Red pigment content in ♀♀ heterozygous for different w mutations as an indication of negative complementation.

w mutations	M*	Conf. limits at $P_{0.05}$	
1. w^-	0.630	0.637 - 0.623	
2. w^{258-45}	0.655	0.677 - 0.633	
3. w^{10gA}	0.579	0.601 - 0.557	suppress z
4. w^1	0.520	0.540 - 0.500	
5. w^{59gA}	0.531	0.550 - 0.512	
6. w^{15gA}	0.520	0.532 - 0.508	
7. w^{57gA}	0.511	0.520 - 0.502	
8. w^{13gA}	0.510	0.518 - 0.502	don't suppress z
9. w^{60gA}	0.487	0.499 - 0.475	
10. w^{69gA}	0.436	0.454 - 0.418	
w^{+32}/w^{+32}	0.632	0.670 - 0.594	

* Means at least of 7 replicas

ities of the use of this phenomenon for investigation of such problems as the structure and function of the locus in question are at present studied.

(I wish to thank Eileen S. Gersh for w^-.)

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The functional w^+ isoalleles revealed by w mutations in D. melanogaster.

Quantitative analysis of red eye pigment content in w^+/w ♀♀ was successfully used for the estimate, more sensitive than visual observation, of the difference in phenotypic action of w^+ alleles from two different stocks of D. melanogaster (Green, Proc. Nat. Acad. Sci. 45: 549-553, 1959). After the radiation-induced mutability of w^+ alleles from wild-type stocks D-32 and D-18 (w^{+32} and w^{+18}, respectively) had been studied (cf. DIS, this issue) the quantitative analysis of phenotypic action of these alleles was undertaken. Simultaneously, the analysis of action of w^+ alleles from ten other wild-type stocks of D. melanogaster was carried out. Gamma-ray-induced mutations w^{10gA} (allele of w^1, suppressing z) and w^{69gA} (pseudo-allele of w^1, not suppressing z) obtained in our radiation experiments were used.

For the quantitative determination of red eye pigments the spectrophotometric method of Ephrussi & Herold (Genetics 29: 148-175, 1944) was used with minor modifications. This involves extraction of pigments from 30 heads (from which the clypeus and proboscis were removed and an incision between the eyes was made) for 48 hours at 25°C with 3 ml of 30% ethanol acidified to pH 2.2 with concentrated hydrochloric acid. After extraction, quantitative analyses of the pigments in 2 ml cuvettes were made with an Jurány-Kovács model (Hungary) extinctiometer at wave length of 480 mμ. The data are expressed as the extinction (E) per 10 heads extracted per 1 ml of solvent. In addition, the determinations of red eye pigments of w^+/w^+ ♀♀ from each stock were made. All flies were fed on standard mannacroup - sultana - molasses - agar - yeast medium at the same level of crowding and were aged for at least 5 days before the analysis.

The results of these analyses are the following. The quantities of red pigment are different in homozygous +/+ ♀♀ from stocks of dissimilar origin. If the latter are set in order of decrease in red pigment content they form the series listed in Table 1. This phenotypic variability may well be explained by concomitant consequences of inbreeding according to Lerner (Genetic Homeostasis, N.Y., 1954), taking into account relatively high homozygosity of laboratory wild-type stocks. The overall heterozygosity of w^+/w^{10gA} or w^+/w^{69gA} ♀♀ smooths out the effect of certain genotypic modifiers and reveals clearly the specific action of major locus (w^+) on the phenotypic trait in question. It may be seen from the Table 2 that the action of w^+ alleles from different stocks is quite different. Analysis of variance of these

Table 1. Red eye pigment content in w^+/w^+ ♀♀ of twelve stocks.

Stocks	M* ± S.E.	Stocks	M* ± S.E.
1. Centre-1	0.903 ± 0.0033	7. Canton-S	0.747 ± 0.0033
2. Swedish	0.840 ± 0.0115	8. P-86	0.747 ± 0.0033
3. Sevelen	0.833 ± 0.0127	9. Magarach	0.710 ± 0.0057
4. Graaff-Reinet	0.833 ± 0.0127	10. Stellenbosch	0.669 ± 0.0137
5. Inozemceva	0.817 ± 0.0033	11. D-18	0.626 ± 0.0203
6. Oregon-R	0.760 ± 0.0152	12. D-32	0.622 ± 0.0141

* Means at least of 3 replicas

Table 2. The functional activity of w^+ of dissimilar origin revealed by two w pseudo-allelic mutations.

w^+ alleles of stocks	w^{10gA} M M*± S.E.	w^{10gA} M of groups Conf. limits	w^{69gA} M*± S.E.	w^{69gA} M of groups Conf. limits
1. Canton-S	0.738 ± 0.0180	0.738 / 0.783 - 0.703	0.642 ± 0.0127	0.642 / 0.668 - 0.616
2. Centre-1	0.683 ± 0.0066		0.503 ± 0.0033	
3. Magarach	0.673 ± 0.0033		0.533 ± 0.0066	
4. Inozemceva	0.647 ± 0.0033		0.507 ± 0.0033	
5. Oregon-R	0.637 ± 0.0228	0.639 / 0.689 - 0.589	0.527 ± 0.0033	0.522 / 0.529 - 0.515
6. P-86	0.637 ± 0.0033		0.513 ± 0.0066	
7. Graaff-Reinet	0.620 ± 0.0057		0.527 ± 0.0066	
8. Swedish	0.620 ± 0.0115		0.547 ± 0.0033	
9. Sevelen	0.617 ± 0.0117		0.517 ± 0.0066	
10. D-32	0.561 ± 0.0198		0.449 ± 0.0067	
11. D-18	0.547 ± 0.0033	0.551 / 0.575 - 0.527	0.447 ± 0.0033	0.451 / 0.463 - 0.439
12. Stellenbosch	0.533 ± 0.0033		0.473 ± 0.0033	

* Means at least of 3 replicas

data permits us to distinguish three groups of w^+ alleles with high (allele of stock Canton-S), middle (alleles of stocks ranging from Centre-1 to Sevelen) and relatively low (alleles of the last three stocks) levels of the functional activity. Alleles of three groups are functional iso-alleles as regards to each other. The w^{+32} and the w^{+18} are seen not to be iso-alleles. It is important that the composition of three groups coincides for ♀♀ heterozygous for both w^{10gA} and w^{69gA}. Then it was concluded that: (i) two studied w mutations are the pseudo-alleles with quantitatively different antimorphic action and (ii) the difference is fundamentally interallelic. Is this difference related to the different position of two w mutants on the genetic map of white locus? The results of experiments designed to obtain the answer to this question are presented in the following note.

(I wish to thank D.J. Nolte for stocks Graaff-Reinet and Stellenbosch.)

Graf, U. and F.E. Würgler. Swiss Federal Institute of Technology, Zürich, Switzerland. Influence of the maternal genotype on the rate of apparent X/O males after irradiation of mature sperm.

Two to three day old R(1)2, y B/y^+ Y males were X-rayed (50keV, 520 R/min) in nitrogen (20 min pretreatment) with 2000 R. Males for nonirradiated controls were only treated with nitrogen. Each sample of treated ring-X males was divided into two groups and every group mated for 7 hours to a different type of female. We used y sn^3 females and "Oster" females (Inscy;dp bw;st p^p). At the end of the mating period the males were discarded and the inseminated females transferred to standard culture vials. In order to get similar population densities we used 2 females per vial in the control series