RT² Profiler PCR Array (Rotor-Gene® Format)

Human GABA & Glutamate

Cat. no. 330231 PAHS-152ZR

For pathway expression analysis

Format	For use with the following real-time cyclers
RT² Profiler PCR Array, Format R	Rotor-Gene Q, other Rotor-Gene cyclers

Description

The Human GABA & Glutamate RT² Profiler PCR Array profiles the expression of 84 key genes of the GABA (?-aminobutyric acid) and glutamate neurotransmitter systems. The brain is a complex organ, capable of exerting essential responses for a variety of internal and external stimuli. Each stimulus activates excitatory or inhibitory responses, and the sum of these responses on each neuron results in propagated or inhibited neuronal transmission. Of the wide variety of neuronal receptors in the brain, the major excitatory receptors recognize the ligand glutamate, and the major inhibitory receptors respond to the ligand GABA. The GABA neurotransmitter system includes the GABAA and GABAC classes of ligand gated ion channels. The glutamate neurotransmitter system includes NMDA, AMPA, and kainate ligand-gated ion channels. Key enzymes synthesize GABA or glutamate as necessary, which are then transported into synaptic vesicles. Release of GABA or glutamate from vesicles activates postsynaptic GABA-responsive or glutamate-responsive ion channels, respectively, initiating downstream G protein signaling to propagate neurotransmission. Dysregulation of GABAergic or glutamatergic synaptic transmission results in a wide variety of nervous system disorders, including chronic pain, psychiatric diseases, neurodegenerative diseases, and insomnia. There are many drugs that are agonists or antagonists of the GABA and glutamate neurotransmitter systems. Historically, these major excitatory and inhibitory systems were studied separately. However, recent research suggests that input from both GABA and glutamate are necessary for normal nervous system growth and function. This array represents genes essential for the synthesis and transport of GABA and glutamate, as well as responsive ion channels and downstream signaling. The results of this array may yield insights into the interaction of these excitatory and inhibitory neuronal systems during essential cognitive functions. Using real-time PCR, research studies can easily and reliably analyze the

expression of a focused panel of genes involved in neuronal GABA and glutamate functions with this array.

For further details, consult the *RT² Profiler PCR Array Handbook*.

Shipping and storage

RT² 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.

Note: Ensure that you have the correct RT² Profiler PCR Array format for your real-time cycler (see table above).

