

ExProfile™ Human Ion Channels Related Gene qPCR Array

For focused group profiling of human ion channels genes expression

Cat. No. QG091-A (4 x 96-well plate, Format A)

Cat. No. QG091-B (4 x 96-well plate, Format B)

Cat. No. QG091-C (4 x 96-well plate, Format C)

Cat. No. QG091-D (4 x 96-well plate, Format D)

Cat. No. QG091-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 ion channels related gene qPCR array profiles the expression of 336 human genes related to neuroscience-related ion channels and transporters. These genes are carefully chosen for their close pathway correlation based on a thorough literature search of peer-reviewed publications, mainly including genes involved in calcium channels, potassium channels, sodium channels, chloride channels, and related transporters. This array allows researchers to study the related genes to gain understanding of their roles in the functioning and characterization of neuronal ion channels and transporters.

- QG091 plate 01: 84 unique gene PCR primer pairs
- QG091 plate 02: 84 unique gene PCR primer pairs
- QG091 plate 03: 84 unique gene PCR primer pairs
- QG091 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)
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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-OneTM First-Strand cDNA Synthesis Kit

All-in-OneTM 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	KCNG3	HTR3C	TRPV3	CESK1	KCTD11	BEST3	TRPM6	TMEM37	KCNH8	KCTD18	CATSPER1	GRIN3A
B	SLC26A8	STX1B2	SHKBP1	CHRFAM7A	ALG10	HVCN1	BTBD10	KCTD10	KCNK16	KCNH6	TRPM3	KCTD15
C	TMEM38A	KCTD14	TRPV4	HCN3	KCTD16	MCOLN1	CHRNA10	NMUR2	KCMF1	KCNK13	TRPV5	GABRQ
D	CACNA2D3	TRPV6	MCOLN3	TMEM38B	BEST2	TRPM7	TRPM4	KCTD9	KCTD5	KCNK10	CLIC6	FXVD4
E	FXVD5	FXVD6	FXVD7	CLIC5	TPCN1	TRPV2	KCNK9	KCTD3	PLLP	TAX1BP3	KCNIP2	TRPM5
F	KCNMB4	KCNH5	KCNMB3	CACNG4	PKD2L2	NOX1	ATP2C1	TRPC4AP	KCNE4	SLC7A11	KCNE1L	KCTD2
G	MLC1	CLCC1	SCN11A	SLC9A6	TOMM40	PKDREJ	ABCC9	HCN4	KCNE3	KCNE2	CLCA2	KCNK6
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure1. Illustration of QG091 plate 01

	1	2	3	4	5	6	7	8	9	10	11	12
A	KCNB2	CACNA2D2	HTR3B	KCNQ4	P2RX1	MTMR6	CLIC3	TRPA1	CACNA1G	CACNA1I	KCNK5	APOL1
B	CUL5	GLRA3	BSND	TRPV1	BEST1	VDAC3	VDAC1	TRPM2	TRPC6	TRPC4	TRPC3	TRPC1
C	TPTE	TNFAIP1	TAP2	TAP1	SLC9A5	SLC9A3	SLC9A2	SLC9A1	SCNN1B	SCN9A	SCN7A	SCN5A
D	SCN4B	SCN4A	SCN2B	SCN2A	SCN1B	SCN1A	RYR3	RYR1	FXVD3	PKD2	P2RX7	P2RX3
E	P2RX1	TRPM1	KCNS3	KCNS2	KCNS1	KCNQ3	KCNQ2	KCNQ1	KCNN4	KCNN3	KCNN2	KCNMB1
F	KCNMA1	KCNK2	KCNK1	KCNJ15	KCNJ13	KCNJ11	KCNJ8	KCNJ6	KCNJ5	KCNJ4	KCNJ3	KCNJ2
G	KCNJ1	KCNH2	KCNH1	KCNG1	KCNE1	KCND3	KCND2	KCND1	KCNC4	KCNC2	KCNC1	KCNB1
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure2. Illustration of QG091 plate 02

