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A new inversion in *Drosophila prosaltans* from Brazil: The third case of apparently associated inversions in the species.

Tamarozzi, Mirela de Barros, Juliana Garcia de Oliveira, and Hermione E. M. de Campos Bicudo. Universidade Estadual Paulista - Instituto de Biociências, Letras e Ciências Exatas de São José do Rio Preto, SP, Brazil.

Drosophila prosaltans is the species in the *saltans* subgroup (*saltans* group, *Sophophora* subgenus) with the greatest extension of distribution area (Magalhães, 1962). It has been collected exclusively in the Neotropical region, from Costa Rica to the South of Brazil and Paraguay. Previous studies on chromosomal polymorphism of 33 strains from different places along its geographical distribution showed 14 inversions on the three chromosome pairs that characterize the species (two metacentric - chromosomes X and II, and one acrocentric - chromosome III) (Dobzhansky and Pavan, 1943; Bicudo, 1973; Bicudo *et al*., 1978). The distribution of the 14 inversions in the chromosome arms is as follows: seven in the XL arm; one in the XR; one in the IIL; three in the IIR, and two in the chromosome III.

In the present study, recently collected isofemale lines from four Brazilian localities were analyzed as to the presence of chromosomal polymorphism: Cacho Monteiro (Bahia State), Icém and Onda Verde (São Paulo State), and Eldorado (Rio Grande do Sul State). Synapsis was examined in salivary gland polytene chromosomes of third instar larvae, in lacto-acetic orcein stained squashing preparations.

Larvae from Icém and Eldorado did not show heterozygous inversions; the ones from Onda Verde showed the previously described inversions PXLd and PIILa, located on the chromosome arms XL and IIL, respectively; in Cacho Monteiro, they showed the previously described inversions PIILa (already mentioned, found in most of the Brazilian strains analyzed till now), and PIIIb, located in the chromosome III, and a new inversion, also in the chromosome III, that we named PIIIc. This new inversion includes five of the 25 sections into which Cavalcanti (1948) divided the *D. prosaltans*' chromosome III. The new heterozygous inversion and its breakpoints established on the mentioned chromosome map, are shown in Figure 1. With this new inversion, the total number of intraspecific inversions in *D. prosaltans* increased to 15.

Table 1. Number and percentage of homozygous (h) and heterozygous (he) arrangements present in chromosomes IIL and III of Cacho Monteiro strain. Number of individuals analyzed = 38.

		Arrangements	
Chromosome	Inversion	h (%)	he (%)
IIL	PIILa	12 (32%)	26 (68%)
III	PIIIb;PIIIc	24 (63%)	14 (37%)

In the strain from Cacho Monteiro, the new inversion PIIIc was found only occurring simultaneously with PIIIb, although they are at a distance of five sections from each other (Figure 1). The frequencies of

homozygous and heterozygous arrangements found in this strain are presented in Table 1. As we see, 37% of the examined larvae showed both inversions in heterozygous condition and none showed any of them occurring alone.

It is known that inversions not only inhibit recombi-nation in heterokaryo-types within the inverted segment, but they also modify recombination on their own chromo-some and even on others. The intrachromosomal inhibition between two non-overlapping inversions on the same chromosome arm is considered of particular interest (Krimbas and Powell, 1992). Data that have been obtained in different *Drosophila* species have shown that in some cases there is a complete recombination inhibition between them (for example in *D. subobscura*, Krimbas and Zouros, 1969), while in other species there is partial or no inhibition (for example in *D. willistoni*, Franca and da Cunha, 1968). This feature may also vary among different strains belonging to the same species, as in *D. annanassae* (Singh, 1973). The linkage association, in some species is maintained by selection (Levitan, 1958, 1961).

In *D prosaltans*, subject of the present paper, this is the third case of two non-overlapping inversions on a chromosome arm, detected only simultaneously. The other two involve the inversions PXLf and PXLg, also located at a distance of five sections from each other in the chromosome map (Bicudo, 1973), and PIIRc that was exclusively found with PIIRb, located at a distance of four sections (Bicudo *et al*., 1978). They have in common the fact that one of the inversions occurs close to the distal

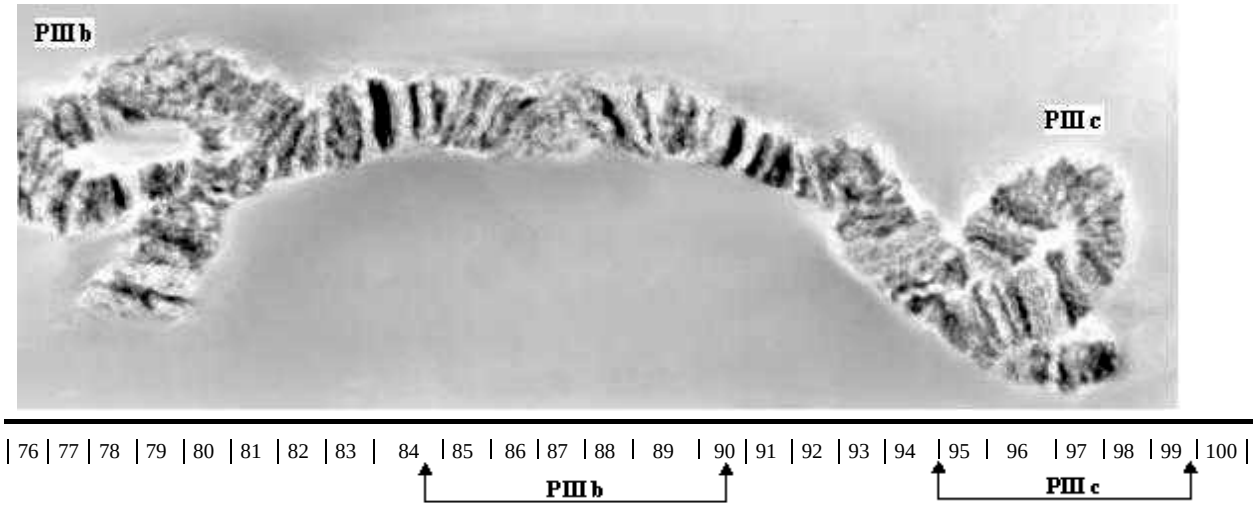

Figure 1. The inversions PIIIb and PIIIc, and their breakpoints established on the chromosome map presented by Cavalcanti (1948).

chromosome tip and that every one of these inversion combinations was detected in a single Brazilian locality. We think that these cases of apparent association of inversions deserve a better analysis in order to find how they affect the species.

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