

OR232*Social immunity and sanitary risks management in ant *Myrmica rubra****Jean-Baptiste Leclerc, Claire Detrain**

Eusociality in insects has led to the emergence of various evolutionary benefits but brought new constraints. One of the strongest is the increased risk of transmission of pathogens due to the close physical and genetic proximity of individuals living at high density in the confined environment of a nest or a beehive. In addition to individual innate immunity, eusocial insects have therefore developed a range of individual and social behaviours that limit the entry and spread of pathogens within the colony. Among these, we are interested in the behavior of spatial and social isolation of infected individuals with a pathogen. Although this phenomenon is considered to be one of the simplest forms of social immunity, mechanisms underlying it remain poorly understood. First of all, we have found in *Myrmica rubra* no significant differences in aggression levels toward healthy and infected nestmates by *Metarhizium anisopliae*. We also found no differences in social interaction rates in the nest entrance area. It seems that there is no chemical mechanism for early detection of infection by this fungus, and thus no perceptible signal by nestmates. This spatial isolation behaviour is therefore an active phenomenon and not a rejection by congeners, which do not change their behaviours in their presence. We however found changes in behavioral and spatial patterns of infected individuals. Once infected, individuals spend less and less time in the nest, but spend more time on its periphery when they are in. In addition, contaminated individuals groom themselves longer before entering the nest. Infected individuals seem to perceive their morbid state, probably due to physiological changes induced by the fungus. This is supported by the fact that these changes took place 3 days after infection, when the spores through the cuticle of individuals.