

# ZytoDot® 2C SPEC TOP1 /CEN 20 Probe

## Background

The ZytoDot® 2C SPEC TOP1/CEN 20 Probe is designed for the detection of TOP1 gene amplifications.

The TOP1 (DNA topoisomerase I) gene is located in the chromosomal region 20q12 and encodes a DNA topoisomerase I, a nuclear enzyme that is required in replication and which is responsible for unwinding DNA and preventing lethal strand breaks.

The TOP1 locus appears to undergo frequent copy number alterations which are either focal in nature, e.g., amplicon-driven, or may involve larger chromosomal regions, such as 20q.

TOP1 copy number gain has been reported in several tumor entities, as e.g. breast cancer, melanoma, gastric cancer, and in colorectal cancer patients, TOP1 copy number increase seems to be associated with longer overall survival.

For metastatic colorectal cancer (mCRC), irinotecan is included in the treatment regimens. The active metabolite is SN-38, which is cytotoxic and destabilizes the TOP1-DNA covalent complex leading to cancer cell death. Studies evaluating the efficacy of this topoisomerase I inhibitor in metastatic breast cancer are currently ongoing.

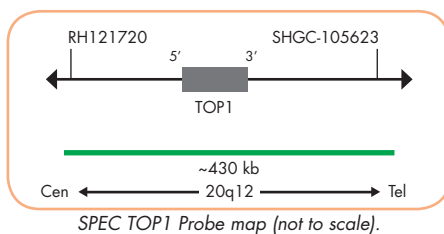
Thus, detection of TOP1 gene status by Chromogenic *in situ* Hybridization might be of predictive value.

### References

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- McLeod HL & Keith KN (1996) Br J Cancer 74: 508-12.
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- Rømer MU, et al. (2012) Mol Oncol 7: 101-11.
- Sønderstrup IM, et al. (2015) Mol Oncol 9: 1207-17.
- Stenvang J, et al. (2013) Front Oncol 3: 313.

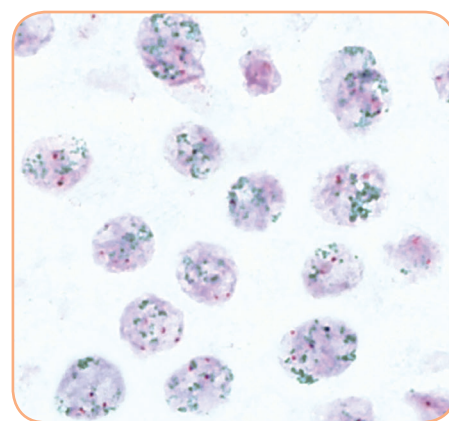
## Probe Description

The ZytoDot® 2C SPEC TOP1/CEN 20 Probe is a mixture of a Digoxigenin-labeled probe specific for the chromosomal region 20q12 harboring the TOP1 gene and a Dinitrophenyl-labeled CEN 20 probe specific for the alpha satellite centromeric region of chromosome 20 (D20Z2).



## Results

In a normal interphase nucleus, using the ZytoDot® 2C CISH Implementation Kit, two green (TOP1) and two red (CEN 20) signals are expected. In a cell with amplification or gain of the TOP1 gene locus, polysomy of chromosome 20, or gain of the chromosomal arm 20q, multiple copies of the green signal or green signal clusters will be observed.



Breast carcinoma tissue section with amplification of the TOP1 gene as indicated by multiple green signals in each nucleus.

Prod. No.	Product	Label	Tests* (Volume)
C-3069-400	ZytoDot 2C SPEC TOP1/CEN 20 Probe CE IVD	Digoxigenin/DNP	40 (400 µl)
<b>Related Products</b>			
C-3044-40	ZytoDot 2C CISH Implementation Kit CE IVD		40
<small>Incl. Heat Pretreatment Solution EDTA, 500 ml; Pepsin Solution, 4ml; Wash Buffer SSC, 560 ml; 20x Wash Buffer TBS, 2x 50 ml; Anti-DIG/DNP-Mix, 4 ml; HRP/AP-Polymer-Mix, 4 ml; AP-Red Solution A, 0.4 ml; AP-Red Solution B, 15 ml; HRP-Green Solution A, 0.8 ml; HRP-Green Solution B, 15 ml; Nuclear Blue Solution, 20 ml; Mounting Solution (alcoholic), 4 ml</small>			

\* 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.