

kernels in which this determinant is present in two doses do not show variegation. Because of these dosage effects, the segregation on ears resulting from self-pollination of plants of  $\underline{GR}^G$ -variegated/ $\underline{gr}^r$  genotype do not fit a simple Mendelian ratio. However, such ears invariably segregated a proportion of variegated kernels.

An attempt is being made to isolate the determinants which produce aleurone variegation by complementary action in separate stocks.

The variegation patterns observed with the " $\underline{R}^G$ " system just described strikingly resemble those produced by McClintock's  $\underline{Ac-Ds}$  system. In view of the origin of these materials it is reasonable to postulate that the " $\underline{R}^G$ " system is comprised of a " $\underline{Ds}$ -like" element located at or near the  $\underline{R}$  locus, and an " $\underline{Ac}$ -like" element located elsewhere in the complement. Further studies of the origin and interaction of the postulated elements and of their homology with the  $\underline{Ac}$  and  $\underline{Ds}$  elements isolated by McClintock are being conducted.

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1. Distance between K10 heterochromatic regions in several interphase tissues.

In a stock homozygous for K10 these large knobs are thought to be recognizable as the most prominent of the heterochromatic regions found at interphase in acetocarmine squash preparations. Measurements were made in consecutive analyzable cells of systematically scanned slides (at various interphase stages) of the distance between the pair of presumed homologous K10's and of nuclear diameters. Stages studied were: premeiotic interphase and tapetal interphase from very small anthers (about 0.4 mm. in length), premeiotic interphase and tapetal interphase from larger anthers (about 1.0 mm. in length) and tapetal interphase from anthers with sporocytes at pachytene. The ratio of the distance between these heterochromatic regions and the nuclear diameter was calculated for each nucleus observed so that the relative nearness of these knobs could be compared. Mean ratios found for the different stages were as follows:

interphase sporocytes (anther length 0.4 mm) - 0.135

interphase sporocytes (anther length 1.0 mm) - 0.142

interphase tapetals (anther length 0.4 mm) - 0.163

interphase tapetals (anther length 1.0 mm) - 0.192

interphase tapetals (pachytene anthers) - 0.191

The homologous K10's were very significantly (.01 level) nearer than random expectation would predict in both t tests and Kolmogorov-Smirnov tests at all stages studied.

Differences found between average K10 separation were not significant (0.10 level, t test) in the following comparisons:

interphase sporocytes (anther length 0.4 mm) vs interphase  
sporocytes (anther length 1.0 mm)

interphase sporocytes (anther length 0.4 mm) vs interphase  
tapetals (anther length 0.4 mm)

interphase tapetals (anther length 0.4 mm) vs interphase  
tapetals (anther length 1.0 mm)

interphase tapetals (anther length 0.4 mm) vs tapetals  
from pachytene anthers

interphase tapetals (anther length 1.0 mm) vs tapetals  
from pachytene anthers

The K10's were significantly closer (.01 level) by this test, however, in interphase sporocytes from anthers 1.0 mm. long than in interphase tapetal nuclei from the same anthers.

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1. Plants carrying the gene "rootless."

A phenomenon noticed rather strikingly in 1968 field plantings of some 1000 rootless (rt/rt) plants derived from a "nearly rootless" stock was that a portion of the field which was unintentionally left