

Good reason to be nasty to your sister: Aggression towards pathogen infected nest-mates in the honey bee, *Apis mellifera*

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Eligible for student prize

The honey bee (*Apis mellifera*) is an vital ecological and commercial pollinator, though is subject to population pressure from an array of pathogens and parasites. Potential pathogens implicated in colony collapse in North America include the two microsporidian gut parasites *Nosema apis* and *N. ceranae*. Bee keepers are dubious as to the presence of *Nosema ceranae* in New Zealand. We collected honey bees from hives in the North Island, especially around the supposed *Nosema ceranae* incursion site. DNA sequencing confirmed that the gut pathogen *Nosema ceranae* is established in NZ. The confirmed presence of this pathogen has implications for our export/import industry. Little information is available about how our bees respond to such pathogens. In the laboratory we infected honey bees with *Nosema* spores and observed the behaviour of pathogen-free siblings towards the infected bees. We observed that honey bees can recognize and are aggressive towards their *Nosema* infected siblings. The most extreme sibling aggression occurred towards more heavily infected bees. This behaviour represents a form of “social immunity” for bees to fight pathogens such as *Nosema* spp.

