Lecture by Professor **Allan V. Kalueff**

7th December at 12:00

Auditorium 1231-424, Lille Anatomisk Auditorium

"*Zebrafish models in translational neuroscience research*"

Professor Allan V. Kalueff, PhD, Dr. Sci

School of Pharmacy, Southwest University, Chongqing, China
and Inst. of Translational Biomedicine, St. Petersburg State University, Russia

ABSTRACT. The zebrafish (Danio rerio) is a small aquatic vertebrate organism that has become a new powerful model organism in preclinical biomedical research. Zebrafish possess all major neurotransmitter receptors, transporters and enzymes, as well as express rich behavioral repertoire, thereby offering a wide spectrum of CNS disease models. However, our understanding of zebrafish role as a new emerging mainstream model in neuroscience research is still limited. For example, zebrafish behavior has long been mistakenly viewed as "primitive" or "reflex-driven", resulting in incomplete utilization of the major advantages of this species for CNS disease modeling or drug discovery. I will discuss zebrafish models relevant to several important human disorders, including epilepsy, autism, stress/depression, anxiety and addiction, to demonstrate excellent future of this model organism in biological psychiatry research. Furthermore, zebrafish are highly sensitive to all major classes of neurotropic drugs (including antipsychotics, anxiolytics, antidepressants, sedatives/anesthetics, stimulants, hallucinogens, antiepileptics) and are well-suited to various high-throughput applications (due to their high fecundity, rapid external development, transparency, fast drug intake, and robust behavioral and physiological phenotypes in both larval and adult fish). Finally, zebrafish emerge as an excellent model for neurogenetic analyses, as they express 26,000 protein-coding genes, with the overall genetic homology to mammals and humans around 75%, and nearly 85% of shared genes known to be associated with human disease. Collectively, this calls for a wider use of zebrafish models as a powerful promising model organism for neuroscience and biopsychiatry research.

BIOSKETCH. Prof. Allan V. Kalueff graduated with the specialist degree in physiology from Moscow State University in 1994, and received PhD degree in physiology from RUDN University, Russia. In 2005, he was also awarded Ph.D. degree with honors [top 5%] in anatomy from Tampere University, Finland, for the discovery of multiple neural phenotypes of VDR knockout mice, and received Dr Science degree from St. Petersburg State University in 2020 for his seminal work on zebrafish. In 2005, Dr. Kalueff joined the National Institute of Mental Health, NIH, USA, where his research was aimed at modeling complex neuropsychiatric disorders associated with serotonin dysregulation, with a particular focus on genetic animal models of pathogenetic interplay between emotional and affective disorders. Since 2008, he worked as a Professor at Georgetown and Tulane Universities (USA), Director of ZENEREI Research Center, Distinguished Chair Professor at Guangdong Ocean University (China), Professor and Director of Biological Psychiatry Lab at St. Petersburg State University, Surius University, and Leading Scientist at Ural Federal University (Russia). Dr. Kalueff is on editorial boards of 8 international journals, and authored more than 260 papers and 12 books in the field of neuroscience and biological psychiatry. His works are cited in more than 17000 publications, with an H-index of 71 (Google Scholar). He has chaired 30 International annual "Stress and Behavior" neuroscience conferences and two international Summer Schools for young neuroscientists. He has received a number of prestigious scientific awards, including the Presidential Scientific Prize, two Graduate fellowships from the International Science Foundation, Medal for Steroid Research, Yaroslav Mudry Medal, and Young Investigator awards from NARSAD. Dr Kalueff is the current President of the International Stress and Behavior (ISBS) Society, member of the Governing Council of WFSBP (World Federation of Societies of Biological Psychiatry), and Chair of the International Zebrafish Neuroscience Research Consortium (ZNRC). Since 2021, he is a full member of the European Academy (Academia Europaea).