

Stage 2 Beginning of Segmentation

20–24 Hours

Within 24 hours the first cleavage division is completed. The eggs are near the exit of the ampulla, between the first and the second loop of the oviduct (Fig. 9). This second loop is said to exhibit peristaltic contractions, which aid ova transport [5]. *The first cleavage* yields two cells of about equal size, with finely granulated cytoplasm. Their large spherical nuclei contain 4–5 nucleoli that are surrounded by a small border of chromatin. The egg and zona pellucida shrink considerably after Bouin's fixation. The overall diameter is 48 to 64 microns, including the zona. After fixation with OsO₄ there is much less shrinkage and the zona appears in sections as a distinct thick ring (Figs. 10 and 11), with an overall diameter of 83 microns. In the fresh, unfixed state, eggs of this stage are 80–100 microns in diameter.

The second polar body is tangentially cut in Fig. 12. The first polar body, visible in another plane of section, is located about 90 degrees from the second, and is in metaphase. The nucleus of the second polocyte is typically small and has peripheral chromatin (Fig. 10).

The corpus luteum has slightly enlarged cells, which form irregular trabeculae separated by invading capillaries. As an exception, in Fig. 9 a distinct central blood coagulum is visible. *Spermatozoa* are visible in the oviduct and uterus up to 20 hours after copulation (KT 975). There are also few leukocytes and other free cells. Thereafter, spermatozoa disappear completely.

| Material | Age | Content |
|-----------|------|---|
| KT 975/76 | 20 h | 4 fertilized eggs: one 2-celled, in the process of cleavage, one degenerating |
| KT 790/91 | 24 h | 4 fertilized eggs: all 2-celled, at lower end of first loop of oviduct |
| KT 729 | 45 h | Eggs not fertilized, some exhibiting second meiotic division, some degenerating |

Figs. 9–12: Beginning of segmentation, 20 h

FIG. 9. Overall picture: ovary–oviduct.

Drawing (*right*) shows location of eggs in oviduct (*arrow*); *Cl* = fresh corpus luteum. Bouin, H.-E. KT 791. 40:1

FIG. 10. Two-celled egg with polar body indicated by *P*. Phase contrast. Fixation OsO₄.

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FIG. 11. Two-celled egg.

In nucleus, *N*, several small nucleoli are visible. Phase contrast. Fixation OsO₄.

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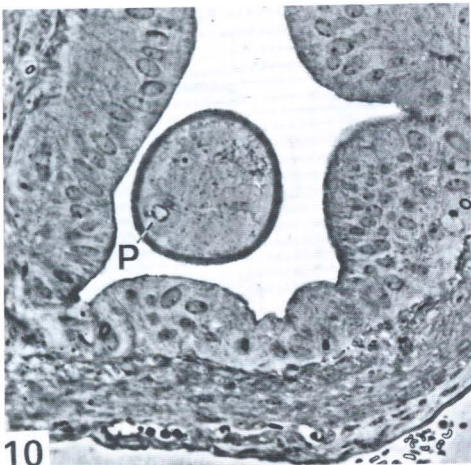
FIG. 12. Two-celled egg, higher magnification. Bouin, H.-E.

The zona pellucida obviously thinned in comparison to Figs. 10 and 11.

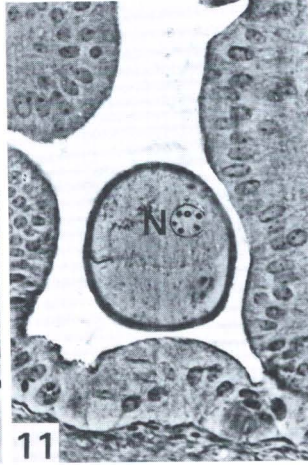
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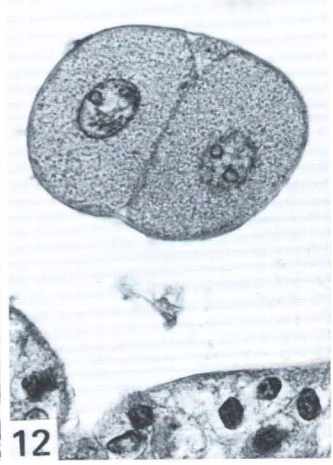
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10



11



12