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*Epigenetic regulation of reproduction and behavior in a clonal ant*

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Division of labor is at the root of the ecological success of insect societies, yet the mechanisms regulating reproduction and behavior are not fully understood. The clonal raider ant *Cerapachys biroi* has no distinct queen and worker castes, and is characterized by an alternation between reproductive phases (ants lay eggs inside the nest) and brood care phases (ants do not lay eggs but nurse the brood and forage for food). The opportunity to compare queen-like (reproductive phase) and worker-like (brood care phase) individuals, combined with the possibility to control for age, experience and genetic background (all known to influence reproduction and behavior), makes *C. biroi* a great model system to study division of labor. In the past few years, there has been a growing interest in the role of epigenetic mechanisms (e.g. DNA methylation) in division of labor. Our aim is to investigate the role of DNA methylation in regulating reproduction and behavior in *C. biroi*, by comparing whole-genome DNA methylation patterns between brains of individuals collected in reproductive and brood care phases. Preliminary experiments using methylation-sensitive AFLP suggest that the global level of DNA methylation differs between these two types of individuals. We are currently using whole-genome bisulfite sequencing to determine where DNA methylation occurs in the genome, and which genes are differentially methylated between reproductive and brood care phases. Finally, by revealing how DNA methylation affects gene expression and alternative splicing in *C. biroi*, this project will also provide important insights into the function of DNA methylation in insects.