Short-Term Scientific Mission
A multinational field parasitological expedition on the track of the vector of *Onchocerca lupi*
14th-19th April 2014
Scientific report

STSM applicant: DOMENICO OTRANTO
Below, the report of the activities by the COST STSM applicant, Prof. Domenico Otranto (ref code: COST-STSM-ECOST-STSM-TD1303-140414-044129), is provided. The scientific mission was carried out at the University of Èvora (Portugal), in collaboration with Prof. Helder Cortes and according to the Work Plan previously provided.

Purpose of the STSM
This STSM aimed at strengthening the existing networks and fostering collaborations by allowing scientists from different European countries to visit the University of Évora (Portugal).The lab staff, coordinated by Prof. Helder Cortes, already provided new data on *O. lupi*, a vector-borne helminth parasite whose biology remains largely unknown. In particular, the identity of the arthropod vector involved in the transmission of this nematode is still unknown. Therefore, as a member of the team working on this topic, the applicant designed this field expedition, which final aim was to fill the gap on the knowledge of this canine filarioid.

The research contributed to the TD1303 COST Action objectives of "One Health" concept in the ecology of vector-borne diseases (WG1), as well as to the investigation of rare and emerging vector-borne pathogens (WG5). During the study, the applicant exchanged its experience in the field of vector-borne nematodes. In particular, he trained two PhD students on the study of parasitological techniques, as well as two ESRs.

Description of the activities carried out during the STSM

1) *Procedures on dogs*
The applicant trained other participants on the sampling procedures to diagnose canine filarioids in dogs. He collected blood and skin samples from dogs, after owners consent, to assess the presence of *Dirofilaria immitis*, *Dirofilaria repens* and *Acanthocheilonema reconditum* microfilariae, as well as *O. lupi* and *Cercopithifilaria* spp. Skin samples were collected using individual 3mm diameter biopsy punches, performed on the inter-scapular region of dogs. All animals lived in endemic areas for canine onchocercosis, where an overall prevalence of up to 8.4% has been recorded.

2) *Laboratory procedures*
A Knott-modified test was performed in order to detect microfilariae in the blood. In addition, skin samples were screened for the presence of skin-dwelling microfilariae, according to the procedures described in literature. Briefly, skin snips were soaked in saline solution (NaCl 0.9%) and left overnight at room temperature, in order to allow the migration of microfilariae from the derma to the solution. Sediments were individually observed under a light microscope (i.e., two fields of 18mm×18mm coverslip each) and microfilariae found were identified, according to their morphological and morphometrical features. In particular, microfilariae of the following filarioid species infesting dogs were detected: *O. lupi*; *Cercopithifilaria bainae* and *Cercopithifilaria* sp. II sensu Otranto et al. 2012.

In addition, each dog was screened for the presence of blood microfilariae, using the Knott modified method.

3) *Collection of insects*
The participant collected haematophagus insects (i.e., simulids, biting midges, mosquitoes, and sand flies) from the environment and female insects were allowed to fed on a *O. lupi* positive dog, which was physically restrained into a confined tent. Plastic tubes containing the blood-sucking insects were placed on the dog shaved back. In addition, some specimens were released in the tent and collected the day after and stored in plastic cages.

Dissection of haematophagous insects
Dead fed insects were dissected onto glass slides containing a drop of 0.9 % physiological saline solution, with the aid of a sterile scalpel, and examined immediately under a light microscope at different magnifications. The possible presence of developing larvae of *O. lupi* will be identified as described elsewhere.

Main results
During the STSM period, 10 dogs were sampled and those that scored positive for microfilariae are reported in the following. All species were morphologically and morphometrically identified.

Identification of insects

During the STSM, the following insect species were collected:

- Mosquitoes: *Ochlerotatus caspius*; *Culex pipiens pipiens;Ochlerotatus detritus*
- Blackflies: *Simulium pseudoequinum; Simulium intermedium*

The detection of *O. lupi* developing larvae is currently in progress at the University of Novi Sad (Serbia).

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

The results of this STSM will be published in 1 or 2 peer-reviewed journals.

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

I herein confirm the present report regarding the COST-STSM-ECOST-STSM-TD1303-140414-044129 in Portugal.

Évora, 16th of May 2014

Helder Carola Espiguinha Cortes