

# RNAscope® Probes for Human Cancer Genes

## Get probes for your gene of interest designed in two weeks.

Above: Human breast cancer: *HPRT1*, *POLR2A*, *PPIB* and *PGK* mRNA expression in FFPE tissue

### Featured Publications using RNAscope® Technology

A collagen-remodeling gene signature regulated by *TGF-β* signaling is associated with metastasis and poor survival in serous ovarian cancer.

Cheon *et al.* (2014)  
PMID: 24218511

Possible role of *Cdx2* in the serrated pathway of colorectal cancer characterized by *BRAF* mutation, high-level CpG Island methylator phenotype and mismatch repair-deficiency.

Dawson *et al.* (2014)  
PMID: 24166180

*In situ* Tumor *PD-L1* mRNA expression is associated with increased TILs and better outcome in breast carcinomas.

Schalper *et al.* (2014)  
PMID: 24647569

RNASCOPE® DELIVERS

# MD+MC

IN A SINGLE ASSAY

**Molecular Detection** visualizes and quantifies expressed genes at single-cell resolution.

**Morphological Context** localizes expressed genes and reveals tissue architecture.

### Cancer RNA Biomarkers

A cancer RNA biomarker refers to a coding or non-coding RNA that is indicative of the presence of cancer—either expressed by a tumor or expressed as a specific response of the body to the presence of cancer. Cancer researchers apply RNAscope® *in situ* hybridization to study the following:

**Tumor heterogeneity**—There is a tremendous amount of inter-tumor and intra-tumor heterogeneity. RNAscope's single-molecule sensitivity with single-cell resolution along with intact morphological context allows for visualization of differential gene expressions in morphologically similar tumor cells.

**Tumor microenvironment**—A tumor is a complex organ comprised of many different cell types. Its communication with neighboring normal cells, extracellular matrix, and signaling molecules like chemokines, cytokines and growth factors is a major driver of cancer progression and metastasis. RNAscope ISH is particularly suited for dissecting complex autocrine and paracrine communication mechanisms.

**Circulating tumor cells**—The unprecedented high-fidelity signal amplification and multiplexing capability of RNAscope make it possible to simultaneously detect and characterize viable CTCs in the background of millions of blood cells.

RNAscope ISH enables visualization of RNA biomarkers while preserving tissue context with single-cell resolution. It is an essential solution in a multitude of cancer research applications

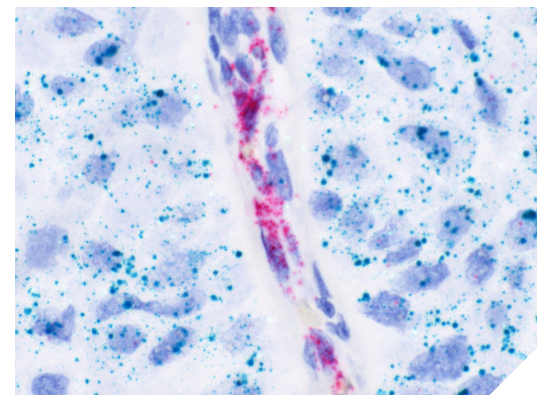


Figure 1. Human breast cancer: *EPCAM1* (red) & *EGFR* (green) expression in FFPE tissue; RNAscope 2-plex Chromogenic Kit

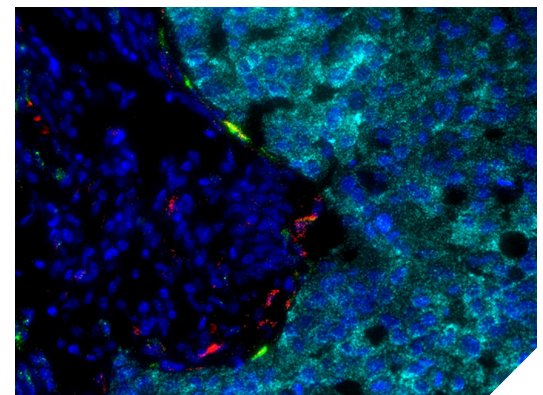


Figure 2. Human breast cancer: *PanCK*, *uPA* and *PAI-1* expression in FFPE tissue; RNAscope Multiplex Fluorescent Kit

including risk assessment, diagnosis, prognosis, patient stratification, therapy and epidemiology.

