



FISH Probes

Multicolor DNA Probe Panels

Fluorescent in situ Hybridization (FISH) is a cytogenetic diagnostic technique that utilizes DNA fragments labeled with a fluorescent tag to highlight the location, presence, or rearrangement of genetic loci. FISH probes enable clinicians & researchers to accurately determine a specific genetic abnormality. The revelation of an abnormality can answer key questions in disease diagnosis, prognosis, and enable the selection of the ideal treatment. FISH probes also aid in drug development and biomarker validation. Empire Genomics can create custom probes using our full RP-11 library. Below is a sampling of gene-specific probes that we currently offer. If a gene you are interested in is not listed, let us know, we can design a probe to hybridize to any human gene!

Hematopathology

Acute Lymphoblastic Leukemia (Adult)

MYB/Con 6 (6q23.3 del)
ABL1 (9q34.1)
BCR/ABL t(9;22)
BCR/ABL/ASS1 (9;22)
PAX5 (9p13.2)
CDKN2A (9p21.3)
JAK2 (9p24.1)
KMT2A (11q23)
EPOR (19p13.2)
IGH (14q32)

Acute Lymphoblastic

Leukemia (Pediatric)
ABL1 (9q34.1)
BCR/ABL t(9;22)
IGH (14q32)
ETV6/RUNX1 t(12;21)
KMT2A (11q23)

Acute Myelogenous Leukemia

MECOM (3q26.2)
KIT (4q12)
DEK/NUP214 (6;9)
FGFR1 (8p11.2)
RUNX1T1/RUNX1 t(8;21)
BCR/ABL/ASS1 t(9;22)
PML/RARA t(15;17)
CBFB inv(16)

Acute Myeloid Leukemia

MECOM (3q26.2)
TERT (5p15.3)
CBFB (16q22.1)
MYB (6q23.3)
RREB1 (6p24.3)
NCOA2 (8q13.3)
WT1 (11p13)
KMT2A (11q23)

Acute Myelomonocytic Leukemia

MECOM (3q26.2)
Del 20p20q

Acute Promyelocytic Leukemia

CHEK1 (11q24.2)
PML/RARA t(15;17)
RARA (17q21.2)

Burkitt Lymphoma

IGH/MYC/Con 8 t(8;14)
MYC (8q24.2)
MYC/IGH t(8;14)

Chronic Lymphocytic Leukemia

BIRC3 (11q22.2)
ATM (11q22.3)
D13S319 (13q del)
RB1 (13q14.2)
IGH (14q32)
TP53 (17p13.1)
BCL2 (18q21.3)

Chronic Myelogenous Leukemia (CML)

BCR/ABL1 t(9;22)
BCR/ABL1/ASS1 t(9;22)
ABL1 (9q34.1)

Follicular Lymphoma

IGH/BCL2 t(14;18)

Large B-Cell Lymphoma (LBCL)

BCL6 (3q27.3)
BCL2 (18q21.3)

Lymphoma

ALK (2p23)
BCL6 (3q27.3)
DUSP22 (6p25.3)
TCRG (7p14)
MYC (8q24.2)
PD-L1 (9p24.1)
MALAT1 (11q13.1)
MYC/IGH t(8;14)
CCND1/IGH t(11;14)
IGH/BCL2 t(14;18)
IGH (14q32)
BCL2 (18q21.3)
NFKB2 (10q24.3)

MALT Lymphoma

IGH (14q32)
MALT1 (18q21.3)
BCL2 (18q21.3)

Mantle Cell Lymphoma (MCL)

BIRC3 (11q22.2)
CCND1/IGH t(11;14)
IGH (14q32)

Multiple Myeloma

CDKN2C/CKS1B (1p1q)
FGFR3 (4p16.3)
BIRC3 (11q22.2)
RB1 (13q14.2)
IGH (14q32)
MAF (16q23.2)
TP53 (17p13.1)
CIC (19q13.2)
BRD4 (19p13.1)
Con 7, 9, 11, 17

