

- Step 8: The enzyme is a 5% cellulase - 5% pectinase solution.
- Step 11: Add a 22 x 50 mm coverslip.
- New Step 12: Heat gently.
- Step 13: Seal with gum mastic. The coverslip should be held down by a flat block of marble or other suitable material while sealing.

R. M. Brown

### 3. Karyotype of Zea mays.

Karyotypes of maize have been composed from several commercial varieties, translocation stocks, a trisomic 6 stock and normal stocks. Metaphase chromosomes from root tip cells were employed.

The relative lengths of the mitotic chromosomes are very similar to the meiotic chromosomes, with chromosome 10 being approximately one half the length of chromosome 1. Chromosome 1 in mitotic metaphase is easily distinguished because of its length. Chromosome 2 is also usually distinguished from all others. Chromosomes 3, 4, and 5 can be identified one from the other in exceptional preparations only. Chromosome 6 does not possess an easily discerned satellite at mitotic metaphase, although it is observed during mitotic prophase. Root tips germinated in .02% 5-bromodeoxyuridine contain cells with satellites at mitotic metaphase. Two chromosomes possess satellites, and the length of the stalk varies. From preliminary studies this appears to be chromosome 6. Chromosomes 6, 7 and 8 cannot always be distinguished. Chromosomes 9 and 10 can usually be identified.

Graphs have been made of 10 cells using the length and arm ratios as axes. The points were grouped, and compared with the karyotypes which had been grouped visually. The measurements for the graphs were taken from projections of the negatives. The groupings were in most cases similar in graphs and the karyotype.

Measurements of the longest two and the shortest two chromosomes in projected cells were taken and used to determine the mean, standard error, and variance among cells. A group of cells was measured independently eleven times to calculate the experimental error. Confidence limits were calculated; analysis of variance, and t tests were completed.

The mean arm ratio for the longest two chromosomes was 1.19. The standard error was .00279.

The mean arm ratio for the shortest two chromosomes was 1.59. The standard error was .0264.

A t test showed that the two samples (long and short chromosomes) were not from the same population.

An F test showed that the experimental error was not significant. A second F test yielded a highly significant difference between the variance of the longest and shortest chromosomes.

A table of the arm ratios of the 10 pairs is below. The measurements were done on enlarged photographs, and the arm ratios given are the averages from fourteen cells.

The arm ratios are not always the same as those observed in meiosis. Chromosomes 1, 2, 3, 4, 5, and 9 have ratios in mitotic metaphase similar to pachytene. No ratio has ever been observed greater than 2.8: 1.0 in any chromosome. The ratio of chromosome 6, 7, 8, and 10 varies from cell to cell. This variation of 6 might be accounted for by the degree of condensation of the satellite region.

Chromosome No.	Arm ratio
1	1.2
2	1.2
3	1.8
4	1.6
5	1.1
6	2.2
7	1.7
8	2.1
9	1.8
10	1.6

Our karyotype is routinely presented as follows:

- Group A - chromosome 1
- Group B - chromosome 2
- Group C - chromosomes 3, 4, 5
- Group D - chromosomes 6, 7, 8
- Group E - chromosomes 9, 10

R. M. Brown

#### 4. Influence of temperature on pollen germination and tube growth.

The effect of temperature on the germination and growth of "Seneca 60" ( $su_1/su_1$ ) hybrid corn pollen was investigated. The pollen was germinated in the concavities of well slides on a medium consisting of 12% sucrose, 100 ppm  $H_2BO_3$ , 300 ppm  $CaCl_2 \cdot 2H_2O$  and 1% methyl cellulose (MGCNL 39:169 and 340:147). Germination was allowed to proceed for varying times in a water-saturated atmosphere either within covered