

# RNA scope<sup>®</sup>



**INSIGHT**  
BIOTECHNOLOGY

*visualize*  
single-copy RNA expression



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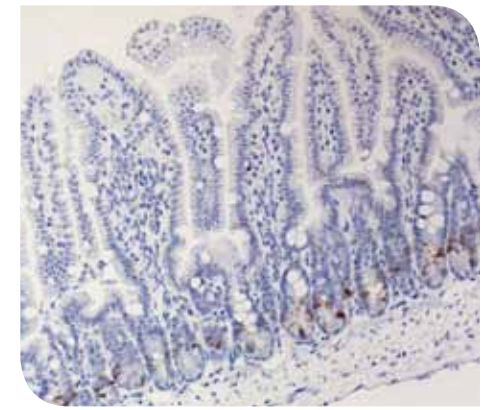
Email: [info@insightbio.com](mailto:info@insightbio.com)  
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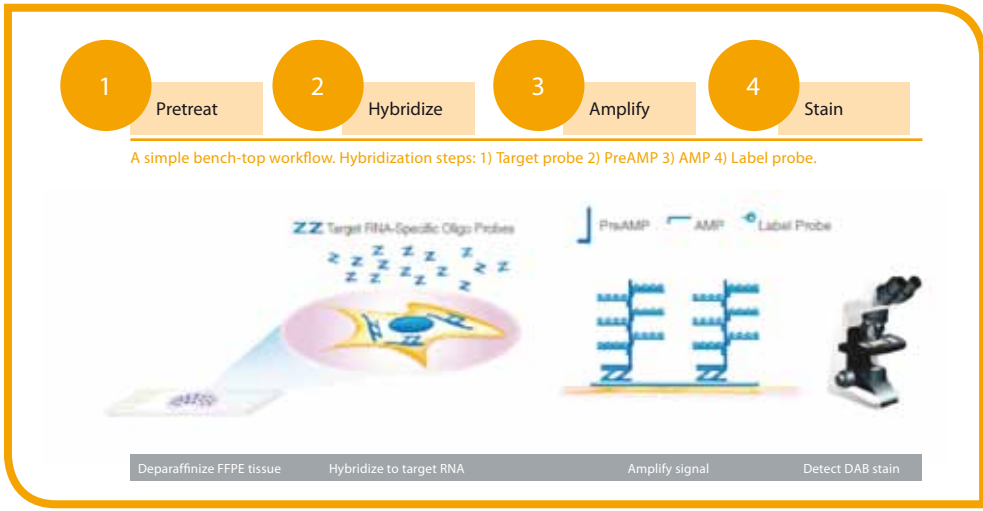
# RNA scope

## A breakthrough technology

RNAscope is a proprietary RNA in situ hybridization (ISH) method that enables routine detection and visualization of virtually any expressed gene in formalin-fixed paraffin-embedded (FFPE) tissue. Based on its patented probe design, RNAscope enables as much as 400-fold enhancement in signal-to-noise ratio, making it the most sensitive RNA ISH method available.



### RNAscope workflow

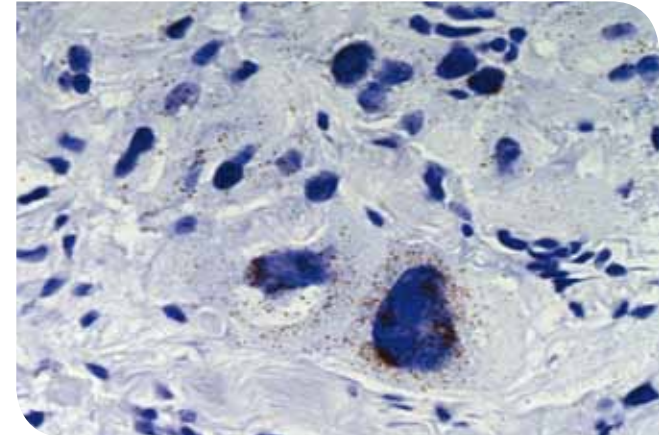


- 1 Routine FFPE tissue sections are deparaffinized and pretreated to allow access to target RNA
- 2 Gene-specific "ZZ" (double Z) probe pairs hybridize to the target mRNA
- 3 A signal amplification scaffold is created with a serial hybridization of PreAMP -> AMP -> Label Probes
- 4 Target RNA is detected chromogenically (or fluorescently) and visualized with a standard bright-field microscope (or fluorescent microscope)

for

# visualizing single-copy RNA molecules in situ.

- Single RNA molecule sensitivity, either chromogenic or fluorescent
- Virtually no background with proprietary double Z probe design
- Exquisite specificity to distinguish sequences with up to 90% identity
- Designed for formalin fixed paraffin embedded (FFPE) samples
- Simple IHC-like protocol: deparaffinization to stained slides in 7 hours
- Guaranteed performance: if RNA is present, RNAscope will detect it
- Gene sequence to RNAscope assay in < 3 weeks, for any gene



