

Acridine orange banding of maize chromosomes — Haploid and diploid maize seeds from the same strain were germinated at 23°C for four to seven days. A modification of Dutrillaux's technique for human chromosomes was applied to root-tips using BuDr and acridine orange.

When viewed with blue light fluorescence, the chromosomes appeared yellow/green with red/orange bands. Chromosome 1 had three red/orange regions, one on the short arm and two on the long arm. Chromosome 4 had one on the short arm and two on the long arm. Chromosome 6 had a red/orange band at the nucleolar organizer region and two bands on the long arm, and chromosome 7 had a red/orange band on the long arm that corresponds to the regular knob region shown by acetocarmine squashes of microsporocytes at pachytene stage. Further studies of the other chromosomes are in progress.

The regions banded by the acridine orange-BuDr technique appear to correspond to the Giemsa-banded regions reported last year in the News Letter. The red/orange bands are late-replicating, indicating that there are more heterochromatic regions revealed by acridine orange than by the conventional acetocarmine technique. If acridine orange bands are the same as G bands, then the G bands are also late-replicating.

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Ultrastructure of the pollen grain ectexine of maize and its relatives — The present investigation using electron microscope methods has revealed that the pollen grain ectexines of "pure races" of maize and teosinte have very similar patterns of evenly distributed ectexine spinules at the ultrastructural level. This ectexine pattern was also found among some re-investigated fossil pollen grains (approximately 80,000 years old) from the deep-core samples from Mexico City (U. C. Banerjee, Ph.D. Thesis, Harvard Univ., 1973); these fossil pollen grains were previously described by Barghoorn and Wolfe (M.G.C.N.L. 27:17, 1953) and by Barghoorn, Wolfe and Clisby (Harvard Bot. Mus. Leaflet 16:229, 1954). Similar ectexine patterns were also recorded in fossil maize pollen from Gatun Basin, Panama, by A. S. Bartlett (Ph.D. Thesis, Harvard Univ., 1967) and by Bartlett, Barghoorn and Berger (Science 165:389, 1969) and in some archaeological pollen grain samples from Tehuacán Valley, Mexico, and from surface level at the site near