

bifunctional locus. The latter model was proposed by Coe (1964) because he did not obtain the crossovers expected on the basis of the compound locus model. While this may be the case, the dominance behavior of (the mutation) I appears to be somewhat similar to the so-called super-repressed mutations of the regulator gene (R^S type) in E. coli which when heterozygous (R^S/R^+) are unable to synthesize the enzyme (B-galactosidase). This is a very striking result from the genetic point of view since an R^S mutation corresponds to a dominant loss of function (Jacob & Monod in Cytodifferentiation and Macromolecular Synthesis, Academic Press, 1963).

The data to be presented here were collected with a view to study similarities and differences between I and C in regard to their direction of mutation, mutation rates, and any other information which would have a bearing on the above models. Our observations are summarized in Table 2. The following points are noteworthy:

- (1) There is a very high proportion of non-concordant changes of I. In contrast no such class was observed from C, Sh and Wx mutations.
- (2) The direction of mutation of I is only to i (phenotypically indistinguishable from c) never to C. These findings are similar to those of Coe (1962) for the direction of spontaneous mutation of I.
- (3) The mutation rates of I and C are apparently dissimilar but the data are insufficient on this point.

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3. A new gametophyte factor on chromosome 9.

Drastically reduced pollen transmission for the factors located on the short arm of chromosome 9 was observed following, apparently, a spontaneous mutation of a Ga factor to ga. I was transmitted to the extent of about 1%, Sh about 3%, Bz about 4%, and Wx about 10%. No reduction in transmission of these factors was noted in the reciprocal cross (Table 3). Assuming 100% non-transmission for the pollen carrying ga and assuming the transmitted gametes as due to crossovers, the locus of ga is placed very close to I and distal to it. Crossing-over between I and Wx is about half the usual value. Its relationship with ga, if any, is not clear at the moment.

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4. High rate of induced change for anther color in maize.

During the course of a study designed to reveal the type of sectorial mutations induced by ionizing radiations and chemical mutagens, homozygous ACR^F (original stock kindly supplied by Prof. R. A. Brink) seeds were irradiated with Co^{60} gamma-rays and ethylmethane sulfonate (EMS). A large number of plants arising from the treated seeds were observed to have green anthers (Table 4). EMS was found to be particularly effective in inducing this change with as many as 103 out of 280 plants showing some