

Supplementary materials

Table 1. Functional enrichment analysis of up-regulated genes in subtype ER+PR-

qpid	val_avg	jac_avg	Description	gene name
sp Q9H8P0 PORED_HUMAN	0.261778	0.005314	Polyprenal reductase	SRD5A3
sp Q9H2X9 S12A5_HUMAN	0.080137	1.39E-05	Solute carrier family 12 member 5	SLC12A5
sp Q9H2X9 S12A5_HUMAN	0.001912	4.88E-06	Electroneutral potassium-chloride cotransporter 2	SLC12A5
sp Q9HCC8 GDPD2_HUMAN	0.073513	1.78E-05	Glycerophosphodiester phosphodiesterase domain containing 2	GDPD2
sp Q9HCC8 GDPD2_HUMAN	0.017989	0.000679	Glycerophosphoinositol inositolphosphodiesterase GDPD2	GDPD2
sp Q9HCC8 GDPD2_HUMAN	0	0	GP-PDE domain-containing protein	GDPD2
sp Q6PI48 SYDM_HUMAN	0.178078	1.35E-05	Aspartyl-tRNA synthetase 2, mitochondrial	DARS2
sp Q6PI48 SYDM_HUMAN	0.033455	9.79E-06	Aminoacyl-transfer RNA synthetases class-II family profile domain-containing protein	DARS2
sp Q6PI48 SYDM_HUMAN	0.004787	1.83E-05	SYDM protein (Fragment)	DARS2
sp Q6PI48 SYDM_HUMAN	0.010641	5.79E-07	cDNA FLJ76156, highly similar to Homo sapiens aspartyl-tRNA synthetase 2 (DARS2), mRNA	DARS2
sp Q6PI48 SYDM_HUMAN	0.002404	8.19E-10	Aspartate--tRNA ligase	DARS2
sp Q17RW2 COOA1_HUMAN	0.045341	0.000108	Collagen type XXIV alpha 1 chain	COL24A1
sp Q17RW2 COOA1_HUMAN	0.091872	2.32E-07	Collagen, type XXIV, alpha 1	COL24A1
sp Q17RW2 COOA1_HUMAN	0.021748	1.13E-05	Fibrillar collagen NC1 domain-containing protein	COL24A1
sp Q17RW2 COOA1_HUMAN	0	0	Thrombospondin-like N-terminal domain-containing protein	COL24A1
sp Q9UBS9 SUCCO_HUMAN	0.035423	0.000106	SUCO isoform 1	SUCO
sp Q9UBS9 SUCCO_HUMAN	0.0226	7.03E-05	Protein osteopotential homolog isoform 1	SUCO
sp Q9UBS9 SUCCO_HUMAN	0.070441	0.000947	SUN domain containing ossification factor	SUCO
sp Q969P0 IGSF8_HUMAN	0.16399	6.68E-05	Immunoglobulin superfamily member 8	IGSF8
sp Q969P0 IGSF8_HUMAN	0	0	Ig-like domain-containing protein	IGSF8
sp Q9HB65 ELL3_HUMAN	0.065664	0.000669	Elongation factor for RNA polymerase II 3	ELL3
sp Q9HB65 ELL3_HUMAN	0.004573	2.46E-05	OCEL domain-containing protein	ELL3
sp Q96NN9 AIFM3_HUMAN	0.077767	8.07E-05	Apoptosis inducing factor mitochondria associated 3	AIFM3

