FARABI
Medical Laboratory

ONCOGENETICS

Genetic Testing for Hereditary and Somatic Cancers

PCR Studies

- B-RAF Mutation study
- K-RAS / N-RAS mutations
- GenesWell Breast Cancer Test (BCT) is a molecular prognostic assay that predicts the risk of 10–year distant metastasis in patients with pathologic N0 or N1 status (pN0-N1), hormone receptor-positive, HER2-negative breast cancer. This test is a qRT-PCR-based assay that measures the relative expression of six prognostic genes and two clinical variables using FFPE tumor tissues similar to the Oncotype DX.
- EGFR: Mutations in the gene encoding epidermal growth factor receptor (EGFR) can confer sensitivity to EGFR tyrosine kinase inhibitors in patients with advanced non-small-cell lung cancer.
- Microsatellite instability (MSI) plus DNA Mismatch Repair study (DMMR)
- BCR-ABL fusion gene detection
- BCR-ABL mRNA quantitative assay for monitoring CML
- JAK II mutation for polycythemia vera and essential thrombocythemia, ARMS-PCR
- NPM1 gene mutations study in AML, RT-PCR
- Chromosomal translocations-AML panel {t(9;22), t(8;21), t(15;17), Inv(16)} RT-PCR
- Chromosomal translocations-ALL panel {t(9;22), t(4;11), t(1;19), t(12;21)} RT-PCR
- t(12;21) with TEL-AML1 fusion gene in ALL, RT-PCR
- t(4;11) with MLL-AF4 fusion gene in various types of leukemia, RT-PCR
- t(1;19) with E2A-PBX1 fusion gene in precursor B cell ALL, RT-PCR
- t(15;17) with PML-RARA fusion gene for acute promyelocytic leukemia, RT-PCR
- Inv(16) with CBFB-MYH11 fusion gene for acute myelomonocytic leukemia, RT-PCR

Next Generation Sequencing (NGS) Panels

Somatic Oncology NGS Panels

- **BRCA1, BRCA2 Somatic**
- **Myeloid tumor panel** (35 genes of Acute myeloid leukemia, Chronic myeloid leukemia, Chronic myelomonocytic leukemia, Juvenile myelomonocytic leukemia, Myelodysplastic syndrome, Myeloid tumor, Myeloproliferative neoplasms)
- **Solid tumor panel** (149 genes of Adrenal cancer, Biliary tract cancer, Bone marrow cancer, Breast cancer, Colon cancer, Endometrial cancer, Esophageal cancer, Gastrointestinal stromal tumor, Glioma, Hepatic cancer, Lung cancer, Lymphoma cancer, Meningioma, Ovarian cancer, Pancreatic cancer, Prostate cancer, Renal cancer, Skin cancer, Testicular cancer, Thyroid cancer)

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Hereditary Cancer NGS Panels

- **BRCA1, BRCA2 Hereditary** (The Breast Cancer Susceptibility Genes, BRCA1 and BRCA2, are the dynamic regulators of genomic integrity. Inherited mutations in these genes are associated with the development of cancer in multiple organs including the breast and ovary. Mutations of BRCA1/2 genes greatly increase lifetime risk to develop breast and ovarian cancer and these mutations are frequently observed in hereditary breast and ovarian cancers.)
- **Breast cancer panel** (24 genes of breast cancer and ovarian cancer; includes genes associated with breast and ovarian cancer, lynch syndrome (HNPCC or non-pol- yp colon cancer), Li Fraumeni Syndrome (TP53), Cowden Syndrome (PTEN), Peutz-Jeghers Syndrome (STK11).)
- **Colon cancer panel** (23 genes of colon cancer for syndromes such as non-polyposis (Lynch Syndrome/HNPCC), hereditary adenomatous polyps (FAP), Peutz Jeghers Syndrome, Juvenile polyposis (JPS), Cowden (PTEN) Syndrome, MUTHY-associated polyposis)
- **Prostate cancer panel** (13 genes associated with prostate cancer)
- **Cancer Predict Prime panel** (175 genes of Breast cancer, Colorectal cancer, Endometrial cancer, Familial adenomatous polyposis, Gastric cancer, Gastrointestinal stromal tumor, Melanoma, Ovarian cancer, Pancreatic cancer, Prostate cancer, Renal cancer, Skin cancer, Thyroid cancer, Uterine cancer)
- **Cancer Predict Comprehensive panel** (360 genes associated with common he-reditary cancers as well as hereditary hemato- logical cancers and rare hereditary cancers such as Bloom Syndrome, lung and gastric cancers, retinoblastoma, neurofibromatosis)
- **Pediatric cancer panel** (98 genes of Leukemia, Malignant brain tumors, Lymphomas, Bone cancer, Neuroblastoma, Wilms tumor, Rhabdomyosarcoma)

ABOUT FARABI MEDICAL LABORATOTY

Farabi Medical Laboratory, established in Erbil, Iraq in 2012 is a private medical laboratory working primarily in molecular diagnostics field. The lab has necessary equipment to perform all analytical steps of the tests, from DNA or RNA extraction to amplification and detection. In its first phase of operation, the focus was on infectious diseases, oncology tests, and HLA typing for transplant candidates. Currently a wide range of genetic tests are offered, either performed locally or referred to reputable international genetics service providers.