Myelodysplastic Syndrome (MDS)

5p5q (5q31 del)
Con 7 / 7q (7q31 del)
Con 8 (trisomy 8)
Con 9 (trisomy 9)
KMT2A (11q23)
20q- (20q12 del)

Myeloid Neoplasms with Eosinophilia

PDGFRA/CHIC2/FIP1L1
PDGFRB (5q32)
FGFR1 (8p11.2)

Myeloproliferative Neoplasms (MPN)

5p5q (5q31 del)
PDGFRB (5q32)
Con 7 / 7q (7q21 del)
Con 8 (trisomy 8)
Con 9 (trisomy 9)
RB1 (13q14.2 del)
20q- (20q12 del)

NUT Midline Carcinoma

NUTM1/BRD4 (15;19)

T-Cell Leukemia / Lymphoma

FGFR3 (4p16.3)
Isoschromosome 7q
FGFR1 (8p11.2)
TRA (14q11.2)

Solid Tumor Pathology

Alveolar Rhabdomyosarcoma PAX7 (1p36.1) CCND1 (11q13.3) CDK4 (12q14.1) FOXO1 (13q14.1)	Cervical Cancer WWTR1 (3q25.1) PDGFRA (4q12) MYB (6q23.3) MET (7q31.2) MAML2 (11q21) YY1 (14q32.2) BCL2 (18q21.3)	Lung Cancer NTRK1 (1q23.1) EML4/ALK (2;2) ALK (2p23) CREB1 (2q33.3) VHL (3p25.3) WWTR1 (3q25.1) PIK3CA (3q26.3) TP63 (3q28) FGFR3 (4p16.3) PDGFRA (4q12) KIT (4q12) VEGFR2 (4q12) TERT (5p15.3) CD74/ROS1 (5;6) NPM1 (5q35.1) GOPC (6q22.1) PHF1 (6p21.3) ROS1 (6q22.1) EGFR (7p11.2) NCF1 (7q11.2) MET (7q31.2) BRAF (7q34) FGFR1 (8p11.2) PREX2 (8q13.2) PD-L1 (9p24.1) PD-L2 (9p24.1) KIF5B/RET (10;10) PTEN (10q23.3) RET (10q11.2) FGFR2 (10q26.1) WT1 (11p13) MAML2 (11q21) CCND1 (11q13.3) KRAS (12p12.1) CDK4 (12q14.1) HMGA2 (12q14.3) AKT1 (14q32.3) HER2 (17q12) BCL2 (18q21.3) TFE3 (Xp11.2)	Neuroblastoma NTRK1 (1q23.1) MYCN (2p24.3) NTRK3 (15q25.3)	Skin Cancer KIT (4q12) PDGFRA (4q12) RREB1 (6p24.3) JAK2 (9p24.1) CDK4 (12q14.1) SMARCB1 (22q11.2) PDGFB (22q13.1)
Aneurysmal Cyst/ Nodular Faciitis USP6 (17p13.2)	Colorectal Cancer PD-L1 (9p24.1) WWTR1 (3q25.1) PHF1 (6p21.3) NCF1 (7q11.2) MET (7q31.2) PREX2 (8q13.2) CHEK1 (11q24.2) ZNF217 (20q13.2)	Prostate Cancer HPC1 (1q25.3) CENPF (1q41) CREB1 (2q33.3) ETV5 (3q27.2) PHF1 (6p21.3) ETV1 (7p21.2) MAGI2 (7q21.2) MET (7q31.2) NCF1 (7q11.2) PREX2 (8q13.2) NCOA2 (8q13.3) MSR1 (8p22) HGF (7q21.1) ETV6/RUNX1 (12;21) FOXM1/CENPF (12;1) MAF (16q23.2) YES1 (18p11.3) ELAC2 (17p12) BCL2 (18q21.3) ERG (21q22.2) TMPRSS2 (21q22.3) ERG (22q22.2)	Ovarian Cancer GOPC (6q22.1) WT1 (11p13) CHEK1 (11q24.2) HMGA2 (12q14.3) CDKN2D (19p13.2) ZNF217 (20q13.2) XIST (Xq13.2)	Smooth Muscle Tumors HMGA2 (12q14.3)
