

# RT<sup>2</sup> Profiler PCR Array (Rotor-Gene® Format)

## Human mTOR Signaling

Cat. no. 330231 PAHS-098ZR

For pathway expression analysis

Format	For use with the following real-time cyclers
RT <sup>2</sup> Profiler PCR Array, Format R	Rotor-Gene Q, other Rotor-Gene cyclers

### Description

The Human mTOR Signaling RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes involved in the mammalian target of rapamycin (mTOR) signaling pathway. mTOR, a serine/threonine protein kinase, integrates responses from a wide variety of signals (nutrients, hormones, growth factors and cellular stresses) to regulate cell growth, metabolism and survival. The first generation of mTOR inhibitors (e.g. rapamycin) failed to inhibit all mTOR functions, because the kinase forms two distinct protein complexes, mTORC1 and mTORC2. The rapamycin-sensitive mTORC1 complex regulates multiple biosynthetic cellular processes (protein synthesis, cell cycle progression, cell growth and proliferation). Until recently, the lack of mTORC2-specific inhibitors complicated elucidation of this protein complex's molecular functions. One definitive mTORC2 response is AKT activation, important for cell proliferation, migration and survival (apoptosis and autophagy inhibition). This array includes members of the mTORC1 and mTORC2 complexes as well as upstream regulators of many mTOR responses, and downstream genes from the many cellular processes regulated by mTOR complex activation. Using real-time PCR, you can easily and reliably analyze the expression of a focused panel of genes involved in mTOR signaling with this array.

For further details, consult the *RT<sup>2</sup> Profiler PCR Array Handbook*.

### Shipping and storage

RT<sup>2</sup> Profiler PCR Arrays in the Rotor-Gene format are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products.

For long term storage, keep plates at -20°C.

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**Note:** Ensure that you have the correct RT<sup>2</sup> Profiler PCR Array format for your real-time cycler (see table above).

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



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Sample & Assay Technologies

## Array layout

The 96 real-time assays in the Rotor-Gene format are located in wells 1–96 of the Rotor-Disc™ (plate A1–A12=Rotor-Disc 1–12, plate B1–B12=Rotor-Disc 13–24, etc.). To maintain data analysis compatibility, wells 97–100 do not contain real-time assays but will contain master mix to account for weight balance.

