

	<u>%</u> <u>G1</u>	<u>%</u> <u>Lg</u>	<u>%</u> <u>A</u>
K 10/K 10, K 3/K 3	50%	---	50%
K 10/K 10, K 3/k 3	50	63.3	67.9
K 10/k 10, K 3/K 3	50	---	50
K 10/k 10, K 3/k 3	50 51.7	70.2 72.5	64.2 63.6
K 10/k 10, k 3/k 3	50	50	50
k 10/k 10, K 3/K 3	50	---	50
k 10/k 10, K 3/k 3	50	50	50
k 10/k 10, K 3/k 3	50	50	50

for all segregating loci. The data show clearly that preferential segregation occurs only when the chromosome 3 bivalent is heterozygous for the knob and when abnormal 10 is either homozygous or heterozygous. The slightly high percentage of preferential segregation of the A locus over that of the Lg locus in the K 10/K 10, K 3/k 3 class is anomalous but is almost certainly due to the relatively small population obtained for this combination.

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6. Level of polyploidy and size of chloroplasts.

Using the elongate gene which when homozygous results in the formation of unreduced megaspores in plants at all tested levels of ploidy (Rhoades MNL 30), a polyploid series consisting of 1N, 2N, 3N, 4N, 5N, 6N and 7N plants has been obtained. Although not isogenic, the close relationship of the different polyploids permits a comparison of the effects of ploidy level on various characteristics such as height, vigor, etc. One of the more interesting findings is that the size of the mesophyll chloroplasts is the same throughout the range of polyploidy although the number of plastids per cell increases with level of ploidy. This independence of plastid size from nuclear constitution is further indication of plastid autonomy.

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7. On the origin of abnormal 10.

During the course of the investigation discussed above on

preferential segregation with loci in chromosome 3, a number of plants were obtained which were heterozygous for abnormal 10 and carried a single B chromosome. Although our earlier studies had indicated no homology between the extra segment of abnormal 10 and B chromosomes, it was felt that a further examination was called for in view of Ting's (Chromosoma 1958) suggestion that the abnormal 10 which he found arose from a B-10 translocation. If the extra segment of the abnormal 10 found by Longley and subsequently widely studied by others has come from a B chromosome via translocation, pairing between the distal end of abnormal 10 and homologous regions of the B chromosome should occur frequently in plants with a single B and heterozygous for abnormal 10 because of a lack of pairing competition. A large number of pachytene figures were examined in such plants and, except for an occasional adhesion of the knob-like region of abnormal 10 to the distal heterochromatic regions of the B, there was no evidence of homology between the two chromosome segments.

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1. The effect of the independent activator of a-mutable on pale green mutable.

In a previous communication (MCNL 30) it was reported that pale-green-stable (pg^S) does not respond to the activator of a^m . It is now believed that in this case a non-mutable pg^S (similar to a^{dl}) was being tested. Recent experiments with a known mutable pg^S clearly show that pg^{S*} does mutate in the presence of the independent controller of a -mutable. Furthermore, this controller corresponds in every way to Enhancer and so will be designated En.

The test of similarity showing En to cause both a^{mI**} and pg^S to be mutable.

	F ₁ pg-segregating types
+/ pg^{S*} A A x Pg/Pg a sh/a sh ^{***} + mutable factor	-- 1/2 Pg/ pg^S A/a sh
no mutable factor	1/2 Pg/ pg^S A/a sh
+ mutable factor	

* known to respond to En

** a^{mI} is mutable only in the presence of En

*** this a responds to Dt and not to En