

RT² Profiler PCR Array (Rotor-Gene[®] Format)

Mouse GABA & Glutamate

Cat. no. 330231 PAMM-152ZR

For pathway expression analysis

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

Description

The Mouse GABA & Glutamate RT² Profiler PCR Array profiles the expression of 84 key genes of the GABA (γ-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	Mm.259315	NM_172961	Abat	4-aminobutyrate aminotransferase
A02	Mm.288206	NM_007406	Adcy7	Adenylate cyclase 7
A03	Mm.298908	NM_001008533	Adora1	Adenosine A1 receptor
A04	Mm.333734	NM_009630	Adora2a	Adenosine A2a receptor
A05	Mm.393311	NM_172532	Aldh5a1	Alddehyde dehydrogenase family 5, subfamily A1
A06	Mm.277585	NM_007471	App	Amyloid beta (A4) precursor protein
A07	Mm.6190	NM_009732	Avp	Arginine vasopressin
A08	Mm.1442	NM_007540	Bdnf	Brain derived neurotrophic factor
A09	Mm.334658	NM_007578	Cacna1a	Calcium channel, voltage-dependent, P/Q type, alpha 1A subunit
A10	Mm.4424	NM_007579	Cacna1b	Calcium channel, voltage-dependent, N type, alpha 1B subunit
A11	Mm.142275	NM_009871	Cdk5r1	Cyclin-dependent kinase 5, regulatory subunit 1 (p35)
A12	Mm.268930	NM_009907	Cln3	Ceroid lipofuscinosis, neuronal 3, juvenile (Batten, Spielmeyer-Vogt disease)
B01	Mm.27256	NM_007864	Dlg4	Discs, large homolog 4 (Drosophila)
B02	Mm.32191	NM_019439	Gabbr1	Gamma-aminobutyric acid (GABA) B receptor, 1
B03	Mm.101909	NM_001081141	Gabbr2	Gamma-aminobutyric acid (GABA) B receptor, 2
B04	Mm.439668	NM_010250	Gabra1	Gamma-aminobutyric acid (GABA) A receptor, subunit alpha 1
B05	Mm.5304	NM_008066	Gabra2	Gamma-aminobutyric acid (GABA) A receptor, subunit alpha 2
B06	Mm.248731	NM_010251	Gabra4	Gamma-aminobutyric acid (GABA) A receptor, subunit alpha 4
B07	Mm.273114	NM_176942	Gabra5	Gamma-aminobutyric acid (GABA) A receptor, subunit alpha 5
B08	Mm.4915	NM_008068	Gabra6	Gamma-aminobutyric acid (GABA) A receptor, subunit alpha 6
B09	Mm.38567	NM_008069	Gabbr1	Gamma-aminobutyric acid (GABA) A receptor, subunit beta 1
B10	Mm.8004	NM_008071	Gabbr3	Gamma-aminobutyric acid (GABA) A receptor, subunit beta 3
B11	Mm.388925	NM_008072	Gabrd	Gamma-aminobutyric acid (GABA) A receptor, subunit delta
B12	Mm.391288	NM_017369	Gabre	Gamma-aminobutyric acid (GABA) A receptor, subunit epsilon
C01	Mm.255292	NM_010252	Gabrg1	Gamma-aminobutyric acid (GABA) A receptor, subunit gamma 1
C02	Mm.5309	NM_008073	Gabrg2	Gamma-aminobutyric acid (GABA) A receptor, subunit gamma 2
C03	Mm.378920	NM_008074	Gabrg3	Gamma-aminobutyric acid (GABA) A receptor, subunit gamma 3
C04	Mm.117125	NM_020488	Gabrq	Gamma-aminobutyric acid (GABA) A receptor, subunit theta
C05	Mm.14116	NM_008075	Gabbr1	Gamma-aminobutyric acid (GABA) C receptor, subunit rho 1
C06	Mm.6227	NM_008076	Gabbr2	Gamma-aminobutyric acid (GABA) C receptor, subunit rho 2
C07	Mm.272120	NM_008077	Gad1	Glutamic acid decarboxylase 1
C08	Mm.440465	NM_001081081	Gls	Glutaminase
C09	Mm.210745	NM_008131	Glul	Glutamate-ammonia ligase (glutamine synthetase)
C10	Mm.254629	NM_010305	Gnai1	Guanine nucleotide binding protein (G protein), alpha inhibiting 1
C11	Mm.439701	NM_008139	Gnaq	Guanine nucleotide binding protein, alpha q polypeptide
C12	Mm.341742	NM_172952	Gphn	Gephyrin
D01	Mm.4920	NM_008165	Gria1	Glutamate receptor, ionotropic, AMPA1 (alpha 1)
D02	Mm.220224	NM_013540	Gria2	Glutamate receptor, ionotropic, AMPA2 (alpha 2)
D03	Mm.327681	NM_016886	Gria3	Glutamate receptor, ionotropic, AMPA3 (alpha 3)
D04	Mm.209263	NM_019691	Gria4	Glutamate receptor, ionotropic, AMPA4 (alpha 4)
D05	Mm.5134	NM_146072	Grik1	Glutamate receptor, ionotropic, kainate 1
D06	Mm.332838	NM_010349	Grik2	Glutamate receptor, ionotropic, kainate 2 (beta 2)
D07	Mm.370291	NM_175481	Grik4	Glutamate receptor, ionotropic, kainate 4
D08	Mm.2879	NM_008168	Grik5	Glutamate receptor, ionotropic, kainate 5 (gamma 2)
D09	Mm.278672	NM_008169	Grin1	Glutamate receptor, ionotropic, NMDA1 (zeta 1)
D10	Mm.2953	NM_008170	Grin2a	Glutamate receptor, ionotropic, NMDA2A (epsilon 1)
D11	Mm.436649	NM_008171	Grin2b	Glutamate receptor, ionotropic, NMDA2B (epsilon 2)
D12	Mm.39090	NM_010350	Grin2c	Glutamate receptor, ionotropic, NMDA2C (epsilon 3)
E01	Mm.391904	NM_016976	Grm1	Glutamate receptor, metabotropic 1
E02	Mm.410822	NM_001160353	Grm2	Glutamate receptor, metabotropic 2
E03	Mm.318966	NM_181850	Grm3	Glutamate receptor, metabotropic 3
E04	Mm.358940	NM_001013385	Grm4	Glutamate receptor, metabotropic 4
E05	Mm.235018	NM_001081414	Grm5	Glutamate receptor, metabotropic 5
E06	Mm.134265	NM_173372	Grm6	Glutamate receptor, metabotropic 6
E07	Mm.240881	NM_177328	Grm7	Glutamate receptor, metabotropic 7
E08	Mm.320732	NM_008174	Grm8	Glutamate receptor, metabotropic 8
E09	Mm.37533	NM_152134	Homer1	Homer homolog 1 (Drosophila)