## What makes RNAscope unique?

RNAscope was designed to amplify target-specific signal without also amplifying the background signal, resulting in marked improvement in signal-to-noise ratio. This is accomplished by ACD's patented double Z-probe design for in situ hybridization, where two independent probes (a double Z probe pair) are required to hybridize in tandem to the target sequence in order for signal amplification to occur. Since it is highly unlikely that two independent probes will hybridize to a nonspecific target right next to each other, this design concept ensures highly selective amplification of target-specific signals, therefore improving both sensitivity and specificity.

### How does RNAscope signal amplification work?

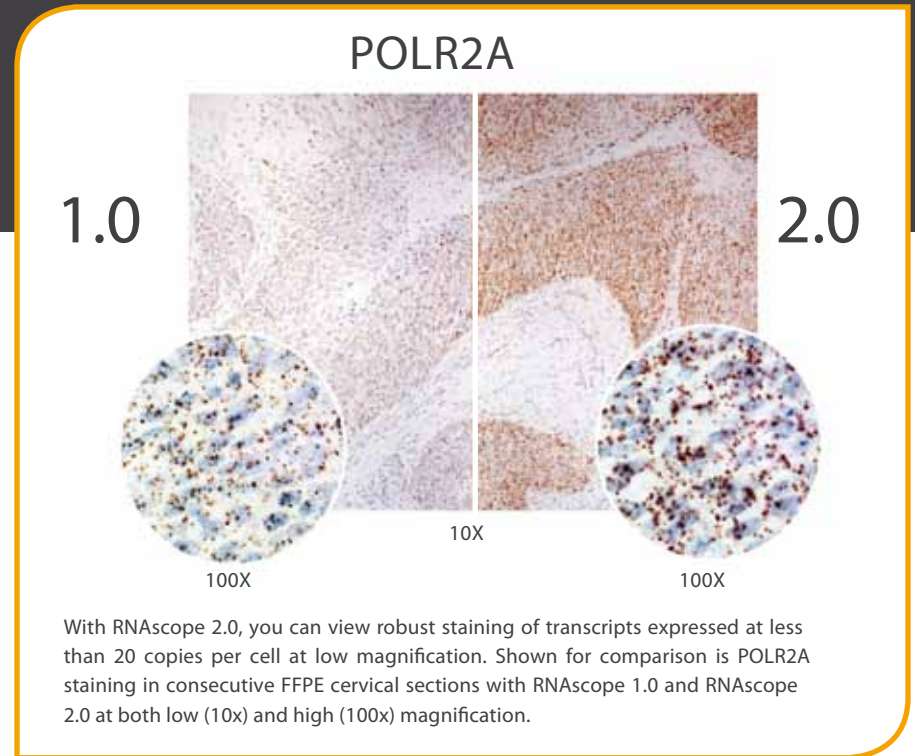
A PreAmplifier (PreAMP) molecule hybridizes to each double Z probe pair, and then multiple Amplifier (AMP) molecules hybridize to each PreAMP. Finally, multiple HRP-labeled Label Probes hybridized to each AMP. DAB substrate is added for colorimetric detection of target RNA. Fluorescent- or AP-labeled Label Probes can also be used for fluorescent or Fast Red detection of target RNA.

# introducing RNA scope 2.0

Now with RNAscope 2.0, you can robustly detect single RNA transcripts for very low expression genes and short transcript genes in FFPE tissue. It even works for archival FFPE samples containing significantly degraded RNA.

