INDIANA UNIVERSITY
DEPARTMENT OF MEDICAL AND MOLECULAR GENETICS
School of Medicine

The IU Cytogenetics Laboratory of the IU Genetic Testing Laboratories (IUGTL), Department of Medical and Molecular Genetics, is pleased to announce the availability of new/updated FISH testing.

For Acute Lymphoblastic Leukemia (ALL), in response to the most recent WHO classification published in 2017 and new testing requirements defined by Children's Oncology Group (COG) for 2020, we validated multiple additional probe sets*. We plan to offer the panels listed below differentiated by pediatric (≤18 years old) and adult (>18 years old) patients. These new probes expand coverage of prognostically significant findings in ALL and will identify additional genetic changes associated with potential response to tyrosine kinase inhibitors/JAK2 inhibitors in Ph-like ALL patients.

The Acute Myeloid Leukemia (AML) Panel has also been updated to include t(6;9)(p22.3;9q34.1) [DEK/NUP214], which is recognized in the 2017 WHO classification as a prognostically significant disease entity within the subcategory of AML with recurrent genetic abnormalities. In addition, the laboratory has changed from the CBFB break-apart probe to the CBFB/MYH11 dual-color, dual-fusion probe for detection of inv(16)(p13.1q22.1) or t(16;16)(p13.1;q22.1) on the AML Panel.

Finally, the Chronic Lymphocytic Leukemia (CLL) Panel will now include a 6q probe, which targets *PRDM1 at* 6q21 and *MYB at* 6q23.3, to assess for deletions. This probe will provide prognostic information for patients with CLL.

The new testing will launch 3/13/2020. Our requisitions have been updated for ordering and are available online at https://geneticslab.medicine.iu.edu/Requisition-Forms.html. The new panels are not yet updated in Cerner for ordering. Physicians may order the ALL Panel, and the laboratory will apply either the pediatric or adult panel based on the age of the patient as detailed below.

Pediatric ALL Panel	**Genomic Target**
**CRLF2*	*CRLF2* rearrangement
**PBX1/TCF3*	*PBX1/TCF3* fusion, t(1;19)
**ABL2*	*ABL2* rearrangement
4/10/17 centromeres	Hyperdiploidy, Hypodiploidy
**PDGFRB*	*PDGFRB* rearrangement
CDKN2A and 9 centromere	*CDKN2A* deletion
**ABL1*	*ABL1* (non-BCR) rearrangement
BCR/ABL1	*BCR/ABL1* fusion, t(9;22)
KMT2A (MLL)	*KMT2A* rearrangement
ETV6/RUNX1	*ETV6/RUNX1* fusion, t(12;21)

Adult ALL Panel and Ph-like ALL Reflex Panel (automatic reflex if BCR/ABL1 fusion negative)	**Genomic Target**
**CRLF2*	*CRLF2* rearrangement
**PBX1/TCF3*	*PBX1/TCF3* fusion, t(1;19)
4/10/17 centromeres	Hyperdiploidy, Hypodiploidy
CDKN2A and 9 centromere	*CDKN2A* deletion

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BCR/ABL1	*BCR/ABL1* fusion, t(9;22)
KMT2A (MLL)	*KMT2A* rearrangement
ETV6/RUNX1	*ETV6/RUNX1* fusion, t(12;21)

Ph-like ALL REFLEX	**Genomic Target**
**ABL2*	*ABL2* rearrangement
**PDGFRB*	*PDGFRB* rearrangement
**ABL1*	*ABL1* (non-BCR) rearrangement

AML Panel	**Genomic Target**
inv(3); t(3;3)	*MECOM/RPN1 fusion*
-5/del(5)	Multiple genes
DEK/NUP214	*DEK/NUP214* fusion, t(6;9)
-7/del(7)	Multiple genes
8 centromere/*20q13*	Gain of chromosome 8/Loss of D20S108
RUNX1T1/RUNX1	*RUNX1T1/RUNX1* fusion, t(8;21)
KMT2A(MLL)	*KMT2A* rearrangement
PML/RARA	*PML/RARA* fusion, t(15;17)
CBFB/MYH11	*CBFB/MYH11* fusion, inv(16;16) or t(16;16)

CLL Panel	**Genomic Target**
del(6q)	*PRDM1/MYB* loss
11q22.3	*ATM* loss
12 centromere	Gain of chromosome 12
13q14/13q34	*RB1/D13S319/LAMP1* loss
17p13	*TP53* loss

NOTE: The IUH Pathology Laboratory considers the IU Cytogenetics Laboratory a reference laboratory. Therefore, to assure that samples remain on campus, please designate on the order and requisition form that the specimen should be sent to the IUGTL.

Send all specimens to the IU Cytogenetics Laboratory, 975 W. Walnut Street, IB 350, Indianapolis, IN 46202. Should courier services be required, please call the laboratory at (317) 274-2243. The laboratory staff will pick up specimens on campus. For questions, please call the Cytogenetics Laboratory at (317) 274-2243.

For your convenience a copy of the requisition form is attached to this email.