



The Chinese University of Hong Kong

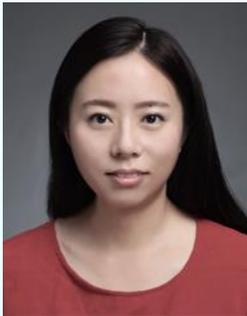
Department of Biomedical Engineering



Time: 10:00 am, 22 January 2020 (Wednesday)

Venue: Room 215, William M.W. Mong Engineering Building

# Towards decoding and restoration of visual and motor functions



**Dr. ZHANG Jiayi**

**Vice Director of State Key Laboratory of Medical Neurobiology  
Assistant Dean of Institutes of Brain Science**

## **Abstract**

The restoration of light response with complex spatiotemporal features in retinal degenerative diseases towards retinal prosthesis has proven to be a considerable challenge over the past decades. Herein, inspired by the structure and function of photoreceptors in retinas, we developed artificial photoreceptors based on gold nanoparticle-decorated titania (Au-TiO<sub>2</sub>) nanowire arrays, for restoration of visual responses in the blind mice with degenerated photoreceptors.

We previously demonstrated that for long-term spastic limb paralysis, transferring the seventh cervical nerve (C7) from the nonparalyzed side to the paralyzed side in human patients results in increase of 17.7 in Fugl-Meyer score. In our study, we develop an implantable multisite optogenetic stimulation device (MOSD) based on shape-memory polymer. Our work opens up the possibility for multisite nerve bundle stimulation to induce highly-selective activations of limb muscles, which could inspire further applications in neurosurgery and neuroscience research.

## **Biography**

Dr. Jiayi Zhang received her B. Sc. Degree from Hong Kong Baptist University and Ph.D. degree from Brown University. She was a Brown-Coxe postdoctoral fellow in Yale University and joined Institutes of Brain Science at Fudan University in 2012. She is currently the vice director of State Key Laboratory of Medical Neurobiology and assistant dean of Institutes of Brain Science. Her recent work focused on the restoration of vision and motor functions. She serves as the Vice chairman of the Young Scholar Panel and fellow for Chinese Association for Physiological Sciences (CAPS) as well as the Vice chairman of the Sensory and Motor Panel, Chinese Neuroscience Society (CNS).

**\*\*\* ALL ARE WELCOME \*\*\***

*For enquiries, please contact Ms. Joyce Chan, Department of Biomedical Engineering at 3943 8278*