BIOCARE MEDICAL

FISH Probe | Organ / Disease

Dive into *in situ* hybridization (ISH) with Biocare's new FISH probes. Updated sequence-specific probes with Clear-View FISH™ labeling technology are available for cancer and disease states – yielding clear results with less ambiguity. Patent-pending del-TECT™ probe design virtually eliminates error due to the truncation artifact in FFPE tissues giving you more confidence in less time.

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Prostate

With disease panels like PTEN, TMPRSS2/ERG and Androgen Receptor (AR), more informative disease stratification is possible[1]. MYC amplification and NKX3.1 allelic loss are significant predictors of prostate cancer progression and aggressiveness[2,3]. The novel tumor suppressor PHLPP1 is deleted as frequently as PTEN in prostate cancer, and may represent a therapeutic target for suppressing oncogenic pathways[4].

Probe Name	Target	Colors	Catalog Number
PTEN-del-TECT™ Four Color	PTEN		CYMO-PND-23-100
ERG Break-Apart (21q22)	ERG (BA)		CYMO-EG-14-100
TMP/ERG del-TECT™Four Color	ERG		CYMO-21D-23-100
AR (Xq12) + Copy Control Xp11.21	AR		CYMO-AR-14-100
8p del NKX del cMYC del-TECT™ Four Color	NKX3.1		CYMO-NM-23-100
MYC – 8q24 Single Color	MYC		CYMO-MC-8-100
MYC 8q24 Single Color + Copy Control 8	MYC		CYMO-MY8-10-100
MYC Break Apart – 8q24	MYC		CYMO-MC-10-100
PHLPP1 + Copy Control 18	PHLPP1		CYMO-P118-14-100

Lung

Recently, the ALK-EML4 fusion gene has been shown to be an important biomarker for ALK tyrosine kinase inhibitor (crizotinib) treatment in NSCLC[5], and Biocare's unique ALK-EML4 Tri-Color allows detection of ALK break-apart and EML4 fusion in the same test. Patients with either ROS1 rearrangement or MET amplification have also been shown to respond to crizotinib treatment[6,7]. Other small molecule kinase inhibitors have shown activity against RET break apart mutants[8].

Probe Name	Target	Colors	Catalog Number
ALK Break Apart – 2p23.2 FISH Probe	ALK (BA)		CYMO-AK-10-100
ALK Break Apart – 2p23.2 FISH Probe	ALK (BA)		CYMO-AK-14-100
ALK-EML4 Tri-Color	ALK-EML4		CYMO-AET-15-100
ALK-EML4 del-TECT™ Four Color Panel FISH Probe	ALK-EML4		CYMO-AR-14-100
ROS1 Break Apart FISH Probe	ROS1		CYMO-R1-10-100
RET1 (10q11) Break Apart	RET		CYMO-RT-10-100
MET (7q31) + Copy Control 7	MET		CYMO-M7-10-100

Melanoma

Cytogenetic abnormalities in RREB1, MYB, and CCND1 loci detected by FISH are sensitive and specific markers of malignancy valuable for differentiating between benign and malignant melanocytic lesions[9]. CDKN2A is frequently deleted in melanoma of all primary subtypes[10], and loss of both CDKN2A and CCND1 correlate with poor responses to inhibitor therapy[11].

Probe Name	Target	Colors	Catalog Number
RREB1 (6p25)	RREB1		CYMO-RB1-8-025
RREB1 (6p25) + Copy Control 6 (6q11.1)	RREB1		CYMO-RB1-10-100
COPY CONTROL PROBE 6	Copy Control 6		CYMO-CC6-1-025
MYB 6q21/6q23 del	MYB		CYMO-MBD-14-100
CCND1 (BCL1) - 11q13	CCND1/BCL1		CYMO-C1-8-100
CCND1 – 11q13 + Copy Control 11	CCND1/BCL1		CYMO-C1-10-100
CDKN2A (p16) 9p21	CDKN2A		CYMO-CA-8-025
CDKN2A (p16) 9p21 + Copy Control 9	CDKN2A		CYMO-CA9-10-100
CDKN2A del-TECT™ Four Color	CDKN2A		CYMO-CA-23-100

Cervical

Amplification of TERC appears to be an important associated genetic event in the progression of cervical dysplasia to invasive cancer[12]. 5p15.2 is another locus which displays significant amplification in association with progression to aggressive disease[13]. Increases in genes at and near 20q13 have been specifically associated with cervical cancer progression to higher grade lesions[14].