sp Q96NN9 AIFM3_HUMAN	0.024134	3.28E-07	Apoptosis-inducing factor 3	AIFM3
sp Q96NN9 AIFM3_HUMAN	0.005225	3.00E-07	Leucine zipper like post translational regulator 1	AIFM3
sp Q96NN9 AIFM3_HUMAN	0.004162	4.25E-09	Leucine-zipper-like transcriptional regulator 1	AIFM3
sp Q96NN9 AIFM3_HUMAN	0.005481	3.19E-07	Rieske domain-containing protein	AIFM3
sp P47736 RPGP1_HUMAN	0.092162	0.000421	RAP1 GTPase activating protein	RAP1GAP
sp P47736 RPGP1_HUMAN	0.010954	3.79E-07	Ubiquitin specific peptidase 48	RAP1GAP
sp P47736 RPGP1_HUMAN	0	0	Rap-GAP domain-containing protein	RAP1GAP
sp Q96A54 PAQR1_HUMAN	0.190279	0.001771	Adiponectin receptor 1	ADIPOR1
sp P12532 KCRU_HUMAN	0.159489	0.000849	Creatine kinase U-type, mitochondrial	
sp Q8TBX8 PI42C_HUMAN	0.252524	8.76E-05	Phosphatidylinositol 5-phosphate 4-kinase type-2 gamma	PIP4K2C
sp Q9BVG3 TRI62_HUMAN	0.06345	0.003103	E3 ubiquitin-protein ligase TRIM62	TRIM62
sp Q9BVG3 TRI62_HUMAN	0.052285	5.30E-05	Tripartite motif containing 62	TRIM62
sp Q9BVG3 TRI62_HUMAN	0.031145	2.15E-06	RING-type E3 ubiquitin transferase	TRIM62
sp P12830 CADH1_HUMAN	0.00581	2.57E-07	Cadherin-1	CDH1
sp Q99856 ARI3A_HUMAN	0.25364	0.001056	AT-rich interactive domain-containing protein 3	ARID3A
sp Q7Z403 TMC6_HUMAN	0.549173	5.41E-05	Transmembrane channel-like protein	TMC6
sp P58417 NXPH1_HUMAN	0.230761	0.003076	Neurexophilin	NXPH1
sp Q9UBB6 NCDN_HUMAN	0.495046	0.022698	Neurochondrin	NCDN
sp Q00610 CLH1_HUMAN	0.163636	0.000162	Clathrin heavy chain	CLTC
sp Q00610 CLH1_HUMAN	0.001109	5.49E-10	RNA helicase	CLTC
sp Q9Y3E5 PTH2_HUMAN	0.487229	1.19E-05	peptidyl-tRNA hydrolase	PTRH2
sp Q9Y3D9 RT23_HUMAN	0.121044	0.000141	Mitochondrial ribosomal protein S23	MRPS23
sp Q9Y3D9 RT23_HUMAN	0.039485	4.57E-05	Small ribosomal subunit protein mS23 conserved domain-containing protein	MRPS23
sp P05111 INHA_HUMAN	0.17361	0.001672	Inhibin alpha chain	INHA
sp Q5VV43 K0319_HUMAN	0.084608	0.001986	Dyslexia-associated protein KIAA0319 homolog	KIAA0319
sp Q5VV43 K0319_HUMAN	0.064807	0.000269	MANSC domain-containing protein	KIAA0319
sp Q53FV1 ORML2_HUMAN	0.009994	3.58E-06	ORMDL sphingolipid biosynthesis regulator 2	

sp Q14244 MAP7_HUMAN	0.133198	4.19E-05	Microtubule associated protein 7	MAP7
sp Q14244 MAP7_HUMAN	0.053956	7.45E-06	cDNA FLJ50557, highly similar to Homo sapiens microtubule-associated protein 7 (MAP7), mRNA	MAP7
sp Q14244 MAP7_HUMAN	0.024113	0.00025	Enscosin	MAP7
sp Q9C0D6 FHDC1_HUMAN	0.127608	0.000461	FH2 domain containing 1	FHDC1
sp Q9H6T0 ESRP2_HUMAN	0.088374	0.00019	Epithelial splicing regulatory protein 2	ESRP2
sp Q9H6T0 ESRP2_HUMAN	0.002451	8.45E-06	Putative rna-binding protein fusilli	ESRP2
sp Q9H6T0 ESRP2_HUMAN	0.013897	7.76E-07	RRM domain-containing protein	ESRP2
sp Q9UM11 FZR1_HUMAN	0.007517	5.38E-07	CDC20/Fizzy WD40 domain-containing protein	FZR1
sp Q9UM11 FZR1_HUMAN	0.053174	0.000154	Fizzy and cell division cycle 20 related 1	FZR1
sp Q9UM11 FZR1_HUMAN	0.029865	5.36E-07	Fizzy-related protein homolog isoform X1	FZR1
sp Q9UM11 FZR1_HUMAN	0.004055	1.11E-09	Fizzy-related protein like protein	FZR1
sp Q9UM11 FZR1_HUMAN	0	0	Fizzy-related protein-like protein (Fragment)	FZR1
sp Q15475 SIX1_HUMAN	0.168538	0.004459	Homeobox protein SIX1	SIX1
sp Q15475 SIX1_HUMAN	0.16628	0.000139	SIX homeobox 1	SIX1

