methods. The structure of the purified proteins will be studied using NMR spectroscopy. The students will learn how to analyze NMR data and the data analyzed will be used for protein structural characterization and determination.

### Project Description:

Cells interact with neighboring cells through multi-protein complexes. Information of events that occur in the cell surface is transmitted to the interior of the cell by proteins in these complexes regulating gene expression. Characterization of the specific interactions in these complexes and the conformational changes between the free and bound forms will provide a physical description of the molecular recognition processes that occur at these sites. The students will characterize the interactions of two proteins at the cell-cell junction sites: LMO7 and alpha-actinin. A combination of biochemical, biophysical and Nuclear Magnetic Resonance (NMR) spectroscopy methods will be used to study the structural details of this interaction.

**Mentor:** Dr. Gabriela C. Pérez-Alvarado