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Leptomonas seymouri in *Leishmania* infections: Genetic mechanisms of pre-adaptation to the vertebrate host's environment

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The co-infection cases involving dixenous *Leishmania* spp. (mostly of the *L. donovani* complex) and presumably monoxenous trypanosomatids in mammalian hosts including humans are well documented. The main opportunistic parasite has been identified as *Leptomonas seymouri* of the sub-family Leishmaniinae. The molecular mechanisms allowing a typical parasite of insects to withstand elevated temperature and substantially different conditions of vertebrate's tissue are not understood. Here we demonstrate that *L. seymouri* is well pre-adapted for the environment of the warm-blooded host. We sequenced the genome and compared the whole transcriptome profiles of this species cultivated at low (mimicking insect) and high (mimicking vertebrate host) temperatures and identified genes and pathways differentially expressed under these experimental conditions (for example, genes involved in oxidative stress response, etc). Importantly, *L. seymouri* can survive in sand fly insect vectors capable of transmitting *Leishmania* parasites, *Phlebotomus argentipes* and *P. orientalis*, although the intensity of infection compared to *Leishmania* is significantly lower. We concluded that although *Leptomonas seymouri* has a capacity to co-infect vertebrates along with *Leishmania* spp., additional factors are required for establishing a stable infection of this monoxenous trypanosomatid.

Biography

Vyacheslav Yurchenko is currently an Assistant Professor and the Head of the Laboratory of Molecular Protozoology at the Life Science Research Centre, University of Ostrava, Czech Republic. He received his PhD 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 monoxenous Trypanosomatidae and mechanisms governing virulence of *Leishmania*.

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