

OR383*Caste-specific RNA-editomes in the leaf-cutting ant Acromyrmex echinator***Qiye Li**, Zongji Wang, Jinmin Lian, Morten Schiott, Sanne Nygaard, Jacobus J. Boomsma, Guojie Zhang

Eusocial insects have evolved the capacity to generate adults with contrasting morphological, reproductive and behavioral phenotypes from the same genome. Recent studies have suggested that RNA-editing might be a mechanism to enhance the diversity of gene products at the post-transcriptional level, particularly to induce relatively rapid functional changes in the nervous system. Using head samples from the leaf-cutting ant *Acromyrmex echinator*, we have obtained the first comparative RNA-editomes across eusocial castes. We identified an average of 12,000 RNA editing sites per caste (small workers, large workers, gynes). About 60% of these sites were found across three sympatric colonies, targeting >1,000 genes that are enriched in functions for neurotransmission, circadian rhythm, stimulus response and RNA splicing. Although most *A. echinator* editing sites were species-specific, it is intriguing that 10-24% were conserved across subfamilies and thus likely to have been generally important for the evolution of eusociality in ants. Editing levels for some sites differed consistently between castes in each of the three colonies that we sampled, suggesting that RNA editing may be a novel and general mechanism for shaping caste morphology and behavior in ants and other eusocial insects.