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Responsible Investigator: Anton Lang
 University Department: Botany
 Financial Support 1954-55: UC \$ 3,956.00; NSF \$ 7,000.00*.
 *(With Dr. S. G. Wildman).

The general aim of our studies is to determine the mode of the hereditary transmission of proteins in plants with regard to its role in inheritance in general, and to study the changes in the protein pattern of plants during their development. The immediate objectives of the present project are, 1) to discover whether a particular nucleoprotein, the so-called Fraction I protein, which is present in large amount in plant leaves, is transmitted to the offspring directly through the cytoplasm of the egg cell and hence not subject to the exclusive control by the genes contained in the nucleus; 2) to establish whether a definite developmental change in the plant, the transition from vegetative growth to flower initiation, which can be controlled at will by manipulating a specific environmental factor, is associated with the appearance of a new, specific nucleoprotein in the plant. The reasons for the choice of these specific problems, which we consider to be particularly well-suited for an experimental approach, and their bearing on the problem of cancer have been

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explained in the original application for this project. The approach to the first of the two above objects consists in preparing Fraction I proteins from different plant species (tobacco), characterizing them by serological and physicochemical procedures, and studying how these properties are transmitted to the reciprocal hybrids between these species. The second objective is approached in two ways: first, by preparing the proteins from treated and non-treated plants; second, by treating the plants with materials which interfere with the formation of new nucleoprotein and studying the effect of this treatment on the developmental change in question.

The project was started July 1, 1954. Hence, the work done to-date is largely exploratory in character and is still under way. Concerning the first of the two specific problems mentioned above the best means to prepare Fraction I proteins from different tobacco species and the serological activity of these proteins have been studied. Concerning the second problem, a series of experiments with antagonists of nucleoprotein synthesis have been started; however, these are experiments requiring rather long periods of time (about 100 days), and therefore no results can as yet be reported.

Publications To Date: None.