

## CDC25A, Active

Full-length recombinant human protein expressed in Sf9 cells

**Catalog # C04-20G**

Lot # P1842-4

### Product Description

Full-length recombinant human CDC25A was expressed in Sf9 insect cells using an N-terminal GST tag. The gene accession number is [NM\\_001789](#).

### Gene Aliases

CDC25A2

### Formulation

Recombinant protein stored in 20mM MOPS, pH 7.5, 300mM NaCl, 10mM glutathione, 0.25mM DTT, 0.1mM PMSF, 25% glycerol.

### Storage and Stability

Store product at -70°C. For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, avoid repeated handling and multiple freeze/thaw cycles.

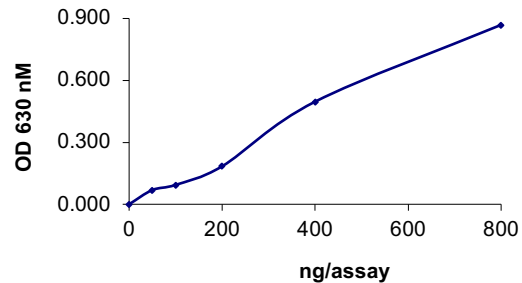
### Scientific Background

CDC25A (also known as cell division cycle 25 homolog A) is a member of the CDC25 family of phosphatases that are required for progression from G1 to the S phase of the cell cycle. CDC25A can activate the cyclin-dependent kinase CDC2 (also known as CDK1) by removing two phosphate groups (1). CDC25A is specifically degraded in response to DNA damage, which prevents cells with chromosomal abnormalities from progressing through cell division. CDC25A overexpression is detected in human cancers and this may contribute to the tumorigenesis process (2). CDC25A is degraded by moderate heat shock and this degradation is protected by HSP90.

### References

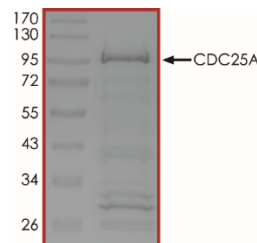
1. Mailand, N. et.al: Rapid destruction of human Cdc25A in response to DNA damage. *Science* 288: 1425-1429, 2000.
2. Madlener, S. et.al: Short 42 degrees C heat shock induces phosphorylation and degradation of Cdc25A which depends on p38MAPK, Chk2 and 14.3.3. *Hum. Molec. Genet.* 18: 1990-2000, 2009

### Specific Activity



The specific activity of CDC25A was determined to be **36 nmol phosphate released /min/mg** as per activity assay protocol.

### Purity



The purity was determined to be **>80%** by densitometry. Approx. MW **94kDa**.

## CDC25A, Active

Full-length recombinant human protein expressed in Sf9 cells

|                    |   |
|--------------------|---|
| Catalog #          | C04-20G   |
| Specific Activity  | 36 nmol/min/mg  |
| Lot #              | P1842-4   |
| Purity             | >80%  |
| Concentration      | 0.1 µg/µl   |
| Stability          | 1 yr at -70°C from date of shipment   |
| Storage & Shipping | Store product at -70°C. For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, avoid repeated handling and multiple freeze/thaw cycles. Product shipped on dry ice. |

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# Activity Assay Protocol

## Reaction Components

### Active Phosphatase (Catalog #: C04-20G)

Active CDC25A (0.1µg/µl) diluted with CDC25 Dilution Buffer and assayed as outlined in sample activity plot. (Note: these are suggested working dilutions and it is recommended that the researcher perform a serial dilution of Active CDC25A for optimal results).

### CDC25 Dilution Buffer

CDC25 Dilution Buffer contains 100mM TRIS-HCl, pH8.2, 40mM NaCl, 1mM dithiothreitol, 20% glycerol.

### Substrate Assay Solution

OMFP (3-o-methylfluorescein phosphate) diluted in CDC25 Dilution Buffer to a final concentration of 500 µM.

### Detection Solution

BIOMOL GREEN reagent phosphatase detection kit (BioMol Catalog #: AK-111).

## Assay Protocol

- Step 1.** Prepare a fresh batch of CDC25 Dilution Buffer and keep on ice.
- Step 2.** Prepare phosphate standard curve following the instruction of BIOMOL GREEN reagent phosphatase detection kit. Briefly, prepare 1:1 serial dilutions of phosphate standard solutions with CDC25 Dilution Buffer in a volume of 25µl. Also, use 25µl CDC25 Dilution Buffer as a blank. The range of phosphate amount should be 0~4 nmol.
- Step 3.** Thaw the Active CDC25A on ice. Prepare serial dilutions of CDC25A using CDC25 Dilution Buffer.
- Step 4.** In a pre-cooled microfuge tube, add the following reaction components in total volume of 25µl:

