

## **Antennal morphology and mate location in the Springbok Mantis, *Miomantis caffra***

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Eligible for student prize

Mate location in insects relies on a suite of different sensory cues and modalities. For the transmission of mate location information over longer distances, insects primarily exploit chemical or acoustic signals, whereas close-range communication, particularly that involved in courtship, often utilises visual or tactile signals. Within groups of insects that employ scramble competition as their mating systems, it is predicted that there will be particularly strong selection on mate searching ability and the use of these signals. Such a mating system is characterised by males effectively racing one another to gain access to females, and thus males that are more efficient at using these signals to locate a mate should, in theory, achieve higher mating success. Praying mantids are particularly useful systems for investigating the dynamics of mate location and sensory mechanisms in this context. They exhibit intense scramble competition and use multiple sensory modes for mate location, with airborne chemicals (sex pheromones released by the female) and visual cues being used for long- and short-range location, respectively. The detection of airborne chemicals by males is mediated by the antennae, which are endowed with various chemoreceptors, or sensilla. The type, distribution, and density of sensilla along the antennae may provide important information regarding the ability of males to detect and process sensory information relating to mate location. We thus hypothesise that there may be a link between male antennal morphology and mate location; that antennal morphology itself may be under sexual selection. Our research will investigate this notion in the Springbok mantis, *Miomantis caffra*, using attraction studies and controlled races to determine the mate location ability of individual males. We will then characterise the antennae of individuals using Scanning and Transmission Electron Microscopy to quantify a link between antennal morphology and mate location in this species.

