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Nano-gold immuno-electron microscopic localisation of caveolin-1 in human placenta

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We have localized the placental endothelial marker caveolin-1 at the ultrastructural level using indirect immuno-labeling with particles of colloidal gold 10nm in diameter. The particulate label has been quantified per unit area to assess the distribution of the target protein within placental chorionic villi and basal plate in term placentae. Very low levels of labelling were detectable over embedding medium that was free of tissue, erythrocytes, serum-filled cavities and extracellular matrix. The mesodermal compartment of the tissue was more heavily labelled than the ectodermally derived chorionic villus trophoblast. Within the mesodermally derived cells, the distribution of anti-caveolin-1 labelling within endothelial cells was maximal. Intracellularly there was a clear tendency for the labelling pattern to be margined in the endothelial cells. Our approach to quantitating this was to measure particles per unit area in apical, basal and central ("ABC") strips in order to assess whether it was polarised or not. In both villous and basal plate lining endothelium labelling of this fixed term tissue $B > A > C$. Caveolin-1 distribution is considered in the light of possible transport vesicle and signaling platform rôles relevant to the materno-fetal interaction.