**Component 1.** 10µl of diluted Active CDC25A (Catalog #C04-20G)

**Component 2.** 10µl of Substrate Assay Solution

**Component 3.** 5µl CDC25 Dilution Buffer

- Step 5.** Set up the blank control as outlined in step 4, excluding the addition of the Active Phosphatase. Replace the Active Phosphatase with an equal volume of CDC25 Dilution Buffer.
- Step 6.** Start the reaction by incubating the mixture in a water bath at 37°C for 30 minutes.
- Step 7.** Add 100µl BIOMOL GREEN Reagent to each reaction including control tubes.
- Step 8.** Add 100µl BIOMOL GREEN Reagent to each phosphate standard solution including the blank (step 2).
- Step 9.** Incubate at room temperature for 30 minutes to allow development of the green color
- Step 10.** Measure the absorbance of the reaction solution in a spectrophotometer at 630 nm.
- Step 11.** Plot the free phosphate standard curve. Determine absorbance (y) for each sample (where y = absorbance of sample – background absorbance) and calculate the corresponding nmol phosphate released (x) during the assay using the equation  $y = A*x + B$  or  $x = [y - B] / A$  (the A and B values are determined from the slope of the line from the standard curve).
- Step 12.** Calculate the phosphatase specific activity (SA):

### Phosphatase Specific Activity (SA) (nmol/min/mg)

$$SA = \text{Corresponding phosphate released} * 1000 / [(\text{Reaction time in min}) * (\text{Enzyme amount in } \mu\text{g})]$$

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# SAFETY DATA SHEET

## Article 1 - Product Identification

**Product Name: CDC25A, Active**

**Catalog # C04-20G**

*This product is sold only for research use by qualified laboratory personnel, and is not to be used as a drug, medical device, food additive, cosmetic, nor household chemical. It is not to be used in diagnostic, therapeutic, consumer, agricultural, nor pesticidal applications.*

Manufacturer's Name: SignalChem Pharmaceuticals Inc.  
Street Address: 110-13120 Vanier Place  
City, Prov. Postal Code: Richmond, BC, V6V 2J2  
Fax: 604-232-4601  
EMERGENCY PHONE: 604-232-4600

## Article 2 - Hazard Identification

- **WHMIS Classification:** Not WHMIS controlled.
- **GHS classification:** Skin irritation (Category 3); Eye irritation (Category 2B).
- **Hazard Pictograms:** none.
- **Signal words:** Warning.
- **Hazard statements:** Causes mild skin irritation (H316); Causes eye irritation (H320).
- **Precautionary statements:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305 + P351 + P338).
- **Other hazards:** none known.

## Article 3 – Composition/Information on Ingredients

**Chemical Characterization:** Mixtures.

**Description:** This product consists of the substances listed below.

| Common name                          | Chemical name                         | CAS-No.           | Concentration |
|--------------------------------------|---------------------------------------|-------------------|---------------|
| Glycerol                             | Glycerol                              | 56-81-5           | ≤30%          |
| NaCl                                 | Sodium chloride                       | 7647-14-5         | ≤1.753%       |
| MOPS                                 | 3-(N-morpholino) propanesulfonic acid | 1132-61-2         | 0.418%        |
| Glutathione                          | Glutathione                           | 70-18-8           | 0.307%        |
| Protein                              |                                       | No data available | ≤0.02%        |
| DTT; Dithiothreitol                  | (R*,R*)-1,4-Dimercaptobutane-2,3-diol | 3483-12-3         | 0.0038%       |
| PMSF; Phenylmethanesulfonyl fluoride | α-Toluenesulphonyl fluoride           | 329-98-6          | 0.002%        |

## Article 4 – First-aid Measures

- **General information:** Consult a physician by providing the SDS.
- **After inhalation:** Breathe in fresh air. If cannot breath, give artificial respiration and consult a physician.
- **After skin contact:** Immediately wash with soap and plenty of water and rinse thoroughly. Consult a physician.
- **After eye contact:** Rinse opened eyes with plenty of water for at least 15 minutes. Consult a physician.
- **After swallowing:** rinse the mouth with plenty of water and consult a physician.

## Article 5 - Fire-fighting Measures

- **Suitable extinguishing media:** Use water spray, extinguishing powder, carbon dioxide, or other appropriate measure that is suitable to the environment.
- **Specific hazards arising from the substance or mixture:** None known.
- **Special protective equipment and precautions for fire-fighters:** Self-contained breathing apparatus if necessary.

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## Article 6 – Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:** Apply standard laboratory practices and personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation.
- **Environmental precautions:** Do not allow to enter drains.
- **Methods and materials for containment and cleaning up:** Absorb on sand or vermiculite and place in closed containers for disposal.

## Article 7 - Handling and Storage

- **Precautions for safe handling:** Wear chemical safety goggles and compatible chemical-resistant gloves. Avoid inhalation, contact with eyes, skin or clothing.
- **Conditions for safe storage:** Store in a dry and well-ventilated place in -70 °C. Keep container upright and tightly closed.

