

**DEPARTMENT OF CELL BIOLOGY, NEUROBIOLOGY AND ANATOMY  
College of Medicine**

**SUMMER RESEARCH OPPORTUNITIES  
FOR UNDERGRADUATE WOMEN**

**APPLICATION DEADLINE: MARCH 3, 2003**

*The Department of Cell Biology, Neurobiology and Anatomy is pleased to offer the following research project(s) for the summer of 2003. Interested students are urged to contact the faculty member(s) directing the project(s) that most interest them. By contacting the faculty member(s), you can discover more about the project(s), learn what your responsibilities will be, and if possible, develop a timetable for the twelve-week research period.*

**Understanding the Mechanisms of Action of the Estrogen Receptor**

**Professor Sohaib Khan**

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The Khan laboratory is interested in the understanding of the mechanisms of action of the estrogen receptor (ER). This understanding is critical to find cures for diseases such as breast and uterine cancers where estrogen is a key component in the deregulation of normal cell signaling.

Upon binding of estradiol (E<sub>2</sub>) in the nucleus, the ER undergoes a conformational change. This conformational change allows for dimerization of ER followed by binding to a specific DNA domain, present in the promoter of specific genes, called the estrogen response element (ERE). Upon binding of the ER to the ERE, gene transcription will be regulated.

Recent evidence suggests that the ER is also located in the plasma membrane and triggers a different signaling pathway compared to the nuclear activation. One of the focuses of the Khan laboratory is to further study this alternative mode of signaling using mammary duct epithelial cells (MCF7) and fluorescently labeled ER.