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## Epigenetic regulation of fiber development in cotton

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In contrast to animals, where cell differentiation occurs during embryogenesis, higher plants have the ability to regenerate specialized cell types of already differentiated cells. Development of a specialized cell type is regulated by signals of different genetic and epigenetic networks acting within the cell. Histone modifiers play an important role in transcriptional regulation. Although, the developmental roles of some of the modifiers have been explored in different studies, limited steps have been taken up to enumerate the mechanism and targets of these histone modifying machineries in the developing plant cells. Fiber development in cotton provides a great opportunity to explore these networks contributing the differentiation and development of plant cells. The present study aims to explore the role of epigenetic regulators, specifically Histone Acetyltransferases (HATs) and deacetylases (HDACs), in cotton fiber development. Various inhibitors have been used for the characterization of these histone modifiers. We used cotton fiber as a model system and have employed an ovule culture technique to study the effect of inhibitors of different histone modifying enzymes on fiber development in cotton. We identified some key inhibitors, which were affecting the fiber growth significantly. To identify the potential targets of these modifiers, we performed transcriptomic sequencing of inhibited and control fiber samples. The transcriptome data were further correlated with the ChIP-sequencing to explore the interaction of fiber related genes with regulatory networks. The results will enrich our understanding of epigenetic regulation of cell development.

### Biography

Sunil Kumar Singh is pursuing his PhD in Molecular Biology at National Botanical Research Institute, India with Dr. Samir Sawant, Principal Scientist. His area of work is epigenetics and cell development.

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