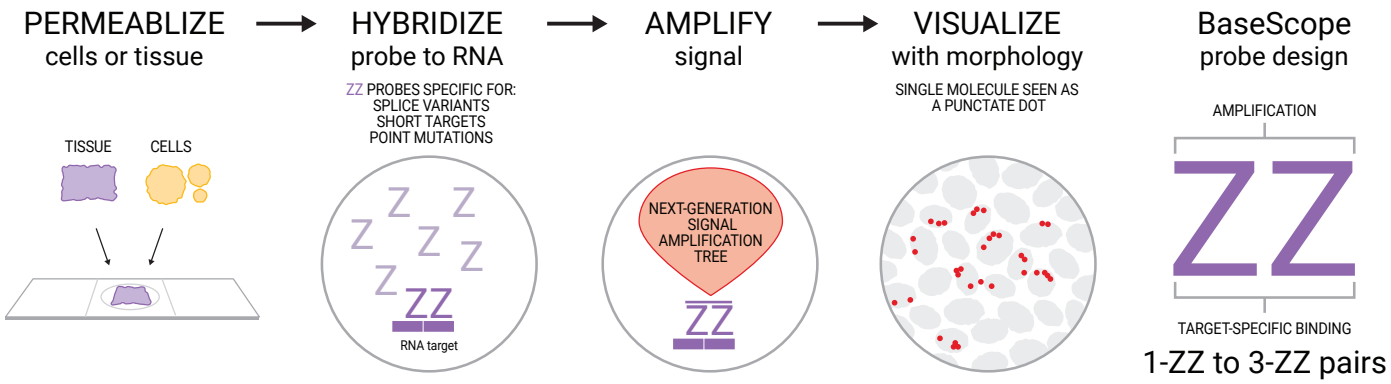
BaseScope™

ACD™ a bio-techne brand

BaseScope™ Assays for the Detection of Splice Variants, Short Targets, and Point Mutations

Publications highlighting the utility of the BaseScope assay



The BaseScope assay workflow: The BaseScope assay is a specialized *in situ* hybridization assay designed for the detection of splice variants, highly homologous or short sequences, and point mutations.

Publications Highlighting Splice Variants

Expression of avian β-defensin mRNA in the chicken yolk sac

Zhang, H. and Wong, E.A. (2019). *Dev Comp Immunol.* 95:89–95

The landscape of d16HER2 splice variant expression across HER2-positive cancers

Volpi, C.C., *et al.* (2019). *Sci Rep.* 9(1):3545

Targeting LIF-mediated paracrine interaction for pancreatic cancer therapy and monitoring

Shi, Y., *et al.* (2019). *Nature.* 569(7754):131–135

Alternative RNA splicing of the GIT1 gene is associated with neuroendocrine prostate cancer

