

# QuantiNova® LNA® PCR Focus Panels (96-Well Format and 384-Well [4 x 96] Format)

## Rat DNA Repair

Cat. no. 249950 SBRN-042ZA

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 (96-well): QuantiNova LNA PCR Focus Panel

For the 384-well (4 × 96) PCR panels, genes are present in a staggered format. Refer to the QuantiNova LNA PCR System Handbook at [www.qiagen.com](http://www.qiagen.com) for further details.

	1	2	3	4	5	6	7	8	9	10	11	12
A	Alkbh2	Alkbh3	Apex1	Atm	Atxn3	Blim	Brca1	Brca2	Ccnh	Cdk7	Dclre1a	Dclre1b
B	Ddb1	Ddb2	Dmc1	Ercc1	Ercc2	Ercc3	AABR0702900 2.2	Ercc5	Ercc6	Ercc8	Exo1	Fen1
C	Gen1	Lig1	Lig3	Lig4	Msh6	Mgmt	Mlh1	Mlh3	Mpg	Mre11a	Msh2	Msh3
D	Msh5	Mus81	Mutyh	Neil1	Neil2	Nhej1	Nhl1	Ogg1	Parp1	Parp2	Parp3	Pms1
E	Pms2	Pnkp	Polb	Pold3	Poll	Prkdc	Rad18	Rad21	Rad23a	Rad23b	Rad50	Rad51
F	Rad51c	Rad51d	Rad52	Rad54i	Rad9b	Rfc1	Rpa1	Rpa3	Sik	Smug1	Tdg	Top3a
G	Top3b	Trex1	Trex2	Ung	Xab2	Xpc	Xrec1	Xrec2	Xrcc4	Xrcc5	Xrcc6	Atp23
H	Actb	B2m	Hprt1	Ldha	Rplp1	RGDC	QIC	QIC	QIC	PPC	PPC	PPC

