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Product Data Sheet
MDS FISH Probe Cocktails

Catalog #'s: MDS-A, MDS-B

Product Contents:

This Product insert covers two independent FISH probe cocktails, "MDS FISH Probe Cocktail Mix A", and "MDS FISH Probe Cocktail Mix B". The MDS FISH Probe Cocktails are provided ready to use in hybridization buffer. Blocking DNA is included to suppress non-specific binding to similar sequences outside of the indicated binding sites. Researchers are advised to optimize slide processing and hybridization conditions.

Volume: 250µl
Reactions: 50 (5µl/ reaction)

Included FISH Probes:

The following table indicates each of the individual FISH probes and associated colors included in the "**MDS FISH Probe Cocktail Mix A**".

Gene	Locus	Purpose	Color	Dye	Absorbance	Emission
EGR1	5q31	5q Deletion	Gold	Alexa532	532	554
CTNND2	5p15	Control for chrom. 5	Green	Alexa488	495	519
N/A	CEN 8	Trisomy 8	Aqua	DEAC	432	472

The following table indicates each of the individual FISH probes and associated colors included in the "**MDS FISH Probe Cocktail Mix B**".

Gene	Locus	Purpose	Color	Dye	Absorbance	Emission
ZNF217	20q13	20q Deletion	Red	Alexa594	590	615
N/A	CEN 20	Control for chrom. 20	Green	Alexa488	495	519
MET	7q31	7q Deletion	Gold	Alexa532	532	554

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Clinical Relevance:

Myelodysplastic syndrome (MDS) is a heterogeneous group of hematopoietic stem-cell disorders characterized by progressive bone marrow failure, which can lead to bleeding, infections, and complications secondary to anemia. Approximately 35% to 40% of patients diagnosed with MDS progress to the more severe acute myeloid leukemia (AML). While the absence of any cytogenetic abnormalities confers the best prognosis, more than 50% of patients with MDS have clonal cytogenetic abnormalities. While the clinical significance for some of these abnormalities is still being elucidated, clinical significance has been established for some of the more common cytogenetic abnormalities. (1,2,3,4,5)

5q Deletion: Deletions of the long arm of chromosome 5 are the most common cytogenetic abnormality observed in MDS patients with cytogenetic abnormalities (~30%) and when observed without other abnormalities confer a good prognosis. While the region of 5q deleted is variable, deletions most commonly center around the 5q31 or 5q32 loci and encompasses a region with numerous genes associated with hematopoiesis. (1,2)

20q Deletion: Deletions of the long arm of chromosome 20 are a relatively rare event in MDS patients with cytogenetic abnormalities (~2%) but are associated with a good prognosis when not observed with other cytogenetic abnormalities. While the region of 20q deleted is variable, the minimum common deleted region encompasses 20q13. (1,3)

7q Deletion: Monosomy 7 or deletions of the long arm of chromosome 7 are the second most commonly observed cytogenetic abnormality in MDS patients and are associated with a poor prognosis. While a minimum commonly deleted region has not been identified, the most commonly deletion region includes 7q22.1 to 7q31.31. (1,4).

Trisomy 8: Trsiomy 8 is observed in approximately 10% of MDS patients with cytogenetic abnormalities and is associated with an intermediate prognosis. (1,5).

Probe Specifications:

Centromere Specific Probe Specifications:

Each of the centromere specific probes target the α-satellite region of the centromere specific for the indicated chromosome.

Locus Specific Probes:

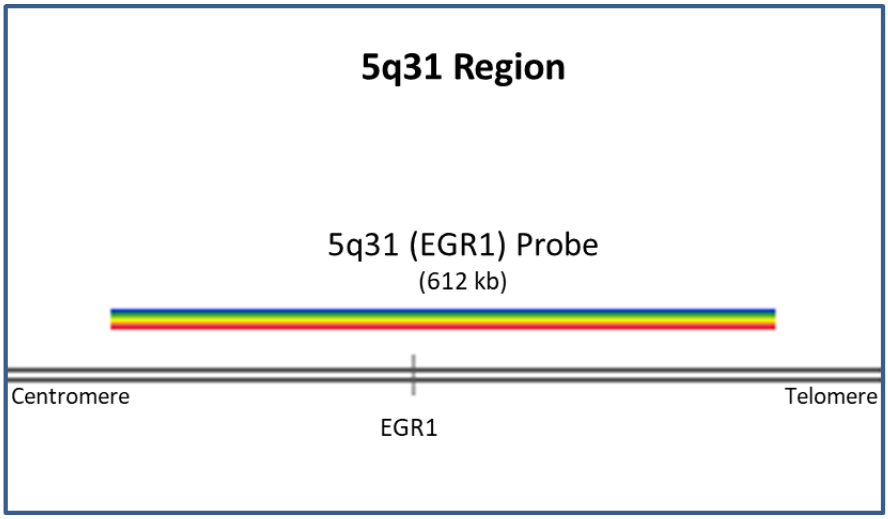
Probe and target gene boundaries are indicated in relation to proximity to the centromere or telomere.

