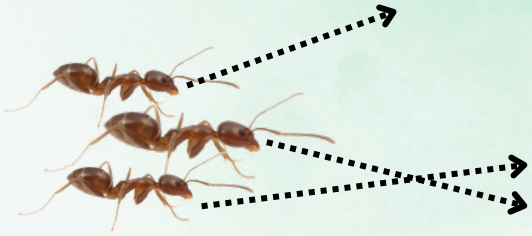
Problem-solving through individual cognition in invasive social insects

Invasive Argentine ant (*Linepithema humile*) perpetuates a major ecological threat as it adapts to the conditions of the introduced area. The balance between individual behavioural adaptability and its associated costs raises questions about colony-level problem-solving strategies in invasive ants. By investigating behavioural and neuroanatomical variations, we aim to discern whether collective solutions arise from intra-individual differences or are shaped by differences between individuals.

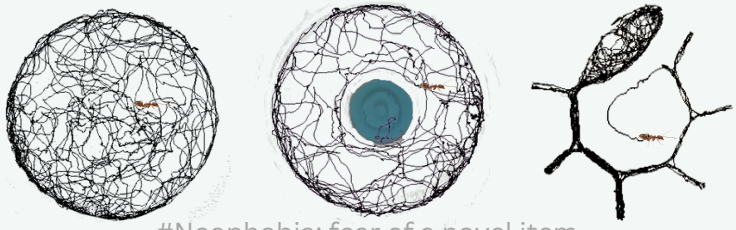
Intra-Individual plasticity

Inter-Individual plasticity

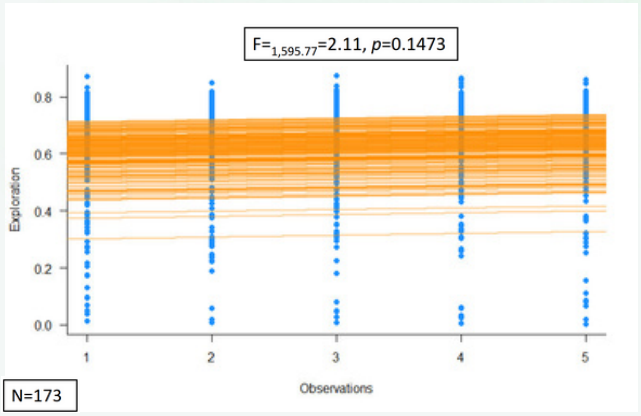


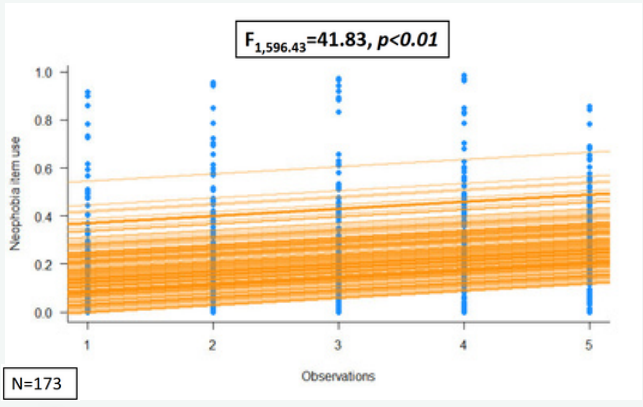
Ant photos from Alex wild

We tested the behavioural variations across three tests over five days; exploration, neophobia and maze-solving.



#Neophobia: fear of a novel item





Ants have a similar behavioural pattern which is constant over time for the proportion of area explored. The use(time) of the neophobic element also has a similar behavioural pattern across individuals but increases over time. The ants tend to use the neophobic item more without increasing their exploration value. Different values observed suggests behavioural differences among individuals, which the colony may rely upon to solve new problems. The success of the plasticity between and within individuals can be further elucidated with inputs from the maze-solving and the neuroanatomical connection which can finally answer the topical question: **How are *Linepithema humile* a very successful invasive species in the world?**

follow us to find more answers

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To know more about our project and group