

Journal of Andrology, Vol 15, Issue 5 415-434, Copyright © 1994 by The American Society of Andrology

JOURNAL ARTICLE

Immunocytochemical Localization of glutathione S-transferase Yo subunit in the rat testis and epididymis

J. P. Veri, L. Hermo and B. Robaire

Department of Anatomy and Cell Biology, McGill University, Montreal, Quebec, Canada.

The glutathione S-transferases (GSTs) are a family of isozymes that catalyze the conjugation of glutathione with electrophiles. These proteins exist as homo- or heterodimers and are separated into five classes (alpha, mu, pi, theta, and sigma). In the present study, the distribution of the GST Yo subunit, a member of the mu family, was examined immunocytochemically in the adult rat testis and epididymis using both light microscopy (LM) and electron microscopy (EM). In the testis, an intense immunoperoxidase reaction was observed over Leydig cells but not macrophages. Within the seminiferous epithelium, only weak reactivity was noted over Sertoli cells, spermatogonia, spermatocytes, and step 1-15 spermatids. There was, however, a progressive and dramatic increase in the intensity of staining in the cytoplasmic lobes of spermatids between steps 16 and 19. Residual bodies, representing the detached cytoplasmic lobes of the late step 19 spermatids, were also intensely stained. Initially seen near the lumen of the tubule, they eventually appeared at different levels of the tubule at stages IX-XI; none were present at stage XII. Cytoplasmic droplets of step 19 spermatids were also intensely reactive. After spermiation, the cytoplasmic droplets of spermatozoa within the proximal region of the epididymis remained intensely stained. A noticeable decrease in staining was observed in the cauda epididymidis in those droplets that were still there. Quantitation of the labeling density (number of gold particles representing anti-Yo antigenic sites/microns²) paralleled the LM results; for example, between step 15 and 19 spermatids, a greater than sevenfold increase in labeling density was noted. In the epididymis, a progressive increase in immunoreactivity was observed over epithelial principal cells from the initial segment to the cauda region of this tissue. There was little reactivity over basal, halo, or clear cells. In all reactive cells, gold particles were distributed randomly throughout the cytoplasmic matrix and nucleus. The present work thus demonstrates that, at the end of spermiogenesis, the GST Yo subunit is expressed at high levels in late spermatids. Furthermore, the presence of this protein in late spermatids and cytoplasmic droplets of spermatozoa suggests that this conjugating enzyme may play a role in protecting these cells from electrophilic attack. Also interesting is the correlation between the loss of reactivity in cytoplasmic droplets of spermatozoa of the distal region of the epididymis and the concomitant increase of reactivity in principal cells of this region.

This Article

- ▶ [Full Text \(PDF\)](#)
- ▶ [Alert me when this article is cited](#)
- ▶ [Alert me if a correction is posted](#)

Services

- ▶ [Similar articles in this journal](#)
- ▶ [Similar articles in PubMed](#)
- ▶ [Alert me to new issues of the journal](#)
- ▶ [Download to citation manager](#)

Citing Articles

- ▶ [Citing Articles via HighWire](#)
- ▶ [Citing Articles via Google Scholar](#)

Google Scholar

- ▶ [Articles by Veri, J. P.](#)
- ▶ [Articles by Robaire, B.](#)
- ▶ [Search for Related Content](#)

PubMed

- ▶ [PubMed Citation](#)
- ▶ [Articles by Veri, J. P.](#)
- ▶ [Articles by Robaire, B.](#)



TOXICOLOGICAL SCIENCES

▶ HOME

S. B. DuTeaux, J. W. Newman, C. Morisseau, E. A. Fairbairn, K. Jelks, B. D. Hammock, and M. G. Miller

Epoxide Hydrolases in the Rat Epididymis: Possible Roles in Xenobiotic and Endogenous Fatty Acid Metabolism

Toxicol. Sci., April 1, 2004; 78(2): 187 - 195.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



BIOLOGY of REPRODUCTION

▶ HOME

S. B. DuTeaux, M. J. Hengel, D. E. DeGroot, K. A. Jelks, and M. G. Miller
Evidence for Trichloroethylene Bioactivation and Adduct Formation in the Rat Epididymis and Efferent Ducts

Biol Reprod, September 1, 2003; 69(3): 771 - 779.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Journal of ANDROLOGY

▶ HOME

S. Andonian and L. Hermo

Immunolocalization of the Yb1 Subunit of Glutathione S-transferase in the Adult Rat Epididymis Following Orchidectomy and Efferent Duct Ligation

J Androl, July 1, 2003; 24(4): 577 - 587.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Journal of Histochemistry & Cytochemistry

▶ HOME

C. C. Luedtke, S. Andonian, S. Igdoura, and L. Hermo

Cathepsin A Is Expressed in a Cell- and Region-specific Manner in the Testis and Epididymis and Is Not Regulated by Testicular or Pituitary Factors

J. Histochem. Cytochem., August 1, 2000; 48(8): 1131 - 1146.

[\[Abstract\]](#) [\[Full Text\]](#)



DRUG METABOLISM AND DISPOSITION

▶ HOME

M. A. Otieno, R. B. Baggs, J. D. Hayes, and M. W. Anders

Immunolocalization of Microsomal Glutathione S-TraNsferase in Rat Tissues

Drug Metab. Dispos., January 1, 1997; 25(1): 12 - 20.

[\[Abstract\]](#) [\[Full Text\]](#)