## How does RNAscope 1.0 compare to 2.0?

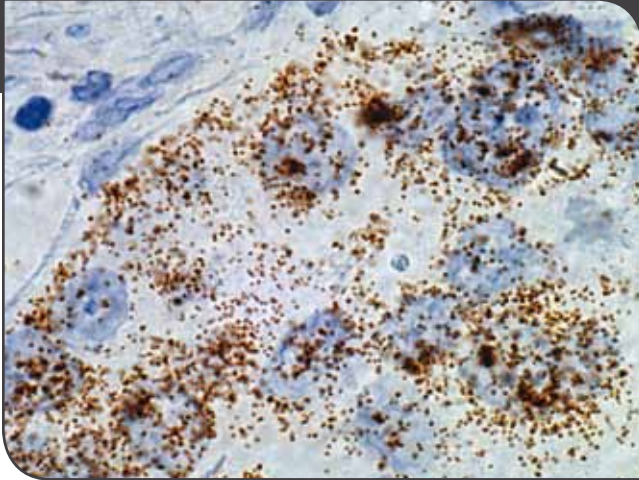
	RNAscope 1.0	RNAscope 2.0
Sensitivity	Single copy	Single copy
Sample requirement	FFPE	FFPE
Target region (typical)	1,000 bases	1,000 bases
Suggested minimum target length	800 bases	200 bases
Optimal expression level	>20 copies/cell	1-20 copies /cell
Degraded RNA	Less suitable	More suitable
Color detection	DAB (Brown)	DAB (Brown) or Fast Red (Red)
Staining spot size	Smaller	Larger
Staining spot observed under	20x to 40x lens	10x to 20x lens
Assay time	<7 hrs	<8 hrs
Housekeeping gene control	UbC (moderate expression)	POLR2A (low expression)



With RNAscope 2.0, you can view robust staining of transcripts expressed at less than 20 copies per cell at low magnification. Shown for comparison is POLR2A staining in consecutive FFPE cervical sections with RNAscope 1.0 and RNAscope 2.0 at both low (10x) and high (100x) magnification.

RNAscope 2.0 utilizes the same double Z probe design to ensure exceptional specificity but incorporates additional signal amplification steps to make single RNA molecules appear as larger, more intense punctate spots. Shorter target gene transcripts or specimens with degraded RNA can still yield robust staining with RNAscope 2.0, resulting in single molecule spots that are large enough for visualization under a standard bright field microscope.

Same high quality.

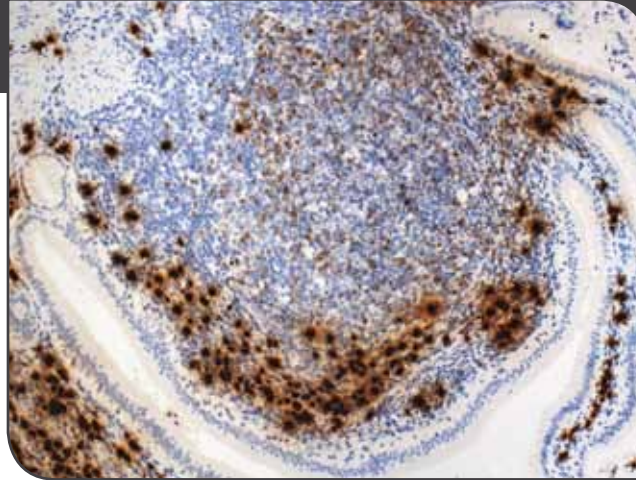


HER2 in breast cancer, 100X

## RNAscope 1.0

RNAscope 1.0 has set the standard for guaranteed high performance RNA-ISH and is still the easiest method available. RNAscope 1.0 kits are ideal for medium to high gene expression levels above 20 copies per cell, or for use in freshly prepared FFPE tissue specimens.

Multiple options.

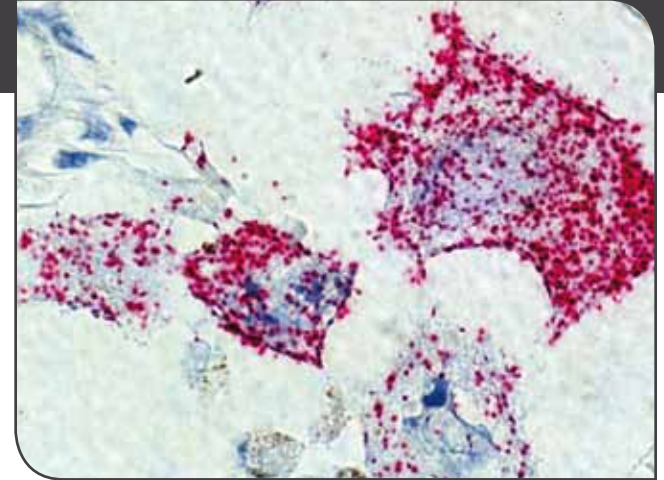


Ig-kappa in non-Hodgkin's lymphoma, 10X

## RNAscope 2.0 BROWN

RNAscope 2.0 Brown Kits are designed to provide more intense DAB staining when low copy target gene expression is anticipated (1-20 copies per cell). RNAscope 2.0 kits adhere to the same high quality standards for reagents and probes as you have come to expect from RNAscope 1.0.