Table 2. Functional enrichment analysis of down-regulated genes in subtype ER+PR-

qpId	val_avg	jac_avg	Description	genename
sp Q9Y4F9 RIPR2_HUMAN	0.117647	0.000825	Rho family-interacting cell polarization regulator 2	RIPOR2
sp Q86UD1 OAF_HUMAN	0.127713	0.003312	Out at first protein homolog	OAF
sp Q8IYM9 TRI22_HUMAN	0.079681	2.09E-05	Tripartite motif-containing protein 5	TRIM22
sp Q8IYM9 TRI22_HUMAN	0.02438	0.00049	E3 ubiquitin-protein ligase TRIM22	TRIM22
sp Q8IYM9 TRI22_HUMAN	0.022541	8.54E-07	RING-type E3 ubiquitin transferase	TRIM22
sp Q8NFB8 BHE22_HUMAN	0.113744	7.37E-05	Class E basic helix-loop-helix protein 22	BHLHE22
sp Q8N6G6 ATL1_HUMAN	0.191938	0.000746	ADAMTS like 1	ADAMTSL1
sp Q8N6G6 ATL1_HUMAN	0.073967	6.89E-07	ADAMTS-like protein 1	ADAMTSL1
sp Q9H4B8 DPEP3_HUMAN	0.197287	8.98E-05	Dipeptidase	DPEP3
sp Q8IZC6 COL27A1_HUMAN	0.036153	1.74E-05	Collagen type XXVII alpha 1 chain	COL27A1
sp Q8IZC6 COL27A1_HUMAN	0.044205	6.70E-08	Collagen, type XXVII, alpha 1	COL27A1

