

# RT<sup>2</sup> Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

## Human Synaptic Plasticity

Cat. no. 330231 PAHS-126ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT <sup>2</sup> Profiler PCR Array, Format A	Applied Biosystems® models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well block); Bio-Rad® models iCycler®, iQ™ 5, MyiQ™, MyiQ2; Bio-Rad/MJ Research Chromo4™; Eppendorf® Mastercycler® ep realplex models 2, 2s, 4, 4s; Stratagene® models Mx3005P®, Mx3000P®; Takara TP-800
RT <sup>2</sup> Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT <sup>2</sup> Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT <sup>2</sup> Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT <sup>2</sup> Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT <sup>2</sup> Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT <sup>2</sup> Profiler PCR Array, Format H	Fluidigm® BioMark™



## Description

The Human Synaptic Plasticity RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes central to synaptic alterations during learning and memory. The brain recalls immediate events via short-term memories; however, it must consolidate these events into long-term memory for later recall. Memory consolidation requires synaptic plasticity characterized by physical changes to, and gene expression changes in, neuronal synapses. Synaptic plasticity studies have discovered immediate-early genes (IEGs) that alter expression immediately after neuronal events. IEGs mediate long-term potentiation (LTP), a process that enhances synaptic connections and consolidates memories. However, as not all events become long-term memories, the opposite synaptic remodeling response, long-term depression (LTD), also plays a central role in synaptic plasticity. Gene expression changes associated with LTD yield physical changes in the neuronal synapse that recycle receptors and either enhance or inhibit synaptic connections. This array includes IEGs and other genes important for LTP and LTD, as well as key neuronal receptor genes and genes important for synapse remodeling. Using real-time PCR, you can easily and reliably analyze the expression of a focused panel of genes involved in synaptic plasticity, LTP and LTD 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 formats A, C, D, E, F, and G are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products. RT<sup>2</sup> Profiler PCR Arrays in format H are shipped on dry ice or blue ice packs.

For long term storage, keep plates at  $-20^{\circ}\text{C}$ .

**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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## Array layout (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the *RT<sup>2</sup> Profiler PCR Array Handbook* for layout.

	1	2	3	4	5	6	7	8	9	10	11	12
<b>A</b>	ADAM10	ADCY1	ADCY8	AKT1	ARC	BDNF	CAMK2A	CAMK2G	CDH2	CEBPB	CEBPD	CNR1
<b>B</b>	CREB1	CREM	DLG4	EGR1	EGR2	EGR3	EGR4	EPHB2	FOS	GABRA5	GNAI1	GRIA1
<b>C</b>	GRIA2	GRIA3	GRIA4	GRIN1	GRIN2A	GRIN2B	GRIN2C	GRIN2D	GRIP1	GRM1	GRM2	GRM3
<b>D</b>	GRM4	GRM5	GRM7	GRM8	HOMER1	IGF1	INHBA	JUN	JUNB	KIF17	KLF10	MAPK1
<b>E</b>	MMP9	NCAM1	NFKB1	NFKBIB	NGF	NGFR	NOS1	NPTX2	NR4A1	NTF3	NTF4	NTRK2
<b>F</b>	PCDH8	PICK1	PIM1	PLAT	PLCG1	PPP1CA	PPP1CC	PPP1R14A	PPP2CA	PPP3CA	PRKCA	PRKCG
<b>G</b>	PRKG1	RAB3A	RELA	RELN	RG52	RHEB	SIRT1	SRF	SYNPO	TIMP1	TNF	YWHAQ
<b>H</b>	ACTB	B2M	GAPDH	HPRT1	RPLP0	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