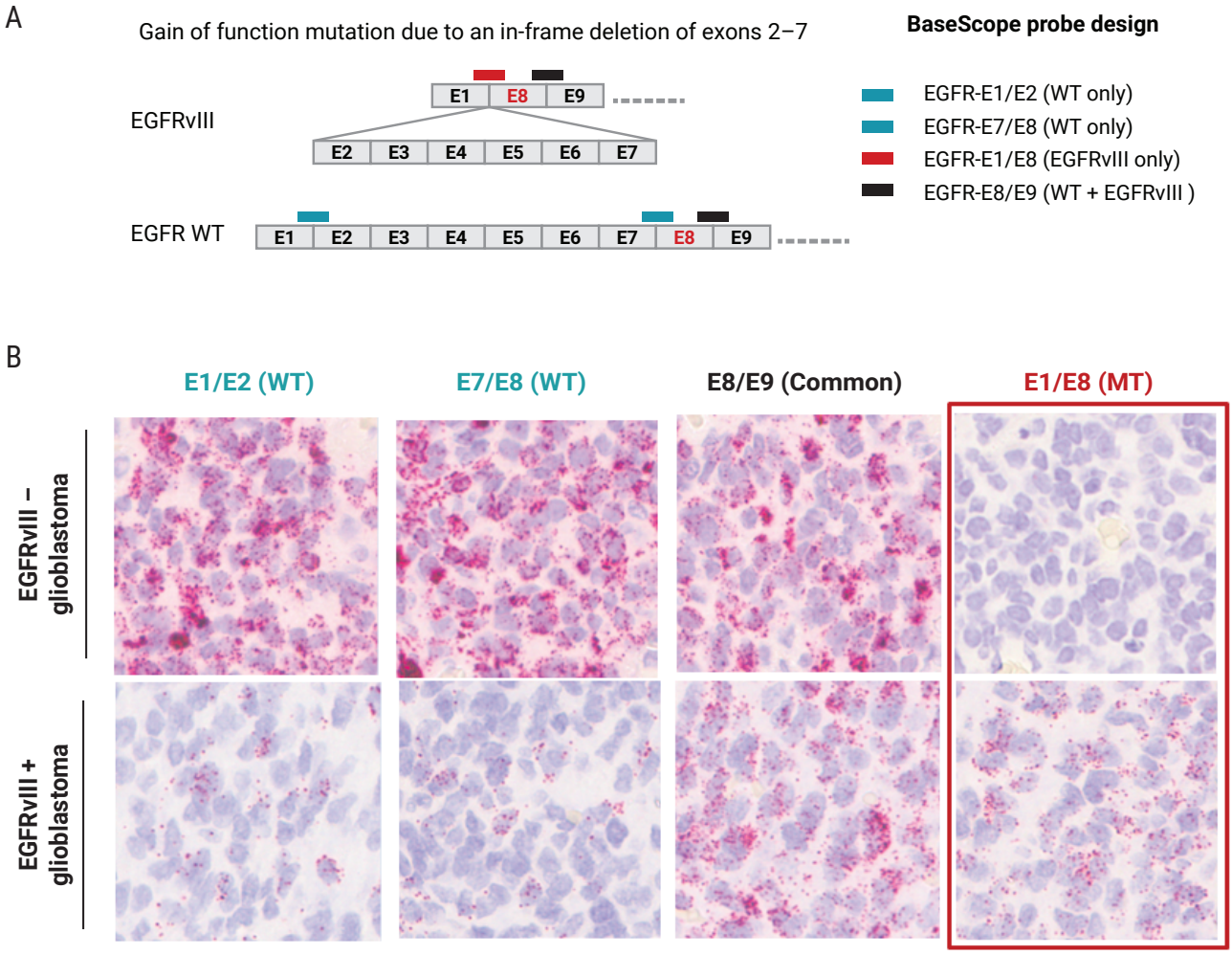
Lee, A.R., *et al.* (2019). *Cancer Sci.* 110(1):245–255

Altered human oligodendrocyte heterogeneity in multiple sclerosis

Jäkel, S., *et al.* (2019). *Nature.* 566(7745):543–547

Loss of BCL9/9l suppresses Wnt driven tumourigenesis in models that recapitulate human cancer

Gay, D.M., *et al.* (2019). *Nat Commun.* 10(1):723



The BaseScope assay can be used to identify the EGFRvIII status in glioblastoma patient samples. (A) Different probes were designed to specifically detect WT and mutant EGFR transcripts. (B) The exon junction E1/E2 probe detects WT EGFR transcript in both glioblastoma samples. Probe designed against a common exon junction E8/E9 detects both WT and mutant EGFR transcripts in both samples, while the E1/E8 probe specifically detects the mutant exon junction in EGFRvIII + glioblastoma sample. Red punctate dots indicate positive signal.

NRG1 type I dependent autoparacrine stimulation of Schwann cells in onion bulbs of peripheral neuropathies

Fledrich, R., *et al.* (2019). *Nat Commun.* 10(1):1467

Detection and quantification of multiple RNA sequences using emerging ultrasensitive fluorescent *in situ* hybridization techniques

Erben, L. and Buonanno A. (2019). *Curr Protoc Neurosci.* 87(1):e63

XBP1S regulates MUC5B in a promoter variant-dependent pathway in IPF airway epithelia

Chen, G., *et al.* (2019). *Am J Respir Crit Care Med.* DOI: 10.1164/rccm.201810-1972OC

A CCDC50 splice variant is modulated by SRSF3 and promotes hepatocellular carcinoma via the Ras signaling pathway

Wang, H., *et al.* (2018). *Hepatology.* 69(1):179–195

Cost-efficient and easy to perform PCR-based assay to identify Met exon 14 skipping in formalin-fixed paraffin-embedded (FFPE) non-small cell lung cancer (NSCLC) samples

O'Brien, O., *et al.* (2019). *Diagnostics (Basel).* 9(1)

Heterozygosity of chaperone Grp78 reduces intestinal stem cell regeneration potential and protects against adenoma formation

van Lidth de Jeude, J.F., *et al.* (2018). *Cancer Res.* 78(21):6098–6106

Somatic APP gene recombination in Alzheimer's disease and normal neurons

Lee, M.H., *et al.* (2018). *Nature.* 563(7733):639–645

C9ORF72 repeat expansion causes vulnerability of motor neurons to Ca^{2+}-permeable AMPA receptor-mediated excitotoxicity

