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Linkage data on two new swine-requiring mutants, one of which is a new locus, serine-5 (ser-5).

Five swine-requiring mutants were isolated by filtration enrichment (Woodward, de Zeeuw ond Srb 1954 Proc. Nat. Acad. Sci. U.S.A. 40: 192) following ultraviolet irradiation to 20% survival of A, al-2; cot-1 conidio Two of these mutants hove now been located on separate linkage groups: ser(JBM 4-13) mops on linkage group VR, near met-3; ser(JBM-9) maps on linkage group IIIR, near trp-1. Linkage data are given in Tables 1 ond 2.

Mutant stock A, al-2 (15300); cot-1 (C102t); ser (JBM 4-13) was crossed to FGSC#780: a; his-1 (K744), met-3 (361-4). Stock A; ser (JBM-9); cot-1 (C102t) was crossed to FGSC#190: a; sc (5801), trp-1 (10575) and to FGSC#116: a, ser-1 (H605). Crosser were mode on Westergaard-Mitchell medium (1947 Am. J. Bot. 34: 573) containing 2% sucrose and supplements as required by the strains used in each cross. Random spores were spread on 4% agar plates. Single spores were isolated onto small slants of appropriately supplemented Vogel's medium containing 2% sucrose, heat shocked at 60°C for one hour, and incubated at 25°C.

Crosser of ser(JBM 4-13) were characterized by a disproportionate frequency of the wild-type allele of this locus, apparently due to an unusually high frequency of vegetative reversion of ser(JBM 4-13) (Maxwell and Bengston, to be published). The assymetry observed between reciprocal classes of progeny is minimized by restricting results to those obtained from spores transferred one to five days after germination, as in the data shown in Table 1. The mutant ser(JBM 4-13) maps within the same region as ser-2 and tests of allelism are now in progress.

In crosses involving ser(JBM-9), cot-1, the spore germination frequency showed a bell-shaped distribution. Spores isolated 26 days after co-inoculation of the parent cultures onto supplemented crossing medium had a germination frequency of 68%. The frequency increased with time to a maximum value of 90-92% between 33-39 days. The germination frequency declined to 53% by day 44 and was 12-18% after day 64. Soaking the aged spores in distilled water (Strickland and Perkins 1973 NN#20: 34) did not improve the germination frequency, as it has for most other crosses performed by this laboratory. Most data used for mapping ser(JBM-9) were collected from spores less than 40 days old, when the germination frequency was 68-93%.

Table 1. Linkoge data on random spores isolated from the cross: ser(JBM 4-13) x his-1, met-3.

zygote genotype	parental	Recombination: single region I	single region II	double region I and II	total	% germination
his-1 met-3 +	108	3	2	0	254	89-95
+ + ser(JBM 4 - m	120	13	7	1		
6.6 3.5						

Table 2. Linkage data on random spores isolated from the cross ser(JBM-9) x sc, trp-1.

zygote genotype	parental	combination	single region I	single region II	double region I and II	total	% germination
sc + trp-1	374	131	7	0	1041	63.5	
+ ser(JBM-9) +	393	130	3	3			
25.4 1.2							

A cross between ser(JBM-9), cot-1 and ser-1 indicated a map distance between ser-1 and ser(JBM-9) of 12.1 map units (20+/330 germinated spores, germination frequency 53-86%.) This result is consistent with the gene order sc, ser-1, ser(JBM-9), trp-1. The evidence presented is considered sufficient to assign ser(JBM-9) as a new serine locus, rer-5. Mapping of the remaining three mutants is in progress.

We are grateful to Mr. Paul West, who assisted in the mutant isolation. This work was supported by on NSF Institutional Grant to JBM. ■ ■ ■ Deportment of Biology, California State University, Northridge, CA 91324.