Public Abstract
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In many organisms, gene expression is regulated by packaging DNA into chromatin. Active genes have loosely packed chromatin and inactive genes have tightly packed chromatin. How changes in chromatin structure lead to altered gene expression is not well understood. To address some of the unanswered questions about chromatin-level gene regulation this study focused on a maize regulatory gene. The maize purple plant1 gene controls purple pigment synthesis. One form of this gene, which normally produces variegated pigmentation, can be genetically altered by a modifier, leading to more pigment production. Analysis of the modifier effect on pigmentation revealed that the the higher pigment levels are due to multiple genes that act together to loosen chromatin packaging of the purple plant1 gene. This leads to more expression of purple plant1 and thereby more pigment. The insights provided by this study have led to increased understanding of chromatin-level regulation of gene expression.