## Gene table: QuantiNova LNA PCR Focus Panel

Position	Assay	Name	Symbol	Ensembl ID	Description
A01	SBR1210149	ENSRNOT00000031658.5	Alkbh2	ENSRNOG0000028584	alkB homolog 2, alpha-ketoglutarate-dependent dioxygenase Source RGD Symbol Acc 1306377
A02	SBR1097733	ENSRNOT00000030784.5	Alkbh3	ENSRNOG0000021678	alkB homolog 3, alpha-ketoglutarate-dependent dioxygenase Source RGD Symbol Acc 1359731
A03	SBR1185931	ENSRNOT00000087958.1	Apex1	ENSRNOG0000009663	apurinic/apyrimidinic endodeoxyribonuclease 1 Source RGD Symbol Acc 2126
A04	SBR1113073	ENSRNOT00000050555.3	Atm	ENSRNOG0000029773	ATM serine/threonine kinase Source RGD Symbol Acc 1593265
A05	SBR1173486	ENSRNOT00000007505.2	Atxn3	ENSRNOG0000005470	ataxin 3 Source RGD Symbol Acc 621567
A06	SBR1208346	ENSRNOT00000015065.7	Blm	ENSRNOG0000011213	BLM RecQ like helicase Source RGD Symbol Acc 1308810
A07	SBR1185089	ENSRNOT00000028109.3	Brca1	ENSRNOG0000020701	BRCA1, DNA repair associated Source RGD Symbol Acc 2218
A08	SBR1095330	ENSRNOT00000001475.7	Brca2	ENSRNOG0000001111	BRCA2, DNA repair associated Source RGD Symbol Acc 2219
A09	SBR1112912	ENSRNOT00000049423.1	Ccnh	ENSRNOG00000031656	cyclin H Source RGD Symbol Acc 69419
A10	SBR1188490	ENSRNOT00000025026.8	Cdk7	ENSRNOG0000018510	cyclin-dependent kinase 7 Source RGD Symbol Acc 621124
A11	SBR1140281	ENSRNOT00000036321.5	Dclre1a	ENSRNOG0000026204	DNA cross-link repair 1A Source RGD Symbol Acc 1306156
A12	SBR1173760	ENSRNOT00000026213.6	Dclre1b	ENSRNOG0000019367	DNA cross-link repair 1B Source RGD Symbol Acc 1310343
B01	SBR1165211	ENSRNOT00000028188.7	Ddb1	ENSRNOG0000020715	damage-specific DNA binding protein 1 Source RGD Symbol Acc 621889
B02	SBR1172394	ENSRNOT00000018998.8	Ddb2	ENSRNOG0000014071	damage specific DNA binding protein 2 Source RGD Symbol Acc 1310164
B03	SBR1115669	ENSRNOT00000018526.5	Dmc1	ENSRNOG0000013807	DNA meiotic recombinase 1 Source RGD Symbol Acc 1307611
B04	SBR1128428	ENSRNOT00000024113.5	Erc1	ENSRNOG0000017839	ERCC excision repair 1, endonuclease non-catalytic subunit Source RGD Symbol Acc 1306992
B05	SBR1168699	ENSRNOT00000024246.7	Erc2	ENSRNOG0000017753	ERCC excision repair 2, TFIIH core complex helicase subunit Source RGD Symbol Acc 1309109
B06	SBR1211602	ENSRNOT00000018422.6	Erc3	ENSRNOG0000013180	ERCC excision repair 3, TFIIH core complex helicase subunit Source RGD Symbol Acc 1307139
B07	SBR1208915	ENSRNOT00000004563.6	AABR07029002.2	ENSRNOG0000048121	ERCC excision repair 4, endonuclease catalytic subunit Source NCBI gene Acc 304719
B08	SBR1141415	ENSRNOT00000059349.4	Erc5	ENSRNOG0000022812	ERCC excision repair 5, endonuclease Source RGD Symbol Acc 1586176
B09	SBR1130692	ENSRNOT00000088529.1	Erc6	ENSRNOG0000030017	ERCC excision repair 6, chromatin remodeling factor Source RGD Symbol Acc 1311509
B10	SBR1214055	ENSRNOT00000077938.1	Erc8	ENSRNOG0000009968	ERCC excision repair 8, CSA ubiquitin ligase complex subunit Source RGD Symbol Acc 1311570
B11	SBR1147426	ENSRNOT00000088204.1	Exo1	ENSRNOG0000056209	exonuclease 1 Source RGD Symbol Acc 1309465
B12	SBR1214077	ENSRNOT00000027842.3	Fen1	ENSRNOG0000020531	flap structure-specific endonuclease 1 Source RGD Symbol Acc 621821
C01	SBR1107015	ENSRNOT00000006470.4	Gen1	ENSRNOG0000004667	GEN1 Holliday junction 5 flap endonuclease Source RGD Symbol Acc 1559792
C02	SBR1130641	ENSRNOT00000019799.6	Lig1	ENSRNOG0000014193	DNA ligase 1 Source RGD Symbol Acc 621424
C03	SBR1167456	ENSRNOT00000084076.1	Lig3	ENSRNOG0000021815	DNA ligase 3 Source RGD Symbol Acc 1309875
C04	SBR1212635	ENSRNOT00000019615.5	Lig4	ENSRNOG0000014605	DNA ligase 4 Source RGD Symbol Acc 1304639
C05	SBR1208757	ENSRNOT00000093689.1	Msh6	ENSRNOG0000016134	mutS homolog 6 Source RGD Symbol Acc 2322311
C06	SBR1144940	ENSRNOT00000021537.4	Mgmt	ENSRNOG0000016038	O-6-methylguanine-DNA methyltransferase Source RGD Symbol Acc 3087
C07	SBR1108786	ENSRNOT00000081718.1	Mlh1	ENSRNOG0000033809	mutL homolog 1 Source RGD Symbol Acc 620937
C08	SBR1172256	ENSRNOT00000033493.3	Mlh3	ENSRNOG0000006699	mutL homolog 3 Source RGD Symbol Acc 1309227
C09	SBR1159432	ENSRNOT00000027940.4	Mpg	ENSRNOG0000020571	N-methylpurine-DNA glycosylase Source RGD Symbol Acc 3106
C10	SBR1133175	ENSRNOT00000012940.4	Mre11a	ENSRNOG0000009506	MRE11 homolog A, double strand break repair nuclease Source RGD Symbol Acc 69263
		ENSRNOT000000		ENSRNOG00	

