

which add to or delete from the original length are not mathematically equivalent; however, we have not resolved their statistical equivalency to the present.

Giannelli, F. and R. M. Howlett 1967 Cytogenetics 6:420-435.
W. G. Fillion

6. Somatic association: the effects of various methods of arresting spindle-fiber development.

Driscoll and Darvey (1970), Avivi, Feldman and Bushuk (1969) and Back and Zang (1969) have suggested that the presence of somatic association of homologous chromosomes at metaphase is to some extent determined by the chemical treatment used to accumulate metaphase figures for the study.

Avivi, et al. using colchicine and cold treatment, noted in common wheat, Triticum aestivum L, that somatic association of homologous chromosomes detected at metaphase after using cold treatment was not observed when the experiment was repeated using colchicine instead of cold to arrest spindle-fiber development.

We have studied all possible homologous and non-homologous associations of chromosomes in a normal single-cross hybrid Seneca-60 using cold (5°C for 24 hrs.), 8-hydroxyquinoline (method of C.C. Chen, 1970), and monobromonaphthalene (method D. Weber as modified by J. Miles) to arrest spindle formation. For procedural and statistical considerations, see Horn and Walden (1970).

Fifty circular metaphase spreads in which the chromosomes were non-overlapping, well squashed and in the same focal plane were selected for each study. The results are presented in Table 1.

Table 1
Mean distances between homologous chromosomes

Treatment	Chromosome Number									
	1	2	3	4	5	6	7	8	9	10
8-hydroxy-quinoline	.420	.331*	.406	.479	.421	.448	.481	.473	.418	.417
Cold Treatment	.491	.390*	.379*	.380*	.413	.423	.352*	.411*	.412*	.407
Monobromonaphthalene	.463	.434	.466	.460	.503	.402*	.490	.456	.424	.415

*indicates positive association $p < 0.05$

NOTE: There is no precise cutoff value for significance as the shape of the frequency distribution of distances between homologues as well as the mean distance is considered in the Kolmogorov-Smirnov statistical method used.

No non-homologous associations were detected. The study was repeated for both the long and short arms of the chromosomes. Similar results to those shown above were obtained.

Literature Cited

- Avivi, L., Feldman, M., and Bushuk, W. 1969. The mechanism of somatic association in common wheat, *Triticum aestivum* L. I. Suppression of somatic association by colchicine. *Genetics* 62:745-752.
- Back, E., and Zang, K. D. 1969. Quantitative studies on the arrangement of human metaphase chromosomes. II. Influence of the preparation techniques on other association pattern of the acrocentric Chromosomes. *Cytogenetics* 8:304-314.
- Chen, C. C. 1969. The somatic chromosomes of maize. *Canadian Journal of Genetics and Cytology*. Vol. XI, 3:752-754.
- Driscoll, C. J., and Darvey, N. L. 1970. Chromosome Pairing: Effect of Colchicine on an isochromosome. *Science* 169:290-291.
- Horn, J. D. and Walden, D. B. 1970. Somatic association as a general phenomenon in maize. *MGCNL* 44.
- Miles, J. Personal communication.

J. D. Horn