Selvaraj, B.T., *et al.* (2018). *Nat Commun.* 9(1):347

Endogenous Notch signaling in adult kidneys maintains segment-specific epithelial cell types of the distal tubules and collecting ducts to ensure water homeostasis

Mukherjee, M., *et al.* (2018). *J Am Soc Nephrol.* 30(1):110–126

Loss of amphiregulin reduces myoepithelial cell coverage of mammary ducts and alters breast tumor growth

Mao, S.P.H., *et al.* (2018). *Breast Cancer Res.* 20(1):131

Quantitative analysis of alternative pre-mRNA splicing in mouse brain sections using RNA *in situ* hybridization assay

Guo, X., *et al.* (2018). *J Vis Exp.* (138):pe57889

Roles of alternative RNA splicing of the *Bif-1* gene by SRRM4 during the development of treatment-induced neuroendocrine prostate cancer

Gan, Y., *et al.* (2018). *EBioMedicine.* 31:267–275

PHD2 inactivation in Type I cells drives HIF-2alpha dependent multi-lineage hyperplasia and the formation of paraganglioma-like carotid bodies

Fielding, J.W., *et al.* (2018). *J Physiol.* DOI: 10.1113/JP275996

The same strain of *Piscine orthoreovirus* (PRV-1) is involved with the development of different, but related, diseases in Atlantic and Pacific Salmon in British Columbia

Di Cicco, E., *et al.* (2018). *Facets.* 3(1):599–641

Next-generation *in situ* hybridization approaches to define and quantify HIV and SIV reservoirs in tissue microenvironments

Deleage, C., *et al.* (2018). *Retrovirology.* 15(1):4

Novel junction-specific and quantifiable in situ detection of AR-V7 and its clinical correlates in metastatic castration-resistant prostate cancer

Zhu, Y., *et al.* (2018). *Eur Urol.* 73(5):727–735

Rare progerin-expressing preadipocytes and adipocytes contribute to tissue depletion over time

Revêchon, G., *et al.* (2017). *Sci Rep.* 7(1):4405

A novel ultrasensitive in situ hybridization approach to detect short sequences and splice variants with cellular resolution

Erben, L., *et al.* (2018). *Mol Neurobiol.* 55(7):6169–6181

Publications Highlighting Short Targets

Expression of avian β-defensin mRNA in the chicken yolk sac

Zhang, H. and Wong, E.A. (2019). *Dev Comp Immunol.* 95:89–95

The Familial dementia gene ITM2b/BRI2 facilitates glutamate transmission via both presynaptic and postsynaptic mechanisms

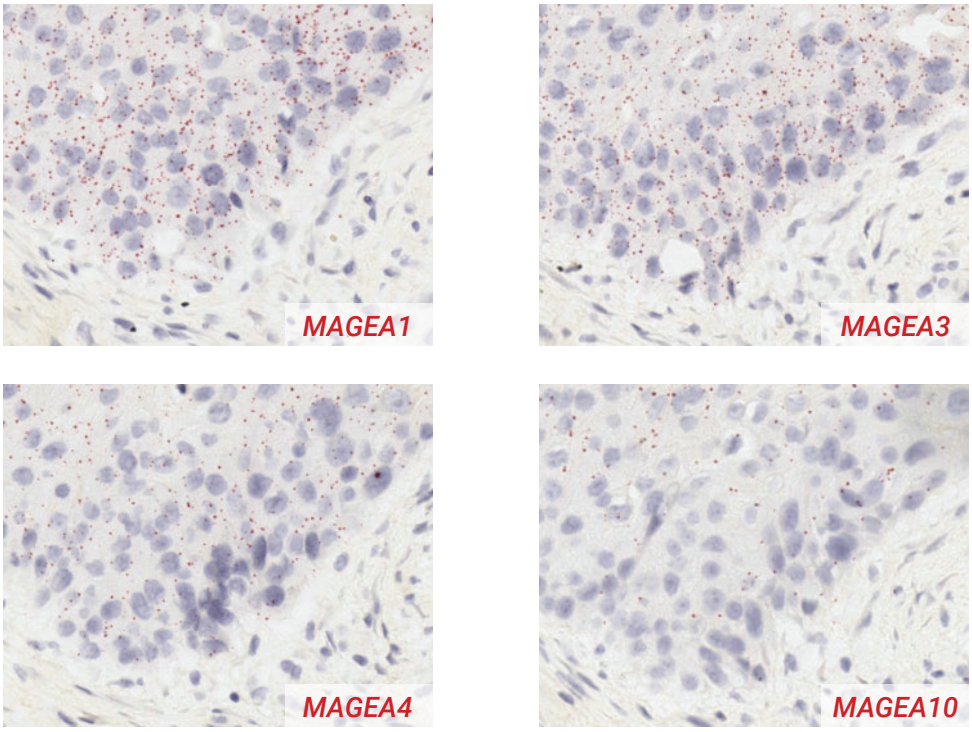
Yao, W., *et al.* (2019). *Sci Rep.* 9(1):4862

