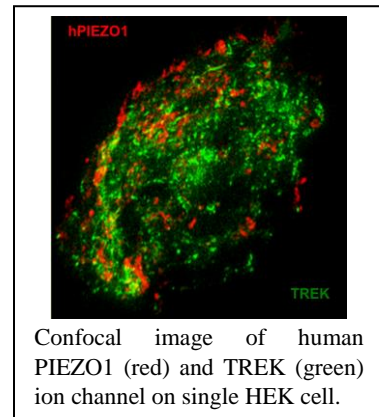


Cellular Mechanism of Otoprotective Effects on Noise-Induced Hearing Loss

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Mechanotransduction, the conversion of mechanical stimuli into other biological signals, plays a critical physiological role in our senses of touch, pain, and hearing. Mechanotransduction is critical for almost all mammalian cells and is linked to mechanosensitive ion channels (MSCs). In 2010, the first unequivocal eukaryotic excitatory MSCs, Piezo channels, were identified and cloned. Piezo channels are expressed ubiquitously in human organ systems that are integral components for cell response to mechanical force.

Dr. Kathleen Campbell's group at SIU School of Medicine reported that their otoprotective effects on the animal model of noise-induced hearing loss (NIHL). However, the detail mechanism of how this otoprotective agent protects NIHL is still unknown. We hypothesize that the MSC is the key component for the otoprotective effects on NIHL. Thus, the goal of this project is to determine the role of Piezo on the otoprotective effects in NIHL. We will use an electrophysiological system combined with a laser



scanning confocal microscope. Besides this project, the REU students will have broad opportunities to learn not only the basic wet-lab techniques but also hands-on experience related to Biomedical Engineering projects.