# RT² Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

# Dog Antibacterial Response

**Cat. no. 330231 PAFD-148ZA**

**For pathway expression analysis**

| Format | For use with the following real-time cyclers |
|---|---|
| RT² 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 |
| RT² Profiler PCR Array, Format C | Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block) |
| RT² Profiler PCR Array, Format D | Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000® |
| RT² Profiler PCR Array, Format E | Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™ |
| RT² Profiler PCR Array, Format F | Roche® LightCycler® 480 (96-well block) |
| RT² Profiler PCR Array, Format G | Roche LightCycler 480 (384-well block) |
| RT² Profiler PCR Array, Format H | Fluidigm® BioMark™ |

## Description

The Dog Antibacterial Response RT² Profiler PCR Array profiles the expression of 84 key genes involved in innate immune response to bacteria. Three different families of pattern recognition receptors (PRRs) (toll-like (TLRs), Nod-like (NLRs), and RIG-I-like receptors) initiate innate immunity, the inborn general host response to common pathogens such as bacteria. The TLRs, NLRs, and other PRRs recognize bacterial pathogen-associated molecular patterns (PAMPs) including lipopolysaccharide (LPS), peptidoglycan, and flagella. PAMP-receptor binding then activates the innate immune response, initiates downstream signaling, and induces the expression of inflammatory cytokines. Antimicrobial peptides expressed and secreted by immune and epithelial cells also contribute to the innate immune response. They function as chemoattractants for immune cells, directly disrupt pathogen membranes, and seem to also activate some PRR signaling pathways. This array includes genes involved in bacterial-activated PRR signal transduction, encoding downstream effectors important for inflammation and apoptosis, and encoding immune cell-expressed antimicrobial peptides. The results of this array can yield insights into innate immune mechanisms to bacterial pathogens. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in antibacterial response with this array.

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

## Shipping and storage

RT² 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. RT² Profiler PCR Arrays in format H are shipped on dry ice or blue ice packs.

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 (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the ***RT²*** ***Profiler PCR Array Handbook*** for layout.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | AKT1 | APCS | BCL10 | BIRC3 | BPI | CAMP | CARD9 | CASP4 | CASP8 | CCL3 | CCL5 | CD14 |
| B | CHUK | CRP | CTSG | CTSK | CXCL8 | CYBB | DMBT1 | FADD | GCH1 | HSP90AA1 | IFNB1 | IKBKB |
| C | IL12A | IL12B | IL18 | IL1B | IL6 | IRAK1 | IRAK3 | IRF5 | IRF7 | JUN | LBP | LCN2 |
| D | LTF | LY96 | LYZ | MALT1 | MAP2K1 | MAP2K3 | MAP2K4 | MAP3K8 | MAPK1 | MAPK14 | MAPK3 | MAPK8 |
| E | MEFV | MPO | MYD88 | NFKB1 | NFKBIA | NLRP1 | NLRP3 | NOD1 | NOD2 | PIK3CA | PIK3R1 | PRDX2 |
| F | PSTPIP1 | PYCARD | RAC1 | RELA | RIPK1 | RIPK2 | SLC11A1 | SLPI | SUGT1 | TAB1 | TICAM1 | TIRAP |
| G | TLR1 | TLR2 | TLR4 | TLR5 | TLR6 | TLR9 | TNF | TNFRSF1A | TOLLIP | TRAF6 | XIAP | ZBP1 |
| H | ACTB | B2M | GAPDH | HPRT1 | RPLP1 | FGDC | RTC | RTC | RTC | PPC | PPC | PPC |