EGR1 (5q31) Probe Specifications:

	Target			Probe		
Locus	Gene	Centromere	Telomere	Centromere	Telomere	Size (Kb)
5q31	EGR1	138,465,479	138,469,303	138,187,787	138,800,023	612

Positions are based on UCSC genome assembly GRCh38/hg38.

Probe Map:

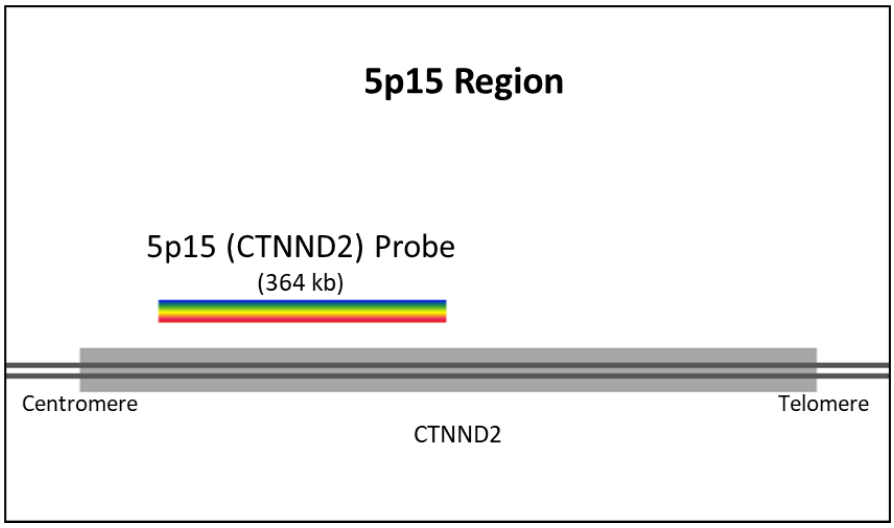


CTNND2 (5p15) Probe Specifications:

Locus	Target			Probe		
	Gene	Centromere	Telomere	Centromere	Telomere	Size (Kb)
5p15	CTNND2	10,971,952	11,904,110	11,070,648	11,434,358	364

Positions are based on UCSC genome assembly GRCh37/hg19.

Probe Map:

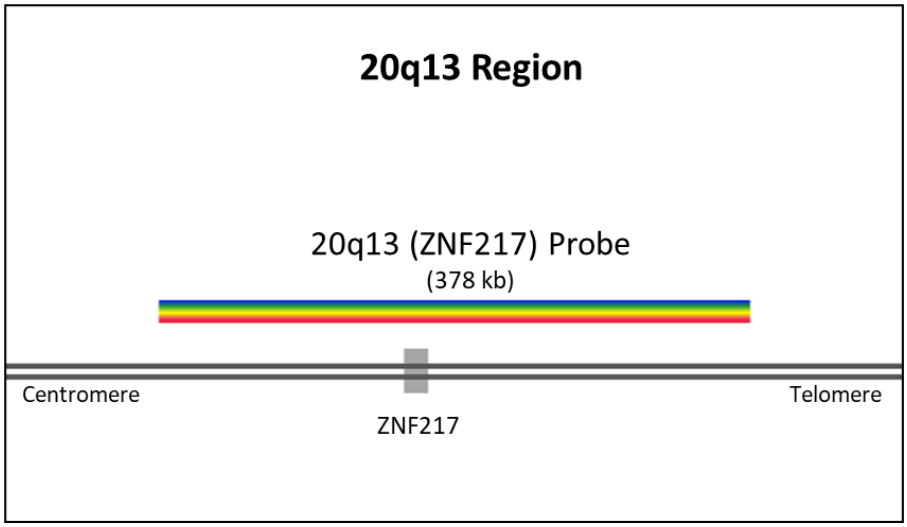


ZNF217 (20q13) Probe Specifications:

Locus	Target			Probe		
	Gene	Centromere	Telomere	Centromere	Telomere	Size (Kb)
20q13	ZNF217	52,183,610	52,199,636	52,026,197	52,404,557	378

Positions are based on UCSC genome assembly GRCh37/hg19.