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

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: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Hs.336768	NM_000663	ABAT	4-aminobutyrate aminotransferase
A02	Hs.513578	NM_001114	ADCY7	Adenylate cyclase 7
A03	Hs.77867	NM_000674	ADORA1	Adenosine A1 receptor
A04	Hs.197029	NM_000675	ADORA2A	Adenosine A2a receptor
A05	Hs.371723	NM_001080	ALDH5A1	Aldehyde dehydrogenase 5 family, member A1
A06	Hs.434980	NM_000484	APP	Amyloid beta (A4) precursor protein
A07	Hs.89648	NM_000490	AVP	Arginine vasopressin
A08	Hs.502182	NM_001709	BDNF	Brain-derived neurotrophic factor
A09	Hs.501632	NM_000068	CACNA1A	Calcium channel, voltage-dependent, P/Q type, alpha 1A subunit
A10	Hs.495522	NM_000718	CACNA1B	Calcium channel, voltage-dependent, N type, alpha 1B subunit
A11	Hs.500015	NM_003885	CDK5R1	Cyclin-dependent kinase 5, regulatory subunit 1 (p35)
A12	Hs.628393	NM_000086	CLN3	Ceroid-lipofuscinosis, neuronal 3
B01	Hs.463928	NM_001365	DLG4	Discs, large homolog 4 (Drosophila)
B02	Hs.167017	NM_001470	GABBR1	Gamma-aminobutyric acid (GABA) B receptor, 1
B03	Hs.198612	NM_005458	GABBR2	Gamma-aminobutyric acid (GABA) B receptor, 2
B04	Hs.175934	NM_000806	GABRA1	Gamma-aminobutyric acid (GABA) A receptor, alpha 1
B05	Hs.116250	NM_000807	GABRA2	Gamma-aminobutyric acid (GABA) A receptor, alpha 2
B06	Hs.248112	NM_000809	GABRA4	Gamma-aminobutyric acid (GABA) A receptor, alpha 4
B07	Hs.612087	NM_000810	GABRA5	Gamma-aminobutyric acid (GABA) A receptor, alpha 5
B08	Hs.90791	NM_000811	GABRA6	Gamma-aminobutyric acid (GABA) A receptor, alpha 6
B09	Hs.27283	NM_000812	GABRB1	Gamma-aminobutyric acid (GABA) A receptor, beta 1
B10	Hs.302352	NM_000814	GABRB3	Gamma-aminobutyric acid (GABA) A receptor, beta 3
B11	Hs.113882	NM_000815	GABRD	Gamma-aminobutyric acid (GABA) A receptor, delta
B12	Hs.22785	NM_004961	GABRE	Gamma-aminobutyric acid (GABA) A receptor, epsilon
C01	Hs.375051	NM_173536	GABRG1	Gamma-aminobutyric acid (GABA) A receptor, gamma 1
C02	Hs.7195	NM_000816	GABRG2	Gamma-aminobutyric acid (GABA) A receptor, gamma 2
C03	Hs.569475	NM_033223	GABRG3	Gamma-aminobutyric acid (GABA) A receptor, gamma 3
C04	Hs.283081	NM_018558	GABRQ	Gamma-aminobutyric acid (GABA) receptor, theta
C05	Hs.437745	NM_002042	GABRR1	Gamma-aminobutyric acid (GABA) receptor, rho 1
C06	Hs.99927	NM_002043	GABRR2	Gamma-aminobutyric acid (GABA) receptor, rho 2
C07	Hs.420036	NM_000817	GAD1	Glutamate decarboxylase 1 (brain, 67kDa)
C08	Hs.116448	NM_014905	GLS	Glutaminase
C09	Hs.518525	NM_002065	GLUL	Glutamate-ammonia ligase
C10	Hs.134587	NM_002069	GNAI1	Guanine nucleotide binding protein (G protein), alpha inhibiting activity polypeptide 1
C11	Hs.269782	NM_002072	GNAQ	Guanine nucleotide binding protein (G protein), q polypeptide
C12	Hs.208765	NM_020806	GPHN	Gephyrin
D01	Hs.519693	NM_000827	GRIA1	Glutamate receptor, ionotropic, AMPA 1
D02	Hs.32763	NM_000826	GRIA2	Glutamate receptor, ionotropic, AMPA 2
D03	Hs.377070	NM_000828	GRIA3	Glutamate receptor, ionotrophic, AMPA 3
D04	Hs.503743	NM_000829	GRIA4	Glutamate receptor, ionotrophic, AMPA 4
D05	Hs.706747	NM_000830	GRIK1	Glutamate receptor, ionotropic, kainate 1
D06	Hs.98262	NM_021956	GRIK2	Glutamate receptor, ionotropic, kainate 2
D07	Hs.568901	NM_014619	GRIK4	Glutamate receptor, ionotropic, kainate 4
D08	Hs.367799	NM_002088	GRIK5	Glutamate receptor, ionotropic, kainate 5
D09	Hs.558334	NM_007327	GRIN1	Glutamate receptor, ionotropic, N-methyl D-aspartate 1
D10	Hs.411472	NM_000833	GRIN2A	Glutamate receptor, ionotropic, N-methyl D-aspartate 2A
D11	Hs.654430	NM_000834	GRIN2B	Glutamate receptor, ionotropic, N-methyl D-aspartate 2B
D12	Hs.436980	NM_000835	GRIN2C	Glutamate receptor, ionotropic, N-methyl D-aspartate 2C
E01	Hs.32945	NM_000838	GRM1	Glutamate receptor, metabotropic 1
E02	Hs.121510	NM_000839	GRM2	Glutamate receptor, metabotropic 2
E03	Hs.590575	NM_000840	GRM3	Glutamate receptor, metabotropic 3
E04	Hs.654847	NM_000841	GRM4	Glutamate receptor, metabotropic 4
E05	Hs.147361	NM_000842	GRM5	Glutamate receptor, metabotropic 5
E06	Hs.248131	NM_000843	GRM6	Glutamate receptor, metabotropic 6
E07	Hs.606393	NM_000844	GRM7	Glutamate receptor, metabotropic 7
E08	Hs.449625	NM_000845	GRM8	Glutamate receptor, metabotropic 8

