

**OR003**

*Adult-larva epistasis affects development and fitness in a clonal ant*

**Serafino Teseo**, Nicolas Châline, Pierre Jaisson, Daniel J.C. Kronauer

In social species, the phenotype and fitness an individual depend not only on its genotype, but also on the genotype of its social partners. However, how these indirect genetic effects affect genotype fitness in competitive situations is poorly understood, for example because of the lack of control over the genetic composition of social groups. In our study, we investigate how indirect genetic effects affect phenotypic plasticity and fitness of two clones (A and B) of the parthenogenetic ant *Cerapachys biroi*, both in monoclonal and chimeric colonies. We show that, while clone B has lower fitness in isolation, it consistently outcompetes clone A in chimeras. The reason is that, in chimeras, clone B produces more individuals specializing in reproduction rather than cooperative tasks, behaving like a facultative social parasite. A cross-fostering experiment shows that the proportion of larvae that develop in high-reproductive individuals depends on intergenomic epistasis between larvae and nursing adults, explaining the flexible allocation strategy of clone B. In *C. biroi*, larval fate depends thus not only on the genotype of the larvae, but also on the genotype of the nursing adults, which exert a control over larval development. This mechanism has possibly evolved to maintain an optimal colony-level allocation in reproductive vs. ergonomic tasks within monoclonal natural colonies, but its clone-specific calibration leads to differential fitness levels for different clones mixed within the same colony. Our study shows that intergenomic epistasis could be a possible proximate mechanism for social parasitism in ants, and reveals striking analogies between social insects and social microbes.