Annex No. 1 tender documentation

Technical specification: Cell electrophysiology system (patch-clamp) + suitable fluorescence inverted microscope

Intended use / application: A complete electrophysiology rig for single cell patch clamp recordings (voltage and current clamp modes; whole cell and single channel recordings) of cultured cell lines and isolated primary neurons (Part A). Additionally, fluorescence inverted microscope with the possibility to visualize cells expressing the fluorescent proteins GFP and mCherry for identification of cells for patch-clamp recordings is requested (Part B).

Part 1: Complete patch-clamp rig

Amplifier:
- Modes I-Clamp and V-Clamp
- Telegraph mode (Gain, filter, capacitance)
- Holding potential range -/+ 1000 mV
- Holding current range +/- 200 nA
- Output gain 0.5 to 500 mV/pA
- Low noise (<0.13 pA rms (10 kHz)
- True voltage-clamp-resistor
- Capacitance compensation

AD/DA converter:
- Input signal +/- 10V
- Maximum noise amplitude 20 V (peak-to-peak)
- Noise cancellation line-frequency 50Hz/60Hz +harmonics 10kHz
- Cancellation response time < 1 second
- Minimum input channel 8 (single-ended)
- Sampling rate 1 Hz – 500 kHz
- Input range -10.000 V to +10.000 V, input resistance >1 MΩ

- Output range -10.000 V to +10.000 V, output impedance <0.5 Ω

Micromanipulator
- Mechanical manual and computer-controlled patch clamp micromanipulator
with compatible stand

Perfusion system
- Computer controlled perfusion system (8 channels) for patch clamp recordings

Computer (desktop machine with one screen + keyboard + mouse)

- Windows 10 Pro (32- or 64-bit) or later version

- CPU 2.0 GHz (or faster), min. dual processor

- RAM 4 GB or higher, display 1920 × 1080 or higher, 3x USB 2.0 ports

Software
- Acquisition and analysis software compatible with above mentioned amplifier and AD/DA converter

Anti-vibration table with air compressor and Faraday cage

Table:
- type : air supported, suitable for patch-clamp applications

- optical breadboard 120 × 90 cm with predrilled holes

- pneumatic supports (tie-bars and casters)

Air compressor - compatible with above mentioned air table

Faraday cage - compatible with above mentioned air table

Part 2: Inverted fluorescence microscope suitable for desired applications

- Observation method: fluorescence, DIC, phase contrast, bright filed

- Observation tube tilting binocular

- Stage: mechanical, Condenser: manual

- Objectives Plan FLN 40×/0.6; 20×/0.45; 4×/0.13

- Fluorescence filters GFP, mCherry

- Suitable light source