

# PRODUCT INFORMATION



## ROCK1 (human, recombinant)

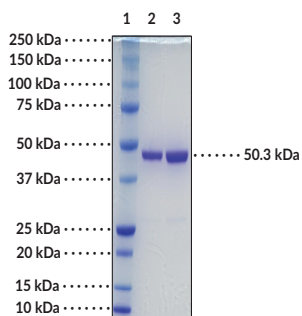
Item No. 32757

### Overview and Properties

<b>Synonyms:</b>	p160 ROCK1, Renal Carcinoma Antigen NY-REN-35, Rho-associated, Coiled-coil-containing Protein Kinase 1, Rho-associated Protein Kinase 1
<b>Source:</b>	Active recombinant N-terminal His-tagged human ROCK1 expressed in insect cells
<b>Amino Acids:</b>	6-415
<b>Uniprot No.:</b>	Q13464
<b>Molecular Weight:</b>	50.12 kDa
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	≥1 year
<b>Purity:</b>	<i>batch specific</i> (≥90% estimated by SDS-PAGE)
<b>Supplied in:</b>	20 mM HEPES, pH 7.5, with 150 mM sodium chloride, and 1 mM DTT
<b>Protein Concentration:</b>	<i>batch specific</i> mg/ml
<b>Activity:</b>	<i>batch specific</i> U/ml
<b>Specific Activity:</b>	<i>batch specific</i> U/mg
<b>Unit Definition:</b>	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, with 50 mM sodium chloride, 10 mM MgCl <sub>2</sub> , 1 mM EGTA, 0.02% Triton, and 108 μM S6K peptide.

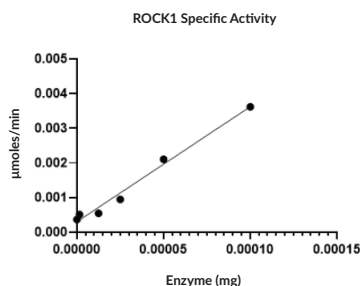
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Images

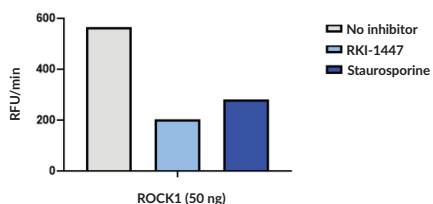


Lane 1: MW Markers  
Lane 2: ROCK1 (2 μg)  
Lane 3: ROCK1 (4 μg)

SDS-PAGE Analysis of ROCK1.



ROCK1 activity was determined using a coupled-kinase assay. HRP readily combines with hydrogen peroxide, a by-product, 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 ROCK1 activity by the ROCK1 inhibitor RKI-1447 (Item No. 16278) and the multi-kinase inhibitor staurosporine (Item No. 81590).

**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**  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

Copyright Cayman Chemical Company, 12/21/2021

**CAYMAN CHEMICAL**  
1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA  
PHONE: [800] 364-9897  
[734] 971-3335  
FAX: [734] 971-3640  
CUSTSERV@CAYMANCHEM.COM  
WWW.CAYMANCHEM.COM

# PRODUCT INFORMATION



## Description

---

Rho-associated protein kinase 1 (ROCK1) is a serine/threonine kinase that has roles in cytoskeletal organization, as well as cell survival, proliferation, and apoptosis.<sup>1,2</sup> 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.<sup>2,3</sup> *Rock1* mRNA is expressed in all tissues except in the muscle and brain, and the protein is localized predominantly in the cytosol but also associates with the plasma membrane and centrosomes.<sup>1,2</sup> Binding of ROCK1 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.<sup>2</sup> The C-terminal autoinhibitory region of ROCK1 is cleaved by caspase-3 during the execution phase of apoptosis, resulting in constitutively active ROCK1 and plasma membrane blebbing, a hallmark of apoptosis.<sup>1,2</sup> ROCK1 is overexpressed in tumors from patients with various solid tumors, including hepatocellular carcinoma, glioblastoma, or melanoma, and increased tumor *ROCK1* mRNA transcript levels are correlated with increased metastasis and reduced overall survival in patients with breast cancer.<sup>4,5</sup> Cayman's ROCK1 (human, recombinant) protein can be used for ELISA, enzyme activity assay, and Western blot (WB) applications.

## 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. Haga, R.B., Garg, R., Collu, F., *et al.* RhoBTB1 interacts with ROCKs and inhibits invasion. *Biochem. J.* **476**(17), 2499-2514 (2019).
4. Hu, C., Zhou, H., Liu, Y., *et al.* ROCK1 promotes migration and invasion of non small cell lung cancer cells through the PTEN/PI3K/FAK pathway. *Int. J. Oncol.* **55**(4), 833-844 (2019).
5. Lane, J., Martin, T.A., Watkins, G., *et al.* The expression and prognostic value of ROCK I and ROCK II and their role in human breast cancer. *Int. J. Oncol.* **33**(3), 585-593 (2008).

CAYMAN CHEMICAL  
1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA  
PHONE: [800] 364-9897  
[734] 971-3335  
FAX: [734] 971-3640  
CUSTSERV@CAYMANCHEM.COM  
WWW.CAYMANCHEM.COM