

**Medium range olfactory responses of the malaria vector
Anopheles gambiae to synthetic odor blends**

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Declaration

I Fredros Oketch Okumu, declare that this is my original work and has not been submitted for a degree in any other university

Signature..........Date. 16/09/008

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This thesis has been submitted for examination with our approval as university supervisors

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Abstract

The interaction between the malaria vector *Anopheles gambiae* and its human host is mediated mainly by olfactory cues that emanate from the host. Several compounds from whole body odor, sweat and breath are proven mosquito kairomones. Medium range olfactory responses of *An. gambiae* s.s to ammonia, carbon dioxide (CO₂) and selected carboxylic acids were evaluated using semi-field binary assays. Traps baited with a blend consisting of ammonia, CO₂ and optimal concentrations of the carboxylic acids caught 17% [12%-23%] of all responding mosquitoes when tested in competition with human foot odors plus CO₂.

The binary assays were found to be advantageous for rapid evaluation of behaviorally active compounds. Evidently, ammonia, carbon dioxide and the candidate carboxylic acids are not the only compounds that mediate *Anopheles* olfactory responses to humans. However, it is concluded that by combining selected attractants at their optimal concentrations, it is possible to formulate a blend that is optimally attractive to host seeking mosquitoes. The odor blend developed in this study can be readily used to develop high impact interventions or sampling tools that target malaria mosquitoes.