

# GÁBOR TAMÁS

## CV & ABSTRACT

SPEAKER AT:

## HOW MIND EMERGES FROM BRAIN: A VIEW INTO THE FUTURE



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Dr. Gábor Tamás, has already distinguished himself by gaining a D.Sc from the Hungarian academy of Sciences, Budapest, and currently holds an International Senior Research Fellowship awarded by the Wellcome Trust, UK. Tamás has made significant contributions to brain physiology and the study of cortical microcircuits, with a strong publication record, for example in the Journal of Neuroscience. As well as being a Wellcome fellow, Tamás is currently associate professor in the department of Comparative Physiology at the University of Szeged in Hungary.

### **The functional scope of single neurons**

The presentation addresses mechanisms linking the activity of single neurons with network events by defining the function of a cell type in the cerebral cortex. The example is a GABAergic cell type, the so-called neurogliaform cells which achieve their function in the cortex through an extreme form of spatial unspecificity of release. We showed that neurogliaform cells reach GABAA and GABAB receptors on target cells through unitary volume transmission going beyond the classical theory which states that single cortical neurons act in or around synaptic junctions. Moreover, enrichment of the neurosteroid sensitive GABAA delta receptor subunits on neurogliaform cells suggests that these neurons could gate hormonal actions in neocortical circuits. We propose that the spatial unspecificity of neurotransmitter action leads to unprecedented functional capabilities for a single neuron simultaneously acting on neuronal, glial and vascular components of the surrounding area allowing neurogliaform cells to synchronize metabolic demand and supply in microcircuits.

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