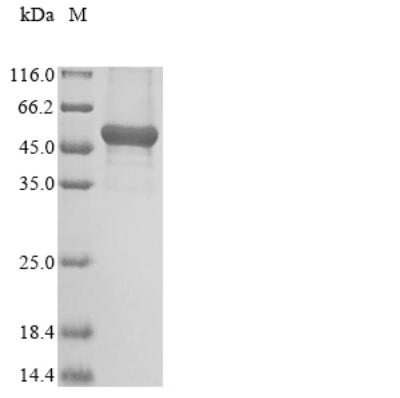
Recombinant Human GTPase NRas (NRAS)

Product Code	CSB-EP016070HU
Abbreviation	Recombinant Human NRAS protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P01111
Form	Liquid or Lyophilized powder
Storage Buffer	If the delivery form is liquid, the default storage buffer is Tris/PBS-based buffer, 5%-50% glycerol. If the delivery form is lyophilized powder, the buffer before lyophilization is Tris/PBS-based buffer, 6% Trehalose.
Product Type	Recombinant Proteins
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	MTEYKLVVVGAGGVGKSALTIQLIQNHFVDEYDPTIEDSYRKQVVIDGETCLLDI LDTAGQEEYSAMRDQYMRTGEGFLCVFAINNSKSFADINLYREQIKRVKDSDD VPMVLVGNKCDLPTRTVDTKQAHELAKSYGIPFIETSAKTRQGVEDAFYTLVRE IRQYRMKKLNSSDDGTQGCMGLPC
Research Area	Cancer
Source	E.coli
Target Names	NRAS
Protein Names	Recommended name: GTPase NRas Alternative name(s): Transforming protein N-Ras
Expression Region	1-186aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-GST-tagged and C-terminal Myc-tagged
Mol. Weight	56.1 kDa
Protein Length	Full Length of Mature Protein
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Expressing the recombinant human GTPase NRAS protein in E.coli cells involves inserting a DNA fragment encoding the human NRAS protein (1-186aa) into a plasmid vector along with the N-terminal 10xHis-GST and C-terminal Myc-tag gene and transferring it to the E.coli cells. Positive cells are screened, cultured, and induced to express the NRAS protein. The cells are lysed to collect the recombinant human NRAS protein, which is purified through affinity purification and then identified using SDS-PAGE and subsequent staining of the gel with Coomassie Brilliant Blue. The purity of the resulting recombinant human NRAS protein exceeds 85%.

The NRAS protein, encoded by the neuroblastoma RAS viral oncogene homolog (NRAS) gene, is a crucial player in cellular signaling pathways that regulate processes such as cell proliferation, survival, migration, and differentiation [1]. NRAS is a member of the RAS protein family, which includes KRAS, HRAS, and NRAS, and functions as a molecular switch transmitting signals from activated receptors to the nucleus through intricate downstream signaling cascades [2]. Mutations in NRAS, such as NRAS(Q61), NRAS(G12), and NRAS(G13), can lead to dysregulation of RAS activity, affecting its GTPase function and conformation, thereby contributing to uncontrolled cell growth and proliferation [3].

NRAS is frequently implicated in various cancers, including melanoma, where its mutant forms are challenging to target with conventional therapies [2]. Studies have explored different approaches to modulate NRAS expression and activity. For instance, microRNA-708 has shown promise in reducing NRAS protein levels in cancer cell lines with NRAS mutations, leading to inhibited cell growth and enhanced apoptosis [4]. Additionally, small molecules targeting the NRAS 5' UTR have been investigated as potential inhibitors to counteract the aberrant signaling driven by constitutively active NRAS [5].

Understanding the conformational dynamics of NRAS is crucial for developing targeted therapies. Research has highlighted the importance of the balance of conformational states in influencing the intrinsic hydrolysis of NRAS compared to other RAS isoforms, shedding light on potential vulnerabilities that could be exploited for therapeutic interventions [6]. Moreover, the interaction landscape of RAS paralogs, including NRAS, has been studied to elucidate the proximal protein interactions that drive oncogenic signaling in various cancer types [7].

References:
[1] S. Kumari, A. Bugaut, J. Huppert, & S. Balasubramanian, An rna g-quadruplex in the 5′ utr of the nras proto-oncogene modulates translation, Nature Chemical Biology, vol. 3, no. 4, p. 218-221, 2007. https://doi.org/10.1038/nchembio864
[2] C. Posch and S. Ortiz?Urda, Nras mutant melanoma - undrugable?, Oncotarget, vol. 4, no. 4, p. 494-495, 2013. https://doi.org/10.18632/oncotarget.970
[3] E. Muñoz?Couselo, E. Zamora, C. Ortiz, J. García, & J. Peréz-García, nras-mutant melanoma: current challenges and future prospect, Oncotargets and Therapy, vol. Volume 10, p. 3941-3947, 2017. https://doi.org/10.2147/ott.s117121
[4] J. Pang, P. Chien, M. Kao, P. Chiu, P. Chen, Y. Hsuet al., Microrna-708 emerges as a potential candidate to target undruggable nras, Plos One, vol. 18, no. 4, p. e0284744, 2023. https://doi.org/10.1371/journal.pone.0284744
[5] S. Balaratnam, Z. Torrey, D. Calabrese, M. Banco, K. Yazdani, X. Lianget al., Investigating the nras 5’ utr as a target for small molecules,, 2022. https://doi.org/10.1101/2022.01.05.475055
[6] D. Reid and C. Mattos, Balance of conformational states affect the intrinsic hydrolysis of nras when compared to other ras isoforms, The Faseb Journal, vol. 31, no. S1, 2017. https://doi.org/10.1096/fasebj.31.1_supplement.764.14
[7] B. Béganton, E. Coyaud, E. Laurent, A. Mangé, J. Jacquemetton, M. Romanceret al., Proximal protein interaction landscape of ras paralogs, Cancers, vol. 12, no. 11, p. 3326, 2020. https://doi.org/10.3390/cancers12113326

Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.