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E. Anderson ... H.W. Beams

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The ovary of sexually mature non-pregnant guinea pigs has been studied by light and electron microscopy. The electron micrographs of oogonia reveal a large nucleus with an irregular nucleolus composed of dense granules arranged in reticular fashion. In the cytoplasm are many mitochondria and a few elements of the endoplasmic reticulum. The large "œyolk nucleus" is osmiophilic after preparing material by Kolatchew's technique. Submicroscopically, this body is composed of many double membrane lamellae and vesicles of varying sizes. It is referred to as *Golgi material*. The plasma membrane of oogonia is smooth and in direct contact with that of the flattened follicular epithelial cells.

The cytoplasm of primary oocytes contains many vesicles, regions displaying small masses of Golgi complexes, multivesicular bodies, mitochondria and a scant amount of cisternae of the endoplasmic reticulum. The plasma membrane is thrown into protoplasmic projections in the form of microvilli.

The cytoplasm of cells forming the corona radiata consists of the same cytoplasmic constituents as the oogonium and primary oocyte. The endoplasmic reticulum, however, is more highly organized. These cells appear stellate and their processes end on the plasma membrane of the oocyte in the form of desmosome-like areas.

The zona pellucida appears to be composed of a homogeneous, apparently structureless, material of relatively low density. Within this material are embedded the microvilli of the primary oocyte and the processes of the follicle cells.

A suggestion is made concerning a possible mode by which the primary oocyte receives its nutrient materials.



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