

Seminar

Towards a High Resolution Retinal Implant to Restore Vision for the Blind

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Date: 18 August 2016 (Thursday)
Time: 12:00 nn – 1:30 pm (Reception with light sandwiches starts at 11:45 am. To facilitate the order of sandwiches, please register through email yfung2222@cityu.edu.hk.)
Venue: B6605, Academic 1, City University of Hong Kong
Language: English

Abstract

Neural implant aims at restoring lost functions of mankind with artificial means. The rapid development of technology leads to the success of deep brain stimulator and cochlear implant that restore motion and auditory functions of patients. Retinal prostheses (implant) are designed to treat outer retinal diseases, like age-related macular degeneration (AMD) and retinitis pigmentosa (RP), which blind hundreds of thousands each year worldwide.

Despite the progress of potential treatment of RP including gene therapy and transplantation, no effective treatment is yet available. Clinical trials of the prototype retinal prostheses have shown the promise of giving the blind to see again. In this talk, I will introduce the state-of-the-arts visual prostheses and how individual recipient of the implants are able to detect light and perform visually guided tasks with a low-resolution implant. I will discuss the challenges towards a high resolution retinal implant. I will present results on the effect of retinal-electrode distance on evoked response and how one can optimize the electrical parameters to safely and efficiently stimulate the degenerated retina. The alterations in the visual cortical properties under retinal degeneration will be discussed. Future prospects of retinal implant will also be discussed.

Biography



Dr. Chan received her B.Eng. degree in Electrical and Electronic Engineering from the University of Hong Kong (HKU). She then went to University of Southern California (USC) for graduate school, earning degrees in Electrical Engineering (M.S. 2004) and Biomedical Engineering (Ph.D. 2009). During her graduate studies, her research contributed in the retinal prosthesis testbed development at the Biomimetic MicroElectronic Systems (BMES) Engineering Research Center at USC. After graduation, she joined the Saban Research Institute at Children's Hospital of Los Angeles as a postdoctoral fellow in the Developmental Neuroscience Program. She was appointed as Assistant Professor of Electronic Engineering at City University of Hong Kong in December 2011. Her research interest is mainly focused on the neural device interface, stimulating electrode array, and in vivo electrophysiology on visual system.

**** ALL ARE WELCOME ****