



ON-SITE BIOLOGY COLLOQUIUM

Friday, 23 Feb 2024 | 4 pm | DBS Conference Room 1

Hosted by Prof Thorsten Wohland

On brain ventricles, potassium and Reissner fibre

By **Vladimir Korzh**

International Institute of Molecular and Cell Biology in Warsaw, Poland



About the Speaker

Dr. Vladimir Korzh was born in China, grew in Ukraine, studied in Kyiv for B.Sc., for PhD in Moscow.

He worked as a postdoc in Norway and Sweden, as a PI in the IMA and IMCB in Singapore (1995-2016). Currently, he is a Senior Researcher in the International Institute of Molecular and Cell Biology in Warsaw, Poland.

The brain ventricular system (BVS) development in zebrafish was studied in vivo using a model of hydrocephalus linked to neurodegenerative disease in mutants of the Kv channel. The BVS description in zebrafish remains controversial despite a possibility to use as the landmarks the circumventricular organs (CVOs). To generate the tools to study the BVS development, we created several CVO-tagging GFP-, and KillerRed-expressing transgenic lines. The BVS development was described using a combination of bioimaging in vivo, immunohistochemistry and wholemount in situ hybridization. The mutants of Kv channel subunits *Kcnb1* and *Kcng4b* cause defects of BVS development such as microcephaly and hydrocephalus and affect the Reissner fibre, a rope-like acellular structure generated by one of the CVOs - the subcommissural organ (SCO) in the IIIrd ventricle and floor plate. It spans the whole anterior-posterior extent of the CNS excluding the forebrain and regulates the CSF flow and metabolism of bioamines. We characterised the novel genes expressed in the SCO, floor plate and ependyma lining the BVS and analysed their role in the RF development. The experimental analysis including the loss-of-function and gain-of-function experiments based on a combination of genetic and toxicological approaches provided novel information about RF development and its role in BVS morphogenesis.