# ExProfile™ Human DNA Damage and Repair Related Gene qPCR Array

**For focused group profiling of human DNA damage and repair genes expression**

Cat. No. QG012-A (1 x 96-well plate, Format A)
Cat. No. QG012-B (1 x 96-well plate, Format B)
Cat. No. QG012-C (1 x 96-well plate, Format C)
Cat. No. QG012-D (1 x 96-well plate, Format D)
Cat. No. QG012-E (1 x 96-well plate, Format E)

Plates available individually or as a set of 6. Each set contains 84 unique gene primer pairs deposited in one 96-well plate.

## Introduction

The ExProfile human DNA damage and repair related gene qPCR array profiles the expression of 84 human genes related to DNA damage and repair. These genes are carefully chosen for their close correlation based on a thorough literature search of peer-reviewed publications, mainly including genes involved in apoptosis, cell cycle, various DNA repair processes. This array allows researchers to study the related genes to gain understanding of their roles in the process of DNA damage and repair.

- QG012 plate 01: 84 unique gene PCR primer pairs

## Shipping and storage condition

Shipped at room temperate
Stable for at least 6 months when stored at -20℃

## Array format

GeneCopoeia provides five qPCR array formats (A, B, C, D, and E) suitable for use with the following real-time cyclers.

**Important note:** Upon receiving, please check to make sure that the correct array format was ordered to ensure the compatibility with your qPCR instrument.

| Plate format | Instrument provider | qPCR instrument model |
|---|---|---|
| **A** (96-well) | Applied Biosystems | 5700, 7000, 7300, 7500, 7700, 7900HT (Standard 96-well block), ViiA™7 (Standard 96-well block) |
| **B** (96-well) | Applied Biosystems | 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA™7 (Fast block) |
| **C** (96-well) | Bio-Rad Laboratories | iCycler iQ®, MyiQ™, iQ™5 |
| **D** (96-well) | Bio-Rad Laboratories | CFX96™, DNA Engine Opticon™, DNA Engine Opticon 2™, Chromo4™ |
| **E** (96-well) | Roche Applied Science | LightCycler® 480 (96-well block) |

## Quality control

1. Each pair of primers in the ExProfile gene qPCR array has been experimentally validated to yield a single dissociation curve peak and to generate a single amplicon of the correct size for the targeted gene.
2. The positive PCR controls (PCR) have been verified to amplify a single amplicon of the correct size with Ct values around **20±2**.
3. The Spike-in reverse transcription controls (RT) have been verified to amplify a single amplicon of the correct size with Ct values around **20±3**.
4. $R^2$ > 0.99 was observed for high inter/ intra-array reproducibility.

## Materials required but not provided

All-in-One™ First-Strand cDNA Synthesis Kit
All-in-One™ qPCR Mix
Total RNA extraction kit (RNAzol® RT RNA extraction reagent is recommended)
DNase/RNase free tips, PCR reaction tubes, 1.5 ml microcentrifuge tubes
5 ml and 10 ml graduated pipettes, beakers, flasks, and cylinders
10 µl to 1,000 µl adjustable single channel micropipettes with disposable tips
5 µl to 20 µl adjustable multichannel micropipette, disposable tips, and reservoir
qPCR instrument, compatible with gene qPCR arrays ordered

## Array layout

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | XRCC4 | XRCC3 | XRCC2 | XRCC1 | XPC | XAB2 | UHRF1 | TP53BP1 | TP53 | TDP1 | TDG | SMUG1 |
| B | REV3L | REV1 | RAD52 | RAD51C | RAD51 | RAD23B | RAD23A | RAD21 | RAD18 | RAD17 | RAD1 | POLL |
| C | POLK | POLI | POLE | POLD1 | POLB | PMS2 | PCNA | NEIL3 | NEIL2 | NEIL1 | MSH6 | MSH3 |
| D | MSH2 | MRE11A | MPG | MLL | MLH1 | MBD4 | LIG4 | LIG1 | HUS1 | GTF2H4 | GTF2H3 | GTF2H1 |
| E | GADD45G | GADD45A | FEN1 | FANCC | FANCA | ERCC4 | ERCC3 | ERCC2 | ERCC1 | DDB2 | DDB1 | DCLRE1C |
| F | DCLRE1B | DCLRE1A | BRCA2 | BRCA1 | BLM | ATRX | ATM | APEX2 | APEX1 | NTHL1 | FANCG | H2AFX |
| G | UNG | XPA | MSH5 | MUTYH | NBN | PARP2 | PNKP | POLH | PRKDC | MSH4 | RFC5 | TREX1 |
| H | **HGDC** | **HGDC** | **GAPDH** | **ACTB** | **B2M** | **RPL13A** | **HPRT1** | **RN18S1** | **RT** | **RT** | **PCR** | **PCR** |

