AMPIVIEW™ RNA Probes

Powered by Enzo's LoopRNA ISH™ Technology

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Introduction

AMPIVIEW™ RNA probes are uniquely designed with the precision of targeted, sequence-specific RNA, powered by Enzo's LoopRNA ISH™ technology designed to deliver superior sensitivity when combined with Enzo's linkers and immunohistochemistry (IHC) detection solutions. When **AMPIVIEW™ RNA probes** hybridize to its nucleic acid target, loops form exposing biotin or digoxigenin labels, making these probes one of the most sensitive means of detection, while preserving sample morphology with results that can be examined with a light microscope.

Main Features

- Detection of unique nucleic acid targets (DNA, RNA or DNA/RNA) down to a single cell level
- High sensitivity and reliability (detection down to 2-3 target copies per cell)
- Flexible protocols for formalin-fixed, paraffin-embedded (FFPE) tissues and cells
- Mild and short protocols to preserve tissue and cell morphology
- Optimized with Enzo's cost-effective IHC/ISH detection portfolio
- Adaptable products for any workflow (Manual or Automated)

APPLICATIONS

- Basic Research
- Biomarkers
- Cancer
- Developmental Biology
- Drug Discovery and Development
- Infectious Diseases
- Pathogen Identification
- Neuroscience
- And more...

Visualize the Spatial Biology of Your Target Genes Within the Morphological Tissue Context

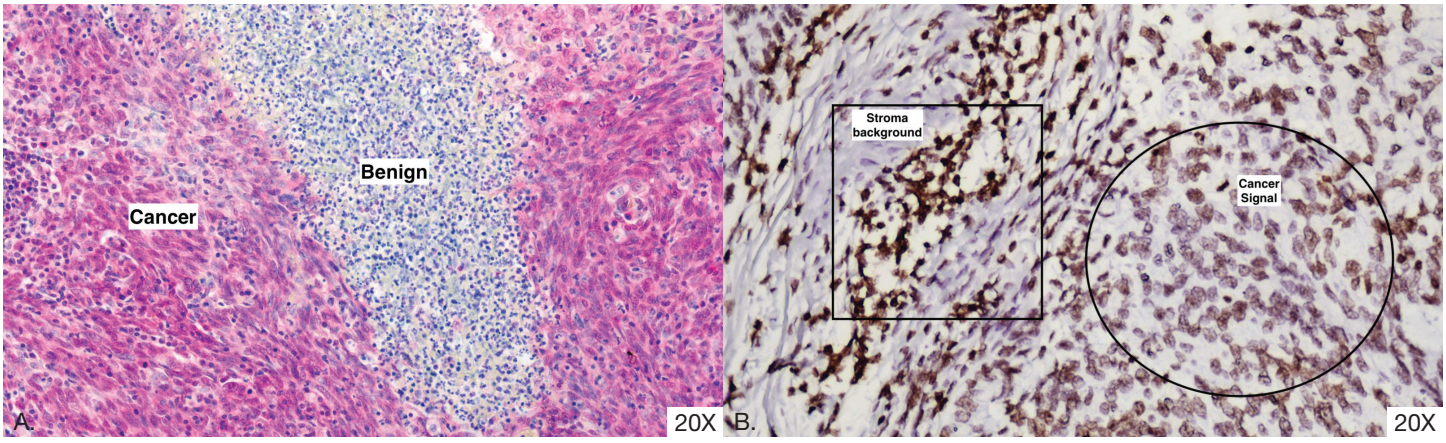

Figure 1. HPV high-risk detection in cervical cancer tissue with A. AMPIVIEW™ HPV High-Risk RNA probes (red) combined with POLYVIEW® PLUS AP and HIGHDEF® Red AP Chromogen and B. Competitor's high-risk HPV probes and detection reagents tested according to manufacturer's instructions. Note the distinct staining pattern between cancer and benign cells with AMPIVIEW™ compared to the non-specific staining in the stroma compared to the cancer signal with the leading competitor's probes.