sp Q8IZC6 CORA1_HUMAN	0.001893	6.76E-07	Fibrillar collagen NC1 domain-containing protein	COL27A1
sp Q8IZO2 LRC34_HUMAN	0.082116	0.000139	Leucine rich repeat containing 34	LRR34
sp Q9UIG8 SO3A1_HUMAN	0.080697	3.98E-05	Solute carrier organic anion transporter family member	SLCO3A1
sp Q8WXF7 ATLA1_HUMAN	0.13258	0.000586	Atlustin GTPase 1	ATL1
sp Q8WXF7 ATLA1_HUMAN	0.049851	8.67E-07	Atlustin-1 isoform X1	ATL1
sp Q8WXF7 ATLA1_HUMAN	0	0	Atlustin-1	ATL1
sp Q8WXF7 ATLA1_HUMAN	0.009148	7.14E-08	GB1/RHD3-type G domain-containing protein	ATL1
sp Q9P2D8 UNC79_HUMAN	0.191011	0.0026	Unc-79 homolog, NALCN channel complex subunit	UNC79
sp Q9P2D8 UNC79_HUMAN	0	0	Unc-79 homolog	UNC79
sp P26718 NKG2D_HUMAN	0.229589	9.94E-06	NKG2-D type II integral membrane protein	KLRK1
sp Q8WV24 PHLA1_HUMAN	0.085136	2.17E-05	Pleckstrin homology like domain family A member 1	PHLDA1
sp Q8WV24 PHLA1_HUMAN	0.007131	3.25E-07	PH domain-containing protein	PHLDA1
sp Q8WV24 PHLA1_HUMAN	0.000938	1.68E-09	Putative apoptosis-associated nuclear protein (Fragment)	PHLDA1
sp Q9NTM9 CUTC_HUMAN	0.164203	0.000429	Copper homeostasis protein cutC homolog	CUTC
sp Q96Q27 ASB2_HUMAN	0.065036	5.18E-05	Ankyrin repeat and SOCS box containing 2	ASB2
sp Q6AZY7 SCAR3_HUMAN	0.073928	0.000111	Scavenger receptor class A member 3	SCARA3
sp Q9Y279 VSIG4_HUMAN	0.161116	4.15E-05	V-set and immunoglobulin domain containing 4	VSIG4
sp Q9Y279 VSIG4_HUMAN	0	0	Ig-like domain-containing protein (Fragment)	VSIG4
sp O43781 DYRK3_HUMAN	0.437943	6.57E-06	dual-specificity kinase	DYRK3
sp P34896 GLYC_HUMAN	0.297642	0.000131	Serine hydroxymethyltransferase	SHMT1
sp P34896 GLYC_HUMAN	0.148644	6.64E-06	Serine hydroxymethyltransferase, cytosolic	SHMT1
sp Q5T5U3 RHG21_HUMAN	0.1013	7.49E-05	Rho GTPase activating protein 21	ARHGAP21
sp Q9P212 PLCE1_HUMAN	0.168617	0.00011	Phosphoinositide phospholipase C	PLCE1
sp Q9P212 PLCE1_HUMAN	0.001814	4.50E-09	1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase epsilon-1	PLCE1
sp A8MVX0 ARG33_HUMAN	0.071021	4.99E-05	Rho guanine nucleotide exchange factor 33	ARHGEF33
sp A8MVX0 ARG33_HUMAN	0.00231	4.93E-07	DH domain-containing protein	ARHGEF33
sp Q9P2N2 RHG28_HUMAN	0.105158	7.06E-05	Rho GTPase activating protein 28	ARHGAP28

sp Q9P2N2 RHG28_HUMAN	0	0	Rho-GAP domain-containing protein	ARHGAP28
sp Q13133 NR1H3_HUMAN	0.075431	6.76E-06	Nuclear receptor subfamily 1 group H member 3	NR1H3
sp Q13133 NR1H3_HUMAN	0.028836	2.16E-06	Liver X receptor alpha	NR1H3
sp Q13133 NR1H3_HUMAN	0.023636	0.000194	Oxysterols receptor LXR-alpha	NR1H3
sp Q7RTM1 OTOP1_HUMAN	0.203095	0.002136	Otopetrin 1	OTOP1
sp Q7RTM1 OTOP1_HUMAN	0.022894	0.000351	Proton channel OTOP1	OTOP1
sp Q7RTM1 OTOP1_HUMAN	0	0	Otopetrin-1	OTOP1
sp P40261 NNMT_HUMAN	0.419937	0.000591	Nicotinamide N-methyltransferase	NNMT
sp P40261 NNMT_HUMAN	0.014015	3.82E-05	NNMT methyltransferase (Fragment)	NNMT
sp Q7Z2Y8 GVIN1_HUMAN	0.100994	3.36E-05	Interferon-induced very large GTPase 1-like	
sp Q7Z2Y8 GVIN1_HUMAN	0.104177	5.00E-06	VLIG-type G domain-containing protein	
sp P06870 KLK1_HUMAN	0.182806	0.001217	Kallikrein 1	KLK1
sp P06870 KLK1_HUMAN	0.000716	1.33E-09	Kallikrein-1	KLK1
sp P06870 KLK1_HUMAN	0.009549	9.67E-06	Transmembrane protein 277	KLK1
sp P06870 KLK1_HUMAN	0.023881	9.71E-07	Peptidase S1 domain-containing protein	KLK1
sp P61812 TGFB2_HUMAN	0.165659	0.000153	Transforming growth factor beta	TGFB2
sp Q6UWB1 IL27RA_HUMAN	0.099618	2.02E-05	Interleukin 27 receptor subunit alpha	IL27RA
sp Q6UWB1 IL27RA_HUMAN	0.009382	6.29E-07	Fibronectin type-III domain-containing protein	IL27RA
sp C9JRZ8 AK1B1_HUMAN	0.064965	0.000246	Aldo-keto reductase family 1 member B10	AKR1B10
sp C9JRZ8 AK1B1_HUMAN	0.019308	2.04E-06	Aldose reductase-related protein 2	AKR1B10
sp C9JRZ8 AK1B1_HUMAN	0.046023	3.70E-07	NADP-dependent oxidoreductase domain-containing protein	AKR1B10
sp C9JRZ8 AK1B1_HUMAN	0.129896	2.19E-05	Aldo-keto reductase family 1, member B19	AKR1B10
sp P49327 FASN_HUMAN	0.161812	1.67E-05	Fatty acid synthase	FASN
sp Q9Y646 CBPQ_HUMAN	0.251255	0.000222	Carboxypeptidase Q	CPQ
sp P04278 SHBG_HUMAN	0.310557	0.007089	Sex hormone-binding globulin	SHBG
sp P14222 PERF_HUMAN	0.260702	0.002376	Perforin 1	PRF1
sp P14222 PERF_HUMAN	0	0	Perforin-1	PRF1
sp P14222 PERF_HUMAN	0.017597	3.95E-08	Perforin-1 isoform X1	PRF1

