DNAscope™ DUPLEX ASSAY

SPATIAL IS IN OUR DNA

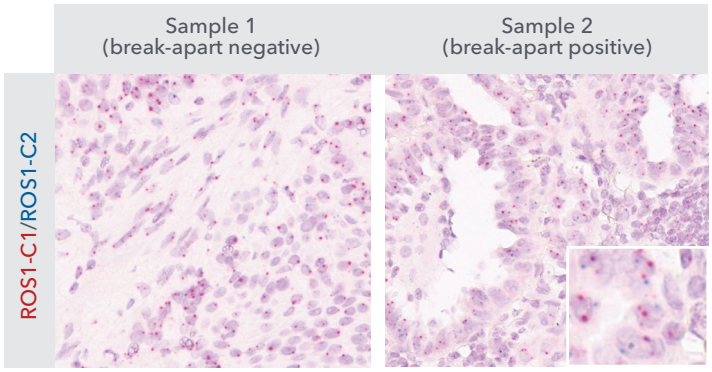
ACD™
a bio-techne® brand

BRINGING MOLECULAR CYTOGENETIC ANALYSIS TO YOUR BENCH

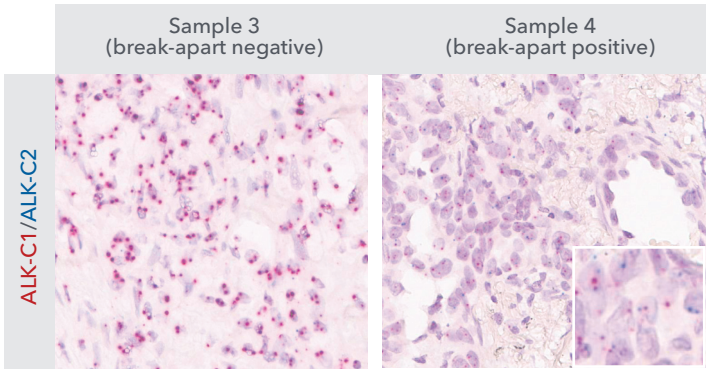
CHROMOGENIC DETECTION OF DNA FOR EASE OF VISUALIZATION

For accurate and reliable detection of DNA aberrations current commercial FISH techniques fall short on morphological detail due to the use of fluorescent nuclear staining and rely on expensive high-resolution microscopes to visualize gene rearrangement and copy number variation signals. Additionally, use of Bacterial Artificial Chromosome (BAC) clone-based probes that are large and tend to span multiple genes, lack single gene detection specificity limiting the scale and development of DNA research

To overcome these limitations, we are introducing a new **chromogenic DNA *in situ* hybridization (ISH)** technology. DNAscope™ employs the proven "double-Z" probe design and signal amplification system of RNAscope™, enabling **rapid and flexible** probe development for **any DNA target enabling visualization of target** in paraffin embedded tissues.

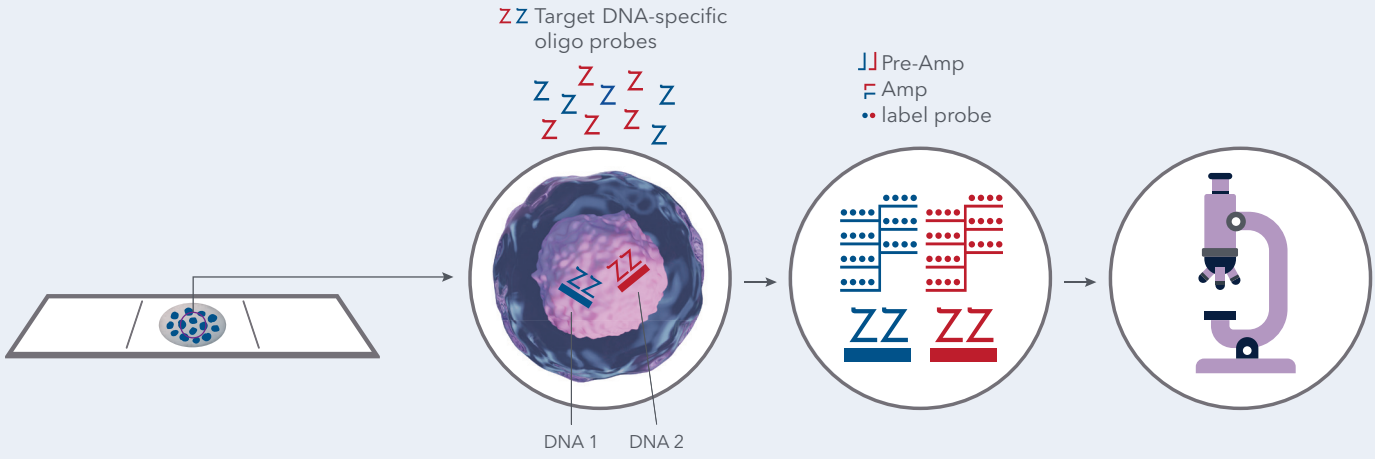


Sample 2 tumor appeared to be positive for ROS1 gene rearrangement indicated by break-apart event visualized as bright blue dots.



