

ExProfile™ Human AMPK Signaling Related Gene qPCR Array

For focused group profiling of human AMPK signaling genes expression

Cat. No. QG004-A (4 x 96-well plate, Format A)

Cat. No. QG004-B (4 x 96-well plate, Format B)

Cat. No. QG004-C (4 x 96-well plate, Format C)

Cat. No. QG004-D (4 x 96-well plate, Format D)

Cat. No. QG004-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 AMPK signaling related gene qPCR array profiles the expression of 336 human genes related to AMPK-mediated signal transduction. These genes are carefully chosen for their close pathway correlation based on a thorough literature search of peer-reviewed publications, mainly including genes that encode AMP-activated protein kinase complex, its regulators and targets involved in many important biological processes, such as glucose uptake, β -oxidation of fatty acids and modulation of insulin secretion. This array allows researchers to study the pathway-related genes to gain understanding of their roles in the different biological processes.

- QG004 plate 01: 84 unique gene PCR primer pairs
- QG004 plate 02: 84 unique gene PCR primer pairs
- QG004 plate 03: 84 unique gene PCR primer pairs
- QG004 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

GeneCopoela 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	ELK1	HTR2C	CEBPB	IGFBP3	PKLR	INS	TLR4	GAL	PRKAB1	TLR2	PYGB	EXOC7
B	CACNA1E	CACNA1C	GC	IAPP	PHKB	LPL	GHR	NAT2	CBLB	UCP1	GHRH	NMUR2
C	IFNG	GRK4	CNTF	TCF7L2	PFKM	EIF4EBP1	PAX6	GCK	PTPN1	PIK3CB	MAP2K1	CD38
D	AGT	ACACA	SLC27A1	PIK3R1	CCKBR	MLXIPL	ANGPTL6	PTGES2	NR0B2	FOXA2	CAPN10	TRIB3
E	RETN	TRPV1	OSBPL1A	MKMK2	CALML5	GHRL	CNR1	OSBPL3	SDC3	SHC2	RHOQ	DGAT1
F	TRH	RAC1	NEU3	PRKCD	PRKAA1	PLTP	NKX6-1	WFS1	PBEF1	RHEB	HSD11B1	AKT3
G	LIPE	HRAS	MCHR1	CALML3	ATP2A3	PPARG	KCNB1	ADIPOQ	FOXA1	BAD	H6PD	RRAD
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure1. Illustration of QG004 plate 01

	1	2	3	4	5	6	7	8	9	10	11	12
A	PTK2B	EIF4EBP2	SOC3	SOC2	SOC1	IRS4	VIP	UCP3	TUB	SHC1	PTPRF	PTPN2
B	MAPK10	MAPK9	MAPK8	MAPK1	PRKCB1	PRKAR1A	PRKAG1	PRKACA	PPP1R3A	PPP1CB	PKM2	MIF
C	HMG1	GRB2	GNB3	EDN1	CEL	CAV1	CALM2	ATP2A2	ASIP	CAV3	AGRP	ADM
D	MYO1C	FTO	UNC13A	SSTR2	SST	SLC2A4	PRKAG2	ENPP2	CD68	CDC42	ANGPTL4	SORBS1
E	CALCA	PRKCZ	CEACAM1	PCK2	INPP5D	AKT1	RPS6	PPP1CA	RPS6KB2	SREBF1	LEPR	PFKL
F	PPARA	TRPM2	PTGDS	POMC	NPY1R	NPY	DRD2	CCK	CCR2	NOS2A	IGF1	IGF2
G	CD44	NOS3	IGFBP1	TSC2	TCF1	KCNJ11	GH1	HNF4A	STK11	HFE	ALDH3A2	VDR
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure2. Illustration of QG004 plate 02

