

Seminar

Tinnitus Alleviation by Restored Kv1.4-mediated Dendritic Excitability

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Date: 26 May 2016 (Thursday)
Time: 12:30 pm – 1:30 pm (Reception with light sandwiches starts at 12:15 pm. To facilitate the order of sandwiches, please register through email shulchan2@cityu.edu.hk.)
Venue: B6605, Academic 1, City University of Hong Kong
Language: English

Abstract

Noise-induced tinnitus, an internal ringing ear, is one of the capital causes of disability in modern society. How noise-induced tinnitus is generated and manifested has received intensive attention in neuroscience. Yet, a molecular mechanisms and efficient treatment for tinnitus is not currently available. One widely accepted cellular mechanism delineating noise-induced tinnitus is homeostatic downregulation of cortical inhibition according to our early research. In current research, we additionally provide a molecular mechanism of tinnitus which is involved in the attenuated expression of Kv1.4 potassium channels in dendrite. Here, we propose that co-occurrence of reduced cortical inhibition and Kv1.4-mediated dendritic hyperexcitability may shape the neuronal circuit underlying the noise-induced tinnitus. This research is only possible with advanced techniques including two-photon imaging and in vivo whole-cell recording. Toward this end, it may reveal an essential role of restored Kv1.4-mediated dendritic excitability in tinnitus alleviation.

Biography



Dr Sungchil Yang achieved PhD in the department of molecular and integrative physiology, University of Illinois at Urbana & Champaign, studying a biophysical role of individual auditory neurons (from cochlear nucleus to auditory cortex) in auditory information processing under the supervision of Dr Albert S. Feng. Then, Dr Yang joined Helen Wills Neuroscience Institute of University of California at Berkeley as a postdoctoral fellow, studying mechanisms of an auditory phantom pain, tinnitus, with Dr Shaowen Bao. His research regarding the sensory system continued in Center for Integrative Neuroscience of University of California at San Francisco as a research associate, studying a role of axon initial segment of auditory neurons in information processing and a cellular basis of perceptual learning with Dr Kevin J. Bender and Christoph E. Schreiner, respectively. In 2015, he joined the Department of Biomedical Science in City University of Hong Kong.

**** ALL ARE WELCOME ****