ZytoLight® Probes for Chromosome Enumeration

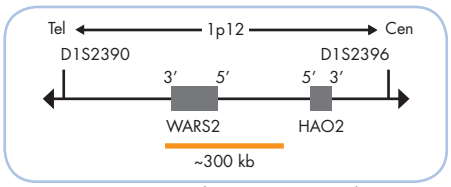
Background

The ZytoLight® Chromosome Enumeration Probes are designed for identification and enumeration of human chromosomes in interphase cells and as an adjunct to standard karyotyping in metaphases. These probes will produce sharp, bright signals specific for each individual chromosome.

Probe Description

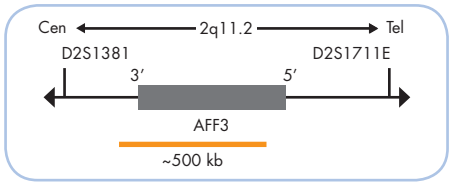
For most chromosomes, direct labeled ZytoLight® CEN™ Probes hybridizing to highly repetitive human satellite DNA sequences mainly located at the centromeric regions of chromosomes are applicable. As several chromosomes share the same repetitive sequences resulting in cross-hybridization signals, they cannot be differentiated by centromere specific probes. Instead, these chromosomes can be identified by direct labeled ZytoLight® SPEC™ Probes hybridizing in close proximity to the respective satellite DNA sequences or to other chromosome specific loci.

The ZytoLight® SPEC 1p12 Probe is designed to hybridize in close proximity of centromere 1 at 1p12 harboring WARS2, and HAO2. Since chromosomes 1, 5, and 19 share the same repetitive sequences, they cannot be differentiated by probes detecting centromere specific repeats.



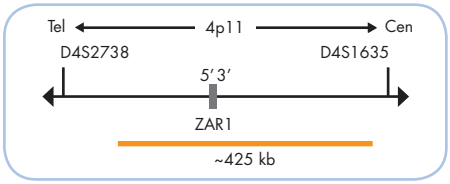
SPEC 1p12 Probe map (not to scale).

The ZytoLight® SPEC 2q11 Probe is specific for the AFF3 (AF4/FMR2 family, member 3) gene region in 2q11.2. Due to cross-hybridizations of chromosome 2 alpha satellites to other centromeric regions, probes specific for 2q11 are frequently used for chromosome 2 copy number detection.



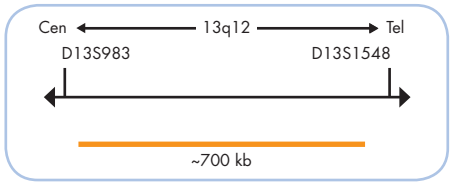
SPEC 2q11 Probe map (not to scale).

The ZytoLight® SPEC 4p11 Probe is designed to hybridize in close proximity of centromere 4 at 4p11 harboring the ZAR1 (zygote arrest 1) gene. For an unambiguous enumeration of chromosome 4 the SPEC 4p11 is found to be more suitable.



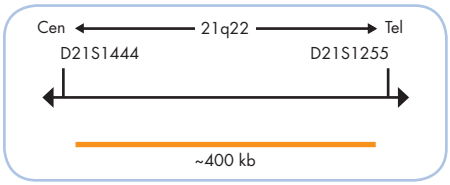
SPEC 4p11 Probe map (not to scale).

The ZytoLight® SPEC 13q12 Probe is designed to hybridize in close proximity of centromere 13 at 13q12. Since chromosomes 13 and 21 share the same repetitive sequences, they cannot be differentiated by probes detecting centromere specific repeats.



SPEC 13q12 Probe map (not to scale).

The ZytoLight® SPEC 21q22 Probe hybridizes to the so-called Down Syndrome Critical Region on 21q22 commonly duplicated in cases with partial trisomy 21. Since chromosomes 13 and 21 share the same repetitive sequences, they cannot be differentiated by probes detecting centromere specific repeats.



SPEC 21q22 Probe map (not to scale).

