

A total of about 2,500 males and females were examined for their 5th, 6th, and 7th abdominal pigmentation pattern and the observations are shown in Figure 1 (a-e) females and (f-h) males. The difference in the pigmentation pattern of the 6th and 7th tergites of females and males are prominent. Five types of pigmentation pattern have been noticed in females and three types in males. Our study will be extended to the pigmentation pattern of *D. sulfurigaster*. A comparative study of the abdominal pigmentation pattern of these two species will be very helpful for the identification of the females of these two species.

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References: Burla, H., 1951, Rev. Suisse Zool. 58: 23-175; Coyne, J.A., 1983, Evolution 37: 1101-1117; Eisses, K. Th., and M. Santos 1997, Dros. Inf. Serv. 80: 87; Gallo, A.J., 1973, Ciencia and Cultura 25: 341-345; McNamee, S., and C. Dytham 1993, Syst. Entomol. 18: 231-236; Shorrocks, B., 1972, *Drosophila*. Ginn and Company Limited, London; Sturtevant, A.H., 1919, Psyche 26: 153-156.

Detailed description of puffing patterns in the salivary gland chromosomes of normally developing larvae and prepupae of *Drosophila melanogaster*.

Zhimulev, I.F., and E.S. Belyaeva. Institute of Cytology and Genetics, Novosibirsk 630090, Russia.
e-mail: zhimulev@bionet.nsc.ru.

Puffing of the salivary gland polytene chromosomes in different *Drosophila melanogaster* mutants is an object of investigations in our laboratory for more than 25 years (Zhimulev, 1974; Belyaeva, 1982). We found that the puffs are highly reproducible in different stocks with normal development (Oregon-R, Canton-S, Batumi-L, *yellow*) either in sequences of changes of properly puffing patterns or Puff Stages (PS) (see for review Ashburner and Berendes, 1978), in schedule of appearance of the individual puffs or their sizes. Constant puffs (these are, as a rule, small ones), the regions of decondensed chromatin, with diameter not exceeding considerably the diameter of chromosome, are invariable as well.

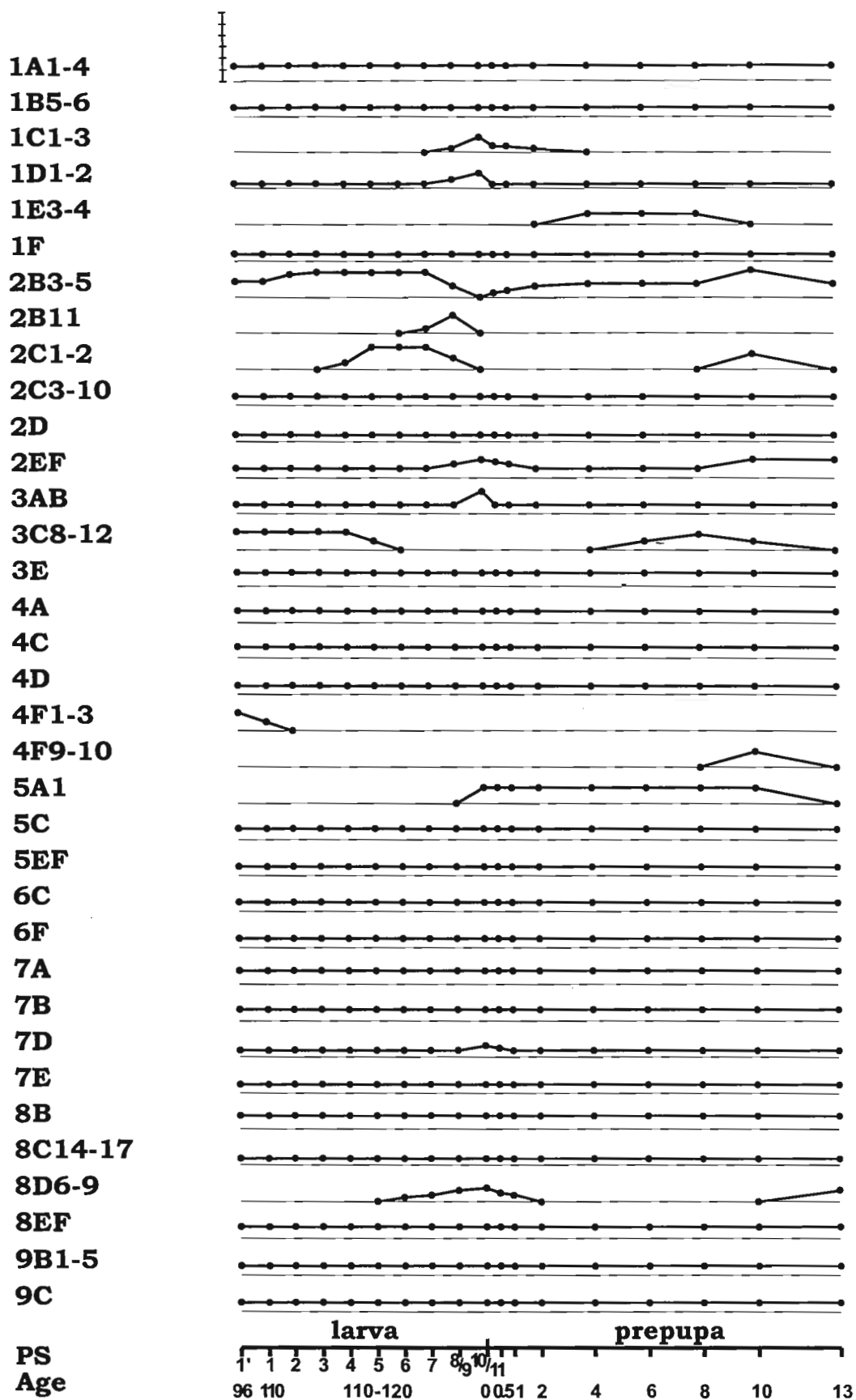
The diagrams, showing behavior of all visually revealed puffs during larval and prepupal development are given below (Figure 1). They seem to be useful for other researchers dealing with polytene chromosomes. The puff sizes are estimated using a 6-point scale (Zhimulev, 1974; Belyaeva, 1982) in larvae from 96 hr of development to 13 hr prepupae, *i.e.*, in the period when polytene chromosomes are accessible for analysis.

