and (iii) individuals with 2.05 X-chromosomal segments were constructed. In the first and third case, the segment $2C_1$ to $3C_4$ was added (as translocated segment to 3rd chromosome) to 1X and 2X individuals, respectively, and in the second case 2X individuals were deficient for the similar segments. Replication pattern of the salivary gland chromosomes were studied after pulse labelling with ^{3}H-thymidine (sp. activity: 17,400 uCi/mM, BARC, Trombay, India; Cons. 500 uCi/ml, exposure time - 20 days).

Our results reveal that in individuals with 1.05 X-chromosomal segments, both the entire X and the X chromosomal fragment involved in duplication, displays both puffy appearance and asynchronous replication pattern in comparison to that of autosomal segments. On the other hand, in individuals with 1.95 and 2.05 X-chromosomal segments, each part of X chromosomes, so far morphology and replicationi is concerned, represents a typical female X chromosome (Figures 1a-b; 2a-b). Such results indicate that 1X individuals could recognize small fragments as its duplication, regardless of the position of the duplicated segments. However, further works with large intercalary duplications would provide a more clear picture and such works are in progress.

This work is supported by a UGC minor research project to Debasish Mutsuddi.

Reference: Duttagupta, A.K., M. Mutsuddi and D. Mutsuddi1984, DIS 60:97-98.

Engels, W.R. University of Wisconsin, Madison, USNA. A set of P cytotype balancer stocks.

Multiply rearranged balancer chromosomes in P-cytotype stocks are often useful for maintaining dysgenesis-induced mutations while avoiding further changes in P element numbers and positions. I constructed two such stocks for the X chromosome and one for each major autosome. The resulting balancer stocks are:

M-5(P), w^a B; π_2 , C(1)DX,y f /FM7(P) y sn^{x2} B; π_2 ,
CyO(P), S^2 cn^P bw/π; π_2 , TM6B(P), e Tb ca/π-lethal; π_2 .

The strain π_2 is a strong P strain described previously (Engels & Preston 1979) and the symbol π refers to individual chromosomes from this stock. Tb is described by Craymer (1980),and cn^P is a strong cinnabar allele that was EMS-induced by C.R. Preston (pers. comm.) in 1977. The TM6B chromosome, constructed by L. Craymer (pers. comm.), is thought to be the most effective crossover suppressor available for the third chromosome. The other balancers and the markers they carry are all described in DIS or Lindsley & Grell.

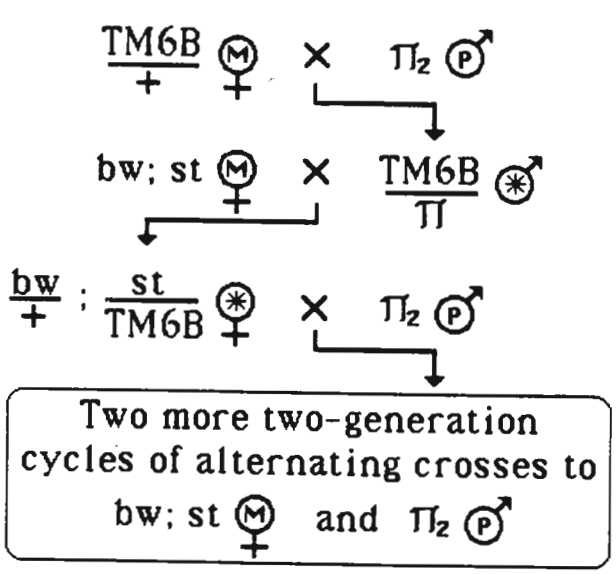

Figure 1. Crossing scheme to generate an M-5 chromosome with P elements. Each fly is designated as **P** or **M** according to its classification in the **P-M** system, or else as * to indicate it is dysgenic. All crosses were performed at 21°.

