

Title: Chemical Initiation of an Interspecies Social Behavioral Program

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Abstract: Interspecies social behaviors have traditionally been difficult to study because such they are difficult to reconstitute in lab; additionally, many systems exhibiting interspecies interactions are intractable for molecular manipulation. Here, we demonstrate a stereotyped, robust interspecies grooming behavior for study of social communication. *Sceptobius lativentris*, a guest rove beetle which infiltrates ant colonies, routinely grooms host ants to steal cuticular nestmate recognition pheromones. These stolen pheromones serve as a cloak of disguise for the beetle amongst the ants. Though *Sceptobius* has a strict host association with *Liometopum occidentale* in nature, it initiates its stereotyped grooming program on various divergent species of ants. It does not, however, exhibit the same grooming behavior on a hemipteran which peripherally associates with *Liometopum occidentale*. We hypothesize that a core set of cuticular pheromones conserved across ants act as proximate odorant cue leading to initiation of this social behavioral program. Going forward, we plan to use *Sceptobius* as an insect model of interspecies social interaction. We plan to employ molecular tools readily available in insects, including RNAi, GC coupled antennal electrophysiology, and transgenic expression of *Sceptobius* odorant receptors in *Drosophila*, to precisely identify the molecular basis for the chemical initiation of grooming behavior.