



BIOLOGY COLLOQUIUM

Friday, 14 Sept 2018 | 4pm | DBS Conference Room 1

Hosted by A/P Cynthia He

Fascinating biology of trypanosomatid parasites



By Vyacheslav Yurchenko

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Kinetoplastid protists (a large group including trypanosomatids) are considered a unique playground for molecular evolution. It appears that a plethora of molecular innovations has been "field-tested" in this group. These include RNA editing, trans-splicing, nucleotide modifications, and many others. Trypanosomatids also offer a rare opportunity to study the evolution of parasitism. While their close relatives are either photo- or phagotrophic, a number of kinetoplastid species are facultative or obligatory parasites, supporting a hypothesis that parasitism has emerged within this group of flagellates.

About the speaker

*Vyacheslav Yurchenko is currently an Associate Professor and the Head of the Laboratory of Molecular Protozoology at the Life Science Research Centre, University of Ostrava, Czech Republic. He received his Ph.D. degree in Molecular Biology from the Moscow State University (1999) and conducted postdoctoral research at the Albert Einstein College of Medicine and Rockefeller University in NY. His laboratory is involved in research of evolution of parasitism, biology of monoxenous (with one host in their life cycle) trypanosomatids, and mechanisms governing virulence of *Leishmania*. . 1993).*

In this lecture, Dr. Yurchenko will discuss a progress his group has recently made in identification of the novel virulent factors in *Leishmania* infection, and discovery of the unique nuclear genetic code in trypanosomatids, in which all three stop codons can be used as sense ones. The last part of the talk will be devoted to RNA viruses in trypanosomatids. A recent comprehensive survey revealed that these flagellates can harbor viruses belonging to several supergroups (*Narnaviridae*, *Bunyavirales* and uncharacterized family of tombus-like viruses), in addition to the previously known *Totiviridae* from *Leishmania*. The infer scenarios of evolution of all these divergent viruses implied that they have independently originated from viruses of fungi, insects, and non-insect terrestrial invertebrates.