**Figure1. Illustration of QG012 plate 01**

- **Gene primer pairs**: 84 wells (A row to G row) are designated for a real-time PCR assay for genes (see the primer list).
- **HK1-6**: Six pre-deposited housekeeping gene (HK1-6) primer pairs, which can be used as endogenous positive controls as well as for array normalization.
- **GDC**: Genomic DNA controls, which can be used to specifically detect genomic DNA contamination with a high level of sensitivity.
- **RT**: Spike-in reverse transcription controls, which can be used to monitor the efficiency of the RT reactions. These pre-deposited primer pairs specifically amplify the cDNA template reversed transcribed from the spike-in control RNA in the sample.
- **PCR**: Positive PCR controls, which are used to verify the PCR efficiency by amplifying the pre-deposited DNA template with its specific pre-deposited primer pairs.

**Gene primer list**

| Plate | Position | Catalog No. of Primer | Accession No. of Gene | Symbol |
|---|---|---|---|---|
| QG012-01 | A01 | HQP018565 | NM_003401 | XRCC4 |
| QG012-01 | A02 | HQP018564 | NM_005432 | XRCC3 |
| QG012-01 | A03 | HQP018563 | NM_005431 | XRCC2 |
| QG012-01 | A04 | HQP018562 | NM_006297 | XRCC1 |
| QG012-01 | A05 | HQP018556 | NM_004628 | XPC |
| QG012-01 | A06 | HQP015272 | NM_020196 | XAB2 |
| QG012-01 | A07 | HQP008445 | NM_001048201 | UHRF1 |
| QG012-01 | A08 | HQP018176 | NM_005657 | TP53BP1 |
| QG012-01 | A09 | HQP018175 | NM_000546 | TP53 |
| QG012-01 | A10 | HQP014691 | NM_001008744 | TDP1 |
| QG012-01 | A11 | HQP017996 | NM_003211 | TDG |
| QG012-01 | A12 | HQP006236 | NM_014311 | SMUG1 |
| QG012-01 | B01 | HQP016223 | NM_002912 | REV3L |
| QG012-01 | B02 | HQP012755 | NM_001037872 | REV1 |
| QG012-01 | B03 | HQP016087 | NM_134424 | RAD52 |
| QG012-01 | B04 | HQP016079 | NM_002876 | RAD51C |
| QG012-01 | B05 | HQP016077 | NM_002875 | RAD51 |
| QG012-01 | B06 | HQP016076 | NM_002874 | RAD23B |
| QG012-01 | B07 | HQP016075 | NM_005053 | RAD23A |
| QG012-01 | B08 | HQP016074 | NM_006265 | RAD21 |
| QG012-01 | B09 | HQP015190 | NM_020165 | RAD18 |
| QG012-01 | B10 | HQP016070 | NM_002873 | RAD17 |
| QG012-01 | B11 | HQP015947 | NM_002853 | RAD1 |
| QG012-01 | B12 | HQP007689 | NM_013274 | POLL |
| QG012-01 | C01 | HQP012725 | NM_016218 | POLK |
| QG012-01 | C02 | HQP001399 | NM_007195 | POLI |
| QG012-01 | C03 | HQP013425 | NM_006231 | POLE |
| QG012-01 | C04 | HQP013423 | NM_002691 | POLD1 |
| QG012-01 | C05 | HQP013422 | NM_002690 | POLB |
| QG012-01 | C06 | HQP013352 | NM_000535 | PMS2 |
| QG012-01 | C07 | HQP012420 | NM_002592 | PCNA |
| QG012-01 | C08 | HQP014222 | NM_018248 | NEIL3 |
| QG012-01 | C09 | HQP006460 | NM_145043 | NEIL2 |
| QG012-01 | C10 | HQP019141 | NM_024608 | NEIL1 |
| QG012-01 | C11 | HQP008493 | NM_000179 | MSH6 |
| QG012-01 | C12 | HQP011492 | NM_002439 | MSH3 |
| QG012-01 | D01 | HQP011491 | NM_000251 | MSH2 |

