Confirmation that the *sn* locus is between *Aldo* and *Gal2* in linkage group VII of pea

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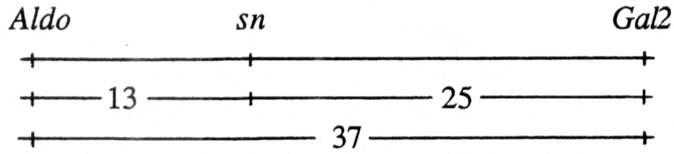
Sn is one of three complementary dominant genes *Sn, Dne* and *Ppd* which together confer the ability to respond to photoperiod and a late flowering habit in pea (1-4). The recessive mutant allele *sn* causes a loss of the photoperiod response, and common early flowering, day neutral cultivars such as Sparkle, Massey, Alaska and Progress #9 are homozygous for this allele (2, 5, 7). Weeden et al. (7) reported very close linkage between *sn* and the amylase locus *Amyl* leading to placement of the *sn* locus between isozyme loci *Aldo* and *Gal2* in the lower section of linkage group VII in recent maps (e.g. 8).

We have recently obtained data from cross HL249 $(Aldo^{S}\ Sn\ Gal2^{S})$ x Sparkle $(Aldo^{F} sn\ Gal2^{F})$ which confirm that location. Monohybrid segregation for *Aldo* and *sn* was in good accordance with expectation ($P>0.5$), but segregation for *Gal2* was mildly disturbed ($P<0.01$). The dihybrid segregation data (Table 1) indicate linkage between all markers and generate the following map:



These results are in reasonable accordance with, and thus support, the 1993 (8) and current (9) maps for this section of the pea genome. Whether *sn* is located above or below *Amyl* remains undetermined.

Table 1. Dihybrid segregation data from the F_2 of the cross HL249 $(Aldo^{S}\ Sn\ Gal2^{S})$ x Sparkle $(Aldo^{F} sn\ Gal2^{F})$. The plants were grown under an 8-h photoperiod to allow unequivocal recognition of *Sn* and *sn* segregants. The data were analysed using the program LINKAGE1 (6).

Gene pair	Phenotype[1]									Total	Linkage Chi-square	Recomb Fract.	SE
	DF	DH	DS	RF	RH	RS							
Sn - Aldo	6	33	17	16	4	0				76	35.10**	13	4
Sn-Gal2	3	24	29	8	10	2				76	18.70**	25	6
	FF	FH	FS	HF	HH	HS	SF	SH	SS				
Aldo – Gal2	5	13	4	6	15	16	0	6	11	76	10.27*	37	3

[1] D = dominant, R = recessive, F = homozygous fast, H = heterozygous, and S = homozygous slow. The first named locus is shown first.

*, ** $P<0.05$ and 0.0001, respectively.

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