Bladder Cancer PD-L1 (9p24.1) FGFR3 (4p16.3) PDGFRB (5q32) RREB1 (6p24.3) TP63 (3q28) FGFR1 (8p11.2) P16 (9p21) FGFR2 (10q26.1) KIT (4q12) CDK4 (12q14.1) CDKN2D (19p13.2)	Ewing Sarcoma EWSR1 (22q12.2)	Myxoid Liposarcoma DDIT3 (12q13.3) CDK4 (12q14.1) HMGA2 (12q14.3)	Renal Cell Carcinoma MTOR (1p36.2) VHL (3p25.3) TFEB (6p21.2) TFE3 (Xp11.23) MET (7q31.2) PD-L1 (9p24.1) HIF1A (14q23.2) FLCN (17p11.2) YWHAE (17p13.3) SMARCB1 (22q11.2)	Stomach Cancer PDGFRA (4q12) MET (7q31.2) JAK2 (9p24.1) YWHAE (17p13.3) NTRK3 (15q25.3) ZNF217 (20q13.2)
Breast Cancer REL (2p16.1) CREB1 (2q33.3) WWTR1 (3q25.1) TERT (5p15.3) PHF1 (6q21.3) MYB (6q23.3) NCF1 (7q11.2) MET (7q31.2) FGFR1 (8p11.2) NRG1 (8p12) NCOA2 (8q13.3) PREX2 (8q13.2) PTEN (10q23.3) NFKB2 (10q24.3) FGFR2 (10q26.1) CCND1 (11q13.3) BIRC3 (11q22.2) CHEK1 (11q24.2) CDK4 (12q14.1) HMGA2 (12q14.3) NTRK3 (15q25) MAF (16q23.2) Con 17 HER2 (17q12) TOP2A (17q21.2) BCL2 (18q21.3) CIC (19q13.2) ZNF217 (20q13.2) PDGFB (22q13.1) XIST (Xq13.2)	Fibrosarcoma COL1A1/PDGFB (17;22)	Retinoblastoma RBI (13q14.2)	Synovial Sarcoma SS18 (18q11.2)	Testicular Cancer PDGFRA (4q12) CDK4 (12q14.1) CDKN2D (19p13.2) XIST (Xq13.2)
Glioma 1p19q TERT (5p15.3) PDGFRB (5q32) ROS1 (6q22.1) SMARCB1 (22q11.2) PDGFB (22q13.1)	Liver Cancer TERT (5p15.3) PHF1 (6p21.3) NCF1 (7q11.2) MET (7q31.2) PREX2 (8q13.2) YWHAE (17p13.3)	Melanoma PAX3 (2q36.1) KIT (4q12) TERT (5p15.3) RREB1 (6p24.3) MAGI2 (7q21.1) PREX2 (8q13.2) PD-L1 (9p24.1) CDK4 (12q14.1) BCL2 (18q21.3)	Uterine Cancer KIT (4q12) MYB (6q23.3) BIRC3 (11q22.2) YWHAE (17p13.3) ERBB2 (17q12) BCL2 (18q21.3) XIST (Xq13.2)	Thyroid Cancer NTRK1 (1q23.1) PDGFRA (4q12) PAX8/PPARG (2;3) KIT (4q12)
Wilms Tumor WT1 (11p13) NTRK3 (15q25.3) HMGA2 (12q14.3) SMARCB1 (22q11.2)	Vascular Tumors CAMTA1/WWTR1 (1;3)	Round Cell Carcinoma WT1/EWSR1 (22;22) CIC (19q13.2)		