## Article 8 - Exposure Controls/Personal Protection

- **Components with limit monitoring values at workplace:**  
Glycerol (CAS-No: 56-81-5)

| Values | Control parameters                      | Regulations              |
|--------|---|--------------------------|
| TWA    | 10 mg/m <sup>3</sup> for mist           | British Columbia, Canada |
| TWA    | 3 mg/m <sup>3</sup> for respirable mist | British Columbia, Canada |
| TWA    | 10 mg/m <sup>3</sup>                    | Alberta, Canada          |
| TWAEV  | 10 mg/m <sup>3</sup>                    | Ontario, Canada          |
| TWAEV  | 10 mg/m <sup>3</sup>                    | Quebec, Canada           |
| TWA    | 10 mg/m <sup>3</sup>                    | USA                      |

- **Appropriate engineering controls:**  
Apply adequate ventilation including mechanical exhaust or laboratory fume hood. Follow standard laboratory practices.
- **Individual protection measures:**  
**Respiratory protection:**  
Use appropriate respirator if there is inadequate ventilation by following the government standards.  
**Hand protection:**  
Wear gloves and use proper glove removal technique to avoid skin contact. Discard gloves after use by following the applicable laboratory regulations. Wash and dry hands.  
**Eye/face protection:**  
Safety goggles with side-shields approved under appropriate government standards.  
**Skin/body protection:**  
Use appropriate clothing, footwear and any additional protection measures to protect from splashing or contamination.

## Article 9 – Physical and Chemical Properties

|   |   |
|---|---|
| <b>Appearance:</b> Colorless fluid.                   | <b>Danger of explosion:</b> Product does not present an explosion hazard. |
| <b>Odour/Odour Threshold:</b> Not determined.         | <b>Explosion limits:</b> Lower: 0.9 Vol %; Upper: 0.0 Vol %.              |
| <b>pH:</b> Not available.                             | <b>Decomposition temperature:</b> Not available.                          |
| <b>Melting point/freezing point:</b> Not determined.  | <b>Vapor pressure at 20 °C:</b> 0.1 hPa                                   |
| <b>Boiling point/Boiling range:</b> 100 °C.           | <b>Density:</b> Not determined.   |
| <b>Flash point:</b> > 100 °C.                         | <b>Relative density:</b> Not determined.                                  |
| <b>Flammability (solid, gaseous):</b> Not determined. | <b>Vapor density:</b> Not determined.                                     |
| <b>Ignition temperature:</b> 400 °C.                  | <b>Evaporation rate:</b> Not determined.                                  |
| <b>Auto-igniting:</b> Product is not self-igniting.   | <b>Solubility in / Miscibility with Water:</b> Fully miscible.            |

## Article 10 - Stability and Reactivity

- **Reactivity:** Stable under recommended transport and storage conditions.
- **Chemical stability:** Stable under recommended transport and storage conditions.
- **Possible hazardous reactions:** No dangerous reactions known.
- **Conditions to avoid:** Heat and moisture.
- **Incompatible materials:** Strong acids/bases, strong oxidizing/reducing agents.
- **Hazardous decomposition products:** Carbon oxides may formed under fire conditions; no known decomposition information for other decomposition products.

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# SAFETY DATA SHEET

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## Article 11 - Toxicological Information

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- **Acute toxicity:** Not available.
- **LD/LC50:** Not available.
- **Skin corrosion/irritation:** Not available.
- **Serious eye damage/eye irritation:** Not available.
- **Respiratory or skin sensitization:** Not available.
- **Germ cell mutagenicity:** Not available.
- **Carcinogenicity:** No components are listed in IARC, or NTP, or OSHA, or ACGIH.
- **Reproductive toxicity:** Not available.
- **Teratogenicity:** Not available.
- **Specific target organ toxicity - single exposure/ - repeated exposure (GHS):** Not available.
- **Aspiration hazard:** Not available.
- **Potential health effects:**
  - Inhalation:** May be harmful if inhaled. May cause respiratory tract irritation.
  - Ingestion:** May be harmful if swallowed.
  - Skin:** May be harmful if absorbed through skin. May cause skin irritation.
  - Eyes:** May cause eye irritation.
- **Signs and Symptoms of Exposure:**
  - Prolonged or repeated exposure can cause: Nausea, Dizziness.
- **Synergistic effects:** Not available.

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## Article 12 - Ecological Information

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- **Eco-toxicity:** Not applicable.
- **Biodegradability:** Not applicable.
- **Bio-accumulative potential:** Not applicable.
- **Mobility in soil:** Not applicable.
- **PBT and vPvB assessment:** Not applicable.
- **Other adverse effects:** Not applicable.

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## Article 13 - Disposal Considerations

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- **Disposal methods:** In accordance to applicable national, regional, or local laws and regulations. For additional handling information and protection of employees please refer to Article 7 and 8.
- **Contaminated packaging:** Disposal should be made in accordance to official regulations. Use water or cleansing agents to clean the area.

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## Article 14 - Transport Information

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- **DOT:** Not dangerous goods.
- **IMDG:** Not dangerous goods.
- **IATA:** Not dangerous goods.

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## Article 15 - Regulatory Information

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- **WHMIS Classification:** Non-hazardous.
- **GHS label elements:** Not applicable.
- **Signal word:** Not applicable.
- **Hazard statements:** Not applicable.

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## Article 16 - Other Information

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The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. SignalChem shall not be held liable for any damage resulting from handling or from contact with the above product. See the Technical Specification, Packing Slip, Invoice, and Product Catalog for additional terms and conditions of sale.

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