1183 New insights into cotton fiber development obtained through microscopic imaging

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Even for a cell studied as long as cotton fiber and as important as cotton fiber, there is still much to learn at the morphological level about its development. Here we will show novel aspects of cotton (Gossypium hirsutum) fiber development revealed by several imaging methods employed synergistically. Data presented will include correlations between fiber development in vivo and in vitro, state-of-the art scanning electron micrographs, results from immunolabeling after microwave-assisted-chemical fixation and observation in the transmission electron microscope, and novel insights obtained through traditional light microscopic histology. Interpreted together and along with results arising from genomic and biochemical analyses, these data provide new understanding of several aspects of cotton fiber development and quality, including control of transitions between stages of fiber development and fiber length and uniformity. For support of this research we thank: Cotton Inc., Cary, NC; Dept. of Crop Science and the CALS Electron Microscopy Facility, NCSU; and the Imaging Center, Dept. of Biological Sciences, TTU.