

Ants givin the brush-off to pathogens: **The Antenna Cleaner**

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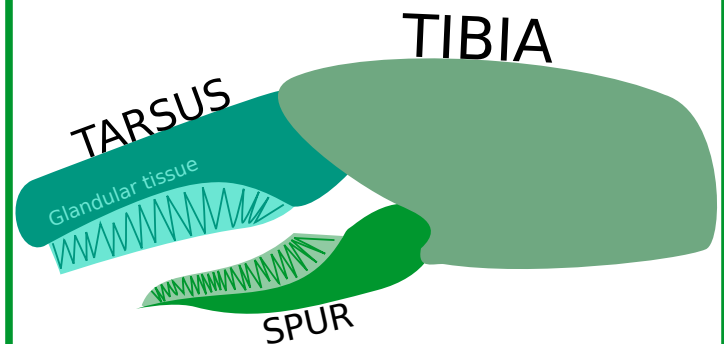
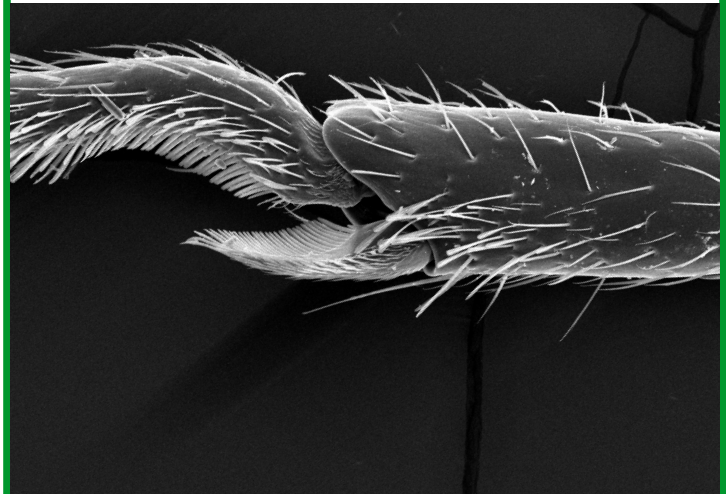
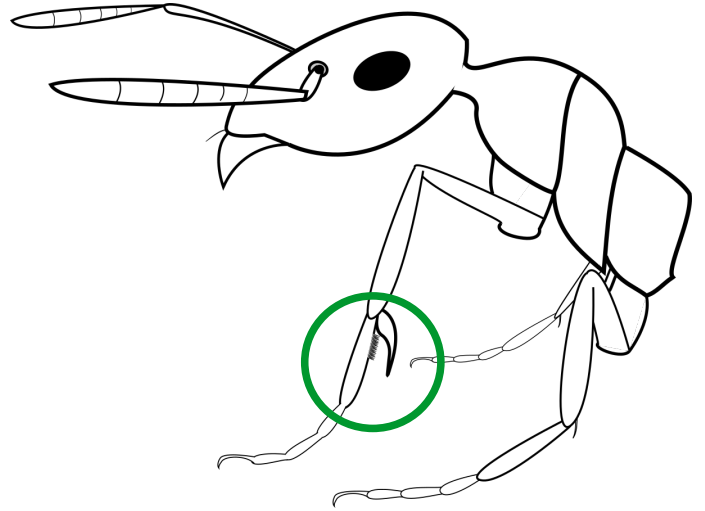
SOCIAL IMMUNITY

General aim

Hygiene is a very important part of the health of insect societies as it can help to prevent or fight diseases.

Social insect evolution has been shown to promote behavioral, physiological, and morphological traits supporting hygiene at the group level, leading to "social immunity". Social insects therefore evolved many parallels to the immune system of organisms, yet at the colony level.

In ants, we can observe the presence of a specialized cleaning organ allowing them to effectively clean their antennae - the most important sensory organs of the ants. It consists of a complex structure on the fore-legs, called the strigilis. This organ is used to brush off and thereby mechanically remove particles from the antenna, and it further contains a gland of unknown function. The morphology of the strigilis shows wide phylogenetic stability across extant ants, suggesting its remaining importance since the early evolution of eusocial life the family and pointing at a fundamental function, which, however, is little understood. In my project, I hence combine functional morphology and experimental work on ant behavior to understand the role of this evolutionary-conserved antenna-cleaning organ for individual and collective disease defence in ant colonies.



The antenna cleaner. Placement on the ant body, scanning electron microscopy, and schematic representation.