

tive positions each of these extracted chromosomes occupy in the normal complement of T. dactyloides are also included to facilitate their identification.

W. C. Galinat
B. G. S. Rao
P. Chandravadana

17. Internuclear variability in the form and pairing behaviour of the homeolog for corn chromosome II derived from T. floridanum.

Analysis of 35 pachytene nuclei from microsporocytes of six 20+2 Lg G1 plants, in which the added chromosome pair is derived from T. floridanum, revealed the presence of two distinct chromosome types of tripsacum in different sister nuclei. Their morphological features and that of chromosome 9 of T. dactyloides, all of which are homeologous to corn II, are compared in Table 1.

Table 1

Source of extraction	Length in microns			Arm ratio
	short arm	long arm	Total	
T. dactyloides:	7.7	13.2 (TK)	22.3	1.7
T. floridanum:				
*Type 1	6.6	11.4 (TK)	19.2	1.7
*Type 2	5.7	15.4 (TK)	22.3	2.7

*Represent averages of 21 and 14 observations, respectively, for types 1 and 2; TK - terminal knob present.

In addition to the types 1 and 2, the following variations with respect to the extra chromosome pair were also observed in some of the pachytene nuclei:

- (a) partial or total asynapsis of the long arms with one of them loosely paired with a corn bivalent;
- (b) heteromorphy for only the terminal knob accompanied by asynapsis in that region;

- (c) deficiency for the terminal knob and part of the long arm, leaving the normal homologue as a univalent; the deficient segment of this pair occurs terminally in the short arm of a corn bivalent (probably chromosome X), which therefore assumes heteromorphy; occasionally the two heteromorphic bivalents pair in the univalent regions bearing the terminal knob; the expected quadrivalents, however, are not found in later stages;
- (d) Homomorphic but devoid of the two terminal knobs; these are located terminally on two univalent chromosomes of the corn genome within the same nucleus.

Because of the close similarity of type 1 of T. floridanum with the chromosome extracted from T. dactyloides, it is probably the unaltered form of the homeolog. Such an interpretation would also be consistent with the regular and normal pairing reported in the F_1 of T. dactyloides x T. floridanum (Tantravahi, 1968) at least in so far as this chromosome is concerned. Consequently type 2, which has a higher arm ratio resulting from an increased length of its long arm, has to be regarded as the derived condition, which in all probability is related to the variations described under (a) to (d).

Occurrence of types 1 and 2 as well as the phenomena (a) to (d) among sister nuclei of the same anther seems to indicate that these chromosomal alterations took place in the pre-pachytene nuclei. Natural fragmentation and reunion of the bits resulting repeatedly in the same types of altered forms seems improbable, unless we assume some sort of break-susceptibility of particular regions on the concerned chromosomes.

B. G. S. Rao
W. C. Galinat

18. Spontaneous duplication of the nucleolus organizing body of chromosome VI in the genome of maize.

Supernumerary nucleoli were observed in the pollen mother cells of Lg gl plants which were derived from an interchange between the short arm of chromosome II of the recessive maize parent and its homeolog from T. dactyloides (chromosome 9) carrying the dominant alleles Lg₁ and Gl₂.