Universitat Autònoma de Barcelona

PLEC DE PRESCRIPCIONS TÈCNIQUES

PROCEDIMENT Negociat SP Exclusivitat

Contracte núm. CONTR-104/2023

Supply of laser equipment for ERC-COG-DREAMNET project, GA number 101088598 as a fundamental part of ERC-CoG-DREAMNET project to Adam Ranson. The laser is a 1035nm pulsed femtosecond laser with low repeat rate, suitable for optogenetic stimulation of light activated ion channels in vivo.

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1. [Clàusula primera]

Description of equipment:

The ERC Consolidator project DREAMNET aims to measure neural activity in the rodent brain during sleep at cellular resolution across spatially distributed (>2mm distal) cortical areas of the brain. The project has the aim of understanding how and why neural activity is produced during sleep and dreaming and the roles it is playing in creativity and memory.

This project requires a microscope which uses two-photon excitation to excite light sensitive ion channels in neurons, thus resulting in targeted activation of those neurons. This is achieved using a relatively low repeat rate femtosecond pulsed stimulation laser. The planned experiments (holographic two-photon excitation) require a high-powered laser of at least 40W average power with a repetition tuneable between single pulse and 50Hz. The laser should additionally have the option of modification if required for 3-photon excitation to target deeper structures and control over number of pulses administered (single-shot functionality).

Parts and components of the equipment:

1035nm pulsed femtosecond laser

Minimum technical characteristics:

1) Power 40W
2) Pulse duration < 350fs
3) Built-in AOM
4) Built-in GDD correction
5) Capacity to be modified to synchronise pulses with another similar System
6) Single pulse up to 50MHz repetition rate
7) Option of modification for use in three-photon imaging

Equipment installation:

Once the equipment has arrived at the UAB premises, the supplier will need to:

- Unpack the equipment.
- Assembly of the equipment
- Proceed to carry out the verifications of correct operation

- Provide traing in use of the system

Associated documentation:

- Instruction manual
- Report indicating equipment complies with the technical specifications
- Documentation relating to the guarantees of all equipment components
- Telephone numbers and contact addresses of the Technical Service