DYRK3 Protein, Human (sf9, His-GST)

Cat. No.:	HY-P76308
Synonyms:	Dual specificity tyrosine-phosphorylation-regulated kinase 3; REDK; DYRK3
Species:	Human
Source:	Sf9 insect cells
Accession:	O43781 (M1-S588)
Gene ID:	8444
Molecular Weight:	Approximately 80 kDa.

PROPERTIES

Biological Activity	The enzyme activity of this recombinant protein is testing in progress, we cannot offer a guarantee yet.
Appearance	Solution.
Formulation	Supplied as a 0.2 μm filtered solution of 20 mM Tris, 500 mM NaCl, 0.5 mM PMSF, 10% gly, pH 8.0.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	N/A.
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice.

DESCRIPTION

Background	DYRK3, a dual-specificity protein kinase, plays a pivotal role in orchestrating the disassembly of various membraneless organelles, including stress granules, nuclear speckles, and pericentriolar material, during mitosis. Operating as a central dissolvase during the G2-to-M transition, DYRK3 achieves this by phosphorylating multiple serine and threonine residues in unstructured domains of target proteins, such as SRRM1 and PCM1. Notably, DYRK3's dissolving activity is selective, sparing membraneless organelles like P-bodies and the nucleolus. This orchestrated disassembly is crucial for releasing mitotic regulators, including ZNF207, from liquid-unmixed organelles, preventing their sequestration and maintaining dissolution during mitosis. Additionally, DYRK3 regulates mTORC1 by mediating stress granule dissolution and facilitating mTORC1 relocation to the cytosol, a process essential for full reactivation of mTORC1 signaling. Beyond its role in organelle dynamics, DYRK3 emerges as a negative regulator of EPO-dependent erythropoiesis, potentially imposing an upper limit on red cell production during stress erythropoiesis. Furthermore, DYRK3 exhibits a pro-survival function, inhibiting cell death induced by cytokine withdrawal in hematopoietic progenitor cells and promoting cell survival under genotoxic stress through the phosphorylation of SIRT1, consequently inhibiting p53/TP53 activity and apoptosis.

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

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