Journal of Andrology, Vol 21, Issue 6 822-832, Copyright © 2000 by The American Society of Andrology

JOURNAL ARTICLE

Mouse Spam1 (PH-20): evidence for its expression in the epididymis and for a new category of spermatogenic-expressed genes

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The gene for the sperm adhesion molecule 1 (PH-20), SPAM1, has been known to be testis-specific and exclusively haploid expressed. We show that in mice, the 2 common isoforms of the protein (Spam1) observed in sperm are also present in the caput, corpus, and cauda epididymides. Both qualitative and quantitative variation of expression of the protein were observed in epididymis with the highest expression detected in the corpus. The endogenous production of enzymatically active (via hyaluronidase) Spam1 by epididymal cells is supported by the detection of steady-state Spam1 epididymal messenger RNA in both wild type and germ cell-deficient mice. In situ transcript hybridization shows the transcript to be localized to the principal cells of the epithelium. The protein was similarly immunolocalized to these cells, predominantly in vesicles near the apical region. The results suggest a mechanism for transportation of Spam1 from the epididymal epithelium to sperm during their transit and storage in the cauda. None of the current categories of spermatogenic-expressed genes shows the dual transcription pattern (haploid testicular/diploid epididymal) observed for Spam1. The work also confirms and extends the finding that Spam1 is expressed in the kidney.

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