

green in the translocated region of TB-9b; one yellow stripe in the translocated region of TB-7.

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1. Crossing-over in the A<sub>2</sub>-Bt-Pr region.

Recombination data for markers of chromosome 5 in different genetic backgrounds are reported in the following table (backcross of the multiple recessive to heterozygous seed plants possessing T cytoplasm):

Genetic backgrounds	Kernel classes					
	A Bt Pr	A bt pr	A Bt pr	A bt Pr	a Bt	a bt
A 158	1725	76	335	59	139	1905
W 22	1320	59	383	31	69	1648

From these data the following recombination frequencies and standard errors may be calculated:

	Region A-Bt	Region Bt-Pr	Double recomb.
A 158	6.5 ± 0.4	17.9 ± 0.8	3.3 ± 0.4
W 22	4.5 ± 0.1	23.0 ± 0.6	2.3 ± 0.4

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1. Another isolation of the En-Spm system.

Two pale green plants with sectors of dark green were present in a 13 plant progeny of a second generation self in a corn breeding nursery in 1959. The unstable pale green plants were outcrossed as males to available silks in an inbred nursery. The unstable pale green phenotype again appeared in the F<sub>2</sub>. Pollen from these unstable pale green plants

was used to pollinate three different tester stocks each sensitive to a different controlling element, viz: (1) C Ds (no Ac), (2) a<sub>1</sub><sup>m</sup> (no En) and (3) a<sub>1</sub><sup>m-1</sup> (pale aleurone, no Spm).

The kernels from the cross with the C Ds tester would be expected to show a chromosome breakage pattern in the F<sub>1</sub> if the pale green stock carried recessive c as expected and an Ac-like element. They did not show such a pattern.

The second and third crosses had to be carried to the F<sub>2</sub> to detect mutability at the a-locus because the unstable pale green plants carried a dominant A<sub>1</sub> allele. In both crosses a few dotted seeds were present on the F<sub>2</sub> ears as one would expect if A and a<sup>m</sup> were segregating along with C-c, R-r and if a controlling element were present as well. One F<sub>1</sub> with the pale aleurone a<sup>m-1</sup> stock was backcrossed to the a<sup>m-1</sup> parent and produced an ear which segregated 1/2 purple to 1/2 dotted as expected where A and a<sup>m-1</sup> were segregating in the presence of C- and R-. The fact that all of the non-purple class were dotted is puzzling.

It thus appears that my unstable pale green stock activated mutable a<sub>1</sub> alleles which had previously been described as part of the En and Spm systems. This is additional confirmation of Dr. Peterson's report that his En element is the same as Dr. McClintock's Spm (MNL 37:72).

The origin of this new isolation of a mutable system can be traced to the hybrid of three dent corn stocks, viz: (1) C0111, an inbred line produced at the Central Experimental Farm, Ottawa, Canada; (2) a line received in 1952 from the Eastern States Farmers Exchange which had come originally from the Bishop open pollinated variety; and (3) J.H.L.E., a long eared variety received from Dr. W. L. Brown in 1954. Evidence of a mutable phenotype had not been observed in these three lines prior to combining them into a three-way hybrid, nor in the first two lines which have been grown every year since. No unstable pale green plants were observed in the first segregating generation either, although the progeny consisted of only 13 plants, as did the next selfed generation in which the two original mutable pale green plants were found.

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## 2. Mutation of P<sup>CW</sup> to P<sup>WR</sup>.

Further observations are available on the origin of the colorless pericarp-red cob inbred Pa W703 which apparently arose by mutation from the red pericarp white cap-white cob inbred Q703 (see MNL 36:50 and 37:109). The F<sub>1</sub> from the cross Q703 x Pa W703 was both selfed to produce an F<sub>2</sub> and testcrossed to the colorless pericarp-white cob allele P<sup>WW</sup> as carried by inbred A171 to produce:

	<u>F<sub>2</sub></u>	<u>F<sub>1</sub> x P<sup>WW</sup></u>
Red pericarp white cap - red cob	363	0
Red pericarp white cap - white cob	196	347
Colorless pericarp - red cob	160	329
Colorless pericarp - white cob	0	0