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"The Yin and Yang of Sensory Brain Plasticity"

Sensory brain plasticity exhibits a fundamental duality, a yin and yang, in that it is both a source and possible solution for various types of perceptual impairments. When normal signaling from the ear is disrupted, the balance of excitation and inhibition tips toward hyperexcitability throughout auditory processing centers of the brain, increasing the ‘central gain’ on afferent signals so as to partially compensate for diminished inputs from the periphery. Excess amplification in sensory circuits distorts the temporal coding of complex communication sounds and may even induce the perception of phantom sounds, contributing to pathophysiological processes such as hyperacusis and tinnitus. This is the ‘yin’, the dark side of brain plasticity, wherein the transcriptional, physiological and neurochemical changes that compensate for the loss or degradation of peripheral inputs can incur debilitating perceptual costs. Our research is also committed to understand the ‘yang’ of brain plasticity, how the remarkable malleability of the adult brain can be harnessed and directed towards an adaptive – or even therapeutic – endpoint through pharmacology, direct brain stimulation and non-invasive approaches such as immersive sensory training. My lecture will focus on the mechanisms underlying the yin and yang of plasticity in the auditory cortex, midbrain and basal forebrain. I will conclude by describing our recent efforts to translate findings from animal models to human subjects with auditory perceptual disorders.

Thursday, March 22, 2018
1:30 pm
The Vollum M1441

Hosted by Lina Reiss, Laurence Trussell & Stephen David
Oregon Hearing Research Center

For more information call (503) 494-8032