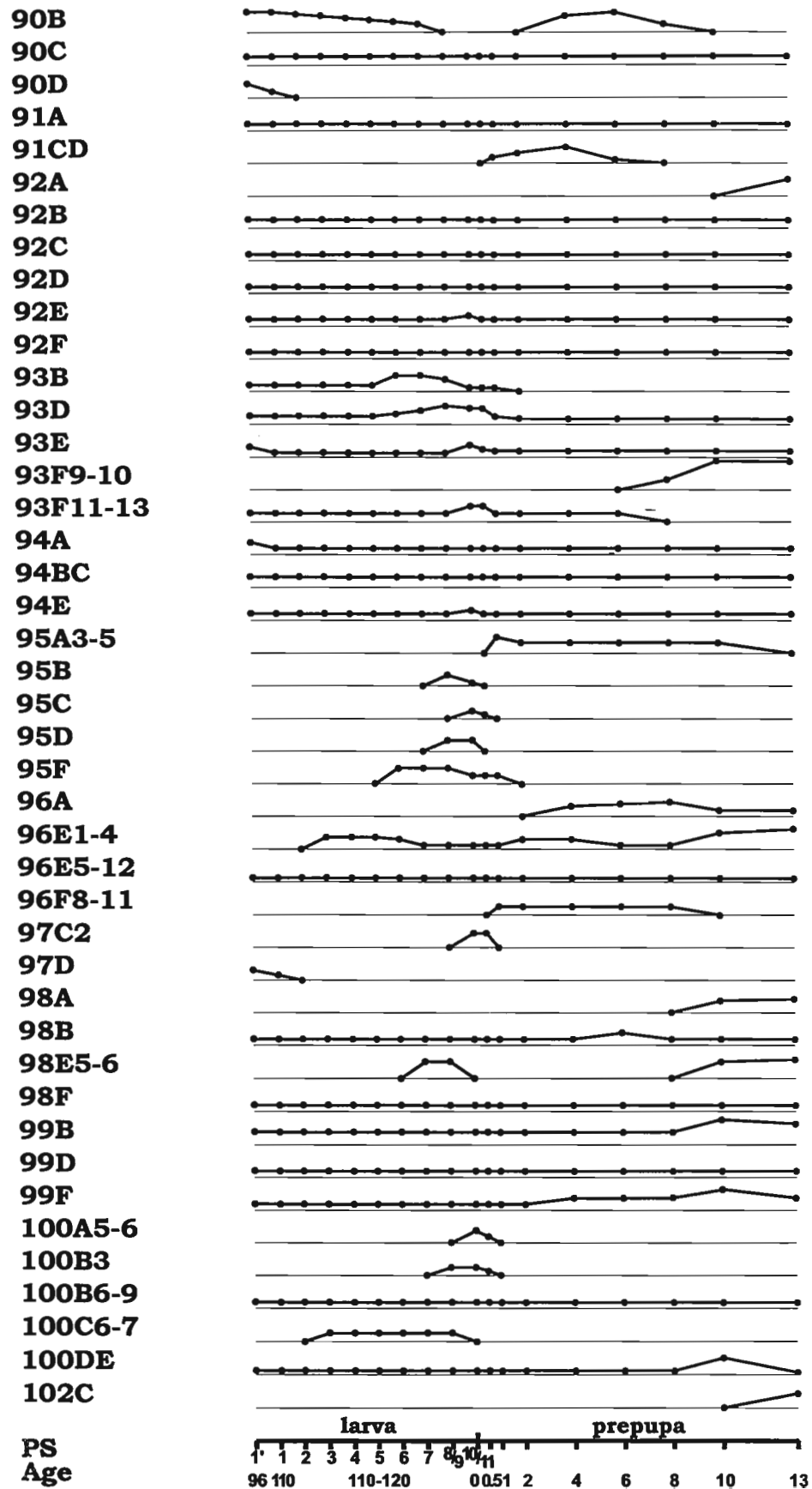
For puffing chronology in prepupae we used hours after formation of 0 h prepupae. This developmental stage is marked by spiracle eversion. For determination of developmental stages of larvae, morphological characteristics of the salivary glands were used (Figure 2).

