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**Lab Dept:**                      **Anatomic Pathology**

**Test Name:**                      **TARGETED B-ALL FUSION ANALYSIS  
(Hematologic Cancer Fusion Analysis)**

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***General Information***

**Lab Order Codes:**              TBALL

**Synonyms:**                      B Cell Acute Lymphoblastic Leukemia Fusion Panel, B-ALL Kinase Fusion Panel; Hematologic Cancer Fusion Analysis by NGS, HEMFUSN

**CPT Codes:**                      81456 – Targeted genomic sequence analysis panel, organ/neoplasm

**Test Includes:**                      An interpretive report will be provided and requires a bone marrow or blood sample containing at least 10% blasts.

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***Logistics***

**Test Indications:**                      This test evaluates for the presence of oncogenic gene fusions in hematologic malignancies. Chromosomal translocations resulting in gene fusions are a hallmark of hematologic neoplasias and can help define the diagnosis and potential treatment options. Identifying a specific oncogenic fusion present in the patient offers an opportunity to treat the patient with inhibitors specific to the oncogenic fusion present in the patient.

This panel provides fusion information for 148 gene fusion partners relevant to lymphoid and myeloid malignancies as well as lymphomas, including gene fusion partners associated with Philadelphia chromosome-like (Ph-like) B-cell acute lymphoblastic leukemia, and some, but not all IGH-CRLF2 gene fusions. Please note, this test is not recommended as a first-line diagnostic assay for lymphomas due to reduced sensitivity for detecting genomic rearrangements with cancer associated immunoglobulin loci (IgG, IgL, IgK). Lymphomas that have tested negative for Ig rearrangements by FISH or other methodologies are acceptable. The fusion partner genes included in this panel are listed below:

AICDA, ASB13, BCL2A1, BCL3, ALK, BCL11B, BATF3, BCL2, ABL1, ABL2, BCL6, BCR, BIRC3, BLNK, BMF, BMP7, CBFB, CCDC50, CCND1, CCND2, CCND3, CD274, CD44, CDC25A, CDK6, CDKN2A, CDKN2B, CEBPA, CEBPD, CEBPE, CEBPG, CHD1, CHIC2, CIITA, CREB3L2, CREBBP, CRLF2, CSF1R, CTLA4, CYB5R2, DEK, DENND3, DNMT3B, DNTT, DUSP22, E2F2, EBF1, EIF4A1, ENTPD1, EPOR, ERG, ETV6, EXOC2, FAM216A, FGFR1, FLT3, FOXP1, FUT8, GLIS2, HOXA10, HOXA9, ID4, IKZF1, IKZF2, IKZF3, IL16, IRF4, IRF8, ITPKB, JAK2, KAT6A, KIAA0101, KLF2, KMT2A, LIMD1, LMO1, LMO2, LRMP, LYL1, LZTS1, MAL, MALT1, MAML3, MECOM, MKL1, MLF1, MLLT10, MLLT4, MME, MUC1, MYBL1, MYC, MYH11, NEK6, NF1, NFKB1, NFKB2, NME1, NOTCH1, NTRK3, NUP214, NUP98, P2RY8, PAG1, PAICS, PAX5, PBX1, PDCD1, PDCD1LG2, PDGFRA, PDGFRB, PICALM, PIM1, PIM2, PML,

PPAT, PRDM16, PRKAR2B, PTK2B, PTPN1, PYCR1, RAB29, RAG1, RAG2, RANBP1, RARA, RBM15, ROS1, RUNX1, RUNX1T1, S1PR2, SEMA6A, SERPINA9, SETD2, SH3BP5, SOX11, STIL, STRBP, TCF3, TFG, TLX1, TLX3, TNFRSF13B, TNFSF4, TP63, TYK2, WT1, ZCCHC7

Positive results may be confirmed by RT-PCR with Sanger sequencing.

<b>Lab Testing Sections:</b>	Anatomic Pathology - Sendouts
<b>Referred to:</b>	Nationwide Children's Hospital Molecular Genetics (NWC Test: HEMFUSN)
<b>Phone Numbers:</b>	MIN Lab: 612-813-6280  STP Lab: 651-220-6550
<b>Test Availability:</b>	Daily
<b>Turnaround Time:</b>	3 weeks
<b>Special Instructions:</b>	At least 10% blasts must be present in the Fresh, Snap-Frozen, or OCT samples. At least 25% blasts/tumor must be present in the FFPE tissue blocks or scrolls (based on internal pathology review). Sample acquisition PRIOR to receiving treatment is strongly preferred.  The provider must complete a Nationwide Children's <a href="#">Oncology Genetic Test Requisition Form</a> . Send with the specimen or deliver to Sendouts Laboratory by fax, email, or pneumatic tube delivery. Contact the lab for guidance. The form is REQUIRED.

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### ***Specimen***

<b>Specimen Type:</b>	Whole blood, Bone Marrow, or Tissue
<b>Container:</b>	Blood: Lavender (EDTA) tube  Bone marrow aspirate:  Preferred: Collect in a dry syringe and transfer STAT to an EDTA vacutainer, inverting well to prevent clotting.  Acceptable. Aspirate may be collected in a heparin coated syringe and transferred to an EDTA vacutainer.
<b>Draw Volume:</b>	4 mL blood or bone marrow
<b>Processed Volume:</b>	Same as Draw Volume
<b>Collection:</b>	Routine blood or bone marrow collection

**Special Processing:** Lab Staff: **Do Not** process or centrifuge whole blood or bone marrow. Ship at room temperature via overnight courier. If delay in transport is greater than 24 hours, refrigerate.

Saturday deliveries are accepted; please check Saturday Delivery on shipment labels.

See the reference lab catalog for tissue requirements. [Laboratory Services Test Directory | Tests](#)

Specimen stability:

- Bone marrow: Room temperature 24 hour(s)
- Bone marrow: Refrigerated 48 hour(s)
- Whole blood: Room temperature 24 hour(s)
- Whole blood: Refrigerated 48 hour(s)
- OCT-embedded tissue: Frozen 3 day(s)
- Paraffin embedded tissue: Room temperature 6 month(s)
- Tissue (Fresh): Room temperature 24 hour(s)
- Tissue (Fresh): Refrigerated 48 hour(s)
- Tissue (Snap-frozen): Frozen 3 day(s)
- Tissue scrolls (FFPE): Room temperature 6 month(s)

**Patient Preparation:** None

**Sample Rejection:** Frozen specimen; delayed or improper handling; mislabeled or unlabeled specimen; insufficient tumor content in sample; wrong type of specimen; wrong collection tube.

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### ***Interpretive***

**Reference Range:** An interpretive report will be provided.

A minimum of 10% blasts is required. A blast percentage of <10% will be reviewed by NWC Pathology and may be canceled.

**Critical Values:** N/A

**Limitations:** Blast count under 10% could lead to a canceled test.

**Methodology:** Anchored Multiplex PCR (AMP), Next Generation Sequencing

**References:** [Nationwide Children's Online Directory](#) February 2025

**Updates:** 2/12/2025: Added specimen stability, bone marrow details, link to required test requisition form. Updated test indications, CPT code, synonyms