



Neuroblastoma Testing at Nationwide Children's Hospital

Neuroblastoma is the most common extra-cranial solid tumor of childhood, with over 600 new cases diagnosed each year in the United States. Children with this type of cancer are assigned a specific risk group (low, intermediate, or high) based on a variety of clinical and biological factors. These include age at time of diagnosis, INSS staging, *MYCN* status, DNA Ploidy, and Shimada histology.

Nationwide Children's Research Institute houses the Neuroblastoma (NBL) Reference Laboratory for the national Children's Oncology Group (COG). Current COG therapeutic studies for neuroblastoma patients are tailored according to patient risk group. The NBL Reference Laboratory is responsible for the genetic analysis of each tumor. These results are combined with clinical and morphologic factors to assign the patients to the most appropriate therapy.

The Neuroblastoma Reference Laboratory receives tumor samples from over 250 COG member institutions. All specimens are processed by the Biopathology Center at Nationwide Children's Research Institute and distributed to the different specialized laboratories at **ChildLab** for testing:

- ♥ Core Morphology (histopathology review)
- ♥ Cytogenetics (*MYCN* FISH)
- ♥ Molecular Genetics (DNA and RNA isolations, loss of heterozygosity [LOH] testing for 1p36 and 11q23)
- ♥ Flow Cytometry (DNA Ploidy)

All results are entered into the COG electronic Remote Data Entry (RDE) and the patient's risk group is assigned. Each risk group is associated with a particular treatment arm and these outcomes will be compared by COG to continuously improve the survival of patients with neuroblastoma.

While most children with neuroblastoma will be enrolled in COG protocols due to the large number of COG-member institutions, ChildLab offers *MYCN* FISH and DNA Ploidy analysis testing on a clinical basis for those patients who are not enrolled in a COG protocol.

MYCN FISH

ChildLab offers *MYCN* FISH Monday through Friday with results reported in 3-10 working days. Frozen tissue, paraffin-embedded tissue, or involved (>30% tumor) bone marrow is accepted.

Snap-frozen tumor should be sent on dry ice for overnight delivery. Paraffin-embedded tumor should be sent at room temperature overnight. **DO NOT FREEZE BONE MARROW SAMPLE.** The ordering physician must call the Cytogenetics laboratory at (614)722-5321 with a shipping tracking number.

A completed requisition and copy of pathology report (even if preliminary) is required.

DNA Ploidy

ChildLab offers DNA Ploidy Analysis testing Monday through Friday with results typically reported in 5 working days. Tissue and bone marrow samples can be submitted for DNA Ploidy Analysis. Acceptable tissue samples should be snap-frozen (no OCT) or paraffin-embedded. Bone marrow samples should be collected in sodium heparin tubes and kept at room temperature.

For More Information: Please call ChildLab Client Services at (614)722-5477 or (800)934-6575 for information regarding limits on specimen shipment and acceptability.