

NRAS Mutation Detection Kit

NRAS Mutations and Cancer

NRAS is a member of the RAS family of GTPases and plays a central role in the MAPK signaling pathway. Activating mutations in exon 2 (codon 12/13), exon 3 (codon 61), and exon 4 (codon 146) have been found in various cancers, including melanoma (13-25%), colorectal cancer (1-6%), lung cancer (1%), hepatocellular carcinoma (10%), myeloid leukemias (14%), and thyroid carcinoma (7%). Recent clinical studies using anti-EGFR targeted therapies of patients diagnosed with colorectal cancer have demonstrated that tumors possessing NRAS mutations are less likely to respond to such therapies than those without the mutations (*Clin Cancer Res* 2013;19:1902-1912).

The table below lists the mutations detected by this kit.

Exon	Mutation	Nucleotide Change	Amino Acid Change
2	G12D	c.35G>A	Glycine (G) to Aspartic acid (D)
	G12C	c.34G>T	Glycine (G) to Cysteine (C)
	G12S	c.34G>A	Glycine (G) to Serine (S)
	G13R	c.37G>C	Glycine (G) to Arginine (R)
	G13V	c.38G>T	Glycine (G) to Valine (V)
3	Q61H	c.183A>C & c.183A>T	Glutamine (Q) to Histidine (H)
	Q61L	c.182A>T	Glutamine (Q) to Leucine (L)
	Q61K	c.181C>A	Glutamine (Q) to Lysine (K)
	Q61R	c.182A>G	Glutamine (Q) to Arginine (R)
4	A146T	c.436G>A	Alanine (A) to Threonine (T)

EntroGen's NRAS mutation detection kit is a polymerase chain reaction (PCR)-based assay that uses allele-specific primers to identify the presence of the mutations listed above. The testing procedure involves three (3) simple steps:

- Isolation of DNA from tumor biopsies, paraffin-embedded sections (FFPE), or fresh frozen tumors
- Amplification of regions of the *NRAS* gene using allele-specific primers.
- Detection of amplification product on a Real-Time PCR instrument.

This test can be completed in approximately 2 hours from isolation of DNA to test result.

Equipment and Materials

EntroGen's NRAS mutation detection kit requires a real-time PCR instrument capable of detecting FAM and VIC fluorescent probes.

This test includes reagents required for PCR amplification/detection, as well as validated reaction controls. Columns and reagents for DNA isolation are not included.

Intended Use

EntroGen's NRAS mutation detection kit is available for Research Use Only (RUO) in the United States and for In Vitro Diagnostic use (CE-IVD) in Europe.

Ordering Information

Product Name	Cat. No.
NRAS Mutation Detection Kit	NRAS-RT50