

Acute myeloid leukemia (AML) and related neoplasms

- AML with recurrent genetic abnormalities :**
- AML with t(8;21)(q22;q22.1)
 - AML with inv(16)(p13.1q22) or t(16;16)(p13.1;q22)
 - APL with PML-RARA
 - AML with t(9;11)(p21.3;q23.3)
 - AML with t(6;9)(p23;q34.1)
 - AML with inv(3)(q21.3q26.2) or t(3;3)(q21.3;q26.2)
 - AML (megakaryoblastic) with t(1;22)(p13.3;q13.3);RBM15-MKL1
 - AML with t(9;22)(q34.1;q11.2)
 - AML with mutated NPM1
 - AML with biallelic mutations of CEBPA
 - AML with mutated RUNX1
- AML with myelodysplasia-related changes**

- Therapy-related myeloid neoplasms**
- AML, NOS** (with minimal differentiation, with / without maturation, acute myelomonocytic leukemia, acute monoblastic/monocytic leukemia, pure erythroid leukemia, acute megakaryoblastic leukemia, acute basophilic leukemia)
- Myeloid proliferations related to Down syndrome**

Acute leukemias of ambiguous lineage AML/ALL typing

B-lymphoblastic leukemia/lymphoma

- B-lymphoblastic leukemia/lymphoma with recurrent genetic abnormalities:**
- B-lymphoblastic leukemia/lymphoma with t(9;22)(q34.1;q11.2)
 - B-lymphoblastic leukemia/lymphoma with t(v;11q23.3)
 - B-lymphoblastic leukemia/lymphoma with t(12;21)(p13.2;q22.1)
 - B-lymphoblastic leukemia/lymphoma with hyperdiploidy
 - B-lymphoblastic leukemia/lymphoma with hypodiploidy
 - B-lymphoblastic leukemia/lymphoma with t(5;14)(q31.1;q32.3)
 - B-lymphoblastic leukemia/lymphoma with t(1;19)(q23;p13.3)
 - B-lymphoblastic leukemia/lymphoma, BCR-ABL1-like
 - B-lymphoblastic leukemia/lymphoma with RUNX1 iAMP21 amplification

T-lymphoblastic leukemia/lymphoma

Chimerism

Cytology | Cytochemistry

Peripheral blood and/or bone marrow aspirate smears analysis

Immunophenotyping

AML typing
(panel ALOT, AML)

AML/ALL typing
(panel ALOT, AML, ALL)

ALL typing
(panel ALOT, ALL)

Conventional cytogenetics: hematological karyotyping

Bone marrow karyotyping

Blood karyotyping if peripheral blastosis

Molecular cytogenetics: Fluorescent in situ Hybridization (FISH)

- RUNX1-RUNX1T1
- CBFB-MYH11
- PML-RARA
- MLL (KMT2A)
- DEK-NUP214
- MECOM
- BCR-ABL1
- Myeloid panel: chromosomes 5, 7 and 8 status, EVI1 (MECOM), TP53, TEL (ETV6), 20q, MLL (KMT2A).
- BCR-ABL1 / MLL (KMT2A)
- BCR-ABL1
- MLL (KMT2A)
- ETV6-RUNX1
- IgH-DC
- TCF3-PBX1
- PDGFRβ
- BCR-ABL / MLL (KMT2A)
- XX/XY

Molecular Biology including NGS panel

- AML panel**
- ASXL1, BRAF, CALR, CBL, CEBPA, CSF3R, DNMT3A, ETV6, EZH2, FLT3, HRAS, IDH1, IDH2, JAK2, KIT, KRAS, MPL, NPM1, NRAS, PTPN11, RUNX1, SETBP1, SF3B1, SRSF2, TET2, TP53, U2AF1, WT1, ZRSR2.
- Qualitative BCR-ABL**
- Quantitative BCR-ABL (MRD (follow-up))**
- BCR-ABL mutation (Resistance to imatinib)**

