

HE2 protein family Antibodies

HE2, a human sperm antigen expressed by SPAG11 gene (chromosome 8p23-p22) in proximal epididymis, a 103aa protein adopts a typical antigenic pattern with a subacrosomal equatorial distribution on the sperm head. Infections of genitourinary tract are a major cause of morbidity and may contribute to infertility, localization of HE2 with Beta-defensins in the epithelial defense system of epididymal duct have developed mechanism to fight ascending infections, including local production of these antimicrobial peptides and proteins.

Sequence analysis of HE2 reveals a signal peptide, a N-glycosylation site and numerous positively charged residues. Northern blot analysis revealed expression of an approximately 0.7kb transcript.

The regionalized epididymal expression of the HE2 and its isoforms suggests that they exert their effects at different times in the controlled sequence of sperm modification, maturation, binding and a direct role in fertilization.

HE2 represents 3 major isoforms, HE2-alpha, HE2-beta and HE2-gamma, all variants have a common 71 residue N terminus but various C termini, these variations at C termini is due to frame shifting deletions.

Thus, identical sequences and deletion, start and stop points indicate that HE2 isoforms are derived from alternative splicing of 8 or more exons of a single gene and working towards common microbial defense and sperm maturation to acquire fertilizing ability.

A gene product of rat epididymal duct, bin 1b, has been suggested to represent the rat counterpart of human HE2 protein. As HE2, Bin 1b also shows structural characteristics of beta-defensins.

HE2 alpha: It appears in two isoforms HE2 A1 (103aa) and HE2 A2 (70aa). HE2 alpha represents major peptide isoforms in

human epididymis, processed at the peptide level and secreted apically into the

duct lumen, HE2 A2 sequence is entirely different from defensins and from any other known peptide.

Epididymis restricted expression and sperm binding properties of HE2 alpha suggests its involvement in the process of post-testicular sperm maturation.

HE2 beta: The 2 beta isoforms encode proteins of 133aa(HE2 beta1) and 108aa (HE2 beta2).

HE2 B1 contains the 6 cysteine beta-defensin motif located on exon 4 of SPAG11 gene, its shows antimicrobial activity and play a role in host defense in the genital tract.

HE2B2 play a role in both contraception and treatment of sexually transmitted diseases. The B2 contains a potential glycosaminoglycan attachment site at amino acid 102.

HE2 gamma: It is found in 2 isoforms, HE2 gamma1(82aa) and HE2 gamma2 (74aa). The two isoforms functions towards the epithelial defense during ejaculation and sperm binding. This member of epididymis specific family of androgen-regulated proteins in human shows second deletion at C-termini, the gamma2 isoforms contain the HE2 alpha coding region to amino acid 71 where the frame shifting Beta form deletion begins.

Bin 1b: (68aa, Bin 1b gene) The rat ortholog of human HE2 with 29.3% amino acid sequence identity, tends to be effective against invasive pathogenic microorganisms while simultaneously preserving spermatozoa from cytotoxic damage during epididymal transport, maturation, storage and fertility.

Since, Bin 1b appears to have different roles in epididymis function and may not only offer an interesting lead for work in contraception but may also have therapeutic implications for sexually transmitted diseases.

Antibody Ordering Information (http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2557)

Most Product data sheets are posted at the website contact ADI for information.

Item	Antibody host	Peptide Antigen location	**expected Ab Cross reactivity	Affinity Pure IgG Cat #	Control peptide Cat #
HE2	Rb	h, 14aa, Mid-region	mk, h	HE21-A	HE21-P
HE2-Alpha	Rb	h,14aa, ~CT	h, chimp	HE2A11-A	HE2A11-P
HE2-Beta	Rb	h, 21aa,~CT	h, mk, chimp	HE2B21-A	HE2B21-P
HE2-Gamma	Rb	h, 14aa,~CT	h	HE2G31-A	HE2G31-P
BIN 1B	Rb	r, 13aa,~CT	m, h, chimp,mk	BIN 1B11-A	BIN 1B11-P

Rb=Rabbit; Ch=Chicken; m=mouse; r=rat; h=human; b=bovine; ~CT/NT=near C or N-terminus. *Expected antibody cross reactivity information is based upon high (>70%) sequence conservation of antigenic/control peptides in various species. It does not necessarily mean that ab-crossreactivity has been experimentally verified.

Significant antigenic similarity exist but antibody cross reactivity is questionable

Control peptide (#***-P)** is suitable for ELISA and Antibody neutralization to show antibody specificity in ELISA/Western/IHC etc. It is a small peptide of about 2-3 Kda and it cannot be used as protein to run on Western. **Protein controls**, if available, are listed as #*****-C. **Unpurified antiserum (#*****-S)** can be used for ELISA/Western but the **affinity purified antibodies (#*****-A)** will provide cleaner results in ELISA, Western, and IHC/IF.

HE2_Antibodies_Flr 130819P

