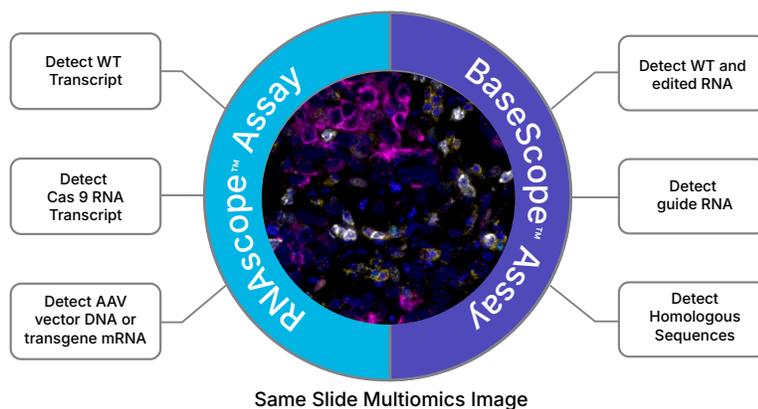


# Precise Visualization of CRISPR-Based Editing with Powerful RNAscope™ ISH Assays

Accelerate your CRISPR-based gene editing projects with RNAscope *in situ* hybridization (ISH) and BaseScope™ assays. Advanced Cell Diagnostics (ACD) offers advanced spatial multiomics solutions with unparalleled precision and single-molecule sensitivity, empowering you to clearly visualize gene editing at the RNA level.

## Spatially Obtain the Complete Picture



## Highlights

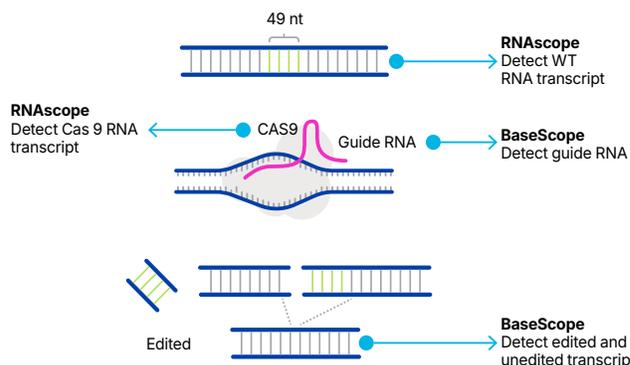
**Measure** expression and biodistribution of Cas 9 RNA or protein, Cas 9 inactivation, guide RNA, target mRNA, and cell-specific marker proteins.

**Validate** CRISPR-induced edits with high specificity including point mutations, large insertions and deletions.

**Distinguish** if the CRISPR/Cas 9-mediated mutation is mono or bi-allelic with wild type (WT) and edited probes.

**Characterize** therapeutic impact with same-slide multiomic detection of protein and RNA biomarkers.

## RNAscope Assays for CRISPR-Based Editing

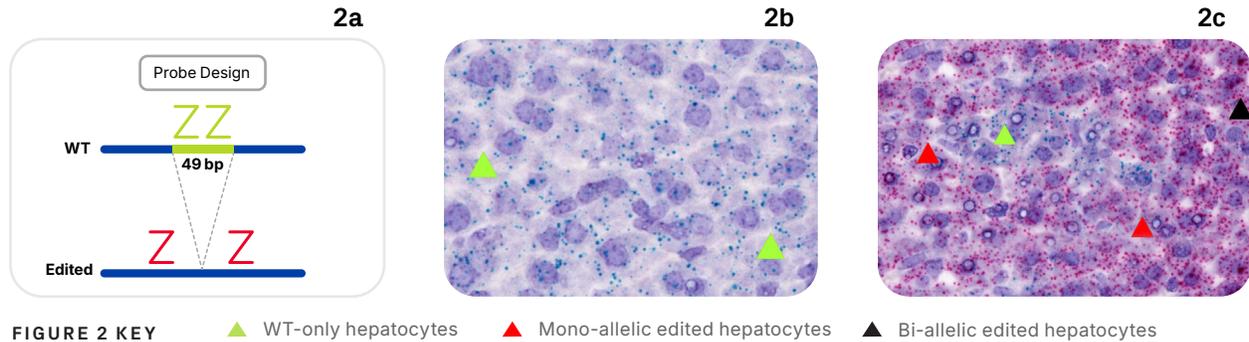


Simultaneous visualization of wildtype and CRISPR-edited mRNA along with Cas 9 mRNA or protein and guide RNAs.

Fig 1. Schematic representation of different types of RNA that can be detected after CRISPR-based editing: Applications of CRISPR-mediated gene editing and visualization by the RNAscope, and BaseScope Assays.

# Evaluate and Confirm Mono- or Bi-Allelic Gene Editing

The BaseScope Duplex Assay leverages the proven RNAscope technology to expand the detection of short RNA target sequences and exon junctions thereby providing unique insight into biological mechanisms. This assay was used to visualize mono- or bi-allelic CRISPR-based gene editing in the mouse liver. CRISPR/Cas9 was delivered to the liver in lipid nanoparticles (LNP) and was designed to target and delete 49 nucleotides (nts) from a wild-type (WT) gene sequence, generating a novel sequence junction (Edited). The BaseScope probes were designed to target either the WT sequence or the sequences brought together because of the 49 nts deletion



**Fig 2. A.** CRISPR-mediated nucleotide deletion. BaseScope paired oligo (1 ZZ) probes were designed to target either the nucleotides in the WT sequence or the novel edited junction sequence. **B and C.** The WT sequence (green) was detected in both the unedited liver and the edited liver, whereas the edited sequence (red) was detected only in the edited liver. Most hepatocytes expressed either WT only or edited only transcripts, however a few cells co-expressed both the WT and edited sequences black arrows.

## Key RNAscope Products for CRISPR applications

The RNAscope and BaseScope assays can be used to detect RNA editing and components of the CRISPR system in a multiplexed assay amenable to a manual or automated workflow. Obtain single-molecule specificity and sensitivity to visualize a combination of RNA and protein targets on the same slide.

	RNAscope Assay	BaseScope Assay
<b>Preferred Solution</b>	<b>RNAscope Duplex or Multiplex Assay</b>	<b>BaseScope Duplex Assay</b>
	<ul style="list-style-type: none"> <li>- Detect the Cas 9 enzyme gene expression</li> <li>- Confirm target and knockout of downstream gene expression</li> <li>- Multiplex with cell-type marker probes</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm the targeted edit at the RNA level</li> <li>- Visualize the guide RNA</li> <li>- Detect multiple indels with pooled BaseScope probes</li> </ul>

## Professional Assay Services

Need to know your results fast? Outsource your study to our experts and obtain answers that you can trust!



- Leverage PAS expertise for complex projects in CRISPR-based editing.
- Receive actionable results within 4-6 weeks.



Global Developer, Manufacturer, and Supplier of High Quality Reagents, Analytical Instruments, and Precision Diagnostics

**INCLUDES** R&D Systems™ Novus Biologicals™ Tocris Bioscience™ ProteinSimple™ ACD™ ExosomeDx™ Asuragen™ Lunaphore™

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