New insights on how bees battle deadly varroa mite by grooming

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In a new study published in the *Journal of Apicultural Research*, scientists have compared the ability of two strains of honey bees to defend themselves against the parasitic mite varroa by grooming the mites from their bodies.

The mite Varroa destructor is generally considered to be the greatest threat to honey bees worldwide because it transmits virus diseases which lead to colony death. Treatments by various chemicals have become less effective in recent years because the mites have become resistant to them. This has led to attempts to breed strains of bee that are resistant to the mite. One of the possible mechanisms of resistance is "grooming" behaviour, where bees brush bees from themselves (autogrooming) or brush bees from their nestmates (allogrooming). It has long been known that different strains of bee differ in their resistance to varroa. In particular so-called Africanized bees (hybrids of Apis mellifera scutellata) bees appear to have more resistance than European strains.

Ciro Invernizzi and colleagues from the Facultad de Ciencias, Montevideo, Uruguay, compared grooming behaviour in Italian (Apis mellifera ligustica) and Africanized bees. They found that at the individual level, Africanized bees showed a higher total number of reaction behaviours to V. destructor than did Italian bees, and colonies of Africanized bees showed a higher proportion of injured mites than colonies of Italian bees did.

The authors state: "Africanized bees are characterized by presenting

higher resistance to V. destructor than European bees. This study shows that such difference can be, partly due to grooming behaviour".

International Bee Research Association (IBRA) Science Director Norman Carreck commented: "This interesting study adds to our knowledge about resistance mechanisms, and may aid the search for bees resistant to varroa."

More information: Ciro Invernizzi et al. Multilevel assessment of grooming behavior againstin Italian and Africanized honey bees, *Journal of Apicultural Research* (2016). DOI: 10.1080/00218839.2016.1159055

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