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A Nanoscale Tale[1]

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Experimentalists constantly seek to overcome technical limitations. This is especially true in the world of biophysics, where the drive to study molecular targets such as ion channels, a type of membrane transport protein, has resulted in methodological breakthroughs that have merited the Nobel Prize (Hodgkin and Huxley, 1963; Neher and Sakmann, 1991). In this presentation I will explain how nanoscale phenomena that are essential for sensory perception underlie the ability of dancers, gymnasts, and musicians to excel at their artistic endeavors. I will describe how our investigations of sensory mechanotransduction and the quest for improved signal amplification inspired a scientific journey that has culminated in an exciting new line of collaborative NIH-funded research with nanomaterials (quantum dots). I will conclude with a general discussion of how training in physics offers an ideal foundation for interdisciplinary research in health related fields, such as those that deal with neuroscience and disorders of the nervous system.

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