Perreault, W. J., H. Gay and B. P. Kaufmann
University of Michigan, Ann Arbor. Base composition of DNA in heterochromatin of Drosophila melanogaster.

In defining the biochemical properties of the heterochromatic (heteropycnotic) portions of the chromosomes of D. melanogaster, we have undertaken an analysis of the base composition of DNAs in XO, XX, XY, and XXY flies. The amount of heterochromatin/total chromatin ranges from about 21.2% for XO males to 31.0% for XXY females. To determine the GC content of each of the types listed above, DNA was extracted from 5-10 grams of flies by the method of Mead. Perchloric acid hydrolysates were chromatographed on Whatman #1 paper in an isopropanol-HCl system. Relative amounts of free bases were calculated from optical density measurements of the eluted spots. The results obtained indicate that the base composition of the extracted DNA is not markedly different among the karyotypes studied. It appears, therefore, that the DNA of heterochromatin is not greatly different from that of euchromatin with respect to base composition, even though small changes in GC content lie beyond the resolving power of the methods used. Since our data were extensive - involving several repetitions in the analysis of each karyotype - they indicate that any possible difference in base composition between euchromatin and heterochromatin among these karyotypes could not be greater than 10%. (This work was supported by N.I.H. Grant GM-10499.)

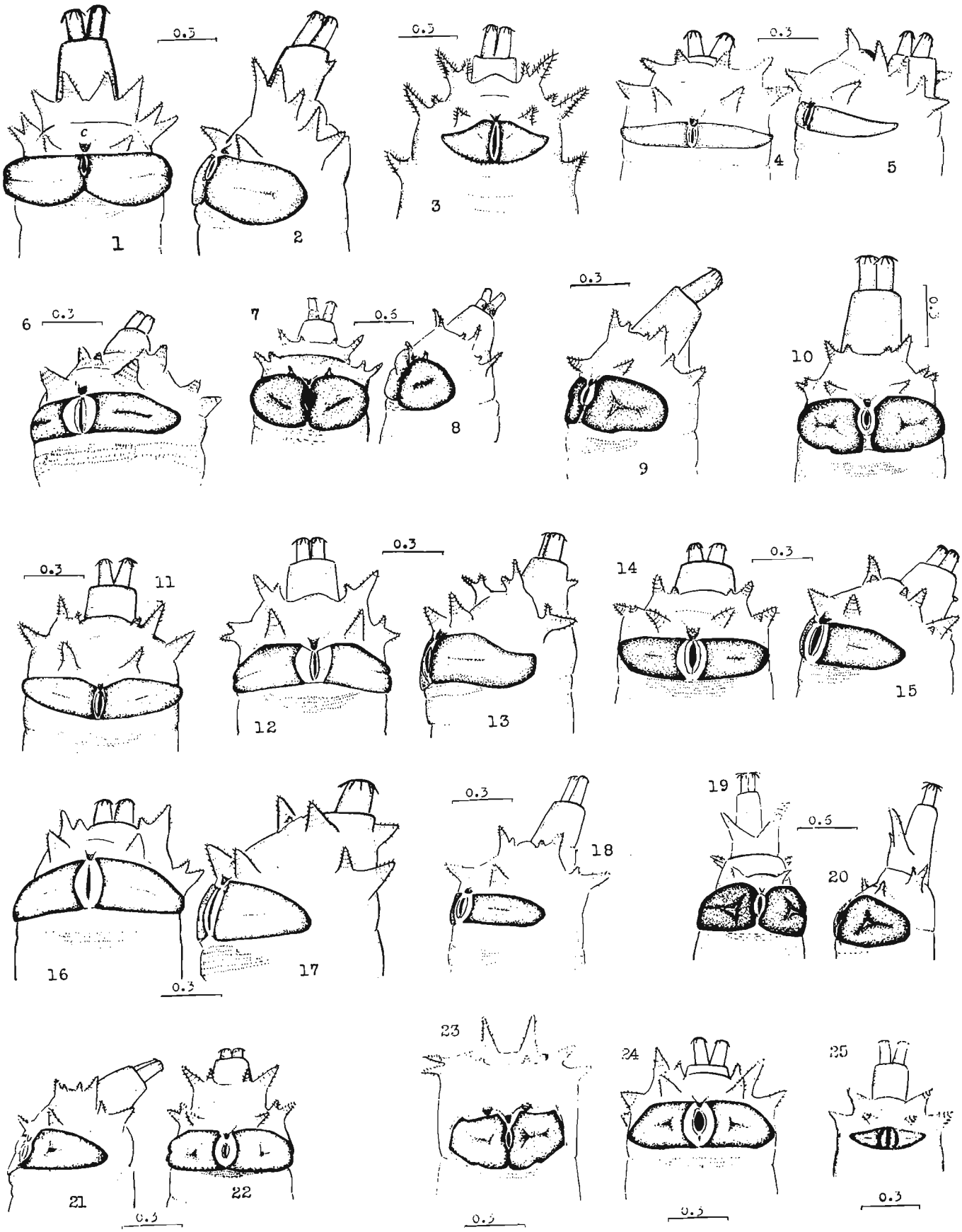
Yalvac, S. Atatürk University, Erzerum, Turkey. Variation in the larval anal organ in various Drosophilidae.

The existence of a larval anal organ, which darkens and becomes conspicuous with several reagents, has been reported by various authors (e.g. Stark, 1918; Wheeler, 1947; Gloor, 1949). The osmoregulatory function of this organ was reported by Gloor and Chen (1950), who used silver nitrate to make the anal organ darken. Waddington (1959) showed that the size of this structure varies in D. melanogaster reared in different salt concentrations.

The expectation that interspecific differences in the form of the anal organ might be useful taxonomically prompted the investigation of this structure in laboratory stocks in a number of species of Drosophila and related genera. Third instar larvae taken from stock bottles (corn meal, molasses, agar medium, with Tegosept) were exposed to 70% alcohol, which causes progressive darkening of the whole larva, during which the anal organ becomes clearly visible. A small amount of Carnoy's Solution was added to prevent wrinkling. At a suitable stage of darkening (varying with species) camera lucida drawings were prepared to illustrate the structure. (This work was done during 1957-59 in the Department of Zoology of the University of Nebraska. The author is indebted to Dr. Marshall Wheeler of the University of Texas for most of the stocks.)

Twenty species of Drosophila and one each of Chymomyza, Scaptomyza, and Zaprionus were investigated. Closely related species were generally not very different from each other as to form of the anal organ, and one might doubt whether environmentally caused variation might sometimes override such slight interspecific differences as were observed. On the other hand, members of different genera and subgenera and of species groups within the subgenus Drosophila did show substantial differences. An account of this variation was presented at the XI International Congress of Genetics. However, illustrations of representatives of more or less distinct types are presented here to make then available to Drosophila workers.

Figures: (1-2) D. victoria (Pholadoris), ventral and lateral views; (3) D. busckii (Drosophila); (4-5) D. duncani (Hirto drosophila); (6) D. melanogaster (Sophophore); (7-8) D. americana (Drosophila, virilis gp.); (9-10) D. hydei (Dros. repleta gp.); (11) D. tripunctata (Dros.); (12-13) D. immigrans (Dros.); (14-15) D. funebris (Dros.); (16-17) D. pallidipennis (Dros.); (18) D. guarani (Dros.); (19-20) D. robusta (Dros.); (21-22) D. putrida (Dros., testacea gp.); (23) Chymomyza procnemis; (24) Zaprionus vittiger; (25) Scaptomyza disticna.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