THE UNIVERSITY OF WESTERN ONTARIO
London, Canada
Department of Botany

1. Enzyme treatment of chromosomes.

A preliminary investigation into the effects of trypsin on maize chromosomes is being undertaken as an undergraduate research project. The experiments were suggested by the work of Trosho and Wolff (J. Cell Biol. 26, 1965), who succeeded in observing multistrandedness in metaphase chromosomes of Vicia faba root tips.

Modified Trosho and Wolff techniques were adopted to microsporocytes; the anther smear was made in a trypsin solution (0.1 mg/ml of 0.01 M phosphate buffer, pH 7.2), incubated for one hour at 32°C, air dried and stained in Feulgen. Compared to controls, incubated in the buffer and treated similarly, the enzyme treated chromosomes showed in all stages of division a "fraying" and "blurring", the effect being most noticeable for cells in diplotene. Although multistrandedness may occur, no cells demonstrated an organized arrangement of strands.

Studies are also being conducted on mitotic chromosomes and interphase nuclei from root tip and tapetal cells. A cursory examination has not revealed an effect as found for the sporocytes.

It is hoped that further observations may be performed on sporocytes exhibiting anaphase bridges and large translocation regions. Comparative digestion studies on metaphase chromosomes of mitosis and meiosis I and II are also underway.

Edward J. Ward

2. Refined smear technique for obtaining large numbers of metaphases in corn root tips.

This is an amended recipe of the technique which appeared in the Maize Genetics Cooperation News Letter, 40:146-147, 1966:

Step 1: The seeds can be grown on 2% agar or on vermiculite in a Petri dish. A 10 mm radicle will be produced within 40 hours.

Step 2: Transfer 10 mm radicles to a Petri dish containing a 0.2% aqueous tween 80 colchicine solution and incubate 8 hours.

Step 5: Hydrolyze in 1N HCl at 60°C for 25 minutes.

Step 6: Stain in leuco-basic fuchsin until the root tip is deeply colored.