



IBS Center for Molecular Spectroscopy and Dynamics

COLLOQUIUM

■ **SPEAKER**

Dr. Tae Yun Kim (Rhode Island Hospital & Warren Alpert Medical School of Brown University)

■ **TITLE**

Proarrhythmogenic Roles of Interaction between Cardiac Fibroblasts and Myocytes in-vitro 3D microtissue

■ **ABSTRACT**

Cardiac fibroblasts (CFs) are important mediators of structural and functional remodeling in cardiac disease. Fibrotic responses can disturb impulse propagation by creating electrical obstacles or disturbing cell-cell coupling through excessive deposition of extracellular matrix. In addition, CFs may form electrical coupling with cardiac myocytes (CMs) and alter excitability and conduction to facilitate arrhythmias. The electrical characteristics of CFs (such as resting membrane potential, ion channel expressions and gap junction coupling) and spatial patterns of CF distribution such as scar formation in myocardial infarction can greatly potentiate arrhythmogenic potentials of CFs in generating triggered activities and slowing conduction thereby reentry formation. To investigate electrical coupling and conduction characteristics in 3D, we used scaffold-free, self-assembled 3D spheroids comprised of neonatal rat ventricular CMs and CFs. We found that ion channel kinetics of CF and gap junction conductance between CM and CF increases arrhythmogenic activations. And also we found that suggested roles of Na⁺ channel expression in CFs and migration of CFs in potentiating the AP propagation delay have implications for arrhythmogenesis in compact fibrosis and border zone such as in myocardial infarction disease.

■ **DATE AND VENUE**

September 17, 2018 (Monday, 11:00 - 12:00)
Seminar Room A 116, KU R&D Center

■ **LANGUAGE**

Korean

■ **INVITED BY**

Associate Director Wonshik Choi