

Odour coding in antennal sensilla of the southern house mosquito, *Culex quinquefasciatus*.

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The *Culex pipiens* species complex is comprised of important vectors of human pathogens. The southern house mosquito, *Culex quinquefasciatus*, is a vector for the causative agents of lymphatic filariasis and arbovirus encephalitis. *Culex quinquefasciatus* originated in Africa, but its populations have spread throughout the tropical and temperate regions of the globe. As the major vector of *Wuchereria bancrofti*, *Cx. quinquefasciatus* is responsible for the more than 100 million people infected, and the 45 million people seriously disabled, by this form of lymphatic filariasis worldwide.

As arguably the most important insect vectors of human disease, mosquitoes have come under the auspices of many control programs using a multitude of techniques, such as insecticides, repellents, insect growth regulators, biological agents and environmental manipulation. Each of these techniques has its merits, but also its disadvantages, and currently no single control method yields consistent and global success. It is chemicals that have proven, historically, to be the most effective control agents in use. The development, however, of resistant vector populations due to the indiscriminate use of insecticides remains a major constraint to the continued use of chemicals in this manner. This does not, of course, exclude all chemicals as useful control agents.

Mosquitoes use various volatile chemicals as behavioural cues, particularly in seeking for hosts and oviposition sites (e.g. Puri et al., 2006; Allan et al., 2006; McCall and Cameron, 1995; Mukabana et al., 2004; Meijerlink et al., 2001; Gieir et al., 1999). Human skin emanates with between 300 and 400 chemicals (Bernier et al., 2000) but only a fraction of these volatiles have proven attractive to mosquitoes (e.g. Puri et al., 2006; Allan et al., 2006; Meijerlink et al., 2001).

Using 45 volatile compounds previously recognised as attractive to *Cx. quinquefasciatus* in behavioural and EAG assays, we characterise the functional classes of trichoid sensilla on the antennae of *Cx. quinquefasciatus* by means of the classical single sensillum recording (SSR) technique. Since mosquito seeking behaviour alters significantly following a blood meal (Takken et al., 2001), it is not unreasonable to hypothesise that the response profile of the population of olfactory sensilla will be modified following a blood meal. To test this hypothesis, antennal sensilla of sugar fed (blood naïve) adult females were assessed by SSR and compared to the responses from gravid females.