

**Department of Chemistry  
COLLEGE OF Arts & Sciences**

**SUMMER RESEARCH OPPORTUNITIES  
FOR UNDERGRADUATE WOMEN**

**APPLICATION DEADLINE: March 1, 2011**

*The Department of Chemistry is pleased to offer the following research project for the summer of 2011. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.*

**PROJECT TITLE: Exploration of the role of charged groups in the interactions between fusion proteins and cellular membranes**

**Professor Ruxandra Dima  
Department of Chemistry  
Office Room and Building 1302 Crosley  
Cincinnati, OH 45221-Mail Location  
Tel: (513) 556-3961  
Fax: (513) 556-9239  
Email: ruxandra.dima@uc.edu**

**Project Description**

Research in the Dima group focuses on understanding the role of various structural and cellular factors in the mechanical response of biological molecules ranging from small multi-domain proteins to large fibrillar assemblies that play crucial roles in fundamental processes such as the maintenance of the cell shape, cell mobility, synaptic fusion, cell-cell adhesion, blood flow, wound closure, axonal growth, and mitosis. A project for a REWU student is "Exploration of the role of charged groups in the interactions between fusion proteins and cellular membranes". The goal of this project is to identify and classify the types of interactions involving charged groups in fusion proteins and in membranes that facilitate the early stages of the cellular fusion reactions. Special emphasis will be placed on the synaptic fusion reaction. The student will gain experience with bioinformatics methods, will learn to use software applications to probe the dynamical response of proteins to applied forces, and will gain knowledge in searching the scientific literature.