Sample 4 tumor appeared to be positive for ALK gene rearrangement indicated by break-apart event visualized as bright blue dots.

SIMPLIFIED WORKFLOW FOR RAPID RELIABLE DNA DETECTION



Tissue Section

Start with properly prepared tissue sections and pretreat to allow access to target DNA

Hybridize to target DNA

Hybridize two sets of target specific ZZ probes to two DNA targets

Amplify Signal

Capture a cascade of signal amplification molecules into each target via hybridization

Image at 40x

Visualize target DNA using a standard bright-field microscope

The DNAscope chromogenic duplex (red/blue) staining allows researchers to use a standard bright-field microscope to visualize and quantify gene copy number variations (amplifications/deletions) and gene rearrangements/fusions in tissues with spatial and morphological context at single cell resolution.

KEY ADVANTAGES

Brightfield Visualization enabling Easy data Interpretation and Analysis

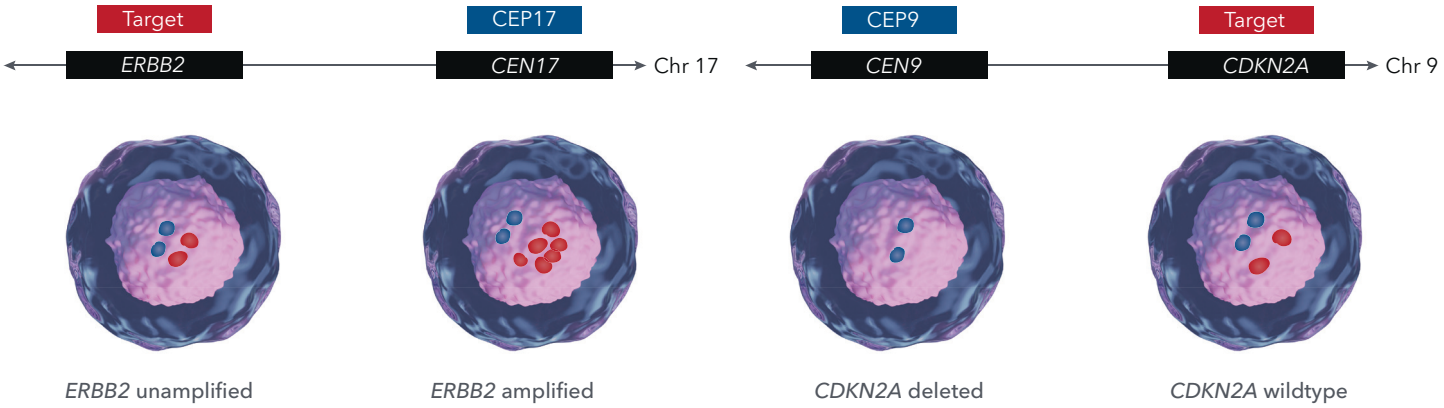
Signal Amplification for high sensitivity and signal to noise ratio

High resolution and Precise target Detection for small genomic regions/single gene locus

Rapid custom probe design capability and universal assay conditions

DUPLEX ASSAY ENABLES DETECTION OF ANY DNA COPY NUMBER OR STRUCTURAL ALTERATIONS

DETECTION OF COPY NUMBER VARIATION



ERBB2 unamplified

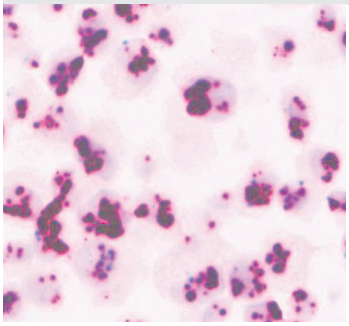
ERBB2 amplified

CDKN2A deleted

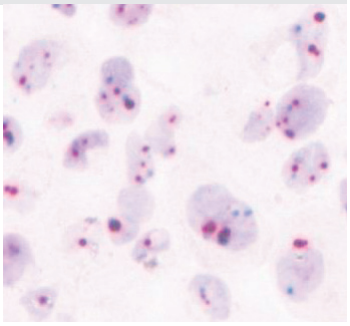
CDKN2A wildtype

ERBB2-C1/CEP17q-C2

BT474 (positive for ERBB2 amplification)

