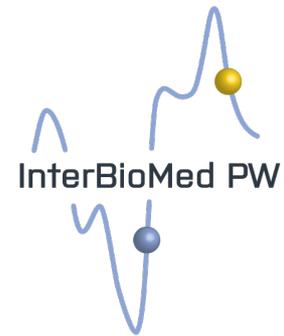


Specjalny gość 1st Young Scientists Forum InterBioMed:

Profesor Leszek Kaczmarek

*BRAINCITY, Instytut Biologii Doświadczalnej PAN im. Marcelego Nenckiego w Warszawie*



Leszek Kaczmarek wygłosi wykład pod tytułem:

## **„Molecules for the mind”**

Data: 14.10.2019, podczas sesji specjalnej, 10.15 – 11.00.

**Zapraszamy!**

### **Abstract:**

c-Fos is a component of AP-1 transcription factor pivotal for learning and memory, i.e., healthy mind. We have identified c-Fos/AP-1 gene targets in activated neurons, such as those encoding tissue inhibitor of metalloproteinases-1 (TIMP-1) and matrix metalloproteinase 9 (MMP-9). MMP-9 is an extracellularly operating enzyme that has been demonstrated as important regulatory molecule in control of synaptic plasticity, learning and memory. We have shown that either genetic or pharmacological inhibition of MMP-9 impairs late phase of long-term potentiation at various pathways, as well as appetitive and spatial memory formation, although aversive learning remains apparently intact in MMP-9 KO mice. MMP-9 is locally translated and released from the excitatory synapses in response to neuronal activity. Extrasynaptic MMP-9 is required for growth and maturation of the dendritic spines to accumulate and immobilize AMPA receptors, making the excitatory synapses more efficacious. Our studies on animal models have implicated MMP-9 in such neuropsychiatric conditions, as e.g., epileptogenesis, autism spectrum disorders, development of addiction, and depression. We have also reported that in humans MMP-9 appears to contribute to epilepsy, alcohol addiction, Fragile X Syndrome, schizophrenia and bipolar disorder. In aggregate, all those conditions may be considered as relying on alterations of dendritic spines/excitatory synapses and thus understanding the role played by MMP-9 in the synaptic plasticity may allow to elucidate the underpinnings of major neuropsychiatric disorders, i.e., diseased mind.

*Partners of 1<sup>st</sup> InterBioMed Young Scientists Forum*



**SYGNIS**  
BIO TECHNOLOGIES



**Scope  
Fluidics**



**SKAFFOSYS**

**Politechnika  
Warszawska**