

Organization of the Olfactory System and the Mushroom Body of the Weaver Ant, *Oecophylla smaragdina*

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Abstract : Weaver ants-*Oecophylla smaragdina* live in colonies that have polymorphic castes. The females which include the queen, major and minor workers are haploid. The individuals of castes are dependent on olfactory cues for carrying out caste-specific behaviour. In an effort to understand whether organizational differences exist to support these behavioural differences, we studied the olfactory system at the level of the sensilla on the antennae, olfactory glomeruli and the Kenyon cells in the mushroom bodies (MB). The MB differ in major and minor workers in terms of their size, with the major workers having relatively larger calyces and peduncle. The morphology of different types of Kenyon cells as revealed by Golgi-rapid staining was studied and the major workers had more dendritic arbors than minor workers. This suggests a greater degree of olfactory processing in major workers. Differences in caste-specific arrangement of sensilla, olfactory glomeruli and cellular architecture of MB indicate a developmental programme that forms basis of differential behaviour.

Keywords : ant, oecophylla, caste, mushroom body

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