Journal of Andrology, Vol 17, Issue 1 17-26, Copyright © 1996 by The American Society of Andrology

JOURNAL ARTICLE

Distribution and tissue expression of semenogelin I and II in man as demonstrated by in situ hybridization and immunocytochemistry

A. Bjartell, J. Malm, C. Moller, M. Gunnarsson, A. Lundwell and Lilja. H
Department of Urology, University Hospital, Malmo, Sweden.

Semenogelin I and II (SgI, SgII) are two separate gene products of chromosome 20 with extensive (80%) identity in primary structure. They are mainly responsible for immediate gel formation of freshly ejaculated semen. Degradation of SgI and SgII is due to the proteolytic action of prostate-specific antigen (PSA); it results within 5-15 minutes in liquefaction of semen and release of progressively motile spermatozoa. By means of cDNA cloning and Northern blots, SgI and SgII transcripts have previously been shown to be abundant in human seminal vesicles, but SgII alone is suggested to be expressed at low levels in the epididymis. To characterize the expression and tissue distribution of SgI and SgII in greater detail, we produced monoclonal immunoglobulin Gs (IgGs for immunocytochemistry (ICC) and specific [35S]-, digoxigenin-, or alkaline phosphatase-labeled 30-mer antisense probes to SgI and SgII for in situ hybridization (ISH). Immunocytochemical staining for both SgI and SgII, and ISH detection of both SgI and SgII transcripts, were demonstrated in the cytoplasm of seminal vesicle epithelium. ISH showed SgII alone to be expressed in the epithelium of the epididymal cauda. Neither ICC nor ISH yielded any evidence of SgI or SgII expression in caput or corpus epithelium or in any stromal cells of the epididymis. Consistent with our previous findings using polyclonal IgG, monoclonal anti-SgII SgII IgGs identified epitopes on the posterior head, midpiece, and tail of ejaculated spermatozoa. Spermatozoa in the epididymal cauda were also immunoreactive, but those in the caput or corpus region of the epididymis as well as those in the testis were negative. As shown by ICC, neither SgI nor SgII were expressed in the testis, the prostate, the female genital tract, or other normal human tissue specimens. Although the significance of Sg attachment to epididymal and ejaculated spermatozoa remains to be established, monoclonal anti-Sg IgG might prove useful in establishing the origin of seminal vesicle tissue components in prostate core biopsies or other biopsy specimens.

This article has been cited by other articles:

The Journal of Immunology HOME

A. M. L. Edstrom, J. Malm, B. Frohm, J. A. Martellini, A. Giwercman, M. Morgelin, A. M. Cole, and O. E. Sorensen
The Major Bactericidal Activity of Human Seminal Plasma Is Zinc-Dependent and Derived from Fragmentation of the Semenogelins
J. Immunol., September 1, 2008; 181(5): 3413 - 3421.
[Abstract] [Full Text] [PDF]

Human Molecular Genetics HOME

A. E. Platts, D. J. Dix, H. E. Chemes, K. E. Thompson, R. Goodrich, J. C. Rockett, V. Y. Rawe, S. Quintana, M. P. Diamond, L. F. Strader, *et al.*
Success and failure in human spermatogenesis as revealed by teratozoospermic RNAs
Hum. Mol. Genet., April 1, 2007; 16(7): 763 - 773.
[Abstract] [Full Text] [PDF]

Clinical Cancer Research HOME

J. Dejmek, K. Leandersson, J. Manjer, A. Bjartell, S. O. Emdin, W. F. Vogel, G. Landberg, and T. Andersson
Expression and Signaling Activity of Wnt-5a/Discoidin Domain Receptor-1 and Syk Plays Distinct but Decisive Roles in Breast Cancer Patient Survival
Clin. Cancer Res., January 15, 2005; 11(2): 520 - 528.
[Abstract] [Full Text] [PDF]