	1	2	3	4	5	6	7	8	9	10	11	12
A	KCNA5	KCNA4	KCNA3	ITPR3	ITPR2	ITPR1	HTR3A	GRIN2D	GRIN2C	GRIN2A	GRIN1	GRIK5
B	GRIK4	GRIK2	GRIK1	GRID2	GRID1	GRIA3	GRIA2	GRIA1	GLRB	GABRR1	GABRP	GABRG2
C	GABRG1	GABRB3	GABRB2	GABRB1	GABRA5	GABRA4	GABRA2	GABRA1	MS4A2	CYBB	CNGA4	CNGA2
D	CNGA1	CNGB1	CLNS1A	CLIC2	CLIC1	CLCNKB	CLCN7	CLCN6	CLCN5	CLCN4	CLCN2	CLCN1
E	CHRNA7	CHRNE	CHRN4	CHRN3	CHRNA7	CHRNA5	CHRNA4	CHRNA3	CHRNA1	CHRM2	CFTR	CACNB3
F	CACNB2	CACNB1	CACNA2D1	CACNA1S	CACNA1F	CACNA1E	CACNA1D	CACNA1C	HCN2	ATP7B	ATP4A	ATP2B4
G	ATP2A3	ATP2A2	ATP2A1	FXD2	ATP1B3	ATP1B2	ATP1A3	ATP1A1	ABCC6	AQP9	AQP4	AQP2
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure3. Illustration of QG091 plate 03

	1	2	3	4	5	6	7	8	9	10	11	12
A	SHROOM2	ACCN2	ACCN1	CACNA1A	CHRM5	CLCA1	GABRD	GLRA2	SCN10A	KCNK7	CACNG3	KCNH3
B	KCNG2	KCNIP1	ACCN5	CNGB3	CHRNA9	KCNIP4	TMEM142A	KCNK17	KCNH7	GRIN3B	ANXA7	ATP1B1
C	ATP2B1	ATP4B	ATP7A	TTYH1	CACNG6	CHRM4	KCTD17	CHRN2	CHRNA1	CLCN3	CLCNKA	CNGA3
D	GABRA3	GABRA6	GABRE	GABRG3	GABRR2	GLRA1	GRIA4	GRIK3	KCNA1	KCNA2	TTYH3	KCNA7
E	SLC4A11	KCNC3	KCNF1	KCNJ9	KCNJ10	KCNJ14	KCNJ16	KCNK3	KCNN1	P2RX4	P2RX5	FXD1
F	SCN3A	TRPC5	VDAC2	KCNAB1	KCNAB2	CHRNA6	PKD2L1	KCNAB3	CLCA3	KCNMB2	CACNG2	CLCA4
G	P2RX2	KCNH4	CLIC4	KCNV1	CACNG5	SLC26A7	KCNK4	NUDT9	NOLA1	KCTD12	KCNQ5	KCNK12
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure4. Illustration of QG091 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 reverse 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
QG091-01	A01	HQP004278	NM_133329	KCNG3
QG091-01	A02	HQP004260	NM_130770	HTR3C
QG091-01	A03	HQP004022	NM_145068	TRPV3
QG091-01	A04	HQP003549	NM_014406	CESK1
QG091-01	A05	HQP003354	NM_001002914	KCTD11
QG091-01	A06	HQP003207	NM_032735	BEST3
QG091-01	A07	HQP003059	NM_017662	TRPM6
QG091-01	A08	HQP003051	NM_183240	TMEM37
QG091-01	A09	HQP002662	NM_144633	KCNH8
QG091-01	A10	HQP002617	NM_152387	KCTD18
QG091-01	A11	HQP001927	NM_053054	CATSPER1
QG091-01	A12	HQP001887	NM_133445	GRIN3A