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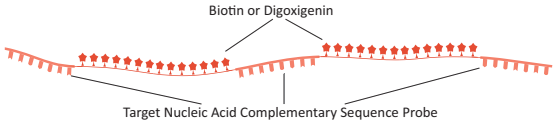
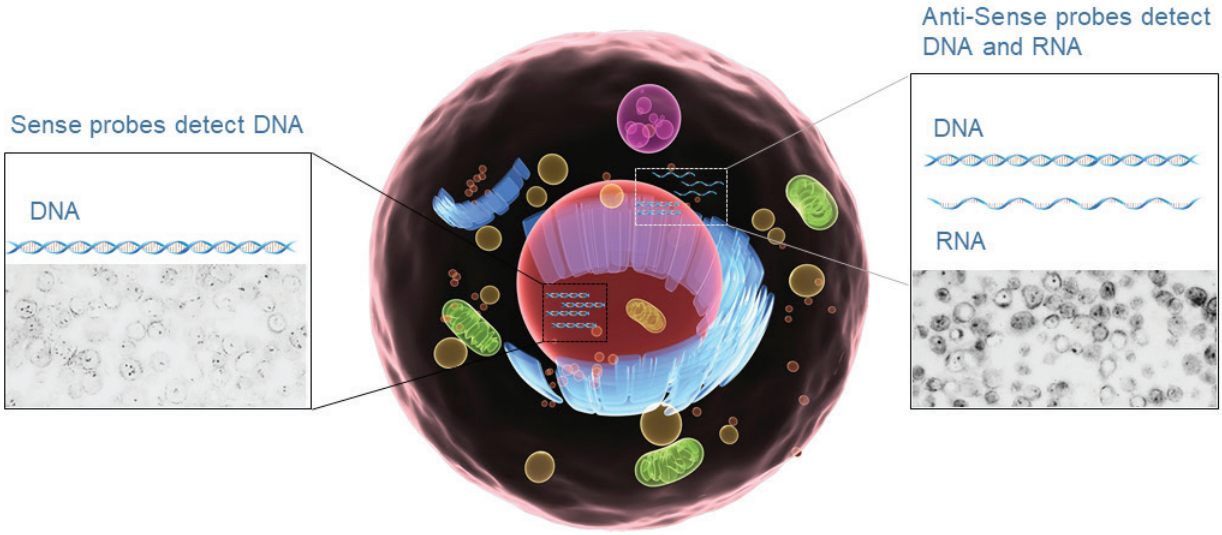
Nucleic Acid Target

Select target nucleic acid (DNA or RNA) sequence from any species, any genome.

AMPIVIEW™ RNA Probes



Analyze sequence of the target nucleic acid, design and produce labeled (biotin or digoxigenin) probes.



Probes can be designed as sense probes to detect DNA only or antisense probes to detect RNA or both DNA and RNA.