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FISH Panels

Indication		Chromosome/locus	Gene(s)/aberration
Acute Lymphocytic Leukemia Panel (ALL)	Adult (each probe upon request) 2-probe each	8q24	*MYC rearrangement*
		t(9;22)(q34;q11.2)	*BCR-ABL1 rearrangement*
		11q23	*KMT2A(MLL) rearrangement*
		14q32	*IGH rearrangement*
		19p13	*TCF3 (E2A) rearrangement*
	Pediatric (each probe upon request) 2-probe each	+4	*gain*
		+10	*gain*
		del(9p)/CDKNT2A	*CDKNT2A deletion*
		t(9;22)(q34;q11.2)	*BCR-ABL1*
		11q23	*KMT2A (MLL) rearrangement*
		t(12;21)(p13;q22)	*ETV6-RUNX1(TEL-AML1) rearrangement*
		RUNX1 (iAMP21)	*ETV6-RUNX1(TEL-AML1)* amplification
	Ph-like ALL **panel** 10 probe panel	t(1q25;var)	ABL2 *rearrangement*
		t(5q33;var)	*PDGFRB rearrangement*
		t(9p24;var)	*JAK2 rearrangement*
		t(9q34;var)	*ABL1 rearrangement*
		t(Xp22;var)	*CRLF2 rearrangement*
		t(Xp22;var)	*P2RY8 rearrangement*
Acute Myelogenous Leukemia Panel (AML) (each probe upon request) 2-probe each		t(15;17)(q24;q21)(M3)	*PML-RARA rearrangement*
		t(8;21)(q22;q22)(M2)	*RUNX1T1-RUNX1(ETO-AML1) rearrangement*
		inv(16)(p13.3q22)(M4, Eos)	*CBFB/MYH rearrangement*
		11q23(M1-M7)	*KMT2A (MLL) rearrangement*
		inv(3) or t(3;3) (M1,2,4,6,7)	*RPN1/MECOM (EVI1) rearrangement*
		t(9;22)(q34;q11.2)(M0-M7)	*BCR-ABL1* rearrangement
Acute Myelogenous Leukemia with Myelodysplastic Syndrome or Therapy-Related AML (each probe upon request) 2-probe each		del(5)(q31)	*5q deletion/loss, monosomy 5*
		del(7)(q31)/-7	*7q deletion/loss, monosomy 7*
		del(17p)	*17p deletion/loss*
		del(13q)	*13q deletion/loss*
		del(20q)	*20q deletion/loss*
Chronic Lymphocytic Leukemia (CLL) **Panel** 6-probe panel		del(11q)	*ATM deletion*
		+12	*12 gain*
		del(6q)	*MYB deletion/loss*
		del(13q)	*13q deletion/loss*
		del(17p)	*TP53(p53) deletion*

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FISH Panels continued

Indication		Chromosome/locus	Gene(s)/aberration
Chronic Myelogenous Leukemia (CML)		t(9;22)(q34;q11.2)	*BCR-ABL1* rearrangement
Eosinophilia Panel (each probe upon request) 2-probe each 8 -probe panel		*4q12*	*PDGFRA-CHIC2-FIP1L1 rearrangement*
		5q33.1	*PDGFRB* rearrangement
		8p12	*FGFR1* rearrangement
		inv(16)	*CBFB* rearrangement
Lymphoma (Aggressive) **Panel** 6-probe panel		3q27	*BCL6* rearrangement
		8q24	*MYC* rearrangement
		t(14;18)(q32;q21)	*IGH-BCL2* rearrangement
Lymphoma (each probe upon request) 2-probe each	Burkitt	8q24	*MYC* rearrangement
	Diffuse large cell	3q27	*BCL6* rearrangement
	Follicular	t(14;18)(q32;q21)	*IGH-BCL2* rearrangement
	IgH rearrangement	14q32	*IGH* rearrangement
	Mantle cell	t(11;14)(q13;q32)	*IGH-CCND1(BCL1)* rearrangement
	MALT	18q21	*MALT1* rearrangement
Multiple Myeloma Panel	**Panel I** 8 -probe panel	1q21	gain
		del(17p)	*TP53*(*p53*) deletion
		t(11;14)(q13;q32)	*IGH-CCND1(BCL1)* rearrangement
		t(14;v)(q32;v)	*IGH* rearrangement
		Del(13/13q)	deletion
	Panel II for trisomies 3-probe panel	+7	gain
		+9	gain
		+15	gain
	Reflex sequential IGH rearrangement upon request in cases that IGH rearrangement is not with CCND1 partner 2-probe each	t(4;14)(p16;q32)	*IGH-FGFR3* rearrangement
		t(14;16)(q32;q23.1)	*IGH-MAF* rearrangement
		t(14;20)(q32;q12)	*IGH-MAFB* rearrangement
Myelodysplastic Syndrome (MDS) **Panels**	**Panel I** for common abnormalities, 8 -probe panel	del(5/5q) (good)	*5q deletion/loss, monosomy 5*
		del(7/7q) (poor)	*7q deletion/loss, monosomy 7*
		del(20q) (good)	*20q deletion/loss*
		+8 (intermediate)	*13q deletion/loss*
		del(17p) (intermediate)	*17p deletion/loss*
	Panel II for less common abnormalities 5-probe panel	inv(3) or t(3;3) (intermediate)	*RPN1/MECOM (EVI1)* rearrangement
		del(12p) (good)	*deletion*
		t(11q23;v)(good/intermediate)	*KMT2A* rearrangement
Myeloproliferative Disorder (MPD) (each probe upon request) 2-probe each 8 -probe panel		4q12	*PDGFRA-CHIC2-FIP1L1* rearrangement
		5q33.1	*PDGFRB* rearrangement
		8p12	*FGFR1* rearrangement
		t(9;22)(q34;q11.2)	*BCR-ABL1* rearrangement

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