

Kambysellis, M.P. New York University, New York. Ultrastructure of the chorion in *Drosophila* species.

During the last stages of egg maturation the follicle cells synthesize and lay around the oocyte a protective shell, the chorion. This complex structure consists of lipids, carbohydrates and several proteins (King and Koch,

1963; Paul et al., 1972) and exhibits an intricate morphology when viewed under a scanning electron microscope (Figure 1).

The general chorionic pattern in more than 20 species analyzed was found to be the same, a network of hexagons. Significant differences in the size and shape of the hexagons were found among the species (Figures 1.2, .5, .7, .8) and also between different positions in the same egg (Figures 1.7, .11). Each hexagon represents the imprint of a follicle cell. The rims, which correspond to the borders of the follicle cells, are in relief, augmented by continued secretion, while the center of the cell remains concave with numerous pores. The thickness and shape of the hexagonal rims and the number and size of the pores differ among species, and at different locations on the same egg. We suspect, on the basis of preliminary data from a correlated ecological and morphological study, that the diversity of the pore size is correlated with the respiratory needs of the developing embryo (Hinton, 1960). The process of chorion formation during oocyte maturation is now under investigation. (Supported by NSF Research Grants GB-29288 and GB-34168 and Arts and Sciences Institutional Grant.)

References: King, R.C. and E.A. Koch 1963, Quart. J. Micr. Sci. 104:297; Paul, M., M.R. Goldsmith, J.R. Hunsley and F.C. Kafatos 1972, J. Cell Biol. 55:653; Hinton, H.E. 1960, J. Insect Physiol. 4:176.

Figure 1 (next page) Representative scanning electron micrographs of mature *Drosophila* oocytes:

- .1-.3 *D. mimica* (140, 3,000 and 10,000 x)
- .4-.6 *D. gymnobasis* (300, 3,000 and 10,000 x)
- .7 *D. virilis* dorsal view (3,000 x)
- .8-.9 *D. melanogaster* (3,000 and 10,000 x)
- .10-.12 *D. virilis* microphyle triangular (300, 3,000 and 10,000 x)

All photographs were taken with a Jelco model JSM-U3 scanning electron microscope. The specimens were fixed in 3% glutaraldehyde and coated with 60% gold - 40% palladium in a model Jee-4C vacuum evaporator.

Breugel, F.M.A. van. University of Leiden, The Netherlands. Some new phenes of lethal tumorous larvae and adult characteristics of some "Durchbrenner".

An array of larval characteristics of the late larval lethal mutant *l^{tl}* (lethal tumorous larvae) have been described by Kobel and van Breugel (1967) and recently by Zhimulev and Lytchev (1972). At the moment sampling of lethal larvae in our *l^{tl}/TM₃* strain is facilitated because *l^{tl}* larvae show rather early in development a

heavily bloated caudal end, more pronounced than it seemed six years ago. The stock is still perfectly balanced and in normal cultures only Serrate (*l^{tl}/TM₃*) flies emerge. However, from 25°C subcultures some "Durchbrenner" may arise if larvae with bloated caudal ends are isolated and placed on fresh standard food. The (pseudo)pupae that eventually arise may show some degree of imaginal differentiation or even a complete imago that emerges. The flies thus obtained can be easily divided in a male and a female class because of their size, pigmentation and sexcomb, but usually they lack outward genitalia. Some of the flies showed extra scutellar bristles, but this happens to occur also in sibs. In contrast to their sibs, the exceptional flies have normal wings, so are most likely indeed *l^{tl}* homozygotes. Out of 181 assumed *l^{tl}* larvae emerged 24 flies all with wildtype wings. Of them, 8 males and 8 females completely lacked outward genital structures, 3 more of both sexes had abnormal genitalia and 1 male and 1 female looked normal but proved to be sterile. Some of the genitalless flies showed rudiments of internal gonads after dissection. In one male the outward genitalia hang on the inside of the abdomen. It seems reasonable to accept, that there is a correlation between the bloated caudal structure of the larval body and the lack or abnormal outgrowth of the outward genitalia of the adult.

References: Kobel, H.R. and F.M.A. van Breugel 1967, Genetica 38:305-327; Zhimulev, I.F. and V.A. Lytchev 1972, DIS 48:49.



Kambysellis, M.P., Ultrastructure of the chorion in *Drosophila* species: legend preceding page.