

over between K10 and the centromere. It is not known whether treatment at pachytene reduces crossover frequency; further studies are in progress.

It is hoped that this report will draw attention to the apparent potential value of ethanol treatment techniques for the study of meiotic chromosome structure and behavior.

Stocks which have so far been subjected to ethanol treatment include KYS and Coop stocks heterozygous and homozygous for K10 and elongate (e1). Similar effects were observed in all stocks with the following astonishing exception: frequent bivalent interlocking at diakinesis was found in a 24-hour sample from one e1 plant. This is described below.

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Induced bivalent interlocking — In a sporocyte sample from a phenotypically e1 plant collected and fixed 24 hours after initiation of ethanol treatment (described above), clear bivalent interlocking at diakinesis was frequent. Diakinesis material collected from this plant before treatment appeared completely normal. From the affected sample 15 cells each showed two pairs of bivalents interlocking, four cells showed three pairs interlocking and four cells each had a chain of three interlocked bivalents; only nine cells were seen which had no evidence of interlocking at diakinesis. Many cells (119) contained chromosomes too clumped for analysis, and many of these may have been interlocked. Only five metaphase I cells were available in squash preparations from this sample; of these, one cell showed two sets of apparently interlocked bivalents, and one cell showed one pair of such bivalents.

It is unlikely that cells at diakinesis 24 hours after treatment initiation were less advanced than pachytene (complete synapsis) at the time of treatment initiation. Thus, bivalents probably already completely synapsed at treatment seem to have been induced somehow to interlock by diakinesis in many cells.

It is not known whether the e1 trait expression is in any way related to the bivalent interlocking seen. No such interlocking has been seen in diakinesis slides from another e1 plant similarly treated or from any other treated plants. Further studies are underway.

Marjorie Maguire

Possible clustering within anthers of sporocytes with crossovers in specific regions — A common impression among cytogeneticists who have examined large numbers of sporocytes in smear preparations is that cells with cytologically recognizable products of crossing over in specific regions tend to be found close together in pairs or larger clusters. This is unexpected since anther contents