Laboratory Bulletin

Neuro-oncologic NGS Panel

Effective Date: April 27th, 2023

The Molecular Pathology Laboratory at Beaumont Health will update the gene list for the Neuro-oncologic NGS panel. This next generation sequencing assay interrogates 50 genes for the detection of single nucleotide variants (SNV), insertion/deletion mutations (indels), gene copy number changes (CNV), and rearrangements that involve at least one of 15 genes associated with central nervous system tumors to assess for the presence of somatic mutations and rearrangements. Microsatellite instability (MSI) and tumor mutational burden (TMB) are also part of this test.

The genes included in the panel reflect the emerging need to identify tumor genetic variants to increase specificity in pathologic diagnosis that may lead to changes in patient management.
Genes that will be sequenced are (specific targeted regions of each gene can be found in the lab test directory):

ALK§, ATRX, BRAF*§, CDK6, CDKN2A, CDKN2B, CIC, EGFR*§, EWSR1*, FGFR1*§, FGFR2*§, FGFR3*§, FUBP1, GNA11, GNAQ, GNAS, H3F3A, HIST3H3, IDH1, IDH2, MAP2K1, MDM4§, MET*§, MLH1, MSH2*, MSH6, MYC*§, NF1, NF2, NTRK1*, NTRK2*, NTRK3*, PDGFRA*§, PIK3CA*§, PIK3R1, PMS1, PTCH1, PTEN§, RB1, RET*, ROS1*§, SETD2, SMARCA4, SMARCB1, SMO, TERT, TP53, TSC1, TSC2 and YAP1.*

* Genes analyzed for fusions.
§ Genes analyzed for copy number variants.

Synonyms:
TSO500, TruSight Oncology 500, next generation sequencing, NGS, neuro panel.

Instructions:
This **test requires insurance preauthorization**. The laboratory will not perform sequencing without preauthorization.

Specimen Collection Criteria:

Paraffin-embedded tissue block must be submitted with corresponding H&E slide. Unstained sections of 5-µm thickness mounted on glass slides can also be used (minimum 5 sections for large tissue and 10 sections for small tissue such as core biopsy). Tissue should be well fixed and well processed. Average tissue size 5.0 mm2.

- DNA and RNA will be assessed for quality. If deemed unacceptable, testing will be cancelled with client notification.
- The specimen must be accompanied by a completed requisition and must contain the patient name, date of birth, collection date, ordering physician, and source of specimen.

Rejection Criteria

- Tissue decalcified with agents other than Mol Decal (EDTA)
- Fixatives other than 10% neutral buffered formalin.
- Improper labeling or inadequate information.
- Less than 10 percent tumor cellularity
- Poor quality and/or quantity of extracted genomic DNA or RNA.
- Frozen specimens.
- Mislabeled or unlabeled samples.

Testing will be cancelled on specimens meeting the above criteria with client notification. Under certain circumstances (i.e., lack of alternative specimens), testing may proceed with approval from the medical director or designee.

Performed

Once or twice per week, dependent upon test volume. Results available in 10-15 business days.

Reference Range

No variants detected or likely benign variants detected.

Test Methodology

Tissue section slides are reviewed by a pathologist and relevant tumor is selected for analysis. RNA, DNA or both are isolated from the sample and quantified. Recovered nucleic acid extracts are prepared for sequencing with the Illumina TruSight Oncology 500 library preparation kit and sequenced on the Illumina NextSeq instrument with the Illumina TruSight Oncology 500 sequencing kit. Analysis is performed using PierianDx Clinical Genomics Workspace (CGW) software.
A personalized interpretive report is generated for each sample that lists the variants detected in each gene, classifies these based on a standardized classification scheme for somatic variants, and provides interpretative comments for each variant of known significance.

Interpretation

Test results should be interpreted in the context of clinical findings, tumor sampling, and other laboratory data. If results obtained do not match other clinical or laboratory findings, please contact the laboratory director.

Test Code

MNEUR

CPT Code
81445

If you have questions, please contact Client Services (1-800-551-0488, option 5).

Laboratory Test Directory: http://beaumontlaboratory.com/test-lab-directory

Date Submitted: 4/12/2023
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