



Thesis Project Form

Title (tentative): Analysis of electrophysiological activity of neuronal networks derived from induced pluripotent stem cells from healthy subject and patients grown on multielectrode arrays

Thesis advisor(s): Chiappalone Michela, Sergio Martinoia (DIBRIS), Monica Frega (U Twente)

E-mail: michela.chiappalone@unige.it

Address: Via Opera Pia 13, 16145 Genova

Phone:

Description

Motivation and application domain

The student will investigate the electrophysiological activity of neuronal networks derived from induced pluripotent stem cells grown on multi-electrode arrays.

General objectives and main activities

The student will study whether differences in activity are present between neuronal networks derived from healthy subjects and patients with Dup15q syndrome, a neurodevelopmental disorder associated with autism and epilepsy. The student will test treatment strategies to improve neuronal network functioning. In vitro experiments will be complemented with data analysis.

The work of the student will be monitored by the Receiving Organisation (University of Twente) and in particular by Monica Frega that will be the supervisor at the company, and simultaneously by the Sending Institution (University of Genova) and in particular by professors Sergio Martinoia and Michela Chiappalone.

Training Objectives (technical/analytical tools, experimental methodologies)

The student will be trained on the following topics: maintenance and neuronal differentiation of induced pluripotent stem cells, recording and analysis of electrophysiological activity exhibited by neuronal networks on MEA. In addition, the student will improve learning skills and teamwork capability and adaptability.

Place(s) where the thesis work will be carried out: University of Twente

Additional information

Pre-requisite abilities/skills: MATLAB programming skills, signal processing, statistics, attitude to experimental work

Maximum number of students: 1

Financial support/scholarship: Erasmus grant