

Product Specification Sheet

**Estrogen Receptor  $\beta$ 2 (ER $\beta$ 2)**

<b>Cat.</b> ERb21-S	Rabbit Anti-rat ER Beta 2 Antisera# 1	<b>SIZE:</b> 100 ul
<b>Cat.</b> ERb21-A	Rabbit Anti- rat ER Beta2, Ig G# 1 (aff pure)	<b>SIZE:</b> 100 ug
<b>Cat.</b> ERb21-P	Rat ERb21 Control peptide	<b>SIZE:</b> 100 ug

Estrogens, produced by ovaries and testis, affect growth and differentiation of many target tissues. These include the male and female reproductive tissues (mammary gland, uterus, ovary, and prostate). Estrogens have also been implicated in the physiology of the bone, cardiovascular tissues, and the brain. Estrogens bind to the intracellular proteins known as estrogen receptors (ER). Estrogen receptor is a member of the super family of nuclear receptor that show a similar structure and mode of action. Once bound by their ligand, ER undergoes a conformational change to a form that can specifically binds to its target genes and later their transcription.

Rat/mouse **ER $\beta$ 1** gene encodes a protein of 485 aa with a calculated size of approx. 54 kDa. **ER $\beta$ 1** is 477 aa in human. As compared to **ER $\alpha$** , **ER $\beta$ 1** is highly conserved in the DNA-binding domain (>90% homology) and the C-terminal ligand binding domain (55% homology). The A/B domain, the hinge region and the F-domain are not conserved. Rat ER $\beta$ 1 is primarily expressed in prostate, ovary, lung, bladder, brain, uterus, and testis. ligand binding experiments with the recombinant ER $\beta$ 1 revealed a single binding component for 17 $\beta$ -E2 with Kd=0.6 nM. Both ER $\alpha$  and ER $\beta$ 1 binds to common agonists and antagonists with more or less overlapping specificity. Most recently functional variants of ER $\beta$ 1, termed ER $\beta$ 2, have been cloned. ER $\beta$ 2 has an additional 18 aa as a results of in-frame mutation within the ligand-binding domain. ER $\beta$ 2 is expressed in ovary, prostate, pituitary, brain, and muscle. Variants of both ER $\beta$ 1 and ER $\beta$ 2 (ER $\beta$ 1 $\delta$ 3, ER $\beta$ 2 $\delta$ 3) were detected that show deletion of 39 aa in the DNA-binding domain. Both ER $\beta$ 1 and ER $\beta$ 2 specifically bind to ER response element. ER $\alpha$ ,  $\beta$ 1 and ER $\beta$ 2 have been found to heterodimerize with each other.

**Source of Antigen and Antibodies**

<b>Antigen</b>	18aa peptide of Rat ER $\beta$ 2; (Gene Accession #JW0046) <b>Designated (ERB21-P or control peptide)</b> , conjugated to KLH; epitope location ~ N-terminus
<b>Ab Host/type</b>	Rabbit, polyclonal; Unpurified antiserum (cat #ERB21-S) Aff pure IgG (cat #ERB21-A)
<b>2-ab</b>	<b>Goat Anti-rabbit IgG-HRP</b> cat # 20320 (AP, biotin, FITC conjugates also available)
<b>-ve control</b>	# 20009-1, Rabbit (non-immune) IgG, purified, suitable for ELISA, Western, IHC as -ve control
<b>-ve control IgG</b>	# 20009-1, Rabbit (non-immune) 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 1mg/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** 1-10 ug/ml for affinity pure IgG using Chemiluminescence technique). The predicted size of the ER $\beta$  receptor is approx. 54-kDa (1).

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

**Histochemistry & Immunofluorescence:** Not tested. we recommend the use of affinity purified antibody at 2-20 ug/ml in formaldehyde fixed tissue.

**Specificity & Cross-reactivity**

The 18-aa rat ERb21-P immunogenic peptide is unique to ER $\beta$ 2. The ERb21-P epitope is also found in the variant of ER $\beta$ 2, the ER $\beta$ 2 $\delta$ 3. It is not clear, at present, if the ER $\beta$ 2 variants can be seen and distinguished by this antibody because of very small size differences in various ER $\beta$  isoforms. Actual crossreactivity of antibodies in all species is not established. 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:** Kuiper GG et al (1996) Proc Natl Acad Sci 93, 5925-5930; Tremblay, GB et al (1997) Mol. Endocrinol. 11, 353-365, Mosselman S et al (1996) FEBS Lett. 392, 49-53, Peterson DN et al (198) Endocrinology 139, 1082; Maruyama K et al (1998) BBRC 246, 142.

**Citation of ADI's antibodies for ER-Beta:** Hosokawa, K et al, 2001 Mol. Hum. Reprod. 2001 7: 137-145.

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

**Related material available from ADI**

**Monoclonal Mouse Anti-Bovine ER** (crossreacts with mouse, rat, human)

ERB21-S-A-P 71216A

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