Jahrestagung der Deutschen Gesellschaft für Zellbiologie und der Gesellschaft für Entwicklungsbiologie, Bonn 26.-29. März 2003

Eur J Cell Biol 82 (Suppl 53):75-76, 2003

[Abstract MS4-39]

Cellular dynamics of actin cytoskeleton in human uterine epithelial RL95-2 cells during trophoblast binding

Carola Heneweer, Hans-Werner Denker, and Michael Thie

Institute of Anatomy, University of Essen Medical School, Hufelandstr. 55, D - 45122 Essen, Germany

Small GTPases of the Rho family are known to act as regulator proteins of the actin cytoskeleton and, thus, might be involved in the acquisition of apical adhesiveness of uterine epithelial cells for trophoblast during embryo implantation. We previously reported that binding of monolayer-cultured uterine epithelial RL95-2 cells to spheroids of human trophoblast-like JAR cells is dependent on Rho GTPases, most likely RhoA. In this study, we investigated changes in expression and distribution of F-actin and RhoA that are seen in both, the apical and basal pole of RL95-2 cells upon binding of JAR spheroids to the apical cell pole. Correlations between changes in the subcellular localisation of Rho proteins and a re-distribution of actin filaments induced by RhoA were determined and compared in areas of JAR-cell contact vs. non-contact areas using high resolution fluorescence confocal microscopy. In the basal region of non-contact RL95-2 cells, significantly higher fluorescence signals of Rho protein and of F-actin were found as compared to the apical pole. Binding of JAR spheroids to RL95-2 cells dramatically altered RhoA and F-actin localisation within RL95-2 cells leading to an inverted pattern of RhoA and F-actin along the apico-basal cell axis. These results demonstrate that uterine RL95-2 cells respond to trophoblast contact with changes in their epithelial cell architecture.