## Gene table: RT² Profiler PCR Array

| Position | UniGene | GenBank | Symbol | Description |
|---|---|---|---|---|
| A01 | N/A | XM_005623876 | AKT1 | V-akt murine thymoma viral oncogene homolog 1 |
| A02 | N/A | XM_003640205 | APCS | Amyloid P component, serum |
| A03 | N/A | XM_547304 | BCL10 | B-cell CLL/lymphoma 10 |
| A04 | Cfa.18376 | NM_001080725 | BIRC3 | Baculoviral IAP repeat containing 3 |
| A05 | N/A | XM_005635045 | BPI | Bactericidal/permeability-increasing protein |
| A06 | Cfa.4552 | NM_001003359 | CAMP | Cathelicidin antimicrobial peptide |
| A07 | N/A | XM_005625116 | CARD9 | Caspase recruitment domain family, member 9 |
| A08 | Cfa.3589 | NM_001003125 | CASP4 | Caspase 4, apoptosis-related cysteine peptidase |
| A09 | Cfa.24658 | NM_001048029 | CASP8 | Caspase 8, apoptosis-related cysteine peptidase |
| A10 | Cfa.36214 | NM_001005251 | CCL3 | Chemokine (C-C motif) ligand 3 |
| A11 | Cfa.21 | NM_001003010 | CCL5 | Chemokine (C-C motif) ligand 5 |
| A12 | Cfa.6175 | XM_843653 | CD14 | CD14 molecule |
| B01 | N/A | XM_534990 | CHUK | Conserved helix-loop-helix ubiquitous kinase |
| B02 | N/A | XM_545746 | CRP | C-reactive protein, pentraxin-related |
| B03 | Cfa.23853 | XM_845595 | CTSG | Cathepsin G |
| B04 | Cfa.588 | NM_001033996 | CTSK | Cathepsin K |
| B05 | Cfa.3510 | NM_001003200 | CXCL8 | Interleukin 8 |
| B06 | Cfa.40704 | NM_001100291 | CYBB | Cytochrome b-245, beta polypeptide (chronic granulomatous disease) |
| B07 | N/A | XM_005637813 | DMBT1 | Deleted in malignant brain tumors 1 |
| B08 | N/A | XM_005631743 | FADD | Fas (TNFRSF6)-associated via death domain |
| B09 | N/A | XM_005623417 | GCH1 | GTP cyclohydrolase 1 |
| B10 | N/A | XM_005623935 | HSP90AA1 | Heat shock protein 90kDa alpha (cytosolic), class A member 1 |
| B11 | Cfa.47521 | NM_001135787 | IFNB1 | Interferon, beta 1, fibroblast |
| B12 | N/A | XM_539954 | IKBKB | Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta |

| Position | UniGene | GenBank | Symbol | Description |
|---|---|---|---|---|
| C01 | Cfa.3843 | NM_001003293 | IL12A | Interleukin 12A (natural killer cell stimulatory factor 1, cytotoxic lymphocyte maturation factor 1, p35) |
| C02 | Cfa.3651 | NM_001003292 | IL12B | Interleukin 12B (natural killer cell stimulatory factor 2, cytotoxic lymphocyte maturation factor 2, p40) |
| C03 | Cfa.40 | NM_001003169 | IL18 | Interleukin 18 (interferon-gamma-inducing factor) |
| C04 | Cfa.33592 | NM_001037971 | IL1B | Interleukin 1, beta |
| C05 | Cfa.3528 | NM_001003301 | IL6 | Interleukin 6 (interferon, beta 2) |
| C06 | N/A | XM_549367 | IRAK1 | Interleukin-1 receptor-associated kinase 1 |
| C07 | N/A | XM_005625657 | IRAK3 | Interleukin-1 receptor-associated kinase 3 |
| C08 | N/A | XM_005628408 | IRF5 | Interferon regulatory factor 5 |
| C09 | N/A | XM_540526 | IRF7 | Similar to Interferon regulatory factor 7 (IRF-7) |
| C10 | N/A | XM_005620245 | JUN | Jun proto-oncogene |
| C11 | N/A | XM_542993 | LBP | Lipopolysaccharide binding protein |
| C12 | N/A | XM_548441 | LCN2 | Lipocalin 2 |
| D01 | Cfa.17370 | NM_001287076 | LTF | Lactotransferrin |
| D02 | N/A | XM_848045 | LY96 | Lymphocyte antigen 96 |
| D03 | N/A | NM_001300876 | LYZ | Lysozyme |
| D04 | N/A | XM_005615363 | MALT1 | Mucosa associated lymphoid tissue lymphoma translocation gene 1 |
| D05 | Cfa.1354 | NM_001048094 | MAP2K1 | Mitogen-activated protein kinase kinase 1 |
| D06 | N/A | XM_546666 | MAP2K3 | Mitogen-activated protein kinase kinase 3 |
| D07 | N/A | XM_014113234 | MAP2K4 | Mitogen-activated protein kinase kinase 4 |
| D08 | N/A | XM_005617056 | MAP3K8 | Mitogen-activated protein kinase kinase kinase 8 |
| D09 | Cfa.2796 | NM_001110800 | MAPK1 | Mitogen-activated protein kinase 1 |
| D10 | Cfa.2823 | NM_001003206 | MAPK14 | Mitogen-activated protein kinase 14 |
| D11 | Cfa.33452 | NM_001252035 | MAPK3 | Mitogen-activated protein kinase 3 |
| D12 | N/A | XM_534943 | MAPK8 | Mitogen-activated protein kinase 8 |
| E01 | N/A | XM_547161 | MEFV | Mediterranean fever |
| E02 | N/A | XM_847352 | MPO | Myeloperoxidase |
| E03 | N/A | XM_534223 | MYD88 | Myeloid differentiation primary response gene (88) |
| E04 | Cfa.10766 | NM_001003344 | NFKB1 | Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 |
| E05 | N/A | XM_537413 | NFKBIA | Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha |
| E06 | N/A | XM_005619880 | NLRP1 | NLR family, pyrin domain containing 1 |
| E07 | N/A | XM_005623148 | NLRP3 | NLR family, pyrin domain containing 3 |
| E08 | Cfa.48412 | XM_539499 | NOD1 | Nucleotide-binding oligomerization domain containing 1 |
| E09 | Cfa.48442 | NM_001287039 | NOD2 | Nucleotide-binding oligomerization domain-containing protein 2 |
| E10 | N/A | XM_545208 | PIK3CA | Phosphoinositide-3-kinase, catalytic, alpha polypeptide |
| E11 | Cfa.4502 | XM_544363 | PIK3R1 | Phosphoinositide-3-kinase, regulatory subunit 1 (alpha) |
| E12 | N/A | XM_542042 | PRDX2 | Peroxiredoxin 2 |
| F01 | N/A | XM_849471 | PSTPIP1 | Similar to proline-serine-threonine phosphatase interacting protein 1 |
| F02 | N/A | XM_547045 | PYCARD | PYD and CARD domain containing |
| F03 | Cfa.40290 | NM_001003274 | RAC1 | Ras-related C3 botulinum toxin substrate 1 (rho family, small GTP binding protein Rac1) |

