

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

## Human Drug Metabolism: Phase I Enzymes

Cat. no. 249950 SBHS-069ZA

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	AANAT	ACSL1	ACSL3	ACSL4	ACSM1	ACSM2B	ACSM3	AGXT	AS3MT	ASMT	BAAT	KYAT1
B	CES1	CES2	CES3	CES5A	CHST7	COMT	DDOST	EPHX1	EPHX2	GALNT1	GALNT4	GAMT
C	GCNT1	GLYAT	GNMT	GSTA1	GSTA3	GSTA4	GSTA5	GSTK1	GSTM2	GSTM3	GSTM4	GSTM5
D	GSTO1	GSTO2	GSTP1	GSTT2	HNMT	INMT	MGAT1	MGAT2	MGST1	MGST2	MGST3	NAA20
E	NAT1	NAT2	NNMT	NQO1	NQO2	PNMT	POMGNT1	PTGES	SAT1	SULT1A1	SULT1A2	SULT1B1
F	SULT1C2	SULT1C3	SULT1C4	SULT1E1	SULT2A1	SULT2B1	SULT4A1	SULT6B1	TPMT	TST	UGCG	UGT1A1
G	UGT1A4	UGT1A9	UGT2A1	UGT2A3	UGT2B10	UGT2B17	UGT2B28	UGT2B4	UGT2B7	UGT3A1	UGT8	XDH
H	ACTB	B2M	GAPDH	HPRT1	RPLP0	HGDC	QIC	QIC	QIC	PPC	PPC	PPC

## Gene table: QuantiNova LNA PCR Focus Panel

Position	Assay	Name	Symbol	Ensembl ID	Description
A01	SBH0305086	ENST00000392492.7	AANAT	ENSG00000129673	aralkylamine N-acetyltransferase Source HGNC Symbol Acc HGNC 19
A02	SBH0588811	ENST00000505492.1	ACSL1	ENSG00000151726	acyl-CoA synthetase long chain family member 1 Source HGNC Symbol Acc HGNC 3569
A03	SBH1219721	ENST00000413316.1	ACSL3	ENSG00000123983	acyl-CoA synthetase long chain family member 3 Source HGNC Symbol Acc HGNC 3570
A04	SBH0030689	ENST00000348502.10	ACSL4	ENSG00000068366	acyl-CoA synthetase long chain family member 4 Source HGNC Symbol Acc HGNC 3571
A05	SBH0205284	ENST00000519745.5	ACSM1	ENSG00000166743	acyl-CoA synthetase medium chain family member 1 Source HGNC Symbol Acc HGNC 18049
A06	SBH0270732	ENST00000414188.6	ACSM2B	ENSG00000066813	acyl-CoA synthetase medium chain family member 2B Source HGNC Symbol Acc HGNC 30931
A07	SBH0585903	ENST00000567387.5	ACSM3	ENSG00000005187	acyl-CoA synthetase medium chain family member 3 Source HGNC Symbol Acc HGNC 10522
A08	SBH0349249	ENST00000476698.1	AGXT	ENSG00000172482	alanine-glyoxylate and serine-pyruvate aminotransferase Source HGNC Symbol Acc HGNC 341
A09	SBH0383617	ENST00000369880.8	AS3MT	ENSG00000214435	arsenite methyltransferase Source HGNC Symbol Acc HGNC 17452
A10	SBH0160479	ENST00000381241.9	ASMT	ENSG00000196433	acetylserotonin O-methyltransferase Source HGNC Symbol Acc HGNC 750
A11	SBH0264528	ENST00000259407.6	BAAT	ENSG00000136881	bile acid-CoA amino acid N-acyltransferase Source HGNC Symbol Acc HGNC 932
A12	SBH0546039	ENST00000483599.5	KYAT1	ENSG00000171097	kynurenine aminotransferase 1 Source HGNC Symbol Acc HGNC 1564
B01	SBH0174091	ENST00000566555.1	CES1	ENSG00000198848	carboxylesterase 1 Source HGNC Symbol Acc HGNC 1863
B02	SBH0162572	ENST00000568470.6	CES2	ENSG00000172831	carboxylesterase 2 Source HGNC Symbol Acc HGNC 1864
