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Recombinant Human KRas4B (G13S, His-Tag)

产品编号	产品名称	包装
P2417-10μg	Recombinant Human KRas4B (G13S, His-Tag)	10μg
P2417-100μg	Recombinant Human KRas4B (G13S, His-Tag)	100μg
P2417-1mg	Recombinant Human KRas4B (G13S, His-Tag)	1mg

产品简介:

Species	Gene ID	Accession	Source	Length	MW	Tag
Human	3845	P01116	*E.coli*	195aa	~22kDa	N-His Tag

蛋白信息(About this protein)	
名称(Name)	Recombinant Human KRas4B G13S; 重组人KRas4B G13S突变体蛋白
别名(Synonyms)	KRas, KRAS, C-K-RAS, CFC2, K-RAS2A, K-RAS2B, K-RAS4A, K-RAS4B, KI-RAS, KRAS1, KRAS2, NS, NS3, RALD, RASK2, K-ras, KRAS proto-oncogene, GTPase, c-Ki-ras2, OES, c-Ki-ras, K-Ras 2, 'C-K-RAS, K-Ras, Kirsten Rat Sarcoma virus
产品简介 (Background)	Beyotime's recombinant human KRas4B G13S (rhKRas4B G13S) was expressed in *E.coli* and purified, which mutate the code 12 glycine to cysteine of the mature form KRas4B (2-186aa) fusion with 6X His tag (HHHHHH) at the N-terminus. KRas gene located on the 12p11.1–12p12.1. The KRas is a member of the small GTPase superfamily, which encodes two highly related protein isoforms, KRas4B and KRas4A. KRas4B and KRas4A consist of 188 and 189 amino acids, respectively, due to different clipping of the fourth exon in mammalian cells. These proteins have different structures in their C-terminal region. KRas4B contains a polybasic stretch of eight lysines and KRas4A presents a palmitoylated cysteine and two polybasic regions. The localization and trafficking of KRas4B relies on the presence of polybasic residues that anchor the protein to the inner leaflet of the plasma membrane, whereas the membrane-targeting signals in KRas4A are two polybasic regions and an additional palmitoyl group, that independently contribute to the plasma membrane localization and signal output. The term KRas is generally referred to as KRas4B due to the high level of mRNA encoding KRas4B in cells. KRas4B is by far the most studied splice variant and frequently observed across cancer types. A single amino acid substitution is responsible for an activating mutation. 98% of KRas4B mutation are found at codon 12 (G12), codon 13 (G13) or codon 61 (Q61). Alterations in G12, G13, and Q61 usually lead to impaired intrinsic GTPase and change the affinity of effectors and metastatic sites. The transforming protein that results is implicated in various malignancies, including lung adenocarcinoma, mucinous adenoma, ductal carcinoma of the pancreas and colorectal carcinoma [1].
产品用途 (Applications)	Recombinant Human KRas4B G13S mutant is useful in studying KRas4B interacting proteins, effectors, GAPs (GTPase-activating proteins) and GEFs (Guanine nucleotide-exchange factors). It can also be used as positive control in Western blots.
外观 (Physical appearance)	Liquid
活性 (Biological activity)	The specific activity of KRas4B G13S mutant was 0.93nmol/min/mg in GTPase activity assay.
浓度 (Concentration)	1mg/ml
纯度(Purity)	≥ 95% by SDS-PAGE
储存液 (Storage buffer)	20mM HEPES (pH7.4), 200mM NaCl, 1mM EDTA, 2mM DTT, 5% glycerol

