

QIAseq Targeted RNA Panels

Mouse Immuno-Oncology

Cat. no. 333005 RMM-009Z

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

The Mouse Immuno-Oncology QIAseq Targeted RNA Panel profiles the expression of 990 genes relevant to host immune responses against tumors. Immunotherapy, now commonly known as the fourth pillar of cancer treatment, brings new hope to otherwise difficult cases. However, not all cancer types or all patients with the same cancer type respond equally to the same treatment, some patients' regress only to relapse later, and some immunotherapy treatments cause side-effects resembling autoimmune disorders. Therefore, basic research, such as gene expression analysis, is required and ongoing to better understand the biology of immuno-oncology and to discover more biomarkers identifying successfully responsive patients. For example, the expression of the immune checkpoint molecules in this panel on both tumor and immune cells prevents cellular immune responses from developing against tumor cells and as such may serve as potential biomarkers. Infiltration of the tumor microenvironment with the correct balance of active effector immune cells over suppressive dendritic or exhausted T cells most strongly correlates with effective immunotherapy and host immune responses. The several immune cell-specific and immune response-specific gene expression signatures in this panel have been all been used to examine immune response status. Finally, gene expression in other biological processes important to these immune responses (such as antigen processing and presentation, the interferon gamma response, and the cytosolic DNA-sensing pathway) have also proven important to analyze. Samples used for such analyses include whole tumor biopsies, tumor or immune cells sorted from those biopsies and even immune cells sorted from whole blood as a noninvasive surrogate. Gene expression changes over immunotherapy treatment courses correlate with either tumor regression and immunotherapy success or tumor resistance and immunotherapy failure. Using digital RNA sequencing, the expression of 990 genes with established roles in immuno-oncology can be analyzed with this primer pool.

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

Panel is enough for 96 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°C and the contents of box 2 at 4°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.



Panel Contents

Contents	Volume
RNase-free water	1000 μ l
Control P2	96 μ l
Buffer GE	192 μ l
RE3 Reverse Transcriptase Mix	192 μ l
5x Buffer BC3	384 μ l
QIaseq RNA 5x Buffer	2400 μ l
HotStarTaq DNA Polymerase (6U / μ l)	480 μ l
RS2 Primer (10 μ M)	160 μ l
BC Primer Mix	640 μ l
LA Primer Mix	640 μ l
QIaseq Beads	32 ml

Gene table: QIaseq Targeted RNA Panels

Gene symbol	Gene symbol	Gene symbol	Gene symbol
2700049A03Rik	4632428N05Rik	5330417C22Rik	5830415F09Rik
Abcb4	Abcb9	Abcc4	Abcg2
Abhd2	Abr	Abt1	Acacb
Acp5	Acpp	Acsl4	Actg1
Acvr1b	Acvr2b	Adap2	Adar
Adarb1	Adat2	Adcy1	Adcyap1
Adgre1	Adora2a	Adprh	Aes
Afp	Ahcyl1	Ahi1	Aim2
Akap3	Akt3	Aldh1b1	Alpl
Amhr2	Ank1	Ankrd10	Anp32b
Anpep	Apba2	Apbb2	Apod
Apoe	Apol7a	App	Aqp3
Ar	Arg1	Arg2	Arhgap8
Arl6ip5	Asf1a	Ass1	Atf2
Atf4	Atf7ip	Atg7	Atf2
Atm	Atp1b3	Atp9a	B2m
B3gat1	Babam1	Bach2	Bank1
Baf	Bcap31	Bcat1	Bcl11a
Bcl11b	Bcl2	Bcl2l1	Birc5
Blk	Blnk	Blvrb	Bnip3l
Bora	Brdt	Bst1	Bst2
Btg3	Btla	Btnl2	Cadm1
Cage1	Calb2	Calr	Caml
Canx	Capzb	Car4	Card9
Casp1	Casp8	Cat	Cblb
Ccdc33	Ccl1	Ccl11	Ccl17

