

Two-point linkage data for *wx1*- and *Wx1*- marked translocations in the Maize Genetics Cooperation Stock Center's collection: Ten years of data collected and compiled by Janet Day Jackson (1958-2010).

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This report summarizes the results of linkage tests between translocation breakpoints (*T*) and *wx1* for *wx1*- (Table 1) and *Wx1*-marked (Table 2) translocations in the Maize Genetics Cooperation Stock Center's collection. Special attention was given to those translocations for which *T* – *wx1* recombination data had not previously been reported. See Anderson (1938. *Genetics* 23:307-313), Patterson (1952. *MNL* 26:8-12), Patterson (1958. *MNL* 32:54-66), Anderson *et al.* (1965. *MNL* 39:106-109), Jackson (2000. *MNL* 74:70), Jackson *et al.* (2001. *MNL* 75:68-71), Jackson *et al.* (2002. *MNL* 76:65-67), and Jackson *et al.* (2002. *MNL* 76:67-68) for previous reports of *T* – *wx1* recombination data.

Linkage crosses were set up as indicated in Tables 1 and 2. Kernels from test cross ears were separated into starchy and waxy classes, planted in our summer crossing nurseries, and the resulting plants were self-pollinated. Selfed ears were scored for heterozygous (*Wx*) vs. homozygous (*wx*) *wx1*, and for normal (*N*) vs. semisterile (*¥*) seed set. Values and standard errors for the percent recombination between *wx1* and the translocation breakpoints were calculated according to the method of Coe (1994. pp. 189-197 in *The Maize Handbook*, Freeling M and Walbot V, eds., Springer-Verlag, New York).

In theory, linkage values should be the same for a given translocation regardless of genetic background (M14 or W23) or whether the translocation is marked with *wx1* or *Wx1*. In many instances this is the case; however, there are some exceptions. In some instances, the genetic background could have an effect (Patterson EB, 1952. Ph.D. Dissertation. California Institute of Technology, Pasadena, CA). In other instances, it is possible that a planting error resulted in the substitution of one translocation for another during propagation. Where possible, linkage tests have been conducted with genetic markers on the relevant chromosome arms to at least confirm the chromosomes involved in the translocations. See Janet Day Jackson *et al.*'s numerous *MNL* reports (1998. *MNL* 72:79-81; 1998. *MNL* 72:81-82; 1999. *MNL* 73:86-88; 1999. *MNL* 73:88-89; 2000. *MNL* 74:67; 2000. *MNL* 74:67-69; 2001. *MNL* 75:67; 2001. *MNL* 75:68-71; 2002. *MNL* 76:65-67; 2002. *MNL* 76:67-68; 2003. *MNL* 77:79; 2003. *MNL* 77:80; 2004. *MNL* 78: 65-66; 2005. *MNL*. 79:47; 2005. *MNL*. 79:48; 2006. *MNL*. 80:29; 2006. *MNL*. 80:30; 2010. *MNL* 84: in press) for summaries of these data.

Table 1. Two-point linkage data for *wx1*-marked translocations in the Stock Center's collection. The inbred conversion used in the linkage tests is indicated (M14, W23, or combined M14 and W23 data).

Testcross: *wx1 N X [Wx1 N X wx1 T]*

Translocation	Breakpoints	Parentals		Recombinants		Totals	% recombination <i>T - wx1</i>
		Wx N	wx Y	Wx Y	wx N		
wx1 T1-9c ^W23	9L.22 1S.48	442	448	39	30	959	7.2 +/- 0.8
wx1 T1-9(5622) combined data	9L.10 1L.10	331	252	48	36	667	12.6 +/- 1.3
wx1 T3-9(8562) ^W23	9L.22 3L.65	527	516	23	16	1082	3.6 +/- 0.6
wx1 T5-9(022-11) ^M14	9L.27 5S.30	111	115	5	5	236	4.2 +/- 1.3
wx1 T5-9c ^W23	9L.10 5S.07	96	98	5	5	204	4.9 +/- 1.5
wx1 T5-9d ^M14	9L.10 5L.14	70	73	2	6	151	5.3 +/- 1.8
wx1 T5-9d ^W23	9L.10 5L.14	104	108	7	8	227	6.6 +/- 1.6
wx1 T6-9e ^W23	9L.24 6L.18	171	169	25	13	378	10.1 +/- 1.5
wx1 T8-9d ^M14	9S.16 8L.09	42	42	4	0	88	4.5 +/- 2.2
wx1 T8-9d ^W23	9S.16 8L.09	209	196	8	4	417	2.9 +/- 0.8
wx1 T9-10(059-10) ^W23	9S.13 10S.40	166	125	6	5	302	3.6 +/- 1.1

Table 2. Two-point linkage data for *Wx1*-marked translocations in the Stock Center's collection. The inbred conversion used in the linkage tests is indicated (M14, W23, or combined M14 and W23 data).

Testcross: *wx1 N X [wx1 N X Wx1 T]*

Translocation	Breakpoints	Parentals		Recombinants		Totals	% recombination <i>T - wx1</i>
		Wx ♀	wx N	Wx N	wx ♀		
Wx1 T3-9c ^W23	9S.20 3S.15	243	200	8	8	459	3.5 +/- 0.9
Wx1 T5-9c ^M14	9L.10 5S.07	484	467	10	40	1001	5.0 +/- 0.7
Wx1 T5-9c ^W23	9L.10 5S.07	348	372	44	49	813	11.4 +/- 1.1
Wx1 T6-9b ^W23	9S.37 6L.10	475	475	15	13	978	2.9 +/- 0.5
Wx1 T7-9(4363) ^M14	9.ctr 7.ctr	906	854	18	23	1801	2.3 +/- 0.4
Wx1 T9-10(8630) ^M14	9S.28 10L.37	388	406	9	19	822	3.4 +/- 0.6
Wx1 T9-10(8630) ^W23	9S.28 10L.37	232	201	6	3	442	2.0 +/- 0.7