sp P14222 PERF_HUMAN	0.00736 6	6.46E-05	PERF protein (Fragment)	PRF1
sp P14222 PERF_HUMAN	0.01493 6	2.94E-06	MACPF domain-containing protein	PRF1
sp Q86VZ6 JAZF1_HUMAN	0.08316 3	0.00215 3	JAZF zinc finger 1	JAZF1
sp Q86VZ6 JAZF1_HUMAN	0.06557 1	0.00082 3	Juxtaposed with another zinc finger protein 1	JAZF1
sp Q86VZ6 JAZF1_HUMAN	0	0	C2H2-type domain-containing protein	JAZF1
sp Q5VXI9 LIPN_HUMAN	0.52556 8	0.00023 3	Lipase	LIPN
sp Q5VXI9 LIPN_HUMAN	0.00127 3	7.94E-09	AB hydrolase-1 domain-containing protein (Fragment)	LIPN
sp Q7Z7K6 CENPV_HUMAN	0.19781 7	0.00024	Centromere protein V	CENPV
sp Q7Z7K6 CENPV_HUMAN	0.0068	7.48E-06	CENPV isoform 2	CENPV
sp Q7Z7K6 CENPV_HUMAN	0	0	CENP-V/GFA domain-containing protein	CENPV
sp Q9H777 RNZ1_HUMAN	0.09404 2	0.00195 1	ElaC ribonuclease Z 1	ELAC1
sp Q9H777 RNZ1_HUMAN	0.00089 9	5.28E-09	Malic enzyme 2	ELAC1
sp Q9H777 RNZ1_HUMAN	0	0	Metallo-beta-lactamase domain-containing protein	ELAC1
sp P13987 CD59_HUMAN	0.01784 8	1.95E-05	CD59 molecule (CD59 blood group)	
sp P13987 CD59_HUMAN	0	0	UPAR/Ly6 domain-containing protein	
sp Q969P5 FBX32_HUMAN	0.21739	0.00055 1	F-box only protein 32	FBXO32
sp P25445 TNR6_HUMAN	0.09391 4	6.34E-05	Tumor necrosis factor receptor superfamily member 6	FAS
sp P25445 TNR6_HUMAN	0.01909 9	5.11E-06	Fas cell surface death receptor	FAS
sp P25445 TNR6_HUMAN	0	0	TNFR-Cys domain-containing protein	FAS
sp Q8IYM2 SLN12_HUMAN	0.10153 9	0.00040 2	Schlafen family member 14	
sp Q8IYM2 SLN12_HUMAN	0.00319 5	0.00036 2	Ribonuclease SLFN12	
sp Q6Q6R5 CRIP3_HUMAN	0.19962 6	8.92E-06	Cysteine rich protein 3	CRIP3
sp Q6Q6R5 CRIP3_HUMAN	0.01057 6	7.24E-07	LIM zinc-binding domain-containing protein	CRIP3
sp Q6P5Z2 PKN3_HUMAN	0.03845 2	7.95E-07	Serine/threonine-protein kinase N3	
sp Q9UIJ7 KAD3_HUMAN	0.00512 5	8.85E-09	Adenylate kinase 3 (Fragment)	
sp P35869 AHR_HUMAN	0.16835	0.00041 3	Aryl hydrocarbon receptor	AHR
sp Q96EM0 T3HPD_HUMAN	0.42917 9	3.63E-05	trans-L-3-hydroxyproline dehydratase	L3HYPDH
sp Q13451 FKBP5_HUMAN	0.18757 4	0.00093 2	Peptidyl-prolyl cis-trans isomerase FKBP5	FKBP5
sp Q13451 FKBP5_HUMAN	0.21436 2	8.44E-05	peptidylprolyl isomerase	FKBP5