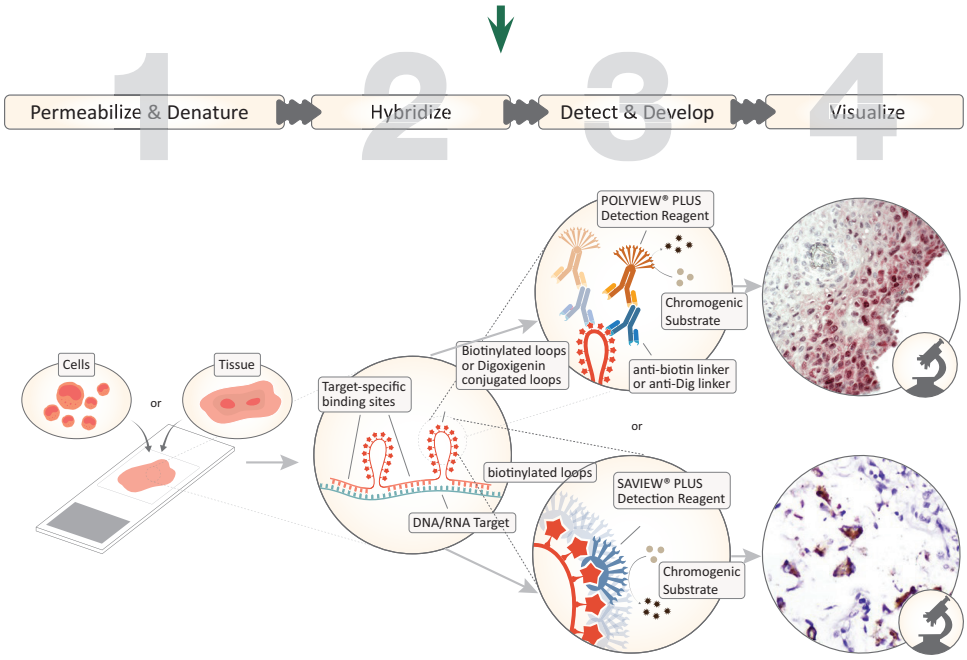


Figure 2. Complete AMPIVIEW™ RNA probes workflow from selection of target to detection. AMPIVIEW™ RNA probes are carefully crafted to ensure high specificity and sensitivity.

AMPIVIEW™ RNA PROBES *IN SITU* HYBRIDIZATION ASSAY WORKFLOW

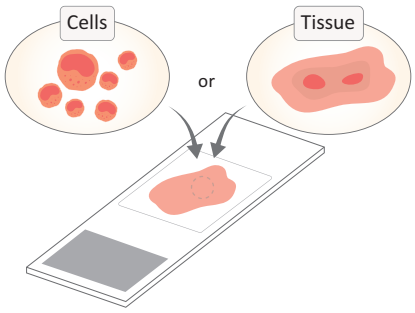
From Sample Preparation to Visualization

Sample Preparation — Optimal sample preparation is the foundation of outstanding results with AMPIVIEW™ RNA Probes.

- Formalin-fixed, paraffin-embedded (FFPE) tissue sample
- Cells — cultured, cytology samples, etc

Permeabilize and Denature — Pre-treatment is performed depending on the sample type:

- Fixation of cells or tissue

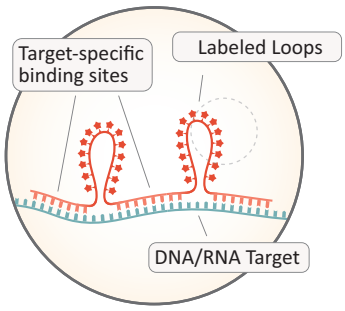


- Deparaffinization (FFPE tissues)
- Antigen retrieval
- Enzymatic permeabilization

Category	Product Name	Product #
Antigen Retrieval	Antigen Retrieval Reagent, pH 6 (10X)	ENZ-ACC112
	Antigen Retrieval Reagent, pH 9 (10X)	ENZ-ACC113
	IHC antigen retrieval reagent (citrate, pH 7.0)	ADI-950-271
	IHC antigen retrieval reagent (EDTA, pH 8.0)	ADI-950-272
	IHC enzyme antigen retrieval reagent	ADI-950-280
Proteinase Treatment	Proteinase K	ENZ-33801

For additional antigen retrieval products, visit enzolifesciences.com/IHC

Hybridize



AMPIVIEW™ RNA probes — Ready-For-Use Probes
AMPIVIEW™ RNA probes are designed to hybridize to specific DNA, RNA or DNA/RNA targets and are powered by Enzo's LoopRNA ISH™ technology. Every target probe has biotin or digoxigenin labels that enable the associated target to be visualized in a specific color chromogens under the light microscope.

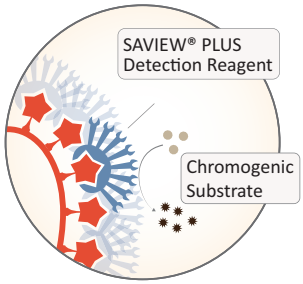
Category	Product Name	Product #
Ready-For-Use Probes	AMPIVIEW™ HPV 6/11 RNA probes Set	ENZ-GEN145
	AMPVIEW™ HPV 16/18 RNA probes Set	ENZ-GEN146
	AMPIVEW™ HPV 31/33/51 RNA probes Set	ENZ-GEN147
	AMPIVIEW™ HPV High-Risk RNA probes Set	ENZ-GEN148
	AMPIVIEW™ SARS-CoV-2 RNA probes Set	ENZ-GEN159
	AMPIVIEW™ EGFR (AS) Dig RNA probes Set	ENZ-GEN129

Each AMPIVIEW™ RNA probes set comes with target probes and 1X hybridization buffer.

