Belyaeva, E.S. and I.F. Zhimulev.
Institute of Cytology and Genetics, Novosibirsk, U.S.S.R. Puff size variability in D. melanogaster.

Variability in puff size was studied in D. melanogaster salivary chromosomes in normal and experimental conditions. To rule out the influence of sex and asynchronous development of single individuals, only females at the stage of spiracle eversion (0 hour prepupae) were used.

Puff studies included the visual estimation of the puffing patterns of the X-chromosome in prepupae from a natural population of Drosophila (Alma-Ata), laboratory stocks (Batumi-L,

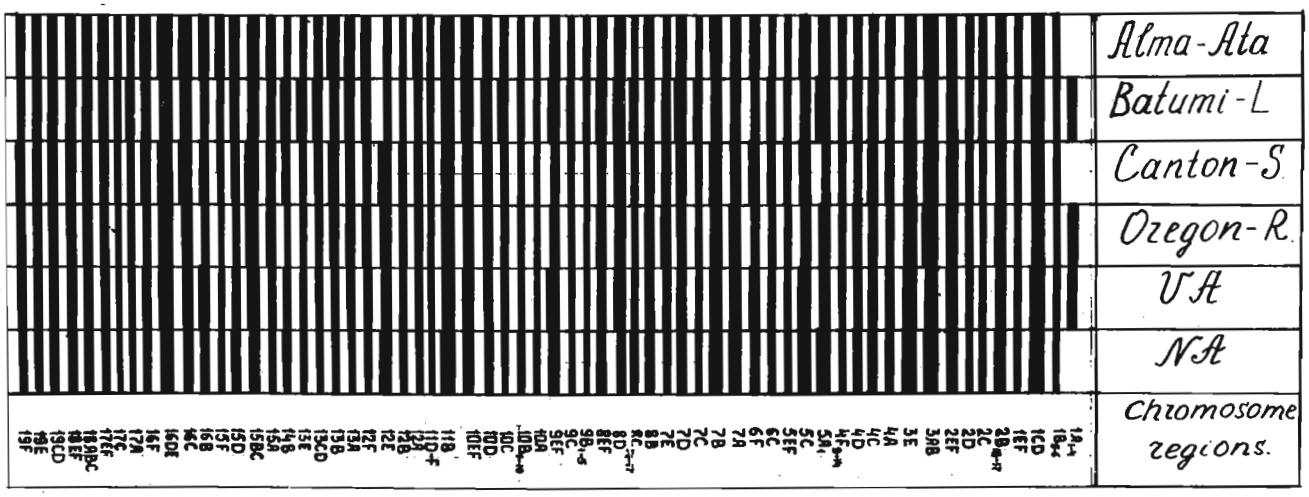

Figure 1. Puff size in the X-chromosome in a natural population and different D. melanogaster stocks. Width of bar corresponds to average puff size estimated visually in 50 chromosomes of each stock.

Oregon-R, Canton-S) and stocks NA and VA inbred for 100 generations (brother x sister). As a result, no significant differences were established in puffing patterns, nor in puff size (Figure 1). Puff $5A_1$ is an exception because stocks Canton-S and VA were found to differ in size. The differences are statistically significant. Thus, this study did not confirm the

Table 1. Variability in the size of puffs $63E_{1-5}$ and 71CE in 0 hour prepupae of Oregon-R stock.

Experimental conditions		Average ratio of diameters $63E_{1-5}$/63A	Average ratio of diameters 71CE*/72A	Variation range in size	Standard square deviation	Occurrence rate of puff	No. of puffs and individuals studied	
Normal culture		2.0		1.3-3.0	0.34	100%	100	10
		1.8*		1.3-2.7	0.28*	100%	100	10
Overcrowded culture		2.0		1.2-3.1	0.37	100%	100	10
		1.9*		1.3-3.0	0.34*	100%	100	10
Parts of one gland	proximal	1.7		1.3-2.1		100%	24	
		1.6*		1.3-2.0		100%	20	
	intermediate	1.7		1.3-2.1	0.27	100%	22	
		1.7*		1.3-2.2	0.24*	100%	13	
	distal	1.8		1.3-2.5		100%	15	
		1.7*		1.3-2.3		100%	8	

* Data for puff 71CE are given in last line.

results of Lychev (1965) according to which inbreeding decreases puff activity.

In the other experiments puffs $63E_{1-5}$ and 71CE and neighboring unpuffed bands (63A and 72A) were measured with an ocular micrometer. Average ratios puff diameters to band diameters were calculated for 0 hour prepupae developed in normal culture (yeast medium, 75 larvae per bottle) and overcrowded culture (75 larvae developed in a bottle to imago hatching. Their progeny were grown on stale food in the same bottle and subsequently was used for chromosome preparations). Average ratios in these puffs are similar in prepupae samples grown in normal conditions and very crowded conditions (Table 1). Therefore, the conditions under which the culture is maintained do not influence puff size, nor its variability. To analyze puff variability in a gland, aceto-orcein-stained gland was subdivided into 3 equal parts. No differences in puff size and the rates of occurrence were found in these puffs (Table 1).

Variability observed in all the samples was mainly due to the differences between the cells within a gland. However, these differences do not depend upon cell localization (Table 1).

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Reference cited: Lychev, V.A. 1965, Tsitologia (USSR) 7:325-333.

Hoenigsberg, H.F., L.E. Castro and H.R. von Prahl. Universidad de los Andes, Bogotá, Colombia. The Drosophila willistoni group from Colombia.

The geographic distribution of the willistoni group in tropical America raises several questions concerning sympatric speciation of certain members of some of the species of the paulistorum complex (Spassky, et al., 1971). Furthermore, some of the courtship and sexual isolation within the paulistorum complex which break up when Andean and Interior "species" from the Yaguaracacan (Amazon River branch) come together, permit hybridization which at least temporarily swarm the recently erected sexual barriers (Hoenigsberg, et al., 1973).

Moreover, the more general problem of the sexual isolation found within several "subspecies" of the paulistorum complex may gain somewhat if complete collecting records are shown. The following data may serve those interested in the speciation of this group. These figures constitute the complete records from 1968 - 1971.

	Collected Species										
	willistoni		equinoxialis		tropicalis		insularis		paulistorum		
Localities	#	%	#	%	#	%	#	%	#	%	Total
AMAZONIA											
Yaguaracaca A											
Leticia (Bajo)	64	24.52	172	65.90	4	1.53	-	-	21	8.05	261
Yaguaracaca B											
Leticia (Alto)	66	13.75	40	8.33	8	1.67	-	-	366	76.25	480
Marco - Brazil	201	21.16	308	32.42	315	33.16	-	-	126	13.26	950
CAQUETA											
Valparaiso - 1	204	51.78	50	12.69	62	15.74	-	-	78	19.80	394
Valparaiso - 2	348	40.80	92	10.79	95	11.14	-	-	318	37.28	853
VAUPES											
Mitú-1 (Rio arriba)	182	25.96	166	23.68	1	0.14	-	-	352	50.21	701
Mitú-2 (Misión)	438	43.93	141	14.14	17	1.71	-	-	401	40.22	997
MACARENA	31	18.67	80	48.19	30	18.07	-	-	25	15.06	166

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References: Hoenigsberg, H.F. and L.E. Castro 1973, Genetica (in press); Spassky, B., R.C. Richmond, S. Pérez-Salas, O. Pavlovsky, C.A. Mourao, A.S. Hunter, H.F. Hoenigsberg, Th. Dobzhansky and F.J. Ayala 1971, Evolution 25:129-143.