

## ExProfile™ Human Immunology Related Gene qPCR Array

For focused group profiling of human immunology genes expression

Cat. No. QG031-A (4 x 96-well plate, Format A)

Cat. No. QG031-B (4 x 96-well plate, Format B)

Cat. No. QG031-C (4 x 96-well plate, Format C)

Cat. No. QG031-D (4 x 96-well plate, Format D)

Cat. No. QG031-E (4 x 96-well plate, Format E)

Plates available individually or as a set of 6. Each set contains 336 unique gene primer pairs deposited in one 96-well plate.

### Introduction

The ExProfile human immunology related gene qPCR array profiles the expression of 336 human genes related to the immune system and immune related disorders. These genes are carefully chosen for their close pathway correlation based on a thorough literature search of peer-reviewed publications, mainly including genes encode various important molecules of immune system, such as signaling molecules, apoptotic mediators, cytokines and chemokines (and their receptors), MHC molecules, secreted lytic molecules, immunoglobulins, immune transcription factors, surface molecules. This array allows researchers to study the related genes to gain understanding of their roles in the immune system.

- QG031 plate 01: 84 unique gene PCR primer pairs
- QG031 plate 02: 84 unique gene PCR primer pairs
- QG031 plate 03: 84 unique gene PCR primer pairs
- QG031 plate 04: 84 unique gene PCR primer pairs

### Shipping and storage condition

Shipped at room temperate

Stable for at least 6 months when stored at -20°C

### Array format

GeneCopeia provides five qPCR array formats (A, B, C, D, and E) suitable for use with the following real-time cyclers.

**Important note:** Upon receiving, please check to make sure that the correct array format was ordered to ensure the compatibility with your qPCR instrument.

Plate format	Instrument provider	qPCR instrument model
A (96-well)	Applied Biosystems	5700, 7000, 7300, 7500, 7700, 7900HT (Standard 96-well block), ViiA™7 (Standard 96-well block)
B (96-well)	Applied Biosystems	7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA™7 (Fast block)
C (96-well)	Bio-Rad Laboratories	iCycler iQ®, MyiQ™, iQ™5

D (96-well)	Bio-Rad Laboratories	CFX96™, DNA Engine Opticon™, DNA Engine Opticon 2™, Chromo4™
E (96-well)	Roche Applied Science	LightCycler® 480 (96-well block)

### Quality control

1. Each pair of primers in the ExProfile gene qPCR array has been experimentally validated to yield a single dissociation curve peak and to generate a single amplicon of the correct size for the targeted gene.
2. The positive PCR controls (PCR) have been verified to amplify a single amplicon of the correct size with Ct values around **20±2**.
3. The Spike-in reverse transcription controls (RT) have been verified to amplify a single amplicon of the correct size with Ct values around **20±3**.
4.  $R^2 > 0.99$  was observed for high inter/ intra-array reproducibility.

### Materials required but not provided

All-in-One™ First-Strand cDNA Synthesis Kit

All-in-One™ qPCR Mix

Total RNA extraction kit (RNAzol® RT RNA extraction reagent is recommended)

DNase/RNase free tips, PCR reaction tubes, 1.5 ml microcentrifuge tubes

5 ml and 10 ml graduated pipettes, beakers, flasks, and cylinders

10 µl to 1,000 µl adjustable single channel micropipettes with disposable tips

5 µl to 20 µl adjustable multichannel micropipette, disposable tips, and reservoir qPCR instrument, compatible with gene qPCR arrays ordered