sp O75155 CAND2_HUMAN	0.073506	0.000209	Cullin associated and neddylation dissociated 2 (putative)	CAND2
sp O75155 CAND2_HUMAN	0.068311	8.29E-07	Cullin-associated NEDD8-dissociated protein 2	CAND2
sp O75155 CAND2_HUMAN	0.017458	7.15E-07	TATA-binding protein interacting (TIP20) domain-containing protein	CAND2
sp O75155 CAND2_HUMAN	0.002766	2.30E-06	Epididymis secretory sperm binding protein	CAND2
sp O75155 CAND2_HUMAN	0.002658	2.40E-07	Intraflagellar transport protein 122 homolog	CAND2
sp Q86UD5 SL9B2_HUMAN	0.054142	2.68E-05	Solute carrier family 9 member B2	SLC9B2
sp Q86UD5 SL9B2_HUMAN	0.025575	0.000213	Cation/H ⁺ exchanger transmembrane domain-containing protein	SLC9B2
sp Q86UD5 SL9B2_HUMAN	0.009622	1.39E-05	Mitochondrial sodium/hydrogen exchanger NHA2	SLC9B2
sp Q14644 RASA3_HUMAN	0.113246	0.000189	RAS p21 protein activator 3	RASA3
sp P20333 TNR1B_HUMAN	0.097751	5.34E-05	TNF receptor superfamily member 1B	TNFRSF1B
sp P20333 TNR1B_HUMAN	0	0	TNFR-Cys domain-containing protein	TNFRSF1B
sp P32456 GBP2_HUMAN	0.146525	2.33E-05	Guanylate binding protein 3	
sp P32456 GBP2_HUMAN	0.096394	3.50E-07	Interferon-induced guanylate-binding protein 2	
sp P32456 GBP2_HUMAN	0.01655	1.32E-08	Interferon-induced guanylate-binding protein 1	
sp P32456 GBP2_HUMAN	0.005096	1.76E-08	Guanylate-binding protein 2 isoform X1	
sp P32456 GBP2_HUMAN	0.040403	8.11E-07	GB1/RHD3-type G domain-containing protein	
sp P32456 GBP2_HUMAN	0.047129	1.61E-07	Guanylate-binding protein 3	
sp P19021 AMD_HUMAN	0.222414	0.001264	Peptidylglycine alpha-amidating monooxygenase	PAM
sp P19021 AMD_HUMAN	0.030363	7.66E-05	PAM isoform 1	PAM
sp P19021 AMD_HUMAN	0.139534	2.13E-05	cDNA FLJ53473, highly similar to Peptidyl-glycine alpha-amidating monooxygenase	PAM
sp Q96PD2 DCBD2_HUMAN	0.077634	0.000259	Discoidin, CUB and LCCL domain containing 2	DCBLD2
sp Q07108 CD69_HUMAN	0.048897	0.000725	Early activation antigen CD69	CD69
sp Q07108 CD69_HUMAN	0.025131	1.39E-06	C-type lectin domain-containing protein	CD69
sp Q9BWW8 APOL6_HUMAN	0.400728	0.000616	Apolipoprotein L6	APOL6
sp Q13253 NOGG_HUMAN	0.550609	0.039443	Noggin	NOG
sp Q13253 NOGG_HUMAN	0.000104	4.01E-07	NOGG protein (Fragment)	NOG
sp P34741 SDC2_HUMAN	0.471142	0.007032	Syndecan	SDC2
sp Q11203 SIAT6_HUMAN	0.124734	0.001464	ST3 beta-galactoside alpha-2,3-sialyltransferase 3	ST3GAL3

