

The Department of Biomedical Engineering

*Presents:*

**Vestibular Prostheses: Engineering and Biomedical Issues**

*By*

**Dr. Conrad Wall**

*Department of Otology and Laryngology  
Harvard Medical School*

**ABSTRACT:**

Medical, surgical, and rehabilitative approaches are all used to treat balance problems. Even though all of these approaches have greatly improved over time, they are still not 100% effective in all cases, so there is still room for other approaches. Vestibular prosthesis could provide another option for those with balance problems as well as those who are elderly and prone to falling.

Invasive and non-invasive solutions are possible, and both are being developed. Both approaches use motion detectors that measure head movement in all three directions get the signal back to the central nervous system (CNS). A sensory substitution device gets the information to the CNS through sound, vision, tactile vibration, or electro-stimulation of the tongue, while an implantable vestibular prosthesis conveys information through selective stimulation of the vestibular nerve. Some of the pioneering experiments that enable vestibular implants will be presented. Several sensory substitution devices and their *pros* and *cons* will be discussed.

**3:35 – 4:30 P.M.**

**Monday, September 28, 2009**

**Room 2-101 NHH**

BME n 8601 Graduate Seminar

For information, contact Rachel Boehme at [bmengp@umn.edu](mailto:bmengp@umn.edu) , 612-624-8396.