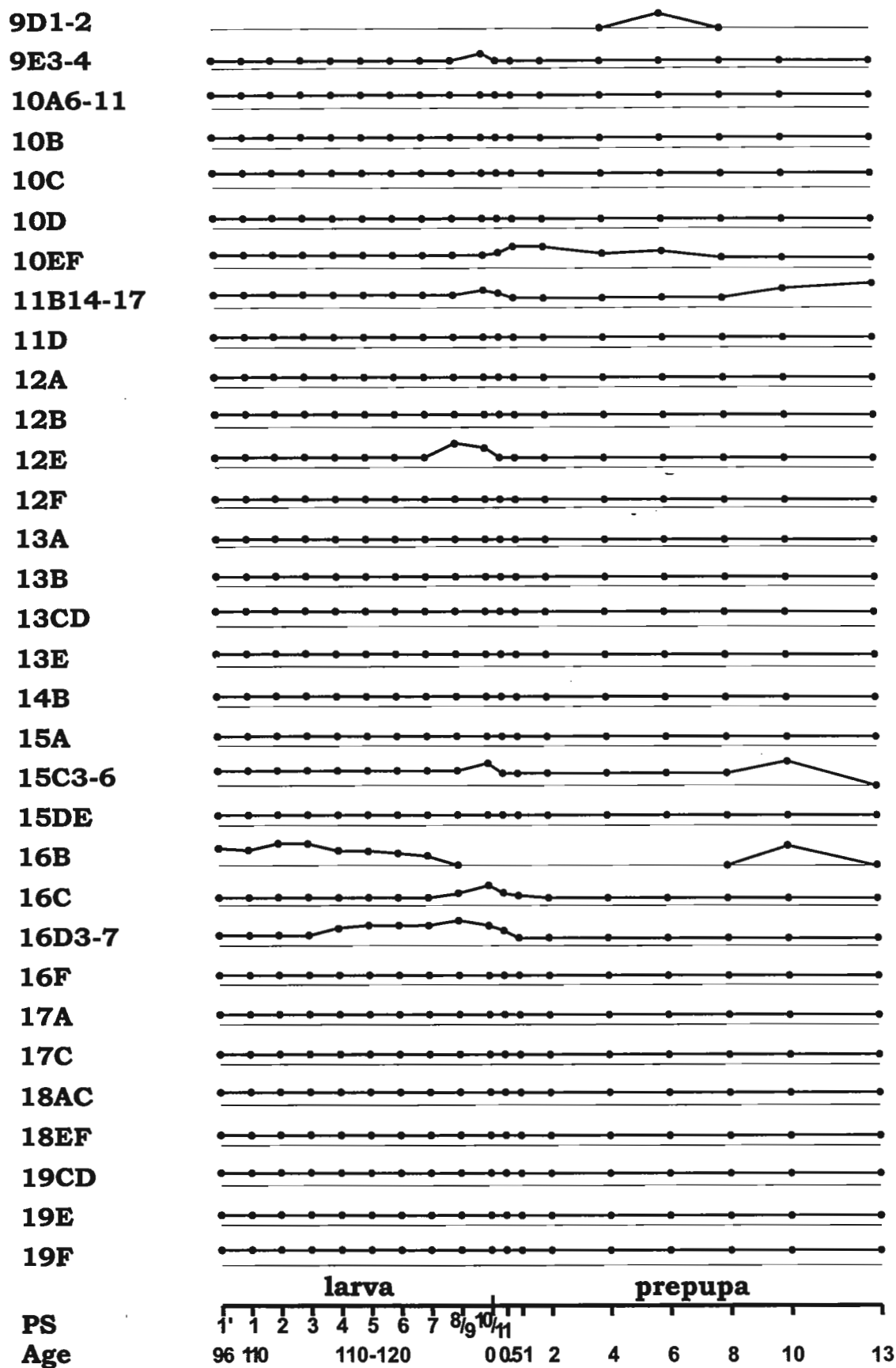
Acknowledgment: The work was partly supported by grants: INTAS grant 96-1339, Russian Fund of Basic Research (RFBR) 96-15-97749 and Russian Frontiers Program in Genetics.

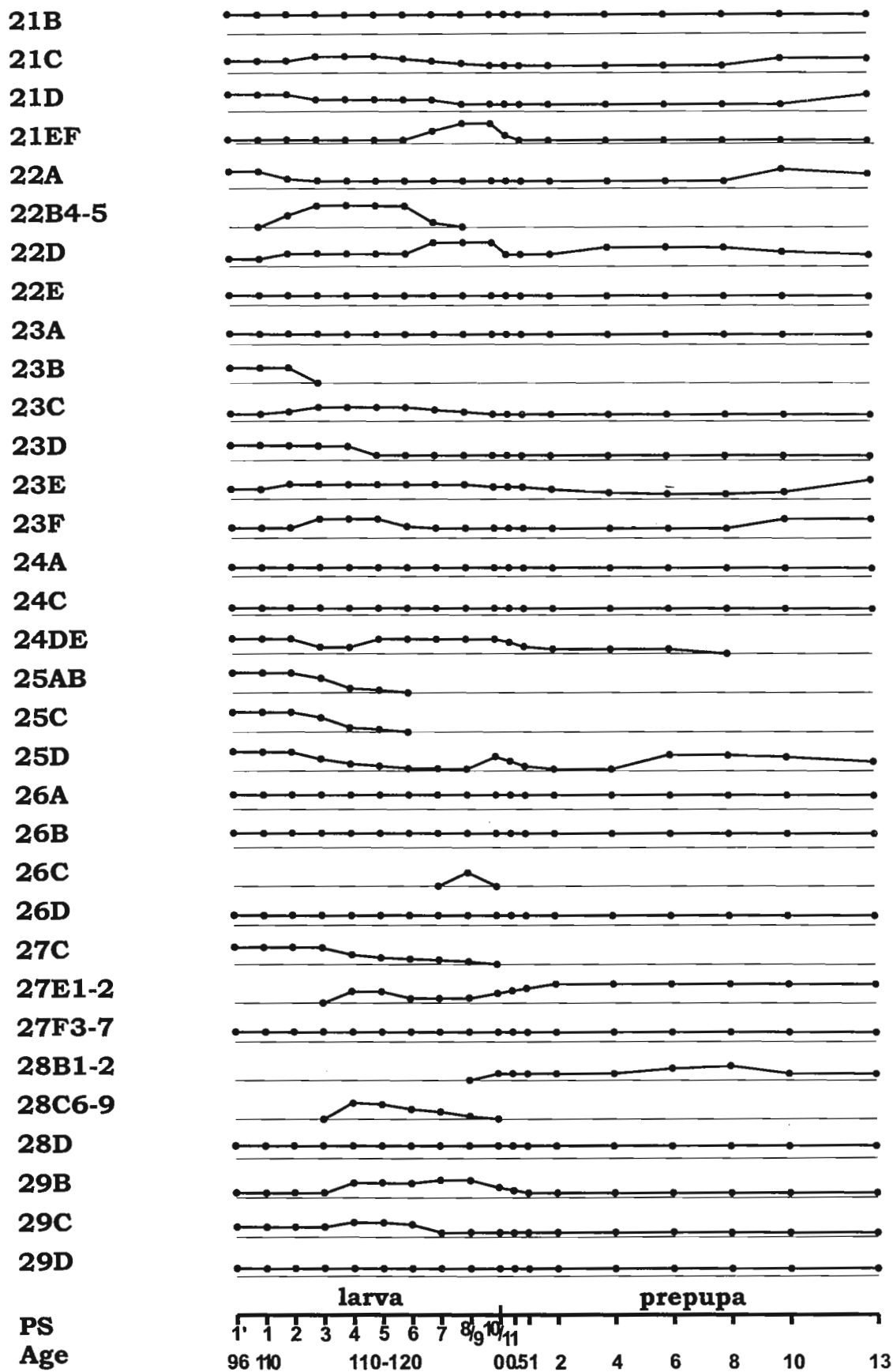
References: Ashburner, M., and H.D. Berendes 1978, In: (M. Ashburner and T.R.F. Wright, eds.), *The Genetics and Biology of Drosophila*, 2b: 316-395, Academic Press, London; Belyaeva, E.S., 1982, Doctor of Sciences Thesis. Institute of Cytology and Genetics, Novosibirsk; Zhimulev, I.F., 1974, Chromosoma 46: 59-76; Zhimulev, I.F., 1999, Advances in Genetics, 39: 1-550; Zhimulev, I.F., M.L. Izquierdo, M. Lewis, and M. Ashburner 1981, W. Roux Arch. Developm. Biol. 190: 351-357.

