Faculty Name:

Gordana Vunjak-Novakovic

Faculty Email:

Gv2131@columbia.edu

Lab:

Laboratory for Stem Cells and Tissue Engineering

Project Title:

Modeling genetic risk of drug-induced cardiac arrhythmias using engineered cardiac tissues

Description:

Drug-induced cardiac arrhythmias commonly cause drug restriction, withdrawal from the market, or even attrition during the development phase. However, current models for studying drug-induced arrhythmias do not fully recapitulate the arrhythmic phenomenon. We aim to develop an optically-based platform for studying emergent arrhythmogenic cardiac behaviors in mature cardiac tissue. Engineered cardiac tissues fabricated from healthy hiPSC-derived cardiomyocytes and primary cardiac fibroblasts will be cultured in bioreactors developed for electromechanical maturation of 3D cardiac tissues. After maturation, tissues will be treated with pro-arrhythmic drugs with defined high, medium, or low pro-arrhythmogenic risk. Tissues will be optically imaged using voltage-sensing optical dyes while electrically paced and evaluated for torsades-, tachycardic-, and bradycardic-like patterns.

Location of Research:

On-Site

# of hrs/week:

35

Department/Program:

Biomedical Engineering

Eligibility:

MS

To apply, please contact:

Sue Halligan sph2130@columbia.edu