

to that actually observed. It would seem then, that DNA from the heterochromatic B-chromosomes of maize is made up largely or entirely of C-G base pairs.

An unexpected result was the difference in base ratios between the normal Black Mexican line and a white dent commercial inbred which is typical of all the maize for which base ratios have been determined in this laboratory. It has been assumed generally that normal individuals of the same species show about the same base ratios in their DNA. Our results indicate that this is not necessarily true for maize. Further studies are being undertaken to investigate this aspect of the problem.

N. van Schaik
Dept. of Genetics

M. J. Pitcut
Dept. of Biochemistry

2. Transmission of the P locus and Modulators in reciprocal crosses.

Reciprocal crosses were made between 31 plants heterozygous for light variegated ($P^{rr} Mp$ + transposed- Mp) and a white commercial inbred line (P^{ww} , no Mp) in order to study the transmission of the P locus and Modulators through male and female gametes. The light variegateds used were all from families which had shown close linkage between the P locus and the transposed-Modulator in previous generations.

Three comparisons were made for each pair of reciprocal crosses:

1. number of colorless ears to colored ears to determine if the transmission of the P locus itself was normal
2. number of medium variegated ears ($P^{rr} Mp$) to light variegated ears ($P^{rr} Mp$ + tr- Mp) to compare the transmission of the transposed-Modulator through male and female
3. number of red ears (P^{rr}) to variegated ears to compare the transmission of the Mp at the P locus through male and female.

The results of the reciprocal crosses were compared for each of the three comparisons by means of χ^2 -tests for 2 x 2 contingency tables. In cases where either the expected values or the totals were too small to use the χ^2 -test, the probability was computed directly.

The results are summarized in table 1.

Table 1

Com- parison	No. of reciprocal crosses giving	
	Significantly different transmission through ♂ & ♀	Not sig. different
colored to colorless	4	28
medium to light var.	1	30
red to variegated	5	26

In all cases a cross showing a different ♂ and ♀ transmission for one characteristic did not show a significant deviation for the other two comparisons.

The abnormality of transmission of the \underline{prr} gene is puzzling. In each of the 4 significant cases, the color gene was transmitted at a much lower frequency when the variegated was the male parent. It may be that there is a male gametophytic lethal closely linked to the \underline{prr} gene in these families.

The most striking difference that appeared in reciprocal crosses was the difference in the proportion of red ears. Five of the 31 plants tested (16%) gave significantly ($P < .05$) more reds when the variegated plant was used as male parent. The 26 crosses which did not give significantly different proportions of red ears individually showed a highly significant difference in the same direction when lumped together. This seems to indicate that the Modulator at the \underline{P} locus is more likely to undergo transposition and/or crossing over in the tissues giving rise to the male gametes than in the corresponding female tissues. The transposed- \underline{Mp} present in the original light variegated plants did not show a corresponding increase in transposability. In only one of the 31 plants was there a significant difference between the proportion of medium and light variegated ears in the reciprocal crosses. In this one case, the $\underline{tr-Mp}$ was closely linked to \underline{P} when passed through the female gametes but independent of \underline{P} when the variegated plant was used as male parent. It is interesting to note that in this single case the transposition of \underline{Mp} occurred in the male tissue thus behaving in the same way as the \underline{Mp} 's at the \underline{P} locus.

N. van Schaik