	1	2	3	4	5	6	7	8	9	10	11	12
A	THBD	INSR	NR3C1	FABP2	CYP19A1	CD36	FAS	APOE	APOA1	ADRB3	ADRB2	SHC4
B	STXBP4	JAZF1	SLC30A8	REM2	LPIN1	DGAT2	BBS2	BBS1	ELOVL6	LPIN3	GYS2	SH2B2
C	GPAM	KIAA1303	WNK1	MKKS	TRPM4	SOX6	SHC3	INSIG2	ALMS1	LPIN2	ANGPTL3	PPARGC1A
D	SIRT1	KIF3A	SOS2	CALM1	NMU	UNC13B	PRKCQ	PRKAA2	PIK3CA	SERPINE2	PHKG1	MC4R
E	FLOT1	SOS1	PYGM	IRS1	ABCA1	SRC	RAPGEF1	GLUD1	CRKL	CBL	CALM3	SIM1
F	PRKX	PIK3R2	PIK3CD	CLOCK	EIF4E2	STX1A	RPS6KA3	RAB4A	KIF5B	FLOT2	CARTPT	TRIP10
G	GYG1	GIP	FASN	SNAP23	MKNK1	PIK3R3	KLF11	UCP2	SYK	SNAP25	PTPN9	PROX1
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure3. Illustration of QG004 plate 03

	1	2	3	4	5	6	7	8	9	10	11	12
A	PRKAR1B	PLIN	PHKA1	PDPK1	PCSK2	PCK1	OSBP	NRAS	ITGAV	GYS1	GCG	FOXO1A
B	EIF4E	SERPINA6	AKT2	ADRBK1	INPPL1	GCKR	EREG	ACACB	PRL	PDE3B	NPY2R	IGF1R
C	ACE	CYP2E1	CKAR	VTN	HTR2A	SERPINE1	LDLR	APOA4	SELE	PON1	PCSK1	APOB
D	TSC1	PTEN	PHKA2	LIPC	LEP	ITGB3	GIPR	G6PC	ALB	MAPK3	PPARD	NFKB1
E	TNFRSF11A	GSK3B	IKBKB	ESR2	ESR1	SOC87	SIRT4	ENPP1	NR1H4	FRAP1	BRAF	PRKAR2A
F	FBP2	PYGL	PRKD1	FABP4	TF	CP	RPS6KB1	MAP2K2	ADIPOR2	ADIPOR1	PPP1R13B	PRKCH
G	MTHFR	GNE	CCL13	PDE1C	JAK2	RAF1	PRKCA	PFKP	GLP1R	CPE	ARAF	ALOX5AP
H	HGDC	HGDC	GAPDH	ACTB	B2M	RPL13A	HPRT1	RN18S1	RT	RT	PCR	PCR

Figure4. Illustration of QG004 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
QG004-01	A01	HQP004749	NM_005229	ELK1
QG004-01	A02	HQP009122	NM_000868	HTR2C
QG004-01	A03	HQP000623	NM_005194	CEBPB
QG004-01	A04	HQP009544	NM_000598	IGFBP3
QG004-01	A05	HQP013181	NM_000298	PKLR
QG004-01	A06	HQP009749	NM_000207	INS
QG004-01	A07	HQP018116	NM_138554	TLR4
QG004-01	A08	HQP012369	NM_015973	GAL
QG004-01	A09	HQP014547	NM_006253	PRKAB1