- 小GTP酶(Small GTPase)，也称Small G-proteins、Ras superfamily，是调节真核细胞信号转导、细胞增殖、细胞骨架重组和细胞内膜转运等过程的分子开关，小GTP酶通过结合和水解GTP，在“激活”和“静息”状态之间循环：在外界信号的刺激下，鸟苷酸交换因子(Guanine nucleotide-exchange factors, GEFs)辅助小GTP酶将结合的GDP置换为GTP，小GTP酶结合GTP进入激活状态(Active state)；激活状态的小GTP酶与下游效应蛋白(Effector protein)相互作用，从而刺激细胞发生相应的响应；GTP酶激活蛋白(GTPase-activating proteins, GAPs)催化小GTP酶结合的GTP水解为GDP，并释放自由磷酸盐(Free phosphate, Pi)，此时小GTP酶结合GDP进入静息状态(Inactive state)，鸟嘌呤核苷酸解离抑制蛋白(Guanine nucleotide dissociation inhibitors, GDIs)抑制小GTP酶释放GDP，直到GEFs受到刺激信号再次开启新一轮的循环(图1) [2-3]。

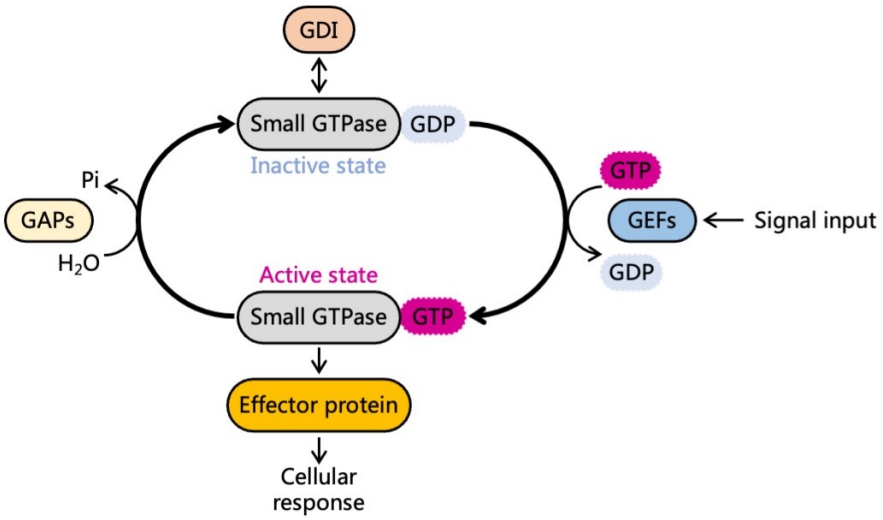

图1. 小GTP酶在“激活”和“静息”状态之间循环的原理图。

- 小GTP酶在人类中已发现超过150个家族成员，在果蝇(*Drosophila*)、秀丽隐杆线虫(*C. elegans*)、酿酒酵母(*S. cerevisiae*)、粟酒裂殖酵母(*S. pombe*)、黏菌(*Dictyostelium*)和植物中也都发现了保守的同源物。小GTP酶根据结构和功能被分为5个家族分支：Ras家族、Rho家族、Ran家族、Rab家族和Arf家族。Ras家族本身又被分为6个亚家族：Ras亚家族、Ral亚家族、Rit亚家族、Rap亚家族、Rheb亚家族和Rad亚家族[4]。
- Ras家族(Ras homologous GTPases)是调节肌动蛋白重组的关键因子，因此在肌动蛋白细胞骨架完整性、细胞增殖、细胞分化、细胞粘附、细胞凋亡和细胞迁移等细胞过程中发挥着重要作用。目前有16个成员被发现，被分为6个亚家族(见下表)，其中HRas、NRas和KRas研究的最为广泛，虽然三种同源异构体在不同细胞类型中的表达水平有所不同，但是在所有癌症中约15%存在三种同源异构体中至少一种的激活突变，因此Ras家族一直是癌症研究领域的热门靶点[5]。

Subfamily	Ras	Ral	Rit	Rap	Rheb	Rad
Subfamily members	HRas NRas KRas4A KRas4B	RalA RalB	Rit1 Rit2	Rap1A Rap1B Rap2A Rap2B Rap2C	Rheb RhebL1	RRad

