SUMMER RESEARCH at Oregon Health & Science University

As in previous years, the Department of Otolaryngology will be offering summer research opportunities to first-year medical students for the summer of 2007, with a stipend of $5193 for each three-month fellowship. Two NIH training grant fellowships are available, as well as additional department-funded fellowships for exceptional candidates.

Successful students will work with a faculty member to develop a research project to be conducted during the summer months with the aim of a published article, a (inter)national conference presentation, or both. Research projects currently in progress are:

Auto-immune disease and otitis media in the inner ear
Causes and treatment of otologic autoimmune disease, and otitis media. For more information, contact Dennis Trune Ph.D. at truned@ohsu.edu

Pharmacokinetics of ototoxic drugs
Identification of mechanisms of ototoxic drug entry into the inner ear that induce sensory cell death. For more information, contact Peter Steyger Ph.D. at steygerp@ohsu.edu

Hair-cell transduction
Our goal is to figure out how inner-ear hair cells convert the information in mechanical stimuli (like sound and head movements) into electrical signals that the brain can interpret. We are identifying the molecules and how they interact to make a sensitive mechano-transduction apparatus. We use molecular biology, electrophysiology, imaging, biochemistry, genetics, and mathematical modeling. For more information, contact Peter Gillespie Ph.D. at gillespp@ohsu.edu

Invertebrate mechanosensory transduction
We are investigating mechanosensation in Drosophila, employing genetic, physiological, molecular and cell biological tools to address the role of molecules in sensory neurons. For more information, contact Richard Walker Ph.D. at walkerri@ohsu.edu

Otoaccoustic emissions
Electrophysiological examination of cochlear mechanics and oto-accoustic emissions. For more information, contact Tianying Ren M.D. at rent@ohsu.edu

Cochlear blood flow and mechanisms of sound induced oxidative damage to the cochlea
Studies on the regulation of inner ear blood flow and the influence of sound as an agent that can induce ischemia and metabolic overload in the cochlea. Studies on the pathways of oxidative damage to the sensory cells and blood vessels in the cochlea. For more information, contact Alfred Nuttall Ph.D. at nuttall@ohsu.edu

Neurohumoral regulation of inner ear artery: cellular electrophysiology
Characterizing ion channels, receptors and signal transduction pathways in inner ear artery cells and their responses to nerve stimulation and vasoactive agents. For more information, contact Zhi-Gen Jiang M.D. at jiangz@ohsu.edu

Quality of Life and Outcomes in Otolaryngology
Prospective evaluation of quality of life measures and outcomes of treatment, particularly relating to chronic rhinosinusitis. For more information, contact Timothy Smith, MD, MPH at smithtim@ohsu.edu.

Effects of estrogen on olfactory neurons
Investigation into the effects of estrogen on the developing peripheral olfactory system using immunohistochemical and molecular techniques. For more information, contact Karen Fong, MD at fongka@ohsu.edu

Gene therapy in tissue engineering
In a rat calvarial model, we are examining bone reconstruction using a plasmid gene therapy vector. Various substrates such as VEGF, EGF are being tested. For more information, contact Mark K. Wax, M.D. at waxm@ohsu.edu

Mechanisms and treatment of chronic tinnitus
Using data from patients treated in the Tinnitus Clinic, we are investigating different mechanisms of tinnitus, and evaluating the effectiveness of various treatments (medication, acoustic therapy, and psychological counseling). For more information, contact Bob Folmer Ph.D. at folmerr@ohsu.edu

Molecular mechanisms of tumor invasion during epithelial carcinogenesis
We are studying molecular mechanisms of tumor invasion, utilizing transgenic/knockout mice, using molecular and cell biological techniques and in vivo experiments. For more information, contact Xiao-Jing Wang MD/PhD at wangxiao@ohsu.edu

Cell fate specification in the vertebrate inner ear
Determination of cell lineage relationships in the mouse inner ear using ultrasound backscatter microscopy, experimental embryology, virology and molecular biology. For more information, contact John Brigande, Ph.D. at brigande@ohsu.edu

Genetic screening of inner ear mutations in zebrafish
We are taking a genetic approach using zebrafish to try to identify the molecules required for mechanotransduction in sensory hair cells, and to understand human deafness. For more information, contact Teresa Nicolson Ph.D. at nicolson@ohsu.edu

Interested students should identify a mentor and with whom they should develop a brief research plan (2 paragraphs) for submission, along with a resume and a short statement the importance of a research internship to their career goals (by email only) to Peter Steyger (steygerp@ohsu.edu) by March 31st, 2007.

Peter Steyger, Ph.D.
http://www.ohsu.edu/ent/gen/sumfac.html
http://www.ohsu.edu/ent/gen/sum2006.pdf