Circ-ZNF609 regulates G1-S progression in rhabdomyosarcoma

Rossi, F., *et al.* (2019). *Oncogene.* 38(20):3843–3854

Cellular senescence in progenitor cells contributes to diminished remyelination potential in progressive multiple sclerosis

Nicaise, A.M., *et al.* (2019). *Proc Natl Acad Sci U S A.* 116(18):9030–9039



The BaseScope assay can be used to specifically identify highly homologous sequences, such as the *MAGEA* family members in human lung cancer tissue.

Reduction of circular RNA expression associated with human retinoblastoma

Lyu, J., *et al.* (2019). *Exp Eye Res.* 184:278–285

Roles of the HOXA10 gene during castrate-resistant prostate cancer progression

Long, Z., *et al.* (2019). *Endocr Relat Cancer.* 26(3):279–292

Circular RNA 0047905 acts as a sponge for microRNA4516 and microRNA1227-5p, initiating gastric cancer progression

Lai, Z., *et al.* (2019). *Cell Cycle.* 1–13

Brf1 loss and not overexpression disrupts tissues homeostasis in the intestine, liver and pancreas

Liko, D., *et al.* (2019). *Cell Death Differ.* DOI: 10.1038/s41418-019-0316-7

Alternative RNA splicing of the GIT1 gene is associated with neuroendocrine prostate cancer

Lee, A.R., *et al.* (2019). *Cancer Sci.* 110(1):245–255

Interleukin 1 up-regulates microRNA 135b to promote inflammation-associated gastric carcinogenesis in mice

Han, T.S., *et al.* (2019). *Gastroenterolog.* 156(4):1140–1155.e4

Melanized focal changes in skeletal muscle in farmed Atlantic salmon after natural infection with *Piscine orthoreovirus* (PRV)

Bjørgen, H., *et al.* (2019). *J Fish Dis.* 42(6):935–945

A long noncoding RNA NR_045363 controls cardiomyocyte proliferation and cardiac repair

Wang, J., *et al.* (2019). *J Mol Cell Cardiol.* 127:105–114

A clinical applicable gene expression classifier reveals intrinsic and extrinsic contributions to consensus molecular subtypes in primary and metastatic colon cancer

Piskol, R., *et al.* (2019). *Clin Cancer Res.* DOI: 10.1158/1078-0432.CCR-18-3032

Annotation and functional clustering of circRNA expression in rhesus macaque brain during aging

Xu, K., *et al.* (2018). *Cell Discov.* 4:48

miR-100 maintains phenotype of tumor-associated macrophages by targeting mTOR to promote tumor metastasis via Stat5a/IL-1ra pathway in mouse breast cancer

Wang, W., *et al.* (2018). *Oncogenesis.* 7(12):97

The Epstein Barr virus circRNAome

Ungerleider, N., *et al.* (2018). *PLoS Pathog.* 14(8):e1007206

Lariat intronic RNAs in the cytoplasm of vertebrate cells

Talhouarne, G.J.S. and Gall, J.G. (2018). *Proc Natl Acad Sci U S A.* 115(34):E7970–E7977

Involvement of *DHH* and *GLI1* in adrenocortical autograft regeneration in rats

Takizawa, N., *et al.* (2018). *Sci Rep.* 8(1):14542

SRRM4 gene expression correlates with neuroendocrine prostate cancer

Li, Y., *et al.* (2019). *Prostate.* 79(1):96–104

A novel mechanism of SRRM4 in promoting neuroendocrine prostate cancer development via a pluripotency gene network

Lee, A.R., *et al.* (2018). *EBioMedicine.* 35:167–177

Cellular localization and regulation of receptors and enzymes of the endocannabinoid system in intestinal and systemic inflammation

Grill, M., *et al.* (2019). *Histochem Cell Biol.* 151(1):5–20

MicroRNA-29c prevents pulmonary fibrosis by regulating epithelial cell renewal and apoptosis

