BIOCARE MEDICAL

FISH Probe Panels | Hematology / Oncology

The use of FISH (Fluorescence *in situ* Hybridization) in the study of hematological cancers has grown significantly in the last decade. All the major hematologic malignancies have been associated with an array of genetic anomalies that are readily revealed by FISH. Thus we are now in an era of FISH probe "panels" that can be routinely applied to understand the underlying genetics of these cancers. This information is useful in predicting cancer progression and aggressiveness.

Chronic Lymphocytic Leukemia

(CLL) comprises about 10% of all hematologic cancers but among leukemias is the most common one in adults. Biocare's CLL panel includes the IGH break apart probe since the status of this locus is used to divide CLLs into two main groups with opposite outcome expectations. TP53/CC17 is included since its deletion is another indicator of poor outcome. Even though rare, the deletion of 11q (probe ATM - 11q22.3) has an impact on disease aggressiveness. CC12 is included for the detection of trisomy 12 and finally D13S25/LAMP1 Control – 13q14.3/13q34 is on the panel since 50% of CLL patients carry a 13q deletion and this is associated with more positive outcome[1,2].

Multiple Myeloma

(MM) is the second most common hematologic cancer. Biocare's panel for studying MM contains two of the IGH probes from the NHL panel, the TP53/CC17 probe, as well as several additional IGH-based probes covering translocations between IGH and FGFR3, CCND1, and MAF[3]. Two probes for the analysis of deletions of the long arm of chromosome 13 (13q) and several chromosomal copy controls (CC3, CC8, CC9) as gains have been observed among many chromosomes in the progression of MM Chromosome 5 amplification has been associated with good outcome in MM and so two probes, EGR1 – 5q31.2/CSF1R-5q32 and 5p15.2, are included in the panel. Amplification of chromosome 1 is associated with negative outcome and so probe set 1q21+1p21 is also on the panel[4,5,6].

Non-Hodgkin's Lymphoma

(NHL) comprises nearly 50% of hematologic cancers and Biocare has a full panel of FISH probes directed against the most commonly observed genetic alterations. This includes the IGH break apart as well as three IGH translocations-MYC, BCL2, and CCND1[7,8]. Three additional break apart assays are available: ALK, BCL6, and MALT1. The panel is rounded out by TP53/CC17 and CC8 and CC12 probes in multiple colors. High Grade/Large B-Cell Lymphoma (HGLBCL) is a sub-type of NHL which is characterized by aberrations in the MYC gene[9].

Myelodysplastic Syndrome

(MDS) is not a hematologic cancer but rather it can lead to cancer (acute myelogenous leukemia, AML) or, more frequently, can lead to death from cytopenia-related conditions. Several chromosome abnormalities are associated with MDS—deletion of 5q, chromosome 7, and 20q and gain of chromosome 8—the Biocare panel includes probes appropriate for these detections. Also included are 5p15.2 and MLL break apart – 11q23 since deletions at these loci have also been associated with MDS[10,11].

Ordering Information

Product Name	Colors	Catalog Number	CLL	MDS	MM	NHL	HGLBCL
IGH Break Apart - 14q32		CYMO-IH-10-100	●		●	●	
IGH/MYC - t(8;14)(q24;q32)		CYMO-IMC-10-100				●	
IGH/BCL2 - t(14;18)(q32;q21)		CYMO-IB2-10-100				●	●
IGH/CCND1 - t(11;14)(q13;q32)		CYMO-IC1-10-100			●	●	
TP53 - 17p13 + Copy Control 17		CYMO-P53-10-100	●		●	●	
ALK Break Apart - 2p23.2		CYMO-AK-10-100				●	
BCL6 Break Apart - 3q27		CYMO-B6-10-100				●	●
MALT1 BA - 18q21		CYMO-MBA-10-100				●	
Copy Control 8		CYMO-CC8-8(12/2)-025			●	●	
Copy Control 12		CYMO-CC12-1(2)-025	●			●	
MYC - 8q24 Single Color		CYMO-MC-2-100					●
MYC Break Apart - 8q24		CYMO-MC-10-100					●
IGH/FGFR3 - t(4;14)(p16.3;q32)		CYMO-IF-10-100			●		
IGH/CCND1/FGFR3 - t(4;11;14)(p16.3;q13;q32)		CYMO-IC1F-11-100			●		
IGH/MAF - t(14;16)(q32;q23)		CYMO-IMF-10-100			●		
D13S25/LAMP1 Control - 13q14.3/13q34		CYMO-DL-10-100	●		●		
13q del Tri-Color - D13S319/D13S25/RB1		CYMO-13Q-15-100	●		●		
1q21 + 1p21		CYMO-1QP-10-100			●		
Copy Control 3		CYMO-CC3-1(2)-025			●		
Copy Control 9		CYMO-CC9-8(12)-025			●		
EGR1 - 5q31.2/CSF1R - 5q32		CYMO-5QD-10-100		●	●		
5p15.2		CYMO-5P-2(12)-025		●	●		
7q31 + Copy Control 7		CYMO-7Q-10-100		●			
20q12		CYMO-20Q-8-025		●			
MLL Break Apart -11q23		CYMO-ML-10-100		●			
ATM - 11q22.3		CYMO-AM-8-025	●				

1. Dicker F, *et al.* Leukemia. 2009 23:117-124. 2. Nelson BP, *et al.* Am J Clin Pathol. 2007 Aug; 128(2):323-32. 3. Hwang Y, *et al.* Int J Lab Hematol. 2011 Jun;33(3):299-304. 4. Pratt G, Mol Pathol. 2002 Oct;55(5)273-83. 5. Shaughnessy Jr. J, *et al.* Blood. 2000 Aug;96(4)1505-11. 6. Chen L, *et al.* Blood. 2010 Jan;115(1):61-70. 7. Horner MJ, *et al.* SEER Cancer Statistics Review, 1975-2006. National Cancer Institute. 8. Pospisilova H, *et al.* Leukemia. 2007 21:2079-83. 9. Zhou K, *et al.* PLoS One. 2014 APR;9(4):95020. 10. Ebert BL, Semin Oncol. 2011 Oct;38(5)621-6. 11. Haase D, Ann Hematol. 2008 Jul;87(9):515-26.

BIOCARE MEDICAL
800.799.9499
4040 Pike Lane
Concord CA 94520
www.biocare.net