BRIEF COMMUNICATION

TROPHOBLASTIC GIANT CELL TRANSFORMATION
OF MOUSE BLASTOCYSTS

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Summary. Although most mature mouse blastocysts recovered during normal gestation possess trophoblastic giant cells, very few undergoing delayed implantation possess them.

In a survey of the morphology of delayed and normal (undelayed) mouse blastocysts, 134 were washed with physiological saline solution from the uterine horns of twenty-four TT strain mice undergoing delay of implantation due to crowding at the time of mating (A. D. Dickson, unpublished observations) or to lactation. They were collected between the 6th and 14th days of gestation (the majority on the 6th and 7th days) and then examined and photographed by phase-contrast microscopy. One hundred and twenty-six were of the form illustrated in Pl. 1, Fig. 1, while the remaining eight appeared as in Pl. 1, Fig. 4. Two hundred and twenty-two blastocysts were recovered from thirty-one normal mice (i.e. not undergoing delay of implantation), examined and photographed. Of the 157 mature (i.e. zona pellucida-free) blastocysts, forty were as shown in Pl. 1, Fig. 2, while 117 were as shown in Fig. 3.

The normal blastocysts illustrated in Pl. 1, Fig. 2, though smaller, is similar to the delayed blastocyst in Fig. 1, while the normal blastocyst in Pl. 1, Fig. 3 is similar to the delayed blastocyst in Fig. 4, although it too is smaller. Examination by phase-contrast microscopy indicated that the trophoblast cells of the blastocysts shown in Pl. 1, Figs. 3 and 4 had undergone the giant cell transformation (Selenka, 1883; Duval, 1891), being enlarged and, in some specimens, piled up into two or three layers at the abembryonic pole.

The normal (undelayed) blastocysts were collected between 9 p.m. on the 4th day of gestation and noon on the 5th day. The first mouse found to contain blastocysts with transformed giant cells was killed at 12.30 a.m. on the 5th day, while the last mouse that contained any blastocysts with untransformed trophoblast cells was killed at 9.15 a.m. on the 5th day. The material examined indicates that the transformation first takes place at the abembryonic pole and spreads towards the embryonic, though in none of the blastocysts recovered had the cells of Rauber's layer become altered.

The great preponderance of untransformed (126) over transformed (8)

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blastocysts undergoing delay of implantation may be due either to the four mice from which the transformed blastocysts were recovered having reached the end of the delay when killed, or to a small proportion of the blastocysts having been transformed during the delay. It seems more likely that the transformation occurs as the delay ends and implantation begins, because one of these four mice had several barely perceptible uterine swellings, indicating that implantation had commenced. Further, the recovery of only eight blastocysts from four mice is probably due to the implantation process having progressed far enough to render others inaccessible to washing out.

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REFERENCES

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FIG. 1. A blastocyst recovered from a mouse undergoing delayed implantation. The abembryonic trophoblast cells are thin and flattened. $\times 375$.

FIG. 2. A blastocyst recovered from a mouse not undergoing delayed implantation. This blastocyst is smaller than the delayed blastocyst illustrated in Fig. 1 and the abembryonic trophoblast cells are thin. $\times 375$.

FIG. 3. A blastocyst recovered from a mouse not undergoing delayed implantation. The trophoblast cells at the abembryonic pole have undergone the giant cell transformation. $\times 375$.

FIG. 4. A blastocyst recovered from a mouse undergoing delayed implantation. The giant cell transformation of the abembryonic trophoblast has taken place. $\times 375$.