Journal of Andrology, Vol 15, Issue 5 381-385, Copyright © 1994 by The American Society of Andrology

REVIEW

The testicular iron shuttle: a "nurse" function of the Sertoli cells

S. R. Sylvester and M. D. Griswold
Department of Biochemistry and Biophysics, Washington State University, Pullman 99164-4660.

The techniques of cell culture and molecular biology first revealed that Sertoli cells synthesize transferrin. Accumulated biological information led to a plausible model for the role of testicular transferrin in an iron shuttle system designed to transport ferric ions around the cellular tight junctions to the germ cells inside the blood-testis barrier. Experiments done in culture and in vivo have supported many aspects of this model. A mutant mouse model that lacks the ability to synthesize transferrin is defective in spermatogenesis and may help to delineate the nature of the iron requirement by germ cells. The levels of seminal transferrin, possibly of Sertoli cell origin, are proportional to sperm production in humans and cattle and may be an effective indicator of Sertoli cell function. The testicular iron shuttle thus represents an important "nurse cell" function of the Sertoli cells.

This article has been cited by other articles:

ENDOCRINE REVIEWS HOME

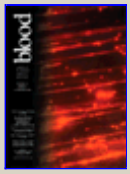
D. D. Mruk and C. Y. Cheng
Sertoli-Sertoli and Sertoli-Germ Cell Interactions and Their Significance in Germ Cell Movement in the Seminiferous Epithelium during Spermatogenesis
Endocr. Rev., October 1, 2004; 25(5): 747 - 806.
[Abstract] [Full Text] [PDF]

HUMAN REPRODUCTION HOME

C. Lecureuil, M.C. Saleh, I. Fontaine, B. Baron, M.M. Zakin, and F. Guillou
Transgenic mice as a model to study the regulation of human transferrin expression in Sertoli cells
Hum. Reprod., June 1, 2004; 19(6): 1300 - 1307.
[Abstract] [Full Text] [PDF]

BIOLOGY *of* REPRODUCTION HOME

D. K. Tarka-Leeds, J. D. Suarez, N. L. Roberts, J. M. Rogers, M. P. Hardy, and G. R. Klinefelter
Gestational Exposure to Ethane Dimethanesulfonate Permanently Alters Reproductive Competence in the CD-1 Mouse
Biol Reprod, September 1, 2003; 69(3): 959 - 967.
[Abstract] [Full Text] [PDF]



blood HOME

N. Jabado, F. Canonne-Hergaux, S. Gruenheid, V. Picard, and P. Gros
Iron transporter Nramp2/DMT-1 is associated with the membrane of phagosomes in macrophages and Sertoli cells
Blood, September 18, 2002; 100(7): 2617 - 2622.
[Abstract] [Full Text] [PDF]

THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM HOME

V. Pentikainen, K. Erkkila, L. Suomalainen, M. Otala, M. O. Pentikainen, M. Parvinen, and L. Dunkel
TNF{alpha} Down-Regulates the Fas Ligand and Inhibits Germ Cell Apoptosis in the Human Testis
J. Clin. Endocrinol. Metab., September 1, 2001; 86(9): 4480 - 4488.
[Abstract] [Full Text] [PDF]

HUMAN REPRODUCTION HOME

A. M.A. Mahmoud, F. H. Comhaire, A. B. Christophe, C. Rolf, T.G. Cooper, and E. Nieschlag
Oral antioxidants and male infertility
Hum. Reprod., December 1, 1999; 14(12): 3149 - 3150.
[Full Text] [PDF]

Clinical Chemistry HOME

F. Lefevre, G. Moutel, F. Carre-Pigeon, J. Caron, and P. Gillery
Automated Nephelometric Assay for Seminal Fluid Transferrin
Clin. Chem., December 1, 1998; 44(12): 2544 - 2546.
[Full Text] [PDF]