

# Neoplastic FISH Probes

Clinically validated FISH probes as of March 2010

**Neoplastic DNA FISH Probes: Probes can be used for either interphase or metaphase analysis. Probes are considered analyte-specific reagents.**

GENE REARRANGEMENT PROBES (alternate name)	TRANSLOCATION / LOCATION	DISEASE	PURPOSE
258B3, MYB, 252P19	6q13, 6q23, 6q27	Lymphoma, Myeloma, Waldenstrom's	Deletion 6q / monosomy 6
ALK (break-apart)	2p23, t(2;5) or variant	Anaplastic large cell lymphoma	ALK Gene rearrangement
ETO/AML1 (RUNX1/RUNX1T1)	t(8;21)	AML M2	Gene fusion, reciprocal translocation
ATM	11q22.3	CLL	ATM deletion
BCL2/IGH (dual fusion)	t(14;18)	Follicular or DLBCL	Gene fusion, reciprocal translocation
BCL6 (break-apart)	3q27	DLBCL	BCL6 gene rearrangement
BCR/ABL1 (dual fusion)	t(9;22)	CML, AML or ALL	Gene fusion, reciprocal translocation
CBFB (break-apart)	16q22	AML M4, Eos	inv(16) or t(16;16)
CCND1 (break-apart)	11q13	Mantle cell lymphoma	CCND1 Gene rearrangement
CCND1/IGH (BCL1/IGH) (dual fusion)	t(11;14)	Mantle cell lymphoma	Gene fusion, reciprocal translocation
CEP4, CEP10, CEP17	chr. 4, 10, 17 centromere	ALL in pediatric	Hyper- or hypodiploidy
CEP8	Trisomy 8	Myeloid disorders and CML, AML, MPD	Trisomy 8
FIP1L1, CHIC2, PDGFRA (break-apart/deletion)	4q12 rearrangement	Hypereosinophilia/mast cell disease	Chromosome rearrangement
CHOP (DDIT3) (break-apart)	12q13, t(12;16) or t(12;22)	Liposarcoma	CHOP gene rearrangement
D13S319, LAMP1	13q14, 13q34	CLL, MM, MPD, MDS	Deletion13q / monosomy 13
D20S108	20q12	Myeloid disorders	Deletion 20q
D7S486	7q31	Myeloid disorders	Deletion 7q / monosomy 7
DEK/CAN (dual fusion)	t(6;9)	AML	Gene fusion, reciprocal translocation
EGFR	7p12	Non-small cell lung cancer, glioma	Amplification status
EGR1	5q31	Myeloid disorders	Deletion 5q / monosomy 5
ELL, ENL	19p13.1, 19p13.3 t(11;19)	ALL or AML	Identify gene on 19p involved in t(11;19)
ETV6 (break-apart)	12p13	Pediatric precursor B-ALL	ETV6 gene rearrangement
ETV6/RUNX1 (TEL/AML1) (dual fusion)	t(12;21) (cryptic)	Pediatric precursor B-ALL	TEL/AML fusion
EWSR 1 (break-apart)	t(11;22) or variant	Ewing sarcoma	EWSR1 gene rearrangement
FGFR (break-apart)	8p12	Myeloproliferative disorders, MPD; EMS	FGFR1 gene rearrange., amplification
FGFR3/IGH (dual fusion)	t(4;14)	Multiple myeloma	Gene rearrangement
FKHR (break-apart)	t(2;13) or variant	Rhabdomyosarcoma	FKHR gene rearrangement
FUS (break-apart)	16p11	Liposarcoma, L-G Fibrinixoid sarcoma	FUS gene rearrangement
IGH (break-apart)	14q34	Lymphoma, MM, HCL	IGH gene rearrangement
MAF/IGH (dual fusion)	t(14;16)	Multiple myeloma	Gene rearrangement
MALT1 (break-apart)	t(11;18) or variant	MALT lymphoma	MALT1 gene rearrangement
MLL (break-apart)	11q23	Leukemias	Rearrange., amplifications or deletion
MYC (enumeration)	8q24	Solid tumors, leukemias	Amplification
MYC (break-apart)	8q24	lymphoma	c-MYC gene rearrangement
MYC/IGH (dual fusion)	t(8;14)	Burkitt's lymphoma	Gene rearrangement
MYCN (N-MYC)	2p23-24	Neuroblastoma	Amplification status
NUP98 (break-apart)	11p15	AML	Gene rearrangement
PAX5	9p13	ALL, Lymphoma	t(9;14)(p13;q32),
PDGFRA (FIP1L1-CHIC2-PDGFRA)	4q12 deletion/translocation	Hypereosinophilia/mast cell disease	CHIC2 deletion, FIP1L1-PDGFRA fusion
PDGFRB (break-apart)	5q33	Myeloproliferative disease	Gene rearrangement
PML/RARA (dual fusion)	t(15;17)	AML M3	PML/RARA fusion
RARA (break-apart)	17q12-21	AML M3	RARA gene rearrangement
RB1	13q14	Retinoblastoma	Deletion
SIL-TAL1	1p32	T-cell ALL	SIL sub-deletion or TAL1 translocation
SHPRH, MYB, CEP6	6q24/6q23/6q10	Myeloma, Waldenstrom's	Deletion 6q / monosomy 6
SYT (SS18) (break-apart)	t(X;18) t(18q11.2)	Synovial sarcoma	Gene rearrangement
TCF3/PBX1 (dual fusion)	t(1;19)(q23;p13)	B-cell ALL	TCF3/PBX1 fusion
TCRAD (break-apart)	14q11	T-cell ALL, PLL	inv(14)(q11q32)
TP16	9p21	T-cell lymphoblastic leukemia	Deletion
TP53	17p13	Solid tumors, leukemias, MM	Deletion
TP58	1p36	Neuroblastoma, glioblastoma	Deletion 1p36
WT1*	11p15	Wilms tumor	Deletion
<b>Panels of Probes:</b>			
BCR/ABL 1, ETV6/RUNX1, MLL, CEP4, 10, 17		Acute lymphocytic leukemia, pediatric ALL	
AML1/ETO, PML/RARA, CBF, MLL		Acute myeloid leukemia classification	
ATM/TP53, D13S319, CEP12		Chronic lymphocytic leukemia prognosis	
MLL, D13S319, TP53, FGFR3/IGH, MAF/IGH, CCND1/IGH		Multiple myeloma prognosis	
EGR1, D7S486, CEP8, D20S108		Myeloid dysplastic syndrome (MDS)	
FIP1L1/CHIC2/PDGFRA, PDGFRB, FGFR1		MPD, Myeloid and lymphoid neoplasm with eosiniphilia	
1p/19q, PTEN, EGFR, TP16		Glioma diagnosis and prognosis, therapy response	
Chromosome Enumeration Probes: Centromere probe for chromosomes 7, 8, 9, 12, 21, X, and Y are the most useful for assessment of clinically relevant chromosome gain/loss of these chromosomes in hematologic malignancies and for following patients with sex mismatched BMT.			
<b>FDA - Approved Kits</b>			Amplification
HER2, CEP17	17q21.1	Breast, ovarian, gastric cancer	