Title (tentative): Multi-well chip for the development of neurotoxicity tests

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Motivation and application domain

Development of high-throughput systems for drug screening
Test and validation of new device-systems

General objectives and main activities

The main objective is to test and optimize an existing system constituted by a multi-well plates in which the 24 wells contain a small micro-electrode array for electrophysiological measurements.

The focus of the activity will be to set-up the system in collaboration with CNR-IBF (Institute of Biophysics) and to perform experiments with neuronal cells and specific chemical compounds whose mode of actions is known. In parallel a specific sw will be adapted and optimized to automatically extract dose-response curves.

Finally the experimental results will be critically analyzed and discussed.

Training Objectives (technical/analytical tools, experimental methodologies)

Use of advanced instruments for network electrophysiology.
Software development (Matlab).
Design of experimental protocols.
Analysis of neuronal signals for neurotoxicity.

Place(s) where the thesis work will be carried out: Neuroengineering and Neurotechnologies Lab@UNIGE; CNR-IBF

Additional information

Curriculum: Neuroengineering and Bio-ICT

Maximum number of students: 1