# QuantiNova® LNA® PCR Focus Panels (Rotor-Gene® Format)

# Mouse DNA Repair

## Cat. no. 249950 SBMM-042ZR

## For study focus gene expression analysis

### Shipping and storage

QuantiNova LNA PCR Focus Panels are shipped at ambient temperature. Immediately upon receipt, they should be stored at 2–8°C for short term storage or at –30°C to –15°C for long time storage. Under these conditions, all components are stable for at least 12 months.

**Note**: Open the package and store the products appropriately immediately upon receipt.

For optimal performance, QuantiNova LNA PCR Focus Panels should be used together with the QuantiNova Reverse Transcription Kit for cDNA synthesis and the QuantiNova SYBR® Green PCR Kit (Mastermix) for PCR.

### Panel layout (Rotor-Gene): QuantiNova LNA PCR Focus Panel

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. Refer to the QuantiNova LNA PCR System Handbook at **www.qiagen.com** for further details.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | Apex1 | Apex2 | Atm | Atr | Atxn3 | Brca1 | Brca2 | Brip1 | Ccnh | Ccno | Cdk7 | Ddb1 |
| B | Ddb2 | Dmc1 | Ercc1 | Ercc2 | Ercc3 | Ercc4 | Ercc5 | Ercc6 | Ercc8 | Exo1 | Fen1 | Lig1 |
| C | Lig3 | Lig4 | Mgmt | Mlh1 | Mlh3 | Mms19 | Mpg | Mre11a | Msh2 | Msh3 | Msh4 | Msh5 |
| D | Msh6 | Mutyh | Neil1 | Neil2 | Neil3 | Nthl1 | Ogg1 | Parp1 | Parp2 | Parp3 | Pms1 | Pms2 |
| E | Pnkp | Polb | Pold3 | Poll | Prkdc | Rad18 | Rad21 | Rad23a | Rad23b | Rad50 | Rad51 | Rad51c |
| F | Rad51b | Rad51d | Rad52 | Rad54l | Rfc1 | Rpa1 | Rpa3 | Slk | Smug1 | Tdg | Top3a | Top3b |
| G | Trex1 | Ung | Xab2 | Xpa | Xpc | Xrcc1 | Xrcc2 | Xrcc3 | Xrcc4 | Xrcc5 | Xrcc6 | Atp23 |
| H | Actb | B2m | Gapdh | Gusb | Hsp90ab1 | MGDC | QIC | QIC | QIC | PPC | PPC | PPC |