Position	Assay	Name	Symbol	Ensembl ID	Description
C11	SBR1147710	021538.7	Msh2	000015796	mutS homolog 2 Source RGD Symbol Acc 620786
C12	SBR1193318	ENSRNOT0000018449.7	Msh3	ENSRNOG0000013673	mutS homolog 3 Source RGD Symbol Acc 1563954
D01	SBR1145468	ENSRNOT00000060762.2	Msh5	ENSRNOG0000000857	mutS homolog 5 Source RGD Symbol Acc 1303008
D02	SBR1141838	ENSRNOT00000028015.6	Mus81	ENSRNOG0000020617	MUS81 structure-specific endonuclease subunit Source RGD Symbol Acc 1311957
D03	SBR1132941	ENSRNOT00000024375.6	Mutyh	ENSRNOG0000017887	mutY DNA glycosylase Source RGD Symbol Acc 620045
D04	SBR1203444	ENSRNOT00000058645.1	Neil1	ENSRNOG0000018577	nei-like DNA glycosylase 1 Source RGD Symbol Acc 1306077
D05	SBR1099949	ENSRNOT00000014198.4	Neil2	ENSRNOG0000010696	nei-like DNA glycosylase 2 Source RGD Symbol Acc 1312033
D06	SBR1102543	ENSRNOT00000024444.5	Nhej1	ENSRNOG0000018162	nonhomologous end-joining factor 1 Source RGD Symbol Acc 1359338
D07	SBR1131490	ENSRNOT00000016490.6	Nth1	ENSRNOG0000012213	nth-like DNA glycosylase 1 Source RGD Symbol Acc 1309289
D08	SBR1160838	ENSRNOT00000085766.1	Ogg1	ENSRNOG0000052140	8-oxoguanine DNA glycosylase Source RGD Symbol Acc 621168
D09	SBR1161994	ENSRNOT00000004232.5	Parp1	ENSRNOG0000003084	poly (ADP-ribose) polymerase 1 Source RGD Symbol Acc 2053
D10	SBR1191091	ENSRNOT00000011840.6	Parp2	ENSRNOG0000008892	poly (ADP-ribose) polymerase 2 Source RGD Symbol Acc 1310568
D11	SBR1155572	ENSRNOT00000017224.6	Parp3	ENSRNOG0000012865	poly (ADP-ribose) polymerase family, member 3 Source RGD Symbol Acc 1305189
D12	SBR1152147	ENSRNOT00000043714.4	Pms1	ENSRNOG0000004076	PMS1 homolog 1, mismatch repair system component Source RGD Symbol Acc 1359511
E01	SBR1167831	ENSRNOT00000078603.2	Pms2	ENSRNOG0000001040	PMS1 homolog 2, mismatch repair system component Source RGD Symbol Acc 1305483
E02	SBR1208548	ENSRNOT00000051640.2	Pnkp	ENSRNOG0000020318	polynucleotide kinase 3 -phosphatase Source RGD Symbol Acc 1303331
E03	SBR1214858	ENSRNOT00000026039.5	Polb	ENSRNOG0000019150	DNA polymerase beta Source RGD Symbol Acc 3363
E04	SBR1146009	ENSRNOT00000024875.6	Pold3	ENSRNOG0000018411	DNA polymerase delta 3, accessory subunit Source RGD Symbol Acc 1312027
E05	SBR1184533	ENSRNOT00000023137.5	Poll	ENSRNOG0000016748	DNA polymerase lambda Source RGD Symbol Acc 1308053
E06	SBR1128961	ENSRNOT00000035247.7	Prkdc	ENSRNOG0000025028	protein kinase, DNA-activated, catalytic subunit Source RGD Symbol Acc 1308982
E07	SBR1142157	ENSRNOT00000066468.2	Rad18	ENSRNOG0000005907	RAD18 E3 ubiquitin protein ligase Source RGD Symbol Acc 1306993
E08	SBR1105130	ENSRNOT00000006209.5	Rad21	ENSRNOG0000004420	RAD21 cohesin complex component Source RGD Symbol Acc 1594529
E09	SBR1105216	ENSRNOT00000084123.1	Rad23a	ENSRNOG0000003026	RAD23 homolog A, nucleotide excision repair protein Source RGD Symbol Acc 1309899
E10	SBR1215319	ENSRNOT00000021629.6	Rad23b	ENSRNOG0000016137	RAD23 homolog B, nucleotide excision repair protein Source RGD Symbol Acc 1562958
E11	SBR1097975	ENSRNOT00000063772.2	Rad50	ENSRNOG0000033065	RAD50 double strand break repair protein Source RGD Symbol Acc 621542
E12	SBR1098144	ENSRNOT00000056432.2	Rad51	ENSRNOG0000037302	RAD51 recombinase Source RGD Symbol Acc 1563603
F01	SBR1110714	ENSRNOT00000008846.5	Rad51c	ENSRNOG0000006661	RAD51 paralog C Source RGD Symbol Acc 1563765
F02	SBR1168219	ENSRNOT00000038376.5	Rad51d	ENSRNOG0000021780	RAD51 paralog D Source RGD Symbol Acc 1306944
F03	SBR1138420	ENSRNOT00000076062.2	Rad52	ENSRNOG0000009742	RAD52 homolog, DNA repair protein Source RGD Symbol Acc 1304975
F04	SBR1174851	ENSRNOT00000018004.5	Rad54l	ENSRNOG0000013148	RAD54 like Source RGD Symbol Acc 1310600
F05	SBR1140633	ENSRNOT00000048454.3	Rad9b	ENSRNOG0000021480	RAD9 checkpoint clamp component B Source RGD Symbol Acc 1308223
F06	SBR1152190	ENSRNOT00000003907.7	Rfc1	ENSRNOG0000002855	replication factor C subunit 1 Source RGD Symbol Acc 620619
F07	SBR1146839	ENSRNOT00000090262.1	Rpa1	ENSRNOG0000003123	replication protein A1 Source RGD Symbol Acc 1307376
F08	SBR1178134	ENSRNOT00000011123.5	Rpa3	ENSRNOG0000008309	replication protein A3 Source RGD Symbol Acc 1306810
F09	SBR1129570	ENSRNOT00000015495.5	Slk	ENSRNOG0000011339	STE20-like kinase Source RGD Symbol Acc 3780
F10	SBR1114425	ENSRNOT00000055290.1	Smug1	ENSRNOG0000036842	single-strand-selective monofunctional uracil-DNA glycosylase 1 Source RGD Symbol Acc 631403

