

## DESCRIPTION

<b>Species Reactivity</b>	Human
<b>Specificity</b>	Detects human Klotho $\beta$ in direct ELISAs.
<b>Source</b>	Monoclonal Rabbit IgG Clone # 1025C
<b>Purification</b>	Protein A or G purified from cell culture supernatant
<b>Immunogen</b>	Mouse myeloma cell line, NS0-derived recombinant human Klotho $\beta$ with a C-terminal 10 His tag. Phe53-Leu997 Accession # Q86Z14
<b>Conjugate</b>	Alexa Fluor 350 Excitation Wavelength: 346 nm Emission Wavelength: 442 nm
<b>Formulation</b>	Supplied 0.2 mg/mL in a saline solution containing BSA and Sodium Azide. See Certificate of Analysis for details.  *Contains <0.1% Sodium Azide, which is not hazardous at this concentration according to GHS classifications. Refer to the Safety Data Sheet (SDS) for additional information and handling instructions.

## APPLICATIONS

**Please Note:** Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

	Recommended Concentration	Sample
<b>Flow Cytometry</b>	0.25-1 $\mu$ g/10 <sup>6</sup> cells	HepG2 human hepatocellular carcinoma cell line

## PREPARATION AND STORAGE

<b>Shipping</b>	The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.
<b>Stability &amp; Storage</b>	<b>Protect from light. Do not freeze.</b> <ul style="list-style-type: none"> <li>12 months from date of receipt, 2 to 8 °C as supplied.</li> </ul>

## BACKGROUND

Klotho  $\beta$ , a divergent structural member of the glycosidase I superfamily, is expressed primarily in the liver and pancreas, with lower expression in adipose tissue (1, 2). Like Klotho, Klotho  $\beta$  facilitates binding between FGF19 subfamily members and their receptors via formation of a ternary complex (3). The Klotho  $\beta$  mediated interaction of human FGF19 (mouse FGF15) with FGF Receptor 4 in the liver negatively regulates bile acid synthesis by controlling the secretion of two key bile acid synthase genes, cholesterol 7- $\alpha$  hydroxylase (Cyp7a1) and sterol 12- $\alpha$  hydroxylase (Cyp8b1) (2-5). Klotho  $\beta$  is also a cofactor for the interaction of FGF21 with FGF Receptor 1c in adipocytes, which allows FGF21 to stimulate GLUT1 expression, upregulating adipocyte insulin-dependent glucose uptake (2-4, 6). The 1043 amino acid (aa) type I transmembrane protein is composed of a 51 aa signal sequence, a 943 aa extracellular domain (ECD) containing two glycosidase-like regions, a 21 aa transmembrane domain, and 28 aa intracellular tail. Since Klotho-related proteins lack critical active site Glu residues present in  $\beta$ -glycosidases, it was initially unclear whether they were functional enzymes (1, 7). However, glucuronidase activity has since been demonstrated for Klotho, indicating that physiologically relevant enzymatic activity for Klotho  $\beta$  is also possible (8). The extracellular domain shares 79%, 87%, 87% and 67% identity with mouse, equine, canine and rat Klotho  $\beta$ , respectively. The low identity with rat reflects aa discordance within rodent ECD.

## References:

1. Mian, I. S. (1998) *Blood Cells Mol. Dis.* **24**:83.
2. Kurosu, H. and M. Kuro-o (2009) *Mol. Cell. Endocrinol.* **299**:72.
3. Ito, S. *et al.* (2005) *J. Clin. Invest.* **115**:2202.
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6. Ogawa, Y. *et al.* (2007) *Proc. Natl. Acad. Sci USA* **104**:7432.
7. Chang, Q. *et al.* (2005) *Science* **310**:490.
8. Goetz, R. *et al.* (2007) *Mol. Cell. Biol.* **27**:3417.

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