Gene symbol	Gene symbol	Gene symbol	Gene symbol
Ccl19	Ccl2	Ccl22	Ccl25
Ccl27b	Ccl3	Ccl4	Ccl5
Ccl7	Ccr10	Ccr2	Ccr3
Ccr4	Ccr5	Ccr6	Ccr7
Ccr8	Ccr9	Cd14	Cd160
Cd163	Cd177	Cd19	Cd1d1
Cd1d2	Cd2	Cd200	Cd200r1
Cd207	Cd209e	Cd22	Cd247
Cd248	Cd27	Cd274	Cd276
Cd28	Cd33	Cd34	Cd36
Cd38	Cd3d	Cd3e	Cd3g
Cd4	Cd40	Cd40lg	Cd44
Cd46	Cd48	Cd5	Cd52
Cd51	Cd6	Cd68	Cd69
Cd7	Cd70	Cd72	Cd74
Cd79a	Cd80	Cd82	Cd83
Cd84	Cd86	Cd8a	Cd8b1
Cd93	Cd96	Cda	Cdcl4a
Cdc25c	Cdc5l	Cdc7	Cdk5r1
Cdkn2aip	Ceacam1	Ceacam10	Ceacam11
Ceacam12	Ceacam13	Ceacam14	Ceacam15
Ceacam18	Ceacam19	Ceacam2	Ceacam20
Ceacam3	Ceacam5	Ceacam9	Cenpf
Cep68	Ch25h	Chgb	Chil1
Chit1	Chrna6	Chst2	Chst7
Chuk	Ciita	Cicf1	Clec10a
Clec5a	Cluap1	Cma1	Coch
Col3a1	Col8a2	Colec12	Cpa3
Cr2	Creb1	Creb3l2	Creb5
Crebzf	Crisp2	Crispld2	Crtam
Csf1	Csf1r	Csf2	Csf2rb
Csf3r	Csnk1e	Cspg4	Cst7
Ctag2	Ctage5	Ctla4	Ctns
Ctsb	Ctsc	Ctsg	Ctsk
Ctsl	Ctss	Ctsw	Cul5
Cx3cl1	Cxcl1	Cxcl10	Cxcl11
Cxcl12	Cxcl13	Cxcl14	Cxcl15
Cxcl2	Cxcl3	Cxcl5	Cxcl9
Cxcr1	Cxcr2	Cxcr3	Cxcr5
Cxcr6	Cybb	Cyld	Cyp4f13
Cysltr2	Dcstamp	Dct	Ddx17
Ddx50	Ddx58	Dgke	Dgki
Dhfr	Dnajb1	Dnase2b	Dock9
Dok5	Dpp4	Dtnb	Dusp2

Gene symbol	Gene symbol	Gene symbol	Gene symbol
Dusp4	Dusp5	Dysf	Ebi3
Edn1	Edn2	Edn3	Ednra
Ednrb	Egfl6	Egr2	Ehd1
Eif3l	Emp1	Emp3	Entpd1
Eomes	Epcam	Epha2	Epn2
Epor	Eppin	Erap1	Erb2
Eri1	Evi5	Ewsr1	F13a1
F2	Fabp4	Fam111a	Fam26f
Fam3c	Fap	Fas	Fasl
Fbrsl1	Fcgr1	Fcgr3	Fcrlb
Fdft1	Fdx1	Fgf18	Figf
Fkbp1a	Fli1	Fn1	Foxj1
Foxn3	Foxp1	Foxp3	Fpr1
Fpr2	Fpr3	Fryl	Fut4
Fyb	Fzd2	Fzr1	G0s2
Gadd45a	Galc	Gata2	Gata3
Gba2	Gbp2	Gbp2b	Gch1
Gcnt1	Gdgd5	Ggf1	Gimap5
Gldc	Glg1	Gm2a	Gng7
Gpc4	Gpr143	Grsf1	Gsta4
Gstt1	Gtf3c1	Gucal1a	Gzma
Gzmb	Gzmc	Gzmk	Gzmm
H2-Aa	H2-Ab1	H2-B1	H2-D1
H2-DMa	H2-Eb1	H2-Eb2	H2-K1
H2-M1	H2-M10.1	H2-M10.2	H2-M10.3
H2-M10.4	H2-M10.5	H2-M10.6	H2-M11
H2-M2	H2-M3	H2-M5	H2-M9
H2-Oa	H2-Q1	H2-Q10	H2-Q2
H2-Q4	H2-Q6	H2-T10	H2-T22
H2-T23	H2-T24	H2-T3	Hal
Havcr2	Hbegf	Hdc	Hells
Hes1	Hey1	Hhla1	Hipk2
Hist1h1c	Hist1h2bc	Hmgb1	Hpgd
Hpgds	Hpse	Hrh4	Hs3st2
Hs3st3b1	Hsd11b1	Hsd12	Htatip2
Ica1	Icam1	Icos	Icosl
Ido1	Ido2	Ifi204	Ifi27
Ifi30	Ifit3	Ifitm3	Ifna14
Ifna2	Ifnb1	Ifng	Ifngr1
Ifngr2	Igfbp5	Igkc	Ikbkb
Ikbke	Ikbkg	Ikzf2	Ikzf4
Il10	Il12b	Il12rb1	Il12rb2
Il13	Il13ra2	Il15	Il17a
Il17b	Il17ra	Il17rb	Il18