Position	UniGene	GenBank	Symbol	Description
E10	Mm.228	NM_011983	Homer2	Homer homolog 2 (Drosophila)
E11	Mm.222830	NM_008361	Il1b	Interleukin 1 beta
E12	Mm.227912	NM_010585	Itpr1	Inositol 1,4,5-trisphosphate receptor 1
F01	Mm.196581	NM_011949	Mapk1	Mitogen-activated protein kinase 1
F02	Mm.260117	NM_008740	Nsf	N-ethylmaleimide sensitive fusion protein
F03	Mm.42026	NM_011027	P2rx7	Purinergic receptor P2X, ligand-gated ion channel, 7
F04	Mm.16898	NM_016966	Phgdh	3-phosphoglycerate dehydrogenase
F05	Mm.155620	NM_016915	Pla2g6	Phospholipase A2, group VI
F06	Mm.330607	NM_019677	Plcb1	Phospholipase C, beta 1
F07	Mm.28456	NM_011172	Prodh	Proline dehydrogenase
F08	Mm.483624	NM_001081370	Shank2	SH3/ankyrin domain gene 2
F09	Mm.256618	NM_080853	Slc17a6	Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 6
F10	Mm.255631	NM_182993	Slc17a7	Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 7
F11	Mm.233921	NM_182959	Slc17a8	Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 8
F12	Mm.246670	NM_009199	Slc1a1	Solute carrier family 1 (neuronal/epithelial high affinity glutamate transporter, system Xag), member 1
G01	Mm.371582	NM_011393	Slc1a2	Solute carrier family 1 (glial high affinity glutamate transporter), member 2
G02	Mm.204834	NM_148938	Slc1a3	Solute carrier family 1 (glial high affinity glutamate transporter), member 3
G03	Mm.6257	NM_009200	Slc1a6	Solute carrier family 1 (high affinity aspartate/glutamate transporter), member 6
G04	Mm.143404	NM_009508	Slc32a1	Solute carrier family 32 (GABA vesicular transporter), member 1
G05	Mm.103568	NM_134086	Slc38a1	Solute carrier family 38, member 1
G06	Mm.5260	NM_178703	Slc6a1	Solute carrier family 6 (neurotransmitter transporter, GABA), member 1
G07	Mm.44683	NM_172890	Slc6a11	Solute carrier family 6 (neurotransmitter transporter, GABA), member 11
G08	Mm.274506	NM_133661	Slc6a12	Solute carrier family 6 (neurotransmitter transporter, betaine/GABA), member 12
G09	Mm.258596	NM_144512	Slc6a13	Solute carrier family 6 (neurotransmitter transporter, GABA), member 13
G10	Mm.260988	NM_011990	Slc7a11	Solute carrier family 7 (cationic amino acid transporter, y+ system), member 11
G11	Mm.17484	NM_009221	Snca	Synuclein, alpha
G12	Mm.131443	NM_013761	Srr	Serine racemase
H01	Mm.328431	NM_007393	Actb	Actin, beta
H02	Mm.163	NM_009735	B2m	Beta-2 microglobulin
H03	Mm.343110	NM_008084	Gapdh	Glyceraldehyde-3-phosphate dehydrogenase
H04	Mm.3317	NM_010368	Gusb	Glucuronidase, beta
H05	Mm.2180	NM_008302	Hsp90ab1	Heat shock protein 90 alpha (cytosolic), class B member 1
H06	N/A	SA_00106	MGDC	Mouse 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.
RT ² First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT ² 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.

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