Honey bee genetics shape the bee gut microbiota at the strain level

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Video Byte

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Abstract

The honey bee gut microbiome has a critical influence on bee health and is transmitted among members of a colony through social interactions. The bee microbiome is made up of a core set of bacterial groups that show high diversity among individuals at the strain level. While this variation has been shown to be clearly associated with numerous environmental factors, bee genetics may also play an important role. Researchers recently used DNA sequencing techniques to better understand how bee genetics affect gut microbiome structure. The team examined the genomes of four subspecies of lab-reared honey bees with those of their associated microbiomes. They noted that the abundance of most core gut microbiota members was influenced by host subspecies and also found a clear link between a *Bifidobacterium* strain in the gut and brain neurotransmitter and gene expression patterns. These findings demonstrate that host genetics help shape bee gut microbiota diversity at the strain level and suggest that genetics not only have an important direct influence on bee health but may also affect it indirectly by guiding the development of a beneficial gut microbiome.