

Internal Webinar

Glutamate exocytosis determines the ultra-structural protein organization at cochlear ribbon synapses: Insights from single molecule imaging and implications for deafness

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The inner hair cells (IHCs) of the mammalian auditory system are short sensory receptors that use a mechano-transduction pathway to convert sound into neural signals. IHCs form specialized "ribbon synapses" with neurons. *The pre-synaptic ribbon* has been the subject of numerous studies that aimed to throw light on how they achieve such a rapid response system. Given their small size, studying overall pre- and post-synaptic protein organization in-situ and in specific disorders is challenging. The architecture of ribbon synapses has hitherto been studied via electron microscopy. Here, I will present a single molecule imaging approach to elucidate the ultra-structural organization of auditory ribbon synapses. I will present data that reveal perturbation of glutamate receptors as well as their underlying scaffolding proteins in a mouse model of congenital deafness. We hope that this work will help understand the basis of deafness and its prevention.

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