Xie, T., *et al.* (2017). *Am J Respir Cell Mol Biol.* 57(6):721–732

Loss of a mammalian circular RNA locus causes miRNA deregulation and affects brain functionl

Piwecka, M., *et al.* (2017). *Science.* 357(6357)

Functional ectopic neuritogenesis by retinal rod bipolar cells is regulated by miR-125b-5p during retinal remodeling in RCS rats

Fu, Y., *et al.* (2017). *Sci Rep.* 7(1):1011

Publications Highlighting Point Mutations

Roles of the HOXA10 gene during castrate-resistant prostate cancer progression

Long, Z., *et al.* (2019). *Endocr Relat Cancer.* 26(3):279–29

Recurrent PDGFRB mutations in unicentric Castleman disease

Li, Z., *et al.* (2019). *Leukemia.* 33(4):1035–1038

Concurrent *in situ* analysis of point mutations and immune infiltrate in FFPE cancers

Baker, A.M. and Graham, T.A. (2019). *Methods in Enzymology.* DOI: 10.1016/bs.mie.2019.05.009

Activating mutations in the MAP-kinase pathway define non-ossifying fibroma of bone

Baumhoer, D., *et al.* (2019). *J Pathol.* 248(1):116–122

The spatio-temporal evolution of lymph node spread in early breast cancer

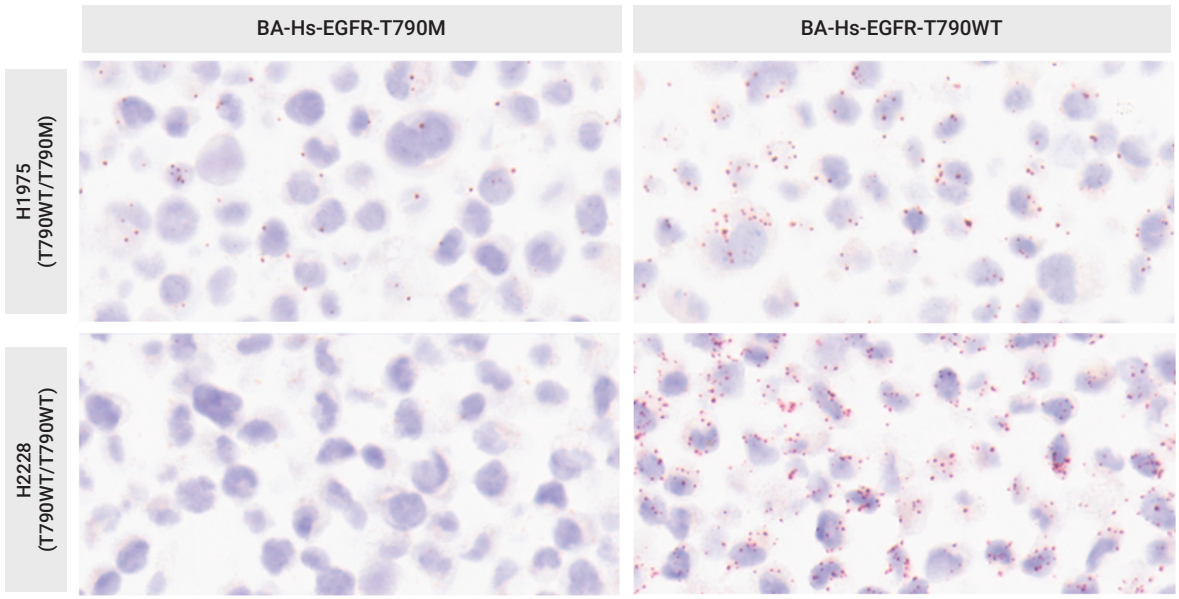
Barry, P., *et al.* (2018). *Clin Cancer Res.* 24(19):4763–4770

Evolutionary history of human colitis-associated colorectal cancer

Baker, A.M., *et al.* (2019). *Gut.* 68(6):985–995

Robust RNA-based in situ mutation detection delineates colorectal cancer subclonal evolution

Baker, A.M., *et al.* (2017). *Nat Commun.* 8(1):1998



BaseScope probe detects the EGFR-T790 mutant transcript in the H1975 lung cancer cell line, which is known to bear the EGFR T790M mutation, but does not detect any mutant transcript in the H2228 lung cancer cell line, which expresses the WT form of EGFR-T790.

Learn more by visiting acdbio.com/basescope™-manual-assays

For more information, visit us online at www.acdbio.com/contact

a bio-techne brand

California, USA