

XVIII SCIENCE FESTIVAL
19-28 September 2014
Nencki Institute of Experimental Biology
Pasteur str. 3

YOUTH CLUBS

52. How do the neurons communicate: the synapse – where the magic happens Prof. M. Skup 22.09. godz. 16.00

Classical view about neurotransmission assumes that flow of signals from one neuron to the other, securing high-fidelity and speedy transfer of chemical message, is limited to the synaptic cleft. However, the nervous system developed mechanisms which control the transfer of signals outside the cleft. The lecture describes the “battle-field” of these processes: a structure of synapses, their peculiarities related to excitatory and inhibitory transmission, phenomena of temporal and spatial neurotransmitter spillover, the mechanisms of extrasynaptic transmission, including recent advances in exploring extrasynaptic receptor specificity and trafficking, transporters and exchangers operating outside the cleft. A concept of a tripartite synapse involving gliotransmission will be presented. Shaping the synaptic signal outside the cleft brings more understanding of the molecular background of the complex processes like learning and memory.

53. Neurotransmitters and neuroreceptors Dr P. Boguszewski 23.09. godz. 16.00

Human brain is the most complex object known to us. It is a fascinating and still mysterious combination of chemical and electrical impulses. This lecture will describe neurotransmission between neurons, its influence on human behavior and mechanism of psychoactive substances action.

54. Life in motion: from molecules to marathon runner - Dr hab. Paweł Pomorski
24.09.;16.00

Introductory lecture, presenting biological point of view on the phenomenon of motion and motility. Molecules, systems and phenomena involved in the formation of a mechanical force in biological systems will be presented at the level of the nano-, micro- to macro-systems. Particular emphasis will be placed on the unity of the molecular mechanisms leading to the formation of both the motion as well as other biochemical phenomena such as transcription and translation of genetic information or storage of chemical energy in ATP.

55. Nobel Prize 2013: vesicular transport or cellular logistics - Prof. dr hab. Marta Miączyńska 25.09.;16.00

The 2013 Nobel Prize in Physiology or Medicine was awarded for basic research in the field of cell biology. Three prize-winning scientists, using three different experimental models (isolated proteins, yeast, nerve cells) explained the universal mechanisms of transport of substances within cells. These studies will be presented in the lecture.

THEMATIC CLUBS - SCIENCE AND HEALTH

166. Alzheimer’s disease: diagnostics and perspectives for new therapies Prof. U. Wojda
20.01. 22.09. godz. 18.00

Alzheimer’s disease (AD) is the most common age-related dementia affecting elderly people. The disease progressively and irreversibly impairs cognition and memory. As of 2013, there

were an estimated 35 million patients with AD worldwide. It is predicted, that this number will increase to an estimated 75.6 million in 2030. At present several anti-AD drugs are used in clinic. These drugs reduce AD symptoms but do not target the cause or causes of the disease. Moreover, it is known that the disease develops many years before the onset of symptoms, but early AD markers are lacking. To win the war against the increasing threat of AD, the knowledge of the disease molecular mechanism is crucial. The research in the recent years resulted in the identification of several molecular changes that seem to contribute to the complex pathology of AD. Based on these findings new hypotheses of AD primary causes and pathomechanism were proposed, and potential new therapeutic targets and early markers were indicated. These novel findings will be presented and discussed in the lecture.

167. How to look inside the human brain? Artur Marchewka 23.09. godz 18.00

Structural and functional imaging of the human brain enables us to study a wide spectrum of cognitive processes. It takes just several minutes in the magnetic resonance scanner to see how the brain works when we read a book, when we are afraid of something or when we lie. At the beginning of lecture we will present the physical bases of magnetic resonance and explain how scanner works. Next we will discuss the results of our recent studies.

168. There are two sides of every story - role of cellular senescence in aging – dr Anna Bielak-Żmijewska 24.09.;18.00

Cellular senescence is one of the fundamental processes observed in all types of cells. Senescence of cells can play both destructive and beneficial roles. On the one hand it is essential to maintain homeostasis, protection from tumor and proper tissues regeneration, on the other it is correlated with organismal aging and age-related diseases. The apparently contradictory functions of cellular senescence will be discussed.

169. Cellular senescence – friend or foe in anticancer therapy - Dr Grażyna Mosieniak, IBD 25.09. ;18.00

Cellular senescence leads to terminal growth arrest of the cells. It's considered as an natural anticancer barrier at early stages of cancer development. It could also determine the positive effect of anticancer therapy. On the other hand senescent cells was shown to support the tumor cell proliferation. The reason for this apparent discrepancy will be explained

245. Biological Evening

26.09.2014; 18.00-22.00

How to extract genetic material from onion? How tissues look like under a microscope? How to detect the sweat glands? Can we use cabbage juice to measure pH? Why do we subject to optical illusions?

And

LITTLE MAN FESTIVAL OF SCIENCE

Department of Biology, the Warsaw University, Miecznikowa str. 1

262. Biological Kindergarten organized by the Nencki's Phd Students Council; 28.09.; 10.00-16.00

Biological Kindergarten is a workshop for children, combining elements of experimental biology and fun. Children will have the opportunity to prepare a "magic potion". Using the colorful solutions and dry ice they will create steaming and foaming mixtures.

Getting to know the brain - the participants themselves will create a simple model of the brain at an early stage of development.