

## Product Specification Sheet

### HFE protein Antibodies

|                       |   |                     |
|-----------------------|---|---------------------|
| <b>Cat. # HFE12-S</b> | Rabbit Anti-Human HFE antiserum #2      | <b>SIZE:</b> 100 ul |
| <b>Cat. # HFE12-A</b> | Rabbit Anti-Human HFE IgG # 2(aff pure) | <b>SIZE:</b> 100 ug |
| <b>Cat. # HFE12-P</b> | Human HFE Control/blocking peptide # 2  | <b>SIZE:</b> 100 ug |

Elemental iron is required for a variety of normal cellular functions and vital for proper growth and development. However, natural iron is quite insoluble and excess iron is harmful, since it can catalyze the formation of potentially damaging reactive oxygen species. Humans also have very limited capacity to excrete iron. Therefore, cells have developed mechanisms to improve solubility of iron and to control intracellular iron levels at the point of absorption in the intestine and other tissue. Several proteins including **Ferritin, transferrin (Tf), transferrin receptors (TfRs), and iron regulatory proteins (IRPs)**, iron transporter (**NRMAP2/DMT1/DCT1**) etc play a key role in iron metabolism. Some genes involved in iron-metabolism are associated with genetic disorders such as Friedreich's Ataxia (**Frataxin**), genetic hemochromatosis (**HFE**), and Sex-linked anemia (**Hephaestin**).

Hereditary hemochromatosis (HHC) is most common autosomal recessive disorder characterized by defective intestinal iron absorption, which lead to iron-overload in many tissues and toxic effects. The candidate gene for HHC encodes the **HFE protein** (formerly called **HLA-H**) resembling the major histocompatibility complex MHC class-1 molecule. HFE protein (mouse 359 aa, rat 360 aa, human 348 aa, ~48 kDa) is type I membrane protein. It is found in all tissues except brain. HFE protein binds to Tf and reduces its affinity for iron-loaded Tf. The HFE Cys282-Tyr (C282Y) is homozygous in 83-100% of HHC subjects in the US and North Europe, and Australia. The C282Y mutation results in the loss of a structural disulfide bond in the alpha-3 domain of the protein, which prevents association with **beta-2 microglobulin** and proper presentation to the surface. Defects in HFE are also a cause of porphyria cutanea tarda (PCT), a disorder characterized by light-sensitive dermatitis and presence of large amounts of uroporphyrin in urine.

### Source of Antigen and Antibodies

|                        |  |
|------------------------|--|
| <b>Antigen</b>         | A 15-aa peptide sequence (Gene Accession #Q30201) ( <b>designated HFE12-P or control peptide</b> ) within the N-terminus of <b>human HFE (1)</b> was synthesized, coupled to KLH |
| <b>Ab Host/type</b>    | Rabbit, Polyclonal antiserum # HO22-S and IgG, purified over antigen-agarose (Cat # HO22-A)  |
| <b>2-Ab</b>            | Cat # 20320, goat anti-rabbit IgG-HRP (AP, biotin, FITC conjugates also available).  |
| <b>-ve control IgG</b> | Cat # 20009-1, Rabbit (non-immune) Serum IgG, purified, suitable for ELISA, Western, IHC as -ve control  |

### Form & Storage of Antibodies/Peptide Control

**Antiserum (unpurified)**  
100ul solution lyophilized powder  
Supplied 0.05% azide, **Reconstitute** powder in 100 ul PBS

#### Affinity pure IgG

100 ug/100ul solution lyophilized powder  
Supplied in **Buffer:** PBS+0.1% BSA  
**Reconstitute powder** in PBS at 1 mg/ml

#### Control/blocking peptide

100 ug/100 ul solution lyophilized powder  
Supplied in **Buffer:** PBS pH 7.5,  
**Reconstitute powder** in PBS at 1 mg/ml.

#### Storage

**Short-term:** unopened, undiluted liquid vials at -200C and powder at 4oC or -20oC..

**Long-term:** at -20C or below in suitable aliquots after reconstitution. Do not freeze and thaw and store working, diluted solutions.

**Stability:** 6-12 months at -20oC or below.

**Shipping:** 4oC for solutions and room temp for powder

### Recommended Usage

**Western Blotting** (1:1K-5K for antiserum and 1-10 ug/ml for aff. pure IgG using Chemiluminescence technique).

**ELISA** (1:100K; using 50-100 ng control peptide/well).

**Histochemistry & Immunofluorescence:** Not tested

### Specificity & Cross-reactivity

The human HFE12-P sequence is 100% conserved in human delE3 variant HFE (256 aa); 562-878 variant (242-aa); delE4 variant (334-aa), del#3-7 variant (161 aa), 495-2314del variants (145-aa), and delE3, intron3ins, intron4ins variant (175-aaa). Antibody reactivity with all human HFE variants or HFE from other species shows 90% homology in rat, rhinoceros and 81% in mouse HFE. We recommend the use of cat # HFE11-A for mouse/rat HFE. Control peptide, because of its low mol. Wt (<3 kDa), is not suitable for Western. It should be used for ELISA or antibody blocking experiments (use 5-10 ug control peptide per 1 ug of aff pure IgG or 1 ul antiserum) to confirm antibody specificity (see detailed protocol at the web site).

**General References:** (1). Riegert P et al (1998) Immunogenetics 47, 174; Hashimoto K et al (1997) BBRC 230, 35; Feder Jn et al (1996) Nat. genet. 13, 399; Roberts AG et al (1997) Lancet 349, 321; Zuccpn L et al (2000) Haematologia 85, 346; Parkkila S et al (2000) Haematologia 85, 340; Griffiths W (2000) Hum. Mol. Genet. 9, 2377

**2. Citations of for ADI Antibodies** (see updated list at the web site)

Martin PM, 2006, Invest. Ophthalmol. Vis. Sci., Oct 2006; 47: 4238 – 4244, WB, IF, mouse retina and RPE, co localization and double labeling

\*This product is for in vitro research use only.

HFE12 S-A-P

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