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Title:	Dynamics of the couple proteins in tip-links during hearing
Authors:	Rakshit, Sabyasachi (/jspui/browse?type=author&value=Rakshit%2C+Sabyasachi)
Keywords:	couple proteins tip-links
Issue Date:	2022
Publisher:	Wiley
Citation:	Febs Open Bio, 12(1), 222-222
Abstract:	Discovery of mechanical transducers that help us to convert touch into nerve impulses earned Professor Ardem Patapoutian the Nobel Prize in Physiology or Medicine 2021. Hearing is similarly a mechanotransduction process, where a protein-couple, jointly known as tip-links, serve as gating-springs and convey the input mechanical force of varying intensities from sound-stimulus to electrical signal. Importantly, tip-links maintain the integrity of their marriage under periodic tension from input sound. With an overarching objective to decipher the force-responsive behaviors of tip-link complexes and their alterations with aging, here we probe the viscoelastic properties of the tip-links directly under mechanical stimuli at the single-molecule level. In this talk, I shall present how tip-links form counterintuitive 'catch-bonds' to overcome the mechanical pulses from sound, and as gear-box, accelerate the lifetime of the complex while conveying force for transduction. Further, tip-links serve as guardians to the non-re-generative hair-cells from the sudden impact of loud noise and at the cost of their marriage. Tip-links dissociate, however, re-engage fast. Towards the end, I shall discuss how tip-link proteins undergo phase separation on a cell membrane to accelerate their formation of tip-links and cell-cell adhesion.
Description:	Only IISER Mohali authors are available in the record
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