

ZANIOLO G., BURIGHEL P. and TRENTIN P. (Department of Animal Biology, University of Padova): *Egg envelopes and placentation in Botryllus schlosseri (Ascidacea)*.

A colony of *B. schlosseri* consists of numerous hermaphrodite individuals with gonads sited in the mantle on either sides of the body. The mature eggs are ovulated into the atrial chamber where they remain attached to the wall by means of the « placenta ». After fertilization, they develop into a swimming tadpole larva which escapes from the colony.

By light and electron microscopy, we have analyzed the egg envelopes and other contiguous structures (oviduct and atrial epithelium) during ovulation and « placenta » formation.

Only a few oocytes mature in every zooid. The single oocytes are, actually, one-egg ovaries furnished with their own oviduct, which appears as a vesicle interposed between the atrial epithelium and the oocyte. The egg is surrounded by three distinct cellular envelopes: one formed by the test cells and the others by the inner and outer follicle cells. There is also an acellular vitelline coat which lies between the test cells and the inner follicle.

Before ovulation, the egg is encrusted by test cells which possess numerous, round, dense granules and a well developed smooth endoplasmic reticulum (ER). The inner follicle cells are joined to each other by means of interdigitations and cell junctions leaving wide gaps which are invaded by cell extensions of the outer follicle. The inner follicle cells are flat and have a few round granules, dense glycogen-like material and many smooth vesicles. The outer follicle cells form a continuous, thick layer and show a great number of long, flattened cisternae of rough ER.

When the egg matures, the oviduct greatly increases in size; its epithelium thins and coalesces with the atrial wall and the outer follicle. In these zones the oviduct opens. The egg penetrates it, and moves to enter the atrial chamber, where it remains attached by a cup-like structure, the « placenta ». The cup has a double wall: the outer derived from the atrial epithelium, and the inner from the oviductal epithelium. The interspace communicates with the underlying blood lacunae.

When the egg enters the oviduct, the outer follicle is discarded by the egg and forms a sort of corpus luteum in the mantle, which degenerates in a short time. The inner follicle remains all around the egg. In the region of the cup, the follicle cells show numerous, irregular, microvilli-like protrusions extending towards the contiguous oviductal epithelium. The two epithelia are bound by dense filamentous material which is apparently secreted by the inner follicle. Circulating blood cells enter the interspace of the cup during embryo development.

The results we have obtained show that in *B. schlosseri* the inner follicle participates together with the oviductal and the atrial epithelium in the formation of the « placenta » and that it has a primary role in facilitating the attachment of the embryo to the atrial wall, and a probable role in mediating the transfer of substances from the parent to the embryo.