

RT² Profiler PCR Array (Rotor-Gene® Format)

Rat Synaptic Plasticity

Cat. no. 330231 PARN-126ZR

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 Rat Synaptic Plasticity RT² 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 *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.



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: RT² Profiler PCR Array

| Position | UniGene | GenBank | Symbol | Description |
|----------|-----------|--------------|--------|--|
| A01 | Rn.42924 | XM_217197 | Adam10 | ADAM metalloproteinase domain 10 |
| A02 | Rn.214145 | NM_001107239 | Adcy1 | Adenylate cyclase 1 (brain) |
| A03 | Rn.10382 | NM_017142 | Adcy8 | Adenylate cyclase 8 (brain) |
| A04 | Rn.11422 | NM_033230 | Akt1 | V-akt murine thymoma viral oncogene homolog 1 |
| A05 | Rn.10086 | NM_019361 | Arc | Activity-regulated cytoskeleton-associated protein |
| A06 | Rn.11266 | NM_012513 | Bdnf | Brain-derived neurotrophic factor |
| A07 | Rn.107499 | NM_012920 | Camk2a | Calcium/calmodulin-dependent protein kinase II alpha |
| A08 | Rn.10961 | NM_133605 | Camk2g | Calcium/calmodulin-dependent protein kinase II gamma |
| A09 | Rn.23200 | NM_031333 | Cdh2 | Cadherin 2 |
| A10 | Rn.6479 | NM_024125 | Cebpb | CCAAT/enhancer binding protein (C/EBP), beta |
| A11 | Rn.202620 | NM_013154 | Cebpd | CCAAT/enhancer binding protein (C/EBP), delta |
| A12 | Rn.89774 | NM_012784 | Cnr1 | Cannabinoid receptor 1 (brain) |
| B01 | Rn.90061 | NM_031017 | Creb1 | CAMP responsive element binding protein 1 |
| B02 | Rn.10251 | NM_001110860 | Crem | CAMP responsive element modulator |
| B03 | Rn.9765 | NM_019621 | Dlg4 | Discs, large homolog 4 (Drosophila) |
| B04 | Rn.9096 | NM_012551 | Egr1 | Early growth response 1 |
| B05 | Rn.89235 | NM_053633 | Egr2 | Early growth response 2 |
| B06 | Rn.44371 | NM_017086 | Egr3 | Early growth response 3 |
| B07 | Rn.31998 | NM_019137 | Egr4 | Early growth response 4 |
| B08 | Rn.27233 | NM_001127319 | Ephb2 | Eph receptor B2 |
| B09 | Rn.103750 | NM_022197 | Fos | FBJ osteosarcoma oncogene |
| B10 | Rn.10368 | NM_017295 | Gabra5 | Gamma-aminobutyric acid (GABA) A receptor, alpha 5 |
| B11 | Rn.11391 | NM_013145 | Gnai1 | Guanine nucleotide binding protein (G protein), alpha inhibiting 1 |
| B12 | Rn.29971 | NM_031608 | Gria1 | Glutamate receptor, ionotropic, AMPA 1 |
| C01 | Rn.91361 | NM_017261 | Gria2 | Glutamate receptor, ionotropic, AMPA 2 |
| C02 | Rn.74049 | NM_032990 | Gria3 | Glutamate receptor, ionotropic, AMPA 3 |
| C03 | Rn.10938 | NM_017263 | Gria4 | Glutamate receptor, ionotropic, AMPA 4 |
| C04 | Rn.9840 | NM_017010 | Grin1 | Glutamate receptor, ionotropic, N-methyl D-aspartate 1 |
| C05 | Rn.9710 | NM_012573 | Grin2a | Glutamate receptor, ionotropic, N-methyl D-aspartate 2A |
| C06 | Rn.9711 | NM_012574 | Grin2b | Glutamate receptor, ionotropic, N-methyl D-aspartate 2B |
| C07 | Rn.9709 | NM_012575 | Grin2c | Glutamate receptor, ionotropic, N-methyl D-aspartate 2C |
| C08 | Rn.91209 | NM_022797 | Grin2d | Glutamate receptor, ionotropic, N-methyl D-aspartate 2D |
| C09 | Rn.74240 | NM_032069 | Grip1 | Glutamate receptor interacting protein 1 |
| C10 | Rn.87787 | NM_017011 | Grm1 | Glutamate receptor, metabotropic 1 |
| C11 | Rn.9681 | NM_001105711 | Grm2 | Glutamate receptor, metabotropic 2 |
| C12 | Rn.41715 | NM_001105712 | Grm3 | Glutamate receptor, metabotropic 3 |
| D01 | Rn.89046 | NM_022666 | Grm4 | Glutamate receptor, metabotropic 4 |
| D02 | Rn.29972 | NM_017012 | Grm5 | Glutamate receptor, metabotropic 5 |
| D03 | Rn.10409 | NM_031040 | Grm7 | Glutamate receptor, metabotropic 7 |
| D04 | Rn.44420 | NM_022202 | Grm8 | Glutamate receptor, metabotropic 8 |
| D05 | Rn.37500 | NM_031707 | Homer1 | Homer homolog 1 (Drosophila) |
| D06 | Rn.6282 | NM_178866 | Igf1 | Insulin-like growth factor 1 |
| D07 | Rn.9874 | NM_017128 | Inhba | Inhibin beta-A |
| D08 | Rn.93714 | NM_021835 | Jun | Jun oncogene |
| D09 | Rn.15806 | NM_021836 | Junb | Jun B proto-oncogene |
| D10 | Rn.2398 | NM_031135 | Klf10 | Kruppel-like factor 10 |
| D11 | Rn.34914 | NM_053842 | Mapk1 | Mitogen activated protein kinase 1 |
| D12 | Rn.10209 | NM_031055 | Mmp9 | Matrix metalloproteinase 9 |
| E01 | Rn.11283 | NM_031521 | Ncam1 | Neural cell adhesion molecule 1 |
| E02 | Rn.2411 | XM_342346 | Nfkb1 | Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 |
| E03 | Rn.8395 | NM_030867 | Nfkbib | Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, beta |
| E04 | Rn.22168 | XM_227525 | Ngf | Nerve growth factor (beta polypeptide) |
| E05 | Rn.10980 | NM_012610 | Ngfr | Nerve growth factor receptor (TNFR superfamily, member 16) |
| E06 | Rn.10573 | NM_052799 | Nos1 | Nitric oxide synthase 1, neuronal |
| E07 | Rn.162101 | NM_001034199 | Nptx2 | Neuronal pentraxin 2 |
| E08 | Rn.10000 | NM_024388 | Nr4a1 | Nuclear receptor subfamily 4, group A, member 1 |
| E09 | Rn.9715 | NM_031073 | Ntf3 | Neurotrophin 3 |

