

SHORT TERM SCIENTIFIC MISSION (STSM) – SCIENTIFIC REPORT

The STSM applicant submits this report for approval to the STSM coordinator

Action number: FA1408

STSM title: Artificial digestion, molecular typing of species, and serological tests for detection of *Trichinella*.

STSM start and end date: 04/02/2018 to 18/02/2018

Grantee name: Zsolt Boros

PURPOSE OF THE STSM

The main purpose of this STSM is to develop my personal knowledge regarding the diagnostic methods for *Trichinella spp.* Following this STSM I want to be able to perform all detection and identification methods for *Trichinella* species. I want to learn these methods because I think it is essential for me to know the different techniques that I can use to identify these parasites among other nematodes and after that to identify the species depending on the situation. The direct methods like trichinelloscopy and artificial digestion are good and very useful, but they can be used only if muscle samples are available from specific muscles where the concentration of larvae is higher. Now trichinelloscopy is a method that is not recognised for official detection of this parasite. By using artificial digestion I can test at the same time a large number of animals and the other advantage is that the larvae can be detected visually very clearly in the end. I know the principle of both techniques and I need to perfect the artificial digestion. I also need to learn other methods like PCR, ELISA, and Western blot that are more sensitive and precise methods of identification. PCR can be used to identify the species of *Trichinella* by using DNA. We can use only one larva to perform this identification. By using ELISA I can identify the antigen in a sample of plasma or serum. I can use Western blot to identify a specific protein or to confirm my result from ELISA. My purpose was to learn and understand these methods so I can use them in my PhD and to extend my knowledge as much as I can. By the end of my STSM I think that I reached my purpose in learning and understanding these techniques and I think I can do them in the lab of my faculty back home.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSMs

In my STSM I did the following methods: Artificial digestion, PCR, ELISA, and Western blot. For each method I received theoretical and practical training. The theoretical information consisted of documents where I could find the necessary information about each technique, explanations about the reason why we are doing this method rather than others, the necessary materials, and the description of the protocol. These documents consisted of articles, books, guidelines from the manufacturer's, internet access, and of course everyone from the lab helped me to understand each step and they answered my questions. The practical part started with the presentation of the lab, they showed me all the instruments, the necessary materials and machines. They had a different room for each method, and there you had all you needed from basic

instruments to kits, and machines. For each method I worked with a person who know the method very well. First I assisted and get information about each step and after that I did the method myself. I was helped if I needed it. They were very helpful and understanding. We followed the protocols at each method. I liked to work there during my STSM.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

By doing the methods that I mentioned above we got some interesting results. First we did the artificial digestion from samples of meat from wild boars and pigs that I brought from my country. Only 2 samples were negative and the rest were positive. In total we used 11 samples. In the 2 positive samples the larvae were in the Kysts. A total of 5 larvae were collected from each positive sample.

We did PCR from these larvae to identify the species of *Trichinella*. The results had shown that from the 9 positive samples 2 were positive for *T. britovi* and 7 samples were positive for *T. spiralis*.

We also did ELISA and Western blot from wild boar plasma samples from my country. In total we had 95 wild boar samples. First we did ELISA and 63 among 95 samples were positive, 6 were doubtful and the rest were negative(26).

For Western blot we choose 26 samples from the 95 tested by ELISA. We choose the ones that were doubtful or near the limit to be positive or negative. We also choose the ones that were only a little bit positive or negative as well. The test has shown that from the samples chosen only 6 were positive in this case. The same 6 samples in ELISA, 4 were positive and 2 were negative.

FUTURE COLLABORATIONS (if applicable)

I think that future collaborations are possible because trichinella is a zoonotic parasite that appears in Romania but also in France. My main focus now is the identification of the species of trichinella in Romania with the help of the methods that I learned. I think we can collaborate because I think that we can help each other to find out more about this parasite and its effects on human populations. Collaborations between the two labs occurred in the past through EU project and this STSM is a way to re-activate this collaboration.