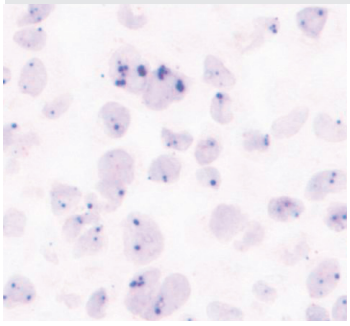


MDA-MB-231 (negative for ERBB2 amplification)

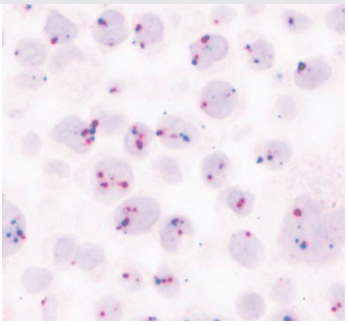


CDKN2A-C1/CEP9p-C2

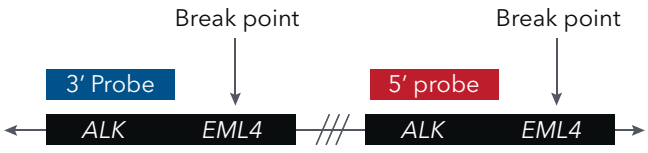
MDA-MB-231 (positive for CDKN2A deletion)

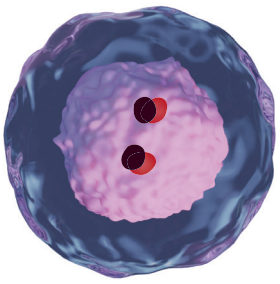


SKBR3 (negative for CDKN2A deletion)

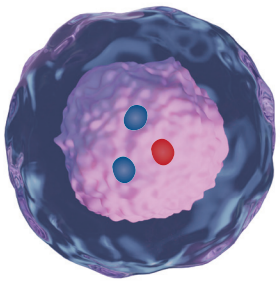


DETECTION OF BREAK-APART EVENTS





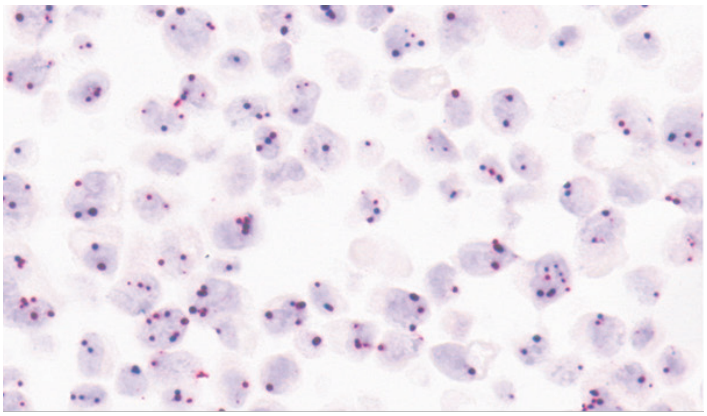
Control
Wild type *ALK*
(fused signals)



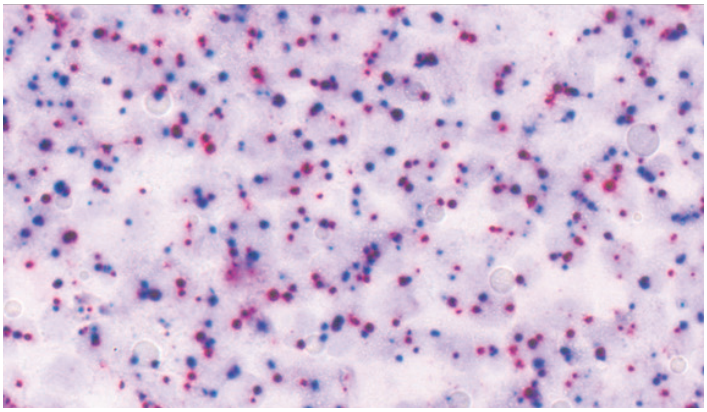
ALK
Rearrangements
(Break-apart signals)

