numbers. (Each data entry has N=500 females approximately.) While there was some heterogeneity between strains and their outcross progenies, these data inform us of any third chromosome effects persisting through various genetic background changes. We may note that ST/ST females are more receptive than the karyotypes containing WT at both temperatures by about the same amount (8-10%). In comparing temperatures, females are generally more receptive when cultured at cool than at warm temperature, in contrast with the population from McDonald Ranch. Thus there is no temperature sensitivity differentially affecting female receptivity of these karyotypes. Among the F_2, however, pooling both mated and unmated females together, as given at the bottom of Table 1, indicate frequencies of emergence, differential temperature effects for what amounts to preadult viability: WT/WT karyotype is apparently at a 10% disadvantage at warm temperature, while the ST/ST has a 20% disadvantage at cool, with heterokaryotype (WT/ST) relatively unaffected throughout. However at 25° it was just two of the 5 sets of segregating progenies that showed a significant deficiency of WT/WT, while at 15° two different sets of progenies displayed a significant deficiency of ST/ST.

Thus chromosomal polymorphs in this population contrast with those in the Napa Valley (McDonald Ranch) in these respects at least: (1) James Reserve population has no apparent seasonal cycle of karyotypes, and female receptivity is not temperature sensitive differentially by chromosomal arrangement. (2) The commonest arrangement in this population (ST) contributes to fast receptivity among females of some strains irrespective of temperatures. (3) Preadult viability is temperature sensitive in some strains, favoring ST at warm and WT at cool.

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References: Moore, J.A., C.E.Taylor & B.C.Moore 1979, Evolution 33:156-171; Yu, H.F. & E.B.Spiess 1978, Genetics 90:783-800.

Spiess, E.B. University of Illinois, Chicago, Illinois. Low female receptivity factor(s) on chromosome 3KL of D.persimilis.

Strains of D.persimilis collected at McDonald Ranch, California, in 1975 and characterized for speed of female receptivity ("switch-on:) by Yu & Spiess (1978) were surveyed for α-amylase variants. Of 3 KL kinlines with amy-1.09, two (lines McD-4 and McD-11) were lowest in receptivity of 19 kinlines tested, while the third was equal to the remaining 16 kinlines (with amy-1.00). We had concluded that KL/KL and KL/MD females matured faster on the average than MD/MD females when cultured at 25°. Thus it became of interest to determine whether the low receptivity in the two amy-1.09 lines was due to a factor (or factors) linked to the KL arrangement (chromosome 3) or to an independent factor(s) on a honhomologous chromosome. Since one KL line (McD-17) with amy-1.09 had the high receptivity characteristic of the remaining KL lines, there was no need to postulate association of the amy-1.09 variant with low receptivity behavior.

Crosses were made in the following manner designed to test for association between low receptivity and the KL arrangement chromosome using amy-variants as markers. Each KL line was outcrossed to a line (McD-33, KL, amy-1.00) that has highly receptive females. G_1 progeny males (McD-4/33 or McD-11/33) were backcrossed to the parent line females:

Table 1. Association contingencies for backcross progeny females.

	A			B			C			D		
	Amy-1.09	1.09/1.00	Sum	Amy-1.09	1.09/1.00	Sum	Amy-1.09	1.09/1.00	Sum	Amy-1.09	1.09/1.00	Sum
M	12	38	50	32	41	73	14	24	38	19	14	33
NM	30	20	50	23	19	42	30	21	51	9	11	20
			100			115			89			53
	χ^2 = 13.3, P < 0.01			χ^2 = 1.3, n.s.			χ^2 = 4.21, P = 0.04			χ^2 = 0.8, n.s.		

Backcross A = G_1 (4/33) males x McD-4 females C = G_1 (11/33) males x McD-11 females
B = " " " x McD-33 females D = " " " x McD-33 females.

Since there is no expected crossing over in males, association between chromosome 3 and receptivity speed can be ascertained with a 2x2 test. Backcross progeny females were aged for 2 days at 25° and tested for receptivity with fast courting doublecross hybrid males (Yu & Spiess 1978), in lots of 20 pairs per mating chamber. After 30 minutes, females mated (M) or not mated (NM) were electrophoresed and determined by amy-variant genotype to be either homozygous (amy-1.09; amy-1.00) or heterozygous (1.09/1.00). Association contingencies given in Table 1 show the numbers of females in each category.

It is clear from the "control" backcrosses to line McD-33 (B & D in the table) that there is no significant difference between the heterozygous females and homozygous McD-33. With both lines McD-4 and McD-11 however receptivity is at about 30% compared with more than 62% mating in the controls. Thus after recombination of whole chromosomes in G_1 males, factors for low receptivity are still associated with the particular line's KL arrangement chromosome.

References: Yu,H.F. & E.B.Spiess 1978, Genetics 90:783-800.

Spiess,E.B. & L.I.Salazar. University of Illinois, Chicago, Illinois. Age of males as a factor in female mate choice in D.melanogaster.

Previously in this laboratory it has been shown that females of D.melanogaster with red (R) (bw^{75}/bw^{75}; st/st) and orange (O) (bw^{75}/bw; st/st) eye color tend to accept the type of male that is not the first to court, presumably because they become conditioned against signals from that male's type (Spiess 1982a,b; Spiess & Schwer 1978; Spiess & Kruckeberg 1980). In earlier tests, flies of both sexes were aged for 5 days posteclosion, while they were aged 3 or 4 days in the more recent tests. One contrasting point between earlier and later tests, in addition to those points emphasized by Spiess (1982b), was that the red (R) and orange-eyed (O) males tended to mate about equally (55% R: 45% O) in the earlier tests; in later tests, O males were significantly less successful than R, especially when flies were more inbred (O males mated 25-28%), while outcrossed O males mated more (35%).

Experiments by Long, Markow, and Yaeger (1980) indicated that males mated at higher frequency with increasing age. Thus a control factor that could account for earlier test results was male age. If the R males had a sexual advantage over O during the first two or three days of the adult, it might diminish as both types approach 4-5 days posteclosion, since the latter might catch up with the former within a day. Eye color of these mutants darkens within that period of time, though they are always distinguishable. Thus perhaps a day's difference in visual ability or other factors of maturation during the first 4 days of the adult could be minimized by testing the O type when a day or two older than the R type male.

Table 1. Experiment 1: matings with all males 3 days old.

Female	Male first to court	Total matings male mated R	Total matings male mated O	Excluding trials where one male only courted R	Excluding trials where one male only courted O	χ^2 c
R	R	23	15	12[a]	15[b]	5.9
	O	18	11	18[b]	5[a]	
O	R	44	11	16[a]	11[b]	4.7
	O	20	10	20[b]	3[a]	
	Total:	105	47	66	34	

a=Total x first male to court = 36; b=Total x second male to court = 64; c=Chi-square contingency on trials where both males courted.

Flies of R and O were cultured with the same method as that used by Spiess & Kruckenberg (1980). Mutant strains bw^{75};st and bw;st homozygote males were first outcrossed to Lausanne-Special (LS) wild type females that had shown positive female conditioning (discrimination ability) previously (Spiess 1982a), and progeny (G_1) were inbred to produce recombinant G_2 homozygotes of red and white eye color (Spiess 1982b). Crossing G_2 red x white gave orange-eyed progeny that were then backcrossed male O x female R. On emergence flies were sexed and