QG004-01	A10	HQP018114	NM_003264	TLR2
QG004-01	A11	HQP015986	NM_002862	PYGB
QG004-01	A12	HQP005934	NM_001013839	EXOC7
QG004-01	B01	HQP018743	NM_000721	CACNA1E
QG004-01	B02	HQP018723	NM_000719	CACNA1C
QG004-01	B03	HQP007230	NM_000583	GC
QG004-01	B04	HQP009147	NM_000415	IAPP
QG004-01	B05	HQP013115	NM_000293	PHKB
QG004-01	B06	HQP010847	NM_000237	LPL
QG004-01	B07	HQP007395	NM_000163	GHR
QG004-01	B08	HQP001136	NM_000015	NAT2
QG004-01	B09	HQP021438	NM_170662	CBLB
QG004-01	B10	HQP018402	NM_021833	UCP1
QG004-01	B11	HQP007396	NM_021081	GHRH
QG004-01	B12	HQP015244	NM_020167	NMUR2
QG004-01	C01	HQP009467	NM_000619	IFNG
QG004-01	C02	HQP008257	NM_001004056	GRK4
QG004-01	C03	HQP002424	NM_000614	CNTF
QG004-01	C04	HQP017962	NM_030756	TCF7L2
QG004-01	C05	HQP013077	NM_000289	PFKM
QG004-01	C06	HQP004676	NM_004095	EIF4EBP1
QG004-01	C07	HQP012219	NM_000280	PAX6
QG004-01	C08	HQP007239	NM_000162	GCK
QG004-01	C09	HQP015828	NM_002827	PTPN1
QG004-01	C10	HQP013151	NM_006219	PIK3CB
QG004-01	C11	HQP014907	NM_002755	MAP2K1
QG004-01	C12	HQP022870	NM_001775	CD38
QG004-01	D01	HQP004494	NM_000029	AGT
QG004-01	D02	HQP008970	NM_198834	ACACA
QG004-01	D03	HQP010011	NM_198580	SLC27A1
QG004-01	D04	HQP013155	NM_181504	PIK3R1
QG004-01	D05	HQP021662	NM_176875	CCKBR
QG004-01	D06	HQP012371	NM_032951	MLXIPL
QG004-01	D07	HQP020344	NM_031917	ANGPTL6
QG004-01	D08	HQP019539	NM_025072	PTGES2
QG004-01	D09	HQP020670	NM_021969	NR0B2
QG004-01	D10	HQP008906	NM_021784	FOXA2
QG004-01	D11	HQP001299	NM_021251	CAPN10
QG004-01	D12	HQP015857	NM_021158	TRIB3
QG004-01	E01	HQP015160	NM_020415	RETN
QG004-01	E02	HQP018498	NM_018727	TRPV1

QG004-01	E03	HQP001722	NM_018030	OSBPL1A
QG004-01	E04	HQP008273	NM_017572	MKNK2
QG004-01	E05	HQP013039	NM_017422	CALML5
QG004-01	E06	HQP012996	NM_016362	GHRL
QG004-01	E07	HQP002408	NM_016083	CNR1
QG004-01	E08	HQP006982	NM_015550	OSBPL3
QG004-01	E09	HQP023059	NM_014654	SDC3
QG004-01	E10	HQP006699	NM_012435	SHC2
QG004-01	E11	HQP006101	NM_012249	RHOQ
QG004-01	E12	HQP021442	NM_012079	DGAT1
QG004-01	F01	HQP018241	NM_007117	TRH
QG004-01	F02	HQP016063	NM_006908	RAC1
QG004-01	F03	HQP000957	NM_006656	NEU3
QG004-01	F04	HQP014731	NM_006254	PRKCD
QG004-01	F05	HQP014530	NM_006251	PRKAA1
QG004-01	F06	HQP013280	NM_006227	PLTP
QG004-01	F07	HQP011846	NM_006168	NKX6-1
QG004-01	F08	HQP018520	NM_006005	WFS1
QG004-01	F09	HQP000167	NM_005746	PBEF1
QG004-01	F10	HQP016276	NM_005614	RHEB
QG004-01	F11	HQP009062	NM_005525	HSD11B1
QG004-01	F12	HQP000001	NM_005465	AKT3
QG004-01	G01	HQP010627	NM_005357	LIPE
QG004-01	G02	HQP009036	NM_005343	HRAS
QG004-01	G03	HQP008082	NM_005297	MCHR1
QG004-01	G04	HQP019834	NM_005185	CALML3
QG004-01	G05	HQP011920	NM_005173	ATP2A3
QG004-01	G06	HQP013633	NM_005037	PPARG
QG004-01	G07	HQP009893	NM_004975	KCNB1
QG004-01	G08	HQP022625	NM_004797	ADIPOQ
QG004-01	G09	HQP008904	NM_004496	FOXA1
QG004-01	G10	HQP015538	NM_004322	BAD
QG004-01	G11	HQP022914	NM_004285	H6PD
QG004-01	G12	HQP016501	NM_004165	RRAD
QG004-01	H01	HGDC		
QG004-01	H02	HGDC		
QG004-01	H03	HQP006940	NM_002046	GAPDH
QG004-01	H04	HQP016381	NM_001101	ACTB
QG004-01	H05	HQP015171	NM_004048	B2M
QG004-01	H06	HQP006171	NM_012423	RPL13A
QG004-01	H07	HQP009026	NM_000194	HPRT1