QG091-01	B01	HQP001877	NM_052961	SLC26A8
QG091-01	B02	HQP001498	NM_052874	STX1B2
QG091-01	B03	HQP022461	NM_138392	SHKBP1
QG091-01	B04	HQP021784	NM_139320	CHRFAM7A
QG091-01	B05	HQP021034	NM_032834	ALG10
QG091-01	B06	HQP020684	NM_001040107	HVCN1
QG091-01	B07	HQP020622	NM_032320	BTBD10
QG091-01	B08	HQP020377	NM_031954	KCTD10
QG091-01	B09	HQP020330	NM_032115	KCNK16
QG091-01	B10	HQP019824	NM_030779	KCNH6
QG091-01	B11	HQP019488	NM_001007470	TRPM3
QG091-01	B12	HQP018882	NM_024076	KCTD15
QG091-01	C01	HQP018880	NM_024074	TMEM38A
QG091-01	C02	HQP017522	NM_023930	KCTD14
QG091-01	C03	HQP016163	NM_021625	TRPV4
QG091-01	C04	HQP015783	NM_020897	HCN3
QG091-01	C05	HQP015679	NM_020768	KCTD16
QG091-01	C06	HQP015489	NM_020533	MCOLN1
QG091-01	C07	HQP015357	NM_020402	CHRNA10
QG091-01	C08	HQP015244	NM_020167	NMUR2
QG091-01	C09	HQP015199	NM_020122	KCMF1
QG091-01	C10	HQP015143	NM_022054	KCNK13
QG091-01	C11	HQP015065	NM_019841	TRPV5
QG091-01	C12	HQP014797	NM_018558	GABRQ
QG091-01	D01	HQP014717	NM_018398	CACNA2D3
QG091-01	D02	HQP014423	NM_018646	TRPV6
QG091-01	D03	HQP014269	NM_018298	MCOLN3
QG091-01	D04	HQP014107	NM_018112	TMEM38B
QG091-01	D05	HQP013745	NM_017682	BEST2
QG091-01	D06	HQP013734	NM_017672	TRPM7
QG091-01	D07	HQP013698	NM_017636	TRPM4
QG091-01	D08	HQP013697	NM_017634	KCTD9
QG091-01	D09	HQP013471	NM_018992	KCTD5
QG091-01	D10	HQP013412	NM_021161	KCNK10
QG091-01	D11	HQP013386	NM_053277	CLIC6
QG091-01	D12	HQP013318	NM_173160	FXYD4
QG091-01	E01	HQP013317	NM_014164	FXYD5
QG091-01	E02	HQP013316	NM_022003	FXYD6
QG091-01	E03	HQP013315	NM_022006	FXYD7
QG091-01	E04	HQP013255	NM_016929	CLIC5
QG091-01	E05	HQP013242	NM_017901	TPCN1
QG091-01	E06	HQP012707	NM_016113	TRPV2
QG091-01	E07	HQP012616	NM_016601	KCNK9
QG091-01	E08	HQP012439	NM_016121	KCTD3
QG091-01	E09	HQP012381	NM_015993	PLLP
QG091-01	E10	HQP008827	NM_014604	TAX1BP3

QG091-01	E11	HQP008787	NM_014591	KCNIP2
QG091-01	E12	HQP008553	NM_014555	TRPM5
QG091-01	F01	HQP007691	NM_014505	KCNMB4
QG091-01	F02	HQP007540	NM_139318	KCNH5
QG091-01	F03	HQP007497	NM_014407	KCNMB3
QG091-01	F04	HQP007496	NM_014405	CACNG4
QG091-01	F05	HQP007459	NM_014386	PKD2L2
QG091-01	F06	HQP007453	NM_007052	NOX1
QG091-01	F07	HQP007447	NM_001001485	ATP2C1
QG091-01	F08	HQP007069	NM_015638	TRPC4AP
QG091-01	F09	HQP006320	NM_080671	KCNE4
QG091-01	F10	HQP006307	NM_014331	SLC7A11
QG091-01	F11	HQP006287	NM_012282	KCNE1L
QG091-01	F12	HQP006160	NM_015353	KCTD2
QG091-01	G01	HQP005868	NM_015166	MLC1
QG091-01	G02	HQP005805	NM_001048210	CLCC1
QG091-01	G03	HQP001511	NM_014139	SCN11A
QG091-01	G04	HQP000579	NM_001042537	SLC9A6
QG091-01	G05	HQP000540	NM_006114	TOMM40
QG091-01	G06	HQP000420	NM_006071	PKDREJ
QG091-01	G07	HQP000081	NM_005691	ABCC9
QG091-01	G08	HQP000040	NM_005477	HCN4
QG091-01	G09	HQP000016	NM_005472	KCNE3
QG091-01	G10	HQP023462	NM_172201	KCNE2
QG091-01	G11	HQP023012	NM_006536	CLCA2
QG091-01	G12	HQP022739	NM_004823	KCNK6
QG091-01	H01	HGDC		
QG091-01	H02	HGDC		
QG091-01	H03	HQP006940	NM_002046	GAPDH
QG091-01	H04	HQP016381	NM_001101	ACTB
QG091-01	H05	HQP015171	NM_004048	B2M
QG091-01	H06	HQP006171	NM_012423	RPL13A
QG091-01	H07	HQP009026	NM_000194	HPRT1
QG091-01	H08	HQP054253	NR_003286	RN18S1
QG091-01	H09	RT		
QG091-01	H10	RT		
QG091-01	H11	PCR		
QG091-01	H12	PCR		
QG091-02	A01	HQP022515	NM_004770	KCNB2
QG091-02	A02	HQP022407	NM_001005505	CACNA2D2
QG091-02	A03	HQP022253	NM_006028	HTR3B
QG091-02	A04	HQP022139	NM_004700	KCNQ4
QG091-02	A05	HQP022123	NM_005446	P2RXL1
QG091-02	A06	HQP022088	NM_004685	MTMR6
QG091-02	A07	HQP021891	NM_004669	CLIC3
QG091-02	A08	HQP021818	NM_007332	TRPA1

