TRK Fusion Cancer

Some cancers are caused by specific changes in genes. Genes carry instructions for proteins in cells. An abnormal change to the genes can lead to an alteration of the proteins. As a result, these altered proteins may drive the growth and spread of tumors.

Neurotrophic tyrosine receptor kinase *(NTRK)* genes provide instructions for coding **TRK proteins**.[1-3]

When an NTRK gene fusion joins, or **fuses** with an unrelated gene – it produces an altered TRK fusion protein.[1-3]

This **tropomyosin receptor kinase (TRK) fusion protein** becomes active, triggering a signaling cascade.[1,2] In people with TRK fusion cancer, these TRK fusion proteins are a driver of the spread and growth of tumors.[4]

Prevalence

TRK fusion cancer occurs across a broad range of tumor types with varying prevalence and in both adult and pediatric patients.

Estimated frequency of NTRK gene fusions in specific tumor types

ADULT

- **90% - 100%** *Mammary analogue secretory*[5,6]
- **1.5%-14.5%** *Thyroid Cancer*[7]
- **3.6%** *Intrahepatic cholangiocarcinoma*[8]
- **0.2%-3.3%** *Lung Cancer*[9]
- **3.2%** *Gastrointestinal Stromal Tumor*[10]
- **1.5%** *Colon Cancer*[11]
- **0.3%** *Melanoma*[12]

PEDIATRIC

- **91% - 100%** *Infantile fibrosarcoma*[13,14]
- **92%** *Secretory breast cancer*[15]
- **83%** *Congenital mesoblastic nephroma*[14,16]
- **7.1%** *Non-brainstem high-grade glioma*[17]

Testing

// Only specific tests can detect TRK fusion cancer.[1,3]

// **Next-generation sequencing (NGS)** can identify TRK fusion cancer by recognizing the presence of an NTRK gene fusion.[18, 19]

// **Immunohistochemistry (IHC)** uses antibodies to detect the presence of proteins, in this case, TRK proteins, in a given sample[20]

// **Fluorescence *in situ* hybridization (FISH)** is a laboratory technique used to look at specific pieces of the DNA binding to fluorescent probes, lighting up when viewed under a microscope.[21]

For more information visit:
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