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Immunity, sanitary behaviour and social structure of diseased ant colonies

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Pathogen exposure induces performance of sanitary actions and upregulation of physiological immune defences in host individuals. In social groups, like the societies of ants, sick individuals are further taken care off by group members, for example by removal of infectious particles during allogrooming. These collective defences often beneficially influence the course of disease of the pathogen-exposed individuals, but involve the risk of contracting the disease by previously healthy colony members. We analyse how singular and repeated exposure to entomopathogenic fungi alters immune gene expression and performance of sanitary tasks in both directly exposed ants and their nestmates. We further study the long and short term effect of disease on the social organisation of colonies, by determining immediate changes in the behavioural interaction frequencies upon pathogen entry into the colony and persisting changes in colony structure and the performance of sanitary tasks.