Sample requirements

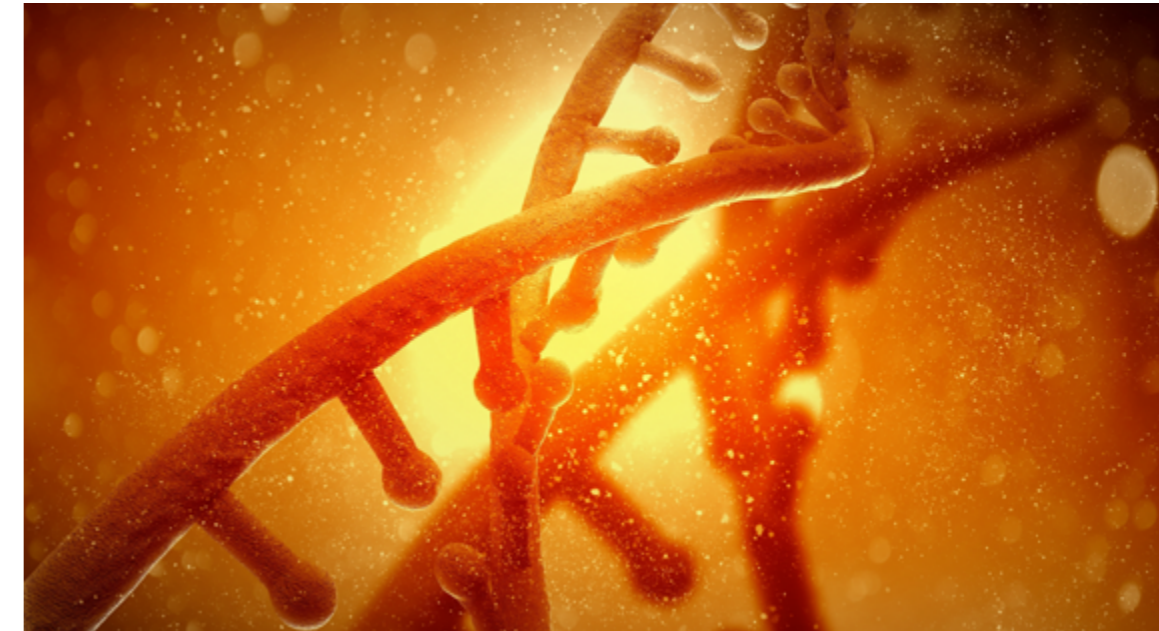
Sample must reach laboratory within 48 hours.

	Preanalytical			Temperature	Required informations	Test request form
	Blood	Bone marrow	Other			
Cytology / Cytochemistry	2 slides unfixed and unstained	≥4 slides unfixed and unstained		Room temperature Do not freeze	- Clinical data - FBC	B8-INTGB Malignant blood disorders + BW12-INTGB Fish request form for Malignant Hemopathies and Solid Tumors
Immunophenotyping	1 EDTA tube (or 1 heparin tube) 2 slides unfixed and unstained	2 ml in EDTA (or heparin) 2 slides unfixed and unstained		Room temperature Do not freeze	- Clinical data - FBC	
Conventional cytogenetics: Haematological karyotyping	5ml 1 lithium heparin tube	2-5ml 1 medullary puncture transferred to 1 lithium heparin tube	Biological fluid	Room temperature Do not freeze	- Clinical data - FBC - Bone marrow report - Immunophenotyping report	
Molecular cytogenetics : FISH	5ml 1 lithium heparin tube	2-5ml 1 medullary puncture transferred to 1 lithium heparin tube	FISH also available on: unstained slides (peripheral blood or bone marrow smear). No analysis from bone marrow biopsy	Room temperature Do not freeze		
Molecular biology Qualitative BCR-ABL	Whole blood 1 EDTA tube and 1 PaxGen tube	Bone marrow transferred to 1 EDTA tube		EDTA tube : Room temperature PaxGen tube : Freeze -20°C		
Molecular Biology Quantitative BCR-ABL	Whole blood 1 EDTA tube and 1 PaxGen tube			EDTA tube : Room temperature PaxGen tube : Freeze -20°C		
All others molecular biology tests	Whole blood 2 EDTA tubes	Bone marrow transferred to 1 EDTA tube		Room temperature Do not freeze		

All the preanalytical information and the gene list by NGS panel can be found on www.eurofins-biomnis.com > Test Guide



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Pathological diagnosis and follow up of patients with Acute Leukemia

Acute leukemia - antibodies minimal panels

Minimal panel	Markers
Acute Myeloid Leukemia Orientation Test (ALOT)	CD45 cyMPO cyCD3/CD3 CD7 CD19 cyCD79a
Acute Myeloid Leukemia (AML)	CD45 CD11b CD13 CD14 CD15 CD33 CD117 CD34 CD38 HLA-DR
B-Acute Lymphoid Leukemia (B-ALL)	CD45 CD19 CD20 cyCD22 kappa/lambda cyIgM CD10 CD34 CD38 TdT and myeloid markers CD13 CD15 CD33 CD117
T-Acute Lymphoid Leukemia (T-ALL)	CD45 CD2 CD3 CD5 CD7 CD4 CD8 TCRab/gd CD1a TdT and myeloid markers CD13 CD15 CD33 CD117

References

*Swerdlow SH, Campo E, Harris NL, Jaffe ES, Pileri SA, Stein H, Thiele J. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues (Revised 4th edition) IARC Lyon 2017



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