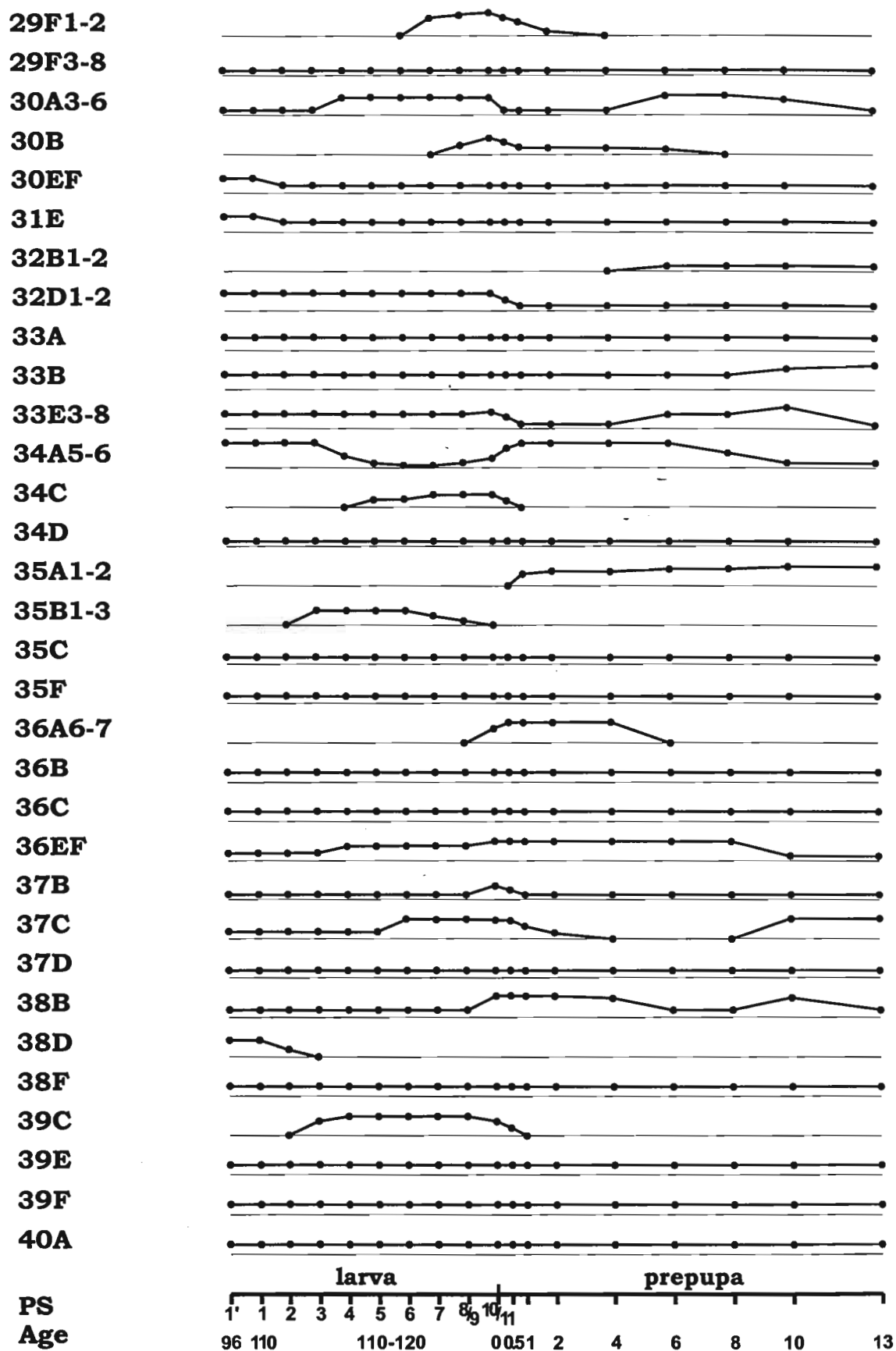
Figure 1 (following ten pages). Changes of puffing patterns during last 24 hours of larval and 13 h of prepupal development (25°C).