Position	Assay	Name	Symbol	Ensembl ID	Description
F11	SBR1186430	ENSRNOT00000034213.5	Tdg	ENSRNOG0000027124	thymine-DNA glycosylase Source RGD Symbol Acc 620959
F12	SBR1117437	ENSRNOT00000068351.3	Top3a	ENSRNOG0000005099	DNA topoisomerase III alpha Source RGD Symbol Acc 1309320
G01	SBR1119220	ENSRNOT00000002524.5	Top3b	ENSRNOG0000001845	DNA topoisomerase III beta Source RGD Symbol Acc 1309468
G02	SBR1116820	ENSRNOT00000033719.5	Trex1	ENSRNOG0000022540	three prime repair exonuclease 1 Source RGD Symbol Acc 1311998
G03	SBR1206022	ENSRNOT00000081973.1	Trex2	ENSRNOG0000056983	three prime repair exonuclease 2 Source RGD Symbol Acc 1562245
G04	SBR1130541	ENSRNOT00000056865.3	Ung	ENSRNOG0000000692	uracil-DNA glycosylase Source RGD Symbol Acc 1307200
G05	SBR1149064	ENSRNOT00000001309.4	Xab2	ENSRNOG0000000988	XPA binding protein 2 Source RGD Symbol Acc 621217
G06	SBR1133388	ENSRNOT00000011490.3	Xpc	ENSRNOG0000008274	XPC complex subunit, DNA damage recognition and repair factor Source RGD Symbol Acc 1305760
G07	SBR1170337	ENSRNOT00000027057.5	Xrcc1	ENSRNOG0000019915	X-ray repair cross complementing 1 Source RGD Symbol Acc 619823
G08	SBR1109147	ENSRNOT00000010025.7	Xrcc2	ENSRNOG0000007493	X-ray repair cross complementing 2 Source RGD Symbol Acc 1564823
G09	SBR1157632	ENSRNOT00000045850.2	Xrcc4	ENSRNOG0000029966	X-ray repair cross complementing 4 Source RGD Symbol Acc 1359573
G10	SBR1103076	ENSRNOT00000021656.4	Xrcc5	ENSRNOG0000016105	X-ray repair cross complementing 5 Source RGD Symbol Acc 3976
G11	SBR1106897	ENSRNOT00000008819.7	Xrcc6	ENSRNOG0000006392	X-ray repair cross complementing 6 Source RGD Symbol Acc 2643
G12	SBR1205611	ENSRNOT00000074743.1	Atp23	ENSRNOG0000045629	ATP23 metalloproteinase and ATP synthase assembly factor homolog Source RGD Symbol Acc 1588587
H01	SBR1220567	ENSRNOT00000042459.4	Actb	ENSRNOG0000034254	actin, beta Source RGD Symbol Acc 628837
H02	SBR1220568	ENSRNOT00000023017.5	B2m	ENSRNOG0000017123	beta-2 microglobulin Source RGD Symbol Acc 2189
H03	SBR1225377	ENSRNOT00000065935.3	Hprt1	ENSRNOG0000048561	hypoxanthine phosphoribosyltransferase 1 Source RGD Symbol Acc 2826
H04	SBR1122313	ENSRNOT00000017468.2	Ldha	ENSRNOG0000013009	lactate dehydrogenase A Source RGD Symbol Acc 2996
H05	SBR1220572	ENSRNOT00000018820.5	Rplp1	ENSRNOG0000013874	ribosomal protein lateral stalk subunit P1 Source RGD Symbol Acc 621774
H06	SBR1218555	Sybr_RGDC	RGDC	Sybr_RGDC	Rat 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.

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