

## COTTON PLANT CELL CULTURE

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The ultimate objective of this project is to be able to fuse cotton plant cells with other plant cells then manipulate the hybrid cells with hormones and growth regulators to make them proliferate and differentiate into plantlets. If successful, this approach will add a new dimension to plant breeding which will bypass the normal sexual stage in plant reproduction.

Better and more reliable techniques in the aseptic culture of cotton plant cells have been developed which give good growth of callus tissue from cotton plant parts. Instead of soaking the explant material in 25% solution of commercial Chlorox, now only a 5% solution is used and the explant materials are soaked for 2 hours, rinsed in sterile distilled water, the bark peeled off, and the stem placed on a modified Whites media with coconut milk. Callus tissues have been kept alive for over a year with periodic transfer to fresh media. Cotton plant cells cultured to date are G. hirsutum (AD<sub>1</sub>), G. barbadense (AD<sub>2</sub>), G. tomentosum (AD<sub>3</sub>), G. sturtianum (C<sub>1</sub>), and the hexaploid (AD<sub>1</sub>C<sub>1</sub>).

Attempts to induce differentiation are being made with the use of different types of media and different hormones and vitamins. Success to date has been limited. This type of experimental research is in the area of high risk, as the chances for contamination is great, and cultures can be lost through contamination.

Some unusual and interesting observations have been made regarding the G. sturtianum callus tissues. The cells forming the callus tissues in this species are loosely bound and are easily shaken apart. This is a significant discovery which may give us the opportunity to isolate single cells without the use of the enzyme pectinase.