BIOLOGY *of* REPRODUCTION HOME

F. Bourgeon, B. Evrard, M. Brillard-Bourdet, D. Colleu, B. Jegou, and C. Pineau
Involvement of Semenogelin-Derived Peptides in the Antibacterial Activity of Human Seminal Plasma
Biol Reprod, March 1, 2004; 70(3): 768 - 774.
[Abstract] [Full Text] [PDF]

Journal of ANDROLOGY HOME

K. Yoshida, T. Yamasaki, M. Yoshiike, S. Takano, I. Sato, and T. Iwamoto
Quantification of Seminal Plasma Motility Inhibitor/Semenogelin in Human Seminal Plasma
J Androl, November 1, 2003; 24(6): 878 - 884.
[Abstract] [Full Text] [PDF]

Molecular Human Reproduction HOME

A. Lundwall, A. Giwercman, Y. Ruhayel, Y. Giwercman, H. Lilja, C. Hallden, and J. Malm
A frequent allele codes for a truncated variant of semenogelin I, the major protein component of human semen coagulum
Mol. Hum. Reprod., June 1, 2003; 9(6): 345 - 350.
[Abstract] [Full Text] [PDF]

The Journal of Immunology HOME

T. Persson-Dajotoy, P. Andersson, A. Bjartell, J. Calafat, and A. Egesten
Expression and Production of the CXC Chemokine Growth-Related Oncogene-{alpha} by Human Eosinophils
J. Immunol., May 15, 2003; 170(10): 5309 - 5316.
[Abstract] [Full Text] [PDF]

The American Journal of PATHOLOGY HOME

Y. Cao, A. Lundwall, V. Gadaleanu, H. Lilja, and A. Bjartell
Anti-Thrombin Is Expressed in the Benign Prostatic Epithelium and in Prostate Cancer and Is Capable of Forming Complexes with Prostate-Specific Antigen and Human Glandular Kallikrein 2
Am. J. Pathol., December 1, 2002; 161(6): 2053 - 2063.
[Abstract] [Full Text] [PDF]

Molecular Human Reproduction HOME

A. Lundwall, A. Bjartell, A.Y. Olsson, and J. Malm
Semenogelin I and II, the predominant human seminal plasma proteins, are also expressed in non-genital tissues
Mol. Hum. Reprod., September 1, 2002; 8(9): 805 - 810.
[Abstract] [Full Text] [PDF]

BIOLOGY *of* REPRODUCTION HOME

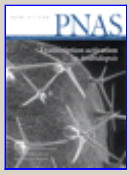
H. Koistinen, T. Soini, J. Leinonen, C. Hyden-Granskog, J. Salo, M. Halttunen, U.-H. Stenman, M. Seppala, and R. Koistinen
Monoclonal Antibodies, Immunofluorometric Assay, and Detection of Human Semenogelin in Male Reproductive Tract: No Association with In Vitro Fertilizing Capacity of Sperm
Biol Reprod, March 1, 2002; 66(3): 624 - 628.
[Abstract] [Full Text] [PDF]

BIOLOGY *of* REPRODUCTION HOME

A. Lundwall and A. Y. M. Olsson
Semenogelin II Gene Is Replaced by a Truncated LINE1 Repeat in the Cotton-Top Tamarin
Biol Reprod, August 1, 2001; 65(2): 420 - 425.
[Abstract] [Full Text] [PDF]

Clinical Cancer Research HOME

R. G. Rodrigues, A. Panizo-Santos, J. A. Cashel, H. C. Krutzsch, M. J. Merino, and D. D. Roberts
Semenogelins Are Ectopically Expressed in Small Cell Lung Carcinoma
Clin. Cancer Res., April 1, 2001; 7(4): 854 - 860.
[Abstract] [Full Text]



Proceedings of the National Academy of Sciences HOME

P. S. Nelson, L. Gan, C. Ferguson, P. Moss, R. Gelinas, L. Hood, and K. Wang
Molecular cloning and characterization of prostase, an androgen-regulated serine protease with prostate-restricted expression
PNAS, March 16, 1999; 96(6): 3114 - 3119.
[Abstract] [Full Text] [PDF]