

### STSM Scientific Report

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**COST Action:** TD1303

**STSM Title:** Mosquitoes and mosquito-borne parasitic diseases (*Dirofilaria*), molecular  
epidemiology, phylogenetics

**WG 5:** Rare and emerging vector-borne pathogens

**Reference:** COST-STSM-ECOST-STSM-TD1303-130415-057896

**STSM Period:** 13/04/2015 to 29/04/2015

**Location:** University of Veterinary Medicine Vienna, Department for Pathobiology, Institute of  
Parasitology, Vienna, Austria

**Host:** Mag. Dr. Hans-Peter Fuehrer, Department for Pathobiology, Institute of Parasitology,  
Vienna, Austria, hans-peter.fuehrer@vetmeduni.ac.at

#### Purpose of the STSM

This STSM was aimed to obtain experience and practice in mosquito research and to initiate the collaboration between Slovakia and Austria in determination of prevalence of dirofilariosis in the mosquito population.

#### Description of the work during my STSM

My STSM was segmented to following parts:

1. First, I started with mosquito sampling using Biogents CO<sub>2</sub> mosquito traps. I learned the proper way to set up mosquito traps in suitable locations. Then, we set up the traps in different ecological habitats like the Danube Island in Vienna, Marchegg and the Donau Auen. These places are situated near to the Slovakian border, which allows us to compare our sampling results in the future.
2. I adopted the right techniques for processing the samples. Each sample was differentiated between mosquitoes and other insects. Then, I identified mosquitoes by morphology with an

identification key (e.g. Becker et al.). In our samples, the most frequent species were members of the *Culex pipiens* complex and some individuals of *Aedes vexans* and *Anopheles maculipennis* complex. However, I learned to identify other mosquito species using frozen prespecified samples.

3. For problematic species (e.g. *Cx. pipiens* complex), we used molecular analysis by means of standard PCR analysis using *Culex pipiens* CQ11 Locus primers for the discrimination between *Cx. pipiens* form *pipiens* and *Cx. pipiens* f. *molestus* and the *Culex pipiens* ACE locus primer for the discrimination between *Cx. pipiens* and *Cx. torrentium*. Furthermore we worked at an ongoing project on the barcoding of Austrian mosquitoes with Culicidae COI barcoding primer.

4. For identification of pathogens the extraction of DNA with Quiagen kit and standard PCR analysis for each pathogens were used. Several samples were screened for filarioid helminths and other vector borne pathogens.

#### **Description of the main results obtained**

I learned the main methods for mosquito sampling, morphological and molecular specification in order to accomplish the entomological research in Slovakia with special emphasis on identification of vectors of *Dirofilaria* species infesting dogs, other carnivores and humans.

Samples from our sampling areas confirmed that the most prevalent species in spring belong to the *Cx. pipiens* complex. We found just some individuals of other species like *Aedes vexans* and *Anopheles maculipennis*-complex. Barcoding analysis was made from 55 individuals of the *Cx. pipiens* complex by standard PCR using Culicidae COI Barcoding primer. After PCR analysis, we sent our PCR product for sequencing to LGC sequencing.

#### **Future collaboration with the host institution (if applicable)**

The STSM is the start of long-term collaboration between both institutes and we plan proposal submission for EU-grants. (First survey of dirofilariosis in mosquitoes in area of Slovak/Austria borders in *Helminthologia* /2016)

#### **Foreseen publications/articles resulting from the STSM (if applicable)**

The results of this STSM and further work on mosquitoes and *Dirofilaria* in the Austrian/Slovakian border area will be published in peer-reviewed journals.

#### **Other comments**

I would like to thank for the great cooperation and friendly approach to Dr. Hans-Peter Fuehrer, Mag. Carina Zित्रa and the whole working team and I would like to express my gratitude to the host institute - Institute of Parasitology in Vienna and COST Action TD1303 for this opportunity.

**Confirmation by the host institution of the successful execution of the STSM**

I herein confirm the present report regarding the COST-STSM-ECOST-STSM-TD1303-130415-057896 at the Institute of Parasitology - Vetmeduni Vienna (Austria).

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(Applicant)

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