affected. No endosperm analysis could be done to discover whether loss of Bz was to be ascribed to chromosome breakage or chromosome loss.

Class 5 had 16 semisterile plants. Seed and plant phenotypes suggested deficiencies in both sperms: a proximal deficiency (with regard to Bz) was presumably in the sperm that fused with the polar nuclei, or the whole chromosome was lost; a distal deficiency in the other sperm could account for the Bz plant phenotype, plant aspect and pollen semisterility. The few genetic data obtained from these plants are not enough for a conclusive statement, but suggested abnormal segregations (they are not included in this report).

Class 6 had 15 trisomic plants one of which died at the seedling stage. Plant no. 8 gave normal disomic ratios, and could be the result of somatic loss of one of the extra chromosomes carrying Bz or, less likely, it could be trisomic for another chromosome. The remaining plants were considered to be trisomic 1 individuals. However, in testcrosses they gave quite abnormal ratios for Bz : bz which do not fit those usually found with either normal or trisomic plants (see Table 2). These data seem to suggest that the nondisjunction event, which made one of the sperms hyperploid and the other sperm deficient, was associated with (or was the cause of) chromosome breakages which could possibly account for the abnormal ratios found.

Achille Ghidoni

UNIVERSITY OF MINNESOTA
St. Paul, Minnesota

1. A chromosomal region with more crossing over in megasporogenesis than microsporogenesis.

Several chromosomal regions in maize exhibit differences in the frequency of recombination occurring in mega- versus microsporogenesis. The $Rg$-$lg_2$ and Rg-d regions in chromosome 3, the la-su region in chromosome 4, the $A_2$-bt, $A_2$-bm, bt-pr, and bm-pr regions in chromosome 5, the y-pb region in chromosome 6, the gl-In region in chromosome 7, and the sh-$gl_{15}$ and $wx^c$-$wx^{90}$ regions in chromosome 9 consistently have been

Table 1

Comparisons of recombination in mega- versus microsporogenesis

| Initial cross | Number of reciprocals and (number of progeny) | Range in percent recombination*** | | $\bar{d}$**** (♀ - ♂) |
|---|---|---|---|---|
| | | mega- | micro- | |
| $\underline{Y}$ $\underline{Su_2}$ (inbred W23)/$\underline{y}$ $\underline{su_2}$ $\left(\frac{64\text{-}100\text{-}3}{64\text{-}104\text{-}9}\right)$* | 6(5308) | 30.0 - 35.7 | 15.7 - 24.8 | 12.2** |
| $\underline{y}$ $\underline{Su_2}$ (inbred Minn A188)/$\underline{Y}$ $\underline{su_2}$ $\left(\frac{64\text{-}98\text{-}5}{64\text{-}97\text{-}10}\right)$ | 6(4939) | 25.0 - 28.3 | 17.3 - 21.3 | 7.9** |
| $\underline{y}$ $\underline{Su_2}$ (inbred Minn A188)/$\underline{Y}$ $\underline{su_2}$ $\left(\frac{64\text{-}97\text{-}4}{64\text{-}99\text{-}1}\right)$ | 4(2701) | 27.3 - 36.7 | 15.9 - 29.7 | 9.1** |

*Maize Genetics Cooperative identification numbers in parentheses. The $F_1$'s were backcrossed to homozygous $\underline{y}$ $\underline{su_2}$ $\frac{61\text{-}172\text{-}1}{61\text{-}172\text{-}5}$. The various homozygous $\underline{su_2}$ strains carry the same $\underline{su_2}$ allele but differ somewhat in their genetic backgrounds.

**Significant at the 1% level of probability.

***The recombination data were normal in all cases in regard to allelic ratios and equality of complementary parental and recombinant classes.

****$\bar{d}$ = weighted mean difference (see Phillips. 1969. Genetics 61:117-127).

reported to have a higher recombination value in microsporogenesis, i.e. when the $F_1$ is used as the male parent. Greater pollen abortion than ovule abortion in the pericentric inversion 5A (5S near centromere, 5L.50) heterozygote has been attributed to the occurrence of more crossing over in the male flowers. In 1969, I reported that the $\underline{Y}$-$\underline{su}_2$ region in chromosome 6 had significantly more recombination in megasporogenesis (Genetics 61:117-127). This conclusion was based on data from seven reciprocal backcrosses (6422 progeny). More extensive tests are reported here involving two unrelated inbred lines and three additional sources of $\underline{su}_2$.

The experimental approach was simply to reciprocally backcross the $F_1$ to a homozygous $\underline{y}$ $\underline{su}_2$ stock. The same tester plant was used in reciprocal backcrosses with the same $F_1$ plant. These "exact" reciprocal backcrosses were made at the same time using only the upper ear on the main stalk. The results of these tests are given in Table 1.

Significant differences in recombination for mega- versus microsporogenesis were obtained in every reciprocal backcross. Greater recombination in megasporogenesis, therefore, appears to be an inherent quality of the $\underline{Y}$-$\underline{su}_2$ region in chromosome 6 (probably representing the physical region 6L.17-.45) which is not affected greatly by the particular genetic background. To my knowledge, this is the only chromosomal region in maize to consistently show more recombination in megasporogenesis. Additional studies are underway utilizing Pl to determine if the difference in recombination extends over the entire $\underline{Y}$-$\underline{su}_2$ region.

R. L. Phillips

2. New information on interchanges listed as T1-5.*

| Symbol | Breakpoints (Longley, 1961) | Chromosomes interchanged |
|---|---|---|
| 8347 | 1S.84-5L.51 | 1,2 |
| 8972 | 1S.56-5S.29 | 1,5 |
| 018-5 | 1S.53-5L.52 | 1,2 |
| 055-4 | 1S.32-5L.31 | 1,8 |
| 040-3 | 1S.17-5L.61 | 1,2 |
| 024-5 | 1S.09-5L.98 | 1,2 |
| 4331 | 1L.03-5S.02 | 7,10 |
| 6178 | 1L.04-5L.05 | 1,2 |
| 48-34-2 | 1L.19-5L.76 | 1,4 |
| 8388 | 1L.30-5S.25 | 1,2 |

C. R. Burnham
Richard V. Kowles
J. T. Stout

*Supported by N.S.F. Grant GB8742