

ZytoLight® SPEC PTEN/CEN 10 Dual Color Probe



Background

The *ZytoLight*® SPEC PTEN/CEN 10 Dual Color Probe is designed for the detection of PTEN deletions frequently observed in many tumor types, including renal, melanoma, endometrial, breast, prostate, lung, bladder, and thyroid cancer but also in hematological neoplasms.

The tumor suppressor gene PTEN (phosphatase and tensin homolog deleted on chromosome ten), often referred to as MMAC1 (mutated in multiple advanced cancers 1), is located on 10q23.31 and encodes a 47 kDa dual-specificity phosphatase that has both lipid and protein phosphatase activity. Its inactivation results in constitutive activation of the PI3K/AKT pathway and in subsequent increase in protein synthesis, cell cycle progression, migration, and survival.

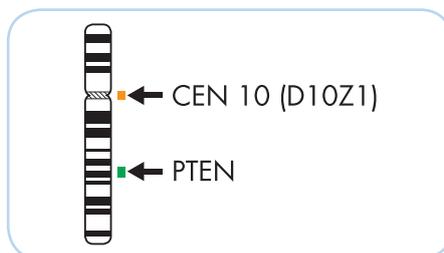
Deletions affecting the long arm of chromosome 10 have been detected in 30 to 50% of early and advanced stage sporadic melanomas and about 40 to 70% of prostate cancers. In both tumor entities loss of PTEN has been associated with poor clinical outcome. Currently, several drugs targeting the PI3K/AKT pathway for the therapy of solid tumors have entered clinical trials.

References

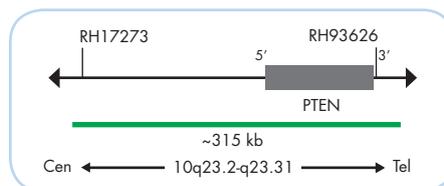
- Ach T, et al. (2013) *Virchows Arch* 462: 65-72.
- Dahia PLM, et al. (1999) *Hum Mol Genet* 8: 185-93.
- Ethel T, et al. (2012) *Br J Cancer* 106: 719-26.
- Ethel T, et al. (2014) *Head Neck* 36: 517-23.
- Healy E, et al. (1998) *Oncogene* 16: 2213-8.
- Li J, et al. (1997) *Science* 275: 1943-7.
- Swoboda A, et al. (2011) *Genes Chromosomes Cancer* 50: 680-8.
- Weng LP, et al. (2001) *Hum Mol Genet* 10: 599-604.
- Yoshimoto M, et al. (2006) *Cancer Genet Cytogenet* 169: 128-37.
- Yoshimoto M, et al. (2007) *Br J Cancer* 97: 678-85.

Probe Description

The SPEC PTEN/CEN 10 Dual Color Probe is a mixture of an orange fluorochrome direct labeled CEN 10 probe specific for the alpha satellite centromeric region of chromosome 10 (D10Z1) and a green fluorochrome direct labeled SPEC PTEN probe specific for the chromosomal region 10q23.2-q23.31 harboring the PTEN gene.



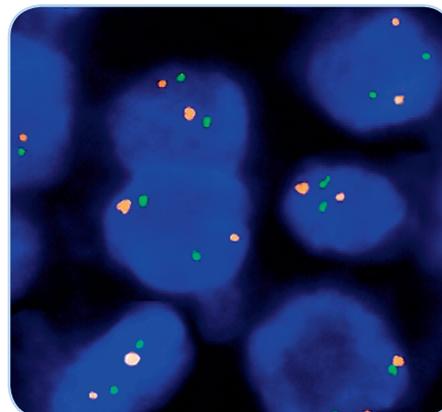
Ideogram of chromosome 10 indicating the hybridization locations.



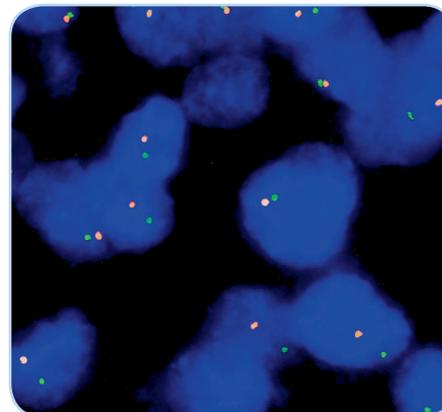
SPEC PTEN Probe map (not to scale).

Results

In a normal interphase nucleus, two orange and two green signals are expected. In a cell with deletions of the PTEN gene locus, a reduced number of green signals will be observed. Deletions affecting only parts of the PTEN gene might result in normal signal pattern with green signals of reduced size.



SPEC PTEN/CEN 10 Dual Color Probe hybridized to normal interphase cells as indicated by two orange and two green signals in each nucleus.



Melanoma tissue section with chromosome 10 monosomy as indicated by one orange and one green signal in each nucleus.

Prod. No.	Product	Label	Tests* (Volume)
Z-2078-50	<i>ZytoLight</i> SPEC PTEN/CEN 10 Dual Color Probe	●/●	5 (50 µl)
Z-2078-200	<i>ZytoLight</i> SPEC PTEN/CEN 10 Dual Color Probe	●/●	20 (200 µl)
Related Products			
Z-2028-5	<i>ZytoLight</i> FISH-Tissue Implementation Kit		5
Incl. Heat Pretreatment Solution Citric, 150 ml; Pepsin Solution, 1 ml; Wash Buffer SSC, 210 ml; 25x Wash Buffer A, 50 ml; DAPI/DuraTect-Solution, 0.2 ml			
Z-2028-20	<i>ZytoLight</i> FISH-Tissue Implementation Kit		20
Incl. Heat Pretreatment Solution Citric, 500 ml; Pepsin Solution, 4 ml; Wash Buffer SSC, 560 ml; 25x Wash Buffer A, 100 ml; DAPI/DuraTect-Solution, 0.8 ml			

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