Optimal results.



MLANA in melanoma, 100X

## RNAscope 2.0 RED

RNAscope 2.0 Red Kit offers a beautiful and sensitive alternative to typical DAB staining. RNAscope 2.0 RED can be used in applications where DAB staining is less than desirable, such as staining lung and melanoma tissue specimens.

# RNA scope

... the fastest path for translating genomic discovery to validated biomarkers

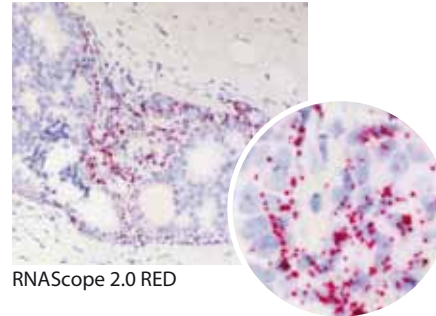
While immunohistochemistry (IHC) and DNA fluorescent in situ hybridization (FISH) are widely used in the clinic to assess protein and DNA biomarkers, respectively, in situ RNA analysis is rarely utilized in the clinical setting. This is a large gap considering the abundance of RNA biomarkers discovered through whole-genome expression profiling. RNAscope bridges the gap with a simple, robust and ultra sensitive ISH solution that is fully compatible with current pathology workflow.

## RNAscope assays are ideal for:

- Biomarker Analysis
- Target ID & Validation
- Molecular Pathology
- Novel Biomarkers
- Companion Dx
- Validating IHC Results
- Non-coding RNA
- Stem Cell Research
- Tumor Heterogeneity
- Rare-cell Analysis

## Growth Factor Receptors in Breast Cancer

EGFR

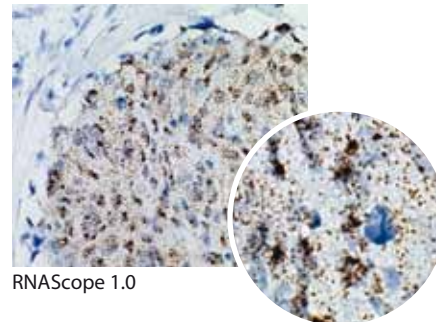


RNAscope 2.0 RED

- Reliable staining of EGFR and other low level receptors
- Virtually no background compared to IHC
- No need for separate scoring of membrane and cytoplasmic staining

## HPV Viral Transcripts in Head & Neck Cancer

HPV

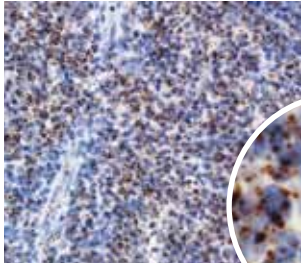


RNAscope 1.0

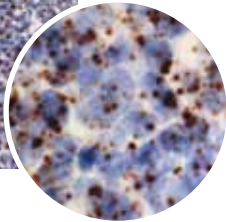
- Genotype-specific detection of HPV in situ
- Pooled probes for efficient detection of all high-risk types
- Applicable to any viral gene transcript

## Signaling Pathway Regulation in Lymphoma

PTEN



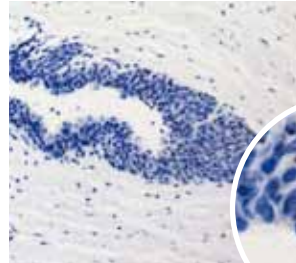
RNAScope 2.0 BROWN



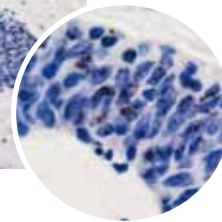
- Distinguish PTEN normal from deleted samples
- Visualize regulatory signaling pathways in situ
- Easy optimization for dense and difficult tissue types

## Apoptotic Markers in Prostate Cancer

DR5



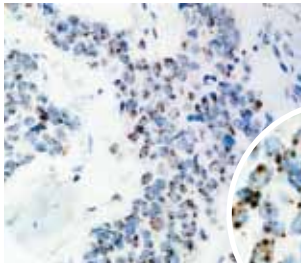
RNAScope 2.0 BROWN



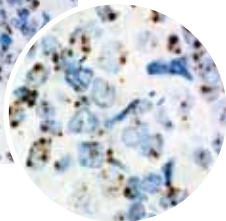
- Evaluate apoptotic pathway targeted therapies
- Less than 10 copies/cell
- Single-copy sensitivity
- Great for any target gene with low expression