### Array layout

	1	2	3	4	5	6	7	8	9	10	11	12
A	ZAP70	XCR1	VCAM1	VAV1	TRAF6	TRAF3	TRAF2	TRAF1	TOLLIP	TNFSF13B	TNFSF10	TNFRSF1B
B	TNFRSF17	TNFRSF13B	TNFRSF11A	TNFAIP6	TNF	TLR9	TLR7	TLR4	TLR2	TIRAP	THY1	TGFB1
C	TGFB1	TGFA	TFRC	TCF7	TBX21	TAPBP	TAP1	TAL1	SYK	STAT6	STAT5B	STAT5A
D	STAT3	STAT1	SRC	SPP1	SOD1	SOCS3	SOCS1	SLAMF1	SIGIRR	SELPLG	SELL	SELE
E	RORC	RELA	REL	RBPJ	RAG1	PTPRC	PTPN22	PTGS2	PTAFR	PSMB9	PSMB8	PRKRA
F	PRKCD	PRDM1	PPARG	PLAUR	PLAU	PECAM1	PDGFRB	PDGFB	PDCD1	PAX5	OAS2	NOTCH1
G	NOS2A	NOD2	NLRP2	NFKBIA	NFKB2	NFKB1	NFATC2	NFATC1	NCR1	NCF4	MYD88	MX1
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure1. Illustration of QG031 plate 01

	1	2	3	4	5	6	7	8	9	10	11	12
A	MTHFR	MS4A1	MMP9	MMP2	MMP13	MIF	MEFV	MBL2	MASP2	MAPK8	MAPK3	MAPK14
B	MAPK1	MAP3K7	MALT1	LY96	LY75	LTF	LTBR	LTA	LIFR	LIF	LEPR	LEP
C	LEF1	LCP2	LCK	LBP	LAT	KRT1	KLRK1	KLRD1	KLRA1	KITLG	KIT	JAK3
D	JAK2	JAK1	ITGB2	ITGB1	ITGAX	ITGAM	ITGAL	ITGA4	ITGA2B	ITGA1	IRF8	IRF3
E	IRF1	IRAK2	IRAK1	INPP5D	INDO	IL8RB	IL8RA	IL8	IL7R	IL7	IL6ST	IL6R
F	IL6	IL5	IL4R	IL4	IL2RG	IL2RB	IL2RA	IL27RA	IL23R	IL23A	IL21R	IL21
G	IL2	IL1RN	IL1RL1	IL1RAP	IL1R2	IL1R1	IL1B	IL1A	IL18	IL17F	IL17A	IL15
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure2. Illustration of QG031 plate 02

	1	2	3	4	5	6	7	8	9	10	11	12
A	IL13RA1	IL13	IL12RB1	IL12B	IL12A	IL11RA	IL10RA	IL10	IKBKG	IGFBP3	IFNG	IFNB1
B	IFNAR2	IFNAR1	IFNA7	IFITM1	IFIT2	IFI35	ICOSLG	ICOS	ICAM2	ICAM1	HSPA1A	HSP90B1
C	HRH4	HMGB1	HLA-DRB1	HLA-DRA	HLA-DQA1	HLA-C	HLA-A	HFE	GZMB	GZMA	GATA3	FYN
D	FRAP1	FOXP3	FOS	FN1	FCGRT	FCGR3A	FCGR2B	FCGR2A	FCGR1A	FCER2	FCER1A	FASLG
E	FAS	F12	ENTPD1	EGFR	EGF	EDN1	EBI2	EBF1	DPP4	DIABLO	DEFB4	DEFB1
F	DEFA1	DAXX	CXCR4	CXCR3	CXCL9	CXCL3	CXCL2	CXCL12	CXCL10	CX3CR1	CX3CL1	CTSG
G	CTSD	CTSB	CTLA4	CSF3R	CSF3	CSF2	CSF1R	CSF1	CRP	CR2	CMKLR1	CLU
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure3. Illustration of QG031 plate 03

	1	2	3	4	5	6	7	8	9	10	11	12
A	CLEC5A	CIITA	CHUK	CFH	CFD	CFB	CEACAM1	CDKN1A	CDH5	CD99	CD9	CD86
B	CD80	CD69	CD6	CD59	CD55	CD5	CD44	CD40LG	CD40	CD4	CD3EAP	CD3E
C	CD36	CD34	CD2AP	CD28	CD247	CD244	CD24	CD22	CD209	CD2	CD1D	CD19
D	CD180	CD14	CCR8	CCR7	CCR6	CCR2	CCL5	CCL4	CCL3L1	CCL22	CCL20	CCL19
E	CCL13	CCL11	CCBP2	CBL	CASP8	CASP3	CASP2	CASP1	CARD11	CAMP	CALR	C9
F	C8A	C6	C5	C4A	C3	C2	C1S	C1QA	BTK	BST1	BLNK	BIRC3
G	BID	BCL6	BCL3	BCL2L1	BCL2	BCAP31	BAX	BAD	B2M	ATM	ATF1	AKT1
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure4. Illustration of QG031 plate 04

