

Nuclear Morphology in the Nutritive Cells of *Drosophila* Testes

The behaviour of the nutritive cells in relation to the germinal cells during spermatogenesis in *Drosophila* has been summarized by COOPER¹. However, the characteristics of the nuclear organization in nutritive cells seems to have been overlooked. The present report deals with the morphology of the nutritive cell nuclei which have been studied in vivo under the light microscope.

Testes of normal larvae from *Drosophila melanogaster*, *D. testacea*, *D. hydei*, *D. immigrans*, *D. repleta*, *D. buzzatii* and *D. phalerata* were isolated in *Drosophila* Ringer's solution. Testes from XO and XYY larvae of *D. melanogaster* were also used. After a gradual flattening of the testes², the germinal and nutritive cells form a monolayer, which allows observation in vivo for 10–15 min. The pictures were obtained in a Zeiss Photomicroscope with Planapo X100 phase contrast objective.

The nutritive cell nuclei show a species-specific morphology, as in the case of the Y-chromosome loops in the spermatocyte nuclei³. The former nuclei show a small size in comparison with those of spermatocytes but they are slightly greater than spermatogonia. In the species studied, the nucleolus appears as a globular and prominent body, 3–5 μ m in diameter, which in *D. testacea*, *D. hydei*, *D. immigrans* and *D. phalerata* generally shows a peripheral dark region and a lighter central one.

The nuclei in *D. melanogaster* and *D. testacea* show two dense and free knobs and another dense knob which is attached to the nucleolus (Figure 1). Each free knob appears embedded in a diffuse material which forms irregu-

lar-shaped masses. Often the nucleolar knob also presents a short diffuse arm. The same morphology was observed in the nutritive cell nuclei of XO and XYY testes of *D. melanogaster*.

A prominent spherical nucleolus appears bound to a granular dense body which is surrounded by granular material in *D. hydei* (Figure 2). In *D. immigrans* there is a round body, with or without central vacuole, in close relation with the nucleolus and the masses of granular material. Generally this latter material also presents a dense knob (Figure 3). *D. repleta* only shows a nucleolus and some small areas of low density (Figure 4). *D. buzzatii* presents a vacuolated dense body near the nucleolus and a mass of diffuse material. The nucleolus in nutritive cell nuclei of *D. phalerata* is attached to the nuclear envelope. In this species 2 free knobs, each surrounded by a small area of granular material was observed.

The different morphology of the nutritive cell nuclei in the testes of several *Drosophila* species, seems to indicate certain similarities with the species-specific loops of the Y-chromosome in spermatocytes from this genus^{3,4}. However, the general organization of nutritive cell nuclei in the XO and XYY male larvae of *D. melanogaster*, did not show any appreciable difference to those from XY normal larvae, each having the nucleolar knob and the 2 knobs embedded in diffuse material. It can be assumed that the nuclear structures we have described do not correspond to any Y-chromosome loop.

At present the optical features of the nutritive cell nuclei in *Drosophila* testes are not yet clear. We hope that the cytochemistry and ultrastructural analysis, which are now in progress, may explain the peculiarities of this nuclear organization⁵.

Resumen. Se describe en microscopía óptica una serie de estructuras características dentro del núcleo de células nutritivas vivientes en testículos de varias especies de *Drosophila*. Estas estructuras consisten en corpúsculos densos, homogéneos o vacuolados, y en masas de material difuso o granular.

J. C. STOCKERT⁶ and P. ESPONDA

Centro de Investigaciones sobre Reproducción,
Facultad de Medicina, Paraguay 2155, Buenos Aires
(Argentina), and Departamento de Citología,
Instituto de Biología Celular, Velazquez 144,
Madrid-6 (Spain), 22 April 1971.

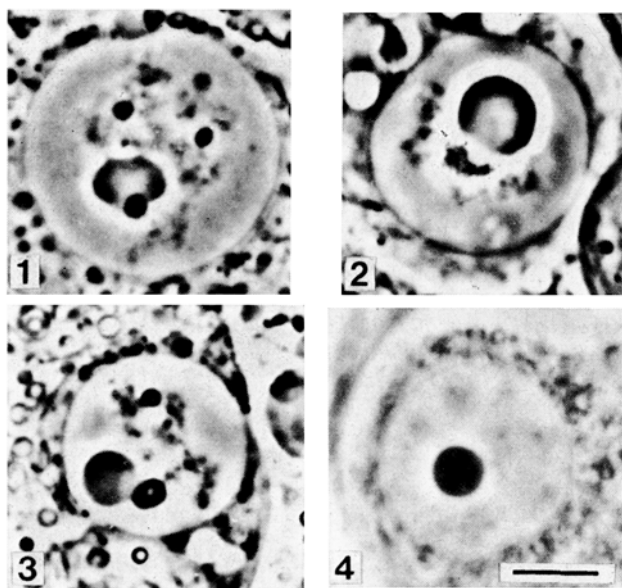


Fig. 1–4. 1. Nutritive cell nuclei from testes of *Drosophila testacea*. 2. *D. hydei*. 3. *D. immigrans*. 4. *D. repleta*. Phase contrast, $\times 2200$. Scale mark, 5 μ m.

¹ K. W. COOPER, in *Biology of Drosophila* (Ed. M. DEMEREC; John Wiley and Sons, Inc., New York 1950), p. 1.

² G. F. MEYER, *Drosoph. Inf. Serv.* 40, 80 (1965).

³ O. HESS and G. F. MEYER, *Adv. Genetics* 14, 171 (1968).

⁴ O. HESS, *Ann. Embr. Morph., Suppl.* 1, 165 (1969).

⁵ We wish to thank Dr. E. TORROJA, Instituto de Genética y Antropología, Madrid (Spain), for providing the *Drosophila* species and the XO and XYY larvae of *D. melanogaster*.

⁶ Supported by The Population Council, Inc., New York.

Repopulation of Thymus, Spleen and Bone-Marrow of Irradiated AKR Mice Injected with Normal or Irradiated Bone-Marrow Cells

The inflow of marrow cells into the bone-marrow and into the lymphoid tissues has been studied in mice by several authors using transfusions of syngeneic normal bone-marrow cells carrying marker chromosomes. Experiments on non-¹, part-body^{2,3} or whole-body irradiated^{4–8} male

CBA recipients receiving CBA-T6T6 normal bone-marrow cells, indicated that cells may be transferred from the marrow to the thymus, although dividing donor cells were observed in the thymus at a considerably later time than in the other tissues studied. The present experiments have been