sp Q11203 SIAT6_HUMAN	0.051387	6.97E-07	CMP-N-acetylneuraminate-beta-1,4-galactoside alpha-2,3-sialyltransferase isoform X1	ST3GAL3
sp Q11203 SIAT6_HUMAN	0.088329	1.13E-06	CMP-N-acetylneuraminate-beta-1,4-galactoside alpha-2,3-sialyltransferase isoform X7	ST3GAL3
sp Q11203 SIAT6_HUMAN	0.04409	5.66E-07	CMP-N-acetylneuraminate-beta-1,4-galactoside alpha-2,3-sialyltransferase isoform X8	ST3GAL3
sp Q11203 SIAT6_HUMAN	0.006087	9.64E-08	Putative glycosyltransferase family 29	ST3GAL3
sp P27144 KAD4_HUMAN	0.1626	3.28E-05	Adenylate kinase 4, mitochondrial	AK4
sp B3EWF7 EP2A2_HUMAN	0.24984	4.44E-07	Laforin, isoform 9	
sp Q9NR56 MBNL1_HUMAN	0.089796	0.000134	Muscleblind like splicing regulator 1	MBNL1
sp Q9NR56 MBNL1_HUMAN	0.08521	1.00E-06	Muscleblind-like protein 1 isoform X2	MBNL1
sp Q9NR56 MBNL1_HUMAN	0	0	C3H1-type domain-containing protein	MBNL1
sp Q9C075 K1C23_HUMAN	0.12922	0.000187	Keratin, type I cytoskeletal 23	KRT23
sp Q9C075 K1C23_HUMAN	0.019371	1.44E-06	IF rod domain-containing protein	KRT23
sp Q9C075 K1C23_HUMAN	0.108187	0.000174	Type I keratin KA23	KRT23
sp Q9NUV9 GIMA4_HUMAN	0.153124	0.000639	GTPase, IMAP family member 4	GIMAP4
sp Q9NUV9 GIMA4_HUMAN	0.027101	5.44E-07	AI1-type G domain-containing protein	GIMAP4
sp Q6DN72 FCRL6_HUMAN	0.185303	0.000433	Fc receptor like 6	FCRL6
sp Q6DN72 FCRL6_HUMAN	0	0	Ig-like domain-containing protein (Fragment)	FCRL6
sp O43187 IRAK2_HUMAN	0.510784	7.14E-06	Interleukin-1 receptor-associated kinase-like 2	IRAK2
sp O43187 IRAK2_HUMAN	0.011483	1.54E-07	Interleukin 1 receptor associated kinase 2	IRAK2
sp Q8N140 EID3_HUMAN	0.208316	6.11E-06	EP300-interacting inhibitor of differentiation 3	EID3
sp Q07352 TISB_HUMAN	0.121347	0.00134	mRNA decay activator protein ZFP36	ZFP36L1
sp Q8NGI0 O52N2_HUMAN	0.214783	7.48E-05	Olfactory receptor	
sp Q8NGI0 O52N2_HUMAN	0.000278	6.53E-10	G-protein coupled receptors family 1 profile domain-containing protein	
sp O00300 TR11B_HUMAN	0.061575	0.000173	Tumor necrosis factor receptor superfamily member 11B	TNFRSF11B
sp O00300 TR11B_HUMAN	0	0	TNFR-Cys domain-containing protein	TNFRSF11B
sp Q8N0X4 CLYBL_HUMAN	0.090134	2.51E-06	Citramalyl-CoA lyase, mitochondrial	CLYBL
sp Q8N0X4 CLYBL_HUMAN	0.016624	2.23E-05	CLYBL isoform 1	CLYBL