QG091-02	A09	HQP021709	NM_018896	CACNA1G
QG091-02	A10	HQP021703	NM_001003406	CACNA1I
QG091-02	A11	HQP021386	NM_003740	KCNK5
QG091-02	A12	HQP021220	NM_003661	APOL1
QG091-02	B01	HQP019709	NM_003478	CUL5
QG091-02	B02	HQP019470	NM_001042543	GLRA3
QG091-02	B03	HQP018767	NM_057176	BSND
QG091-02	B04	HQP018498	NM_018727	TRPV1
QG091-02	B05	HQP018496	NM_004183	BEST1
QG091-02	B06	HQP018472	NM_005662	VDAC3
QG091-02	B07	HQP018470	NM_003374	VDAC1
QG091-02	B08	HQP018256	NM_001001188	TRPM2
QG091-02	B09	HQP018255	NM_004621	TRPC6
QG091-02	B10	HQP018253	NM_016179	TRPC4
QG091-02	B11	HQP018252	NM_003305	TRPC3
QG091-02	B12	HQP018251	NM_003304	TRPC1
QG091-02	C01	HQP018223	NM_199259	TPTE
QG091-02	C02	HQP018143	NM_021137	TNFAIP1
QG091-02	C03	HQP017900	NM_000544	TAP2
QG091-02	C04	HQP017899	NM_000593	TAP1
QG091-02	C05	HQP017460	NM_004594	SLC9A5
QG091-02	C06	HQP017459	NM_004174	SLC9A3
QG091-02	C07	HQP017457	NM_003048	SLC9A2
QG091-02	C08	HQP017456	NM_003047	SLC9A1
QG091-02	C09	HQP016608	NM_000336	SCNN1B
QG091-02	C10	HQP016605	NM_002977	SCN9A
QG091-02	C11	HQP016603	NM_002976	SCN7A
QG091-02	C12	HQP016601	NM_000335	SCN5A
QG091-02	D01	HQP016600	NM_174934	SCN4B
QG091-02	D02	HQP016598	NM_000334	SCN4A
QG091-02	D03	HQP016594	NM_004588	SCN2B
QG091-02	D04	HQP016592	NM_001040142	SCN2A
QG091-02	D05	HQP016591	NM_199037	SCN1B
QG091-02	D06	HQP016589	NM_006920	SCN1A
QG091-02	D07	HQP016535	NM_001036	RYR3
QG091-02	D08	HQP016532	NM_000540	RYR1
QG091-02	D09	HQP013264	NM_005971	FXRD3
QG091-02	D10	HQP013180	NM_000297	PKD2
QG091-02	D11	HQP012100	NM_002562	P2RX7
QG091-02	D12	HQP012095	NM_002559	P2RX3
QG091-02	E01	HQP012094	NM_002558	P2RX1
QG091-02	E02	HQP011252	NM_002420	TRPM1
QG091-02	E03	HQP010069	NM_002252	KCNS3
QG091-02	E04	HQP010063	NM_020697	KCNS2
QG091-02	E05	HQP010058	NM_002251	KCNS1
QG091-02	E06	HQP010054	NM_004519	KCNQ3