- KRas突变是人类癌症中最常见的致癌基因驱动因子，其中98%的突变发生在G12、G13和Q61位点，以单碱基错义突变为主，因此筛选有效靶向KRas G12、G13和Q61位点突变体的抑制剂成为靶向疗法的切入点，2021年FDA批准第一款针对非小细胞肺癌(NSCLC) KRas G12C突变的AMG510 (Sotorasib)靶向药上市，此外，还有多款针对KRas突变体的靶向药进入临床试验。不同癌症KRas突变频率见下表[1]。碧云天提供KRas4B热门药物靶向突变点的重组蛋白：G12C (P2409)，G12D (P2411)，G12V (P2413)，G13D (P2415)，G13S (P2417)和Q61H (P2419)等。

Tumor types	Sample	KRas mutations (%)					
		Total rate	Mutation sites				
			G12	G13	Q61	A146	Other
Pancreatic adenocarcinoma	1207	67.61	62.30	0.83	4.23	0.08	0.17
Colorectal adenocarcinoma	3953	35.77	22.82	6.68	1.67	2.76	1.85
Nonsmall-cell lung cancer	7135	20.42	17.39	0.85	0.31	0.06	1.81
Cholangiocarcinoma	1072	12.69	8.96	1.12	1.12	1.87	0.37
Uterine endometrial carcinoma	1907	14.11	10.38	1.78	0.63	0.10	1.21
Testicular germ cell cancer	506	11.66	6.92	0.00	1.98	1.58	1.19
Cervical squamous cell carcinoma	607	4.28	2.47	0.99	0.00	0.49	0.33
Myelodysplastic	6940	3.83	1.86	0.75	0.29	0.23	0.71

- 本产品经SDS-PAGE电泳检测蛋白纯度和分子量参考图2。

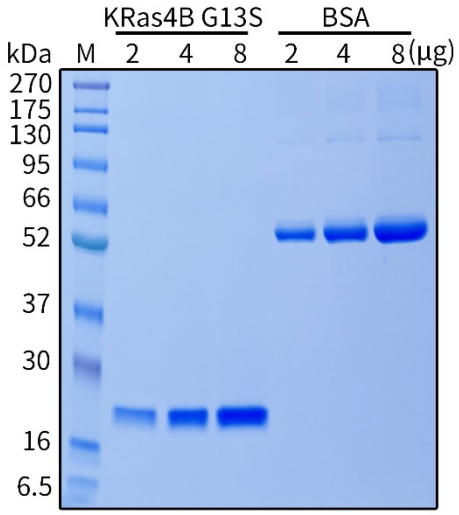

图2. 碧云天Recombinant Human KRas4B (G13S, His-Tag) (P2417)的SDS-PAGE电泳检测图。本蛋白经BeyoGel™ Plus PAGE预制胶(Tris-Gly, 4-15%, 10孔) (P0465)电泳，Marker为BeyoColor™彩色预染蛋白分子量标准(6.5-270kD) (P0071/P0072)，并经BeyoBlue™考马斯亮蓝超快染色液(P0017F)染色。实际检测结果可能会因样品和检测条件等的不同而存在差异，图中数据仅供参考。

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P2417-100μg	Recombinant Human KRas4B (G13S, His-Tag)	100μg
P2417-1mg	Recombinant Human KRas4B (G13S, His-Tag)	1mg
—	说明书	1份

保存条件：

-20°C保存，一年有效。-80°C保存，可以保存更长时间。

注意事项：

- 由于蛋白每次冻融均会引起部分失活，所以首次配制成相应浓度的储存液后，须分装后-20°C或更低温度冻存，尽量避免反复冻融。
- 本产品仅限于专业人员的科学研究用，不得用于临床诊断或治疗，不得用于食品或药品，不得存放于普通住宅内。
- 为了您的安全和健康，请穿实验服并戴一次性手套操作。

使用说明：

1. 收到产品后请立即按照说明书推荐的条件保存。在打开管盖前，请适当离心，使附着在管盖或管壁上的蛋白聚集于管底。
2. 具体的最佳工作浓度请自行参考相关文献，或者根据实验目的，通过实验进行摸索和优化。

参考文献：

1. Huang L, Guo Z, Wang F, Fu L. Signal Transduct Target Ther. 2021. 6(1):386.
2. Vernoud V, Horton AC, Yang Z, Nielsen E. Plant Physiol. 2003. 131(3):1191-208.
3. Ito H, Morishita R, Nagata KI. Int J Mol Sci. 2018. 19(7):2121.
4. Goitre L, Trapani E, Trabalzini L, Retta SF. Methods Mol Biol. 2014. 1120:1-18.
5. Bos JL. Cancer Research. 1989. 49(17): 4682–9.

