

Maize improvement largely driven by contributions from many loci of small effect

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Abstract

In recent decades, scientists have had great success identifying specific loci that contribute to the variability of agronomically important phenotypes. But, while loci of large-effect remain the simplest and most commonly identified in genomic studies, mounting evidence suggests that a substantial proportion of crop evolution is driven by loci of small effect. In this talk, results demonstrating that large-effect loci are not the primary driver of maize evolution will be presented, along with a new method to test quantitative traits for evidence of past selection. By applying this method to a maize breeding population, we show that agronomic traits important for breeding are often dictated by loci of small effect. The implications of these results for driving crop improvement will be discussed, including their potential application to breeding protocols that anticipate global climate change.

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