



Genes underlying division of labour in workers in a termite

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The reproductive ground plan hypothesis proposes that traits connected to reproduction and their underlying genes (such as *vitellogenins*, *vgs*) have been co-opted during social evolution to control caste-specific tasks. This has been shown in social Hymenoptera. Less is known in termites, but genes such as *vgs* and *hexamerins* (*hex*) are involved in caste determination. The West African termite *Macrotermes bellicosus* lives in complex societies, with sterile minor workers. They show an age polyethism with young minor workers generally working inside the nest (for instance, as mound builders and nurses), while older minor workers forage outside. We compared differentially expressed genes between these builders and foragers using transcriptomes. Builders had *vg* and *hex* upregulated, which are also upregulated in queens and kings compared to other castes. They also had *superoxide dismutase* and *catalase* upregulated, which protect against oxidative stress. These genes could reflect an investment in longevity at a young age. Additionally, several cuticle specific genes were upregulated, potentially connected with the building task. Foragers, however, had the serine proteinase *stubble*, a morphogene, as well as a GABA-transporter and a potentially cuticular hydrocarbon-related gene upregulated, which might be connected to task switching and requirements of foraging. Our results support the reproductive ground plan hypothesis in that young building workers had an expression profile similar to reproductives.