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1. Mutation studies at the Sh_1 locus in maize.

The Sh_1 locus is particularly suited to a study of the nature of induced mutations. It has an easily recognizable phenotype, closely linked flanking markers, and a protein product which is easily analyzable by electrophoretic and immunochemical criteria. Furthermore, positive evidence of interallelic complementation among previously analyzed sh_1 mutants suggests that newly induced mutants can also be put to the functional test.

A project to induce sh_1 mutants by gamma irradiation and to investigate them with regard to the above characteristics has been initiated. Kernels and plants of the $C Sh_1$ genotype ($A C R$ stock) were irradiated in two different experimental lots. Acute doses of 10 and 15 kR were given to the first and chronic doses of 0.8, 1.1 and 2.5 kR were applied to the second lot. M_1 plants were used mainly as female parents in crosses with pollen from a $c sh_1$ tester stock. Ten ears showing kernels of colored sh_1 type in a total population of 1145 ears were obtained. Electrophoretic analysis with nine of these mutants shows that neither the Sh_1 protein nor any other new protein band is visible in their endosperm extracts. The single mutant kernel born on the tenth ear gave rise to a plant which did not produce any seeds on selfing and the mutant is consequently lost. Electrophoretic results such as these are most likely to be caused by the loss of the Sh_1 locus. Efforts to further characterize these mutants and to obtain a larger number of sh_1 mutants by gamma irradiation are in progress.

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2. Unusual property of the C_1 locus.

A derivative of I Trombay (Inhibitor of aleurone color) was apparently not transmitted through the male gametes (Chandra Mouli et al., Can. J. Genet. Cytol. 12:259-263, 1970). During the course of further analysis of this line, it was observed that even through the female its