QG091-02	E07	HQP010049	NM_004518	KCNQ2
QG091-02	E08	HQP010046	NM_000218	KCNQ1
QG091-02	E09	HQP010043	NM_002250	KCNN4
QG091-02	E10	HQP010041	NM_002249	KCNN3
QG091-02	E11	HQP010039	NM_021614	KCNN2
QG091-02	E12	HQP010035	NM_004137	KCNMB1
QG091-02	F01	HQP010033	NM_001014797	KCNMA1
QG091-02	F02	HQP010027	NM_001017424	KCNK2
QG091-02	F03	HQP010024	NM_002245	KCNK1
QG091-02	F04	HQP010022	NM_002243	KCNJ15
QG091-02	F05	HQP010018	NM_002242	KCNJ13
QG091-02	F06	HQP010015	NM_000525	KCNJ11
QG091-02	F07	HQP010012	NM_004982	KCNJ8
QG091-02	F08	HQP010010	NM_002240	KCNJ6
QG091-02	F09	HQP010009	NM_000890	KCNJ5
QG091-02	F10	HQP010007	NM_004981	KCNJ4
QG091-02	F11	HQP010005	NM_002239	KCNJ3
QG091-02	F12	HQP010003	NM_000891	KCNJ2
QG091-02	G01	HQP010001	NM_000220	KCNJ1
QG091-02	G02	HQP009998	NM_000238	KCNH2
QG091-02	G03	HQP009990	NM_002238	KCNH1
QG091-02	G04	HQP009980	NM_002237	KCNG1
QG091-02	G05	HQP009969	NM_000219	KCNE1
QG091-02	G06	HQP009959	NM_004980	KCND3
QG091-02	G07	HQP009949	NM_012281	KCND2
QG091-02	G08	HQP009947	NM_004979	KCND1
QG091-02	G09	HQP009938	NM_001039574	KCNC4
QG091-02	G10	HQP009906	NM_139136	KCNC2
QG091-02	G11	HQP009900	NM_004976	KCNC1
QG091-02	G12	HQP009893	NM_004975	KCNB1
QG091-02	H01	HGDC		
QG091-02	H02	HGDC		
QG091-02	H03	HQP006940	NM_002046	GAPDH
QG091-02	H04	HQP016381	NM_001101	ACTB
QG091-02	H05	HQP015171	NM_004048	B2M
QG091-02	H06	HQP006171	NM_012423	RPL13A
QG091-02	H07	HQP009026	NM_000194	HPRT1
QG091-02	H08	HQP054253	NR_003286	RN18S1
QG091-02	H09	RT		
QG091-02	H10	RT		
QG091-02	H11	PCR		
QG091-02	H12	PCR		
QG091-03	A01	HQP009873	NM_002234	KCNA5
QG091-03	A02	HQP009869	NM_002233	KCNA4
QG091-03	A03	HQP009868	NM_002232	KCNA3
QG091-03	A04	HQP009844	NM_002224	ITPR3

QG091-03	A05	HQP009843	NM_002223	ITPR2
QG091-03	A06	HQP009842	NM_002222	ITPR1
QG091-03	A07	HQP009123	NM_000869	HTR3A
QG091-03	A08	HQP008380	NM_000836	GRIN2D
QG091-03	A09	HQP008376	NM_000835	GRIN2C
QG091-03	A10	HQP008371	NM_000833	GRIN2A
QG091-03	A11	HQP008367	NM_000832	GRIN1
QG091-03	A12	HQP008365	NM_002088	GRIK5
QG091-03	B01	HQP008363	NM_014619	GRIK4
QG091-03	B02	HQP008353	NM_021956	GRIK2
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QG091-03	H05	HQP015171	NM_004048	B2M
QG091-03	H06	HQP006171	NM_012423	RPL13A
QG091-03	H07	HQP009026	NM_000194	HPRT1
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QG091-03	H12	PCR		

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QG091-04	B09	HQP021860	NM_033272	KCNH7
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QG091-04	D04	HQP006657	NM_033223	GABRG3
QG091-04	D05	HQP006672	NM_002043	GABRR2
QG091-04	D06	HQP007709	NM_000171	GLRA1
QG091-04	D07	HQP008309	NM_000829	GRIA4
QG091-04	D08	HQP008361	NM_000831	GRIK3
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QG091-04	G03	HQP006899	NM_013943	CLIC4
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QG091-04	H01	HGDC		
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QG091-04	H04	HQP016381	NM_001101	ACTB
QG091-04	H05	HQP015171	NM_004048	B2M
QG091-04	H06	HQP006171	NM_012423	RPL13A
QG091-04	H07	HQP009026	NM_000194	HPRT1
QG091-04	H08	HQP054253	NR_003286	RN18S1

QG091-04	H09	RT		
QG091-04	H10	RT		
QG091-04	H11	PCR		
QG091-04	H12	PCR		

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