

## CD3 epsilon Protein, Human (HEK293, His)

<b>Cat. No.:</b>	HY-P70506
<b>Synonyms:</b>	T-Cell Surface Glycoprotein CD3 Epsilon Chain; T-Cell Surface Antigen T3/Leu-4 Epsilon Chain; CD3e; CD3E; T3E
<b>Species:</b>	Human
<b>Source:</b>	HEK293
<b>Accession:</b>	P07766 (D23-D126)
<b>Gene ID:</b>	916
<b>Molecular Weight:</b>	Approximately 18.0 kDa

### PROPERTIES

<b>AA Sequence</b>	D G N E E M G G I T    Q T P Y K V S I S G    T T V I L T C P Q Y    P G S E I L W Q H N D K N I G G D E D D    K N I G S D E D H L    S L K E F S E L E Q    S G Y Y V C Y P R G S K P E D A N F Y L    Y L R A R V C E N C    M E M D
<b>Biological Activity</b>	10 µg/mL (100 µL/well) of immobilized Human CD3E-His can bind Human Anti-CD3 with an ED <sub>50</sub> value of 3-15 ng/mL.
<b>Appearance</b>	Lyophilized powder.
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution of PBS, pH 7.4.
<b>Endotoxin Level</b>	<1 EU/µg, determined by LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
<b>Storage &amp; Stability</b>	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

<b>Background</b>	CD3 epsilon, an integral component of the TCR-CD3 complex on the surface of T-lymphocytes, plays a crucial role in the adaptive immune response. As antigen-presenting cells (APCs) activate the T-cell receptor (TCR), CD3 epsilon, along with other CD3 chains (CD3D, CD3G, and CD3Z), facilitates the transmission of TCR-mediated signals across the cell membrane. Containing immunoreceptor tyrosine-based activation motifs (ITAMs) in its cytoplasmic domain, CD3 epsilon undergoes phosphorylation by Src family protein tyrosine kinases LCK and FYN upon TCR engagement, leading to the activation of downstream signaling pathways. Beyond its role in signal transduction, CD3 epsilon is essential for proper T-cell development, initiating the assembly of the TCR-CD3 complex by forming the heterodimers CD3D/CD3E and CD3G/CD3E.
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Additionally, CD3 epsilon is involved in the internalization and cell surface down-regulation of TCR-CD3 complexes through endocytosis sequences present in its cytosolic region. The TCR-CD3 complex comprises CD3D/CD3E and CD3G/CD3E heterodimers, which preferentially associate with TCRalpha and TCRbeta, forming trimers that interact with CD3Z homodimers to complete the hexameric TCR-CD3 complex. Alternatively, TCRgamma and TCRdelta can replace TCRalpha and TCRbeta. CD3 epsilon's interactions with CD6, NCK1, and NUMB further highlight its pivotal role in orchestrating T-cell activation, development, and internalization processes.

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**Caution: Product has not been fully validated for medical applications. For research use only.**

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