# Gene table: QuantiNova LNA PCR Focus Panel

| Position | Assay | Name | Symbol | Ensembl ID | Description |
|---|---|---|---|---|---|
| A01 | SBM0874745 | ENSMUST00000128395.1 | Apex1 | ENSMUSG00000035960 | apurinic/apyrimidinic endonuclease 1 Source MGI Symbol Acc MGI 88042 |
| A02 | SBM1036077 | ENSMUST00000112719.1 | Apex2 | ENSMUSG00000025269 | apurinic/apyrimidinic endonuclease 2 Source MGI Symbol Acc MGI 1924872 |
| A03 | SBM0745660 | ENSMUST00000150244.1 | Atm | ENSMUSG00000034218 | ataxia telangiectasia mutated Source MGI Symbol Acc MGI 107202 |
| A04 | SBM0707457 | ENSMUST00000189602.6 | Atr | ENSMUSG00000032409 | ataxia telangiectasia and Rad3 related Source MGI Symbol Acc MGI 108028 |
| A05 | SBM0959195 | ENSMUST00000161011.7 | Atxn3 | ENSMUSG00000021189 | ataxin 3 Source MGI Symbol Acc MGI 1099442 |
| A06 | SBM0935779 | ENSMUST00000142086.2 | Brca1 | ENSMUSG00000017146 | breast cancer 1, early onset Source MGI Symbol Acc MGI 104537 |
| A07 | SBM0807222 | ENSMUST00000201226.1 | Brca2 | ENSMUSG00000041147 | breast cancer 2, early onset Source MGI Symbol Acc MGI 109337 |
| A08 | SBM0715407 | ENSMUST00000123366.1 | Brip1 | ENSMUSG00000034329 | BRCA1 interacting protein C-terminal helicase 1 Source MGI Symbol Acc MGI 2442836 |
| A09 | SBM0837376 | ENSMUST00000163600.7 | Ccnh | ENSMUSG00000021548 | cyclin H Source MGI Symbol Acc MGI 1913921 |
| A10 | SBM0873111 | ENSMUST00000225555.1 | Ccno | ENSMUSG00000042417 | cyclin O Source MGI Symbol Acc MGI 2145534 |
| A11 | SBM0902716 | ENSMUST00000091299.7 | Cdk7 | ENSMUSG00000069089 | cyclin-dependent kinase 7 Source MGI Symbol Acc MGI 102956 |
| A12 | SBM1023117 | ENSMUST00000237337.1 | Ddb1 | ENSMUSG00000024740 | damage specific DNA binding protein 1 Source MGI Symbol Acc MGI 1202384 |
| B01 | SBM0998185 | ENSMUST00000152277.7 | Ddb2 | ENSMUSG00000002109 | damage specific DNA binding protein 2 Source MGI Symbol Acc MGI 1355314 |
| B02 | SBM0696126 | ENSMUST00000023065.7 | Dmc1 | ENSMUSG00000022429 | DNA meiotic recombinase 1 Source MGI Symbol Acc MGI 105393 |
| B03 | SBM0942819 | ENSMUST00000003645.8 | Ercc1 | ENSMUSG00000003549 | excision repair cross-complementing rodent repair deficiency, complementation group 1 Source MGI Symbol Acc MGI 95412 |
| B04 | SBM0850014 | ENSMUST00000062831.15 | Ercc2 | ENSMUSG00000030400 | excision repair cross-complementing rodent repair deficiency, complementation group 2 Source MGI Symbol Acc MGI 95413 |
| B05 | SBM0757944 | ENSMUST00000129023.1 | Ercc3 | ENSMUSG00000024382 | excision repair cross-complementing rodent repair deficiency, complementation group 3 Source MGI Symbol Acc MGI 95414 |
| B06 | SBM0688605 | ENSMUST00000138527.1 | Ercc4 | ENSMUSG00000022545 | excision repair cross-complementing rodent repair deficiency, complementation group 4 Source MGI Symbol Acc MGI 1354163 |
| B07 | SBM0968908 | ENSMUST00000131177.7 | Ercc5 | ENSMUSG00000026048 | excision repair cross-complementing rodent repair deficiency, complementation group 5 Source MGI Symbol Acc MGI 103582 |
| B08 | SBM0954098 | ENSMUST00000066807.7 | Ercc6 | ENSMUSG00000054051 | excision repair cross-complementing rodent repair deficiency, complementation group 6 Source MGI Symbol Acc MGI 1100494 |
| B09 | SBM0957543 | ENSMUST00000123138.1 | Ercc8 | ENSMUSG00000021694 | excision repaiross-complementing rodent repair deficiency, complementation group 8 Source MGI Symbol Acc MGI 1919241 |
| B10 | SBM0925254 | ENSMUST00000193822.5 | Exo1 | ENSMUSG00000039748 | exonuclease 1 Source MGI Symbol Acc MGI 1349427 |
| B11 | SBM0765565 | ENSMUST00000025651.5 | Fen1 | ENSMUSG00000024742 | flap structure specific endonuclease 1 Source MGI Symbol Acc MGI 102779 |
| B12 | SBM0876363 | ENSMUST00000123846.8 | Lig1 | ENSMUSG00000056394 | ligase I, DNA, ATP-dependent Source MGI Symbol Acc MGI 101789 |
| C01 | SBM0773238 | ENSMUST00000172609.1 | Lig3 | ENSMUSG00000020697 | ligase III, DNA, ATP-dependent Source MGI Symbol Acc MGI 109152 |
| C02 | SBM1059958 | ENSMUST00000170033.1 | Lig4 | ENSMUSG00000049717 | ligase IV, DNA, ATP-dependent Source MGI Symbol Acc MGI 1335098 |
| C03 | SBM0832259 | ENSMUST00000081510.3 | Mgmt | ENSMUSG00000054612 | O-6-methylguanine-DNA methyltransferase Source MGI Symbol Acc MGI 96977 |
| C04 | SBM0706264 | ENSMUST00000134316.1 | Mlh1 | ENSMUSG00000032498 | mutL homolog 1 Source MGI Symbol Acc MGI 101938 |
| C05 | SBM0907919 | ENSMUST00000166821.7 | Mlh3 | ENSMUSG00000021245 | mutL homolog 3 Source MGI Symbol Acc MGI 1353455 |
| C06 | SBM0864274 | ENSMUST00000167927.7 | Mms19 | ENSMUSG00000025159 | MMS19 cytosolic iron-sulfur assembly component Source MGI Symbol Acc MGI 1919449 |
| C07 | SBM0928248 | ENSMUST00000142964.7 | Mpg | ENSMUSG00000020287 | N-methylpurine-DNA glycosylase Source MGI Symbol Acc MGI 97073 |
| C08 | SBM0787147 | ENSMUST00000215820.1 | Mre11a | ENSMUSG00000031928 | MRE11A homolog A, double strand break repair nuclease Source MGI Symbol Acc MGI 1100512 |
| C09 | SBM0831857 | ENSMUST00000172855.1 | Msh2 | ENSMUSG00000024151 | mutS homolog 2 Source MGI Symbol Acc MGI 101816 |
| C10 | SBM1039955 | ENSMUST00000185852.6 | Msh3 | ENSMUSG00000014850 | mutS homolog 3 Source MGI Symbol Acc MGI 109519 |
| | | ENSMUST00000 | | ENSMUSG00 | |

