Differences in the First Progeny of *Drosophila melanogaster* Strains in Interspecific Competition

A strong degree of frequency-dependence in progeny production[1,2] in mixed cultures of 2 species of *Drosophila* was verified by one generation tests[1]. A decrease or maintenance of progeny number in cultures with high and low parental density is also observed[1]. We attempted to investigate, in mixed cultures of two species, whether the increase in parental density of one species inhibits the first progeny of the other competitor species maintained with constant parental frequency.

We used 15 wild strains of *D. melanogaster*, 12 homozygous and 3 heterozygous for the 2nd chromosome by means of CyL/Pm technique. From each strain 3 replicates were made with 200 flies each and introduced into bottles of $^1/_4$ l, with fresh medium. These 3 replicates received respectively 200, 400, and 600 flies, *D. pseudoobscura*.

In this way, three different sets of populations were established, with species initial frequencies of 1:1, 1:2, and 1:3. The populations were kept at 25 °C and, after 7 days of egg-laying, the parental flies were discarded. 14 days later the progeny counts were made only once. The results are summarized in the Table. Comparisons by means of χ^2 test between outcomes showed in the Table permit us to arrange the 15 strains of *D. melanogaster* in 5 groups with decrease of the first progeny: 1. in direction 1:1, 1:2, 1:3, strain M6; 2. in direction 1:3, 1:2, 1:1, strains M12 and M24; 3. in direction 1:1, 1:3, 1:2, strains M7, M8, M10, M15, M17, M27, POL 1, and POL 3; 4. in direction 1:3, 1:1, 1:2, strains M18 and M32; and 5. the strains M19 and POL 2, without statistically significative differences between the populations 1:1, 1:2, and 1:3.

Number, percentage, and values and P (with 2df) of χ^2-test of the first progeny of *Drosophila melanogaster* for the 3 types of populations

Strains	1:1		1:2		1:3		Values of χ^2 and P
	n	%	*n*	%	*n*	%	
M 6	18	86	2	9	1	5	26.01**
M 7	203	60	34	10	100	30	129.16**
M 8	239	66	28	8	97	26	190.79**
M 10	166	70	20	8	52	22	148.48**
M12	6	3	34	16	175	81	228.97**
M 15	202	88	4	2	23	10	312.70**
M 17	380	62	26	4	207	34	306.72**
M 18	121	42	26	9	142	49	79.32**
M 19	104	36	101	34	88	30	1.48
M 24	27	23	40	33	53	44	8.46*
M 27	253	52	64	13	172	35	110.32**
M 32	24	11	3	1	194	88	297.82**
Mean	145	±34	32	± 8	109	±20	
POL 1	258	72	49	14	51	14	241.72**
POL 2	73	36	67	33	61	31	1.08
POL 3	184	60	26	8	98	32	121.89**
Mean	172	±54	47	±12	70	±14	

*, $P < 0.05$; **, $P < 0.01$.

In the 2nd group strains, the greater the parental density of *D. pseudoobscura* the greater is the first progeny of *D. melanogaster*, as was observed[3] in *D. pseudoobscura*. i.e., the carriers of the 3rd chromosome gene arrangement standard (ST) are superior in fitness over the carriers of the 3rd chromosome inversion Chiricahua (CH) in cultures with high larval density, and the opposite relation occurs in cultures with low larval density. In this sense, the larval competition between *D. melanogaster* and *D. pseudoobscura*, can be increased by extended egg-laying period, because these 2 species lay more eggs in longer oviposition periods[4].

Comparing the mean productivity of *D. melanogaster*, first progeny of the homozygous wild strains, by means of t-tests, the following relations were found: 1:1 ≠ 1:2 (t = 3,225; 22 df; $P < 0.01$), 1:1 = 1:3 (t = 0,897; 22 df; $P > 0.05$), and 1:2 ≠ 1:3 (t = 3,424; 22 df; $P < 0.01$). Moreover, for the heterozygous no differences were found. As is suggested by the results observed, homozygous and heterozygous for 2nd chromosome of *D. melanogaster* exhibit different outcomes in the production of the first progeny in interspecific competitive conditions.

Resumen. El resultado de la producción de la primera progenie de *D. melanogaster* fué diferiente para los tres tipos de poblaciones de competencia com *D. pseudoobscura* y también para las estirpes homo y heterocigotas de *D. melanogaster*.

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A Chromosome Mutation Affecting the Number of Nucleoli in *Xenopus borealis* Parker[1–3]

When crossed with a male of the same species, *Xenopus borealis* ♀ produces offspring whose number of nucleoli (*nu*) per cell is 1 or 2: the proportion of 2 *nu* nuclei varies from one embryo to another between 46 and 76%. It is interesting to report here the exceptional case of a couple of *X. borealis* from Lake Samburu area (Northern Kenya).

Embryos, squashed in toto at stages 10–11 and later at stage 46 (Nieuwkoop and Faber[4]) were examined by phase contrast microscopy. In some there were 1 or 2 nucleoli per nucleus, in others 1, 2 or 3: out of 53 embryos, 25 (47%) belonged to the first category, 28 (53%) to the second one. These proportions suggested a Mendelian distribution of this anomaly.

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[2] Unpublished research in this laboratory has shown that *Xenopus laevis borealis* (Parker) is a species on its own right and we propose to name it *Xenopus borealis* (Parker).
[3] Material collected by Fischberg and Kobel, who express their gratitude to the Fisheries and Game Dept. of Kenya for permission to collect frogs of the genus *Xenopus*.
[4] P. D. Nieuwkoop and J. Faber, *Normal Table of Xenopus laevis (Daudin)* (North Holland Publishing Company, Amsterdam 1956).