PRODUCT INFORMATION

K-Ras(G12C) Isoform A (human, recombinant)

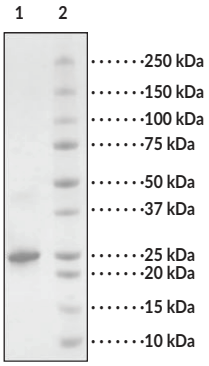
Item No. 40371

Overview and Properties

Synonyms:	c-K-ras(G12C), K-Ras4A(G12C), c-Ki-ras(G12C), Ki-Ras(G12C), Kirsten Rat Sarcoma Virus(G12C), KRAS(G12C)
Source:	Recombinant human N-terminal His-tagged K-Ras(G12C) isoform A expressed in *E. coli*
Amino Acids:	2-186
Uniprot No.:	P01116
Molecular Weight:	23 kDa
Storage:	-80°C (as supplied)
Stability:	≥6 months
Purity:	≥88% estimated by SDS-PAGE
Supplied in:	20 mM HEPES, pH 7.4, 150 mM NaCl, 1 mM DTT
Protein Concentration:	***batch specific*** mg/ml

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

Image



Lane 1: K-Ras(G12C) Isoform A (Item No. 40371)
Lane 2: MW Markers

SDS-PAGE Analysis of K-Ras(G12C) Isoform A

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Description

K-Ras is a small GTPase and member of the RAS family of GTPases with roles in apoptosis, as well as cell proliferation, survival, and migration.[1,2] K-Ras is composed of a guanine nucleotide binding domain containing an active site, an effector binding domain, and an isoform-specific C-terminal hypervariable region, which varies by four amino acids between isoforms A and B.[1,3] The active site cycles between GDP-bound inactive and GTP-bound active states and is regulated by its associations with GTPase-activating proteins (GAPs) or guanine nucleotide exchange factors (GEFs).[3,4] K-Ras is ubiquitously expressed and is tethered to the intracellular side of cell membranes *via* farnesyl and palmitoyl lipidation.[1,5] The glycine-to-cysteine substitution at position 12 mutant K-Ras (K-Ras(G12C)) is constitutively active and found in pancreatic, colon, and lung cancers.[2,6] Inhibition of K-Ras(G12C) with a cysteine-targeted inhibitor ARS1620 (Item No. 27915) reduces tumor volume in K-Ras(G12C)-expressing, but not K-Ras(G12V)-expressing, MiaPaCa-2 pancreatic cancer mouse xenograft models.[7] Tumor levels of K-Ras(G12C) are increased in patients with lung adenocarcinoma who reported to be former or current smokers.[8] Cayman's K-Ras(G12C) Isoform A (human, recombinant) consists of 185 amino acids and has a calculated molecular weight of 23 kDa. By SDS-PAGE, the apparent molecular mass of the protein is 25-26 kDa due to glycosylation.

References

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3. Hillig, R.C., Sautier, B., Schroeder, J., *et al.* Discovery of potent SOS1 inhibitors that block RAS activation via disruption of the RAS-SOS1 interaction. *Proc. Natl. Acad. Sci. USA* **116(7)**, 2551-2560 (2019).
4. Sermon, B.A., Eccleston, J.F., Skinner, R.H., *et al.* Mechanism of inhibition by arachidonic acid of the catalytic activity of ras GTPase-activating proteins. *J. Biol. Chem.* **271(3)**, 1566-1572 (1996).
5. Salim, A.A., Tan, L., Huang, X.-C., *et al.* Oligomycins as inhibitors of K-Ras plasma membrane localisation. *Org. Biomol. Chem.* **14(2)**, 711-715 (2016).
6. Hallin, J., Engstrom, L.D., Hargis, L., *et al.* The KRASG12C inhibitor MRTX849 provides insight toward therapeutic susceptibility of KRAS-mutant cancers in mouse models and patients. *Cancer Discov.* **10(1)**, 54-71 (2020).
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8. Dogan, S., Shen, R., Ang, D.C., *et al.* Molecular epidemiology of EGFR and KRAS mutations in 3,026 lung adenocarcinomas: Higher susceptibility of women to smoking-related KRAS-mutant cancers. *Clin. Cancer Res.* **18(22)**, 6169-6177 (2012).

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