ZytoLight® FISH probes are direct labeled using the unique ZytoLight® *Direct Label System II* providing improved signal intensity. Advanced specificity of the single copy SPEC probes is obtained by the unique ZytoVision® *Repeat Subtraction Technique.*

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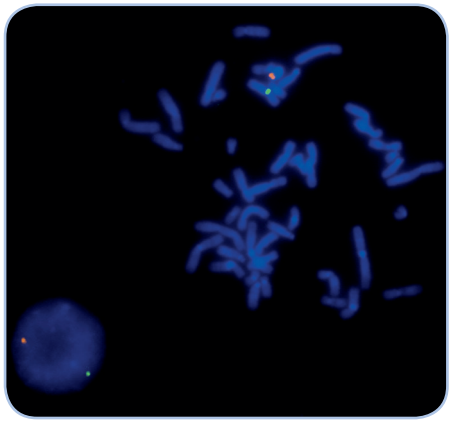
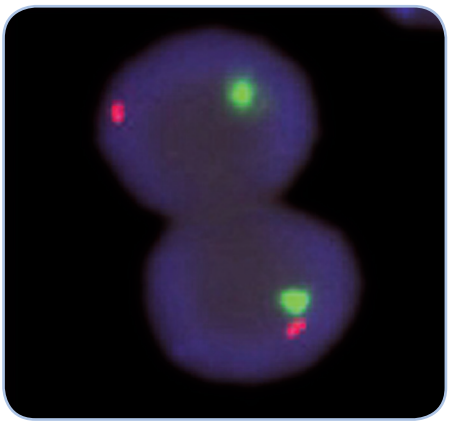
Results

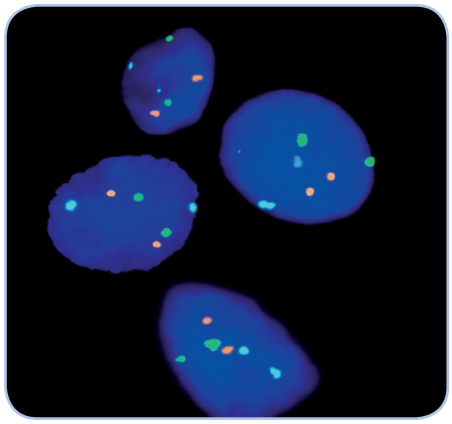
In a normal interphase nucleus, two signals are expected using Chromosome Enumeration Probes specific for autosomes. Using chromosome Y specific probes will result in normal male cells in one signal and in normal female cells in no signal. Using chromosome X specific probes will result in normal male cells in one signal and in normal female cells in two signals per nucleus. Other signal patterns indicate numerical aberrations of the respective chromosome.



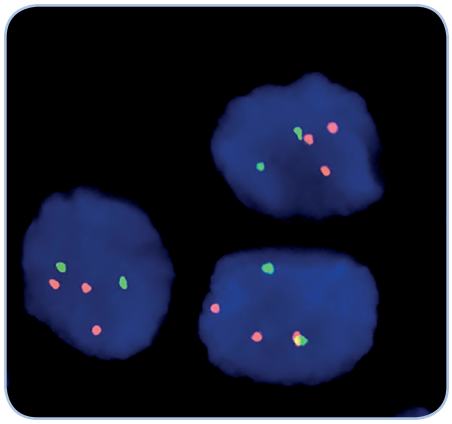
CEN X/Y Dual Color Probe on a metaphase spread.



CEN X/Yq12 Dual Color Probe on interphase cells.



SPEC 13/CEN 18/SPEC 21 Triple Color Probe on cytology specimen.



SPEC 13/21 Dual Color Probe on interphase cells with trisomy of chromosome 21 (orange).

