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SIZE RELATIONSHIP OF OOCYTES THEIR NUCLEI AND NUCLEOLUS IN *LABEO PANGUSIA* (HAMILTON)

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The size relationship of oocyte, nucleus in *Labeo pangusia* resembles ascidian and amphibian oocyte. The result indicate active role of nucleolus and nucleus in previtellogenesis and indirect role of nucleolar extrusions in the yolk formation during vitellogenesis.

Recently nuclear intervention in cytoplasmic growth and differentiation has formed the subject of many studies. One significant observation from these studies is the recognition of the major part played by the nucleolus in developing egg (Caspersson, 1950; Brachet, 1957; Vincent, 1957; Sirlin, 1961; Raven, 1961; Nath, 1968). The determination of size of the nucleus and nucleolus in different stages of growth of the oocyte is important in such studies; further the chemical changes undergone in the nucleolus and nucleus can also be related during oocyte growth. Very little work on volume relationship of different cell structures and the related functional significance during the growth of the oocyte has been done (Sareen & Sharma, 1974). The present paper presents the size relationships of the oocyte, nucleus and nucleolus in *Labeo pangusia* during oogenesis.

In *L. pangusia*, the oocyte grows to a maximum diameter of 960 μ. The diameter of nucleus is comparatively more ranging between 6 to 9 μ in the very young oocytes which in turn range between 9 to 13 μ diameter. With further growth, the size of oocyte increases along with the increase in the size of nucleus. The oocytes ranging from 16 to 98 μ diameter have nuclei ranging from 12 to 50 μ diameter. The increase in the size of nucleus has been noted upto a maximum of 160 μ in oocytes having diameter of 400 μ. But during further growth of the oocyte, the size of nucleus does not increase upto the end of vitellogenesis.

With regard to nucleolus, there is increase in diameter to a maximum of 20 μ in the oocytes measuring upto 120 μ diameter. But during further growth of oocytes, the size of nucleoli show decrease which is due to the division of the

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single nucleolus present in the very young oocyte. No further decrease in the diameter of the nucleolus after 9 μ was observed though the number of nucleoli increased considerably. Nucleolar extrusions were observed during the previtellogenesis which move away from nucleus and ultimately disintegrate in ooplasm.

The size relationship of oocyte, nucleus and nucleolus is shown (Fig. 1). The size relationship in *L. pangusia* thus resembles those described for amphibian (Gall, 1955), ascidian (Rao, 1959), starfish (Vincent, 1957, dragon-fly (Seshachar & Bagga, 1963) and insect (Sareen & Sharma, 1974) oocytes.

From these observations it appears that the nucleolus and nucleus are active in early growth of oocyte *i. e.* previtellogenesis contributing mainly towards its protein and lipid contents. This is supported by the increase in the number of nucleoli rich in lipoprotein and RNA together with the nuclear extrusion in the early growth of the oocyte. Movement of nucleolar extrusions towards the periphery of oocyte and their disintegration before the onset of vitellogenesis indicates their indirect role in the formation of yolk during vitellogenesis. However, contribution to this end also comes from other sources (Shackley & King, 1978, Shahi, *et. al*, 1979).

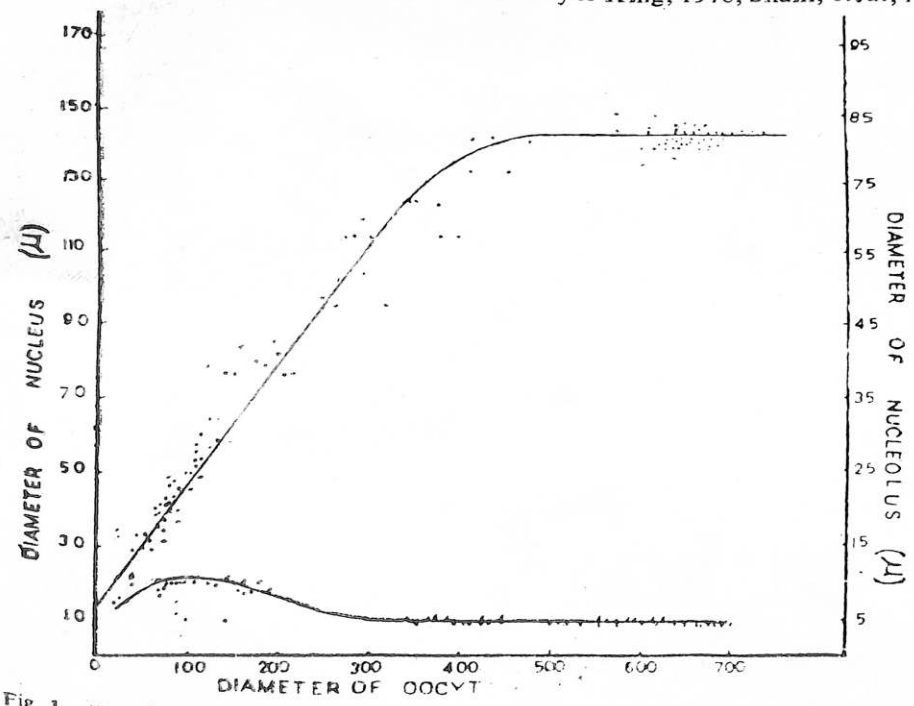

Fig. 1. The size relationship of oocyte, nucleus and nucleolus in *L. pangusia*.

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