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Incomplete dominance in hybrids from D. melanogaster adapted to DDT or NaCl.

Strains have been selected for adaptation to extreme environments, DDT or NaCl in the food. An ebony (e) strain is adapted to .60g DDT/100cc H_2O of a commercial 50% wettable powder. A vestigal (vg) strain is adapted to 8% NaCl. "Instant medium" (Carolina) is used by adding H_2O or a specified solution of DDT or NaCl to an equal volume of dry medium. Each strain is intolerable to the maximal stress environment of the other strain but grows well on normal food. There is no obvious effect of DDT in surviving e flies. The vg flies are very small when subjected to 8% NaCl and the wings have become much longer than non-adapted vg at any temperature or salinity of food. Disposable culture containers, "cartons" and "cups" used for this work are described in Moyer and Yarbrough (1969).

In this study, virgin e and vg females were collected within the first two days from normal food cultures. After ageing for two or three days mating chambers (paper cartons containing only a small cup of food) were employed for three mating groups: 1. 24 e couples and 24 vg couples; 2. 10 e couples and 40 vg couples; 3. 40 e couples and 10 vg couples.

After 24 hours, the e and vg females were transferred separately (without males) to "egg collection chambers". Eggs were collected on an agar-acetic acid-alcohol mixture (Delcour, 1969) in a plastic "cup" cover with a thick yeast suspension on the surface. Egg laying caps were changed daily. Eggs and the agar from the cap were transferred to half pint paper cartons containing medium with the desired concentration of DDT or NaCl. Preliminary results in the table show the proportions of wild type progeny which resulted from e (DDT) x vg (NaCl) matings as detected from the first brood of eggs on normal food, in relation to females mated by males of their own strain. Of course, the proportion of heterogamic matings was influenced by competitive disadvantages of mutants and the proportions of parents of each strain.

In any case, the most striking consequence is the very low proportion of heterozygotes which survive on DDT in contrast to ebony progeny from DDT adapted parents. Furthermore the body size of these wild types was much smaller than e progeny.

Survival of progeny in various environments.

Daily Brood	Food	Progeny of 24 e ♀♀ + ♂♂ / 24 vg ♀♀ + ♂♂			Progeny of 10 e ♀♀ + ♂♂ / 40 vg ♀♀ + ♂♂			Progeny of 40 e ♀♀ + ♂♂ / 10 vg ♀♀ + ♂♂		
Separated e ♀♀ (after mating)		e	+	vg	e	+	vg	e	+	vg
1	Normal	96	221		14	70		138	87	
2	.35 DDT	115	5		26	7		222	0	
3	.45 DDT	109	11		10	14		99	1	
4	.30 DDT	150	25		23	12		246	16	
5	.40 DDT	152	5		30	13		213	21	
Separated vg ♀♀ (after mating)										
1	Normal		165	244		130	283		205	106
2	6 NaCl		56	79		63	108		47	24
3	8 NaCl		8	4		2	3		1	1
4	5 NaCl		59	34		89	187		65	64
5	7 NaCl		28	31		14	20		21	23

Less clear, so far, is the viability of hybrids on NaCl compared to vg salt adapted progeny in the same cultures.

References: Delcour, J., 1969 DIS 44: 133; Moyer and Yarbrough, 1969 Am. Biol. Teacher 31: 593-596.

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A revised map of genes in the proximal region of the X chromosome of Drosophila melanogaster.

Following the initial report that a Y chromosome ($y^+Ymal^+No.2$) with a duplication for the proximal region of the X chromosome covered at least 10 genes located between M(1)n and bb (Schalet, 1963), two earlier maps of this