

# MYCN Gene Amplification by FISH

## Indications for Ordering

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Prognostic determination in individuals with neuroblastoma or medulloblastoma

## Test Description

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- Fluorescence in situ hybridization (FISH) analysis using formalin-fixed, paraffin-embedded (FFPE) tissue
- DNA probes
  - MYCN (2p24)
  - CEP2 (control probe)
- 40 cells evaluated from regions of tumor identified on histopathologic review of a matching hematoxylin and eosin stained section

## Tests to Consider

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### Primary test

[MYCN \(N-MYC\) Gene Amplification by FISH 2007227](#)

### Related test

[Vanillylmandelic Acid \(VMA\) and Homovanillic Acid \(HVA\), Urine 0080470](#)

- Initial test for the diagnosis and monitoring of neuroblastoma

## Disease Overview

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**Incidence** – 4<sup>th</sup> most frequent tumor in children <15 years

### Prognostic issues

- Several prognostic factors have been identified in neuroblastoma
  - Individual's age
  - Stage of disease
  - Marker status
- MYCN is amplified in ~25% of neuroblastomas
  - Associated with poor prognosis, advanced stage, and rapid tumor progression
  - Prognosis depends on level of amplification
  - Prognostication independent from clinical/histopathologic findings
- MYCN is amplified in ~5% of medulloblastomas
  - Associated with clinically aggressive tumors
- MYCN amplifications occur in other tumors, but influence on prognosis is not clear

## Genetics

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**Gene** – MYCN

## Test Interpretation

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### Results

- Amplified – MYCN:CEP2  $\geq 2.0$ 
  - Predicts poor prognosis
- Nonamplified – MYCN:CEP2  $< 2.0$

### Limitations

Results may be compromised if recommended fixation procedures have not been followed