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

Position	UniGene	GenBank	Symbol	Description
A01	Hs.578508	NM_001110	ADAM10	ADAM metallopeptidase domain 10
A02	Hs.192215	NM_021116	ADCY1	Adenylate cyclase 1 (brain)
A03	Hs.591859	NM_001115	ADCY8	Adenylate cyclase 8 (brain)
A04	Hs.525622	NM_005163	AKT1	V-akt murine thymoma viral oncogene homolog 1
A05	Hs.40888	NM_015193	ARC	Activity-regulated cytoskeleton-associated protein
A06	Hs.502182	NM_001709	BDNF	Brain-derived neurotrophic factor
A07	Hs.716391	NM_015981	CAMK2A	Calcium/calmodulin-dependent protein kinase II alpha
A08	Hs.523045	NM_001222	CAMK2G	Calcium/calmodulin-dependent protein kinase II gamma
A09	Hs.464829	NM_001792	CDH2	Cadherin 2, type 1, N-cadherin (neuronal)
A10	Hs.517106	NM_005194	CEBPB	CCAAT/enhancer binding protein (C/EBP), beta
A11	Hs.440829	NM_005195	CEBPD	CCAAT/enhancer binding protein (C/EBP), delta
A12	Hs.75110	NM_016083	CNR1	Cannabinoid receptor 1 (brain)
B01	Hs.516646	NM_004379	CREB1	CAMP responsive element binding protein 1
B02	Hs.200250	NM_183011	CREM	CAMP responsive element modulator
B03	Hs.463928	NM_001365	DLG4	Discs, large homolog 4 (Drosophila)
B04	Hs.326035	NM_001964	EGR1	Early growth response 1
B05	Hs.1395	NM_000399	EGR2	Early growth response 2
B06	Hs.534313	NM_004430	EGR3	Early growth response 3
B07	Hs.3052	NM_001965	EGR4	Early growth response 4
B08	Hs.523329	NM_004442	EPHB2	EPH receptor B2
B09	Hs.728789	NM_005252	FOS	FBJ murine osteosarcoma viral oncogene homolog
B10	Hs.612087	NM_000810	GABRA5	Gamma-aminobutyric acid (GABA) A receptor, alpha 5
B11	Hs.134587	NM_002069	GNAI1	Guanine nucleotide binding protein (G protein), alpha inhibiting activity polypeptide 1
B12	Hs.519693	NM_000827	GRIA1	Glutamate receptor, ionotropic, AMPA 1
C01	Hs.32763	NM_000826	GRIA2	Glutamate receptor, ionotropic, AMPA 2
C02	Hs.377070	NM_000828	GRIA3	Glutamate receptor, ionotropic, AMPA 3
C03	Hs.503743	NM_000829	GRIA4	Glutamate receptor, ionotropic, AMPA 4
C04	Hs.558334	NM_007327	GRIN1	Glutamate receptor, ionotropic, N-methyl D-aspartate 1
C05	Hs.411472	NM_000833	GRIN2A	Glutamate receptor, ionotropic, N-methyl D-aspartate 2A
C06	Hs.654430	NM_000834	GRIN2B	Glutamate receptor, ionotropic, N-methyl D-aspartate 2B
C07	Hs.436980	NM_000835	GRIN2C	Glutamate receptor, ionotropic, N-methyl D-aspartate 2C
C08	Hs.445015	NM_000836	GRIN2D	Glutamate receptor, ionotropic, N-methyl D-aspartate 2D
C09	Hs.505946	NM_021150	GRIP1	Glutamate receptor interacting protein 1
C10	Hs.32945	NM_000838	GRM1	Glutamate receptor, metabotropic 1
C11	Hs.121510	NM_000839	GRM2	Glutamate receptor, metabotropic 2
C12	Hs.590575	NM_000840	GRM3	Glutamate receptor, metabotropic 3
D01	Hs.654847	NM_000841	GRM4	Glutamate receptor, metabotropic 4
D02	Hs.147361	NM_000842	GRM5	Glutamate receptor, metabotropic 5
D03	Hs.606393	NM_000844	GRM7	Glutamate receptor, metabotropic 7
D04	Hs.449625	NM_000845	GRM8	Glutamate receptor, metabotropic 8
D05	Hs.591761	NM_004272	HOMER1	Homer homolog 1 (Drosophila)
D06	Hs.160562	NM_000618	IGF1	Insulin-like growth factor 1 (somatomedin C)
D07	Hs.583348	NM_002192	INHBA	Inhibin, beta A
D08	Hs.714791	NM_002228	JUN	Jun proto-oncogene