- **Gene primer pairs:** 84 wells (A row to G row) are designated for a real-time PCR assay for genes (see the primer list).
- **HK1-6:** Six pre-deposited housekeeping gene (HK1-6) primer pairs, which can be used as endogenous positive controls as well as for array normalization.
- **GDC:** Genomic DNA controls, which can be used to specifically detect genomic DNA contamination with a high level of sensitivity.
- **RT:** Spike-in reverse transcription controls, which can be used to monitor the efficiency of the RT reactions. These pre-deposited primer pairs specifically amplify the cDNA template reversed transcribed from the spike-in control RNA in the sample.
- **PCR:** Positive PCR controls, which are used to verify the PCR efficiency by amplifying the pre-deposited DNA template with its specific pre-deposited primer pairs.

### Gene primer list

Plate	Position	Catalog No. of Primer	Accession No. of Gene	Symbol
QG031-01	A01	HQP053905	NM_001079	ZAP70
QG031-01	A02	HQP007848	NM_001024644	XCR1
QG031-01	A03	HQP018466	NM_080682	VCAM1
QG031-01	A04	HQP018461	NM_005428	VAV1
QG031-01	A05	HQP018237	NM_004620	TRAF6
QG031-01	A06	HQP018234	NM_003300	TRAF3
QG031-01	A07	HQP018233	NM_021138	TRAF2
QG031-01	A08	HQP018232	NM_005658	TRAF1
QG031-01	A09	HQP013496	NM_019009	TOLLIP
QG031-01	A10	HQP000821	NM_006573	TNFSF13B

QG031-01	A11	HQP021502	NM_003810	TNFSF10
QG031-01	A12	HQP018149	NM_001066	TNFRSF1B
QG031-01	B01	HQP016367	NM_001192	TNFRSF17
QG031-01	B02	HQP006148	NM_012452	TNFRSF13B
QG031-01	B03	HQP021550	NM_003839	TNFRSF11A
QG031-01	B04	HQP018147	NM_007115	TNFAIP6
QG031-01	B05	HQP018141	NM_000594	TNF
QG031-01	B06	HQP013388	NM_017442	TLR9
QG031-01	B07	HQP012591	NM_016562	TLR7
QG031-01	B08	HQP018116	NM_138554	TLR4
QG031-01	B09	HQP018114	NM_003264	TLR2
QG031-01	B10	HQP001674	NM_001039661	TIRAP
QG031-01	B11	HQP018083	NM_006288	THY1
QG031-01	B12	HQP018051	NM_004612	TGFBR1
QG031-01	C01	HQP018044	NM_000660	TGFB1
QG031-01	C02	HQP018043	NM_003236	TGFA
QG031-01	C03	HQP018041	NM_003234	TFRC
QG031-01	C04	HQP017958	NM_003202	TCF7
QG031-01	C05	HQP008682	NM_013351	TBX21
QG031-01	C06	HQP017902	NM_003190	TAPBP
QG031-01	C07	HQP017899	NM_000593	TAP1
QG031-01	C08	HQP017895	NM_003189	TAL1
QG031-01	C09	HQP017845	NM_003177	SYK
QG031-01	C10	HQP017775	NM_003153	STAT6
QG031-01	C11	HQP017774	NM_012448	STAT5B
QG031-01	C12	HQP017771	NM_003152	STAT5A
QG031-01	D01	HQP017767	NM_003150	STAT3
QG031-01	D02	HQP017764	NM_007315	STAT1
QG031-01	D03	HQP017696	NM_005417	SRC
QG031-01	D04	HQP017673	NM_000582	SPP1
QG031-01	D05	HQP017615	NM_000454	SOD1
QG031-01	D06	HQP021889	NM_003955	SOCS3
QG031-01	D07	HQP021399	NM_003745	SOCS1
QG031-01	D08	HQP017303	NM_003037	SLAMF1
QG031-01	D09	HQP016150	NM_021805	SIGIRR
QG031-01	D10	HQP016747	NM_003006	SELPLG
QG031-01	D11	HQP016745	NM_000655	SELL
QG031-01	D12	HQP016744	NM_000450	SELE
QG031-01	E01	HQP016378	NM_001001523	RORC
QG031-01	E02	HQP016213	NM_021975	RELA
QG031-01	E03	HQP016208	NM_002908	REL
QG031-01	E04	HQP009574	NM_005349	RBPJ
QG031-01	E05	HQP016089	NM_000448	RAG1
QG031-01	E06	HQP015908	NM_002838	PTPRC
QG031-01	E07	HQP007113	NM_012411	PTPN22
QG031-01	E08	HQP015598	NM_000963	PTGS2

