Exploring the microbiome of kissing bugs

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Video Byte

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Abstract

The blood-feeding kissing bugs are the vector for *Trypanosoma cruzi*, the parasite that causes Chagas disease in humans. One factor believed to alter parasite transmission is the kissing bug's microbiome, which is a fundamental component of natural gut environment where *T.cruzi* develops. To explore this complex environment, researchers set out to identify the factors that shape the kissing bug's microbiome. They investigated the microbiome composition of 5 species of kissing bugs from two U.S. states across all life stages. They analysed 170 *T. cruzi* negative kissing bugs sampled from the nests of white-throated woodrats. The primary factors determining microbiome structure were developmental stage, species identity, and environment. Later developmental stages correlated with lower microbial diversity. In fact, adult microbiomes were frequently dominated by a single taxon of bacteria. This may occur because insects often shed gut linings during molting, which causes the loss or suppression of symbiotic bacteria. The species-specific differences were most pronounced in early life stages and were partly modulated by locality. Future work should explore microbiomes of more species in both Americas to find ways of manipulating these important vectors.