AMPIVIEW™ RNA PROBES — Custom Probes
Enzo can design probes for practically ANY gene in ANY genome to be used in ANY tissue or cells. For more information about ordering custom probes visit enzolifesciences.com/AMPIVIEW

Detect and Develop — AMPIVIEW™ RNA Probes can be detected with Enzo's IHC/ISH detection solutions and chromogens.

Biotin-conjugated Probes



One-Step Detection System for Biotinylated Probes

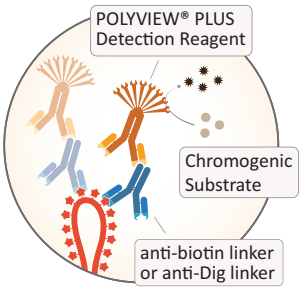
SAVIEW® PLUS AP or HRP Reagent is a ready-to-use streptavidin-based nanopolymer reagent to ensure consistent and reproducible detection of biotinylated probes on tissue sections and cells.

Category	Product Name	Product #
Detect and Develop	SAVIEW® PLUS AP	ENZ-ACC111
	SAVIEW® PLUS HRP	ENZ-ACC102
SARS-CoV-2 Detection Kit	AMPIVIEW™ SARS-CoV-2 RNA Probes Kit	ENZ-GEN158-0020

Two-Step Detection System

Anti-biotin or DIGX® anti-digoxigenin linker antibodies are used in combination with ready-to-use biotin-free nanopolymer POLYVIEW® PLUS AP or HRP detection reagents for consistent and reproducible immunodetection of AMPIVIEW™ RNA probes.

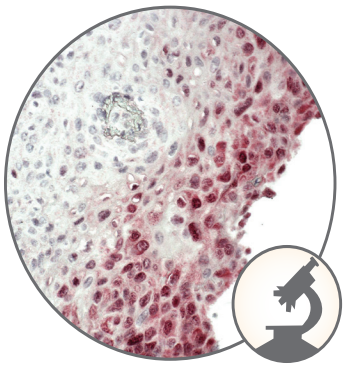
Biotin- or Digoxigenin-conjugated loops



Category	Product Name	Product #
Detect and Develop	POLYVIEW® PLUS AP (anti-mouse)	ENZ-ACC114
	POLYVIEW® PLUS AP (anti-rabbit)	ENZ-ACC110
	POLYVIEW® PLUS HRP (anti-mouse)	ENZ-ACC104
	POLYVIEW® PLUS HRP (anti-rabbit)	ENZ-ACC103
	MULTIVIEW® PLUS (mo-HRP/ra-AP)	ENZ-KIT181
	Mouse anti-biotin Linker	ENZ-32893
	Rabbit anti-biotin Linker	ENZ-32892
	DIG® Mouse anti-digoxigenin Linker	ENZ-ABS304
	DIG® Rabbit anti-digoxigenin Linker	ENZ-ABS303
Complete Detection Kits*	AMPIVIEW™ Dig (Anti-Rabbit) Detection AP/Red Kit	ENZ-ACC160
	AMPIVIEW™ Dig (Anti-Mouse) Detection HRP/DAB Kit	ENZ-ACC159
	AMPIVIEW™ Dig (Anti-Mouse) Detection AP/Red Kit	ENZ-ACC172
	AMPIVIEW™ Dig (Anti-Rabbit) Detection HRP/DAB Kit	ENZ-ACC171

*AMPIVIEW™ Detection Kits contain Antigen Retrieval Reagent, pH 9, Proteinase K, DIGX® anti-digoxigenin linker, AMPIVIEW™ wash buffers 1 and 2, POLYVIEW® PLUS detection reagent, HIGHDEF® chromogen and HIGHDEF® Hematoxylin.

