Speaker: Ardem Patapoutian

Talk title: May The Force Be With You! Piezo Channels in Mechanosensory Biology

Abstract: Mechanotransduction was perhaps the last major sensory modality not understood at the molecular level. Proteins and ion channels that sense mechanical force are thought to play critical roles in touch and pain (somatosensation), sound (hearing), and shear stress (cardiovascular function), among others; however, the identity of the ion channels involved remained elusive. The Patapoutian lab identified PIEZO1 and PIEZO2, mechanically activated cation channels expressed in many mechanosensitive cell types. Genetic studies established that PIEZO2 is the principal mechanical transducer for touch, proprioception, bladder, and lung stretch, and that PIEZO1 mediates vascular development, iron homeostasis, bone density, and other physiological processes; together, PIEZO1 and PIEZO2 also contribute to baroreception as well as parturition. Clinical investigations have confirmed the importance of these channels in human physiology. Current work in the Patapoutian lab continues to explore the roles of mechanosensation and interoception in physiology and disease, including its role in mouthfeel.