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The EM band-interband pattern of SSP chromosomes in **D.subobscura.**

We are revising the LM chromosome map of salivary glands from **D.subobscura** (Kunze-Muehl & Mueller 1958) on the basis of electron micrographs from surface spread polytene (SSP) chromosomes. The same preparation technique has already been used in **Chironomus** (Kalisch 1982; Kalisch & Whitmore 1983) and in **D.hydei** (Kalisch et al. 1985; Whitmore et al., this issue). However, due to the species specific chromosomal proteins we had to modify our SSP chromosome preparation technique for **D.subobscura.** The primary difference compared with the original technique (Kalisch et al. 1984) is in the shortening of the time needed for the acid pretreatment (4 min instead of 30 min in 3.18 M citric acid 1-hydrate and 8.82 M

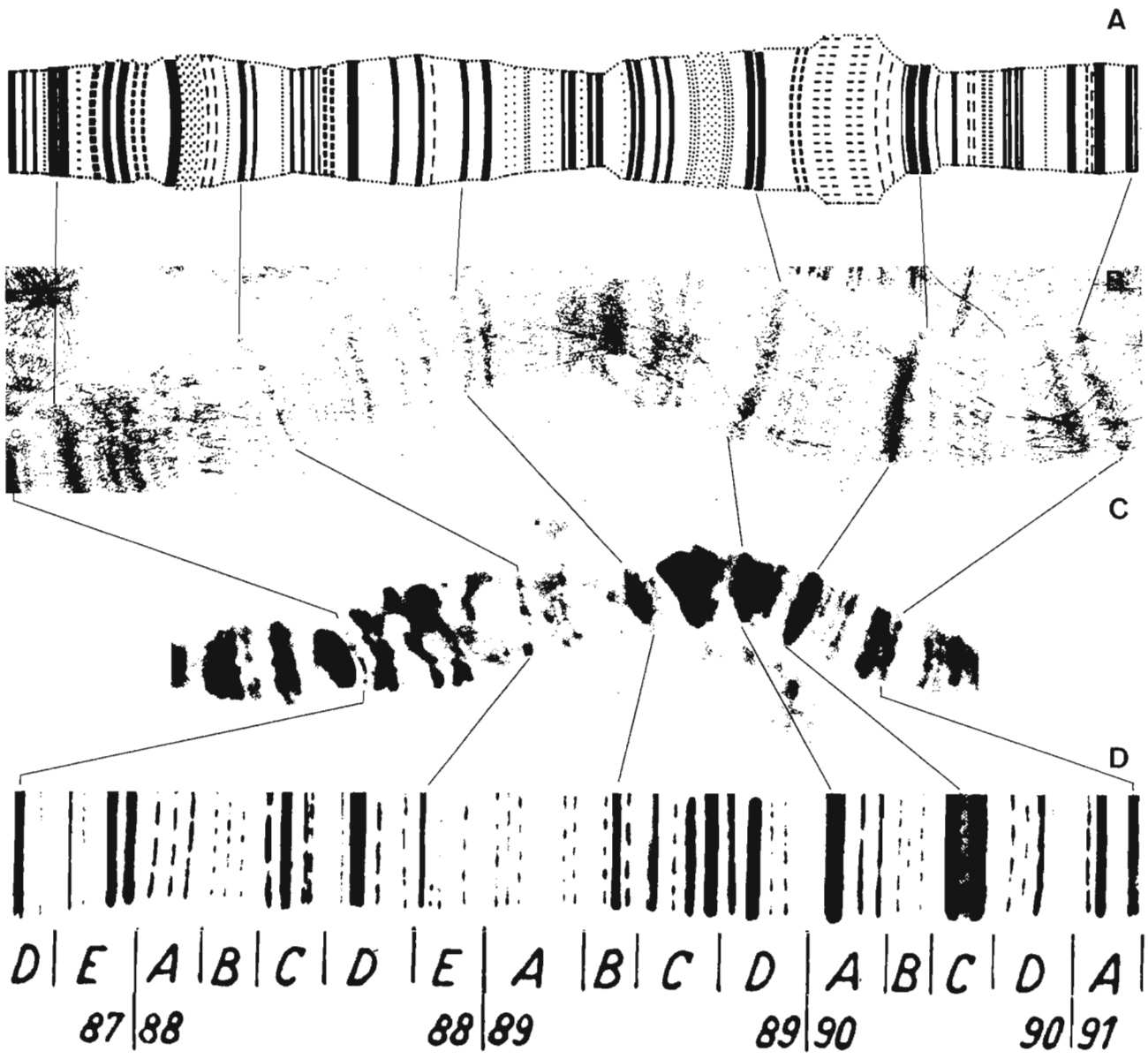

Figure 1. Salivary gland chromosome maps of divisions 88-90 in **D.subobscura.** (A) EM chromosome map based on five SSP chromosome preparations. (B) Electron micrograph of a SSP chromosome. x1600. (C) Light micrograph of a chromosome squash preparation (Pinsker & Sperlich 1981). (D) LM chromosome map based on a large number of chromosome squash preparations (Kunze-Muehl & Mueller 1958).

propionic acid) of the excised salivary glands. Further methodological modifications will be described in detail (in prep.).

To compare the patterns achieved by different chromosome preparation techniques, we have analyzed homologous polytene structures in light micrographs from squash preparations and in electron micrographs from SSP chromosome preparations. Fig. 1 shows our preliminary results for divisions 88-90 of chromosome O: (A) The computerized plot of the EM chromosome map from five SSP chromosome preparations, (B) an individual electron micrograph of a SSP chromosome, (C) an individual light micrograph of a squash preparation, and (D) the LM chromosome map based on many squash preparations (Kunze-Muehl & Mueller 1958).

The plot of the chromosome map shown in Fig. 1A is based on a simple BASIC program written for use with IBM PC XT (MS-DOS) and a Hewlett-Packard HP7475A plotter. The program is basically the same as the one we published for **D.hydei** (Reiling et al. 1984a,b). However, automatic plotting of chromosome outlines by connecting individual chromosome bands with dotted lines, has now been integrated into the program. Those who are interested in obtaining a copy of the program may do so by sending a 5.25" disk (double-sided, double-density, soft sector) to the first author.