## Gene table: RT<sup>2</sup> Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Hs.525622	NM_005163	AKT1	V-akt murine thymoma viral oncogene homolog 1
A02	Hs.515542	NM_032375	AKT1S1	AKT1 substrate 1 (proline-rich)
A03	Hs.631535	NM_001626	AKT2	V-akt murine thymoma viral oncogene homolog 2
A04	Hs.498292	NM_005465	AKT3	V-akt murine thymoma viral oncogene homolog 3 (protein kinase B, gamma)
A05	Hs.632536	NM_016289	CAB39	Calcium binding protein 39
A06	Hs.87159	NM_030925	CAB39L	Calcium binding protein 39-like
A07	Hs.690198	NM_001791	CDC42	Cell division cycle 42 (GTP binding protein, 25kDa)
A08	Hs.198998	NM_001278	CHUK	Conserved helix-loop-helix ubiquitous kinase
A09	Hs.523012	NM_019058	DDIT4	DNA-damage-inducible transcript 4
A10	Hs.480378	NM_145244	DDIT4L	DNA-damage-inducible transcript 4-like
A11	Hs.112981	NM_022783	DEPTOR	DEP domain containing MTOR-interacting protein
A12	Hs.648394	NM_001417	EIF4B	Eukaryotic translation initiation factor 4B
B01	Hs.249718	NM_001968	EIF4E	Eukaryotic translation initiation factor 4E
B02	Hs.411641	NM_004095	EIF4EBP1	Eukaryotic translation initiation factor 4E binding protein 1
B03	Hs.730236	NM_004096	EIF4EBP2	Eukaryotic translation initiation factor 4E binding protein 2
B04	Hs.471933	NM_000801	FKBP1A	FK506 binding protein 1A, 12kDa
B05	Hs.173464	NM_012181	FKBP8	FK506 binding protein 8, 38kDa
B06	Hs.445733	NM_002093	GSK3B	Glycogen synthase kinase 3 beta
B07	Hs.597216	NM_001530	HIF1A	Hypoxia inducible factor 1, alpha subunit (basic helix-loop-helix transcription factor)
B08	Hs.37003	NM_005343	HRAS	V-Ha-ras Harvey rat sarcoma viral oncogene homolog
B09	Hs.90093	NM_002154	HSPA4	Heat shock 70kDa protein 4
B10	Hs.160562	NM_000618	IGF1	Insulin-like growth factor 1 (somatomedin C)
B11	Hs.450230	NM_000598	IGFBP3	Insulin-like growth factor binding protein 3
B12	Hs.597664	NM_001556	IKKB	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta
C01	Hs.5158	NM_004517	ILK	Integrin-linked kinase
C02	Hs.654579	NM_000207	INS	Insulin
C03	Hs.465744	NM_000208	INSR	Insulin receptor
C04	Hs.471508	NM_005544	IRS1	Insulin receptor substrate 1
C05	Hs.431850	NM_002745	MAPK1	Mitogen-activated protein kinase 1
C06	Hs.861	NM_002746	MAPK3	Mitogen-activated protein kinase 3
C07	Hs.495138	NM_024117	MAPKAP1	Mitogen-activated protein kinase associated protein 1
C08	Hs.29203	NM_022372	MLST8	MTOR associated protein, LST8 homolog (S. cerevisiae)
C09	Hs.338207	NM_004958	MTOR	Mechanistic target of rapamycin (serine/threonine kinase)
C10	Hs.286226	NM_033375	MYO1C	Myosin IC
C11	Hs.459691	NM_002613	PDPK1	3-phosphoinositide dependent protein kinase-1
C12	Hs.464971	NM_002647	PIK3C3	Phosphoinositide-3-kinase, class 3
D01	Hs.553498	NM_006218	PIK3CA	Phosphoinositide-3-kinase, catalytic, alpha polypeptide
D02	Hs.239818	NM_006219	PIK3CB	Phosphoinositide-3-kinase, catalytic, beta polypeptide
D03	Hs.518451	NM_005026	PIK3CD	Phosphoinositide-3-kinase, catalytic, delta polypeptide
D04	Hs.32942	NM_002649	PIK3CG	Phosphoinositide-3-kinase, catalytic, gamma polypeptide
D05	Hs.382865	NM_002662	PLD1	Phospholipase D1, phosphatidylcholine-specific
D06	Hs.104519	NM_002663	PLD2	Phospholipase D2
D07	Hs.483408	NM_002715	PPP2CA	Protein phosphatase 2, catalytic subunit, alpha isozyme
D08	Hs.655213	NM_181678	PPP2R2B	Protein phosphatase 2, regulatory subunit B, beta
D09	Hs.400740	NM_021131	PPP2R4	Protein phosphatase 2A activator, regulatory subunit 4
D10	Hs.43322	NM_006251	PRKAA1	Protein kinase, AMP-activated, alpha 1 catalytic subunit
D11	Hs.437039	NM_006252	PRKAA2	Protein kinase, AMP-activated, alpha 2 catalytic subunit
D12	Hs.715515	NM_006253	PRKAB1	Protein kinase, AMP-activated, beta 1 non-catalytic subunit
E01	Hs.50732	NM_005399	PRKAB2	Protein kinase, AMP-activated, beta 2 non-catalytic subunit
E02	Hs.530862	NM_002733	PRKAG1	Protein kinase, AMP-activated, gamma 1 non-catalytic subunit
E03	Hs.647072	NM_016203	PRKAG2	Protein kinase, AMP-activated, gamma 2 non-catalytic subunit
E04	Hs.591634	NM_017431	PRKAG3	Protein kinase, AMP-activated, gamma 3 non-catalytic subunit
E05	Hs.531704	NM_002737	PRKCA	Protein kinase C, alpha
E06	Hs.460355	NM_002738	PRKCB	Protein kinase C, beta
E07	Hs.580351	NM_005400	PRKCE	Protein kinase C, epsilon
E08	Hs.631564	NM_002739	PRKCG	Protein kinase C, gamma