Gene symbol	Gene symbol	Gene symbol	Gene symbol
Il1a	Il1b	Il1r1	Il1r2
Il1rap	Il2	Il21	Il21r
Il22	Il2ra	Il2rb	Il2rg
Il33	Il4	Il5ra	Il6
Il7	Inhba	Inpp4b	Inpp5f
Irf1	Irf2	Irf3	Irf4
Irf5	Irf6	Irf7	Irf8
Irf9	Itga4	Itgal	Itgam
Itgav	Itgb1	Itgb2	Itgb3
Itgb7	Itm2a	Jak1	Jak2
Kank2	Kat6a	Kbtbd11	Kcnh2
Kcnj15	Kcnk5	Kdr	Kif3b
Kir3dl1	Kir3dl2	Kit	Klf12
Klf2	Klf9	Klkb1	Klrb1
Klrc1	Klrc2	Klrc3	Klrd1
Klrk1	Kmt2a	Ksr1	Kynu
Lag3	Lair1	Lamp1	Lamp2
Lamp3	Laptm4b	Lax1	Layn
Lck	Ldb3	Ldlrad4	Leprot
Leprot1	Lgals9	Lgmn	Lima1
Lime1	Lman2l	Lmo7	Lnpep
Lpcat4	Lpgat1	Lrba	Lrp8
Lrrc32	Lrrn3	Lta	Lta4h
Ltb	Ltbr	Ltk	Ly75
Madc11	Madd	Maf	Magea1
Magea3	Magea4	Magea8	Mageh1
Mal	Maob	Map3k1	Map3k2
Mapre3	March6	Marco	Mavs
Mb	Mb21d1	Mcm3ap	Me1
Mef2c	Mefv	Megf9	Methl7a1
Mgam	Mical2	Mical3	Mill1
Mill2	Mki67	Mkl2	Mlana
Mlph	Mme	Mmp12	Mpl
Mpo	Mpped1	Mr1	Mrc2
Mrps27	Ms4a1	Ms4a2	Ms4a4a
Ms4a6d	Msln	Msr1	Mt2
Muc1	Myd88	Myo15b	Myo6
Myo7a	Nab1	Naip1	Nap114
Ncald	Ncam1	Ncr1	Ndfip1
Ndfip2	Nefl	Neil3	Neto2
Nfat5	Nfatc1	Nfatc3	Nfatc4
Nfe2l3	Nfkb1	Nfkbia	Nfkbib
Nkg7	Nos2	Nos3	Npepps
Npr1	Nptn	Nr0b1	Nr4a2

Gene symbol	Gene symbol	Gene symbol	Gene symbol
Nrp1	Nl5c	Nl5e	Nub1
Nudt9	Numa1	Nup107	Oas1a
Oas1b	Oas1c	Oas1d	Oas1e
Oas1f	Oas1g	Oas1h	Oas2
Oas3	Oas1	Odf1	Odf2
Optn	Osbp110	Otd7b	Park7
Pask	Pax5	Pbx4	Pcm1
Pcnx	Pcolce2	Pcx	Pdcd1
Pdcd1lg2	Pde4b	Pdgfrb	Pdia3
Pdlim4	Pdxk	Pf4	Phc3
Phex	Phf10	Phkg2	Pirb
Piwil2	Pla2g6	Pla2g7	Pmch
Pmel	Pml	Pnoc	Pomf1
Pparg	Ppbbp	Ppfbp2	Ppie
Ppif	Ppil2	Ppm1h	Ppp1r2
Ppp2r5c	Prame	Prdm1	Prep
Prf1	Prg2	Prkcq	Prm1
Prr5	Prrc2b	Prss33	Prtn3
Prx	Psma1	Psma2	Psma3
Psma4	Psma5	Psma6	Psma7
Psma8	Psemb1	Psemb10	Psemb11
Psemb2	Psemb3	Psemb4	Psemb5
Psemb6	Psemb7	Psemb8	Psemb9
Psmc1	Psmc2	Psmc3	Psmc4
Psmc5	Psmc6	Psmd1	Psmd10
Psmd11	Psmd12	Psmd13	Psmd14
Psmd2	Psmd3	Psmd4	Psmd5
Psmd6	Psmd7	Psmd8	Psmd9
Psmel	Psmel2	Psmel3	Psmel4
Psmf1	Psmg1	Psmg2	Psmg3
Psmg4	Pspc1	Ptafr	Pten
Ptgdr	Ptgdr2	Ptgds	Ptgis
Ptgs1	Ptpn1	Ptpn11	Ptpn13
Ptpn2	Ptprc	Ptprij	Pvalb
Pycard	Qrs1	Rab27a	Rab38
Rad23a	Rai14	Rap1gap	Rassf4
Rbbp8	Rbl2	Rbm3	Rcor3
Rela	Reps1	Rfx1	Rfxap
Rgs1	Rgs16	Rgs2	Ripk1
Ripk3	Rnf145	Rnf19a	Rora
Rorc	Rpa1	Rpl13a	Rad
Rragb	Rrp12	Runx3	Scarb2
Scg2	Scg5	Scn3a	Sec24c
Sele	Selp	Selplg	Serpina1b

