

# PARK, JAE HONG

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## Education

**Duke University** (2016.09 – Present)  
PhD Student in Biomedical Engineering (Advisor: Miguel Nicolelis)

**Hallym University** (2013)  
M.S. in Medical Science (Physiology) (Advisor: Hyung-Cheul Shin)

**Yonsei University** (2009)  
B.S. in Science (Biology) (Advisor: Kwang-Min Choe)

## Research Interests

- Brain Machine Interface and Motor Learning and Plasticity
- Population Code and Functional Connectivity
- Optogenetic Artificial Sensory Feedback Modulation

## Awards

2016 **Fulbright Graduate Study Award**

## Publications

**Jae Hong Park**, Jin Ki Hong, Ja Yun Jang, Jieun An, Kyu Sung Lee, Tong Mook Kang, Hyun Joon Shin, Jun-Kyo Francis Suh (2017). "Optogenetic Modulation of Urinary Bladder Contraction for Lower Urinary Tract Dysfunction." **Scientific Reports** 7, 40872.

**Jae Hong Park**, Chang-Eop Kim, Jae Woo Shin, Changkyun Im, Chin Su Koh, In Seok Seo, Sang Jeong Kim and Hyung-Cheul Shin (2013). "Detecting bladder fullness through the ensemble activity patterns of the spinal cord unit population in a somatovisceral convergence environment." **Journal of Neural Engineering** 10(5): 056009.

## Research Experiences

**PhD student** (2016.09 – Present): Duke University (Advisor: Miguel Nicolelis)  
"Investigating a specific neural pathway for infrared detection prosthesis."

**Short term internship** (2016.05 – 2016.07): Seoul National University (Advisor: Dr. Sung-yon Kim)  
"Optogenetic dissection of emotion behavior."

**Research Scientist** (2013.05 – 2016.05): Korea Institute of Science and Technology (Advisor: Dr. Jun-Kyo Suh)  
"Optogenetic membrane modulation of muscle and retina for functional rehabilitation."

**Master student** (2011.03 – 2013.02): Hallym University (Advisor: Dr. Hyung-Cheul Shin)  
"Closed-loop system for controlling lower urinary dysfunction."

**Research Assistant** (2009.08 – 2010.12): Seoul National University (Advisor: Dr. Sang Jeong Kim)  
"Role of reactive oxygen species in short-term memory in cerebellum purkinje neurons."

**Undergraduate Assistant** (2006.12 – 2007.06): Yonsei University (Advisor: Dr. Kwang-Min Choe)  
"Wound healing assay in Drosophila."

## Selected conference abstracts

### *Oral Presentations*

**Jae Hong Park**, Hyuk-June Moon, Dong-Hoon Kang, Sujin Hyung, Hyun Jun Shin, Jun-Kyo Francis Suh (2014). “Off-like Responses to the Blue-light in rd1/ChR2 Mouse Retina” 9th International Meeting on Substrate-Integrated Microelectrode Arrays, Reutlingen, Germany.

### *Poster Presentations*

**Jae Hong Park**, Ja Yun Jang, Jin Ki Hong, Hyuk-June Moon, Heon Hwi Lee, Hyun Joon Shin, Jun-Kyo Francis Suh (2015). “Control of bladder function by optogenetic modulation on membrane potential of smooth muscle.” Neuroscience 2015, **Society for Neuroscience**, Chicago, Illinois, USA.

**Jae Hong Park**, Changkyun Im, Chin Su Koh, Jae Woo Shin, In Seok Seo, Hyung-Cheul Shin (2012) Information embedded in functional connectivity patterns within neural ensembles enables to identify bladder fullness in the somatovisceral convergence. The Korean Society for Brain and Neural Science 15<sup>th</sup> conference, Seoul, Korea.

**Jae Hong Park**, Hyun Joo Lee, Changkyun Im, Chin Su Koh, Jae Woo Shin, In Seok Seo, Hyung-Cheul Shin (2011). Excitability Changes of Dorsal Horn Single Neurons Responsive to Bladder Expansion after Spinal Cord Transection. The 8<sup>th</sup> Scientific Meeting for the Asian-Australasian Society of Stereotactic and Functional Neurosurgery, Jeju, Korea.

## Patent

### *Domestic Applications*

- Jun-Kyo Francis Suh, Sang Beom Jun, Ja Yun Jang, Hyuk-June Moon, **Jae Hong Park**. Acousto-Optogenetic Hybrid Methods for Neuromodulation. 10-2014-0097164, Korea (2014).

## Technical and Specialized Skills

- **In-vivo/In-vitro electrophysiology** (multi-channel single unit recording, patch clamp)
- **In-vivo/In-vitro muscle physiology** (isometric contraction, cystometry)
- **Optogenetics**
- **Calcium imaging** with fluorescent dyes and Genetically Encoded Calcium Indicators (ex. R-GECO, GCaMP)
- Immunohisto/cytochemistry
- Animal surgery (craniotomy, laminectomy, stereotactic procedure and etc)
- Mandatory molecular works (PCR, DNA prep.)
- Primary cell culture (hippocampus, smooth muscle)