

**Stage 11 Neural Plate, Presomite Stage**

7 1/2 Days

Some retarded specimens of 7 days 20 hours were included in this stage. Developmental differences between embryos of the same nominal age still exist.

**Closure of Amnion**

At 7 1/2 days, the amniotic cavity is sealed off. From now on, there are three separate cavities: amniotic cavity, exocoelom, and ectoplacental cleft (Figs. 64 and 72b). For a while the cleft extends as the *ectoplacental duct* to the amnion. Shortly before the development of the foregut, this duct is pushed away from the front wall of the egg cylinder by the enlarging exocoelom. It persists for awhile as a short blind extension.

*The neural plate* is clearly delimited anteriorly and laterally. In the midline, it forms a shallow groove. Posteriorly it is less clearly defined and merges with the primitive streak (Fig. 70). In front of the neural plate, a small oral plate consisting of two epithelia can be seen. It is just posterior to the small heart rudiment (Fig. 74).

*The head process* is now developing. The flattened entodermal cells situated at the free end of the egg cylinder disappear. Therefore, the head process is directly exposed to the lumen of the yolk sac. It is obviously intercalated secondarily into the entoderm and cannot be distinguished from it with certainty. In the midline, its cells become cylindrical; posteriorly they form the *notochordal plate*, which is slightly indented. This indentation has also been called the *archenteron* (Fig. 69).

The archenteron is a transitory structure that has nothing to do with the formation of the hind gut. The development of the notochordal plate is similar to the formation of the notochordal canal in the human. In mice, no canal and no distinct primitive pit exist. A "canalis neurentericus" is also completely lacking.

**Foregut**

At 7 days, a small furrow appears in the entoderm beneath the anterior amniotic fold (Figs. 66 and 67, F). It is situated at the boundary between the embryonic and extraembryonic region, *anterior* to the developing heart rudiment, in the area of what later will be the septum transversum [41]. The structure of the entodermal cells in this area changes markedly. Sometimes this change can already be seen at 6 days (in Fig. 50 this is represented by a slight constriction in the middle of the right wall of the egg cylinder). The foregut pocket will develop *caudal* to this constriction (Fig. 74).

Material	Age	
KT 996	7 days 10 h	8 egg cylinders. Formation of amnion 1 pathologic egg cylinder, without lumen
KT 954/55	7 days 20 h	8 neurulae, presomite stages 2 of them implanted in close proximity
KT 687	8 days 0 h	4 neurulae, presomite stages 2 somite stages: 1 and 2 somites; deep foregut portal 1 in resorption

**Figs. 65–71: Neural plate, presomite stage, 7½ days**

FIG. 65. Low magnification of uterus, cross section.

*U* = remnant of uterine lumen.

KT 996/2, 7 days 10 h. 24:1

FIG. 66. Detail of Fig. 65.

*H* = posterior amniotic fold, *F* = furrow in entoderm. The exocoelom (marked throughout with \*) is also visible within the anterior amniotic fold.

KT 996/2, 7 days 10 h. 270:1

FIG. 67. Tangential section of lateral amniotic fold, with exocoelom\*.

*Q* = extraembryonic transverse fold, *E* = ectoplacental cavity, *F* = fold in entoderm.

KT 996/3, 7 days 10 h. 130:1

FIG. 68. Low magnification, slightly older stage.

*M* = mesometrium.

KT 954/1, 7 days 20 h. 20:1

FIG. 69. Head process with archenteron, *Ar*.

*A* = amniotic cavity, *B* = blood islet, *E* = ectoplacental cavity, \* = exocoelom, *K* = head fold.

KT 954/1, 7 days 20 h. 100:1

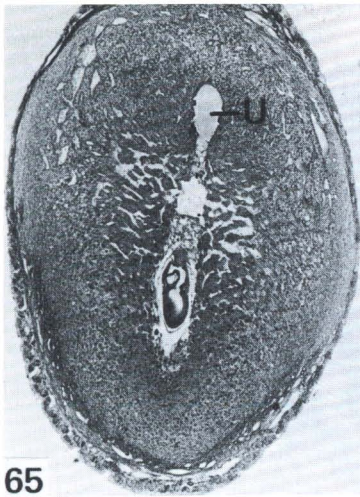
FIG. 70. Detail of Fig. 68, showing allantois (*All*), *E* = ectoplacental cavity, *A* = amniotic cavity, \* = exocoelom, *P* = primitive streak.

