

PLAIN ENGLISH SUMMARY

The cotton fibre is a single cell outgrowth from the surface of the cotton seed and is the primary commercial product for which cotton is grown around the world. The yield of fibre and the quality of the fibre (length, strength, uniformity, extensibility, and dyeing characteristics etc.) are all determined by the interaction of the plants genes with environmental parameters. Plant breeders attempt to find the right combination of genes that suit the Australian production systems to achieve the highest possible yield and quality, but with the advent of biotechnology it should be possible to augment this process with more directed genetic changes if we have a better understanding of what genes are involved and how they determine important physical and chemical characteristics of cotton fibres. This project began our use of a genomics approach to try to define some of the important genes involved in cotton fibre production and involved the construction of two different cDNA libraries which represent all the genes expressed in a particular tissues and the sequencing of some of them (over 2500) to gauge the types of genes being expressed. These libraries and sequences will now be a valuable resource for many of our cotton fibre biology projects and will allow us to move to the next phase of gene discovery of using gene microarrays to examine the expression profiles of many thousands of cotton genes during fibre development. Such studies will hopefully identify key genes that could be manipulated in transgenic plants to modify cotton fibres for improved or novel characteristics.