Visualize RNA biomarkers in your cancer tissues today [acdbio.com/cancer](http://acdbio.com/cancer)

# RNAscope® Human Cancer Gene List

Human Cancer Gene List—Probe details are available at <a href="http://acdbio.com/probesearch">acdbio.com/probesearch</a>															
ABCB1	B2M	CD38	COL1A1	EGF	FGFR3	FOXC2	HPGD	IL3	LAG3	MUC2	PDGFD	PTGES2	SLC18A2	TBP	TRIM29
ACACA	BACH1	CD3G	COL3A1	EGFL7	FLG	FOXM1	HPRT1	IL33	LAPTM4B	MUC4	PDGFRA	PTGS1	SLC24A4	TCF7	TRPA1
ACSL4	BBC3	CD4	CSF1	EGFR	FLI1	FOXP1	HRH3	IL4	LCN2	MUC5AC	PDGFRA	PTGS2	SLC29A1	TERC	TSC2
ACTA2	BCAR4	CD40	CSF1R	EN2	FLT4	FOXP2	HTR3A	IL5	LEPR	MUC6	PDGFRB	PTH1R	SLC34A2	TAGLN	TSLP
ACTB	BCL2	CD40LG	CSF2	ENPP2	FN1	FSHR	HTRA1	IL6	LGR5	MYC	PDPN	PTK7	SLC39A6	TAS2R38	TSPY1
ADAM10	BCL2L1	CD44	CTAG1B	EPCAM	FOLR1	FTL	ICAM1	IL6R	LIN28A	NAMPT	PECAM1	PTPRC	SLC6A4	TBK1	TTF1
ADRM1	BCL6	CD47	CTGF	EPGN	FOLR2	GAL	ICOS	IL7R	LIN28B	NANOG	PGF	PVRL1	SLFN11	TBP	TUBB
AGTR1	BCR	CD68	CTLA4	EPHA2	FOS	GALR1	IDH1	ITGA11	LOXL2	NCSTN	PGK1	PVT1	SMAD2	TCF7	TUBB3
AICDA	BDNF	CD8A	CTNNB1	EPHB2	FOXC2	GAPDH	IDH2	ITGA6	LPAR1	NDRG4	PGR	PYCARD	SMAD3	TERC	TWIST1
ALB	BIN1	CDA	CXADR	EPHB3	FOXM1	GATA3	IDO1	IL8	LRIG1	NGF	PHLDA3	RAF1	SMAD4	TERT	TXNIP
ALDH1A1	BIRC7	CDH1	CXCL10	EPHB4	FOXP1	GATA4	IFNG	ILDR1	LTA	NGFR	PIF1	RARRES3	SMC1A	TFF2	UBB
ALDH1A2	BMI1	CDH2	CXCL13	EPOR	FOXP2	GATA5	IFNL1	INS	MACC1	NID1	PIK3CA	REG1A	SMO	TFF3	UBC
ALK	BRAF	CDH3	CXCR3	ERBB2	FSHR	GATA6	IGF1	INSR	MAGEA10	NOTCH1	PIK3CD	REG1B	SNAI1	TGFA	UCHL1
ALOX12	BRCA1	CDH9	CXCR4	ERBB3	FTL	GDF15	IGF2	IRAK1	MAGEB2	NQO1	PIK3CG	REG3A	SNAI2	TGFB1	UNC5C
AMACR	BRCA2	CDKN1A	CYP3A43	ERBB4	GAL	GDF2	IGF2BP3	ITGA11	MALAT1	NR4A2	PIM1	REG4	SNCA	TGFB2	UPK2
ANGPT2	BRD4	CDKN1B	CYP3A5	ERCC1	GALR1	GDF3	IGFBP2	ITGAM	MAP3K5	NRF1	PLAUR	RIPK1	SOS1	TGFBR2	VEGFA
ANKRD30A	BTC	CDKN1C	DCBLD1	EREG	GAPDH	GFAP	IGFBP3	ITGB6	MAP3K8	NRG1	PMP22	RLN1	SOX2	TLR2	VHL
ANXA10	BTG2	CDKN2A	DCK	ERG	GATA3	GLDC	IGFBP7	ITGB7	MAPT	NTM	PODXL	RNF43	SOX9	TLR3	VIM
ANXA6	BTLA	CDKN3	DCLK1	ESR1	GATA4	GLI1	IGKC	ITGB8	MCAM	NTRK1	POLR2A	ROR1	SPRY2	TLR4	VWF