| Position | Assay | Name | Symbol | Ensembl ID | Description |
|---|---|---|---|---|---|
| C11 | SBM0792446 | 005630.10 | Msh4 | 000005493 | mutS homolog 4 Source MGI Symbol Acc MGI 1860077 |
| C12 | SBM0944651 | ENSMUST00000 172536.1 | Msh5 | ENSMUSG00 000007035 | mutS homolog 5 Source MGI Symbol Acc MGI 1329021 |
| D01 | SBM0907842 | ENSMUST00000 234756.1 | Msh6 | ENSMUSG00 000005370 | mutS homolog 6 Source MGI Symbol Acc MGI 1343961 |
| D02 | SBM1049181 | ENSMUST00000 155346.7 | Mutyh | ENSMUSG00 000028687 | mutY DNA glycosylase Source MGI Symbol Acc MGI 1917853 |
| D03 | SBM0735152 | ENSMUST00000 186410.6 | Neil1 | ENSMUSG00 000032298 | nei endonuclease VIII-like 1 (E. coli) Source MGI Symbol Acc MGI 1920024 |
| D04 | SBM1027237 | ENSMUST00000 225841.1 | Neil2 | ENSMUSG00 000035121 | nei like 2 (E. coli) Source MGI Symbol Acc MGI 2686058 |
| D05 | SBM0893400 | ENSMUST00000 047768.10 | Neil3 | ENSMUSG00 000039396 | nei like 3 (E. coli) Source MGI Symbol Acc MGI 2384588 |
| D06 | SBM1068198 | ENSMUST00000 234635.1 | Nthl1 | ENSMUSG00 000041429 | nth (endonuclease III)-like 1 (E.coli) Source MGI Symbol Acc MGI 1313275 |
| D07 | SBM1066827 | ENSMUST00000 154350.2 | Ogg1 | ENSMUSG00 000030271 | 8-oxoguanine DNA-glycosylase 1 Source MGI Symbol Acc MGI 1097693 |
| D08 | SBM0750626 | ENSMUST00000 191639.1 | Parp1 | ENSMUSG00 000026496 | poly (ADP-ribose) polymerase family, member 1 Source MGI Symbol Acc MGI 1340806 |
| D09 | SBM0881717 | ENSMUST00000 226880.1 | Parp2 | ENSMUSG00 000036023 | poly (ADP-ribose) polymerase family, member 2 Source MGI Symbol Acc MGI 1341112 |
| D10 | SBM0964061 | ENSMUST00000 140029.1 | Parp3 | ENSMUSG00 000023249 | poly (ADP-ribose) polymerase family, member 3 Source MGI Symbol Acc MGI 1891258 |
| D11 | SBM1072495 | ENSMUST00000 133358.1 | Pms1 | ENSMUSG00 000026098 | PMS1 homolog 1, mismatch repair system component Source MGI Symbol Acc MGI 1202302 |
| D12 | SBM0984554 | ENSMUST00000 110710.9 | Pms2 | ENSMUSG00 000079109 | PMS1 homolog2, mismatch repair system component Source MGI Symbol Acc MGI 104288 |
| E01 | SBM0794779 | ENSMUST00000 003044.13 | Pnkp | ENSMUSG00 000002963 | polynucleotide kinase 3 - phosphatase Source MGI Symbol Acc MGI 1891698 |
| E02 | SBM0888675 | ENSMUST00000 033938.6 | Polb | ENSMUSG00 000031536 | polymerase (DNA directed), beta Source MGI Symbol Acc MGI 97740 |
| E03 | SBM0975435 | ENSMUST00000 156518.1 | Pold3 | ENSMUSG00 000030726 | polymerase (DNA-directed), delta 3, accessory subunit Source MGI Symbol Acc MGI 1915217 |
| E04 | SBM0836579 | ENSMUST00000 026239.6 | Poll | ENSMUSG00 000025218 | polymerase (DNA directed), lambda Source MGI Symbol Acc MGI 1889000 |
