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Examining Interactions between the tassel-less4 (tls4) Mutant and Auxin in Maize

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Plant growth and development is an important field of research which has the potential to greatly increase agricultural productivity. An increased understanding of how organs develop as well as the factors that control plant growth would allow for the development of new technologies in improving plant growth for various purposes. One important factor that controls plant development is the plant growth hormone, Auxin. Auxin is an integral part of numerous aspects of plant growth, including lateral growth and organ formation (McSteen et al 2007). However, despite Auxin's essential role in plant growth and development our understanding of how it functions is incomplete. To gain further insight into how Auxin functions in plants, mutants that have problems involving Auxin are used. This project examines the *tassel-less4* (*tls4*) mutant in maize to determine how it interacts with Auxin. *tls4* is a mutant in maize that has a phenotype characteristic of Auxin mutants. To determine how the gene responsible for *tsl4* interacts with Auxin, double mutants were generated between *tls4* and mutants that have known defects in Auxin. Double mutant analyses are currently being performed with *sparse*-inflouresence1(Gallavotti et al 2008) and *vanishing-tassel2* (Phillips et al 2011), both of which are known to function in Auxin biosynthesis. The results of these analyses should be obtained by late August. The interactions between these mutants should provide a more complete picture of how Auxin functions in plants as well as how *tls4* interacts with Auxin.

Gallavotti, A., (2008). sparse inflorescence1encodes a monocot-specificYUCCA-like gene required for vegetative andreproductive development in maize. Plant National Academy of Science 105: 15196-15201.

McSteen, P., (2007). barreninflorescence2Encodes a Co-Ortholog of the PINOIDSerine/Threonine Kinase and Is Required forOrganogenesis during Inflorescence and VegetativeDevelopment in Maize. Plant Physiology 144:1000-1011.

Phillips, K., (2011). vanishing tassel2Encodes a Grass-Specific TryptophanAminotransferase Required for Vegetative and ReproductiveDevelopment in Maize. The Plant Cell 23:550-566.