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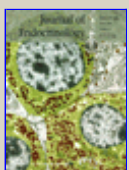
## JOURNAL ARTICLE

# The immunohistochemical localization of alpha 2-macroglobulin in rat testes is consistent with its role in germ cell movement and spermiation

L. J. Zhu, C. Y. Cheng, D. M. Phillips and C. W. Bardin  
Center for Biomedical Research, Population Council, New York, New York 10021.

alpha 2-Macroglobulin (alpha 2-MG) is a nonspecific protease inhibitor and binding protein for peptide hormones that was recently isolated from Sertoli cell-enriched culture medium and shown to be the same protein as alpha 2-MG in serum. The present study was conducted to determine the localization of alpha 2-MG in the seminiferous epithelium in order to gain insight into its possible site(s) of action. Immunostainable alpha 2-MG was present in the lumen of the tubules consistent with its proposed role as a protease inhibitor needed to inactivate the protease released from defective spermatozoa in the male reproductive tract. Immunoreactive alpha 2-MG was also localized adjacent to the heads of elongated spermatids, the most mobile cells in the seminiferous epithelium; immunostainable alpha 2-MG was not observed adjacent to round spermatids and spermatocytes, which are relatively less mobile. The intensity of the staining around the elongated spermatids was dependent on the stage of the spermatogenic cycle. Stainable alpha 2-MG was present adjacent to the spermatids in stage XI soon after the elongation process began. Immunoreactive product was in stages XI-XIV but only faintly visible. The most intense staining reaction for alpha 2-MG was in stages I-VI; it was reduced in stage VII; and virtually no alpha 2-MG was detectable in stages VIII-X at and just after spermiation. The postnatal changes of alpha 2-MG in the testis was also examined. During the first 2 weeks after birth, alpha 2-MG was not detected in the seminiferous epithelium. (ABSTRACT TRUNCATED AT 250 WORDS)

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Endocrinology, April 1, 2005; 146(4): 1893 - 1908.

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Endocr. Rev., October 1, 2004; 25(5): 747 - 806.

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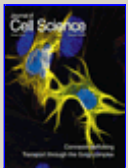


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Biol Reprod, April 1, 2004; 70(4): 945 - 964.

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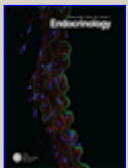


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C.-h. Wong, D. D. Mruk, W.-y. Lui, and C. Y. Cheng  
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J. Cell Sci., February 15, 2004; 117(5): 783 - 798.

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Adhering Junction Dynamics in the Testis Are Regulated by an Interplay of  $\beta$ 1-Integrin and Focal Adhesion Complex-Associated Proteins  
Endocrinology, May 1, 2003; 144(5): 2141 - 2163.

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N. P.Y. Lee, D. Mruk, W. M. Lee, and C. Y. Cheng  
Is the Cadherin/Catenin Complex a Functional Unit of Cell-Cell Actin-Based Adherens Junctions in the Rat Testis?  
Biol Reprod, February 1, 2003; 68(2): 489 - 508.

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The Interplay of Collagen IV, Tumor Necrosis Factor- $\alpha$ , 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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## 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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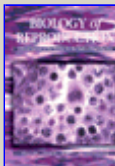
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S. H. Hall, K. G. Hamil, and F. S. French

Host Defense Proteins of the Male Reproductive Tract

J Androl, September 1, 2002; 23(5): 585 - 597.

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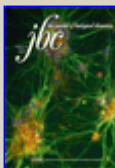
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C. Y. Cheng, B. Silvestrini, J. Grima, M.-y. Mo, L.-j. Zhu, E. Johansson, L. Saso, M.-G. Leone, M. Palmery, and D. Mruk

Two New Male Contraceptives Exert Their Effects by Depleting Germ Cells Prematurely from the Testis

Biol Reprod, August 1, 2001; 65(2): 449 - 461.

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## JBC Online

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V. Syed, E. Gomez, and N. B. Hecht

mRNAs Encoding a von Ebner's-like Protein and the Huntington Disease Protein Are Induced in Rat Male Germ Cells by Sertoli Cells

J. Biol. Chem., April 16, 1999; 274(16): 10737 - 10742.

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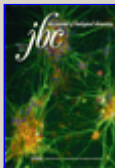
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L. Braghiroli, B. Silvestrini, C. Sorrentino, J. Grima, D. Mruk, and C. Yan Cheng

Regulation of  $\alpha$ 2-Macroglobulin Expression in Rat Sertoli Cells and Hepatocytes by Germ Cells In Vitro

Biol Reprod, July 1, 1998; 59(1): 111 - 123.

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## JBC Online

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J. Grima, L.-j. Zhu, and C. Y. Cheng

Testin Is Tightly Associated with Testicular Cell Membrane upon Its Secretion by Sertoli Cells whose Steady-state mRNA Level in the Testis Correlates with the Turnover and Integrity of Inter-testicular Cell Junctions

J. Biol. Chem., March 7, 1997; 272(10): 6499 - 6509.

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