Cellular / Slice electrophysiology

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Organisation

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SCOPE OF THE METHOD

The Method relates to	Human health
The Method is situated in	Basic Research
Type of method	In vitro - Ex vivo
Species from which cells/tissues/organs are derived	Mice / Rat
Type of cells/tissues/organs	Brain / Neuronal cell

DESCRIPTION

Method keywords

Patch clamp
Field potential
Brain slice

Scientific area keywords

Electrophysiology
neuroscience
Physiology

Method description

In this method, it is possible to use active/viable animal or human brain slices / cells (normal or disease model) to study the effects of different drugs on brain cells (neuron or glia) in diverse brain region.

Lab equipment

Vibration isolation table with Faraday cage ;

Signal amplifier ;
Digitizer ;
Micromanipulator ;
IR-DIC Microscope ;
Perfusion pump ;
Glass pipette microforge.

Method status

History of use
Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

Reduce animal use ;
Any drugs can be tested before clinical studies ;
Possibility of sharing same animal for different experiments depending on target brain regions.

Challenges

Require sophisticated instruments which are expensive ;
Require long training before successful implementation.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

Fanny Sandrine Martineau, Surajit Sahu, Vanessa Plantier, Emmanuelle Buhler, Fabienne Schaller, Lauriane Fournier, Geneviève Chazal, Hiroshi Kawasaki, Alfonso Represa, Françoise Watrin, Jean-Bernard Manent, Correct Laminar Positioning in the Neocortex Influences Proper Dendritic and Synaptic Development, Cerebral Cortex, Volume 28, Issue 8, August 2018, Pages 2976–2990, https://doi.org/10.1093/cercor/bhy113

Associated documents

segev2016.pdf

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