Ribera, I.L. University of Santiago de Compostela, Santiago, Spain. A Study of the influence of r and K reproductive chromosomal arrangements O_{st} and O_{3+4+7} of chromosome O of Drosophila subobscura.

The purpose of this work is to contribute to the revision of the ideas which have been advanced about rigid and flexible chromosomal polymorphism, since Dobzhansky (1962) first proposed and defined these terms.

To do this, we have studied the influence of the reproductive strategies r and K on the arrangements O_{st} and O_{3+4+7} of the chromosome O of Drosophila subobscura.

Among populations which had responded differentially to these strategies over a period of nineteen generation in a variable temperature (v), no difference in response was observed when a change in strategy was induced in these populations. We attributed this result to a loss of genetic variability in the chromosomal arrangements, caused by the special conditions of selection in the laboratory. Next, the populations were mixed in order to generate new variability by recombination. When the populations were again subjected to the reproductive strategies r and K, a differential response was observed favoring the arrangement O_{3+4+7} with strategy vr, and favoring the arrangement O_{st} with strategy vK.

These results were consistent with those already observed in the original populations, and led us to conclude that the polymorphism of chromosome O for the arrangements O_{st} and O_{3+4+7} does not meet the conditions established by Dobzhansky to allow it to be categorized as rigid.

References: Dobzhansky, T. 1962, Am.Nat. 96:321-328; MacArthur, R.A. & E.O. Wilson 1967, Princeton Univ. Press, N.J.; Pianka, R.E. 1970, Am.Nat. 104:592-597; DeFrutos, R. 1978, Genetica 49,2/3:139-151; Taylor, E.C. & C. Condra 1980, Evolution 34:1183-1193.

Robertson, J.P., H.K.Kaya & J.B.Boyd. University of California, Davis, USA. Microsporidian strikes again--a further warning.

In the Fall of 1982 several mutant stocks of Drosophila melanogaster that had developed poor fertility were found to contain flies with bloated abdomens. Giemsa staining (Hazard et al. 1981) of smears obtained from larvae, pupae, and flies revealed the vegetative stage (schizonts) and spores of the intracellular parasite Nosema. A similar infection was reported in 1957 by Wolfson, Stalker and Carson in which they state: "Infected individuals can be recognized, upon dissection in saline, by the presence of spores in the tissues and body fluid. The spores are easily identified by their strikingly consistent size and shape and by an extremely thick and rigid capsule. They are ovoid in shape, 4-5 μ in length, and may occur singly in the body cavity or associated with tumor-like structures." Subsequent referenes which have been particularly helpful in dealing with this problem include: Stalker & Carson 1963; Armstrong 1977; Burnett & King 1962; Kramer 1964; and Hazard et al. 1981. In particular, care must be taken to avoid confusing Nosema spores with intestinal yeast.

The extent of infestation in our stocks was monitored by squashing those flies with the largest abdomens in a drop of physiological saline. Phase contrast microscopy reveals high spore concentrations in infected flies once they have reached 1-2 weeks of age. This survey revealed that 30% (6/21) of all mutant stocks carried in bottles were infected, but no Nosema was detected in 25 vial stocks. Within a single infected mutant stock, between 25-100% of the individual bottles contained infected flies. This pattern of infection suggests that the fly-handling equipment is the primary vehicle of transmission, since vial stocks are transferred directly whereas the bottle stocks are frequently anesthetized.

Thus far we have been unable to eliminate this protozoan with Fumidil B as has been done in the case of a Nosema kingi infection in Drosophila willistoni (Armstrong 1976). Although a strong uninfected stock survived the treatment, flies in weak or infected stocks seem to be more sensitive than the microsporidian. Fortunately we have been able to rescue all mutant stocks by selective elimination of contaminated cultures. This has been accomplished by regular sterilization of the fly-handling equipment with heat or 1-2% sodium hypochlorite. At present our first indicator of infection is the presence of distended abdomens in older flies. Although reduced fertility is a frequent sign of infection, infected flies can exhibit reasonable fertility.