QG004-01	H08	HQP054253	NR_003286	RN18S1
QG004-01	H09	RT		
QG004-01	H10	RT		
QG004-01	H11	PCR		
QG004-01	H12	PCR		
QG004-02	A01	HQP005093	NM_004103	PTK2B
QG004-02	A02	HQP004677	NM_004096	EIF4EBP2
QG004-02	A03	HQP021889	NM_003955	SOCS3
QG004-02	A04	HQP021602	NM_003877	SOCS2
QG004-02	A05	HQP021399	NM_003745	SOCS1
QG004-02	A06	HQP020912	NM_003604	IRS4
QG004-02	A07	HQP018490	NM_003381	VIP
QG004-02	A08	HQP018404	NM_003356	UCP3
QG004-02	A09	HQP018295	NM_003320	TUB
QG004-02	A10	HQP017080	NM_003029	SHC1
QG004-02	A11	HQP015921	NM_002840	PTPRF
QG004-02	A12	HQP015839	NM_002828	PTPN2
QG004-02	B01	HQP014900	NM_002753	MAPK10
QG004-02	B02	HQP014896	NM_002752	MAPK9
QG004-02	B03	HQP014886	NM_002750	MAPK8
QG004-02	B04	HQP014848	NM_002745	MAPK1
QG004-02	B05	HQP014718	NM_002738	PRKCB1
QG004-02	B06	HQP014650	NM_002734	PRKAR1A
QG004-02	B07	HQP014627	NM_002733	PRKAG1
QG004-02	B08	HQP014575	NM_002730	PRKACA
QG004-02	B09	HQP014024	NM_002711	PPP1R3A
QG004-02	B10	HQP013970	NM_002709	PPP1CB
QG004-02	B11	HQP013185	NM_002654	PKM2
QG004-02	B12	HQP011219	NM_002415	MIF
QG004-02	C01	HQP008894	NM_002131	HMGA1
QG004-02	C02	HQP008291	NM_002086	GRB2
QG004-02	C03	HQP007767	NM_002075	GNB3
QG004-02	C04	HQP004557	NM_001955	EDN1
QG004-02	C05	HQP000679	NM_001807	CEL
QG004-02	C06	HQP021313	NM_001753	CAV1
QG004-02	C07	HQP019707	NM_001743	CALM2
QG004-02	C08	HQP011909	NM_001681	ATP2A2
QG004-02	C09	HQP011303	NM_001672	ASIP
QG004-02	C10	HQP021320	NM_001234	CAV3
QG004-02	C11	HQP004453	NM_001138	AGRP
QG004-02	C12	HQP002765	NM_001124	ADM

QG004-02	D01	HQP011640	NM_001080779	MYO1C
QG004-02	D02	HQP018895	NM_001080432	FTO
QG004-02	D03	HQP005680	NM_001080421	UNC13A
QG004-02	D04	HQP017744	NM_001050	SSTR2
QG004-02	D05	HQP053963	NM_001048	SST
QG004-02	D06	HQP053960	NM_001042	SLC2A4
QG004-02	D07	HQP012722	NM_001040633	PRKAG2
QG004-02	D08	HQP012960	NM_001040092	ENPP2
QG004-02	D09	HQP023083	NM_001040059	CD68
QG004-02	D10	HQP023454	NM_001039802	CDC42
QG004-02	D11	HQP012432	NM_001039667	ANGPTL4
QG004-02	D12	HQP000695	NM_001034954	SORBS1
QG004-02	E01	HQP019178	NM_001033952	CALCA
QG004-02	E02	HQP014829	NM_001033581	PRKCZ
QG004-02	E03	HQP016623	NM_001024912	CEACAM1
QG004-02	E04	HQP012353	NM_001018073	PCK2
QG004-02	E05	HQP009754	NM_001017915	INPP5D
QG004-02	E06	HQP004991	NM_001014431	AKT1
QG004-02	E07	HQP053957	NM_001010	RPS6
QG004-02	E08	HQP013953	NM_001008709	PPP1CA
QG004-02	E09	HQP016472	NM_001007071	RPS6KB2
QG004-02	E10	HQP017703	NM_001005291	SREBF1
QG004-02	E11	HQP010582	NM_001003679	LEPR
QG004-02	E12	HQP013074	NM_001002021	PFKL
QG004-02	F01	HQP013617	NM_001001928	PPARA
QG004-02	F02	HQP018256	NM_001001188	TRPM2
QG004-02	F03	HQP015539	NM_000954	PTGDS
QG004-02	F04	HQP013467	NM_000939	POMC
QG004-02	F05	HQP011906	NM_000909	NPY1R
QG004-02	F06	HQP011874	NM_000905	NPY
QG004-02	F07	HQP004446	NM_000795	DRD2
QG004-02	F08	HQP021637	NM_000729	CCK
QG004-02	F09	HQP002200	NM_000647	CCR2
QG004-02	F10	HQP011866	NM_000625	NOS2A
QG004-02	F11	HQP009518	NM_000618	IGF1
QG004-02	F12	HQP009529	NM_000612	IGF2
QG004-02	G01	HQP022972	NM_000610	CD44
QG004-02	G02	HQP011868	NM_000603	NOS3
QG004-02	G03	HQP009539	NM_000596	IGFBP1
QG004-02	G04	HQP018265	NM_000548	TSC2
QG004-02	G05	HQP017954	NM_000545	TCF1

