Know Your Biomarker

RAF | CEA | ctDNA | DPYD | FAP | HER2 | KRAS | Lyn

# NRAS

MSI | MSS | NRAS | NTRK

K3CA | TMB | Tumor Location/Sidedness | UGT1A1 | P

**Who should have NRAS biomarker testing?**

If you have stage IV / metastatic colorectal cancer (bowel cancer), you should be tested for the NRAS biomarker. Stage IV or metastatic means that the cancer has spread to other organs or parts of the body.

If your medical team is considering EGFR inhibitor treatment, you should be tested for NRAS.

**What is NRAS?**

NRAS is a member of the RAS family of genes. These genes play an important role in the way that cell growth and cell survival are controlled. Mutations in these genes can cause cells to grow abnormally, becoming cancer. The NRAS gene mutations found in colorectal cancer are not hereditary.

**How is NRAS tested? How are the results reported?**

The recommended method of testing NRAS is with a tumor (tumour) biopsy sample, either from the primary tumor or from a metastatic tumor. NRAS may also be tested in a blood sample. It may be tested individually, or as part of a multiple gene panel using next-generation sequencing (NGS).

Your result will be reported as “NRAS wild-type” or “NRAS WT” if there is no NRAS mutation in your cancer. If your cancer does have an NRAS mutation, the result will be reported as “NRAS mutant”.

**What do my NRAS results mean for me? How do they impact my treatment?**

If your NRAS is wild-type (no mutation)

→ Patients with NRAS wild-type may benefit from targeted treatment with EGFR inhibitors.

If your NRAS has a mutation

→ NRAS mutations occur in about 5% of all colorectal cancers. Colorectal cancers with NRAS mutations may be aggressive and have a higher risk of recurrence.

→ Talk to your medical team about how you will be checked for recurrence during follow-up care.

→ When NRAS mutations are present, treatment options include traditional chemotherapy combinations (for example FOLFOX, FOLFIRI, CAPOX). These are sometimes combined with bevacizumab, which is a targeted therapy.

→ EGFR inhibitors (for example cetuximab, panitumumab) are not effective against colorectal cancer with NRAS mutations and are not recommended.

→ There are currently no approved therapies directly targeting NRAS mutations. However, there are ongoing clinical trials for treatments that are more effective against colorectal cancers with NRAS mutations. Talk to your medical team about whether you could benefit from a clinical trial.

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Biomarker testing can give you and your medical team valuable knowledge about your cancer and help guide your treatment choices. For more information about colorectal cancer biomarkers, please visit knowyourbiomarker.org and talk to your medical team.

Thank you to our sponsors and partners for their support of the Know Your Biomarker program.