Stunning results can be achieved when combining SAVIEW® PLUS or POLYVIEW® PLUS reagents with Enzo's unrivaled selection of HIGHDEF® chromogens (see list of colors below).



Category	Product Name	Product #
HRP Chromogens	HIGHDEF® DAB Chromogen/Substrate Set	ENZ-ACC105
	HIGHDEF® black IHC chromogen (HRP)	ADI-950-171
	HIGHDEF® blue IHC chromogen (HRP)	ADI-950-151
	HIGHDEF® yellow IHC chromogen (HRP)	ADI-950-170
AP Chromogens	HIGHDEF® Green AP Chromogen/Substrate	ENZ-ACC130
	HIGHDEF® blue IHC chromogen (AP)	ADI-950-150
	HIGHDEF® red IHC chromogen (AP)	ADI-950-140
Counterstain	HIGHDEF® Hematoxylin	ENZ-ACC106
Mounting Medium	HIGHDEF® IHC Mount	ADI-950-261

For more detection product information visit enzolifesciences.com/IHC.

AMPIVIEW™ HPV RNA Probes

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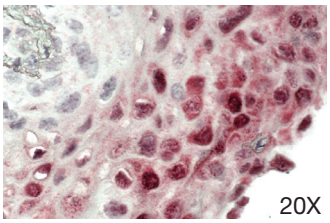
The causal factor over 99% of cervical cancer cases and a significant portion of oropharyngeal and anogenital cancers is due to a persistent infection with high-risk human papillomaviruses (HPV).

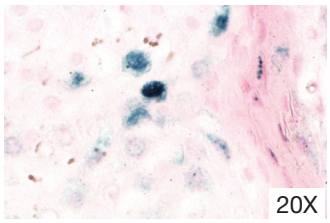
Papillomaviruses are small non-enveloped icosahedral viruses, possessing a circular double-stranded DNA (dsDNA) genome of about 8 kb in length[1]. More than 200 types of HPV have been identified. HPVs can be grouped as high-risk (16, 18, 31, 33, 34, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68 and 70) and low-risk (6, 11, 42, 43 and 44) HPV types[2].

AMPIVIEW™ HPV RNA Probes are conjugated with digoxigenin and have been optimized to produce clear results with Enzo's nanopolymer-based systems, POLYVIEW® PLUS with HIGHDEF® chromogens.

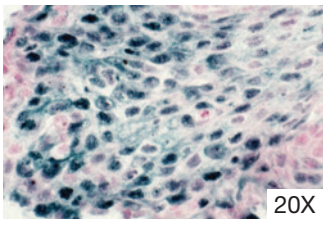
Visualize the spatial biology of HPV in tissue and cells under the light microscope



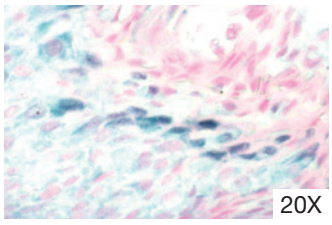
AMPIVIEW™ HPV High-Risk RNA probes (ENZ-GEN148), is a cocktail of HPV types 16, 18, 31, 33 and 51 specific probes that detect high-risk HPV types that are associated with either condyloma or cervical intraepithelial neoplasia (CIN) and carcinoma in situ (CIS).



AMPIVIEW™ HPV 6/11 RNA probes (ENZ-GEN145), is a cocktail of HPV types 6 and type 11 specific probes that detect HPV types that are associated with low risk CIN, recurrent respiratory papillomatosis, conjunctival papillomas/carcinomas and condylomata acuminata (genital warts) among others.

