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During the preimplantation phase of pregnancy, the endometrium is hormonally conditioned to allow attachment and invasion of the trophoblast. Interestingly, there is also evidence for responses of the uterine epithelium to the presence of the implanting blastocysts. One of these responses is the induction of cell coupling via gap junctions between the uterine epithelial cells.

In the nonpregnant state and in pseudopregnancy (no blastocyst present) the uterine epithelium shows only few gap junctions and a very low degree of coupling as evidenced by freeze-fracture, immunocytochemistry of the gap junctions subunit (26k-protein) and dye-spreading. On contrast, in the implantation chamber an extremely large number of gap junctions and extensive cell coupling is observed adjacent to the blastocyst. The role of the blastocyst in inducing gap junction formation is also shown in unilateral pregnancy produced by tubal ligation.

It will be discussed whether this induction of cell coupling is a precondition for or a defence against trophoblast invasion.

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