

Proliferation of tight junctions and fusion in uterine epithelial cells of the rabbit

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The tight junctional belt of rabbit uterine epithelial cells proliferates extensively during the preimplantation phase (day 1 - day 6 p.c.), so that it may nearly reach the basal portion of the cells. At day 6 p.c. the membrane area covered by chains of tight junctions has increased about six-fold compared to that of an oestrous animal. The luminal strands run more or less parallel to the uterine lumen, whereas the lower strands are orientated perpendicularly. In the lower portions of the lateral membranes, isolated macular tight junctions can be observed. From the functional point of view, this proliferation of tight junctions must be discussed in relation to preparation of the uterine epithelium for implantation. On one hand it might be part of the mechanisms involved in regulating the paracellular ion fluxes. However, macular as well as perpendicularly running strands cannot serve such a function. We propose that the described tight junction structure is related to the fusion process of the uterine epithelial cells. Typically large symplasms are formed at this phase. Tight junctions may prepare cells for fusion by reducing the intercellular space bringing lateral membranes of adjacent cells into close apposition. Preliminary results on the formation of symplasms in endometrial cultures seem to support this view, since in vivo as in vitro fusion was never observed without previous proliferation of the tight junctions.

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ABSTRACTS

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