appearance near the top of the kernel. Selection of these kernels with subsequent crosses of the plants to su-Ref have verified this observation. I would appreciate receiving any other independently occurring near-normal or semi-full su alleles to include in my investigation.

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C loss associated with bz-x3m — In the 1974 Newsletter it was reported that on C bz-x3m/c Bz kernels (bz-x3m was formerly bz-x3), colorless sectors and C-c breakage-fusion-bridge patterns were observed. This instability has been transmitted in a number of cases. The highest frequency of variegated kernels obtained so far was from ear #3234, a product of self-pollination on which the following classes were observed: 108 purple; 45 purple with few colorless sectors; 16 purple-colorless BFB patterns; 75 bz-x3m patterns; and 79 colorless. Some of the colorless kernels represented loss of the C allele in one sperm cell only since the scutellum was purple.

The expected phenotypic ratio if no loss of C is occurring is 1 bz-x3m pattern: 2 purple:1 colorless. If in the experimental population the purple and purple-colorless classes are combined, a 1:2:1 ratio results. Thus, the mosaic kernels do represent loss of the C allele on the C bz-x3m homolog.

Numerous additional ears exhibiting C loss on a chromosome 9 carrying bz-x3m have been observed. BFB patterns of Bz - bz-x3m have not been recovered, indicating that breakage is occurring only in the chromosome carrying C bz-x3m and not in the homolog with c Bz.

These observations suggest that an element (receptor) similar to Ds has become attached to chromosome 9 distal to the C locus. This element is responding to the regulator of bz-x3m by causing chromosome breakage. It is possible that the putative receptor element was originally part of the regulator and transposed away from the bronze locus.

In the self-pollinated progeny cited above, the frequency of C-c variegated kernels does not reflect the frequency of breakage in chromosome 9. Some of the kernels are c c C in constitution, resulting from fertilization of a c egg by a C sperm, but others are C C c produced by the reciprocal fertilization. In the c c C kernels breakage of the homolog carrying C will result in C-c variegation; but in the other class if loss of one C allele occurs the second is still there to produce pigment. Although a reduction in color intensity would result due to the

dosage effect of C, it is difficult to detect regularly.

Experiments are currently underway in which c Bz ear parents will be crossed with C bz-x3m individuals to produce c Bz/c Bz/C bz-x3m offspring. The frequency of C-c variegation in these progeny will represent the frequency of breakage in chromosome 9. Studies are also in progress to detect chromosome breakage cytologically.

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Purification and properties of genetically determined malate dehydrogenase isozymes — A large number of inbred lines have been examined, and eight strain-specific malate dehydrogenase (MDH) zymogram patterns have been found. The general isozyme pattern does not vary spatially or temporally within any given inbred strain, though quantitative differences are found. However, of the total number of isozymes present in any inbred strain, some are associated with the soluble cytoplasm (cytosol), some with mitochondria and some with glyoxysomes. The latter were found to be present only in scutella, while NADP-dependent MDH was found in leaf chloroplasts.

In strain W64A two soluble MDH isozymes (s-MDH), five mitochondrial MDH isozymes (m-MDH) and one glyoxysomal MDH (g-MDH) were found in scutella of etiolated seedlings. Both s-MDHs and m-MDHs were precipitated in 50-65% saturated ammonium sulfate. Fractionation on Sephadex G-150 columns shows that, by test tube assay, s-MDHs and m-MDHs come off as a single peak and therefore should have similar molecular weights. Detailed analyses of the MDH zymograms of the "peak fractions" indicate that m-MDHs come off a bit earlier than do the s-MDHs. The MDH isozymes thus partially purified were applied to DEAE cellulose columns. The seven MDH isozymes were separated into three major peaks by a linear salt gradient into two s-MDHs (s-MDH-1 and s-MDH-2), the three most anodal m-MDHs and the two most cathodal m-MDHs. The three peaks were then pooled separately and concentrated. Through the above mentioned purification steps the MDH isozymes in each peak were purified 200-300 fold. Using these three groups of partially purified MDH isozymes, experiments with reducing agents (100 mM mercaptoethanol), low pH treatments (pH 2.0) and high salt concentration treatments (7.5 M guanidine-HCl), along with