QG031-01	E09	HQP015524	NM_000952	PTAFR
QG031-01	E10	HQP015311	NM_002800	PSMB9
QG031-01	E11	HQP015291	NM_004159	PSMB8
QG031-01	E12	HQP021305	NM_003690	PRKRA
QG031-01	F01	HQP014731	NM_006254	PRKCD
QG031-01	F02	HQP016740	NM_001198	PRDM1
QG031-01	F03	HQP013633	NM_005037	PPARG
QG031-01	F04	HQP013205	NM_001005376	PLAUR
QG031-01	F05	HQP013204	NM_002658	PLAU
QG031-01	F06	HQP013015	NM_000442	PECAM1
QG031-01	F07	HQP012889	NM_002609	PDGFRB
QG031-01	F08	HQP012856	NM_002608	PDGFB
QG031-01	F09	HQP012662	NM_005018	PDCD1
QG031-01	F10	HQP012212	NM_016734	PAX5
QG031-01	F11	HQP011988	NM_001032731	OAS2
QG031-01	F12	HQP011873	NM_017617	NOTCH1
QG031-01	G01	HQP011866	NM_000625	NOS2A
QG031-01	G02	HQP016801	NM_022162	NOD2
QG031-01	G03	HQP014556	NM_017852	NLRP2
QG031-01	G04	HQP011810	NM_020529	NFKBIA
QG031-01	G05	HQP011808	NM_001077493	NFKB2
QG031-01	G06	HQP011807	NM_003998	NFKB1
QG031-01	G07	HQP011789	NM_012340	NFATC2
QG031-01	G08	HQP011784	NM_006162	NFATC1
QG031-01	G09	HQP022750	NM_004829	NCR1
QG031-01	G10	HQP011694	NM_000631	NCF4
QG031-01	G11	HQP011603	NM_002468	MYD88
QG031-01	G12	HQP011582	NM_002462	MX1
QG031-01	H01	HGDC		
QG031-01	H02	HGDC		
QG031-01	H03	HQP006940	NM_002046	GAPDH
QG031-01	H04	HQP016381	NM_001101	ACTB
QG031-01	H05	HQP015171	NM_004048	B2M
QG031-01	H06	HQP006171	NM_012423	RPL13A
QG031-01	H07	HQP009026	NM_000194	HPRT1
QG031-01	H08	HQP054253	NR_003286	RN18S1
QG031-01	H09	RT		
QG031-01	H10	RT		
QG031-01	H11	PCR		
QG031-01	H12	PCR		
QG031-02	A01	HQP011547	NM_005957	MTHFR
QG031-02	A02	HQP022527	NM_021950	MS4A1
QG031-02	A03	HQP011263	NM_004994	MMP9
QG031-02	A04	HQP011256	NM_004530	MMP2
QG031-02	A05	HQP011267	NM_002427	MMP13
QG031-02	A06	HQP011219	NM_002415	MIF