| Position | UniGene | GenBank | Symbol | Description |
|---|---|---|---|---|
| F04 | Cfa.41791 | XM_540850 | RELA | V-rel reticuloendotheliosis viral oncogene homolog A (avian) |
| F05 | N/A | XM_545317 | RIPK1 | Receptor (TNFRSF)-interacting serine-threonine kinase 1 |
| F06 | N/A | XM_005638101 | RIPK2 | Receptor-interacting serine-threonine kinase 2 |
| F07 | Cfa.14639 | NM_001013851 | SLC11A1 | Solute carrier family 11 (proton-coupled divalent metal ion transporters), member 1 |
| F08 | Cfa.6128 | NM_001113171 | SLPI | Secretory leukocyte peptidase inhibitor |
| F09 | N/A | XM_005633939 | SUGT1 | SGT1, suppressor of G2 allele of SKP1 (S. cerevisiae) |
| F10 | N/A | XM_005625866 | TAB1 | TGF-beta activated kinase 1/MAP3K7 binding protein 1 |
| F11 | N/A | XM_005633023 | TICAM1 | Toll-like receptor adaptor molecule 1 |
| F12 | N/A | XM_846817 | TIRAP | Toll-interleukin 1 receptor (TIR) domain containing adaptor protein |
| G01 | Cfa.47631 | NM_001146143 | TLR1 | Toll-like receptor 1 |
| G02 | Cfa.15802 | NM_001005264 | TLR2 | Toll-like receptor 2 |
| G03 | Cfa.118 | NM_001002950 | TLR4 | Toll-like receptor 4 |
| G04 | Cfa.48854 | NM_001197176 | TLR5 | Toll-like receptor 5 |
| G05 | Cfa.47631 | XM_005618633 | TLR6 | Toll-like receptor 6 |
| G06 | Cfa.824 | NM_001002998 | TLR9 | Toll-like receptor 9 |
| G07 | Cfa.54 | NM_001003244 | TNF | Tumor necrosis factor |
| G08 | Cfa.3498 | XM_849381 | TNFRSF1A | Tumor necrosis factor receptor superfamily, member 1A |
| G09 | N/A | XM_005631321 | TOLLIP | Toll interacting protein |
| G10 | N/A | XM_003432322 | TRAF6 | TNF receptor-associated factor 6, E3 ubiquitin protein ligase |
| G11 | Cfa.4543 | XM_538165 | XIAP | X-linked inhibitor of apoptosis |
| G12 | N/A | XM_014107314 | ZBP1 | Z-DNA binding protein 1 |
| H01 | Cfa.17735 | NM_001195845 | ACTB | Actin, beta |
| H02 | N/A | XM_535458 | B2M | Beta-2-microglobulin |
| H03 | Cfa.36213 | NM_001003142 | GAPDH | Glyceraldehyde-3-phosphate dehydrogenase |
| H04 | Cfa.4551 | NM_001003357 | HPRT1 | Hypoxanthine phosphoribosyltransferase 1 |
| H05 | N/A | XM_014109387 | RPLP1 | Ribosomal protein, large, P1 |
| H06 | N/A | SA_00130 | FGDC | Dog 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 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 |
| RT² SYBR Green ROX™ 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 |
| RT² 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.



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