| E05 | SBM0998200 | ENSMUST00000 023352.8 | Prkdc | ENSMUSG00 000022672 | protein kinase, DNA activated, catalytic polypeptide Source MGI Symbol Acc MGI 104779 |
| E06 | SBM0947079 | ENSMUST00000 077088.10 | Rad18 | ENSMUSG00 000030254 | RAD18 E3 ubiquitin protein ligase Source MGI Symbol Acc MGI 1890476 |
| E07 | SBM0870390 | ENSMUST00000 226529.1 | Rad21 | ENSMUSG00 000022314 | RAD21 cohesin complex component Source MGI Symbol Acc MGI 108016 |
| E08 | SBM1041817 | ENSMUST00000 003911.12 | Rad23a | ENSMUSG00 000003813 | RAD23 homolog A, nucleotide excision repair protein Source MGI Symbol Acc MGI 105126 |
| E09 | SBM0728335 | ENSMUST00000 127266.1 | Rad23b | ENSMUSG00 000028426 | RAD23 homolog B, nucleotide excision repair protein Source MGI Symbol Acc MGI 105128 |
| E10 | SBM0935165 | ENSMUST00000 126121.1 | Rad50 | ENSMUSG00 000020380 | RAD50 double strand break repair protein Source MGI Symbol Acc MGI 109292 |
| E11 | SBM0702001 | ENSMUST00000 110828.1 | Rad51 | ENSMUSG00 000027323 | RAD51 recombinase Source MGI Symbol Acc MGI 97890 |
| E12 | SBM0696860 | ENSMUST00000 129400.1 | Rad51c | ENSMUSG00 000007646 | RAD51 paralog C Source MGI Symbol Acc MGI 2150020 |
| F01 | SBM0876551 | ENSMUST00000 218039.2 | Rad51b | ENSMUSG00 000059060 | RAD51 paralog B Source MGI Symbol Acc MGI 1099436 |
| F02 | SBM0884363 | ENSMUST00000 135963.7 | Rad51d | ENSMUSG00 000018841 | RAD51 paralog D Source MGI Symbol Acc MGI 1261809 |
| F03 | SBM0882006 | ENSMUST00000 032269.11 | Rad52 | ENSMUSG00 000030166 | RAD52 homolog, DNA repair protein Source MGI Symbol Acc MGI 101949 |
| F04 | SBM1009542 | ENSMUST00000 102704.3 | Rad54l | ENSMUSG00 000028702 | RAD54 like (S. cerevisiae) Source MGI Symbol Acc MGI 894697 |
| F05 | SBM0900035 | ENSMUST00000 172732.7 | Rfc1 | ENSMUSG00 000029191 | replication factor C (activator 1) 1 Source MGI Symbol Acc MGI 97891 |
| F06 | SBM1051303 | ENSMUST00000 135770.7 | Rpa1 | ENSMUSG00 000000751 | replication protein A1 Source MGI Symbol Acc MGI 1915525 |
| F07 | SBM1080371 | ENSMUST00000 012627.4 | Rpa3 | ENSMUSG00 000012483 | replication protein A3 Source MGI Symbol Acc MGI 1915490 |
| F08 | SBM1000108 | ENSMUST00000 130115.1 | Slk | ENSMUSG00 000025060 | STE20-like kinase Source MGI Symbol Acc MGI 103241 |
| F09 | SBM0922402 | ENSMUST00000 064067.8 | Smug1 | ENSMUSG00 000036061 | single-strand selective monofunctional uracil DNA glycosylase Source MGI Symbol Acc MGI 1918976 |
| F10 | SBM0807960 | ENSMUST00000 145370.7 | Tdg | ENSMUSG00 000034674 | thymine DNA glycosylase Source MGI Symbol Acc MGI 108247 |
| | | | | | |