Probe Name	Target	Colors	Catalog Number
TERC (3q26) Single Color	TERC (3q26)		CYMO-TC-8-025
5p15.2 Single Color	5p15.2		CYMO-5P-2-025
20q13.2	20q13 (ZNF217)		CYMO-Z17-8-025
TERC (3q)/5p15/20q13/Copy Control 10	3q26/5p15.2/20q13/CC10		CYMO-T5Z1-23-100

Gastric/Esophageal

The set of FISH probes consisting of MYC, CDKN2A (9p21), ERBB2 (HER-2), and 20q13.2 can provide high sensitivity and specificity for the detection of Barrett's associated neoplasia and allow for the differentiation between esophageal adenocarcinoma and high-grade dysplasia (EAC/HGD) or low-grade dysplasia and non-dysplasia (LGD/ND)[15].

Probe Name	Target	Colors	Catalog Number
CDKN2A (p16) 9p21	CDKN2A		CYMO-CA-8-025
CDKN2A (p16) 9p21 + Copy Control 9	CDKN2A		CYMO-CA9-10-100
CDKN2A del-TECT™ Four Color	CDKN2A		CYMO-CA-23-100
MYC – 8q24 Single Color	MYC		CYMO-MC-8-100
MYC 8q24 Single Color + Copy Control 8	MYC		CYMO-MY8-10-100
MYC Break Apart – 8q24	MYC		CYMO-MC-10-100
ERBB2 Orange	ERBB2 (HER-2)		CYMO-E2-8-025
ERBB2 Red	ERBB2 (HER-2)		CYMO-E2-12-025
ERBB2 (17q12) Orange + CC 17 Green	ERBB2 (HER-2)		CYMO-E2-10-100
ERBB2 (17q12) Red + CC 17 Green	ERBB2 (HER-2)		CYMO-E2-14-100
20q13.2	20q13 (ZNF217)		CYMO-Z17-8-025

Bladder

Amplification at the 5p15.2 locus is strongly linked to high-grade, advanced-stage bladder tumors and rapid tumor cell proliferation in urinary cancer[16]. Cytogenetic analysis demonstrated that 5p might be involved in translocations and/or formation of isochromosomes in a substantial number of bladder tumors[17]. Gains at Chromosomes 3, 7, and 10 are seen more frequently in invasive urothelial tumors[18].

Probe Name	Target	Colors	Catalog Number
5p15.2 Single Color	5p15.2		CYMO-5Pu-12-100
Copy Control 10	Copy Control 10		CYMO-CC10u-2-100
Copy Control 3	Copy Control 3		CYMO-CC3u-1-100
Copy Control 7	Copy Control 7		CYMO-CC7u-8-100

Breast

Amplification of HER-2 has been demonstrated to predict poor clinical outcome in breast cancer patients, and is shown to be associated with resistance to certain chemotherapeutic agents[19,20]. Determining amplification of HER-2 is crucial in the guidance of treatment decisions for the use of HER-2-targeted therapies, and is becoming a standard recommendation in the pretreatment work-up of patients with invasive breast cancer[21]. Loss of PTEN may have prognostic significance in breast cancer, and was shown to be associated with poor clinical outcome in HER-2-positive disease[22,23].

Probe Name	Target	Colors	Catalog Number
ERBB2 Orange	ERBB2 (HER-2)		CYMO-E2-8-025
ERBB2 Red	ERBB2 (HER-2)		CYMO-E2-12-025
ERBB2 (17q12) Orange + CC 17 Green	ERBB2 (HER-2)		CYMO-E2-10-100
ERBB2 (17q12) Red + CC 17 Green	ERBB2 (HER-2)		CYMO-E2-14-100
PTEN-del-TECT™ Four Color	PTEN		CYMO-PND-23-100

Gliomas

Co-deletion of chromosomes 1p and 19q is characteristic of oligodendrogliomas, and is associated with improved prognosis and responsiveness to therapy in those patients[24,25]. Whereas, combined losses of 1p and 19q are quite rare in high-grade astrocytomas[26]. Biocare's 4-color 1p/19q FISH Panel will allow differentiation of astrocytoma from oligodendroglioma.

Probe Name	Target	Colors	Catalog Number
1q25 + 1p36	1q25 + 1p36		CYMO-2536-14-100
19q13 + 19p13	19q13 + 19p13		CYMO-19QP-14-100
1p/19q Four Color	1p/19q (4-Color)		CYMO-1P19-23-100
PTEN-del-TECT™ Four Color	PTEN		CYMO-PND-23-100

References

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