

# QIAseq Targeted RNA Panels

## Human Apoptosis & Cell Death

Cat. no. 333002 RHS-002Z-12

**For gene expression profiling by RNA sequencing with laboratory-verified primer sets**

The Human Apoptosis & Cell Death QIAseq targeted RNA panel profiles the expression of 264 genes involved in cell death, which can occur through 3 mechanisms: apoptosis, autophagy, and necrosis. Apoptosis, or programmed cell death, results in controlled cell shrinkage and nuclear fragmentation via the action of caspases, as well as an anti-inflammatory cytokine release. In contrast, necrosis signals via RIPK1 (RIP1), leading to cell swelling, lysis, and a pro-inflammatory cytokine release. Autophagy destroys the cell's damaged proteins and organelles via an intracellular catabolic process in the lysosome. Multiple physiological processes require the removal of specific cells by a controlled cell-death program. For example, tissue remodeling activates apoptosis, whereas energy metabolism and growth regulation responses rely on autophagy. Developmental processes often activate apoptosis, while bodily injuries or infection more commonly induce necrosis. The molecular mechanisms behind these cell death pathways overlap and can be co-activated by similar upstream stimuli. For example, apoptosis and necrosis both signal through the death domain receptors FAS, TNFRSF1A (TNFR1), and TNFRSF10A (TRAIL-R), while autophagy and apoptosis share BCL2 family members as key regulators. Using digital RNA sequencing, the expression of a focused panel of genes involved in cell death pathways can be analyzed with this primer pool.

For further details, consult the *QIAseq Targeted RNA Panel Handbook*.

Panel is enough for 12 samples.

### Shipping and storage

QIAseq Targeted RNA Panels are shipped in two boxes: box 1 of 2 is shipped on dry ice and box 2 of 2 is shipped on blue ice. For long-term storage, keep the contents of box 1 at  $-20^{\circ}\text{C}$  and the contents of box 2 at  $4^{\circ}\text{C}$ . If stored under these conditions, the panels are stable for 8 months after receipt.

**Note:** Open the package and store the products appropriately immediately upon receipt.



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Sample to Insight

## Panel Contents

Contents	Volume
RNase-free water	1000 $\mu$ l
Control P2	12 $\mu$ l
Buffer GE	24 $\mu$ l
RE3 Reverse Transcriptase Mix	24 $\mu$ l
5x Buffer BC3	48 $\mu$ l
QIaseq RNA 5x Buffer	300 $\mu$ l
HotStarTaq DNA Polymerase (6U / $\mu$ l)	60 $\mu$ l
RS2 Primer (10 $\mu$ M)	20 $\mu$ l
BC Primer Mix	80 $\mu$ l
LA Primer Mix	80 $\mu$ l
QIaseq Beads	4 ml

## Gene table: QIaseq Targeted RNA Panels

Gene symbol	Gene symbol	Gene symbol	Gene symbol
AIFM1	AKT1	AMBRA1	APAF1
APOL1	APP	ATG10	ATG101
ATG12	ATG13	ATG14	ATG16L1
ATG16L2	ATG2A	ATG2B	ATG3
ATG4A	ATG4B	ATG4C	ATG4D
ATG5	ATG7	ATG9A	ATG9B
ATP6V1G2	BAD	BAG1	BAG3
BAK1	BAX	BBC3	BCL10
BCL2	BCL2A1	BCL2L1	BCL2L10
BCL2L11	BCL2L2	BECN1	BFAR
BID	BIK	BIRC2	BIRC3
BIRC5	BIRC6	BMF	BNIP2
BNIP3	BNIP3L	BRAF	BRCA1
C16orf13	C1orf159	CAPN1	CAPN2
CAPN3	CAPN5	CAPN6	CAPN7
CAPNS1	CASP1	CASP10	CASP14
CASP2	CASP3	CASP4	CASP5
CASP6	CASP7	CASP8	CASP8AP2
CASP9	CCDC103	CD27	CD28
CD40	CD40LG	CD70	CDKN1A
CDKN1B	CDKN2A	CFLAR	CIDEA
CIDEB	CLN3	COMMD4	CRADD
CSF2	CTSB	CTSD	CTSS
CXCR4	CYBB	CYCS	CYLD
DAPK1	DAXX	DDIT3	DEFB1
DENND4A	DFFA	DIABLO	DPYSL4

