

**OR013***Viruses and the functional toolkit in social insect biology***Patrick Abbot**

Many insects harbor persistent infections by pathogenic and sometimes mutualistic viruses. Social insects are no different. However, the role of viruses as mutualistic agents in social insect biology is unclear. I review some known and potential mutualistic interactions between viruses and social insects. I then discuss dicistroviruses and social aphids. Dicistroviruses are picorna-like viruses that infect arthropods. Most are pathogenic, but some are not. Recent discoveries in our lab have revealed dicistroviruses infecting two species of aphids in the genus *Pemphigus*. Aphids are insects that attack plants, and are economically important pests of most of the plant crops worldwide. They also transmit over half of all known plant viruses. A small fraction of aphid species are eusocial. We have identified viruses in the genus *Cripavirus*, and I discuss experiments using various surveys (PCR, ELISA and Illumina sequencing) in which we examine the qualitative and quantitative patterns of virus prevalence, distribution and functional roles within and across eusocial aphid species.