QG004-02	G06	HQP010015	NM_000525	KCNJ11
QG004-02	G07	HQP007385	NM_000515	GH1
QG004-02	G08	HQP008908	NM_000457	HNF4A
QG004-02	G09	HQP017794	NM_000455	STK11
QG004-02	G10	HQP008757	NM_000410	HFE
QG004-02	G11	HQP005406	NM_000382	ALDH3A2
QG004-02	G12	HQP018474	NM_000376	VDR
QG004-02	H01	HGDC		
QG004-02	H02	HGDC		
QG004-02	H03	HQP006940	NM_002046	GAPDH
QG004-02	H04	HQP016381	NM_001101	ACTB
QG004-02	H05	HQP015171	NM_004048	B2M
QG004-02	H06	HQP006171	NM_012423	RPL13A
QG004-02	H07	HQP009026	NM_000194	HPRT1
QG004-02	H08	HQP054253	NR_003286	RN18S1
QG004-02	H09	RT		
QG004-02	H10	RT		
QG004-02	H11	PCR		
QG004-02	H12	PCR		
QG004-03	A01	HQP018067	NM_000361	THBD
QG004-03	A02	HQP009764	NM_000208	INSR
QG004-03	A03	HQP008401	NM_000176	NR3C1
QG004-03	A04	HQP005074	NM_000134	FABP2
QG004-03	A05	HQP003904	NM_000103	CYP19A1
QG004-03	A06	HQP022821	NM_000072	CD36
QG004-03	A07	HQP009651	NM_000043	FAS
QG004-03	A08	HQP009556	NM_000041	APOE
QG004-03	A09	HQP009125	NM_000039	APOA1
QG004-03	A10	HQP003812	NM_000025	ADRB3
QG004-03	A11	HQP003791	NM_000024	ADRB2
QG004-03	A12	HQP010646	NM_203349	SHC4
QG004-03	B01	HQP006461	NM_178509	STXBP4
QG004-03	B02	HQP005328	NM_175061	JAZF1
QG004-03	B03	HQP004229	NM_173851	SLC30A8
QG004-03	B04	HQP003977	NM_173527	REM2
QG004-03	B05	HQP005830	NM_145693	LPIN1
QG004-03	B06	HQP020845	NM_032564	DGAT2
QG004-03	B07	HQP015989	NM_031885	BBS2
QG004-03	B08	HQP015979	NM_024649	BBS1
QG004-03	B09	HQP018897	NM_024090	ELOVL6
QG004-03	B10	HQP017235	NM_022896	LPIN3

QG004-03	B11	HQP008662	NM_021957	GYS2
QG004-03	B12	HQP000726	NM_020979	SH2B2
QG004-03	C01	HQP015796	NM_020918	GPAM
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QG004-04	H09	RT		
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