

**Department of Chemistry  
COLLEGE OF ARTS & SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES  
FOR UNDERGRADUATE WOMEN**

**APPLICATION DEADLINE: March 1, 2012**

*The Department of Chemistry is pleased to offer the following research project for the summer of 2012. 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: Exploring the mechanisms of depolymerization of cytoskeletal filaments**

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**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 “Exploring the mechanisms of depolymerization of cytoskeletal filaments”. Large-size biomolecular systems that spontaneously assemble, disassemble, and self-repair by controlled inputs play fundamental roles in biology. Microtubules, which play important roles in cell adhesion and cell division, are a prime example. The goal of this project is to classify the types of interactions involving cellular factors that facilitate the early stages of microtubule depolymerization at the beginning of mitosis. 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.