B03	SBH0536541	ENST00000566453.1	CES3	ENSG00000172828	carboxylesterase 3 Source HGNC Symbol Acc HGNC 1865
B04	SBH0177902	ENST00000544479.1	CES5A	ENSG00000159398	carboxylesterase 5A Source HGNC Symbol Acc HGNC 26459
B05	SBH0067392	ENST00000276055.3	CHST7	ENSG00000147119	carbohydrate sulfotransferase 7 Source HGNC Symbol Acc HGNC 13817
B06	SBH0154349	ENST00000361682.10	COMT	ENSG00000093010	catechol-O-methyltransferase Source HGNC Symbol Acc HGNC 2228
B07	SBH0016785	ENST00000375048.7	DDOST	ENSG00000244038	dolichyl-diphosphooligosaccharide--protein glycosyltransferase non-catalytic subunit Source HGNC Symbol Acc HGNC 2728
B08	SBH0018937	ENST00000614058.4	EPHX1	ENSG00000143819	epoxide hydrolase 1 Source HGNC Symbol Acc HGNC 3401
B09	SBH0538671	ENST00000521400.5	EPHX2	ENSG00000120915	epoxide hydrolase 2 Source HGNC Symbol Acc HGNC 3402
B10	SBH0075206	ENST00000591081.1	GALNT1	ENSG00000141429	polypeptide N-acetylgalactosaminyltransferase 1 Source HGNC Symbol Acc HGNC 4123
B11	SBH0271630	ENST00000529983.3	GALNT4	ENSG00000257594	polypeptide N-acetylgalactosaminyltransferase 4 Source HGNC Symbol Acc HGNC 4126
B12	SBH0076307	ENST00000252288.7	GAMT	ENSG00000130005	guanidinoacetate N-methyltransferase Source HGNC Symbol Acc HGNC 4136
C01	SBH0622964	ENST00000442371.5	GCNT1	ENSG00000187210	glucosaminyl (N-acetyl) transferase 1 Source HGNC Symbol Acc HGNC 4203
C02	SBH0095909	ENST00000611865.4	GLYAT	ENSG00000149124	glycine-N-acyltransferase Source HGNC Symbol Acc HGNC 13734
C03	SBH0180972	ENST00000372808.4	GNMT	ENSG00000124713	glycine N-methyltransferase Source HGNC Symbol Acc HGNC 4415
C04	SBH0553573	ENST00000476213.1	GSTA1	ENSG00000243955	glutathione S-transferase alpha 1 Source HGNC Symbol Acc HGNC 4626
C05	SBH0220322	ENST00000370968.5	GSTA3	ENSG00000174156	glutathione S-transferase alpha 3 Source HGNC Symbol Acc HGNC 4628
C06	SBH0520395	ENST00000477599.5	GSTA4	ENSG00000170899	glutathione S-transferase alpha 4 Source HGNC Symbol Acc HGNC 4629
C07	SBH0441013	ENST00000284562.6	GSTA5	ENSG00000182793	glutathione S-transferase alpha 5 Source HGNC Symbol Acc HGNC 19662
C08	SBH0117412	ENST00000442394.5	GSTK1	ENSG00000197448	glutathione S-transferase kappa 1 Source HGNC Symbol Acc HGNC 16906
C09	SBH0643696	ENST00000460717.7	GSTM2	ENSG00000213366	glutathione S-transferase mu 2 Source HGNC Symbol Acc HGNC 4634
C10	SBH0414055	ENST00000488824.1	GSTM3	ENSG00000134202	glutathione S-transferase mu 3 Source HGNC Symbol Acc HGNC 4635
		ENST00000369		ENSG000000	

Position	Assay	Name	Symbol	Ensembl ID	Description
C11	SBH0414886	836.9	GSTM4	168765	glutathione S-transferase mu 4 Source HGNC Symbol Acc HGNC 4636