Preliminary results: (1) The longitudinal spreading of the SSP chromosome preparation separates prominent bands and interbands from each other. By this, they are not 'fused' as usually depicted in squash preparations (e.g., compare subdivisions 89B-90A in Fig. 1 B and C). (2) The bands registered in the LM chromosome map (Kunze-Muehl & Mueller 1958) are depictable in individual SSP chromosome preparations. (3) Cytologic homology between the LM chromosome map of Kunze-Muehl & Mueller (1958) and the chromosomes in squash preparations as well as in SSP chromosome preparations is sometimes unusual for individual subdivisions as can be judged from the map example depicted in Fig. 1D. Due to this, we have decided to revise the entire map and to put more emphasis on the cytological peculiarities of the pattern (Fig. 1A). (4) The total number of bands in the EM chromosome map shows a ca. 40% increase (81:58) in comparison with the LM chromosome map in Fig. 1D. However, the number of additional bands of EM micrographs compared with LM micrographs differs strongly in individual chromosome subdivisions according to the number of submicroscopical bands and interbands (Kalisch et al. 1985).

For map construction of the entire genome, we still need light micrographs of squash preparations. Contributors are kindly invited as co-authors (for details, see REQUESTS in this issue).

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Kaplan, H. and T. Glover. Hobart College, Geneva, New York USNA. Frequency dependent selection utilizing Bar and sepia mutants of **Drosophila melanogaster.**

Frequency dependent selection has been observed in several species of Drosophila (see review by Ehrman & Probber 1978). When given a choice between two different types of males (different in genotype at a particular locus, reared at different temperatures, or collected from different geographic locations), females mate more frequently than expected with the type of male which is rare. Although this rare male mating advantage is well documented in **Drosophila pseudoobscura** (Ehrman 1966, 1967, 1968), reports of frequency dependent selection in **Drosophila melanogaster** are somewhat rarer. Markow et al. (1978) suggest that frequency dependent selection in **D.melanogaster** is not as common or as strong as reported for **D.pseudoobscura.**

A clear-cut example of strong frequency dependent selection in **D.melanogaster** has been observed using two eye mutant strains, Bar and sepia. Bar is a sex-linked dominant trait caused by a partial chromosome duplication and appears phenotypically as narrow or kidney-shaped red eyes. Sepia is a recessive point mutation on the third chromosome and appears phenotypically as reddish-brown to black eyes.

A total of 100 males in various Bar to sepia ratios were placed in half pint bottles containing culture media and 50 sepia virgin females. The flies were allowed to mate for 24 hr, after which each female was placed in a separate vial. The type of male which inseminated each female was determined by scoring the individual progenies produced by these females.