



이름: 박재원 / Jaewon PARK

직위: 조교수 / Assistant Professor

소속: 건국대학교 글로벌캠퍼스 / Konkuk University

기타소속:

강연제목: 미엘린 연구를 위한 바이오칩

## Brain-on-a-Chip: an *in vitro* CNS Myelination Model

**Abstract:** Myelin is essential for the development and function of the central nervous system (CNS) in vertebrates. Dysfunction or loss of myelin or myelin-forming oligodendrocytes (OLs) contributes to many neurological deficits. The molecular mechanisms that control CNS myelination remain incompletely understood. To facilitate studies into CNS myelination and axon-glia interactions, we developed an *in vitro* myelinogenesis model using a scalable three-dimensional microfluidic platform for these brain aggregates and demonstrated that electrical stimulation of neurons promoted OL differentiation and myelination even more than retinoic acid and ciliary neurotrophic factor treatments. The system is applicable to *in vitro* manipulations for neurodevelopmental, axon-glia interactions studies as well as small molecule testing for their capabilities to promote OL differentiation and myelination.

### Brief Biosketch

#### Education

Ph.D. Texas A&M University (Electrical Engineering), USA, 2011

B.S. Korea University (Electrical Engineering), Korea, 2004

#### Work Experience

2023 - Present

Assistant Professor, Konkuk University Glocal Campus

2015 - 2022

Assistant Professor, Shenzhen University of Science and Technology,

China

#### Research Interest

Research interests include the development and application of organ-on-a-chip microdevices, microphysiological systems for neuroscience applications (Brain-on-a-Chip, Retina-on-a-Chip), high-throughput screening platforms, Point-of-care diagnosis systems, and micro/nano fabrication.