C12	SBH0426044	ENST00000256593.8	GSTM5	ENSG00000134201	glutathione S-transferase mu 5 Source HGNC Symbol Acc HGNC 4637
D01	SBH0200686	ENST00000369710.8	GSTO1	ENSG00000148834	glutathione S-transferase omega 1 Source HGNC Symbol Acc HGNC 13312
D02	SBH0073551	ENST00000450629.6	GSTO2	ENSG00000065621	glutathione S-transferase omega 2 Source HGNC Symbol Acc HGNC 23064
D03	SBH1220043	ENST00000642444.1	GSTP1	ENSG00000084207	glutathione S-transferase pi 1 Source HGNC Symbol Acc HGNC 4638
D04	SBH0441561	ENST00000621118.4	GSTT2	ENSG00000099984	glutathione S-transferase theta 2 (gene/pseudogene) Source HGNC Symbol Acc HGNC 4642
D05	SBH0356932	ENST00000480534.1	HNMT	ENSG00000150540	histamine N-methyltransferase Source HGNC Symbol Acc HGNC 5028
D06	SBH0560411	ENST00000484180.1	INMT	ENSG00000241644	indolethylamine N-methyltransferase Source HGNC Symbol Acc HGNC 6069
D07	SBH0477372	ENST00000446023.6	MGAT1	ENSG00000131446	mannosyl (alpha-1,3-)-glycoprotein beta-1,2-N-acetylglucosaminyltransferase Source HGNC Symbol Acc HGNC 7044
D08	SBH0635720	ENST00000305386.3	MGAT2	ENSG00000168282	mannosyl (alpha-1,6-)-glycoprotein beta-1,2-N-acetylglucosaminyltransferase Source HGNC Symbol Acc HGNC 7045
D09	SBH0489479	ENST00000396210.8	MGST1	ENSG00000008394	microsomal glutathione S-transferase 1 Source HGNC Symbol Acc HGNC 7061
D10	SBH0016875	ENST00000506797.5	MGST2	ENSG00000085871	microsomal glutathione S-transferase 2 Source HGNC Symbol Acc HGNC 7063
D11	SBH1220211	ENST00000367888.8	MGST3	ENSG00000143198	microsomal glutathione S-transferase 3 Source HGNC Symbol Acc HGNC 7064
D12	SBH0564500	ENST00000463154.5	NAA20	ENSG00000173418	N(alpha)-acetyltransferase 20, NatB catalytic subunit Source HGNC Symbol Acc HGNC 15908
E01	SBH0033903	ENST00000307719.9	NAT1	ENSG00000171428	N-acetyltransferase 1 Source HGNC Symbol Acc HGNC 7645
E02	SBH0165670	ENST00000520116.1	NAT2	ENSG00000156006	N-acetyltransferase 2 Source HGNC Symbol Acc HGNC 7646
E03	SBH0168465	ENST00000299964.3	NNMT	ENSG00000166741	nicotinamide N-methyltransferase Source HGNC Symbol Acc HGNC 7861
E04	SBH1220279	ENST00000320623.10	NQO1	ENSG00000181019	NAD(P)H quinone dehydrogenase 1 Source HGNC Symbol Acc HGNC 2874
E05	SBH0470484	ENST00000338130.6	NQO2	ENSG00000124588	N-ribosyl-dihydro-nicotinamide quinone reductase 2 Source HGNC Symbol Acc HGNC 7856
E06	SBH0398860	ENST00000269582.2	PNMT	ENSG00000141744	phenylethanolamine N-methyltransferase Source HGNC Symbol Acc HGNC 9160
E07	SBH0127825	ENST00000371992.1	POMGNT1	ENSG00000085998	protein O-linked mannose N-acetylglucosaminyltransferase 1 (beta 1,2-) Source HGNC Symbol Acc HGNC 19139
