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)
Isochromosome 7q
FGFR1 (8p11.2)
TRA (14q11.2)

Solid Tumor Pathology

Alveolar Rhabdomyosarcoma
- PAX7 (1p36.1)
- CCND1 (11q13.3)
- CDK4 (12q14.1)
- FOXO1 (13q14.1)

Aneurysmal Cyst/ Nodular Faciitis
- USP6 (17p13.2)

Bladder Cancer
- PD-L1 (9p24.1)
- FGFR3 (4p16.3)
- PDGFRB (5q32)
- RREB (6p24.3)
- TP63 (3q28)
- FGFR1 (8p11.2)
- P16 (9p21)
- FGFR2 (10q26.1)
- KIT (4q12)
- CDK4 (12q14.1)
- CDKN2D (19p13.2)

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)

Cervical Cancer
- WWTR1 (3q25.1)
- PDGFRA (4q12)
- MYB (6q23.3)
- MET (7q31.2)
- MAML2 (11q21)
- YY1 (14q32.2)
- BCL2 (18q21.3)

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)

Ewing Sarcoma
- EWSR1 (22q12.2)

Fibrosarcoma
- COL1A1/PDGFB (17;22)

GIST
- KIT (4q12)
- PDGFRA (4q12)
- BRAF (7q34)
- KRAS (12p12.1)
- YWHAE (17p13.3)
- ZNF217 (20q13.2)

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)

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)

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)

Myxoid Liposarcoma
- DDIT3 (12q13.3)
- CDK2 (12q14.1)
- HMGA2 (12q14.3)

Neuroblastoma
- NTRK1 (1q23.1)
- MYCN (2p24.3)
- NTRK3 (15q25.3)

Ovarian Cancer
- GOPC (6q22.1)
- WT1 (11p13)
- CHEK1 (11q24.2)
- HMGA2 (12q14.3)
- CDKN2D (19p13.2)
- ZNF217 (20q13.2)
- XIST (Xq13.2)

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)

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)

Retinoblastoma
- RB1 (13q14.2)

Round Cell Carcinoma
- WT1/EWSR1 (22;22)
- CIC (19q13.2)

Skin Cancer
- KIT (4q12)
- PDGFRA (4q12)
- RREB1 (6p24.3)
- JAK2 (9p24.1)
- CDK4 (12q14.1)
- SMARCB1 (22q11.2)
- PDGFB (22q13.1)

Smooth Muscle Tumors
- HMGA2 (12q14.3)

Stomach Cancer
- PDGFRA (4q12)
- MET (7q31.2)
- JAK2 (9p24.1)
- YWHAE (17p13.3)
- NTRK3 (15q25.3)
- ZNF217 (20q13.2)

Synovial Sarcoma
- SS18 (18q11.2)

Testicular Cancer
- PDGFRA (4q12)
- CDK4 (12q14.1)
- CDKN2D (19p13.2)
- XIST (Xq13.2)

Thyroid Cancer
- NTRK1 (1q23.1)
- PDGFRA (4q12)
- PAX8/PPARG (2;3)
- KIT (4q12)

Uterine Cancer
- KIT (4q12)
- MYB (6q23.3)
- BIRC3 (11q22.2)
- YWHAE (17p13.3)
- ERBB2 (17q12)
- BCL2 (18q21.3)
- XIST (Xq13.2)

Vascular Tumors
- CAMTA1/WWTR1 (1;3)

Wilms Tumor
- WT1 (11p13)
- NTRK3 (15q25.3)
- HMGA2 (12q14.3)
- SMARCB1 (22q11.2)

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