

Department of Otolaryngology
COLLEGE OF Medicine

SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: March 1, 2014

The Department of Otolaryngology is pleased to offer the following research project for the summer of 2014. 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: Understanding Genetic and Molecular Basis of Hearing Impairment

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Project Description

Hearing loss is an etiologically heterogeneous trait that can occur at any age, with any degree of severity, and in any population. Worldwide, more than 70 million children are affected by prelingual severe or profound hearing loss. Hearing requires specialized, intricately structured, sensory hair cells and support cells in the inner ear. Inner ear hair cell degeneration is one cause of deafness. Riazuddin lab has mapped and identified a number of genes responsible for inherited hearing loss. Recently, we have developed mutant model systems by knocking down the genes of interest in mice and we are currently characterizing these mice to better understand the gene function and the mechanism of disease progression.

The WISE undergraduate student will specifically be involved in evaluation of the mutant models for hereditary deafness. The mutant mice are generated by knocking down a gene of interest. The mutant mice will be evaluated for their hearing, vestibular and retinal functions by recording Auditory Brain Stem responses, vestibular evoked potentials and ERGs. The applicant will follow the inner ear morphology of these mice by light microscopy. In addition, they will determine the expression of the interacting protein partners through immuno-localization studies. These mice will provide a model for understanding hearing loss caused by mutation in a gene of interest. No prior experience on these skills is required. The applicant will be given research specific training by the Riazuddin lab. In addition to receiving the hands on research training, the student will participate in the weekly lab meetings and journal club seminars. Participation in these weekly seminars and journal clubs will provide an opportunity to connect with other researchers and for gaining higher level thinking skills that are needed for further professional development.