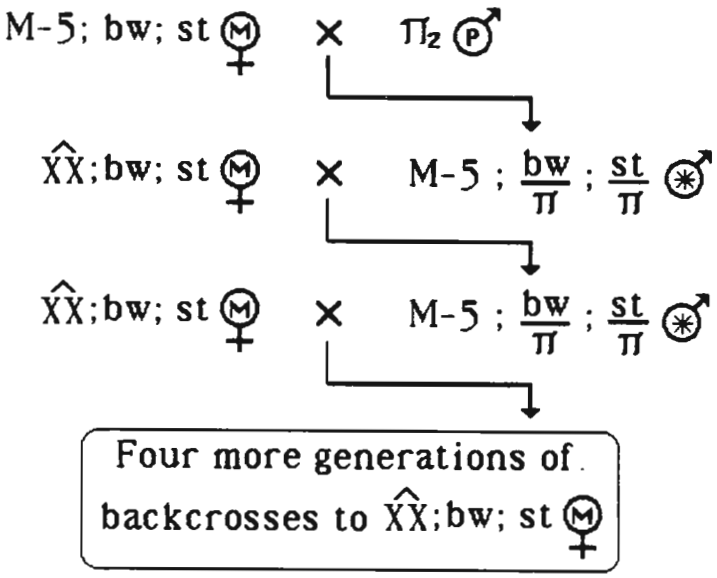

Figure 2. Crossing scheme to generate a TM6B chromosome with P elements. The designations **P**, **M** and * are the same as in Figure 1.

Transpositions of P elements from chromosomes of the P strain, π_2, onto the balancer chromosomes was achieved through a series of "chromosome contamination" crosses in which the balancer was passed at least six times through dysgenic flies in the presence of π_2 chromosomes. Figures 1 and 2 show the procedure for the M-5(P) and TM6B(P) stocks; the others are similar.

Following the "contamination" crosses, each balancer was tested by in situ hybridization to a P element probe to ensure that it had acquired numerous P elements. At least four sites were observed on each of the balancers. In most cases the "contamination" steps were carried out in multiple replicates so that the chromosome with the greatest number of acquired P hybridization sites could be selected.

The remainder of the genome was then replaced by chromosomes from the π_2 stock through a series of backcrosses to π_2 ♀♀. In the case of M-5(P), the balancer was also made homozygous.

Finally, the cytotype of each stock was determined using the sn^W test (Engels 1984). Females from the stock to be tested were crossed to sn^W(P) males, and the resulting sn^W-bearing daughters (or sons in the case of C(1)DX/FM7(P)) were progeny-tested to measure the rate of mutations to sn^e and sn^+. All stocks were confirmed to have the P cytotype, as indicated by the lack of sn^W mutability.

References: Craymer, L. 1980, DIS 55:197-200; Engels, W.R. & C.R. Preston 1979, Genetics 92:161-175; Engels, W.R. 1984, Science 226:1194-1196.

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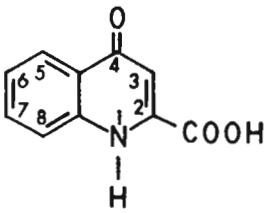
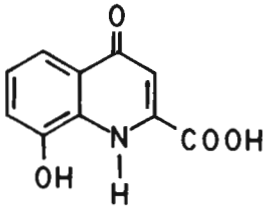
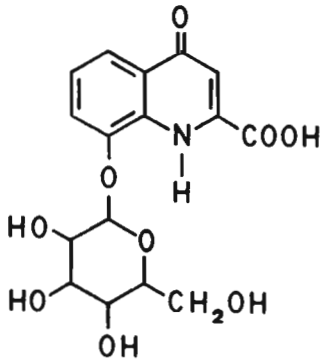
Characterization of a novel quinoline in **Drosophila melanogaster**: xanthurenic acid 8-O-β-D-glucoside.



kynurenic acid



xanthurenic acid



cardinalic acid
(xanthurenic acid 8-O-ß-D-glucoside)

The biosynthesis of xanthommatin, the brown eye pigment of **D.melanogaster**, can be represented by a series of reactions: L-tryptophan → kynurenine → 3-hydroxykynurenine → xanthommatin: Two branch points give rise to other metabolites: xanthurenic acid is derived from 3-hydroxykynurenine and kynurenic acid from kynurenine. The cardinal mutant is deficient in xanthommatin and extracts of the head contain an abnormal fluorescent component that is shown by two dimensional thin layer chromatography. The cardinal mutant shows a fluorescent pattern like that of the wild type, except that the former has an additional blue fluorescent spot with R_f values of 0.65 in isopropanol/2% ammonium acetate (1:1) and 0.53 in 3% ammonium chloride. This unknown compound has been called "cardinalic acid".

To obtain pure "cardinalic acid" for structural studies, the following purification procedure was set up: A Drosophila head extract (from the mutant pr cd which accumulates more cardinalic acid than the cd mutant) at pH 7 was loaded onto a column of Dowex AG 50W (H^+ form) equilibrated with water.

Table 1. pK_a values of the quinolines found in Drosophila, as detected by changes in the UV absorbance.

	Cardinalic acid	Kynurenic acid	Xanthurenic acid
$pK_a(N)$	1.8	2.2	1.8
$pK_a(O_4)$	11.0	11.2	7.3
$pK_a(O_8)$	-	-	12.3

Figure 1. Structure of the quinolines from Drosophila.