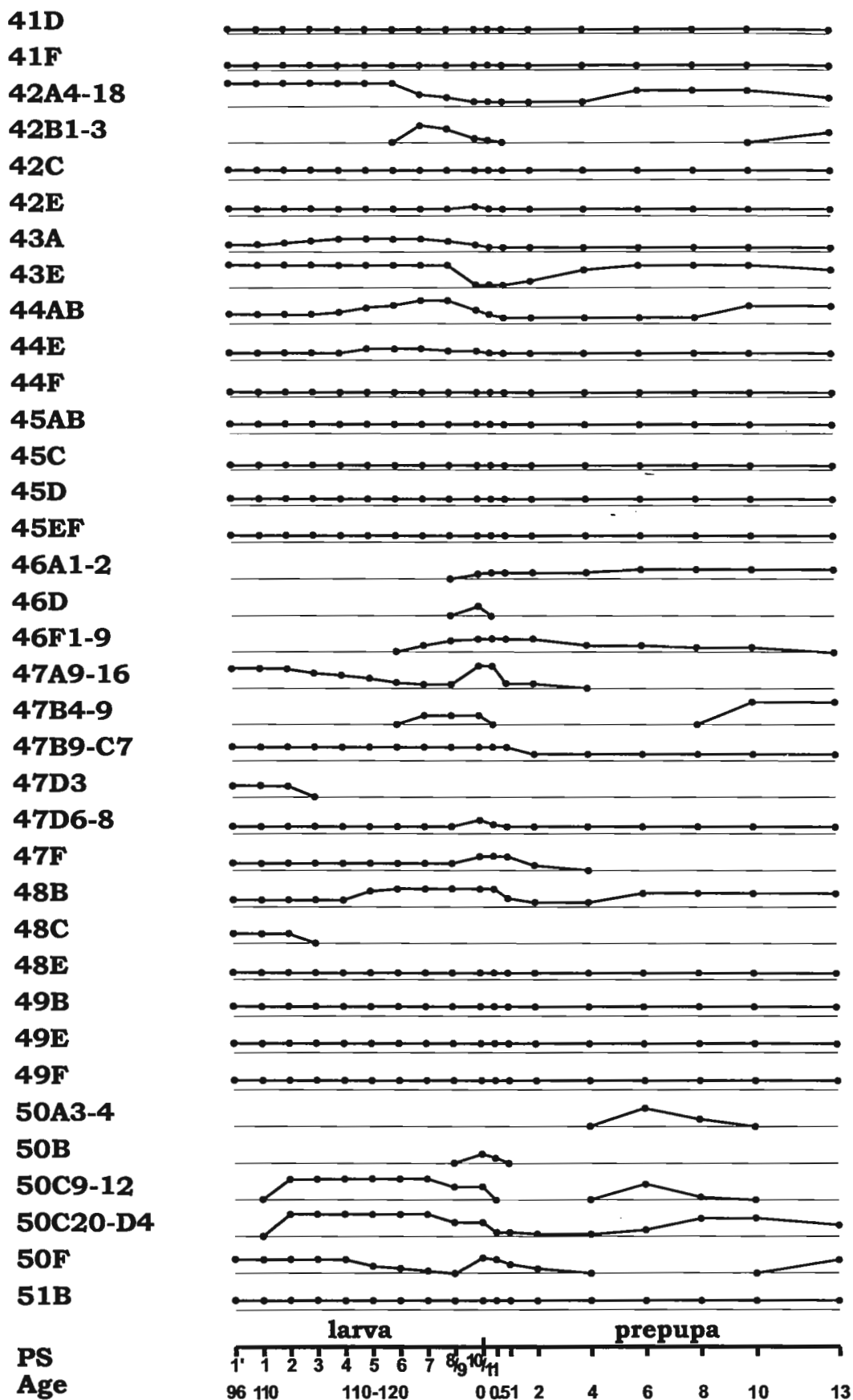


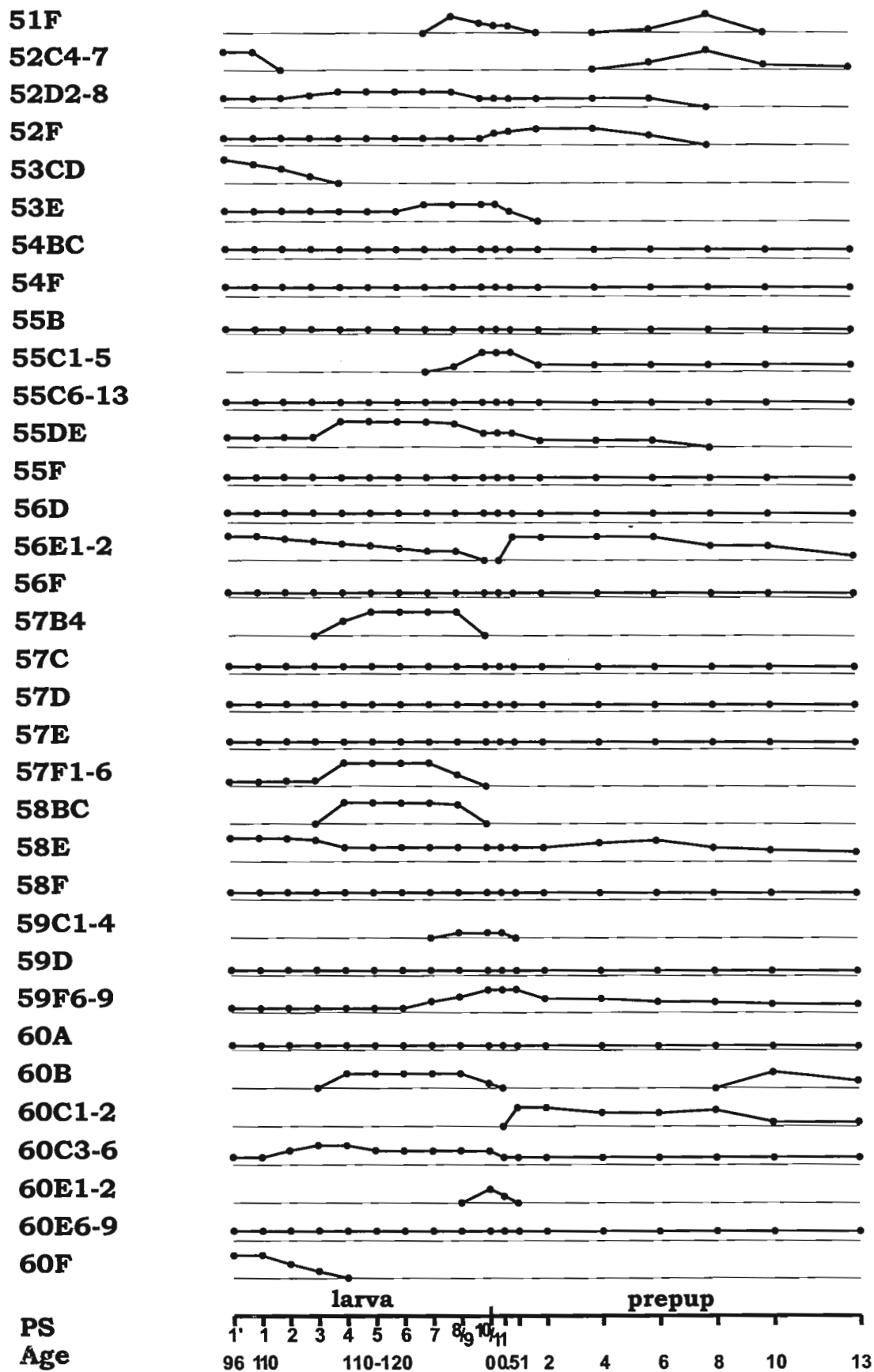


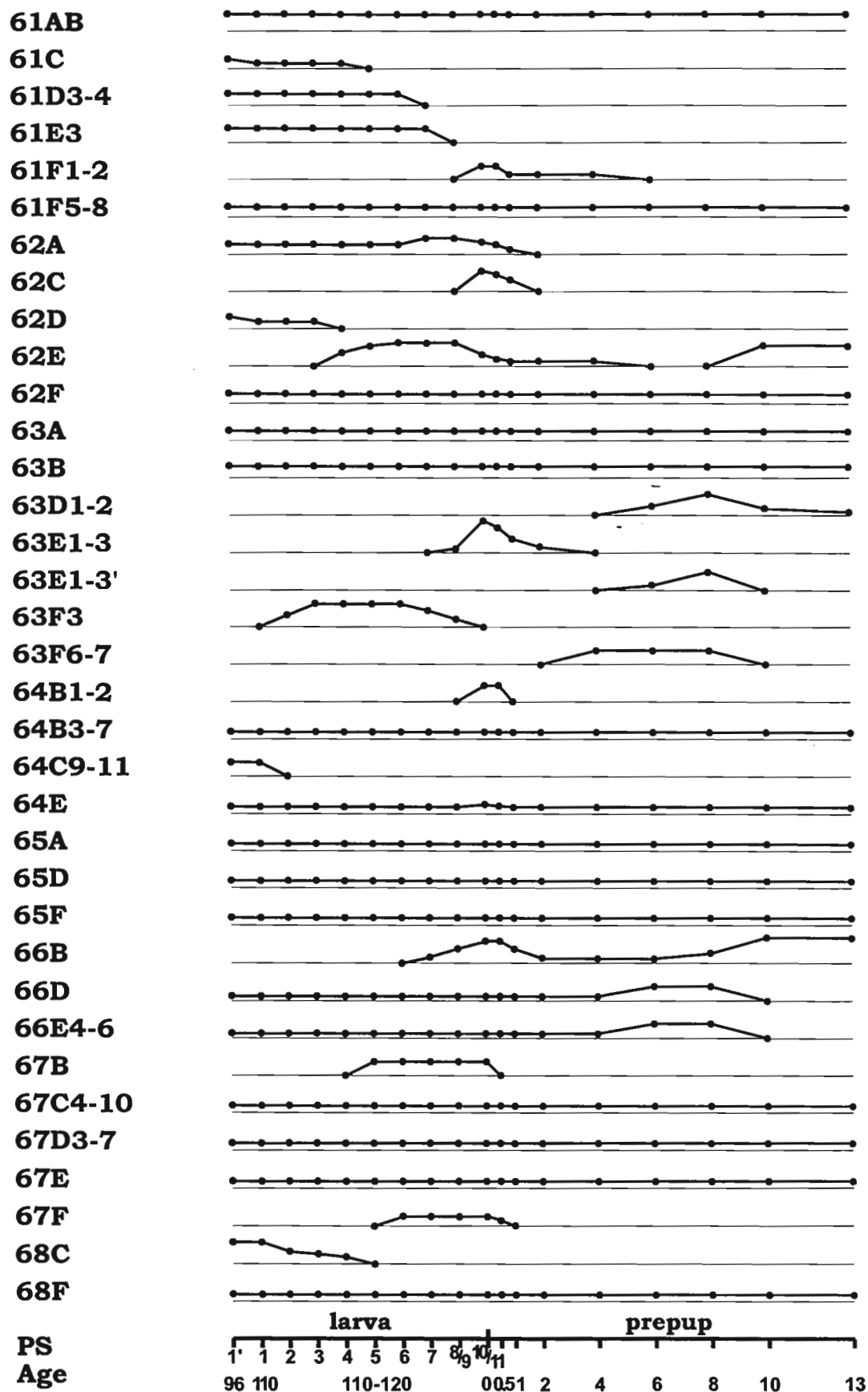


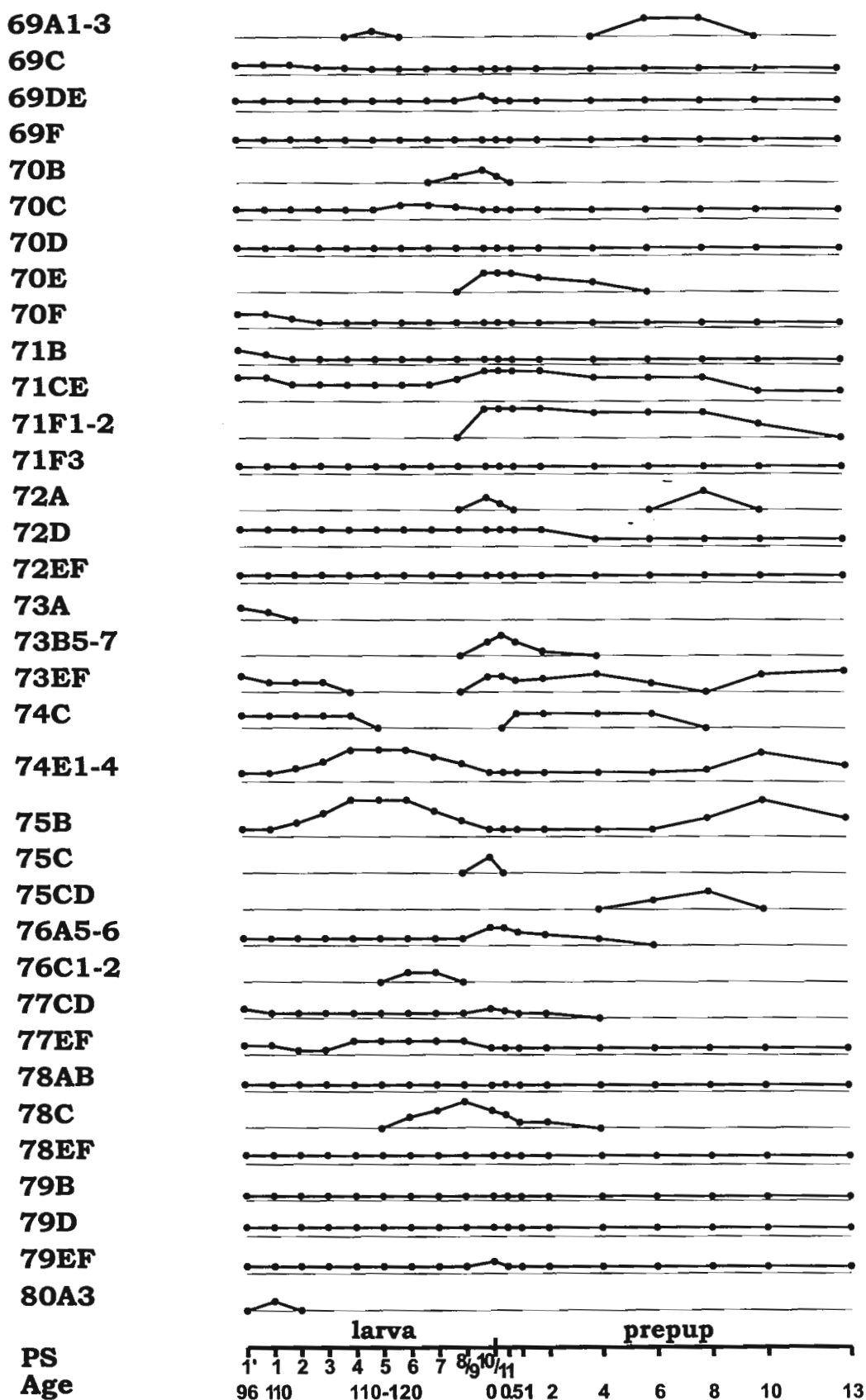


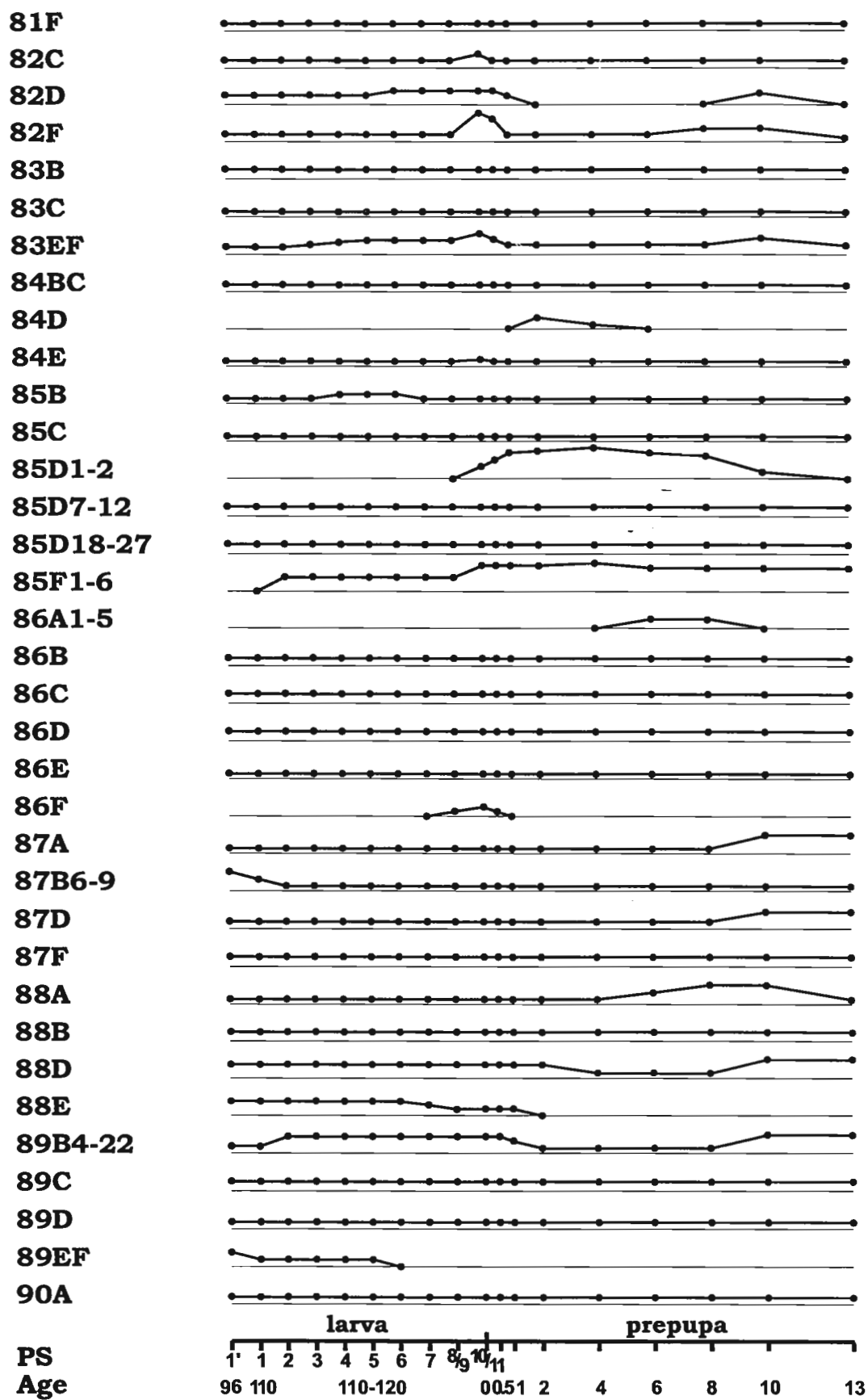












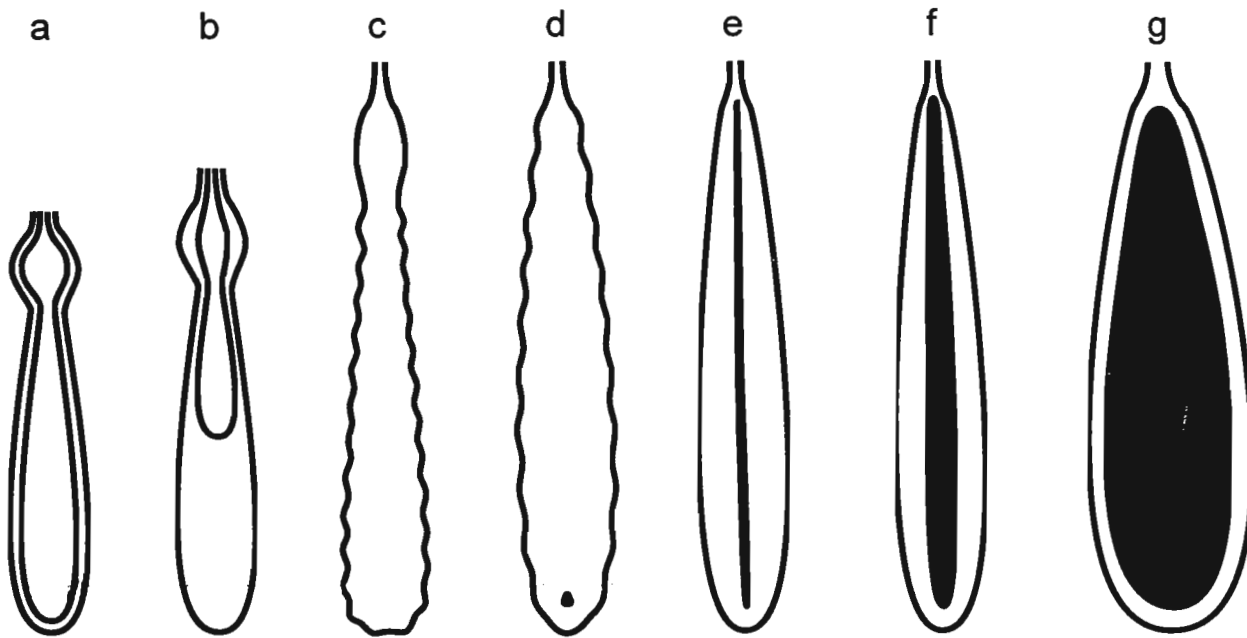


Figure 2. Changes of salivary gland morphology in the second half of third larval instar of *Drosophila melanogaster* (according to G. Richards, 1979, personal communication; Zhimulev *et al.*, 1981; Zhimulev, 1999).

a and *b* – the middle of third instar, *a* – the salivary gland cavity is open completely; *b* – the cells close up beginning from distal part, the cavity is seen only in proximal part of the gland, the cells do not contain glycoprotein granules.