Position	UniGene	GenBank	Symbol	Description
D09	Hs.25292	NM_002229	JUNB	Jun B proto-oncogene
D10	Hs.130411	NM_020816	KIF17	Kinesin family member 17
D11	Hs.435001	NM_005655	KLF10	Kruppel-like factor 10
D12	Hs.431850	NM_002745	MAPK1	Mitogen-activated protein kinase 1
E01	Hs.297413	NM_004994	MMP9	Matrix metalloproteinase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase)
E02	Hs.503878	NM_000615	NCAM1	Neural cell adhesion molecule 1
E03	Hs.654408	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
E04	Hs.9731	NM_002503	NFKBIB	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, beta
E05	Hs.2561	NM_002506	NGF	Nerve growth factor (beta polypeptide)
E06	Hs.415768	NM_002507	NGFR	Nerve growth factor receptor
E07	Hs.654410	NM_000620	NOS1	Nitric oxide synthase 1 (neuronal)
E08	Hs.3281	NM_002523	NPTX2	Neuronal pentraxin II
E09	Hs.524430	NM_002135	NR4A1	Nuclear receptor subfamily 4, group A, member 1
E10	Hs.99171	NM_002527	NTF3	Neurotrophin 3
E11	Hs.730176	NM_006179	NTF4	Neurotrophin 4
E12	Hs.494312	NM_006180	NTRK2	Neurotrophic tyrosine kinase, receptor, type 2
F01	Hs.19492	NM_002590	PCDH8	Protocadherin 8
F02	Hs.180871	NM_012407	PICK1	Protein interacting with PRKCA 1
F03	Hs.81170	NM_002648	PIM1	Pim-1 oncogene
F04	Hs.491582	NM_000930	PLAT	Plasminogen activator, tissue
F05	Hs.268177	NM_002660	PLCG1	Phospholipase C, gamma 1
F06	Hs.183994	NM_002708	PPP1CA	Protein phosphatase 1, catalytic subunit, alpha isozyme
F07	Hs.79081	NM_002710	PPP1CC	Protein phosphatase 1, catalytic subunit, gamma isozyme
F08	Hs.631569	NM_033256	PPP1R14A	Protein phosphatase 1, regulatory (inhibitor) subunit 14A
F09	Hs.483408	NM_002715	PPP2CA	Protein phosphatase 2, catalytic subunit, alpha isozyme
F10	Hs.435512	NM_000944	PPP3CA	Protein phosphatase 3, catalytic subunit, alpha isozyme
F11	Hs.531704	NM_002737	PRKCA	Protein kinase C, alpha
F12	Hs.631564	NM_002739	PRKCG	Protein kinase C, gamma
G01	Hs.654556	NM_006258	PRKG1	Protein kinase, cGMP-dependent, type I
G02	Hs.27744	NM_002866	RAB3A	RAB3A, member RAS oncogene family
G03	Hs.502875	NM_021975	RELA	V-rel reticuloendotheliosis viral oncogene homolog A (avian)
G04	Hs.655654	NM_005045	RELN	Reelin
G05	Hs.78944	NM_002923	RG52	Regulator of G-protein signaling 2, 24kDa
G06	Hs.283521	NM_005614	RHEB	Ras homolog enriched in brain
G07	Hs.369779	NM_012238	SIRT1	Sirtuin 1
G08	Hs.520140	NM_003131	SRF	Serum response factor (c-fos serum response element-binding transcription factor)
G09	Hs.435228	NM_007286	SYNPO	Synaptopodin
G10	Hs.522632	NM_003254	TIMP1	TIMP metalloproteinase inhibitor 1
G11	Hs.241570	NM_000594	TNF	Tumor necrosis factor
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 qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with real-time cyclers that do not require a reference dye, including: Bio-Rad models CFX96, CFX384, DNA Engine Opticon 2; Bio-Rad/MJ Research Chromo4; Roche LightCycler 480 (96-well and 384-well); all other cyclers	330500
RT <sup>2</sup> SYBR Green ROX <sup>™</sup> qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Applied Biosystems models 5700, 7000, 7300, 7500 [Standard and FAST], 7700, 7900HT 96-well block [Standard and FAST] and 384-well block, StepOnePlus; Eppendorf Mastercycler ep realplex models 2, 2S, 4, 4S; Stratagene models Mx3000P, Mx3005P, Mx4000; Takara TP-800	330520
RT <sup>2</sup> SYBR Green Fluor qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Bio-Rad models iCycler, iQ5, MyiQ, MyiQ2	330510

\* Larger kit sizes available; please inquire.

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.

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