HOME HELP FEEDBACK SUBSCRIPTIONS ARCHIVE SEARCH TABLE OF CONTENTS

Journal of Andrology, Vol 18, Issue 2 151–158, Copyright  $^{\odot}$  1997 by The American Society of Andrology

CITATIONS INTO A CITATION MANAGER

JOURNAL ARTICLE

Journal of

## The PH-20 protein in human spermatozoa

K. Sabeur, G. N. Cherr, A. I. Yudin, P. Primakoff, M. W. Li and J. W. Overstreet Department of Obstetrics and Gynecology, University of California, Davis 95616, USA.

PH-20 is a sperm plasma-membrane protein that has been shown to have hyaluronidase activity in several mammalian species including nonhuman primates. In this investigation, the PH-20 protein was characterized in noncapacitated human sperm and in capacitated human sperm. Two forms of PH-20 were observed in immunoblots of sodium dodecylsulfate polyacrylamide-gel electrophoresis (SDS PAGE) using a polyclonal antibody to recombinant PH-20: a major band of 64 kDa appeared in noncapacitated and capacitated sperm extracts and a 53-kDa

band that appeared only in the acrosome-reaction supernatant of acrosome-reacted sperm. Using hyaluronic acid substrate gel analysis, we demonstrated that noncapacitated sperm extracts, capacitated sperm extracts, and the acrosome-reaction supernatant had hyaluronidase activity at neutral pH (pH 7) and acid pH (pH 4). The 64-kDa form in all samples had hyaluronidase activity at both neutral and acid pH, but the 53-kDa form was only active at acid pH. Total hyaluronidase activity at activity, as measured by a microplate assay, was higher at pH 7 than at pH 4. Very low hyaluronidase activity was detected in the acrosome-reaction supernatant. Transmission electron microscopy and immunogold labeling showed that PH-20 of acrosome-intact human sperm was located on the plasma membrane over the entire head but not on the sperm midpiece and tail. After the acrosome reaction, PH-20 was also located on the inner acrosomal membrane. The biochemical characteristics and the ultrastructural localization of PH-20 in human sperm suggest that this protein is the human sperm hyaluronidase and, therefore, has an important function during fertilization.

# This article has been cited by other articles:



GLYCOBIOLOGY

E. S A Hofinger, G. Bernhardt, and A. Buschauer Kinetics of Hyal-1 and PH-20 hyaluronidases: Comparison of minimal substrates and analysis of the transglycosylation reaction Glycobiology, September 1, 2007; 17(9): 963 - 971. [Abstract] [Full Text] [PDF]

#### 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 Sabeur, K.
- Articles by Overstreet, J. W.
- Search for Related Content

#### PubMed

- PubMed Citation
- Articles by Sabeur, K.

HOME

Articles by Overstreet, J. W.

#### HOME

HOME

## **BIOLOGY** of REPRODUCTION

N. L. Cross Reorganization of Lipid Rafts During Capacitation of Human Sperm Biol Reprod, October 1, 2004; 71(4): 1367 - 1373. [Abstract] [Full Text] [PDF]



## JBC Online

J. Shetty, M. J. Wolkowicz, L. C. Digilio, K. L. Klotz, F. L. Jayes, A. B. Diekman, V. A. Westbrook, E. M. Farris, Z. Hao, S. A. Coonrod, *et al.* SAMP14, a Novel, Acrosomal Membrane-associated, Glycosylphosphatidylinositol-anchored Member of the Ly-6/Urokinase-type Plasminogen Activator Receptor Superfamily with a Role in Sperm-Egg Interaction J. Biol. Chem., August 15, 2003; 278(33): 30506 - 30515. [Abstract] [Full Text] [PDF]



**BIOLOGY** of REPRODUCTION

C. Haineault, P. Gourde, S. Perron, A. Desormeaux, J. Piret, R. F. Omar, R. R. Tremblay, and M. G. Bergeron Thermoreversible Gel Formulation Containing Sodium Lauryl Sulfate as a Potential Contraceptive Device Biol Reprod, August 1, 2003; 69(2): 687 - 694. [Abstract] [Full Text] [PDF]



#### BIOLOGY of REPRODUCTION

Z. Hao, M. J. Wolkowicz, J. Shetty, K. Klotz, L. Bolling, B. Sen, V. A. Westbrook, S. Coonrod, C. J. Flickinger, and J. C. Herr SAMP32, a Testis-Specific, I soantigenic Sperm Acrosomal Membrane-Associated Protein Biol Reprod, March 1, 2002; 66(3): 735 - 744. [Abstract] [Full Text] [PDF]

# GLYCOBIOLOGY

## GLYCOBIOLOGY

K. J. Mengerink and V. D. Vacquier Glycobiology of sperm-egg interactions in deuterostomes Glycobiology, April 1, 2001; 11(4): 37R - 43R. [Abstract] [Full Text] [PDF]

## BIOLOGY of REPRODUCTION

G. J. Seaton, L. Hall, and R. Jones Rat Sperm 2B1 Glycoprotein (PH20) Contains a C-Terminal Sequence Motif for Attachment of a Glycosyl Phosphatidylinositol Anchor. Effects of Endoproteolytic Cleavage on Hyaluronidase Activity Biol Reprod, June 1, 2000; 62(6): 1667 - 1676. [Abstract] [Full Text]



### BIOLOGY of REPRODUCTION

S. A. Meyers and A. E. Rosenberger A Plasma Membrane-Associated Hyaluronidase Is Localized to the Posterior Acrosomal Region of Stallion Sperm and Is Associated with Spermatozoal Function Biol Reprod, August 1, 1999; 61(2): 444 - 451. [Abstract] [Full Text]

►НОМЕ

HOME

номе

**HOME** 

HOME

HOME HELP FEEDBACK SUBSCRIPTIONS ARCHIVE SEARCH TABLE OF CONTENTS

Copyright © 1997 by The American Society of Andrology.