相关产品：

产品编号	产品名称	包装
P2061-1ml	Rhotekin-RBD Agarose (活性Rho结合琼脂糖凝胶)	1ml
P2063-10μg	Recombinant Human RhoA (Flag-Tag)	10μg
P2063-100μg	Recombinant Human RhoA (Flag-Tag)	100μg
P2063-1mg	Recombinant Human RhoA (Flag-Tag)	1mg
P2065S	Active Rho Pull-down and Detection Kit	50次
P2065M	Active Rho Pull-down and Detection Kit	250次
P2401-10μg	Recombinant Human NRas (Flag-Tag)	10μg
P2401-100μg	Recombinant Human NRas (Flag-Tag)	100μg

P2401-1mg	Recombinant Human NRas (Flag-Tag)	1mg
P2403-10μg	Recombinant Human HRas (His-Tag)	10μg
P2403-100μg	Recombinant Human HRas (His-Tag)	100μg
P2403-1mg	Recombinant Human HRas (His-Tag)	1mg
P2405-10μg	Recombinant Human KRas4A (His-Tag)	10μg
P2405-100μg	Recombinant Human KRas4A (His-Tag)	100μg
P2405-1mg	Recombinant Human KRas4A (His-Tag)	1mg
P2407-10μg	Recombinant Human KRas4B (His-Tag)	10μg
P2407-100μg	Recombinant Human KRas4B (His-Tag)	100μg
P2407-1mg	Recombinant Human KRas4B (His-Tag)	1mg
P2409-10μg	Recombinant Human KRas4B (G12C, His-Tag)	10μg
P2409-100μg	Recombinant Human KRas4B (G12C, His-Tag)	100μg
P2409-1mg	Recombinant Human KRas4B (G12C, His-Tag)	1mg
P2411-10μg	Recombinant Human KRas4B (G12D, His-Tag)	10μg
P2411-100μg	Recombinant Human KRas4B (G12D, His-Tag)	100μg
P2411-1mg	Recombinant Human KRas4B (G12D, His-Tag)	1mg
P2413-10μg	Recombinant Human KRas4B (G12V, His-Tag)	10μg
P2413-100μg	Recombinant Human KRas4B (G12V, His-Tag)	100μg
P2413-1mg	Recombinant Human KRas4B (G12V, His-Tag)	1mg
P2415-10μg	Recombinant Human KRas4B (G13D, His-Tag)	10μg
P2415-100μg	Recombinant Human KRas4B (G13D, His-Tag)	100μg
P2415-1mg	Recombinant Human KRas4B (G13D, His-Tag)	1mg
P2417-10μg	Recombinant Human KRas4B (G13S, His-Tag)	10μg
P2417-100μg	Recombinant Human KRas4B (G13S, His-Tag)	100μg
P2417-1mg	Recombinant Human KRas4B (G13S, His-Tag)	1mg
P2419-10μg	Recombinant Human KRas4B (Q61H, His-Tag)	10μg
P2419-100μg	Recombinant Human KRas4B (Q61H, His-Tag)	100μg
P2419-1mg	Recombinant Human KRas4B (Q61H, His-Tag)	1mg
AF0273	Ras Rabbit Polyclonal Antibody	50μl
AF1168	Ras Rabbit Monoclonal Antibody	50μl
AF7131	HRas Rabbit Polyclonal Antibody	50μl
AF7347	KRAS Rabbit Polyclonal Antibody	50μl
AG2391	KRAS Rabbit Monoclonal Antibody	50μl
AG2394	KRAS Mouse Monoclonal Antibody	50μl

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