| Position | Assay | Name | Symbol | Ensembl ID | Description |
|---|---|---|---|---|---|
| F11 | SBM1045636 | ENSMUST00000002891.10 | Top3a | ENSMUSG00000002814 | topoisomerase (DNA) III alpha Source MGI Symbol Acc MGI 1197527 |
| F12 | SBM0845311 | ENSMUST00000023465.15 | Top3b | ENSMUSG00000022779 | topoisomerase (DNA) III beta Source MGI Symbol Acc MGI 1333803 |
| G01 | SBM1045779 | ENSMUST00000112053.1 | Trex1 | ENSMUSG00000049734 | three prime repair exonuclease 1 Source MGI Symbol Acc MGI 1328317 |
| G02 | SBM0820363 | ENSMUST00000031587.12 | Ung | ENSMUSG00000029591 | uracil DNA glycosylase Source MGI Symbol Acc MGI 109352 |
| G03 | SBM0822169 | ENSMUST00000159235.1 | Xab2 | ENSMUSG00000019470 | XPA binding protein 2 Source MGI Symbol Acc MGI 1914689 |
| G04 | SBM0953059 | ENSMUST00000058232.10 | Xpa | ENSMUSG00000028329 | xeroderma pigmentosum, complementation group A Source MGI Symbol Acc MGI 99135 |
| G05 | SBM0993944 | ENSMUST00000206476.1 | Xpc | ENSMUSG00000030094 | xeroderma pigmentosum, complementation group C Source MGI Symbol Acc MGI 103557 |
| G06 | SBM0836371 | ENSMUST00000205573.1 | Xrcc1 | ENSMUSG00000051768 | X-ray repair complementing defective repair in Chinese hamster cells 1 Source MGI Symbol Acc MGI 99137 |
| G07 | SBM1037599 | ENSMUST00000134972.2 | Xrcc2 | ENSMUSG00000028933 | X-ray repair complementing defective repair in Chinese hamster cells 2 Source MGI Symbol Acc MGI 1927345 |
| G08 | SBM1034452 | ENSMUST00000021715.5 | Xrcc3 | ENSMUSG00000021287 | X-ray repair complementing defective repair in Chinese hamster cells 3 Source MGI Symbol Acc MGI 1921585 |
| G09 | SBM1030169 | ENSMUST00000161396.1 | Xrcc4 | ENSMUSG00000021615 | X-ray repair complementing defective repair in Chinese hamster cells 4 Source MGI Symbol Acc MGI 1333799 |
| G10 | SBM0879017 | ENSMUST00000027379.8 | Xrcc5 | ENSMUSG00000026187 | X-ray repair complementing defective repair in Chinese hamster cells 5 Source MGI Symbol Acc MGI 104517 |
| G11 | SBM0783568 | ENSMUST00000164779.1 | Xrcc6 | ENSMUSG00000022471 | X-ray repair complementing defective repair in Chinese hamster cells 6 Source MGI Symbol Acc MGI 95606 |
| G12 | SBM0755535 | ENSMUST00000168520.2 | Atp23 | ENSMUSG00000025436 | ATP23 metallopeptidase and ATP synthase assembly factor homolog Source MGI Symbol Acc MGI 1916984 |
| H01 | SBM1220560 | ENSMUST00000100497.10 | Actb | ENSMUSG00000029580 | actin, beta Source MGI Symbol Acc MGI 87904 |
| H02 | SBM0675336 | ENSMUST00000102476.4 | B2m | ENSMUSG00000060802 | beta-2 microglobulin Source MGI Symbol Acc MGI 88127 |
| H03 | SBM1220562 | ENSMUST00000117757.8 | Gapdh | ENSMUSG00000057666 | glyceraldehyde-3-phosphate dehydrogenase Source MGI Symbol Acc MGI 95640 |
| H04 | SBM1220563 | ENSMUST00000026613.13 | Gusb | ENSMUSG00000025534 | glucuronidase, beta Source MGI Symbol Acc MGI 95872 |
| H05 | SBM1220564 | ENSMUST00000166469.7 | Hsp90ab1 | ENSMUSG00000023944 | heat shock protein 90 alpha (cytosolic), class B member 1 Source MGI Symbol Acc MGI 96247 |
| H06 | SBM1218554 | Sybr_MGDC | MGDC | Sybr_MGDC | Mouse Genomic DNA Contamination |
| H07 | SBH1218551 | Sybr_QIC | QIC | Sybr_QIC | QuantiNova Internal Control |
| H08 | SBH1218551 | Sybr_QIC | QIC | Sybr_QIC | QuantiNova Internal Control |
| H09 | SBH1218551 | Sybr_QIC | QIC | Sybr_QIC | QuantiNova Internal Control |
| H10 | SBH1218550 | Sybr_PPC | PPC | Sybr_PPC | Positive PCR Control |
| H11 | SBH1218550 | Sybr_PPC | PPC | Sybr_PPC | Positive PCR Control |
| H12 | SBH1218550 | Sybr_PPC | PPC | Sybr_PPC | Positive PCR Control |

