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Produktinformation



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- Mindermengenzuschlag
- Trockeneiszuschlag
- Gefahrgutzuschlag
- Expressversand

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PRODUCT INFORMATION



ROCK2 (human, recombinant)

Item No. 32758

Overview and Properties

Synonyms: KIAA0619, Rho-associated Coiled-coil-containing Protein Kinase 2, Rho-associated Protein Kinase 2, Rho Kinase 2, p164 ROCK2

Source: Active recombinant N-terminal His-tagged ROCK2 expressed in insect cells

Amino Acids: 19-417

Uniprot No.: O75116

Molecular Weight: 48.3 kDa

Storage: -80°C (as supplied)

Stability: ≥1 year

Purity: *batch specific* (≥95% estimated by SDS-PAGE)

Supplied in: 20 mM HEPES, pH 7.4, with 150 mM sodium chloride and 1 mM DTT

Protein Concentration: *batch specific* mg/ml

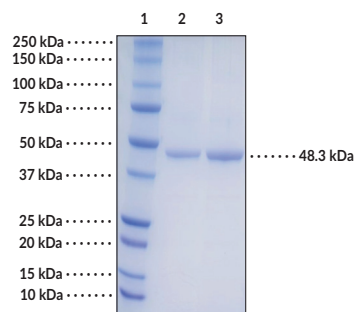
Activity: *batch specific* U/ml

Specific Activity: *batch specific* U/mg

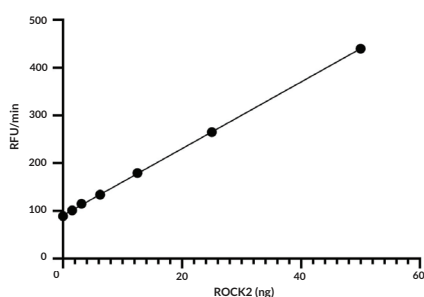
Unit Definition: One unit is defined as the amount of enzyme required to produce 1 μmol of ADP per minute at 25°C in 20 mM HEPES, pH 7.4, containing 50 mM sodium chloride, 10 mM magnesium chloride, 1 mM EGTA, 0.02% Triton, and 108 μM S6K peptide.

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

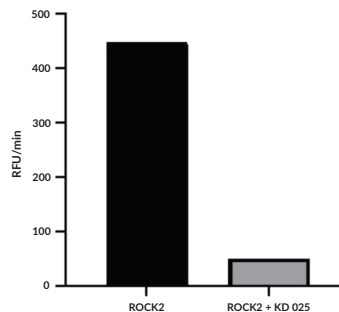
Images



Lane 1: MW Markers
Lane 2: 2 μg ROCK2
Lane 3: 4 μg ROCK2
SDS-PAGE Analysis of ROCK2



ROCK2 activity was determined using a coupled-kinase assay. HRP readily combines with hydrogen peroxide, a byproduct, and this complex is detected by 10-acetyl-3,7-dihydroxyphenoxazine (ADHP) (Item No. 10010469), thereby allowing activity to be monitored by measuring the increase in fluorescence.



Inhibition of ROCK2 with 2 μM KD 025 (Item No. 17055).

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.

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PRODUCT INFORMATION



Description

Rho-associated protein kinase 2 (ROCK2) is a serine/threonine kinase that has roles in cytoskeletal organization and autoimmunity, as well as cell survival, proliferation, and apoptosis.¹⁻³ It exists as a homodimer where each monomer is composed of an N-terminal kinase domain, a coiled-coil region that contains the Rho-binding domain, and a C-terminal pleckstrin homology (PH) domain that contains a cysteine-rich C1 domain and acts as an autoinhibitory region.^{2,4} *Rock2* mRNA is expressed in brain, muscle, heart, lung, and placenta, localized to the cytosol and nucleus, associated with the centrosome, and co-localized with actin and vimentin in a cell-type-specific manner.^{1,2} Binding of ROCK2 to GTP-bound RhoA induces activation of ROCK1, which phosphorylates a variety of downstream targets, including myosin light chain (MLC) phosphatase 1 (MYPT1) and MLC2, that have diverse roles in cytoskeletal organization.² Additionally, ROCK2 is cleaved and activated by proteases, including granzyme B and caspase-2, to induce apoptosis.¹ Pharmacological inhibition of ROCK2 restores immune homeostasis and shifts the helper T (Th17)/regulatory T (Treg) cell balance towards Tregs in various animal models of autoimmunity and chronic graft versus host disease (GVHD).³ *Rock2* knockdown decreases the fibrogenic response in a mouse model of diabetic kidney disease.⁵ Cayman's ROCK2 (human, recombinant) protein can be used for enzyme activity assays.

References

1. Hartmann, S., Ridley, A.J., and Lutz, S. The function of Rho-associated kinases ROCK1 and ROCK2 in the pathogenesis of cardiovascular disease. *Front. Pharmacol.* **6**, 276 (2015).
2. Julian, L. and Olson, M.F. Rho-associated coiled-coil containing kinases (ROCK): Structure, regulation, and functions. *Small GTPases* **5**, e29846 (2014).
3. Zanin-Zhorov, A. and Blazar, B.R. ROCK2, a critical regulator of immune modulation and fibrosis has emerged as a therapeutic target in chronic graft-versus-host disease. *Clin. Immunol.* **230**, 108823 (2021).
4. Haga, R.B., Garg, R., Collu, F., *et al.* RhoBTB1 interacts with ROCKs and inhibits invasion. *Biochem. J.* **476**(17), 2499-2514 (2019).
5. Matoba, K., Takeda, Y., Nagai, Y., *et al.* The physiology, pathology, and therapeutic interventions for ROCK isoforms in diabetic kidney disease. *Front. Pharmacol.* **11**, 585633 (2020).

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