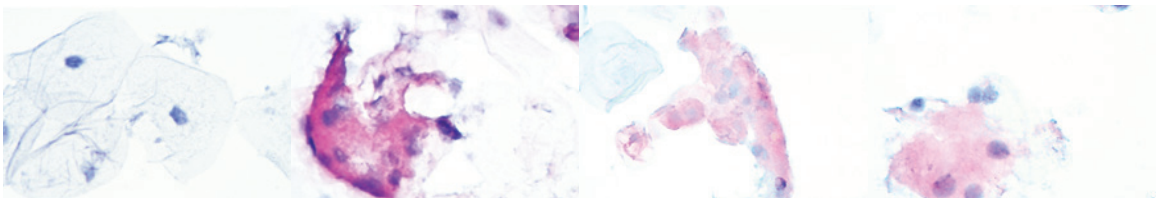


AMPIVIEW™ HPV 16/18 RNA probes (ENZ-GEN146), is a cocktail of HPV type 16 and type 18 specific probes that detect high risk CIN and CIS.



AMPIVIEW™ HPV 31/33/51 RNA probes (ENZ-GEN147), is a cocktail of HPV type 31, type 33 and type 51 specific probes that detect HPV types that are associated with both low- and high-risk CIN and CIS. HPV type 33 is implicated in other cutaneous lesions while type 51 was found in genital warts too.

ISH Results with AMPIVIEW™ HPV High-Risk RNA Probes are as Sensitive as PCR Results



ISH Results	Negative	Positive	Positive	Positive
PCR Results	Negative	Positive	Positive	Positive
Ct Value*	ND	27.8	36.8	38.6

*Real-time PCR cycle threshold. Ct levels are inversely proportional to the amount of target nucleic acid in the sample.

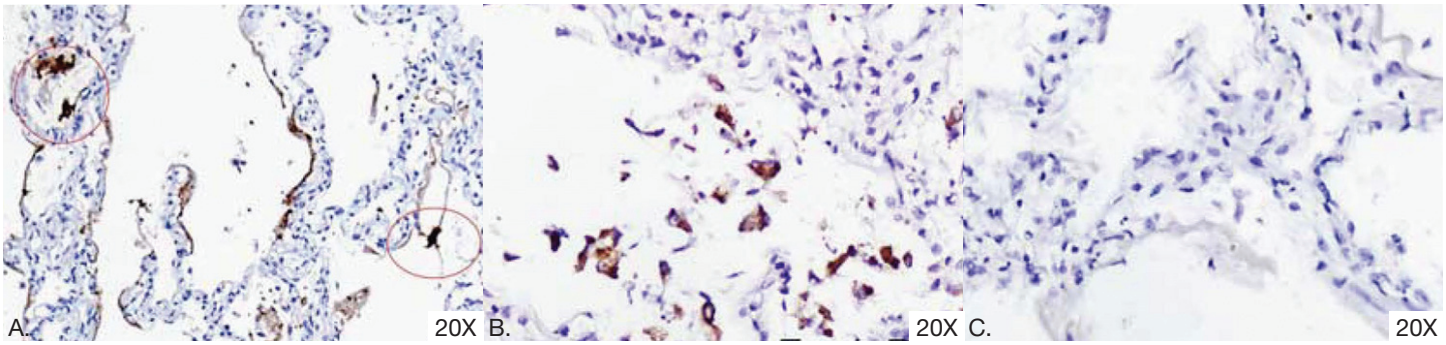
REFERENCES
1. Scarth, JA et al. The human papillomavirus oncoproteins: a review of the host pathways targeted on the road to transformation. Journal of General Virology 2021; 102:001540. DOI 10.1099/jgv.0.001540.
2. Burd, EM. Human papillomavirus and cervical cancer. Clinical Microbiology Reviews, 2003, p1-17. DOI: 10.1128/CMR.16.1.1-17.2003

AMPIVIEW™ SARS-CoV-2 RNA Probes

Powered by Enzo's LoopRNA ISH™ Technology

AMPIVIEW™ SARS-CoV-2 RNA probes (ENZ-GEN159) have been designed to target the N and S protein sequences of SARS-CoV-2 for its detection in tissues and cells. SARS-CoV-2 RNA probes are conjugated with biotin and have been optimized to produce clear results with Enzo's biotin-based detection system, SAVIEW® Plus, Enzo's anti-biotin linker and nanopolymner-based detection systems, POLYVIEW® Plus, and high-quality chromogens, HIGHDEF® to produce clear results that can be visualized with a light microscope.

