

specifically damaging newly replicated chromosome or chromosome regions.

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2. Precise chromosome movements prior to somatic metaphase in maize.

Light and electron microscope observations of early somatic prophase have shown that the chromosomes of maize are attached to the nuclear membrane. The numerous attachment points are apparently randomly distributed along the chromosomes but include the telomeres and centromeres of the chromosomes observed.

The somatic chromosomes were clearly visible during early prophase where they were organized in a polarized bouquet arrangement reminiscent of their previously held anaphase configuration. The chromosome arms were projected toward one end of the nucleus and the centromeres were found located at the other pole of the nucleus.

The centromeres of the prophase chromosomes were observed to move in a coordinated fashion from the "centromere pole" of the nucleus, along the nuclear membrane, to occupy an equatorial position by late prophase. The chromosomes then moved inward toward one another along the equatorial axis of the nucleus to form the new metaphase plate. This chromosome movement established the plane of the new metaphase plate at right angles and equatorial to the long axis of polarization of the prophase nucleus. Consequently, the plane of cell division was established along the axis of the polarization of the nucleus.

John D. Horn

3. The absence of nonhomologous associations of somatic chromosomes in maize.

All possible distance combinations of the ten pairs of somatic chromosomes of maize were accumulated for four cold arrested stocks