

**COTTON FIBERS CAN UNDERGO
CELL DIVISION**
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Abstract

Ovule culture (*Gossypium hirsutum*, cultivar MD51 ne) was used to assay the steps of fiber development in the cotton plant and to determine the interaction between fiber development and the control of cell division.

About 25% of the fiber cells divide when cultured at 34 C. Mitosis occurs after differentiation producing multi-celled fibers with distinctive basal and tip cells. Most cell division occurs in ovules cultured at 2 to 3 days post anthesis. Multi-celled fibers are rare in ovules cultured at 1 day post anthesis and absent in those cultured at 7 days post anthesis. To date, no multi-celled fibers have been detected on ovules sampled directly from the plant. Fiber cell division occurs in the absence of exogenous hormones. The addition of IAA and GA₃ (final concentration 2 μM each) to the medium lowers the frequency of multi-celled fibers. IAA alone further reduces the frequency of multi-celled fibers while GA₃ by itself has no effect. These findings show that a subpopulation of fiber cells, fully differentiated in appearance, retain cell cycle functions up to 4 days post anthesis. All cultivars tested to date have ovules with fiber cells that divide.

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