

# Human CDK2 / p33 Protein (His Tag)

Catalog Number: 10624-H08B



Sino Biological  
Biological Solution Specialist

## General Information

### Gene Name Synonym:

CDKN2; p33(CDK2)

### Protein Construction:

A DNA sequence encoding the human cyclin-dependent kinase 2 isoform 1 (NP\_001789.2) (Met 1-Leu 298) was expressed, fused with a polyhistidine tag at the C-terminus.

**Source:** Human

**Expression Host:** Baculovirus-Insect Cells

## QC Testing

**Purity:** > 85 % as determined by SDS-PAGE

### Bio Activity:

**No Kinase Activity**

### Endotoxin:

< 1.0 EU per µg of the protein as determined by the LAL method

### Stability:

Samples are stable for up to twelve months from date of receipt at -70 °C

**Predicted N terminal:** Met

### Molecular Mass:

The recombinant human CDK2 consists of 308 amino acids and predicts a molecular mass of 35 kDa. The apparent molecular mass of rhCDK2 is approximately 33 kDa in SDS-PAGE under reducing conditions.

### Formulation:

Lyophilized from sterile 50mM Tris, 100mM NaCl, pH 8.0, 10% glycerol

Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween80 are added as protectants before lyophilization. Specific concentrations are included in the hardcopy of COA. Please contact us for any concerns or special requirements.

## Usage Guide

### Storage:

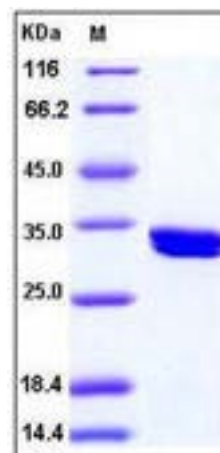
Store it under sterile conditions at -20°C to -80°C upon receiving. Recommend to aliquot the protein into smaller quantities for optimal storage.

**Avoid repeated freeze-thaw cycles.**

### Reconstitution:

Detailed reconstitution instructions are sent along with the products.

## SDS-PAGE:



## Protein Description

CDK2 is a member of the Ser/Thr protein kinase family. This protein kinase is highly similar to the gene products of *S. cerevisiae* cdc28, and *S. pombe* cdc2. It is a catalytic subunit of the cyclin-dependent protein kinase complex, whose activity is restricted to the G1-S phase, and essential for cell cycle G1/S phase transition. Cdks (cyclin-dependent kinases) are heteromeric serine/threonine kinases that control progression through the cell cycle in concert with their regulatory subunits, the cyclins. Cdks are constitutively expressed and are regulated by several kinases and phosphatases, including Wee1, CDK-activating kinase and Cdc25 phosphatase. Although there are 12 different cdk genes, only 5 have been shown to directly drive the cell cycle (Cdk1, -2, -3, -4, and -6). Following extracellular mitogenic stimuli, cyclin D gene expression is upregulated. Cdk4 forms a complex with cyclin D and phosphorylates Rb protein, leading to liberation of the transcription factor E2F. E2F induces transcription of genes including cyclins A and E, DNA polymerase and thymidine kinase. Cdk4-cyclin E complexes form and initiate G1/S transition. Subsequently, Cdk1-cyclin B complexes form and induce G2/M phase transition. Cdk1-cyclin B activation induces the breakdown of the nuclear envelope and the initiation of mitosis. CDK2 associates with and regulated by the regulatory subunits of the complex including cyclin A or E, CDK inhibitor p21Cip1 (CDKN1A) and p27Kip1 (CDKN1B). Its activity is also regulated by its protein phosphorylation. CDK2 is involved in the control of the cell cycle. It also interacts with cyclins A, B1, B3, D, or E. Activity of CDK2 is maximal during S phase and G2.

## References

1. Bao ZQ, *et al.* (2011) Briefly bound to activate: transient binding of a second catalytic magnesium activates the structure and dynamics of CDK2 kinase for catalysis. *Structure*. 19(5):675-90.
2. Neganova I, *et al.* (2011) An important role for CDK2 in G1 to S checkpoint activation and DNA damage response in human embryonic stem cells. *Stem Cells*. 29(4):651-9.
3. Li J, *et al.* (2011) Phosphorylation of MCM3 protein by cyclin E/cyclin-dependent kinase 2 (Cdk2) regulates its function in cell cycle. *J Biol Chem*. 286(46):39776-85.

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