Gene symbol	Gene symbol	Gene symbol	Gene symbol
Serpina1c	Serpina1d	Serpina3n	Serpinb6a
Sf1	Sgcb	Sgms1	Sh2d1a
Sh2d2a	Sh3tc1	Shmt2	Siah1a
Sigirr	Siglece	Siglecf	Sigmar1
Skap1	Sla	Slc15a2	Slc16a7
Slc18a2	Slc22a4	Slc24a3	Slc25a12
Slc25a37	Slc26a6	Slc30a5	Slc35f2
Slc39a14	Slc7a10	Slc7a6	Slc7a8
Smad1	Smad2	Smad3	Smarcb1
Smek1	Smpd3	Snca	Snrpd1
Sntb2	Socs1	Socs2	Socs3
Sp100	Spag5	Spib	Spn
Spon2	Spp1	Srsf7	Ssh1
Sstr3	St3gal1	St8sia1	Stat1
Stat3	Stat4	Steap4	Stk39
Six16	Sult1c2	Sycp1	Syng3
Synj1	Syt17	Tacstd2	Tal1
Tap1	Tap2	Tapbp	Tapbp1
Tbc1d5	Tbcc	Tbcd	Tbk1
Tbx21	Tbxa2r	Tcl1	Tecpr2
Tfec	Tfrc	Tgfb1	Tgfb2
Tgfb3	Tgif1	Thada	Thap3
Thbs1	Thbs4	Themis	Thumpd1
Tia1	Tigit	Timm8a1	Tinagl1
Tiparp	Tktf1	Tle3	Tlr3
Tlr7	Tmbim6	Tmc6	Tmem173
Tmem184c	Tmem259	Tmigd1	Tmprss6
Tnf	Tnfrsf10b	Tnfrsf11a	Tnfrsf14
Tnfrsf17	Tnfrsf18	Tnfrsf1b	Tnfrsf25
Tnfrsf4	Tnfrsf8	Tnfrsf9	Tnfsf11
Tnfsf14	Tnfsf15	Tnfsf18	Tnfsf4
Tnfsf9	Tox	Tpp2	Tpsab1
Tpsb2	Tpte	Traf3	Traf3ip3
Traf4	Trat1	Trex1	Trpv6
Tsc22d3	Tshr	Tssk6	Txk
Tyr	Tyrp1	Ubd	Ube2l3
Uqcrc1	Usp9y	Vamp2	Vash1
Vcam1	Vdr	Vegfa	Vegfb
Vegfc	Vnn3	Vtcn1	Vwa5a
Wars	Wdhd1	Wfdc18	Wnt5a
Xcl1	Yme1l1	Zap70	Zbp1
Zbtb16	Zbtb22	Zbtb32	Zbtb38
Zc3h7a	Zeb1	Zfp13	Zfp282
Zfp3612	Zfp422	Zfp446	Zfp609

Gene symbol	Gene symbol	Gene symbol	Gene symbol
Zfp729b _GDC_CONTROL_MUS_02_	Zfp764 _GDC_CONTROL_MUS_03_	Znrf1 _GDC_CONTROL_MUS_08_	_GDC_CONTROL_MUS_01_ _GDC_CONTROL_MUS_09_



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 or can be requested from QIAGEN Technical Services or your local distributor.

Trademarks: QIAGEN® (QIAGEN Group)
1100785 02/2016 © 2016 QIAGEN, all rights reserved.

www.qiagen.com

Australia ■ 1-800-243-800	Canada ■ 800-572-9613	Ireland ■ 1800 555 049	Norway ■ 800-18859
Austria ■ 0800/281010	China ■ 8621-3865-3865	Italy ■ 800-787980	Singapore ■ 1800-742-4368
Belgium ■ 0800-79612	Denmark ■ 80-885945	Japan ■ 03-6890-7300	Spain ■ 91-630-7050
Brazil ■ 0800-557779	Finland ■ 0800-914416	Korea (South) ■ 080-000-7145	Sweden ■ 020-790282
	France ■ 01-60-920-930	Luxembourg ■ 8002 2076	Switzerland ■ 055-254-22-11
	Germany ■ 02103-29-12000	Mexico ■ 01-800-7742-436	UK ■ 01293-422-911
	Hong Kong ■ 800 933 965	The Netherlands ■ 0800 0229592	USA ■ 800-426-8157



Sample to Insight