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Final Report 03/01/02 **Peanut Genetics**

Title: **Startup Equipment for a Peanut Breeding/Molecular Breeding Program**

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Purchase of equipment. We have purchased the following items, all of which has been delivered:

Item	Quantity	Purpose
-80□ freezer (1)	1	Storage of clones, samples, and exposure of X-ray film for RFLP markers
30 liter liquid nitrogen storage tank	1	freeze samples, DNA extraction
tissue homogenizer	1	DNA extraction
table-top centrifuges (2)	2	DNA extraction, clone purification
gel rigs	7	marker analysis
power suplies	2	marker analysis
ultraviolet light box	1	marker analysis
Polaroid camera	1	marker analysis
shaking hybrdization oven	1	marker analysis
thermal cycler	1	marker analysis

Notes:
(1) A remote alarm and CO_2 backup equipment have also been purchased for warning and keeping samples cold during a power failure.
(2) Two small table-top centrifuges were purchased instead of one large floor-mounted model. This switch was necessary because of the greater amount of bench space relative to floor space in the laboratory.

Use of equipment. The equipment is being used for the following purposes:
(a) Identification of markers for disease resistance. We generated 240 DNA blots, which are being used currently for identification of DNA markers for early and late leafspot resistance in the TxAG-6 x Florunner population developed by Dr. Simpson. We expect to begin comparing marker patterns to data for yield, seed size, plant growth habit, early and late leafspot resistance, nematode resistance, and other traits this summer. Resistance data were obtained by Dr. Starr.
(b) We are beginning to investigate converting our current RFLP markers to PCR markers. This will allow us to perform marker analysis without using radioactive compounds for detection of marker patterns, and will allow obtaining results faster. The first DNA sequence information has been analyzed, and we have been able to identify differences in DNA sequence that can be used to develop the new marker types.
(c) Development of markers for crosses between cultivated peanuts. This is being done simultaneously with part (b) above by including DNA of cultivated peanut accessions. Use of markers in cultivated crosses is a longer-term goal. However, it is needed very much, especially for development of early-maturing material because of the labor needed for scoring maturity.

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