KT 954/1, 7 days 20 h. 100:1

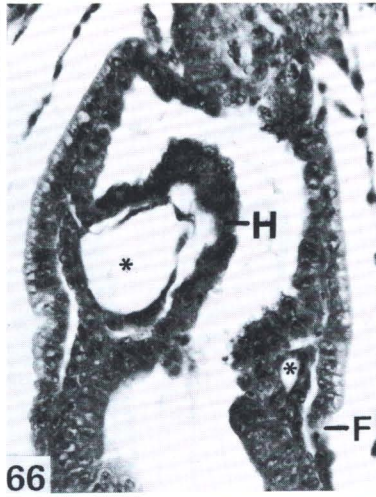
FIG. 71. Higher magnification of allantois (*All*) and Reichert's membrane (*R*).

*E* = ectoplacental cavity, \* = exocoelom.

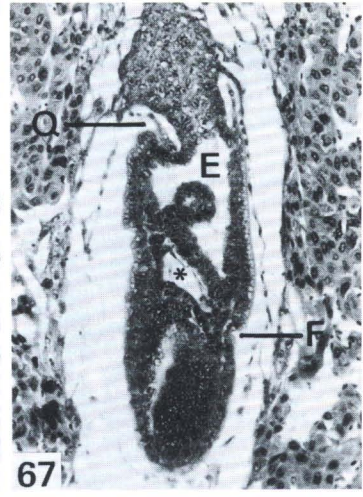
KT 954/1, 7 days 20 h. 270:1



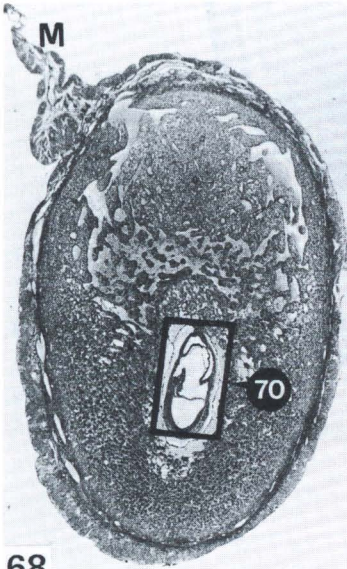
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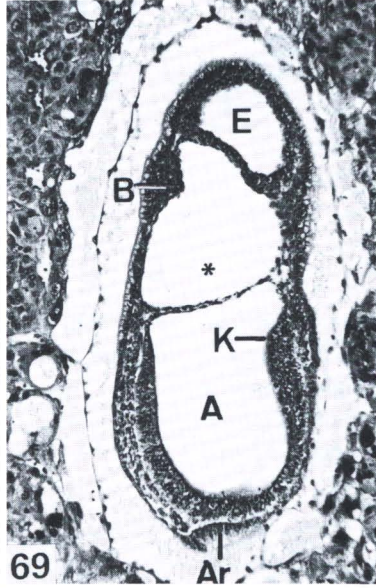
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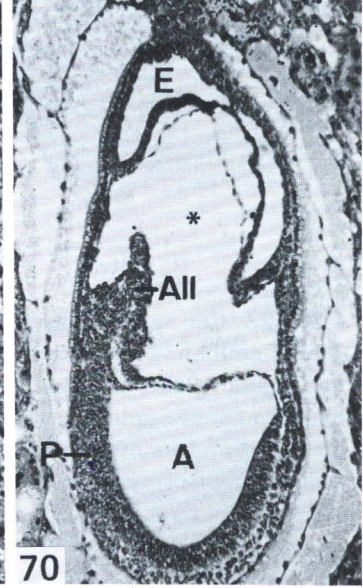
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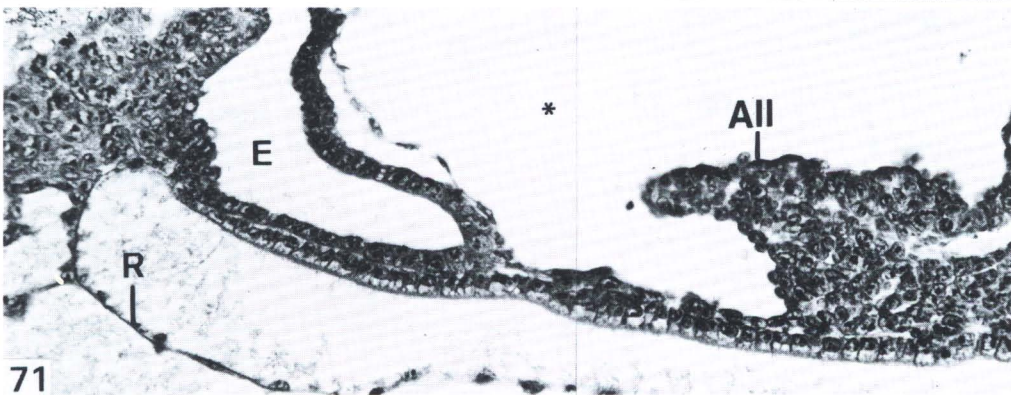
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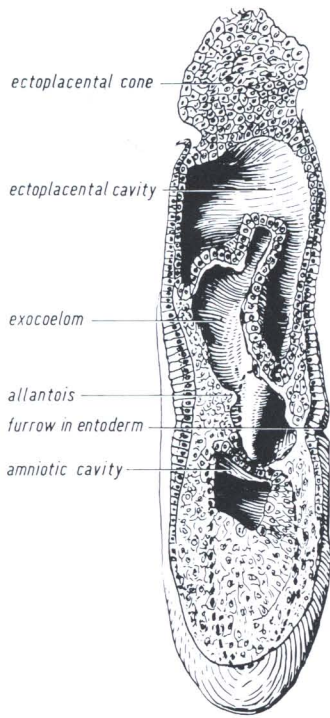
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70



