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Culture of principal cells from the ram epididymis. A comparison of the morphology of principal cells in culture and in situ

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A procedure was developed to isolate and culture principal cells from the initial segment, central caput, distal caput, and proximal corpus epididymidis. The morphology of cultured cells and of cells in situ was compared. Over four to ten days, principal cells cultured in a floating collagen matrix with serum-free medium formed clusters that developed into either large sheets of columnar cells or tubular structures of cuboidal cells. Structural polarity was evident and junctional complexes reformed. The distribution and relative abundance of organelles in principal cells in situ differed depending on the region examined, and most of these regional characteristics were retained by principal cells in culture. Microvilli and membrane-bound vesicles were less conspicuous in cultured cells. Cultured principal cells were shorter than principal cells in situ, but were of similar volume. The high purity (90%) and viability (70%) of principal cells after seven to ten days in culture, their retention of morphologic characteristics unique to the region of origin, and the formation of function units are evidence that such cultures should be valuable for studying regional differences in the function of principal cells.

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