E08	SBH0544203	ENST00000340607.5	PTGES	ENSG00000148344	prostaglandin E synthase Source HGNC Symbol Acc HGNC 9599
E09	SBH0302199	ENST00000379254.5	SAT1	ENSG00000130066	spermidine/spermine N1-acetyltransferase 1 Source HGNC Symbol Acc HGNC 10540
E10	SBH0298008	ENST00000569554.5	SULT1A1	ENSG00000196502	sulfotransferase family 1A member 1 Source HGNC Symbol Acc HGNC 11453
E11	SBH0170794	ENST00000533150.5	SULT1A2	ENSG00000197165	sulfotransferase family 1A member 2 Source HGNC Symbol Acc HGNC 11454
E12	SBH0563936	ENST00000512870.1	SULT1B1	ENSG00000173597	sulfotransferase family 1B member 1 Source HGNC Symbol Acc HGNC 17845
F01	SBH0367599	ENST00000326853.9	SULT1C2	ENSG00000198203	sulfotransferase family 1C member 2 Source HGNC Symbol Acc HGNC 11456
F02	SBH0458848	ENST00000329106.2	SULT1C3	ENSG00000196228	sulfotransferase family 1C member 3 Source HGNC Symbol Acc HGNC 33543
F03	SBH0212628	ENST00000494122.1	SULT1C4	ENSG00000198075	sulfotransferase family 1C member 4 Source HGNC Symbol Acc HGNC 11457
F04	SBH0463439	ENST00000226444.4	SULT1E1	ENSG00000109193	sulfotransferase family 1E member 1 Source HGNC Symbol Acc HGNC 11377
F05	SBH0617470	ENST00000222002.4	SULT2A1	ENSG00000105398	sulfotransferase family 2A member 1 Source HGNC Symbol Acc HGNC 11458
F06	SBH0241404	ENST00000323090.4	SULT2B1	ENSG00000088002	sulfotransferase family 2B member 1 Source HGNC Symbol Acc HGNC 11459
F07	SBH0652363	ENST00000432404.5	SULT4A1	ENSG00000130540	sulfotransferase family 4A member 1 Source HGNC Symbol Acc HGNC 14903
F08	SBH0453510	ENST00000535679.5	SULT6B1	ENSG00000138068	sulfotransferase family 6B member 1 Source HGNC Symbol Acc HGNC 33433
F09	SBH0584603	ENST00000309983.5	TPMT	ENSG00000137364	thiopurine S-methyltransferase Source HGNC Symbol Acc HGNC 12014
F10	SBH0621894	ENST00000622841.1	TST	ENSG00000128311	thiosulfate sulfurtransferase Source HGNC Symbol Acc HGNC 12388

Position	Assay	Name	Symbol	Ensembl ID	Description
F11	SBH0041037	ENST00000495085.1	UGCG	ENSG00000148154	UDP-glucose ceramide glucosyltransferase Source HGNC Symbol Acc HGNC 12524
F12	SBH0460858	ENST00000305208.9	UGT1A1	ENSG00000241635	UDP glucuronosyltransferase family 1 member A1 Source HGNC Symbol Acc HGNC 12530
G01	SBH0112383	ENST00000373409.7	UGT1A4	ENSG00000244474	UDP glucuronosyltransferase family 1 member A4 Source HGNC Symbol Acc HGNC 12536
G02	SBH0317034	ENST00000354728.5	UGT1A9	ENSG00000241119	UDP glucuronosyltransferase family 1 member A9 Source HGNC Symbol Acc HGNC 12541
G03	SBH0616884	ENST00000503640.5	UGT2A1	ENSG00000173610	UDP glucuronosyltransferase family 2 member A1 complex locus Source HGNC Symbol Acc HGNC 12542
