Olfactory Coding in Peripheral Organs of the Malaria Vector Mosquito, *Anopheles gambiae*

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A principal goal in neuroscience is to understand how sensory information is processed and integrated to control a suitable behavioral output in a nervous system of an animal. Of these, olfactory cues are primarily used in an insect to find a host, mate, and oviposition site. Therefore, it is important to understand how olfactory coding occurs a peripheral olfactory organ as well as in central nervous system. In insects, olfactory transduction is initiated by G protein-coupled receptors in the cell membrane, which have been characterized in different insect species so far. In this study, using an important malaria vector mosquito, *A. gambiae*, from which 79 different G protein-coupled receptor genes have been found, we focus on functional analysis of olfactory information processing in antenna as well as proboscis where an odorant receptor gene (AgOR7) is also expressed. With analysis of gene expression in these appendages, here we aim to characterize central processing and olfactory coding in a primary olfactory and gustatory organ, antenna and proboscis, using electrophysiological methods and backfilling techniques. Recording from epithelia of antenna and proboscis was employed with several key mosquito odorant components. Here we report that proboscis shows olfactory responses to an odorant chemical. This result supports the idea that proboscis contributes olfactory perception in accordance with gene expression of the odorant receptor in proboscis. This will be crucial to understand how this mosquito encodes olfactory information to find hosts. More detailed evidence of neural anatomy and single sensillum recording will be presented.