Gene symbol	Gene symbol	Gene symbol	Gene symbol
DRAM1	DRAM2	EDA2R	EIF2AK3
EIF4G1	EIF5B	ERN1	ESR1
F2	FADD	FAF1	FAM134A
FAM134B	FAM134C	FAS	FASLG
FBRSL1	FEM1B	FOXI1	FOXO3
FUS	FYCO1	GAA	GABARAP
GABARAPL1	GABARAPL2	GADD45A	GALNT5
GLUD1	GLUL	GRB2	HDAC1
HDAC6	HGS	HIPK2	HRK
HSP90AA1	HSPA8	HSPBAP1	HTT
IFNB1	IFNG	IGF1	IGF1R
IKBKG	IL10	IL18	IL1B
IL2	IL24	IL4	IL6
INS	IRGM	JPH3	KCNIP1
KIAA0586	LAMP1	LTA	LTBR
MADD	MAG	MAP1LC3A	MAP1LC3B
MAP3K2	MAP3K5	MAPK14	MAPK8
MCL1	MGEA5	MOAP1	MTOR
MYC	MYD88	NAIP	NFKB1
NFKB2	NGF	NGFR	NGFRAP1
NLRC4	NLRP4	NOD1	NOD2
NOL3	NOX1	NOX4	NPC1
OR10J3	PARP1	PARP2	PIDD1
PIK3C3	PIK3CG	PIK3R4	PINK1
PMAIP1	PML	PPIA	PPID
PPIE	PPIL2	PRKAA1	PRKCA
PRKCD	PTEN	PVR	PYCARD
PYGL	RAB24	RAB25	RASA1
RB1	RB1CC1	RFX1	RG519
RIPK1	RIPK2	RIPK3	RPS6KB1
S100A7A	SIRT1	SLC25A4	SLC25A6
SNCA	SP1	SPATA2	SPN
SQSTM1	STAT1	SYCP2	TGFB1
TGM2	THAP3	TMEM123	TMEM57
TMEM74	TNF	TNFRSF10A	TNFRSF10B
TNFRSF11B	TNFRSF14	TNFRSF17	TNFRSF1A
TNFRSF1B	TNFRSF21	TNFRSF25	TNFRSF4
TNFRSF6B	TNFRSF8	TNFRSF9	TNFSF10
TNFSF15	TNFSF8	TP53	TP53BP2
TP73	TRADD	TRAF2	TRAF3
TXNL4B	ULK1	ULK2	UVRAG
VMP1	WIPI1	XIAP	ZBTB22
ZNF446	_GDC_CONTROL_06_	_GDC_CONTROL_07_	_GDC_CONTROL_14_
_GDC_CONTROL_21_	_GDC_CONTROL_24_	_GDC_CONTROL_32_	

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## Ordering Information

Product	Contents	Cat. no.
QIAseq Targeted RNA Panel (12)	Kit containing reagents for first strand synthesis, molecular barcoding, gene-specific amplification and QIAseq Beads for targeted RNA sequencing; fixed panel for 12 samples	333002
QIAseq Targeted RNA Panel (96)	Kit containing reagents for first strand synthesis, molecular barcoding, gene-specific amplification and QIAseq Beads for targeted RNA sequencing; fixed panel for 96 samples	333005
QIAseq Targeted RNA Extended Panel (12)	Kit containing reagents for first strand synthesis, molecular barcoding, gene-specific amplification and QIAseq Beads for targeted RNA sequencing; extended panel for 12 samples	333012
QIAseq Targeted RNA Extended Panel (96)	Kit containing reagents for first strand synthesis, molecular barcoding, gene-specific amplification and QIAseq Beads for targeted RNA sequencing; extended panel for 96 samples	333015
QIAseq Targeted RNA Custom Panel (12)	Kit containing reagents for first strand synthesis, molecular barcoding, gene-specific amplification and QIAseq Beads for targeted RNA sequencing; custom panel for 12 samples	333022
QIAseq Targeted RNA Custom Panel (96)	Kit containing reagents for first strand synthesis, molecular barcoding, gene-specific amplification and QIAseq Beads for targeted RNA sequencing; extended panel for 96 samples	333025
QIAseq Targeted RNA Custom Panel (384)	Kit containing reagents for first strand synthesis, molecular barcoding, gene-specific amplification and QIAseq Beads for targeted RNA sequencing; extended panel for 384 samples	333027
QIAseq Targeted RNA 12-index I (48)	Box containing oligos, enough for a total of 48 samples (for indexing up to 12 samples per run) and Custom Sequencing Primer for targeted RNA sequencing on Illumina platforms	333114
QIAseq Targeted RNA 96-index I (384)	Box containing oligos, enough for a total of 384 samples (for indexing up to 96 samples per run) and Custom Sequencing Primer for targeted RNA sequencing on Illumina platforms	333117
QIAseq Targeted RNA 96-index HT I (384)	Box containing oligos in arrays, enough for a total of 384 samples (for indexing up to 96 samples per	333127

Product	Contents	Cat. no.
	run) and Custom Sequencing Primer for targeted RNA sequencing on Illumina platforms	
QIAseq Targeted RNA 12-index L (48)	Box containing oligos, enough for a total of 48 samples (for indexing up to 12 samples per run) for targeted RNA sequencing on Ion Torrent platforms	333214
QIAseq Targeted RNA 96-index HT L (384)	Box containing oligos, enough for a total of 384 samples (for indexing up to 96 samples per run) for targeted RNA sequencing on Ion Torrent platforms	333217

QIAseq Targeted RNA Panels are intended for molecular biology applications. These products are not intended for the diagnosis, prevention or treatment of a disease.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at [www.qiagen.com](http://www.qiagen.com) or can be requested from QIAGEN Technical Services or your local distributor.

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Sample to Insight