Short Term Scientific Missions in Novi Sad and in Lisbon

Learning & Experiences through AIM COST's STSM programme

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University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Romania

Basic taxonomy for species identification of mosquitoes and maintenance of laboratory breeding mosquito colonies

University of Novi Sad, Serbia

STSM start and end date: **28.01.2019/ 08.02.2019**

- **Aims:**

1. Learning about the basic taxonomy of mosquitoes;
2. Maintenance of laboratory breeding mosquito colonies (*Cx. pipiens* biotype *molestus* & *Ae. albopictus*);

- **Outcome:**

1. Learning to identify male and female mosquitoes, larvae;
2. Learning about the rearing procedures;
3. Creating a laboratory suitable for breeding *Ae. albopictus*, and maintaining a colony at the UASVM;

Microsatellite-based population analysis of *Aedes albopictus* (Diptera: Culicidae) from Romania

Institute of Hygiene and Tropical Medicine (IHMT), Lisbon, Portugal

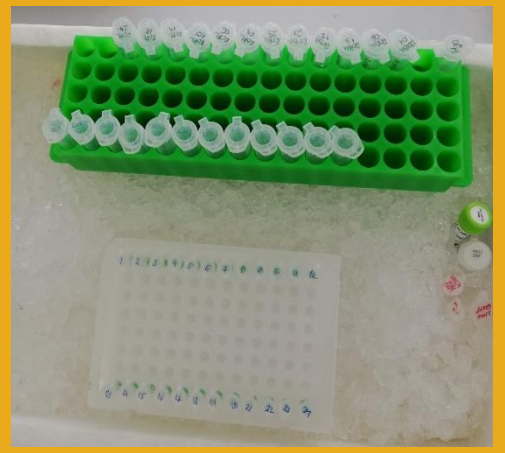
STSM start and end date: **03.05.2021/ 21.05.2021**

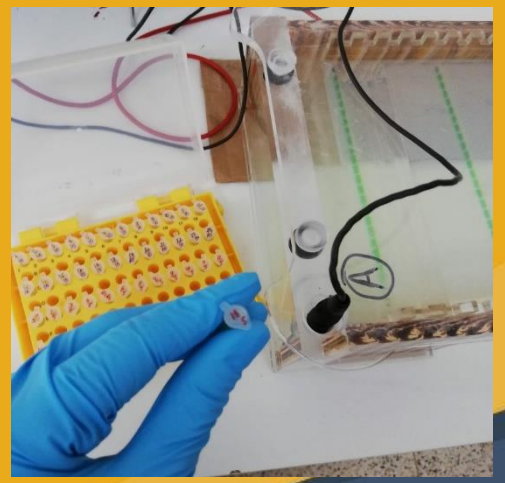
- **Aims:**

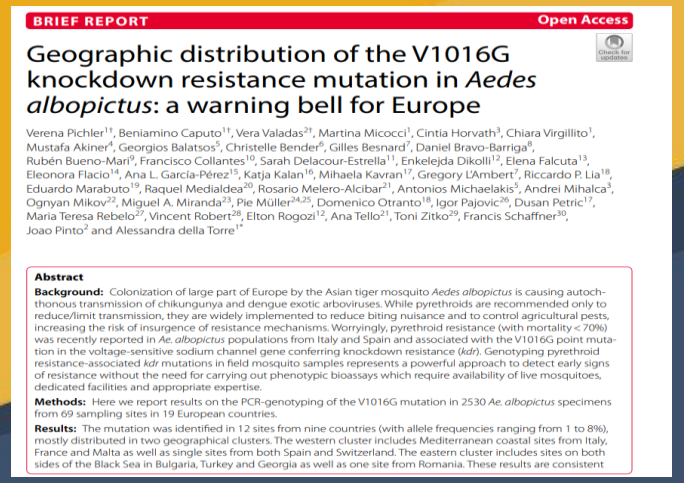
1. To learn about the basics of population genetics;
2. To gain experience in microsatellite-based population genetic analysis of invasive mosquito species

- **Outcome:**

1. Learning about the introduction events and phylogenetic relationship among Romanian *Ae. albopictus* populations + identifying pyrethroid resistance (V1016G);
2. 2 research papers;







BRIEF REPORT Open Access

Geographic distribution of the V1016G knockdown resistance mutation in *Aedes albopictus*: a warning bell for Europe

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Abstract

Background: Colonization of large part of Europe by the Asian tiger mosquito *Aedes albopictus* is causing autochthonous transmission of chikungunya and dengue exotic arboviruses. While pyrethroids are recommended only to reduce/limit transmission, they are widely implemented to reduce biting nuisance and to control agricultural pests, increasing the risk of insurgence of resistance mechanisms. Worryingly, pyrethroid resistance (with mortality < 70%) was recently reported in *Ae. albopictus* populations from Italy and Spain and associated with the V1016G point mutation in the voltage-sensitive sodium channel gene conferring knockdown resistance (*kdr*). Genotyping pyrethroid resistance-associated *kdr* mutations in field mosquito samples represents a powerful approach to detect early signs of resistance without the need for carrying out phenotypic bioassays which require availability of live mosquitoes, dedicated facilities and appropriate expertise.

Methods: Here we report results on the PCR-genotyping of the V1016G mutation in 2530 *Ae. albopictus* specimens from 69 sampling sites in 19 European countries.

Results: The mutation was identified in 12 sites from nine countries (with allele frequencies ranging from 1 to 8%), mostly distributed in two geographical clusters. The western cluster includes Mediterranean coastal sites from Italy, France and Malta as well as single sites from both Spain and Switzerland. The eastern cluster includes sites on both sides of the Black Sea in Bulgaria, Turkey and Georgia as well as one site from Romania. These results are consistent

Thank you for your attention!