c – the cells close up along the whole gland and they are filled with glycoprotein secretion granules, the puff pattern in chromosomes corresponds to PS1 stage.

d – a small cavity appears in the most distal part of gland at the expense of glycoproteins secretion, the set of ecdysone-induced puffs corresponds to the PS2-3 stage;

e – a thin bundle of secretion fills the whole gland, PS4-5;

f – the thickness of secretion bundle is about one third of gland thickness, PS6-7;

g – the gland looks like swollen bag filled by secretion, the developmental stage is the one just before extrusion of secretion in surroundings and spiracle eversion, PS10-11.

Detection of homokaryotype selection, especially for SC/SC (Santa Cruz) and rigid chromosomal pattern in marginal ecological conditions for the third chromosome rearrangements in the *Drosophila pseudoobscura* populations from the Colombian high plateau Andes.

Ruiz-García, Manuel, Diana Alvarez, and Claudia Guerrero. Unidad de Genética (Genética de Poblaciones-Biología Evolutiva). Laboratorio de Bioquímica, Biología y Genética molecular de Poblaciones. Departamento de Biología. Facultad de Ciencias. Pontificia Universidad Javeriana. Cra 7A No 43-82. Bogotá DC., Colombia. E-mail: mruiz@javercol.javeriana.edu.co

Five *Drosophila pseudoobscura* populations from the Colombia Cundiboyacense high plateau in the Andes (Torobarroso, Susa, Sutatausa, Potosí and Santillana) were systematically studied each week during a year (1997), to analyze comparatively the third chromosome rearrangements among these Colombian populations. The first chromosomal study of this species in Colombia, which had been discovered a few years earlier, was carried out by Dobzhansky *et al.* (1963). Only two different chromosomal rearrangements, Santa Cruz (SC) and Tree Line (TL), were found in that study. As in this previous work, the SC and TL were the predominant rearrangements in the Colombian populations studied by us. Nevertheless, for first time, other