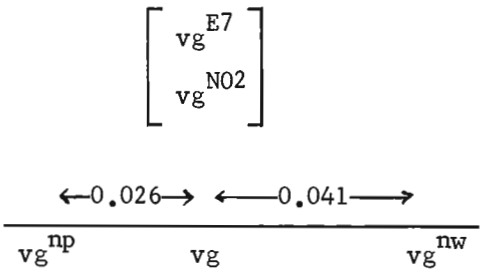
Cross used (x cn vg sf^2 ♂)	Total counted	Confirmed non-vg	Distance (map units)
vg^{np}/cn vg sf^2	30,389	4 cn+++	0.026
vg^{nw}/cn vg sf^2	9,813	2 +++sf	0.041
vg^{E7}/cn vg sf^2	14,567	0	-
vg^{NO2}/cn vg sf^2	7,145	0	-
vg^{np}/cn vg^{E7} sf	4,402	0	-
vg^{nw}/cn vg^{E7} sf	13,257	0	-
vg^{NO2}/cn vg^{np} sf	16,234	0	-



Stocks of cn vg sf^2 were made to provide suitable markers for a four-point test (cn = 2,57.5; vg = 2,67.0; sf^2 = 2,71.5). The alleles vg, vg^{np}, vg^{NO2}, vg^{nw}, and vg^{E7} were used in a series of crosses utilizing the cn and sf markers. The results so far establish the pseudoallelic nature of the vestigial region with three sites mapped. Two alleles, vg^{NO2} and vg^{E7}, have not yet been separated. The vg^{E7} allele shows a strap allele when heteroallelic with vg. It was induced by ethyl methane sulfonate and it is phenotypically normal as a homozygote. Its failure to undergo pseudoallelic crossing-over with vg, vg^{np}, and vg^{nw} suggests that it might be a minute intragenic rearrangement. Similarly, vg^{NO2} does not crossover with vg or vg^{np} and may be a minute rearrangement. When vg^{nw} is crossed to vg^{NO2} the heteroallele, vg^{nw}/vg^{NO2}, does not appear and is thus inviable at both 18°C and 25°C.

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Choo, J.K. Chungang University, Seoul, Korea. Genetic change of Korean natural population of Drosophila melanogaster.

The frequency of recessive lethal genes on the second chromosomes concealed in natural populations of D. melanogaster has been analyzed annually. Surveys have been made since 1971 in Anyang City, since 1975 in Ulsan City, and since 1977 in the Banweol area. The frequency of lethal plus semilethal second chromosomes had been about 28.2% in the 1971-1973 period at Anyang City. It then increased directly through three years and the population maintained 48.6% of L+Sl content in 1977. In the natural population of Ulsan City, the L+Sl content has been 65.7% to 53.4% in the 1975-1977 period. On the other hand, the frequency in the Banweol population was 26.0% in 1977, low compared to other populations.

All second homozygote viability consisting of lethal genes had been 22.3% in the Anyang population in 1971, and then its rate decreased annually to 14.6% in 1977. On the contrary, the Ulsan population maintained about 15.0% on the average in 1975-1977, and 24.8% occurred at Banweol in 1977.

The allelism rate between lethals isolated from the Anyang population has maintained unchanged at about 1-2% during the past six years. However, allelism rate of the Ulsan population decreased from 5.66% in 1975 to 1.47% in 1976.

The frequency of individuals eliminated by deleterious genes in the natural population was estimated to be IQ^2, where I and Q are the L+Sl frequency and allelism rate for successive years. The elimination rate in the Anyang population increased by two times during six years, from 0.04% to 0.08%. Moreover, in the Ulsan population it occurred 2.44% in 1975.

Clyde, M. University of Queensland, Brisbane, Australia. The chromosomes of Drosophila rubra Sturtevant.

D. rubra, a member of the D. immigrans subgroup (Wilson et al. 1969) was described by Sturtevant (1927) from the type specimen collected at Mt. Maquiling, Luzon, Philippines. The flies are yellowish with a reddish tinge. The dull reddish color occurs on the frons, antennae, mesonotum, scutellum and abdomen. The pleurae and legs as well as face, cheeks and mouthparts are yellow.

Five isofemale lines, from Hidden Valley Springs, Luzon (adjacent to the original collection site at Mt. Maquiling) were analyzed. The salivary chromosome configuration of D. rubra comprises four long arms and one short arm (Fig. 1). In one isoline a small, simple inversion in the central region of chromosome III was detected (Fig. 2).

Fig. 1. Salivary gland chromosomes of D. rubra.

Fig. 2. Simple inversion on chromosome III in D. rubra. c.e. = centromere end

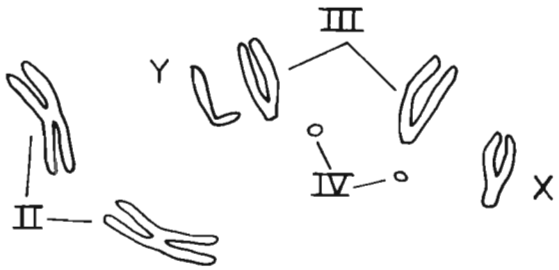

Fig. 3. Karyotype of male D. rubra.

D. rubra has a diploid chromosome number of 2n = 8. The metaphase chromosomes consist of a pair of V's (chromosome II), a pair of rods (chromosome III), a pair of dots (chromosome IV) and the sex chromosomes, of which the X chromosome is rod-shaped and the Y chromosome is J-shaped with arm-ratio of approximately 1:2.5 (Fig. 3). No karyotypic variation was detected.

The isofemale lines used in this study were collected and established by Dr. Wharton B. Mather, University of Queensland.

The work reported was part of a Ph.D. thesis accepted by the University of Queensland in 1978.

References: Sturtevant, A.H. 1927, Philipp. J. Sci. 32:361-374; Wilson, F.D., M.R. Wheeler, M. Harget and M. Kambysellis 1969, Univ. Texas Publ. 6918:209-253.

Clyde, M. University of Queensland, Brisbane, Australia. Chromosome IV variation in D. albomicans Duda.

Two types of chromosome IV were detected in metaphase chromosome preparations of isofemale lines of D. albomicans from Southeast Asia. Isolines from Chiang Mai and West Malaysia (Penang, Kuala Lumpur) were found to have a shorter rod-shaped chromosome IV when compared to an isoline from Taiwan. This is apparent in intraspecific hybrids between the Taiwan and Chiang Mai or West Malaysia isolines (Fig. 1). In three out of eight isolines from Chiang Mai, extra heterochromatin occurred in the form of supernumerary (unattached) dots. Individuals of the same isoline may possess one extra dot or two extra dots in addition to the two short rod-shaped fourth chromosomes (Fig. 2). The presence of this extra heterochromatin in the form of dots in the karyotype appears not to have any phenotypic effect on individuals that possess it. It is conceivable that the extra dots have resulted from fragmentation of the longer rod type of chromosome IV as seen in the strain from Taiwan. As heterochromatin often carries very few or no genes, the loss of such small fragments would not have any deleterious effects on the carrier. Isolines from West Malaysia did not possess these extra dots. An alternative possibility is that extra heterochromatin has been added to the fourth chromosome in the case of the Taiwan strain, thus making it longer than the basic rod-shaped fourth chromosome exhibited by the Malaysian and Thailand strains. The "floating" dots in some of the Chiang Mai strains would then represent as yet unattached heterochromatin.