QG031-02	A07	HQP011154	NM_000243	MEFV
QG031-02	A08	HQP011077	NM_000242	MBL2
QG031-02	A09	HQP000882	NM_006610	MASP2
QG031-02	A10	HQP014886	NM_002750	MAPK8
QG031-02	A11	HQP014854	NM_001040056	MAPK3
QG031-02	A12	HQP003133	NM_001315	MAPK14
QG031-02	B01	HQP014848	NM_002745	MAPK1
QG031-02	B02	HQP017891	NM_003188	MAP3K7
QG031-02	B03	HQP001017	NM_006785	MALT1
QG031-02	B04	HQP006296	NM_015364	LY96
QG031-02	B05	HQP010933	NM_002349	LY75
QG031-02	B06	HQP010919	NM_002343	LTF
QG031-02	B07	HQP010915	NM_002342	LTBR
QG031-02	B08	HQP010907	NM_000595	LTA
QG031-02	B09	HQP010608	NM_002310	LIFR
QG031-02	B10	HQP010607	NM_002309	LIF
QG031-02	B11	HQP010582	NM_001003679	LEPR
QG031-02	B12	HQP010581	NM_000230	LEP
QG031-02	C01	HQP012480	NM_016269	LEF1
QG031-02	C02	HQP010569	NM_005565	LCP2
QG031-02	C03	HQP010565	NM_001042771	LCK
QG031-02	C04	HQP010560	NM_004139	LBP
QG031-02	C05	HQP007461	NM_001014987	LAT
QG031-02	C06	HQP010136	NM_006121	KRT1
QG031-02	C07	HQP005584	NM_007360	KLRK1
QG031-02	C08	HQP010112	NM_002262	KLRD1
QG031-02	C09	HQP000884	NM_006611	KLRA1
QG031-02	C10	HQP011204	NM_000899	KITLG
QG031-02	C11	HQP010099	NM_000222	KIT
QG031-02	C12	HQP009851	NM_000215	JAK3
QG031-02	D01	HQP009850	NM_004972	JAK2
QG031-02	D02	HQP009849	NM_002227	JAK1
QG031-02	D03	HQP009815	NM_000211	ITGB2
QG031-02	D04	HQP009810	NM_002211	ITGB1
QG031-02	D05	HQP009809	NM_000887	ITGAX
QG031-02	D06	HQP009807	NM_000632	ITGAM
QG031-02	D07	HQP009806	NM_002209	ITGAL
QG031-02	D08	HQP009798	NM_000885	ITGA4
QG031-02	D09	HQP009795	NM_000419	ITGA2B
QG031-02	D10	HQP009793	NM_181501	ITGA1
QG031-02	D11	HQP009251	NM_002163	IRF8
QG031-02	D12	HQP009780	NM_001571	IRF3
QG031-02	E01	HQP009778	NM_002198	IRF1
QG031-02	E02	HQP009776	NM_001570	IRAK2
QG031-02	E03	HQP009771	NM_001025242	IRAK1
QG031-02	E04	HQP009754	NM_001017915	INPP5D

QG031-02	E05	HQP009736	NM_002164	INDO
QG031-02	E06	HQP009681	NM_001557	IL8RB
QG031-02	E07	HQP009679	NM_000634	IL8RA
QG031-02	E08	HQP009678	NM_000584	IL8
QG031-02	E09	HQP009677	NM_002185	IL7R
QG031-02	E10	HQP009676	NM_000880	IL7
QG031-02	E11	HQP009674	NM_002184	IL6ST
QG031-02	E12	HQP009672	NM_000565	IL6R
QG031-02	F01	HQP009670	NM_000600	IL6
QG031-02	F02	HQP009666	NM_000879	IL5
QG031-02	F03	HQP009664	NM_000418	IL4R
QG031-02	F04	HQP009662	NM_000589	IL4
QG031-02	F05	HQP009659	NM_000206	IL2RG
QG031-02	F06	HQP009658	NM_000878	IL2RB
QG031-02	F07	HQP009650	NM_000417	IL2RA
QG031-02	F08	HQP022792	NM_004843	IL27RA
QG031-02	F09	HQP003495	NM_144701	IL23R
QG031-02	F10	HQP012859	NM_016584	IL23A
QG031-02	F11	HQP012160	NM_021798	IL21R
QG031-02	F12	HQP016102	NM_021803	IL21
QG031-02	G01	HQP009649	NM_000586	IL2
QG031-02	G02	HQP009645	NM_000577	IL1RN
QG031-02	G03	HQP022241	NM_003856	IL1RL1
QG031-02	G04	HQP009643	NM_002182	IL1RAP
QG031-02	G05	HQP018800	NM_004633	IL1R2
QG031-02	G06	HQP009642	NM_000877	IL1R1
QG031-02	G07	HQP009641	NM_000576	IL1B
QG031-02	G08	HQP009640	NM_000575	IL1A
QG031-02	G09	HQP009718	NM_001562	IL18
QG031-02	G10	HQP001495	NM_052872	IL17F
QG031-02	G11	HQP009717	NM_002190	IL17A
QG031-02	G12	HQP009708	NM_000585	IL15
QG031-02	H01	HGDC		
QG031-02	H02	HGDC		
QG031-02	H03	HQP006940	NM_002046	GAPDH
QG031-02	H04	HQP016381	NM_001101	ACTB
QG031-02	H05	HQP015171	NM_004048	B2M
QG031-02	H06	HQP006171	NM_012423	RPL13A
QG031-02	H07	HQP009026	NM_000194	HPRT1
QG031-02	H08	HQP054253	NR_003286	RN18S1
QG031-02	H09	RT		
QG031-02	H10	RT		
QG031-02	H11	PCR		
QG031-02	H12	PCR		
QG031-03	A01	HQP009700	NM_001560	IL13RA1
QG031-03	A02	HQP009697	NM_002188	IL13



