COTTON FIBER BIOSCIENCE AND GENOMICS: WHAT AND WHY? Barbara A. Triplett USDA-ARS, Southern Regional Research Center New Orleans, LA Hee Jin Kim University of New Orleans New Orleans, LA Duane M. Smith Nicholls State University Thibodeaux, LA William R. Meredith, Jr. USDA-ARS, Crop Genetics and Production Research Stoneville, MS

Abstract

The mission of the International Cotton Genome Initiative is to characterize the structure and function of the cotton genome and to facilitate international "communication, collaboration, education, knowledge and resource integration, technology and resource development, and coordinated research planning." The focus of this talk was to educate producers about genomes and genome maps and how these tools will be used for cotton improvement. Analogies to geographic maps were made to distinguish between genetic and physical maps and structural and functional genomics. Specific objectives of the International Cotton Genome Initiative were discussed as well as why international cooperation is needed, who will benefit from the technological advances, and what the potential impact of this activity will be on cotton improvement. The importance of functional genomics for characterizing stages of fiber development was underscored by specific research accomplishments from the Cotton Fiber Bioscience group. From analyzing promoter deletions and signal transduction in ovule-cultured fibers to measuring relative transcript abundance in field-grown fibers, molecular genetic approaches to analyzing fiber growth and development are indispensable tools for future cotton variety improvement.