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Variation in abdominal pigmentation pattern of *Drosophila immigrans* from Kumaun, India.

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Since the discovery of Sturtevant (1919) that *Drosophila melanogaster* has a closely resembling sibling species *Drosophila simulans*, both species are cosmopolitan and coexistent (Lachaise, *et al.*, 1988). The two species are mainly distinguished by checking the male offspring of isofemale lines because of different genital arches (Coyne, 1983; Shorrocks, 1972). Based on measurements of eye sizes of *D. melanogaster* and *D. simulans*, it is possible to make a distinction between the females (Burla, 1951; Gallo, 1973; McNamee and Dytham, 1993), but it is a painstaking job where large numbers of flies have to be examined. A high number of misqualifications have been reported, based on eye size definitions. Based on a paper by Eisses and Santos (1997), we decided to examine the abdominal pigmentation pattern of *D. immigrans* Sturtevant which is a very common species found in this region.

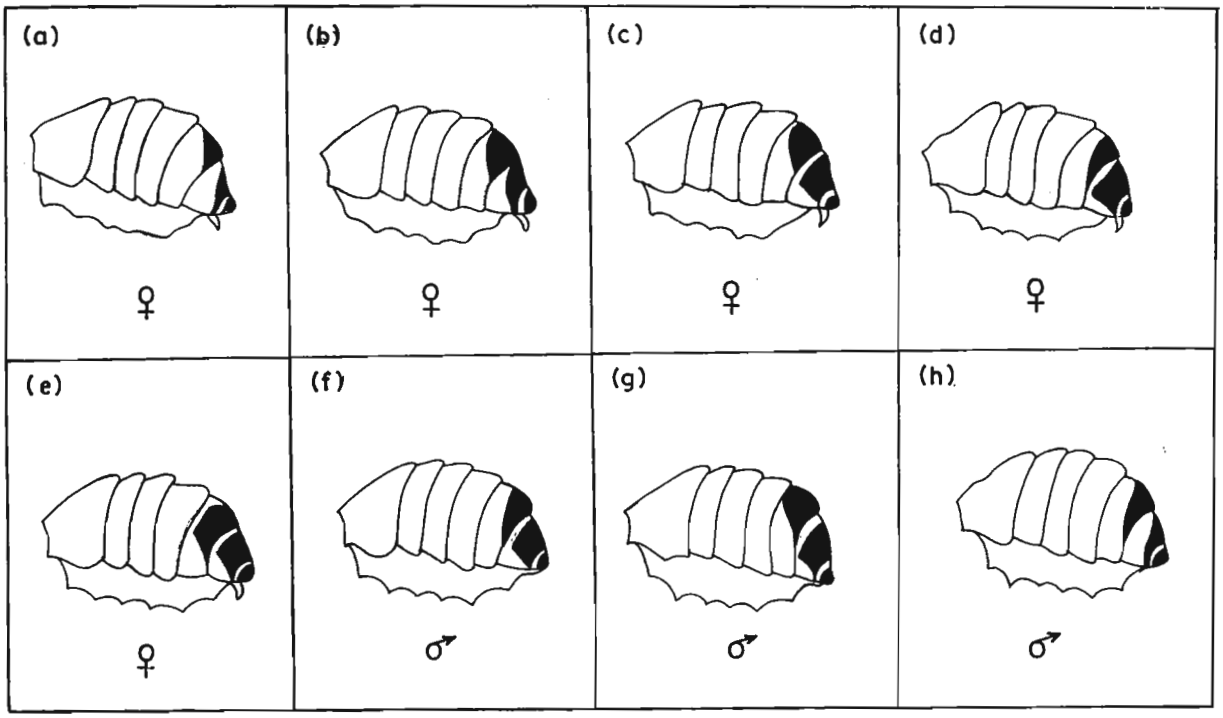

Figure 1. Pigmentation pattern of the 5th, 6th, and 7th tergites of *D. immigrans* Sturtevant. (a-e) females and (f-h) males.

Drosophila immigrans Sturtevant is a member of the *nasuta* subgroup of the *immigrans* species group of the subgenus *Drosophila* of the genus *Drosophila*. The Kumaun region is so far represented by two species of the *immigrans* species group, viz. *D. immigrans* Sturtevant and *D. sulfurigaster* Duda. D. immigrans is fairly distributed throughout the Kumaun region, while *D. sulfurigaster* has been recorded only from a few localities. These two species are morphologically very similar and for the identification of these species one has to depend on the genital structures of the male. During the present investigations, an attempt has been made to examine the abdominal pigmentation pattern of *D. immigrans* collected from different geographical localities of this region.

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

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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).

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