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JOURNAL ARTICLE

Growth and characterization of polarized monolayers of epididymal epithelial cells and Sertoli cells in dual environment culture chambers

S. W. Byers, M. A. Hadley, D. Djakiew and M. Dym

Epididymal epithelial cells isolated from mature rats and Sertoli cells isolated from 10-day-old rats were cultured in serum-free defined media on extracellular matrix impregnated filters maintained in dual environment culture chambers. Epididymal epithelial cells had a polarized appearance only when plated at high density (greater than 1×10^6 cells/cm²). Confluent monolayers of these cells formed a permeability barrier to inulin. Sertoli cells were columnar and highly polarized when grown on extracellular matrix-impregnated filters, cuboidal when grown on filters alone, and squamous when grown on plastic. Confluent polarized monolayers of these cells excluded the electron-dense tracer lanthanum nitrate by way of basal-tight junctions. Therefore, polarized monolayers of epididymal epithelial cells and Sertoli cells can be obtained by growing the cells at high density on extracellular matrix-impregnated permeable supports. By maintaining the monolayers in specially constructed culture chambers, the cells can develop a permeability barrier, and are able to achieve the separation of apical from basal compartments so important for their function in vivo.

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W. Xia, D. D. Mruk, and C. Y. Cheng
C-type natriuretic peptide regulates blood-testis barrier dynamics in adult rat testes
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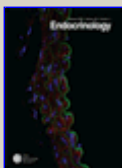
D. D. Mruk and C. Y. Cheng
Sertoli-Sertoli and Sertoli-Germ Cell Interactions and Their Significance in Germ Cell Movement in the Seminiferous Epithelium during Spermatogenesis
Endocr. Rev., October 1, 2004; 25(5): 747 - 806.
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W.-Y. Lui, D. Mruk, W. M Lee, and C. Y. Cheng
Sertoli Cell Tight Junction Dynamics: Their Regulation During Spermatogenesis
Biol Reprod, April 1, 2003; 68(4): 1087 - 1097.
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Endocrinology

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M. K. Y. Siu, W. M. Lee, and C. Y. Cheng
The Interplay of Collagen IV, Tumor Necrosis Factor- α , Gelatinase B (Matrix Metalloprotease-9), and Tissue Inhibitor of Metalloproteases-1 in the Basal Lamina Regulates Sertoli Cell-Tight Junction Dynamics in the Rat Testis
Endocrinology, January 1, 2003; 144(1): 371 - 387.
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Y. Araki, K. Suzuki, R. J. Matusik, M. Obinata, and M.-C. Orgebin-Crist
Immortalized Epididymal Cell Lines From Transgenic Mice Overexpressing Temperature-Sensitive Simian Virus 40 Large T-Antigen Gene
J Androl, November 1, 2002; 23(6): 854 - 869.
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Physiological Reviews

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C. Y. Cheng and D. D. Mruk

Cell Junction Dynamics in the Testis: Sertoli-Germ Cell Interactions and Male Contraceptive Development

Physiol Rev, October 1, 2002; 82(4): 825 - 874.

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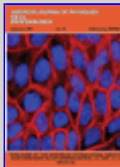
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N. P.Y. Chung, D. Mruk, M.-y. Mo, W. M. Lee, and C. Y. Cheng

A 22-Amino Acid Synthetic Peptide Corresponding to the Second Extracellular Loop of Rat Occludin Perturbs the Blood-Testis Barrier and Disrupts Spermatogenesis Reversibly In Vivo

Biol Reprod, November 1, 2001; 65(5): 1340 - 1351.

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Am. J. Physiol: Cell Physiology

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G. P. H. Leung, J. L. Ward, P. Y. D. Wong, and C.-M. Tse

Characterization of nucleoside transport systems in cultured rat epididymal epithelium

Am J Physiol Cell Physiol, May 1, 2001; 280(5): C1076 - C1082.

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L. Lustig, B. Denduchis, R. Ponzio, M. Lauzon, and R.-M. Pelletier

Passive Immunization with Anti-Laminin Immunoglobulin G Modifies the Integrity of the Seminiferous Epithelium and Induces Arrest of Spermatogenesis in the Guinea Pig

Biol Reprod, June 1, 2000; 62(6): 1505 - 1514.

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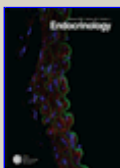
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R. R. Fortna, H. A. Watson, and S. E. Nyquist

Glycosyl Phosphatidylinositol-Anchored Ceruloplasmin Is Expressed by Rat Sertoli Cells and Is Concentrated in Detergent-Insoluble Membrane Fractions

Biol Reprod, October 1, 1999; 61(4): 1042 - 1049.

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Endocrinology

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C. Cudicini, H. Kercret, A.-M. Touzalin, F. Ballet, and B. Jegou

Vectorial Production of Interleukin 1 and Interleukin 6 by Rat Sertoli Cells Cultured in a Dual Culture Compartment System

Endocrinology, July 1, 1997; 138(7): 2863 - 2870.

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