*The spreading quality of the chromosomes is indicated by the indexes 0-4; 0 stands for very poorly spread chromosomes; 4 for the best spreading.

**K stands for reasonably large knob; C indicates a consistently prominent chromomere. When they are heterozygous, K and C are accompanied by parentheses.

+In the long arm of chromosome 6 no case has been found of a knob in its median region: the C cases reported refer to the proximal and distal chromomeres.

#The nucleolar organizer type 1 has its main activity at the distal portion of the body (toward the satellite region); type 2 is chiefly active near the middle of the body.

From the data so far obtained it appears that the lines of different varietal origin are generally characterized by specific knob formulas, whereas the contrary is generally true for lines derived from a given variety.

M. Vetturini

5. Relationships between gametophyte factors and markers of chromosome 9.

Self-pollination of plants derived from normal seeds of Ga Wx/ga wx selfed ears has given, over a period of ten years, 54 ears with about 25% of wx kernels plus 600 ears showing no wx kernels or a severe deficiency of them (about 4% of wx). These figures permit calculation of a crossover rate of about 8.7% for the distance between Wx and the Ga factor detected by the senior Author.

A similar procedure for the repulsion phase Ga wx / ga Wx (independently found by Schwartz and Salamini) leads to an estimate of 13% as a c.o. distance between Wx and ga (566 ears with a large excess of wx, 161 with 25% wx kernels, 105 ears with no wx, and 5 ears with a great deficiency of wx). As reported in the 1966 MNL, this Ga factor has been located between Wx and Bz, at about 2/3 of the Wx-Bz distance from Wx.

Selfed ears of plants Ga sh C/ga Sh c exhibit an excess of sh (about 37.2%), and a deficiency of c (15.6%). If ga gametes are assumed not to function at all (as indicated by other results), these data confirm the median position of ga, at a distance of about 25 c.o. units from sh, and 31 from c. A distance of the same order of magnitude from sh is indicated for ears of selfed plants of the genotype Ga Sh/ga sh that show 12% of sh kernels.

An additional chromosome 9 marker, exhibiting close linkage with ga, is an albino seedling factor (w). Selfed ears of plants Ga Wx/ga wx gave the following results (only 1/3 of the Wx kernels were planted):

Wx kernels		wx kernels	
Normal seedling	Albino seedling	Normal seedling	Albino seedlings
889	1	28	47

The data indicate that the albino factor is closer to Ga than wx; they also permit an estimate of the c.o. value between wx and w (about 2 ± 0.3%).

If ga gametes do not function, the percentage of the w seedlings (about 2%) doubled (4%) provides an estimate of the c.o. value between w and ga.

The distance wx - w is also obtainable from the following data derived from an F_2 in which the Ga - ga pair is absent:

Linkage phase	Wx W	Wx w	wx W	wx w	c.o. ± st. error
R	2021	977	887	4	7 ± 1
C	311	3	0	110	less than 1

Since the wx - w distance varies approximately between 0 and 7 c.o. units, the linkage map of the genes in the short arm of chromosome 9, on the basis of the available data, is tentatively as follows:

C 3 Sh 2 Bz (?) Ga_8 (Schwartz and Salamini) 0 (?) Ga (Bianchi) (=Ga_8?)

4 (?) W 0-7 Wx.

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R. Parlavecchio

6. Linkage relationships for endosperms and seedling traits.

In the 1966 MNL, data were reported on a shrunken mutant showing a cross-over per cent of 32.5 with gl_3 and 18.7 with gl_4. The data suggested a close linkage between this shrunken type and su_1. This has been confirmed by the scoring of ears obtained from the self-pollination of plants derived from su and sh kernels on selfed ears of plants of the constitution Su sh/su Sh: only 2 ears out of 92 proved to be su su Sh sh or sh sh Su su, with the recovery of the double recessive.

Another case of close linkage is offered by the following data (F_2, repulsion phase):

Gl_1 Ij	gl_1 Ij	Gl_1 ij	gl_1 ij
6042	569	536	0