QG031-03	A03	HQP009694	NM_005535	IL12RB1
QG031-03	A04	HQP009693	NM_002187	IL12B
QG031-03	A05	HQP009692	NM_000882	IL12A
QG031-03	A06	HQP009690	NM_004512	IL11RA
QG031-03	A07	HQP009686	NM_001558	IL10RA
QG031-03	A08	HQP009685	NM_000572	IL10
QG031-03	A09	HQP021140	NM_003639	IKBKG
QG031-03	A10	HQP009544	NM_000598	IGFBP3
QG031-03	A11	HQP009467	NM_000619	IFNG
QG031-03	A12	HQP009463	NM_002176	IFNB1
QG031-03	B01	HQP009460	NM_000874	IFNAR2
QG031-03	B02	HQP009458	NM_000629	IFNAR1
QG031-03	B03	HQP009430	NM_021057	IFNA7
QG031-03	B04	HQP021142	NM_003641	IFITM1
QG031-03	B05	HQP009403	NM_001547	IFIT2
QG031-03	B06	HQP009393	NM_005533	IFI35
QG031-03	B07	HQP005977	NM_015259	ICOSLG
QG031-03	B08	HQP008554	NM_012092	ICOS
QG031-03	B09	HQP009187	NM_000873	ICAM2
QG031-03	B10	HQP009184	NM_000201	ICAM1
QG031-03	B11	HQP009077	NM_005345	HSPA1A
QG031-03	B12	HQP018231	NM_003299	HSP90B1
QG031-03	C01	HQP016162	NM_021624	HRH4
QG031-03	C02	HQP008883	NM_002128	HMGB1
QG031-03	C03	HQP008867	NM_002124	HLA-DRB1
QG031-03	C04	HQP008866	NM_019111	HLA-DRA
QG031-03	C05	HQP008861	NM_002122	HLA-DQA1
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QG031-03	D08	HQP005280	NM_021642	FCGR2A
QG031-03	D09	HQP005251	NM_000566	FCGR1A
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QG031-03	D11	HQP005238	NM_002001	FCER1A
QG031-03	D12	HQP009671	NM_000639	FASLG



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QG031-03	G06	HQP003159	NM_000758	CSF2
QG031-03	G07	HQP003158	NM_005211	CSF1R
QG031-03	G08	HQP003149	NM_000757	CSF1
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QG031-04	D08	HQP016625	NM_002984	CCL4

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QG031-04	E11	HQP019841	NM_004343	CALR
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QG031-04	H05	HQP015171	NM_004048	B2M
QG031-04	H06	HQP006171	NM_012423	RPL13A

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QG031-04	H09	RT		
QG031-04	H10	RT		
QG031-04	H11	PCR		
QG031-04	H12	PCR		

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