71

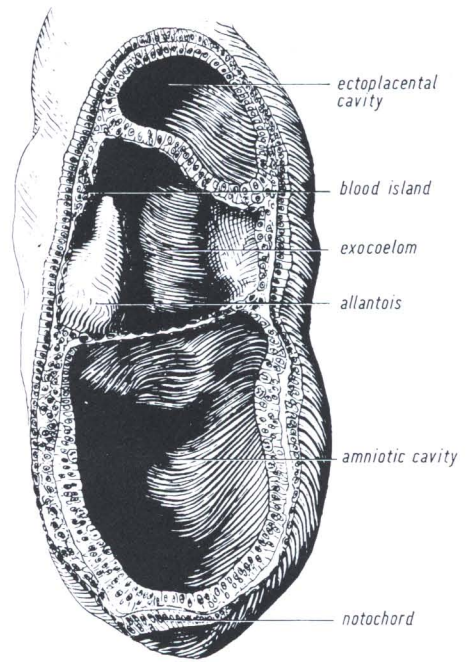


**A**

0.1 mm

FIG. 72A. Cut egg cylinder, shortly before closure of amnion. The section passes obliquely to the sagittal plane, through the right amniotic fold. *Dashed line* indicates contour of the amniotic cavity and connection with the ectoplacental cavity (ectoplacental duct).

KT 996/4, 7 days 10 h



**B**

0.1 mm

FIG. 72B. Cut egg cylinder of 7 days, 20 h (after closure of amnion).

FIG. 73. Ectoplacental duct, shortly before closure of the amnion.

The drawing (*left*) shows the location of cross sections I–III.

*E* = ectoplacental duct, *P* = transition of primitive streak and extraembryonic mesoderm, *C* = mesothelial septum (in regression), *All* = allantois, *G* = limiting furrow.

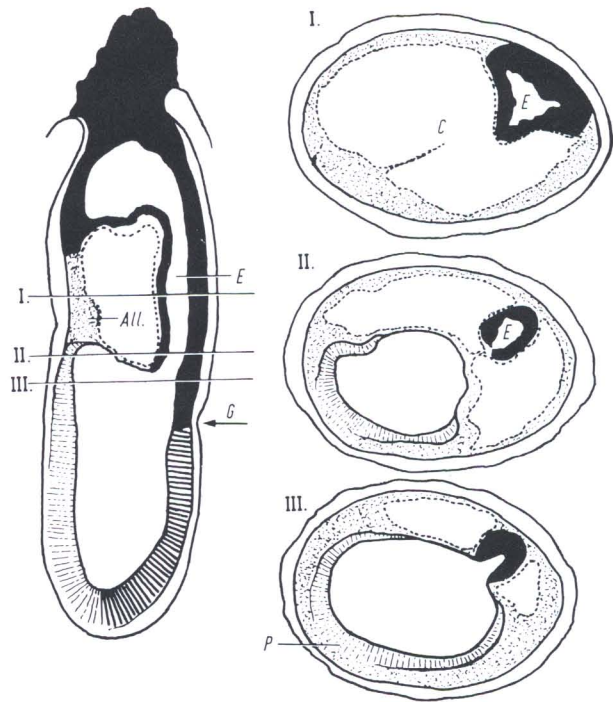


FIG. 74. Development of the foregut pocket.

*Double arrow* marks the embryonic–extraembryonic boundary. Here the epithelium is markedly reduced in height.

KT 955/5, 7 days 20 h