| Position | UniGene | GenBank | Symbol | Description |
|----------|-----------|--------------|----------------|---|
| E10 | Rn.44225 | NM_013184 | Ntf4 | Neurotrophin 4 |
| E11 | Rn.11246 | NM_012731 | Ntrk2 | Neurotrophic tyrosine kinase, receptor, type 2 |
| E12 | Rn.23337 | NM_022868 | Pcdh8 | Protocadherin 8 |
| F01 | Rn.24750 | NM_053460 | Pick1 | Protein interacting with PRKCA 1 |
| F02 | Rn.34888 | NM_017034 | Pim1 | Pim-1 oncogene |
| F03 | Rn.107102 | NM_013151 | Plat | Plasminogen activator, tissue |
| F04 | Rn.11243 | NM_013187 | Plcg1 | Phospholipase C, gamma 1 |
| F05 | Rn.2024 | NM_031527 | Ppp1ca | Protein phosphatase 1, catalytic subunit, alpha isoform |
| F06 | Rn.1495 | NM_022498 | Ppp1cc | Protein phosphatase 1, catalytic subunit, gamma isoform |
| F07 | Rn.73852 | NM_130403 | Ppp1r14a | Protein phosphatase 1, regulatory (inhibitor) subunit 14A |
| F08 | Rn.1271 | NM_017039 | Ppp2ca | Protein phosphatase 2, catalytic subunit, alpha isoform |
| F09 | Rn.6866 | NM_017041 | Ppp3ca | Protein phosphatase 3, catalytic subunit, alpha isoform |
| F10 | Rn.207908 | NM_001105713 | Prkca | Protein kinase C, alpha |
| F11 | Rn.9747 | NM_012628 | Prkcg | Protein kinase C, gamma |
| F12 | Rn.204724 | NM_001105731 | Prkg1 | Protein kinase, cGMP-dependent, type 1 |
| G01 | Rn.44409 | NM_013018 | Rab3a | RAB3A, member RAS oncogene family |
| G02 | Rn.19480 | NM_199267 | Rela | V-rel reticuloendotheliosis viral oncogene homolog A (avian) |
| G03 | Rn.98353 | NM_080394 | Reln | Reelin |
| G04 | Rn.123251 | XR_008709 | RGD156251 1 | Similar to MmKIF17 |
| G05 | Rn.1892 | NM_053453 | Rgs2 | Regulator of G-protein signaling 2 |
| G06 | Rn.859 | NM_013216 | Rheb | Ras homolog enriched in brain |
| G07 | Rn.219976 | NM_001107627 | Sirt1 | Sirtuin (silent mating type information regulation 2 homolog) 1 (S. cerevisiae) |
| G08 | Rn.1501 | NM_001109302 | Srf | Serum response factor (c-fos serum response element-binding transcription factor) |
| G09 | Rn.42910 | NM_021695 | Synpo | Synaptopodin |
| G10 | Rn.25754 | NM_053819 | Timp1 | TIMP metalloproteinase inhibitor 1 |
| G11 | Rn.2275 | NM_012675 | Tnf | Tumor necrosis factor (TNF superfamily, member 2) |
| G12 | Rn.2502 | NM_013053 | Ywhaq | Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, theta polypeptide |
| H01 | Rn.94978 | NM_031144 | Actb | Actin, beta |
| H02 | Rn.1868 | NM_012512 | B2m | Beta-2 microglobulin |
| H03 | Rn.47 | NM_012583 | Hprt1 | Hypoxanthine phosphoribosyltransferase 1 |
| H04 | Rn.107896 | NM_017025 | Ldha | Lactate dehydrogenase A |
| H05 | Rn.973 | NM_001007604 | Rplp1 | Ribosomal protein, large, P1 |
| H06 | N/A | U26919 | RGDC | Rat 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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