## Related products

| Product | Contents | Cat. no. |
|---|---|---|
| QuantiNova LNA PCR QC Panel | These panels are designed to assess the quality of RNA samples before characterization using QuantiNova LNA PCR Focus Panels; available in 96-well, 384-well, and Rotor-Disc 100 formats | 249940 |
| QuantiNova Reverse Transcription Kit (10)* | For 10 x 20 µl reactions: 20 µl 8x gDNA Removal Mix, 10 µl Reverse Transcription Enzyme, 40 µl Reverse Transcription Mix (containing RT primers), 20 µl Internal Control RNA, 1.9 ml RNase-Free Water | 205410 |
| QuantiNova SYBR Green RT-PCR Kit (100)* | For 100 x 20 µl reactions: 1 ml QuantiNova SYBR Green RT-PCR Master Mix, 20 µl QuantiNova SYBR Green RT Mix, 20 µl Internal Control RNA, 500 µl Yellow Template Dilution Buffer, 250 µl ROX Reference Dye, 1.9 µl RNase-Free Water | 208152 |
| QuantiNova SYBR Green PCR Kit (100)* | For 100 x 20 µl reactions: 1 ml 2x QuantiNova SYBR Green PCR Master Mix, 500 µl QuantiNova Yellow Template Dilution Buffer, 250 µl QN ROX Reference Dye, 1.9 ml Water | 208052 |

*Larger kit sizes available.

The QuantiNova LNA PCR Focus Panels are intended for molecular biology applications. These products are not intended for the diagnosis, prevention or treatment of a disease.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.