BREAK-APART EVENTS ARE DETECTED THROUGH APPEARANCE OF PURE BLUE DOTS

ALK WT BREAK-APART NEGATIVE CELL
LINE HS-ALK-BA-5′ / HS-ALK-BA-3′



ALK BREAK-APART POSITIVE CELL
LINE HS-ALK-BA-5′ / HS-ALK-BA-3′



PRODUCT INFORMATION

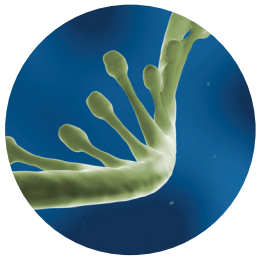
PRODUCT NAME	DESCRIPTION	CATALOG NUMBER
DNAscope™ HD Duplex Reagent Kit	• Contains DNAscope™ HD Duplex Detection-Reagents • DNAscope Pretreatment Reagents Kit • 50x wash buffer	324700

CONTROL PROBES		
GENE NAME	PROBE NAME	CATALOG NUMBER
CEP3q	DS-Hs-CEP3q-C2	1080211-C2
CEP7q	DS-Hs-CEP7q-C2	1080221-C2
CEP9p	DS-Hs-CEP9p-C2	1080231-C2
CEP12p	DS-Hs-CEP12p-C2	1080241-C2
CEP17q	DS-Hs-CEP17q-C2	1080251-C2

TARGET PROBES		
GENE NAME	PROBE NAME	CATALOG NUMBER
ERBB2 (HER2)	DS-Hs-ERBB2-C1	1080031-C1
EGFR	DS-Hs-EGFR-C1	1080041-C1
MET	DS-Hs-MET-C1	1080051-C1
TP53	DS-Hs-TP53-C1	1080061-C1
CDKN2A	DS-Hs-CDKN2A-C1	1080071-C1
ALK	DS-Hs-ALK-BA5-C1	1080081-C1
ALK	DS-Hs-ALK-BA3-C2	1080091-C2
ROS1	DS-Hs-ROS1-BA5-C1	1080101-C1
ROS1	DS-Hs-ROS1-BA3-C2	1080111-C2
NTRK1	DS-Hs-NTRK1-BA5-C1	1080151-C1
NTRK1	DS-Hs-NTRK1-BA3-C2	1080161-C2
NTRK2	DS-Hs-NTRK2-BA5-C1	1080171-C1
NTRK2	DS-Hs-NTRK2-BA3-C2	1080181-C2
NTRK3	DS-Hs-NTRK3-BA5-C1	1080191-C1
NTRK3	DS-Hs-NTRK3-BA3-C2	1080201-C2

BIO-TECHNE SPATIAL ANALYSIS PORTFOLIO

RNAscope

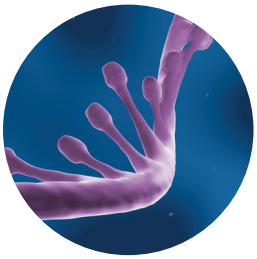


- mRNA or lncRNA target (>300nt)
- 1-plex or Duplex chromogenic: Automated and Manual
- Up to 4-plex fluorescence: Automated and Manual
- Up to 48-plex fluorescence: Manual

BaseScope

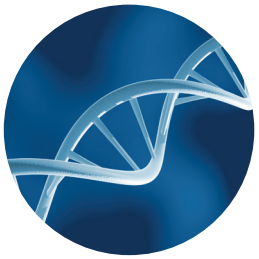
- Splice variants, short/highly homologous sequences, and point mutations (50-300nt)
- 1-plex chromogenic: Automated and Manual
- Duplex chromogenic: Manual

miRNAscope



- New probe design strategy
- ASOs, miRNAs, siRNAs, and other smaller RNA sequences (17-50nt)
- 1-plex chromogenic: Automated and Manual

DNAscope



- Leverage the ZZ design strategy
- Utilize 2 orthogonal signal amplification systems to detect 2 DNA targets
- Application focus on break-apart and copy number variation
- Menu of probes
- Duplex chromogenic assay

NOTES

NOTES

bio-techne®

bio-techne.com

R&D SYSTEMS | NOVUS BIOLOGICALS | TOCRIS | protein simple | ACD | exosome dx

Global info@bio-techne.com bio-techne.com/find-us/distributors TEL +1 612 379 2956 North America TEL 800 343 7475
Europe | Middle East | Africa TEL +44 (0)1235 529449 China info.cn@bio-techne.com TEL +86 (21) 52380373

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