RT² Profiler PCR Array (Rotor-Gene® Format)

Zebrafish Dopamine & Serotonin

Cat. no. 330231 PAZF-158ZR

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 Zebrafish Dopamine & Serotonin Pathway RT² Profiler PCR array profiles the expression of 84 genes associated with the dopamine and serotonin systems. Dopamine and serotonin are 2 of the major neurotransmitter systems in the mammalian nervous system. Dopamine affects brain processes that control both motor and emotional behavior and plays a role in the brain's reward mechanism. Serotonin is critical in temperature regulation, sensory perception, locomotion, sleep, and psychosis. Pharmacological agents targeting dopaminergic/serotoninergic neurotransmission have been clinically used to manage several neurological and psychiatric disorders including Parkinson's disease, schizophrenia, bipolar disorder, depression, attention deficit and hyperactivity disorder (ADHD), and addiction. Besides significant progress in understanding their structural, genetic and pharmacological properties, recent studies have uncovered the complexity, intricacy, and plasticity of intracellular signaling mechanisms involved in dopamine and serotonin receptor function. These receptors act through diverse G-protein coupled and G-protein independent mechanisms that trigger downstream intracellular signal transduction events involving the cAMP/PKA, PI-3Kinase/AKT, phospholipase A2 (PLA2), and phospholipase C (PLC) pathways. These pathways in turn regulate various functions including synthesis, transport and degradation of dopamine and serotonin as well as the transcriptional regulation key genes linked to multiple neuropathological conditions. Using real time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes associated with and regulated by the dopamine and serotonin systems 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
1	Dr.158887	NM_001168349	adcy1a	Adenylate cyclase 1a
2	Dr.89917	NM_001099987	adcy2b	Adenylate cyclase 2b (brain)
3	Dr.140641	NM_001162542	adcy3	Adenylate cyclase 3-like
4	Dr.151784	NM_001171585	adcy5	Adenylate cyclase 5
5	Dr.81721	NM_001128689	adrb1	Adrenergic receptor, beta 1
6	Dr.88172	NM_001102652	adrb2a	Adrenergic receptor, beta 2a
7	Dr.92943	NM_001134725	adrbk2	Adrenergic, beta, receptor kinase 2
8	N/A	NM_001281801	akt1	V-akt murine thymoma viral oncogene homolog 1
9	Dr.151154	NM_198146	akt2	V-akt murine thymoma viral oncogene homolog 2
10	Dr.160105	NM_001197201	akt3a	V-akt murine thymoma viral oncogene homolog 3a
11	Dr.75534	NM_199618	alox12	Arachidonate 12-lipoxygenase
12	Dr.105653	NM_131564	appa	Amyloid beta (A4) precursor protein a
13	Dr.91022	NM_001159822	arrb1	Arrestin, beta 1
14	Dr.132395	NM_201124	arrb2b	Arrestin, beta 2b
15	Dr.132862	NM_131595	bdnf	Brain-derived neurotrophic factor
16	Dr.107121	XM_005164090	cacna1aa	Calcium channel, voltage-dependent, P/Q type, alpha 1A subunit, a
17	Dr.80592	NM_001017741	camk2a	Calcium/calmodulin-dependent protein kinase (CaM kinase) II alpha
18	Dr.11726	NM_131877	casp3a	Caspase 3, apoptosis-related cysteine protease a
19	Dr.105878	NM_131719	cdk5	Cyclin-dependent protein kinase 5
20	Dr.160479	NM_001030157	comta	Catechol-O-methyltransferase a
21	Dr.144106	NM_200909	creb1a	CAMP responsive element binding protein 1
22	Dr.21021	NM_001109694	dbh	Dopamine beta hydroxylase
23	Dr.75993	NM_213342	ddc	Dopa decarboxylase
24	N/A	XM_005173154	drd1	D(1) dopamine receptor-like
25	Dr.89472	NM_197935	drd2l	Dopamine receptor D2 like
26	Dr.151864	NM_183067	drd3	Dopamine receptor D3
27	Dr.92680	NM_001012620	drd4-rs	Dopamine receptor D4 related sequence
28	N/A	XM_003199767	drd5	D(1B) dopamine receptor-like
29	Dr.2413	NM_213067	dusp1	Dual specificity phosphatase 1
30	N/A	XM_009298827	ephb1	EPH receptor B1
31	Dr.12986	NM_205569	fosab	V-fos FBJ murine osteosarcoma viral oncogene homolog
32	Dr.11721	NM_131732	gdnfa	Glial cell derived neurotrophic factor
33	Dr.32667	NM_131373	gfap	Glial fibrillary acidic protein
34	Dr.134726	XM_002660383	grk4	G protein-coupled receptor kinase 4
35	Dr.18531	NM_001173503	grk5	G protein-coupled receptor kinase 5
36	Dr.110697	XM_684691	grk6	G protein-coupled receptor kinase 6
37	Dr.75529	NM_131390	gsk3ab	Glycogen synthase kinase 3 alpha
38	Dr.107139	NM_131381	gsk3b	Glycogen synthase kinase 3 beta

