PRODUCT INFORMATION

CD3ε (human, recombinant)

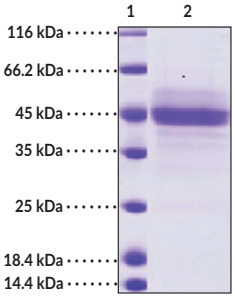
Item No. 44201

Overview and Properties

Synonyms:	CD3E, Cluster of Differentiation 3E
Source:	Active recombinant C-terminal human IgG1 Fc-tagged human CD3ε expressed in HEK293 cells
Amino Acids:	23-126
Uniprot No.:	P07766
Molecular Weight:	38.5 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	Lyophilized from PBS, pH 7.4
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Bioactivity:	See figures for details

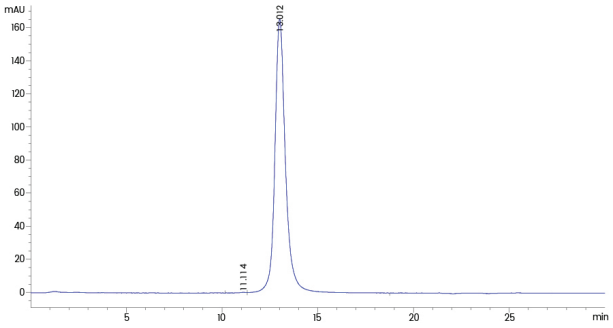
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: CD3ε

SDS-PAGE Analysis of CD3ε. This protein has a calculated molecular weight of 38.5 kDa.



CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

CD3 is a co-receptor for the T cell receptor (TCR), a cell surface receptor that recognizes antigens presented by MHC molecules and has a key role in the adaptive immune response.[1,2] CD3 exists as a dimer composed of γ, δ, ε, or ζ subunits, which are type I transmembrane proteins encoded by distinct genes that enable TCR signal transduction.[1,3] CD3ε is composed of an extracellular immunoglobulin (Ig) domain that mediates protein-protein interactions, a short membrane-proximal connecting peptide that is critical for TCR signaling, a transmembrane segment, and an intracellular immunoreceptor tyrosine-based activation motif (ITAM) that is phosphorylated by the tyrosine kinase Lck, resulting in T cell activation, proliferation, and survival.[1,2,4] CD3ε forms heterodimers with CD3γ or CD3δ that interact with CD3ζζ homodimers to generate CD3 hexamers that noncovalently bind the TCR to form the CD3-TCR complex. Formulations containing murine anti-CD3ε IgG2a monoclonal antibodies have been used in the treatment of acute allograft rejection. Cayman's CD3ε (human, recombinant) can be used for binding assay and Western blot (WB) applications. This protein is a disulfide-linked homodimer. The reduced monomer, composed of CD3ε (amino acids 23-126) fused to human IgG1 Fc at its C-terminus, consists of 342 amino acids, has a calculated molecular weight of 38.5 kDa, and a predicted N-terminus of Asp23 after signal peptide cleavage.

References

1. Dong, D., Zheng, L., Lin, J., *et al.* Structural basis of assembly of the human T cell receptor–CD3 complex. *Nature* **573(7775)**, 546-552 (2019).
2. Birnbaum, M.E., Berry, R., Hsiao, Y.-S., *et al.* Molecular architecture of the αβ T cell receptor–CD3 complex. *Proc. Natl. Acad. Sci. USA* **111(49)**, 17576-17581 (2014).
3. San José, E., Sahuquillo, A.G., Bragado, R., *et al.* Assembly of the TCR/CD3 complex: CD3ε/δ and CD3ε/ɣ dimers associate indistinctly with both TCR α and TCR β chains. Evidence for a double TCR heterodimer model. *Eur. J. Immunol.* **28(1)**, 12-21 (1998).
4. Li, L., Guo, X., Shi, X., *et al.* Ionic CD3–Lck interaction regulates the initiation of T-cell receptor signaling. *Proc. Natl. Acad. Sci. USA* **114(29)**, E5891-E5899 (2017).

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[734] 971-3335
FAX: [734] 971-3640
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WWW.CAYMANCHEM.COM