Wolbachia infection reshapes the microbiome of the small brown planthopper

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Video Byte

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Abstract

The microbial communities associated with a host are known to affect the fitness of that host. And insects are no exception. Disturbing an insect's microbiome has been demonstrated to alter traits, such as its sensitivity to a pathogen. A survey of the microbial communities associated with the small brown planthopper (SBPH) in China and Japan has found that variations in microbiome structure may be associated with biotic and abiotic factors such as longitude, annual mean precipitation, and variations in mitochondrial DNA. However, Wolbachia infection, which is spreading to northern populations of SBPH, seems to have a greater role in shaping SBPH's microbiome structure, leading to sharp decreases in bacterial taxon diversity and abundance. The findings indicate that Wolbachia becomes the dominant species when introduced into the SBPH microbial community. Although Wolbachia did not seem to alter the immune response of SBPH, it did affect SBPH metabolism. The results identify potential interactions among microbial species in the SBPH microbiome that may influence insect physiology, ecology, and evolution.