Position	UniGene	GenBank	Symbol	Description
E09	Hs.591761	NM_004272	HOMER1	Homer homolog 1 (Drosophila)
E10	Hs.578443	NM_004839	HOMER2	Homer homolog 2 (Drosophila)
E11	Hs.126256	NM_000576	IL1B	Interleukin 1, beta
E12	Hs.567295	NM_002222	ITPR1	Inositol 1,4,5-trisphosphate receptor, type 1
F01	Hs.431850	NM_002745	MAPK1	Mitogen-activated protein kinase 1
F02	Hs.431279	NM_006178	NSF	N-ethylmaleimide-sensitive factor
F03	Hs.729169	NM_002562	P2RX7	Purinergic receptor P2X, ligand-gated ion channel, 7
F04	Hs.487296	NM_006623	PHGDH	Phosphoglycerate dehydrogenase
F05	Hs.170479	NM_003560	PLA2G6	Phospholipase A2, group VI (cytosolic, calcium-independent)
F06	Hs.431173	NM_015192	PLCB1	Phospholipase C, beta 1 (phosphoinositide-specific)
F07	Hs.517352	NM_016335	PRODH	Proline dehydrogenase (oxidase) 1
F08	Hs.268726	NM_133266	SHANK2	SH3 and multiple ankyrin repeat domains 2
F09	Hs.242821	NM_020346	SLC17A6	Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 6
F10	Hs.375616	NM_020309	SLC17A7	Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 7
F11	Hs.116871	NM_139319	SLC17A8	Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 8
F12	Hs.444915	NM_004170	SLC1A1	Solute carrier family 1 (neuronal/epithelial high affinity glutamate transporter, system Xag), member 1
G01	Hs.502338	NM_004171	SLC1A2	Solute carrier family 1 (glial high affinity glutamate transporter), member 2
G02	Hs.481918	NM_004172	SLC1A3	Solute carrier family 1 (glial high affinity glutamate transporter), member 3
G03	Hs.515217	NM_005071	SLC1A6	Solute carrier family 1 (high affinity aspartate/glutamate transporter), member 6
G04	Hs.179080	NM_080552	SLC32A1	Solute carrier family 32 (GABA vesicular transporter), member 1
G05	Hs.533770	NM_030674	SLC38A1	Solute carrier family 38, member 1
G06	Hs.443874	NM_003042	SLC6A1	Solute carrier family 6 (neurotransmitter transporter, GABA), member 1
G07	Hs.657405	NM_014229	SLC6A11	Solute carrier family 6 (neurotransmitter transporter, GABA), member 11
G08	Hs.437174	NM_003044	SLC6A12	Solute carrier family 6 (neurotransmitter transporter, betaine/GABA), member 12
G09	Hs.504398	NM_016615	SLC6A13	Solute carrier family 6 (neurotransmitter transporter, GABA), member 13
G10	Hs.390594	NM_014331	SLC7A11	Solute carrier family 7 (anionic amino acid transporter light chain, xc- system), member 11
G11	Hs.271771	NM_000345	SNCA	Synuclein, alpha (non A4 component of amyloid precursor)
G12	Hs.461954	NM_021947	SRR	Serine racemase
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, RT² Profiler PCR Arrays should be used together with the RT² First Strand Kit for cDNA synthesis and RT² SYBR® Green qPCR Mastermixes for PCR.

Product	Contents	Cat. no.
RT² First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT² 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.

RT² 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 or can be requested from QIAGEN Technical Services or your local distributor.

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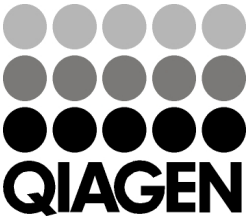

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