

It may be concluded that recombination does not take place in the segment of 3L involved in the transposition either in N3 N3 chromosomes or in Dp9 Dp9 bivalents. That it is not genetically inert is evidenced by the abortion of both N9 Df3 megaspores and microspores.

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1. Paramutagenic action of the C locus.

A paramutagenic gene c^{IP} (provisional designation), has been found in a strain which was the product of a cross between Euchlaena mexicana x Zea. This cross was backcrossed 10 times with the recurrent homozygous strain of genotype: a a, C C, r r, gl gl, ij ij. The action of the c^{IP} gene produces mutations of the alleles C and c and the mutational sequence is C→c and c→c^{IP} (induced inhibitor). The paramutation shows extensive areas in the ear of somatic mosaicism. The mutated genes are more unstable than the standard.

Experimental data:

(1) In the cross: c^{IP}/C(→c) x C/C the following data were obtained:

1389 Colored Kernels Pr
1414 Colorless Kernels

Data from the reciprocal cross were as follows:

808 Colored Kernels Pr
688 Colorless Kernels

In the preceding data the mutation of C→c was not detectable due to the dominant effect of the C/C parent.

(2) In the cross c^{IP}/C(→c) x c/c (tester) the following data were obtained:

426 Colored Kernels Pr
896 Colorless Kernels

The mutation C→c was detected by an excess of colorless kernels.

(3) Allelomorphism.

In the crosses c^{IP}/c x c/c (tester) 18 ears with all colorless kernels were obtained. By selfing the genotype, c^{IP}/c, 8 ears with all colorless kernels were obtained.

- (4) In the crosses $\underline{c}^{IP}/\underline{c}$ x $\underline{C}/\underline{C}$ (tester A C R B Pl Pr) the following data were obtained:

600 Colored Kernels Pr
1031 Colorless Kernels

The mutation $\underline{c} \rightarrow \underline{c}^{IP}$ was detected by an excess of colorless kernels, frequently expressed in extensive areas in the ear of somatic mosaicism.

- (5) The following data were obtained on localization of the induced unstable gene, \underline{c}^{IP} , with the marker sh, and on expression of mosaicism on the ear:

<u>c</u> ^{IP} (induced)	<u>sh</u>		<u>C</u>	<u>sh</u>
		x		
<u>C</u>	<u>Sh</u>		<u>C</u>	<u>sh</u>

lateral right half of the ear:	<u>Pr</u> <u>Sh</u>	48
	<u>Pr</u> <u>sh</u>	9
	colorless <u>Sh</u>	0
	colorless <u>sh</u>	25

lateral left half of the ear:	<u>Pr</u> <u>Sh</u>	52
	<u>Pr</u> <u>sh</u>	47
	colorless <u>Sh</u>	0
	colorless <u>sh</u>	4

In other ears of the same origin, these phenomena of mutation and mosaicism with variable expression were also observed.

Hypothesis:

The phenomenon could be due to an excess of replicated sub-units (#) and (*) of the gene \underline{c}^{IP} (this gene was created in maize by teosinte). These sub-units (#) and (*) could remain transitorily free or attached with variable frequency to the locus C. $\underline{C} + (\#) = \underline{c}$; $\underline{c} + (*) = \underline{c}^{IP}$. This hypothesis could account for the contiguous phenomena of paramutation, mosaicism, mendelian segregation and genetic instability.

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