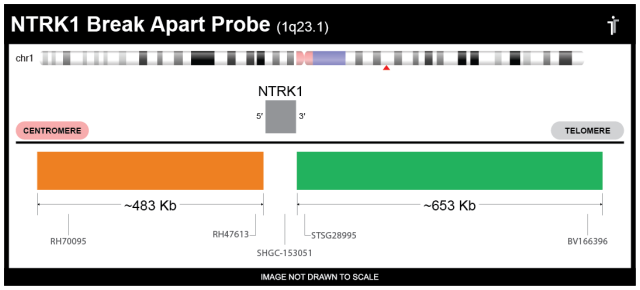
NTRK PROBES
MULTICOLOR DNA PROBE PANELS

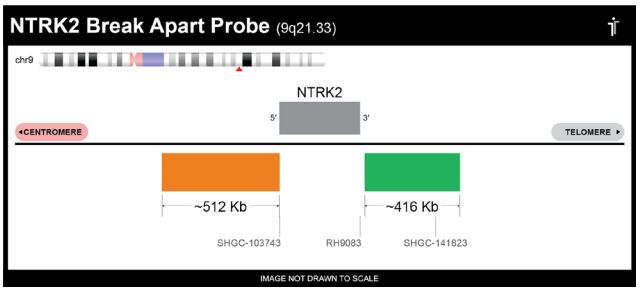
The NTRK gene family is made up of NTRK1, NTRK2, and NTRK3, which encode proteins TRKA, TRKB, and TRKC, respectively. These proteins are transmembrane receptors that set off various signaling pathways critical to nervous system development and maintenance.[1] NTRK genes become oncogenic when fused to genes that constitutively activate the receptors, resulting in deregulated cell proliferation, apoptotic resistance, and abnormal synaptic signaling.[2,3] So far, over 80 different NTRK fusions partners have been identified in a variety of solid tumors, and more continue to be discovered.[4]

GENES	LOCATION / STS	DYE COLOR	SKU
NTRK1	1q23.1		NTRK1BA-20-ORGR
NTRK2	9q21.33		NTRK2BA-20-ORGR
NTRK3	15q25.3		NTRK3BA-20-ORGR



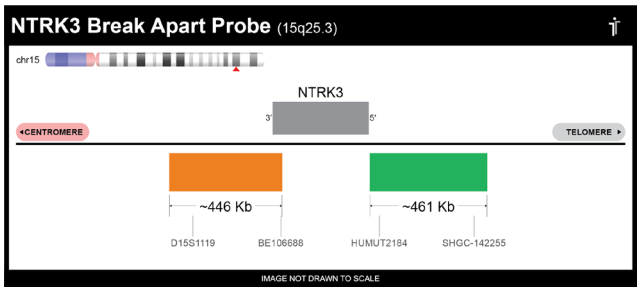
NTRK1

The first NTRK1 fusion was identified in the 1980s in colon cancer cells. The gene was the first of the NTRK family to be characterized as a tumor driver, which helped spur investigation into NTRK2 and NTRK3.[2] NTRK1's encoded protein, TRKA, serves as a receptor for nerve growth factor (NGF), which activates the RAS/MAPK pathway.[1]



NTRK2

NTRK2 fusions were first detected in pilocytic astrocytoma, and shortly afterward in pontine glioma.[2] The gene's protein, TRKB, binds brain-derived neurotrophic factor (BDNF), which activates the PI3K/Akt growth pathway.[2,3] Additional fusions have since been found in glioblastoma and lung adenocarcinoma.[2]



NTRK3

NTRK3's first documented fusion was to ETV6 in infantile fibrosarcoma.[2] NTRK3 encodes TRKC, which binds neurotrophin-3 (NT-3).[5] The gene's most frequent fusion partner is ETV6. The NTRK3-ETV6 fusion is a dominant oncogene in several malignancies, including AML, MASC, and radiation-associated PTC.[2]

To View Our NTRK FISH Probes

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2. Vaishnavi Aria, et al. (2015) Cancer discovery 5.1: 25-34.
3. Radin DP, et al. (2017) Anticancer research 37.8: 3983-3990.
4. Hsiao, Susan J., et al. (2019) Jour Molec Diag.
5. Cocco E, et al. (2018) Nat Rev Clin Onc 15.12: 731-747.