APOA1	CA9	CDX2	DCN	ETV1	GATA5	GLP1R	IL10	JAG1	MCL1	NTRK2	POSTN	ROR2	SPRY4	TLR7	WNT2
APOBEC3A	CALCA	CEACAM6	DDB2	ETV4	GATA6	GPLY	IL12A	JAK2	MDM2	NTRK3	POU5F1	RORC	SST	TLR8	WNT5A
APOBEC3B	CALR	CELA2A	DDIT3	ETV5	GDF15	GNRHR	IL12B	KCNA3	MDM4	OCLN	PPIB	ROS1	SSTR1	TMEM45A	WNT7A
APOC3	CAST	CELA3B	DDR1	EWSR1	GDF2	GRB7	IL13	KDM5A	MEG3	OGN	PPM1D	RPS27L	SSTR2	TNF	ZEB1
APOH	CBFA2T3	CES1	DDR2	EZH1	GDF3	GREM1	IL13RA2	KDR	MET	OLFM4	PRAME	RRM1	SSTR3	TNFRSF1A	ZEB2
AR	CBR3	CES2	DEFA6	EZH2	GFAP	GUCA2A	IL17A	KIT	MGMT	OSGIN1	PRF1	RTN4	SSTR4	TNFRSF10B	
AREG	CCK	CFB	DEFB4A	F2RL1	GLDC	GUCY2C	IL17F	KITLG	MITF	P2RX7	PRKAB1	S100A11	SSTR5	TNFRSF12A	
ARG1	CCKAR	CFLAR	DES	F3	GLI1	H19	IL18	KLF5	MKI67	PAF1	PRL	S100B	ST8SIA1	TNFRSF13C	
ARG2	CCKBR	CFTR	DICER1	FBLN5	GLP1R	HAS2	IL1A	KLF9	MMP2	PAX6	PRLR	S100P	STK39	TNFRSF14	
ARID1A	CCL5	CHGA	DLL4	FBXW7	GPLY	HAVCR2	IL1B	KLK3	MMP3	PAX8	PRNCR1	S1PR1	STK4	TNFRSF17	
ARPC5	CCND1	CHI3L1	DRD2	FCGR2A	GNRHR	HES1	IL1RL1	KLRC1	MMP9	PBRM1	PROCR	S1PR3	SULF1	TNFRSF8	
ASAP1	CCR1	CHRM1	DUOX2	FDXR	GRB7	HEY1	IL2	KRAS	MMP13	PCA3	PROM1	S1PR4	SYP	TNFSF13	
ASCL2	CCR5	CHRNA7	DUOX2	FERMT2	GREM1	HGF	IL20RB	KRT17	MMP14	PCAT1	PROX1	SAT1	TAC1	TNFSF13B	
ATF4	CCR6	CLDN6	DUSP22	FFAR1	GUCA2A	HIF1A	IL21	KRT18	MPO	PCNA	PRUNE2	SCN9A	TACC3	TNFSF15	
ATP4A	CCR8	CLU	DUSP6	FGF19	GUCY2C	HMGB2	IL22	KRT19	MST1R	PDCD1	PTCH1	SEC61B	TACR1	TP53	
AVP	CD22	CMKLR1	EDNRB	FGF2	H19	HMOX1	IL22RA1	KRT20	MTA2	PDCD1LG2	PTEN	SERPINB5	TACSTD2	TP63	
AXIN2	CD24	CNR1	EFNA3	FGF23	HAS2	HOTAIR	IL23A	KRT5	MTNR1A	PDGFA	PTENP1	SERPINE1	TAGLN	TPBG	
AXL	CD274	CNR2	EFNA4	FGFR1	HAVCR2	HOXA13	IL23R	KRT7	MUC1	PDGFB	PTGER2	SFRP4	TAS2R38	TP63	
AZGP1	CD34	COL11A1	EFNB3	FGFR2	HBEGF	HOXC6	IL24	KRT8	MUC13	PDGFC	PTGER4	SHH	TBK1	TRIM23	

ACD offers an ever-growing selection of RNA biomarker probes. Don't see your gene of interest? Custom probes designed within 2 weeks for virtually ANY gene from ANY species in ANY tissue.

Visualize RNA biomarkers in your cancer tissues today [acdbio.com/cancer](http://acdbio.com/cancer)



Advanced Cell Diagnostics

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