G04	SBH0578439	ENST00000503012.1	UGT2A3	ENSG00000135220	UDP glucuronosyltransferase family 2 member A3 Source HGNC Symbol Acc HGNC 28528
G05	SBH0387685	ENST00000265403.12	UGT2B10	ENSG00000109181	UDP glucuronosyltransferase family 2 member B10 Source HGNC Symbol Acc HGNC 12544
G06	SBH0584258	ENST00000317746.2	UGT2B17	ENSG00000197888	UDP glucuronosyltransferase family 2 member B17 Source HGNC Symbol Acc HGNC 12547
G07	SBH0469582	ENST00000335568.9	UGT2B28	ENSG00000135226	UDP glucuronosyltransferase family 2 member B28 Source HGNC Symbol Acc HGNC 13479
G08	SBH0267583	ENST00000502655.5	UGT2B4	ENSG00000156096	UDP glucuronosyltransferase family 2 member B4 Source HGNC Symbol Acc HGNC 12553
G09	SBH0611250	ENST00000509763.1	UGT2B7	ENSG00000171234	UDP glucuronosyltransferase family 2 member B7 Source HGNC Symbol Acc HGNC 12554
G10	SBH0145620	ENST00000625798.2	UGT3A1	ENSG00000145626	UDP glycosyltransferase family 3 member A1 Source HGNC Symbol Acc HGNC 26625
G11	SBH0143398	ENST00000310836.11	UGT8	ENSG00000174607	UDP glycosyltransferase 8 Source HGNC Symbol Acc HGNC 12555
G12	SBH0661683	ENST00000379416.4	XDH	ENSG00000158125	xanthine dehydrogenase Source HGNC Symbol Acc HGNC 12805
H01	SBH1220543	ENST00000646664.1	ACTB	ENSG00000075624	actin beta Source HGNC Symbol Acc HGNC 132
H02	SBH1220550	ENST00000558401.6	B2M	ENSG00000166710	beta-2-microglobulin Source HGNC Symbol Acc HGNC 914
H03	SBH1220545	ENST00000396861.5	GAPDH	ENSG00000111640	glyceraldehyde-3-phosphate dehydrogenase Source HGNC Symbol Acc HGNC 4141
H04	SBH1220546	ENST00000298556.8	HPRT1	ENSG00000165704	hypoxanthine phosphoribosyltransferase 1 Source HGNC Symbol Acc HGNC 5157
H05	SBH1220553	ENST00000546989.5	RPLP0	ENSG00000089157	ribosomal protein lateral stalk subunit P0 Source HGNC Symbol Acc HGNC 10371
H06	SBH1218553	Sybr_HGDC	HGDC	Sybr_HGDC	Human 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 $\mu$ l reactions: 20 $\mu$ l 8x gDNA Removal Mix, 10 $\mu$ l Reverse Transcription Enzyme, 40 $\mu$ l Reverse Transcription Mix (containing RT primers), 20 $\mu$ l Internal Control RNA, 1.9 ml RNase-Free Water	205410
QuantiNova SYBR Green RT-PCR Kit (100)*	For 100 x 20 $\mu$ l reactions: 1 ml QuantiNova SYBR Green RT-PCR Master Mix, 20 $\mu$ l QuantiNova SYBR Green RT Mix, 20 $\mu$ l Internal Control RNA, 500 $\mu$ l Yellow Template Dilution Buffer, 250 $\mu$ l ROX Reference Dye, 1.9 $\mu$ l RNase-Free Water	208152
QuantiNova SYBR Green PCR Kit (100)*	For 100 x 20 $\mu$ l reactions: 1 ml 2x QuantiNova SYBR Green PCR Master Mix, 500 $\mu$ l QuantiNova Yellow Template Dilution Buffer, 250 $\mu$ l 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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