

WISSENSCHAFTLICHE SITZUNG

FREITAG, 9. MÄRZ 2012 — GEMEINSAME SITZUNG SVEG UND SEG

Moderation: Alexander Mathis

Francis Schaffner (Institute of Parasitology, Vector Entomology Unit, University of Zürich). Diversity of mosquito fauna and risk assessment for Switzerland.
(keine Zusammenfassung eingetroffen)

Moderation: Christian Kaufmann

Olivier Engler, Orlando Petrini, Mauro Tonolla, Nicola Patocchi, Simona Casati, Anya Rossi-Pedruzzi (Spiez Laboratory, Istituto Cantonale di Microbiologia, Bellinzona, Fondazione Bolle di Magadino). Monitoring of arboviruses in mosquitoes in Ticino.

Because of changes in climate, the habitat of many mosquito species have shifted and mosquito species that may serve as vectors for new emerging infectious diseases have established themselves in Switzerland. Due to increased travel activities exotic pathogens are frequently transported from endemic regions to Switzerland. Under suitable conditions some of these pathogens could be spread by these mosquito species. Other viruses are brought into Europe through animals such as migratory birds and are transmitted to humans and animals through local mosquito populations. To better understand the situation concerning the dissemination of viral pathogens in Europe, in collaboration with European and national partner institutes we contribute to the molecular biological surveillance of potential mosquito vectors. In collaboration with the Istituto Cantonale di Microbiologia (ICM) in Bellinzona and the Fondazione Bolle di Magadino, the Biology section of the Spiez Laboratory has launched a three-year project to examine indigenous and immigrant mosquito species for viral human pathogens. Due to the latest development in Europe and the spreading of corresponding vectors in Switzerland, the three virus types, West Nile virus (WNV), Dengue virus (DENV) and the Chikungunya virus (CHIKV), have been considered as particularly relevant.

In 2010, a pilot study was carried out in the Ticino to establish the methods, and in 2011, the first results were obtained. For this purpose, mosquito traps were regularly set up for several months at select locations. Tiger mosquitoes were collected in the border region around Chiasso. They have propagated mostly in this region. Other mosquitoes (*Aedes vexans*) were caught in the natural reserve area of Bolle di Magadino and others (*Culex pipiens*) in the immediate vicinity of residential areas. At the end of the year 2011, the mosquitoes were sent for examination to the Spiez Laboratory and were investigated in collaboration with the ICM Bellinzona. The genetic material (RNA and DNA) was extracted from the mosquito pools and tested with a series of microbiological methods (quantitative real-time RT-PCR and generic PCR protocols) for the presence of West Nile, Chikungunya, Dengue and other viruses. Genetic traces of viruses could be detected in more than 10 % of the mosquitoes pooled. Detailed analysis of viral sequences, however, showed that most of the viral species were harmless to humans and animals. In several of the *Culex* mosquito pools the Usutu virus was found which is closely related to the West Nile virus. Usutu viruses became known in connection with extensive bird deaths. For immunocompetent people the Usutu viruses do not constitute a risk, but can – as recently two cases in Italy have shown – give rise to severe infection in persons with a weakened immune system. This virus is currently being propagated in cell cultures to enable better characterisation. By applying whole genome sequencing the entire genome of the Usutu virus is to be deciphered in order to establish its origin.

As experience over the past years has shown, the epidemiological situation in Europe is rapidly changing due to climate change, the migration of birds and greatly increased travel. In particular due to the spread of West Nile viruses in Europe, but also due to the appearance of new viruses, the surveillance of mosquitoes in the Ticino is to be continued and extended to further areas in Switzerland.

Christian Kaufmann, Francis Schaffner, Valentin Pflüger & Alexander Mathis (Institute of Parasitology, Vector Entomology Unit, University of Zürich & Mabritec, Riehen). MALDI-TOF mass spectrometry for the identification of ceratopogonid and culicid insect vectors.

Identification of insect vectors is primarily carried out using morphological features, which can be a time-consuming procedure requiring expertise. PCR-based approaches have been developed for the