Hliatsevich, Maryna A.; Bulai, Pavel M.; Pitlik, Taras N.; Denisov, Andrey A.; Cherenkevich, Sergey N.

Design of deterministic model of signal transduction between neuronal cells. (English) Zbl 07387137

Summary: Mathematical model describing signal transduction between neurons has been presented using the system of nonlinear ordinary differential equations. The Cauchy problem for the given system has been solved numerically and system parameters were adjusted to match the results of experimental measurements of extracellular postsynaptic potentials in rat hippocampus slices. While fitting model to the experimental data some values of synaptic parameters have been determined.

MSC:
34C60 Qualitative investigation and simulation of ordinary differential equation models
92B99 Mathematical biology in general
94A12 Signal theory (characterization, reconstruction, filtering, etc.)
92C20 Neural biology

Keywords:
deterministic model; synaptic transmission; simulation

Full Text: DOI

References:

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