

Public Abstract

First Name:Paul

Middle Name:Babs

Last Name:Ladipo

Adviser's First Name:Karen

Adviser's Last Name:Cone

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Title:The effects of histone acetylation on the maize allele P11-Blotched

The term gene expression applies to how an organism shows the effects of a gene. The gene of interest in our lab, P11-Blotched, causes maize plants to have a variegated, discontinuous purple pattern of pigmentation. However, another allele of the same gene, P11-Rhoades, causes a deep, uniform pattern of pigmentation. These two alleles have identical DNA sequences yet are expressed very differently. This phenomena is known as epigenetics. The focus of my research is to gain a better understanding of the underlying mechanisms behind epigenetic regulation of gene expression. Epigenetic regulation occurs in almost all organisms, and these mechanisms could provide understanding of a wide variety of biological processes, from flowering time in plants to cell cycle control in animals and humans. Although P11-Blotched and P11-Rhoades share the same DNA sequence, they differ in chromatin structure. P11-Blotched has a tighter chromatin structure than P11-Rhoades, causing less expression in plants. Results show that histone acetylation, among other forms of epigenetic regulation, is responsible for this condensed chromatin structure.