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Prod. No.	Product	Alpha/Class. Sat.	Chr. Band	Label	Tests* (Volume)
Z-2101-200	ZytoLight SPEC 1p12 Probe CE IVD	-	1p12	●	20 (200 µl)
Z-2049-200	ZytoLight SPEC 2q11 Probe	-	2q11.2	●	20 (200 µl)
Z-2001-200	ZytoLight CEN 3 Probe	D3Z1	3p11-q11.1	●	20 (200 µl)
Z-2083-200	ZytoLight SPEC 4p11 Probe	-	4p11	●	20 (200 µl)
Z-2002-200	ZytoLight CEN 6 Probe	D6Z1	6p11.1-q11.1	●	20 (200 µl)
Z-2003-200	ZytoLight CEN 7 Probe	D7Z1	7q11.1	●	20 (200 µl)
Z-2004-200	ZytoLight CEN 8 Probe CE IVD	D8Z2	8p11.1-q11.1	●	20 (200 µl)
Z-2067-200	ZytoLight CEN 9 Probe	III D9Z3	9q12	●	20 (200 µl)
Z-2079-200	ZytoLight CEN 10 Probe	D10Z1	10p11.1-q11.1	●	20 (200 µl)
Z-2005-200	ZytoLight CEN 11 Probe	D11Z1	11p11.1-q11	●	20 (200 µl)
Z-2050-200	ZytoLight CEN 12 Probe CE IVD	D12Z3	12p11.1-q11	●	20 (200 µl)
Z-2085-200	ZytoLight SPEC 13q12 Probe CE IVD	-	13q12	●	20 (200 µl)
Z-2095-50	ZytoLight SPEC 13/CEN 18/SPEC 21 Triple Color Probe CE IVD	D18Z1	13q12/18p11.1-q11.1/21q22	●/●/●	5 (50 µl)
Z-2095-200	ZytoLight SPEC 13/CEN 18/SPEC 21 Triple Color Probe CE IVD	D18Z1	13q12/18p11.1-q11.1/21q22	●/●/●	20 (200 µl)
Z-2164-200	ZytoLight SPEC 13/21 Dual Color Probe CE IVD	-	13q12/21q22	●/●	20 (200 µl)
Z-2006-200	ZytoLight CEN 17 Probe CE IVD	D17Z1	17p11.1-q11.1	●	20 (200 µl)
Z-2007-200	ZytoLight CEN 18 Probe	D18Z1	18p11.1-q11.1	●	20 (200 µl)
Z-2086-200	ZytoLight SPEC 21q22 Probe CE IVD	-	21q22	●	20 (200 µl)
Z-2180-200	ZytoLight SPEC 21/CEN X/Yq12 Triple Color Probe CE IVD	DXZ1/ III DYZ1	21q22/Xp11.1-q11.1/Yq12	●/●/●	20 (200 µl)
Z-2008-200	ZytoLight CEN X Probe	DXZ1	Xp11.1-q11.1	●	20 (200 µl)
Z-2010-200	ZytoLight CEN Yq12 Probe	III DYZ1	Yq12	●	20 (200 µl)
Z-2123-200	ZytoLight CEN Y (DYZ3) Probe CE IVD	DYZ3	Yp11.1-q11.1	●	20 (200 µl)
Z-2016-200	ZytoLight CEN X/Yq12 Dual Color Probe CE IVD	DXZ1/ III DYZ1	Xp11.1-q11.1/Yq12	●/●	20 (200 µl)
Z-2016-50	ZytoLight CEN X/Yq12 Dual Color Probe CE IVD	DXZ1/ III DYZ1	Xp11.1-q11.1/Yq12	●/●	5 (50 µl)
Z-2120-200	ZytoLight CEN X/Y Dual Color Probe CE IVD	DXZ1/ DYZ3	Xp11.1-q11.1/Yp11.1-q11.1	●/●	20 (200 µl)
Related Products					
Z-2104-10	ZytoLight Aneusomy Probe Set CE IVD Incl. ZytoLight CEN X/Yq12 Dual Color Probe, 0.05 ml; ZytoLight SPEC 13/CEN 18/SPEC 21 Triple Color Probe, 0.05 ml				10
Z-2104-40	ZytoLight Aneusomy Probe Set CE IVD Incl. ZytoLight CEN X/Yq12 Dual Color Probe, 0.2 ml; ZytoLight SPEC 13/CEN 18/SPEC 21 Triple Color Probe, 0.2 ml				40
Z-2028-5	ZytoLight FISH-Tissue Implementation Kit CE IVD Incl. Heat Pretreatment Solution Citric, 150 ml; Pepsin Solution, 1 ml; Wash Buffer SSC, 150 ml; 25x Wash Buffer A, 50 ml; DAPI/DuraTect-Solution, 0.2 ml				5
Z-2028-20	ZytoLight FISH-Tissue Implementation Kit CE IVD Incl. Heat Pretreatment Solution Citric, 500 ml; Pepsin Solution, 4 ml; Wash Buffer SSC, 500 ml; 25x Wash Buffer A, 100 ml; DAPI/DuraTect-Solution, 0.8 ml				20
Z-2099-20	ZytoLight FISH-Cytology Implementation Kit CE IVD Incl. Cytology Pepsin Solution, 4 ml; 20x Wash Buffer TBS, 50 ml; 10x $MgCl_2$, 50 ml; 10x PBS, 50 ml; Cytology Stringency Wash Buffer SSC, 500 ml; Cytology Wash Buffer SSC, 500 ml; DAPI/DuraTect-Solution, 0.8 ml				20

** Using 10 µl probe solution per test. CE IVD only available in certain countries. All other countries research use only! Please contact your local dealer for more information.*

FE001-4-14

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