Title: Detection of Human Papillomavirus (HPV) Nucleic Acid in FFPE Samples with AMPIVIEW® RNA Probes, Powered by Enzo’s LoopRNA™ ISH Technology

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Abstract

Human papillomavirus (HPV) infection is associated with a variety of clinical conditions that range from innocuous lesions to cancer. *in situ* hybridization (ISH) is a powerful tool used in clinical and research labs for the detection of HPV infection in formalin-fixed paraffin-embedded (FFPE) tissue samples and cells. HPV detection varies among methods due to HPV copy numbers in tissues or insufficient specificity and sensitivity of the assays. This study will introduce the new AMPIVIEW® RNA probes used to detect high-risk and low-risk HPV infections. AMPIVIEW® HPV RNA probes were uniquely designed with the precision of targeted, sequence-specific RNA probes powered by Enzo’s LoopRNA ISH™ technology to deliver superior sensitivity. Results with the AMPIVIEW® RNA probes show that ISH sensitivity matches to PCR sensitivity when tested in high-grade squamous intraepithelial lesion (HSIL) samples. While PCR assays require the homogenization of the samples, ISH results can be observed under a light microscope without disrupting the morphology of the sample. Finally, scientists can visualize the expression and spatial localization of their target genes with ease.

Background

One of the main challenges for ISH applications is sensitivity, especially for those involving the detection of low-copy targets. In clinical settings, insufficient sensitivity can lead to misdiagnosis. To overcome this limitation, Enzo developed AMPIVIEW™ RNA probes, powered by Enzo’s LoopRNA ISH™ technology to deliver high sensitivity to visualize the spatial biology of nucleic acids in the sample.

Materials and Methods

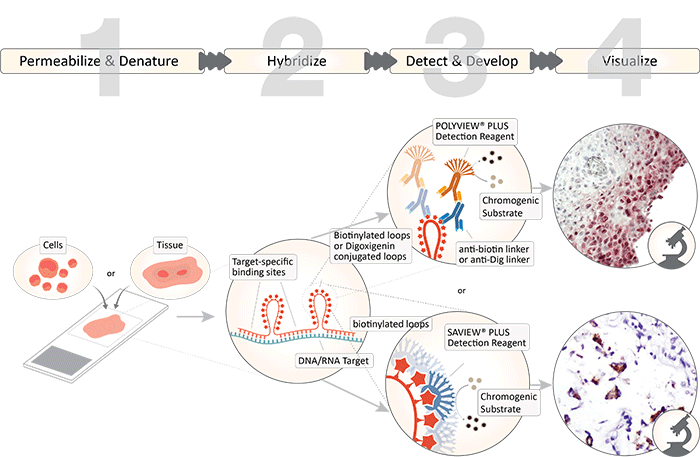
Immunohistochemistry (IHC)

Detection of specific antibodies were performed manually with POLYVIEW® PLUS AP or HRP detection solutions, combined with corresponding HIGHDEF® chromogens and counterstains according to manufacturer’s instructions.

*In situ* Hybridization

*In situ* hybridization experiments were performed with AMPIVIEW® RNA Probes and RNAscope® probes according to manufacturers’ instructions.

AMPIVIEW® ISH Workflow



Results

This study shows that AMPIVIEW® RNA probes demonstrated high specificity with low background compared to leading competitor’s product and can be as sensitive as PCR detection.

Additionally, results obtained with AMPIVIEW® HPV High Risk RNA probes were confirmed with the detection of p16 protein by IHC in cervical tissue infected with HPV. IHC and ISH can be individually or combined for multiplexing.

Conclusion

AMPIVIEW™ RNA probes are uniquely designed with the precision of targeted, sequence-specific RNA probes, powered by Enzo’s LoopRNA™ ISH technology to deliver superior sensitivity and specificity. AMPIVIEW® RNA probes sensitivity proved to be comparable to RT-PCR results, while preserving the morphology of the sample. Furthermore, the design of the probes makes them adaptable to any workflow (manual or automated) and compatible with immunohistochemistry detection systems.

AMPIVIEW® RNA probes are easy-to-use and flexible with existing ISH and IHC setups. AMPIVIEW® RNA probes can be designed with virtually unlimited potential to detect any gene and transcript of interest.

References:

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