

## **Host Specialization in Bat Parasites: Host Choice Experiment and Genetic Comparison of *Cimex lectularius***

Clara Castex<sup>1</sup>, Laura Clément<sup>1</sup>, Pierre Perréaz<sup>1</sup>, Benjamin Wolf<sup>1</sup> and Philippe Christe<sup>1</sup>

*1 Department of Ecology and Evolution, University of Lausanne, Biophore, Lausanne CH-1015, CHE*

Host specialization is a phenomenon that is visible in the Cimicidae family. The bug *Cimex lectularius* is known to have two lineages associated with human and with bat, its primary host. It is a competent vector of the *Trypanosoma cruzi*, responsible for the Chagas disease in humans. Therefore, host specialization in *C. lectularius* is important to study to understand the risk of pathogens transmission between hosts. We first tested if the original host influenced the host choice using an olfactometer experiment. Then, we did a genetic comparison between and among human and bat associated bugs from Western Switzerland using three markers: COI and 16S rRNA mitochondrial genes, 12 microsatellites markers and knock-down resistance gene variants. The host choice experiment is supporting evidence of behavioural differences with the bugs that are more active during the minimal activity period of their host and the human associated bugs that prefer the human odour and recognize the bat odour. The genetic comparison suggests patterns of genetic differentiation between the two hosts associated populations of bugs. A median-joining analysis exhibits a clear separation of haplotypes that are not shared between hosts. The analysis of genetic structure reveals two genetic clusters associated with bats and humans. This clear separation between the two hosts is also supported by the knock-down resistance analysis. Our results are consistent with previous studies supporting differences in response according to the host. The risk of pathogen transmission is unlikely to occur between the two hosts.

Speaker: Clara Castex