

2067 Functional genomics-based analysis of the early stages of cotton fiber development in wild type and lintless mutants

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Cotton fibers are the most economically important natural textile in the world, and therefore understanding the factors involved in their development is of critical importance. The earliest stages of cotton fiber initiation and elongation play an important role in determining fiber quality traits like length and yield; therefore, a thorough understanding of these stages is essential. In order to study the factors involved in initiation and early elongation, we have taken on an in-depth functional genomics analysis of the early stages of cotton fiber development in *Gossypium hirsutum* as well as two different lintless mutant cultivars. Each mutant shows a delay in fiber initiation, as well as defects in fiber elongation, ultimately resulting in fibers that are 25% the length of wild type fibers. Early analysis suggests that the mutants have defects in secondary metabolism and gene regulation. The results of these studies will significantly contribute to the understanding of the mechanisms the early stages of cotton fiber development, and could lead to the development of technologies which improve economically important agronomic traits.