

Torino, 11 agosto 2014

CNR Short-term Mobility 2014

Final report

Dr. Gordon Bennett (Univ. of Texas, Austin) visited the lab of Cristina Marzachi at the Istituto per la Protezione Sostenibile delle Piante (former Istituto di Virologia Vegetale) Consiglio Nazionale della Ricerche, Torino. The tenure of this collaboration was from July 28th to August 7th, 2014. Object of the collaboration was to investigate the leafhopper microbioma starting from sequence data obtained by Illumina and PacBio technologies genome sequencing carried out at the Italian hosting lab.

During this visit Bennett participated in ongoing research projects of the hosting lab, and discussed future work and collaboration. Dr. Bennett also gave a seminar on his research that focuses on the evolution of symbioses between leafhoppers and bacteria.

The goal of Dr. Bennett's visit was to provide an advisory role on the adaptation and evolution of bacterial symbioses in the regional pest leafhopper species, *Macrostelus quadripunctulatus* (Hemiptera: Cicadellidae). This insect vectors phytoplasma pathogens among ornamental and horticultural plants, and it is a research interest of the Marzachi lab.

Bennett developed genomic and bioinformatic approaches to investigate the relationship between the insect host and its symbionts.

The specific research accomplishments of this visit were as follows:

- 1) The complete assembly and gene annotation of the genomes of the symbionts, *Sulcia* and *Nasuia*, found in *M. quadripunctulatus*;
- 2) the assembly of the host insect mitochondrial genome and the identification of several host nuclear loci;
- 3) comparison of all genomes to the related pest leafhopper, *M. quadrilineatus*, of North American agriculture.
(This was done in order to identify important evolutionary patterns and specific genes that may be involved in the ecological success of these pest insects);
- 4) and, comparative genomic investigation of other infecting facultative symbionts, and pathogens that include *Rickettsia* sp. and the phytoplasma Chrysanthemum Yellows.

Dr. Bennett also participated in field research in regional vineyards. This included identifying phytoplasma infected grape plants, hanging traps for insect vectors, and collecting pest leafhoppers from grape plants.

The short-term mobility contract was concluded by a discussion regarding future collaboration on symbioses projects.

This includes a strategy to publish the results gained from Dr. Bennett's visit.

Torino, 11/08/2014

A handwritten signature in blue ink, reading "Cristina Mendonça". The signature is written in a cursive style with a prominent initial 'C' and a long, flowing tail.