Doctoral dissertation of Rita Žiegytė

The author: Rita Žiegytė

Title of the dissertation: The experimental study on development of avian malaria parasites (*Plasmodium*) and haemoproteids (*Haemoproteus*) in vectors.

Field of science: Biomedical Sciences, Zoology (05 B)

Research Supervisor: dr. habil. Gediminas Valkiūnas

Consultant Supervisor: prof. dr. Staffan Bensch

Period of the PhD studies: 2010–2014 m.

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Summary of doctoral dissertation

Avian haemosporidian parasites are common in Lithuania and are suitable objects to examine the fundamental issues of blood parasites in evolutionary biology and ecology of invasive questions, and to investigate the spread of parasites mentioned in a cold climate zones mechanisms.
Using the traditional of parasitology and molecular research methods determined that: the patterns of sporogonic development of the genetically similar and closely related cytochrome *b* (cyt *b*) lineages of *Plasmodium relictum* (pSGS1 and pGRW11) and different isolates of the lineage pSGS1 are the same morphologically in mosquitos *Culex pipiens pipiens* and *C. p. pipiens* form *molestus*. Phylogenies based on the mitochondrial cyt *b* gene for predicting vector species of genetically similar avian malaria parasites. *Culicoides impunctatus* is an important vector of avian haemoproteids, especially in epidemiology research of avian haemoproteosis.
DNA of *Haemoproteus* parasites is detectable in the head, thorax and abdomen of infected mosquitoes *Ochlerotatus cantans* for several weeks following an infected blood meal, indicating the relatively long-time persistence of these parasites in resistant insects. That makes obstacles in application of solely PCR–based detection methods in determining vectors of haemosporidian parasite. It is important to combine traditional research and PCR–based methods in parallel.

List of Publications

1. **Kazlauskienė, R**., Bernotienė, R., Palinauskas, V., Iezhova, T.A., Valkiūnas, G. **2013**. *Plasmodium relictum* (lineages pSGS1 and pGRW11): complete synchronous sporogony in mosquitoes *Culex pipiens pipiens*. *Experimental Parasitology*, 133, 454–461.
2. Palinauskas, V, **Žiegytė, R**., Ilgūnas, M., Iezhova, T.A., Bernotienė, R., Bolshakov, C., Valkiūnas, G. **2014.** Description of first cryptic avian malaria parasite *Plasmodium homocircumflexum* n. sp., with 2 experimental data on its virulence and development in avian hosts and mosquitoes. *International Journal for Parasitology*, accepted to press.

3. Valkiūnas, G., **Kazlauskienė, R**., Bernotienė, R., Palinauskas, V., Iezhova, T.A. **2013**. Abortive long-lasting sporogony of two *Haemoproteus* species (Haemosporida, Haemoproteidae) in the mosquito *Ochlerotatus cantans*, with perspectives on haemosporidian vector research. *Parasitology Research*, 112, 2159–2169.
4. Valkiūnas, G., **Kazlauskienė, R**., Bernotienė, R., Bukauskaitė, D., Palinauskas, V., Iezhova, T.A. **2014**. *Haemoproteus* infections (Haemosporida, Haemoproteidae) kill bird-biting mosquitoes. *Parasitology Research*, 113, 1011–1018.
5. **Žiegytė, R**., Bernotienė, R., Bukauskaitė D., Palinauskas, V., Iezhova, T., Valkiūnas, G. **2014a**. Complete sporogony of *Plasmodium relictum* (lineages pSGS1 and pGRW11) in mosquito *Culex pipiens pipiens* form *molestus,* with implications to avian malaria epidemiology. *Journal of Parasitology*, accepted to PubMed PMID: 24979183.
6. **Žiegytė, R**., Palinauskas, V., Bernotienė, R., Iezhova, T.A, Valkiūnas, G. **2014b**. *Haemoproteus minutus* and *Haemoproteus belopolskyi* 1 (Haemoproteidae): Complete sporogony in the biting midge *Culicoides impunctatus* (Ceratopogonidae), with implications on epidemiology of haemoproteosis. *Experimental Parasitology*, 145, 74–79.

Note: The author's surname Kazlauskienė was changed to Žiegytė in 2013.