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Evolution of termite defence

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Termite colonies consist of several castes, which, unlike in other social insects, result from distinct ontogenetic pathways. Primitive species reveal very plastic ontogeny, while advanced ones show rigid ontogeny with early and irreversible split between sterile and fertile colony members and task specialization among up to three worker and soldier subcastes. Soldier caste is a synapomorphy of all termites. Particular lineages reveal different defensive strategies with soldiers being classified as biting (crushing, slashing, reaping), phragmotic, snapping (symmetrical or asymmetrical) or ejecting defensive fluids (nasutes, nasutoids). Apart from mandibles, soldiers may possess two major defensive glands (labial and frontal), whose development is usually mutually exclusive. Soldiers also differ in other aspects, like defensive behaviour, size difference compared to workers, or proportion in the colony. Although soldiers are defenders of prime importance, other castes are often involved in colony defence. Workers always fight during conflicts, and their role is especially important in (i) building defensive structures (nests and galleries); (ii) soil-feeding species, which in general have lower soldier proportion and complete soldier caste disappearance occurred in several linages, with workers showing several features typical of soldiers (high aggressiveness, presence of defensive glands); (iii) conspecific conflicts of chemically well-defended species which developed specific auto-detoxification mechanisms. Imagoes defend against predators before all by synchronization of dispersal flights, but many species reveal presence of the frontal gland, which may in some cases exceed in size the frontal gland of soldiers. All above-mentioned characters evidence interesting evolutionary history with many examples of convergent evolution. In this talk I will disentangle termite defensive strategies, place them in their ecological context, and emphasise the evolution morphological novelties.