Evidence of transposition of $\underline{M}^{st}$ to another chromosome was obtained in the present case by selecting the colorless kernels from exceptional ears and then making crosses with appropriate tester stocks that reveal the presence of the transposed modifier.

If $\underline{M}^{st}$ transposes to a chromosome other than 10 (where $\underline{R}^{st}$ resides), then 1/2 of the colorless kernels would have received one transposed modifier. The occurrence of ears that show 1:1 distributions for dark and light stippled is here considered proof of the transposition of $\underline{M}^{st}$ from the standard position to a point in a different chromosome. The strain used to test for the presence of a transposed modifier in such colorless kernels is a homozygous $\underline{R}^{st}\underline{M}^{st-}/\underline{R}^{st}\underline{M}^{st-}$ stock.

The validity of such a test rests on the assumption, experimentally proved, that kernels of the genotypic constitution $\underline{r}\underline{M}^{st+}/\underline{r}\underline{M}^{st+}/\underline{R}^{st}\underline{M}^{st-}$ have a darker phenotype than $\underline{r}\underline{M}^{st-}/\underline{r}\underline{M}^{st-}/\underline{R}^{st}\underline{M}^{st-}$ kernels.

In fact, if the colorless kernels derived from the exceptional ears carry a transposed modifier, presence of the latter should be revealed by crossing them with the $\underline{R}^{st}\underline{M}^{st-}/\underline{R}^{st}\underline{M}^{st-}$ tester stocks, since the progeny kernels would exhibit a dark stippled phenotype in 50% of the cases, and a light stippled phenotype in the other 50%. However, if there is no transposed modifier in the genome of the colorless kernels under test, then only progeny kernels with a light stippled phenotype are expected.

Following such crosses, in eight cases out of thirteen examined, evidence of a transposed modifier was found. The frequency of dark and light stippled in the ears carrying transposed $\underline{M}^{st}$ was 1274 dark, 1315 light stippled, values that nicely fit the 50% and 50% ratio predicted.

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5. Test for depletion of $\underline{R}^{st}$ paramutagenic action in $\underline{R}^{r}$ $\underline{R}^{st}$ plants.

$\underline{R}^{r}$ $\underline{R}^{st}$ plants were mated recurrently for three generations to a paramutable $\underline{R}^{r}$ $\underline{R}^{r}$ stock. The latter, F_1 $\underline{R}^{r}$ $\underline{R}^{st}$, and $\underline{R}^{r}$ $\underline{R}^{st}$ individuals representing backcrosses 1, 2, and 3 of $\underline{R}^{r}$ $\underline{R}^{st}$ to $\underline{R}^{r}$ $\underline{R}^{r}$ were then testcrossed on $\underline{r}^{g}$ $\underline{r}^{g}$ ♀♀. The resulting sets of $\underline{R}^{r}$ $\underline{r}^{g}$ $\underline{r}^{g}$ kernels were scored for grade of aleurone color to determine whether maintenance of $\underline{R}^{st}$ in freshly constituted $\underline{R}^{r}$ $\underline{R}^{st}$ heterozygotes for a few

generations depleted the paramutagenic action of $\underline{R}^{st}$. The seed used in grading aleurone pigmentation ranged from 1 (coloress) to 7 (self-colored). There is no evidence from the results obtained, summarized in the accompanying table, that continued heterozygosity for a paramutable $\underline{R}^{r}$ reduces the paramutagenicity of $\underline{R}^{st}$.

Male parent in testcross	No. plants tested	Mean aleurone color score
$\underline{R}^{r}$ $\underline{R}^{r}$ - stock	7	6.43
$\underline{R}^{r}$ $\underline{R}^{st}$ - F1	3	4.47
$\underline{R}^{r}$ $\underline{R}^{st}$ - Bx 1 to $\underline{R}^{r}$ $\underline{R}^{r}$	7	4.08
$\underline{R}^{r}$ $\underline{R}^{st}$ - Bx 2 to $\underline{R}^{r}$ $\underline{R}^{r}$	8	3.40
$\underline{R}^{r}$ $\underline{R}^{st}$ - Bx 3 to $\underline{R}^{r}$ $\underline{R}^{r}$	16	3.59

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6. An unstable R allele from Bolivia.

A highly unstable R allele has been isolated from a colored aleurone strain of maize originally collected in Bolivia (Bolivia 724). The allele simulates $\underline{R}^{mb}$ in that coarse patches of pigment are normally observed in the aleurone following backcross to W22 A C r b pl stocks. Unlike $\underline{R}^{mb}$, however, aleurone pigmentation varies in intensity within patches. Likewise ears vary in frequency of kernels with the spotted pattern. The allele mutates with a relatively high frequency (approximately one per 100 kernels) to a form which produces dilute aleurone pigment uniformly distributed over the kernel. Apparently concomitant with the mutation of spotted to dilute aleurone is alteration of a plant color component at the R locus, since all 12 dilute kernels grown so far have produced mature plants with intensely pigmented leaves and stalks. Plants grown from sib spotted aleurone kernels were uniformly green.

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