Know Your Biomarker

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

NTRK Fusion

MSI | MSS | NRAS | NTRK | PIK3CA | TMB | Tumor Location/Sidedness | UGT1A1 | P

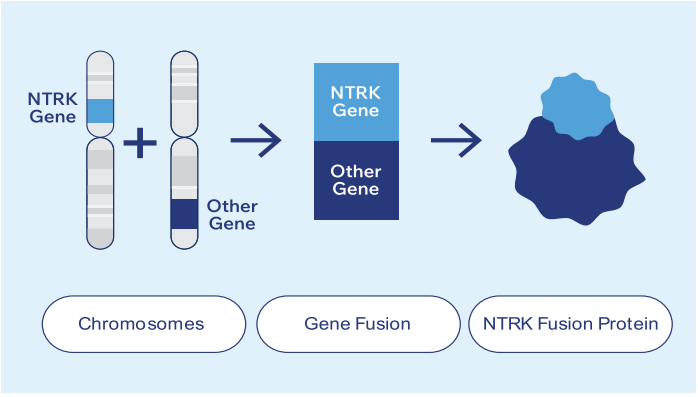
Who should have NTRK Fusion biomarker testing?

If you have stage IV / metastatic colorectal cancer (bowel cancer), wild-type (non-mutant) KRAS, NRAS, and BRAF, and you are experiencing cancer progression while on chemotherapy, you should be tested for NTRK fusion. If your stage IV / metastatic colorectal cancer has MSI-High (also known as dMMR), talk to your medical team about whether NTRK fusion testing could benefit you. Stage IV or metastatic means that the cancer has spread to other organs or parts of the body.

What is NTRK Fusion?

NTRK fusion is a type of genetic change (mutation) involving the NTRK1, NTRK2, or NTRK3 genes that encode the TRK A, TRK B, and TRK C proteins.

When a piece of a chromosome (the cell structure that carries genes) containing an NTRK gene breaks off and attaches to a gene on another chromosome, this is called an NTRK gene fusion. It is a combination of the NTRK gene and a partner gene.



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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.

Genes provide the recipe (instructions) for your cells to make proteins, and when NTRK gene fusion occurs, your cells will make TRK fusion proteins, a combination of the TRK protein and the partner gene protein. Fusion proteins can lead to abnormal cell growth and survival, causing cancer.

NTRK fusion is very rare in colorectal cancer overall. Fewer than 1% of CRCs have NTRK fusion. However, in patients whose cancers are MSI-High and wild-type (non-mutant) KRAS, NRAS, and BRAF, the rate of NTRK fusion can be much higher, ranging from 5-44%. NTRK fusion is also more common in tumors that have high TMB (tumor mutational burden). NTRK fusion mutations are not hereditary.

How is NTRK Fusion tested? How are the results reported?

NTRK fusion is tested on biopsy samples of your tumor (tumour). There are several laboratory methods to test for NTRK fusion and they may be combined to get more accurate and useful information. The methods include IHC (immunohistochemistry), FISH (fluorescence in situ hybridization), and NGS (next generation sequencing) of both DNA and RNA.

Your NTRK fusion testing result will be reported as “no fusion detected” or as “fusion detected”. If an NTRK fusion is detected, the report will include the specific partner gene that is fused with NTRK, and the specific NTRK gene name, such as “TPM3-NTRK1 fusion detected”.

What do my NTRK Fusion results mean for me? How do they impact my treatment?

If your colorectal cancer does not have an NTRK fusion
→ Your treatment will be guided by other biomarker testing results and clinical response.
→ TRK inhibitors are not helpful in colorectal cancer without NTRK fusion.

If your colorectal cancer has an NTRK fusion
→ You may benefit from NTRK targeted treatment, the TRK inhibitors larotrectinib and entrectinib.
→ There are ongoing clinical trials for treatments that are more effective against colorectal cancers with NTRK fusion. Talk to your medical team about whether you could benefit from a clinical trial.

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