| | | | | |
|---|---|---|---|---|
| QG012-01 | D02 | HQP011320 | NM_005590 | MRE11A |
| QG012-01 | D03 | HQP011304 | NM_001015052 | MPG |
| QG012-01 | D04 | HQP011241 | NM_005933 | MLL |
| QG012-01 | D05 | HQP011235 | NM_000249 | MLH1 |
| QG012-01 | D06 | HQP021736 | NM_003925 | MBD4 |
| QG012-01 | D07 | HQP010613 | NM_002312 | LIG4 |
| QG012-01 | D08 | HQP010609 | NM_000234 | LIG1 |
| QG012-01 | D09 | HQP009138 | NM_004507 | HUS1 |
| QG012-01 | D10 | HQP008505 | NM_001517 | GTF2H4 |
| QG012-01 | D11 | HQP008504 | NM_001516 | GTF2H3 |
| QG012-01 | D12 | HQP008502 | NM_005316 | GTF2H1 |
| QG012-01 | E01 | HQP001042 | NM_006705 | GADD45G |
| QG012-01 | E02 | HQP004125 | NM_001924 | GADD45A |
| QG012-01 | E03 | HQP005391 | NM_004111 | FEN1 |
| QG012-01 | E04 | HQP005083 | NM_000136 | FANCC |
| QG012-01 | E05 | HQP005081 | NM_000135 | FANCA |
| QG012-01 | E06 | HQP004984 | NM_005236 | ERCC4 |
| QG012-01 | E07 | HQP004983 | NM_000122 | ERCC3 |
| QG012-01 | E08 | HQP004976 | NM_000400 | ERCC2 |
| QG012-01 | E09 | HQP004974 | NM_001983 | ERCC1 |
| QG012-01 | E10 | HQP004114 | NM_000107 | DDB2 |
| QG012-01 | E11 | HQP004111 | NM_001923 | DDB1 |
| QG012-01 | E12 | HQP016982 | NM_001033855 | DCLRE1C |
| QG012-01 | F01 | HQP017213 | NM_022836 | DCLRE1B |
| QG012-01 | F02 | HQP023381 | NM_014881 | DCLRE1A |
| QG012-01 | F03 | HQP017753 | NM_000059 | BRCA2 |
| QG012-01 | F04 | HQP017713 | NM_007294 | BRCA1 |
| QG012-01 | F05 | HQP016844 | NM_000057 | BLM |
| QG012-01 | F06 | HQP013636 | NM_000489 | ATRX |
| QG012-01 | F07 | HQP011736 | NM_000051 | ATM |
| QG012-01 | F08 | HQP007655 | NM_014481 | APEX2 |
| QG012-01 | F09 | HQP009061 | NM_001641 | APEX1 |
| QG012-01 | F10 | HQP011937 | NM_002528 | NTHL1 |
| QG012-01 | F11 | HQP005099 | NM_004629 | FANCG |
| QG012-01 | F12 | HQP008703 | NM_002105 | H2AFX |
| QG012-01 | G01 | HQP018427 | NM_003362 | UNG |
| QG012-01 | G02 | HQP018555 | NM_000380 | XPA |
| QG012-01 | G03 | HQP011494 | NM_002441 | MSH5 |
| QG012-01 | G04 | HQP011576 | NM_001048171 | MUTYH |
| QG012-01 | G05 | HQP011686 | NM_001024688 | NBN |
| QG012-01 | G06 | HQP000048 | NM_001042618 | PARP2 |

| | | | | |
|---|---|---|---|---|
| QG012-01 | G07 | HQP001521 | NM_007254 | PNKP |
| QG012-01 | G08 | HQP013429 | NM_006502 | POLH |
| QG012-01 | G09 | HQP014837 | NM_001081640 | PRKDC |
| QG012-01 | G10 | HQP011493 | NM_002440 | MSH4 |
| QG012-01 | G11 | HQP016230 | NM_007370 | RFC5 |
| QG012-01 | G12 | HQP001503 | NM_016381 | TREX1 |
| QG012-01 | H01 | HGDC | | |
| QG012-01 | H02 | HGDC | | |
| QG012-01 | H03 | HQP006940 | NM_002046 | GAPDH |
| QG012-01 | H04 | HQP016381 | NM_001101 | ACTB |
| QG012-01 | H05 | HQP015171 | NM_004048 | B2M |
| QG012-01 | H06 | HQP006171 | NM_012423 | RPL13A |
| QG012-01 | H07 | HQP009026 | NM_000194 | HPRT1 |
| QG012-01 | H08 | HQP054253 | NR_003286 | RN18S1 |
| QG012-01 | H09 | RT | | |
| QG012-01 | H10 | RT | | |
| QG012-01 | H11 | PCR | | |
| QG012-01 | H12 | PCR | | |

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