Probe Map:

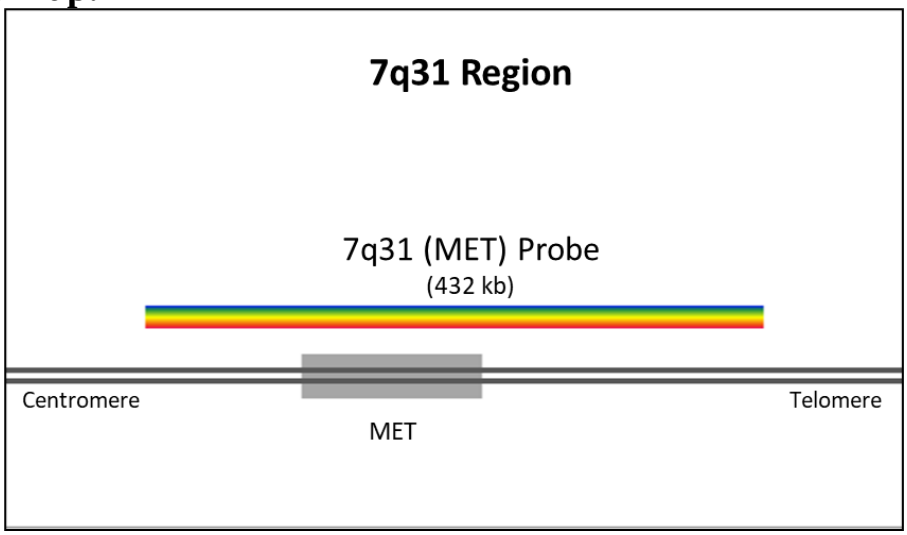


MET (7q31) Probe Specifications:

Locus	Target			Probe		
	Gene	Centromere	Telomere	Centromere	Telomere	Size (Kb)
7q31	MET	116,312,459	116,438,440	116,202,386	116,634,729	432

Positions are based on UCSC genome assembly GRCh37/hg19.

Probe Map:



Storage:

Store at +4°C to -20°C
Protect from direct light.

References:

1. Shyamala C. Navada, MD, Allison Chatalbash, MD, Lewis R. Silverman, MD, Clinical Significance of Cytogenetic Manifestations in Myelodysplastic Syndromes, Laboratory Medicine, Volume 44, Issue 2, May 2013, Pages 103–107, https://doi.org/10.1309/LMSZ0MFKXTY4PGL1
2. Ebert BL. Molecular dissection of the 5q deletion in myelodysplastic syndrome. Semin Oncol. 2011 Oct;38(5):621-6. doi: 10.1053/j.seminoncol.2011.04.010. PMID: 21943668; PMCID: PMC3183434.
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4. Claudia Haferlach, Annette Fasan, Manja Meggendorfer, Melanie Zenger, Susanne Schnittger, Wolfgang Kern, Torsten Haferlach; Myeloid Malignancies with Isolated 7q Deletion Can be Further Characterized By Their Accompanying Molecular Mutations. Blood 2015; 126 (23): 3811. doi: https://doi.org/10.1182/blood.V126.23.3811.3811.
5. Drevon, L., Marceau, A., Maarek, O., Cuccuini, W., Clappier, E., Eclache, V., Cluzeau, T., Richez, V., Berkaoui, I., Dimicoli-Salazar, S., Bidet, A., Vial, J.-P., Park, S., Vieira Dos Santos, C., Kaphan, E., Berthon, C., Stamatoullas, A., Delhommeau, F., Abermil, N., Braun, T., Sapena, R., Lusina, D., Renneville, A., Adès, L., Raynaud, S. and Fenaux, P. (2018), Myelodysplastic syndrome (MDS) with isolated trisomy 8: a type of MDS frequently associated with myeloproliferative features? A report by the Groupe Francophone des Myélodysplasies. Br J Haematol, 182: 843-850. https://doi.org/10.1111/bjh.15490.

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