## Novel Biomarker Assays for Non-Coding RNA

HOTAIR



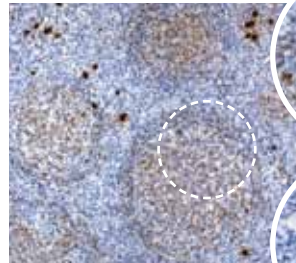
RNAScope 2.0 BROWN



- The best way to visualize non-coding RNA in situ
- From sequence to new assay in < 3 weeks
- Applicable to any non-coding RNA, regardless of size or location of transcript

## Ig-Kappa and Lambda in Lymphoma

Ig  $\kappa/\lambda$



RNAScope 2.0 BROWN



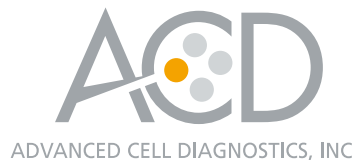
- In situ detection of Ig kappa and lambda mRNAs in all lymphoma types
- Sensitive detection of light chain restriction
- Easy scoring under 10x magnification

Check out our current list of target probes at [www.acdbio.com](http://www.acdbio.com)

# RNAscope Products & Prices

Insight Biotechnology is pleased to announce a 30% academic discount on all RNAscope consumable products for use in University Academic Research Departments / Research Institutes only. An introductory 20% discount is also available for all first time customs. Contact our scientific team to discuss how this cutting edge technology can be used to facilitate your research. A complete list of RNAscope target probes can be viewed at <http://www.acdbio.com/db.php>. New probes are added on a weekly basis. ACD provide a high quality, cost effective and rapid custom probe development service. Contact Insight Biotechnology for further details.

Catalogue No	Category	Product Description	List Price	Academic Discount
320269	Target Probes	New Target Probe Setup Service	£729	£511
300031	Target Probes	RNAscope Probe ( <a href="http://www.acdbio.com/db.php">View a list of RNAscope target probes at http://www.acdbio.com/db.php</a> )	£656	£459
320269	Target Probes	New Probe Setup Service - Standard	£729	£511
320265	Target Probes	New Probe Setup Service - Custom	£1458	£1020
310041	Control Probes	RNAscope 1.0 Positive Control Probe _ Hs-UbC	£109	£77
310771	Control Probes	RNAscope 1.0 Positive Control Probe _ Mm-UbC	£109	£77
312011	Control Probes	RNAscope 1.0 Positive Control Probe _ Rn-UbC	£109	£77
310451	Control Probes	RNAscope 2.0 Positive Control Probe _ Hs-POLAR2A	£109	£77
312471	Control Probes	RNAscope 2.0 Positive Control Probe _ Mm-POLAR2A	£109	£77
312481	Control Probes	RNAscope 2.0 Positive Control Probe _ Rn-POLAR2A	£109	£77
310043	Control Probes	RNAscope Negative Control Probe _ DapB	£109	£77
310090	Full Kit	RNAscope 1.0 FFPE Reagent Kit	£1,021	£715
310035	Full Kit	RNAscope 2.0 FFPE Reagent Kit - Brown	£1,167	£817
310036	Full Kit	RNAscope 2.0 FFPE Reagent Kit - Red	£1,167	£817
310020	Sub Kit	RNAscope Pretreatment Kit	£219	£154
310030	Sub Kit	RNAscope 1.0 Detection Kit	£729	£511
310033	Sub Kit	RNAscope 2.0 Detection Kit - Brown	£875	£613
310034	Sub Kit	RNAscope 2.0 Detection Kit - Red	£875	£613
310091	Consumables	RNAscope Wash Buffer	£146	£103
310045	Consumables	RNAscope Control Slides ( <b>free to new consumers**</b> )	£292**	£204
310013	Instrument Products	HybEZ Hybridization System (220VAC)	£3,646	£3136
310012	Instrument Products	HybEZ Humidifying Tray (with lid)	£313	£220
310014	Instrument Products	HybEZ Slide Rack	£313	£220
310015	Instrument Products	HybEZ Humidifying Paper (10 pack)	£73	£52



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One assay for any gene.



Contact us today and discuss your project with our *in situ* experts!

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