OR305

Larval transcriptomes and developmental plasticity in a tetraphenic ant

Lukas Schrader, Robert Knüppel, Tobias Platschek, Jürgen Heinze, Jan Oettler

One of the most enigmatic examples of developmental plasticity is found in eusocial insects where distinct castes and subcastes arise from the same genotype. In addition to queens and workers, the ant *Cardiocondyla obscurior* also evolved a male diphenism with winged and ergatoid (worker-like) individuals, rendering this species an ideal model to unravel principles of developmental plasticity. Using immunohistology and in situ hybridisation we describe caste-specific development of brain and imaginal discs of early to late 3rd instar larvae. Furthermore, by comparing individual transcriptomes of 28 early 3rd instar larvae, we assess differences in developmental pathways after caste determination in late 2nd instar. We describe caste specific, sex specific and winged/wingless-specific genes and pathways, shedding light on the genetic basis of developmental and phenotypic plasticity in eusocial insects. Finally, we show that these gene sets evolve under significantly different efficiency of purifying and positive selection as a consequence of their caste specificity.