

147. Confrontation of blastocysts and endometrium in organ culture: towards an in-vitro model for embryo implantation

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In order to study molecular mechanisms involved in embryo implantation, we have attempted to develop an in-vitro model, based on experience with an endometrial organ culture system [(Eur. J. Cell Biol., 33, Suppl. 5, 17, (1984)]. Fragments of rabbit endometrium consisting of epithelium and stroma are pre-cultured *in vitro* in order to regenerate a complete epithelial covering and to undergo hormone-dependent morphological transformation as typical for the receptive state. They were subsequently confronted with blastocysts at stages corresponding to the invasive phase of the trophoblast.

Attachment of blastocysts to endometrial fragments *in vitro* was observed only if both were kept in close contact as they are in the uterus. Experimental approaches tested to achieve this will be described. It is concluded that continuing expansion of the blastocysts and regular differentiation of syncytiotrophoblast are prerequisites for successful 'implantation' *in vitro* and can be obtained in this system. Cytological details of attachment of the trophoblast to, and invasion into, the endometrium as seen in these experiments are in many respects similar to implantation *in utero*.

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