Position	UniGene	GenBank	Symbol	Description
E09	Hs.500466	NM_000314	PTEN	Phosphatase and tensin homolog
E10	Hs.283521	NM_005614	RHEB	Ras homolog enriched in brain
E11	Hs.247077	NM_001664	RHOA	Ras homolog gene family, member A
E12	Hs.407926	NM_152756	RICTOR	RPTOR independent companion of MTOR, complex 2
F01	Hs.408073	NM_001010	RPS6	Ribosomal protein S6
F02	Hs.149957	NM_002953	RPS6KA1	Ribosomal protein S6 kinase, 90kDa, polypeptide 1
F03	Hs.655277	NM_021135	RPS6KA2	Ribosomal protein S6 kinase, 90kDa, polypeptide 2
F04	Hs.510225	NM_004755	RPS6KA5	Ribosomal protein S6 kinase, 90kDa, polypeptide 5
F05	Hs.463642	NM_003161	RPS6KB1	Ribosomal protein S6 kinase, 70kDa, polypeptide 1
F06	Hs.534345	NM_003952	RPS6KB2	Ribosomal protein S6 kinase, 70kDa, polypeptide 2
F07	Hs.133044	NM_020761	RPTOR	Regulatory associated protein of MTOR, complex 1
F08	Hs.432330	NM_006570	RRAGA	Ras-related GTP binding A
F09	Hs.50282	NM_006064	RRAGB	Ras-related GTP binding B
F10	Hs.532461	NM_022157	RRAGC	Ras-related GTP binding C
F11	Hs.31712	NM_021244	RRAGD	Ras-related GTP binding D
F12	Hs.510078	NM_005627	SGK1	Serum/glucocorticoid regulated kinase 1
G01	Hs.515005	NM_000455	STK11	Serine/threonine kinase 11
G02	Hs.652338	NM_018571	STRADB	STE20-related kinase adaptor beta
G03	Hs.271044	NM_016111	TELO2	TEL2, telomere maintenance 2, homolog (S. cerevisiae)
G04	Hs.654481	NM_000546	TP53	Tumor protein p53
G05	Hs.370854	NM_000368	TSC1	Tuberous sclerosis 1
G06	Hs.90303	NM_000548	TSC2	Tuberous sclerosis 2
G07	Hs.47061	NM_003565	ULK1	Unc-51-like kinase 1 (C. elegans)
G08	Hs.168762	NM_014683	ULK2	Unc-51-like kinase 2 (C. elegans)
G09	Hs.73793	NM_003376	VEGFA	Vascular endothelial growth factor A
G10	Hs.78781	NM_003377	VEGFB	Vascular endothelial growth factor B
G11	Hs.435215	NM_005429	VEGFC	Vascular endothelial growth factor C
G12	Hs.74405	NM_006826	YWHAQ	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, theta polypeptide
H01	Hs.520640	NM_001101	ACTB	Actin, beta
H02	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H03	Hs.592355	NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
H04	Hs.412707	NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1
H05	Hs.546285	NM_001002	RPLP0	Ribosomal protein, large, P0
H06	N/A	SA_00105	HGDC	Human Genomic DNA Contamination
H07	N/A	SA_00104	RTC	Reverse Transcription Control
H08	N/A	SA_00104	RTC	Reverse Transcription Control
H09	N/A	SA_00104	RTC	Reverse Transcription Control
H10	N/A	SA_00103	PPC	Positive PCR Control
H11	N/A	SA_00103	PPC	Positive PCR Control
H12	N/A	SA_00103	PPC	Positive PCR Control

## Related products

For optimal performance, RT<sup>2</sup> Profiler PCR Arrays should be used together with the RT<sup>2</sup> First Strand Kit for cDNA synthesis and RT<sup>2</sup> SYBR<sup>®</sup> Green qPCR Mastermixes for PCR.

Product	Contents	Cat. no.
RT <sup>2</sup> First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT <sup>2</sup> SYBR Green ROX™ FAST Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the Rotor-Gene Q and other Rotor-Gene cyclers	330620

\* Larger kit sizes available; please inquire.

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RT<sup>2</sup> Profiler PCR Array products 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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