

# Protein interaction network of the neuronal synapse

Mihail Todorov<sup>1\*</sup>, Oliver A. Sved<sup>1</sup>, Julia Balog<sup>1</sup>, Andras Czurko<sup>1</sup>, Adrienna Katalin Kékesi<sup>1, 2</sup> and Gabor Juhasz<sup>1</sup>

<sup>1</sup> Department of Physiology and Neurobiology, Institute of Biology, Eötvös Loránd University, Hungary

<sup>2</sup> Laboratory of Proteomics, Institute of Biology, Eötvös Loránd University, Hungary

One of the most striking outcome of the Human Genom Project is that the number of genes convertible to proteins is far smaller than expected (20-30 kGene). Despite of the alternative splicing the number of proteins in a living organism does not exceed 200.000. Cellular functions never executed by one protein but extensive protein networks are involved. Functioning of networks of interacting proteins are investigated by systems biology tools as gene chipping and proteomics providing a data based hypothesis making instead of literature based hypothesis making as we did classically. Because the output of screening technologies is a list of proteins determined by the concentration resolution of the applied methodology, understanding and interpretation of data can only be achieved by using bioinformatics tools and databases. Neurosciences are far behind the other biological sciences in application database search, bioinformatics and systems biology methods. To help the interpretation work of our neuro-proteomics laboratory we created a protein interaction database and interaction network of the neuronal synapse. We are interested in research of neuro-immune crosstalk as well as the immune system which also has synapses on T-cells, we merged the immune synapse elements with the neuronal synapse network to achieve a database usable for interdisciplinary research as well. We present here a synapse database and interaction network ready for use in interpretation of gene chip and proteomics data. Our database is a manually validated from literature based database merging data of several large public and non-public protein interaction databases.

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\* **Correspondence:** Mihail Todorov, Department of Physiology and Neurobiology, Institute of Biology, Eötvös Loránd University, Budapest, Hungary, [mtodorov@t-online.hu](mailto:mtodorov@t-online.hu)

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