

OR230*Antimicrobial production and the evolution of eusociality in the gall-inducing thrips of Australia***Peterson Coates**, Adam Stow, Tom Chapman, Christine Turnbull, Andrew Beattie

Social insects show the most extreme levels of altruistic behaviour. One group of social insects that have recently received more attention are the gall-inducing thrips of Australia. *Kladothrips intermedius*, a gall-inducer with an altruistic caste (soldiers), was found to produce antimicrobials; this observation increases the evolutionary complexity of taking on the helping role in this species complex. Our work is focused on the evolution of the thrips castes dual role of fighting and antimicrobial ability. We focused on the solitary species *Kladothrips arotrum* and *Kladothrips tepperi* that are closely related to the social thrips. Antimicrobial compounds were extracted from full broods and their ability to retard the germination and growth of a common entomopathogenic fungus was tested via spectrophotometry. Our work suggests that antimicrobial production predates the evolution of the soldier caste in gall-inducing thrips, and that individual foundresses antimicrobial abilities are much higher than that of her brood. Additionally, we found that the most probable source of antimicrobial production is the defensive droplet produced when the individual is under physical attack. Fighting and antimicrobial production were present at the origin of eusociality in this group and, subsequently, these behaviours became specialized in the soldier caste.