

Beehives Possess Their Own Distinct Microbiomes

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Abstract

Honey bees use plant material to manufacture their own food. These insect pollinators visit flowers repeatedly to collect nectar and pollen, which are shared with other hive bees to produce honey and beebread. While producing these products, beehives accumulate a tremendous amount of microbes, including bacteria that derive from plants and different parts of the honey bees' body. In this study, we conducted 16S rDNA metataxonomic analysis on honey and beebread samples that were collected from 15 beehives in the southeast of England in order to quantify the bacteria associated with beehives. The results highlighted that honeybee products carry a significant variety of bacterial groups that comprise bee commensals, environmental bacteria and pathogens of plants and animals. Remarkably, this bacterial diversity differs amongst the beehives, suggesting a defined fingerprint that is affected, not only by the nectar and pollen gathered from local plants, but also from other environmental sources. In summary, our results show that every hive possesses their own distinct microbiome, and that honeybee products are valuable indicators of the bacteria present in the beehives and their surrounding environment.

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