AMPIVIEW™ SARS-CoV-2 RNA probes are highly specific compared to competitor's



A. SARS-CoV-2 nucleic acid detection (brown) in lung tissue from fatal COVID-19 pneumonia patient with competitor's SARS-CoV-2 ISH probes. Note that competitor's probes also stained machrophages (red circles). B. SARS-CoV-2 nucleic acid detection (brown) in lung tissue from fatal COVID-19 pneumonia patient with AMPIVIEW™ SARS-CoV-2 RNA probes detected with POLYVIEW® PLUS HRP/DAB detection kit. C. No specific signal can be detected in normal lung tissue with AMPIVIEW™ SARS-CoV-2 RNA probes and POLYVIEW® PLUS HRP/DAB detection kit.

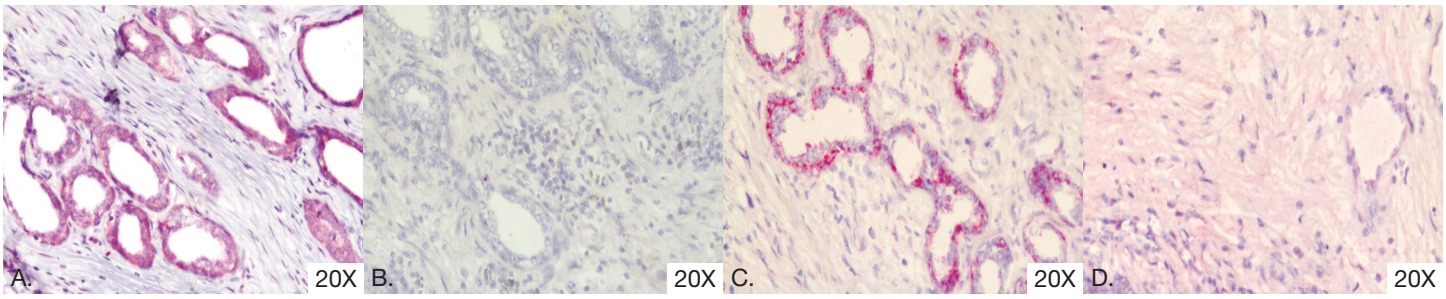
Nuovo, GJ et al. 2022 App Immunohistochem Mo Morphol. DOI: 10.1097/PAI.0000000000000992

AMPIVIEW™ EGFR (AS) Dig RNA Probes

Powered by Enzo's LoopRNA ISH™ Technology

AMPIVIEW™ EGFR (AS) Dig RNA probes (ENZ-GEN129) have been designed to target human epidermal growth factor receptor (EGFR, ErbB-1 or HER-1), a transmembrane protein receptor for members of the EGF family of extracellular protein ligands. Overexpression of EGFR is associated with cancer. AMPIVIEW™ EGFR-Dig RNA probes are digoxigenin-labeled antisense probes that will hybridize to the fixed and pre-treated tissue section on the microscope slide.

AMPIVIEW™ RNA probes produce strong signals with less background compared to competitor's



EGFR detection in benign prostatic hyperplasia, with acute inflammation specimen with A. AMPIVIEW™ EGFR (AS) Dig RNA probes, B. AMPIVIEW™ NSP-Dig RNA probes (negative control) amplified and detected with DIGX® rabbit anti-digoxigenin linker (ENZ-ABS303), POLYVIEW® PLUS AP (anti-rabbit) (ENZ-ACC110), combined with HIGHDEF® Red AP substrate/chromogen and hematoxylin (ENZ-ACC106); C. leading competitor's EGFR probes, D. leading competitor's negative control probes, amplified and detected per manufacturer's protocol. Note AMPIVIEW™ RNA probes strong signal and lack of background compared to leading competitor's results.

If you can't find your targets, AMPIVIEW™ Custom RNA probes services can design and develop probes for practically ANY gene in ANY genome to be detected in FFPE tissues.

SCIENTISTS ENABLING HEALTHCARE™

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