Position	UniGene	GenBank	Symbol	Description
39	Dr.92449	NM_001123321	htr1aa	5-hydroxytryptamine (serotonin) receptor 1A a
40	Dr.161682	NM_001128709	htr1b	Similar to 5-hydroxytryptamine receptor 1B (5-HT-1B) (Serotonin receptor 1B) (5-HT1B) (5-HT-1D-beta) (Serotonin 1D beta receptor) (S12)
41	Dr.155143	NM_001145686	htr1d	5-hydroxytryptamine (serotonin) receptor 1bd
42	N/A	XM_002665643	htr1e	5-hydroxytryptamine receptor 1E-like
43	N/A	XM_001344394	htr1fa	5-hydroxytryptamine (serotonin) receptor 1F-like
44	N/A	XM_684208	htr2a	Similar to serotonin 5-HT2 receptor
45	Dr.74153	NM_001044743	htr2b	Zgc:194119
46	Dr.134134	NM_001129893	htr2cl1	Si:dkey-24g18.2
47	N/A	XM_009295409	htr3a	5-hydroxytryptamine (serotonin) receptor 3A
48	N/A	XM_009295449	htr3b	5-hydroxytryptamine receptor 3A-like
49	N/A	XM_009291062	htr4	5-hydroxytryptamine receptor 4
50	Dr.42552	NM_001126410	htr5a	5-hydroxytryptamine (serotonin) receptor 5A
51	N/A	XM_009297078	htr6	5-hydroxytryptamine receptor 6-like
52	N/A	XM_685507	htr7	5-hydroxytryptamine receptor 7-like
53	Dr.47889	XM_021479879	itpr1b	Inositol 1,4,5-trisphosphate receptor, type 1b
54	Dr.77508	NM_212827	mao	Monoamine oxidase
55	Dr.10452	NM_182888	mapk1	Mitogen-activated protein kinase 1
56	Dr.155385	NM_001045206	moxd1	Monooxygenase, DBH-like 1
57	Dr.9243	NM_001002173	nr4a1	Nuclear receptor subfamily 4, group A, member 1
58	Dr.76117	NM_001172629	nr4a3	Nuclear receptor subfamily 4, group A, member 3
59	Dr.117457	NM_201102	pde10a	Phosphodiesterase 10A
60	N/A	XM_005164238	pde4a	Phosphodiesterase 4A, cAMP-specific
61	Dr.79148	XM_005165881	pde4ba	Phosphodiesterase 4B, cAMP-specific
62	Dr.45552	XM_005163374	pde4ca	Phosphodiesterase 4C, cAMP-specific (phosphodiesterase E1 dunce homolog, Drosophila)
63	N/A	XM_009303868	pde4d	Novel protein similar to vertebrate phosphodiesterase 4D, cAMP-specific (phosphodiesterase E3 dunce homolog, Drosophila) (PDE4D)
64	Dr.161890	NM_001001831	pdyn	Prodynorphin
65	Dr.95538	XM_005155854	pik3ca	Phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit alpha isoform-like
66	Dr.23613	NM_213306	pik3cg	Phosphatidylinositol-4,5-bisphosphate 3-kinase, catalytic subunit gamma
67	N/A	XM_005173576	plcb1	Phospholipase C beta 1
68	N/A	XM_003200291	plcb2	Phospholipase C, beta 2
69	Dr.91096	NM_001122773	plcb3	Phospholipase C, beta 3 (phosphatidylinositol-specific)
70	Dr.91852	NM_001281923	ppp1r1b	Protein phosphatase 1, regulatory (inhibitor) subunit 1B
71	Dr.44411	NM_001082840	prkacaa	Protein kinase, cAMP-dependent, catalytic, alpha, genome duplicate a
72	Dr.33991	NM_001256241	prkca	Protein kinase C, alpha
73	Dr.113864	NM_153657	ptgs2a	Prostaglandin-endoperoxide synthase 2a
74	N/A	XM_001340292	si:dkey-100n10.2	Si:dkey-100n10.2
75	N/A	XM_009304250	slc18a1	Chromaffin granule amine transporter-like
76	Dr.110027	NM_001256225	slc18a2	Solute carrier family 18 (vesicular monoamine), member 2
77	Dr.83333	NM_131755	slc6a3	Solute carrier family 6 (neurotransmitter transporter, dopamine), member 3

Position	UniGene	GenBank	Symbol	Description
78	Dr.39284	NM_001039972	slc6a4a	Solute carrier family 6 (neurotransmitter transporter, serotonin), member 4A
79	Dr.116564	NM_001113636	sncaip	Zgc:172291
80	Dr.120313	NM_001002597	syn2a	Synapsin IIa
81	Dr.105118	NM_001102616	tdo2a	Tryptophan 2,3-dioxygenase a
82	Dr.88609	NM_131149	th	Tyrosine hydroxylase
83	Dr.19931	NM_178306	tph1a	Tryptophan hydroxylase 1 (tryptophan 5-monooxygenase) a
84	Dr.84644	NM_214795	tph2	Tryptophan hydroxylase 2 (tryptophan 5-monooxygenase)
85	Dr.47173	NM_214784	acta1b	Actin, alpha 1b, skeletal muscle
86	Dr.51646	NM_001159768	b2m	Beta-2-microglobulin
87	Dr.77915	NM_212986	hprt1	Hypoxanthine phosphoribosyltransferase 1
88	Dr.150274	NM_201579	nono	Non-POU domain containing, octamer-binding
89	Dr.32450	NM_212784	rpl13a	Ribosomal protein L13a
90	N/A zebrafish	SA_00143	ZGDC	Zebrafish Genomic DNA Contamination
91	N/A	SA_00104	RTC	Reverse Transcription Control
92	N/A	SA_00104	RTC	Reverse Transcription Control
93	N/A	SA_00104	RTC	Reverse Transcription Control
94	N/A	SA_00103	PPC	Positive PCR Control
95	N/A	SA_00103	PPC	Positive PCR Control
96	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.

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