

# PRODUCT INFORMATION



## Cdk2 Isoform 1 (human, recombinant)

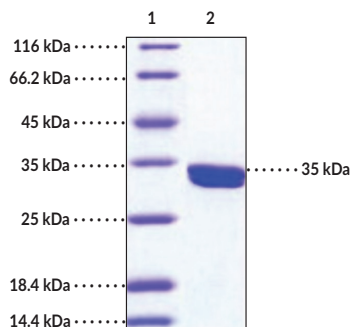
Item No. 40793

### Overview and Properties

**Synonyms:** Cell Division Protein Kinase 2, Cyclin-dependent Kinase 2, p33 Protein Kinase  
**Source:** Recombinant human C-terminal His-tagged Cdk2 isoform 1 expressed in insect cells  
**Amino Acids:** 1-298 (full length)  
**Peptide Sequence:**  
**Uniprot No.:** P24941  
**Molecular Weight:** 35 kDa  
**Storage:** -80°C (as supplied)  
**Stability:** ≥1 year  
**Purity:** ≥85% estimated by SDS-PAGE, ≥95% determined by SEC-HPLC  
**Supplied in:** Lyophilized from sterile 50 mM Tris, pH 8.0, with 100 mM sodium chloride and 10% glycerol  
**Endotoxin Testing:** <1.0 EU/μg, determined by the LAL endotoxin assay  
**Bioactivity:** See figures for details

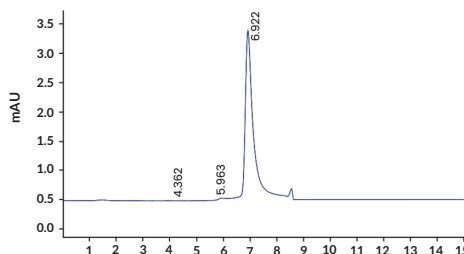
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Images



Lane 1: MW Markers  
Lane 2: Cdk2 Isoform 1

**SDS-PAGE Analysis of Cdk2 Isoform 1.** This protein has a calculated molecular weight of 35 kDa.



**SEC-HPLC verification of Cdk2 isoform 1.** This protein has a purity of ≥95%.

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
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## Description

Cyclin-dependent kinase 2 (Cdk2) is a serine/threonine kinase and member of the CDK family of kinases involved in cell cycle regulation.<sup>1,2</sup> It is composed of an N-terminal domain, an activation segment, also known as the T loop, and a catalytic C-terminal domain.<sup>2</sup> Alternative splicing of *CDK2* mRNA produces a full-length isoform or a shorter isoform that lacks exon 5, which encodes for part of the Cdk2 activation segment and contains residues that participate in interactions with cyclins.<sup>3</sup> It is ubiquitously expressed and localizes to the cytoplasm or nucleus depending on the cell cycle stage.<sup>5,6</sup> Cdk2 associates with cyclin E to mediate the G<sub>1</sub>/S transition and with cyclin A during S phase progression.<sup>1,2</sup> Knockout of *Cdk2* induces gametogenesis defects in mice but does not affect mitotic cell division.<sup>3</sup> Protein levels of Cdk2 are increased in patients with oral squamous cell carcinoma, and overexpression of Cdk2/cyclin A or Cdk2/cyclin E is associated with poor prognosis in patients with oral cancer.<sup>7</sup> Cayman's Cdk2 Isoform 1 (human, recombinant) protein consists of 308 amino acids and has a calculated molecular weight of 35 kDa.

## References

1. Funk, J.O. Cell cycle checkpoint genes and cancer. *Encyclopedia of life sciences*. John Wiley & Sons (2005).
2. Li, Y., Zhang, J., Gao, W., *et al.* Insights on structural characteristics and ligand binding mechanisms of CDK2. *Int. J. Mol. Sci.* **16**(5), 9314-9340 (2015).
3. Ortega, S., Prieto, I., Odajima, J., *et al.* Cyclin-dependent kinase 2 is essential for meiosis but not for mitotic cell division in mice. *Nat. Genet.* **35**(1), 25-31 (2003).
4. Ji, X., Humenik, J., Yang, D., *et al.* PolyC-binding proteins enhance expression of the CDK2 cell cycle regulatory protein *via* alternative splicing. *Nucleic Acids Res.* **46**(4), 2030-2044 (2018).
5. Sherr, C.J. and Roberts, J.M. Living with or without cyclins and cyclin-dependent kinase. *Genes Dev.* **18**(22), 2699-2711 (2004).
6. Bresnahan, W.A., Thompson, E.A., and Albrecht, T. Human cytomegalovirus infection results in altered Cdk2 subcellular localization. *J. Gen. Virol.* **78**(Pt 8), 1993-1997 (1997).
7. Mihara, M., Shintani, S., Nakahara, Y., *et al.* Overexpression of CDK2 is a prognostic indicator of oral cancer progression. *Jpn. J. Cancer Res.* **92**(3), 352-360 (2001).

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