sp Q8N0X4 CLYBL_HUMAN	0.149919	1.21E-05	Citramalyl-CoA lyase	CLYBL
sp Q5FYB0 ARSJ_HUMAN	0.122083	8.48E-05	Arylsulfatase family member J	ARSJ
sp Q5FYB0 ARSJ_HUMAN	0.004083	7.69E-09	Calcium/calmodulin-dependent protein kinase type II subunit delta	ARSJ
sp Q5FYB0 ARSJ_HUMAN	0.012929	6.18E-07	Sulfatase N-terminal domain-containing protein	ARSJ
sp Q17RB8 LONF1_HUMAN	0.073239	1.71E-05	LON peptidase N-terminal domain and ring finger 1	LONRF1
sp Q8IY42 CD019_HUMAN	0.11106	0.001481	PDCD10 and GCKIII kinases-associated protein 1	
sp P29466 CASP1_HUMAN	0.101646	4.30E-05	Caspase 1	CASP1
sp P29466 CASP1_HUMAN	0.07286	4.44E-05	cDNA FLJ77899, highly similar to Homo sapiens caspase 1, apoptosis-related cysteine protease(interleukin 1, beta, convertase) (CASP1), transcript variant alpha, mRNA	CASP1
sp P29466 CASP1_HUMAN	0.0019	1.75E-09	Caspase-1 isoform alpha (Fragment)	CASP1
sp Q5EBN2 TRI61_HUMAN	0.090016	2.11E-05	Tripartite motif containing 61	
sp O75916 RGS9_HUMAN	0.123837	5.22E-05	Regulator of G-protein signaling 9	RGS9
sp Q9Y5Y3 GPR45_HUMAN	0.163597	0.000186	G protein-coupled receptor 45	GPR45
sp Q9Y5Y3 GPR45_HUMAN	0.010698	9.11E-07	G-protein coupled receptors family 1 profile domain-containing protein	GPR45
sp Q9Y5Y3 GPR45_HUMAN	0.020074	8.60E-07	High-affinity lysophosphatidic acid receptor homolog	GPR45
sp O95497 VNN1_HUMAN	0.598796	0.071712	Pantetheinase	VNN1
sp P54922 ADPRH_HUMAN	0.427345	4.273446	ADP-ribosylhydrolase ARH1	ADPRH

Figure 1. Box plots of *PIP4K2C* (A), *CDH1* (B), and *CLTC* (C) expression levels in IBC, stratified by IBC molecular subtypes.

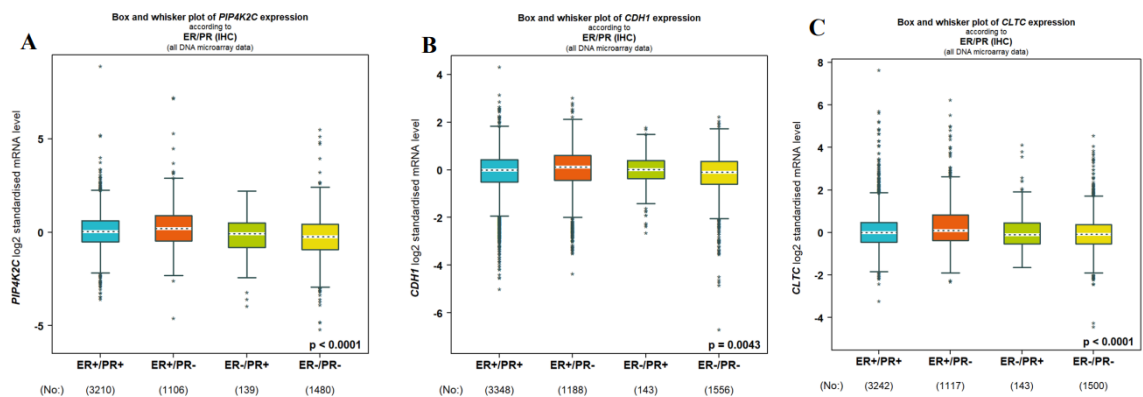


Figure 2. Box plots of *PIP4K2C* (A), *CDH1* (B) and *CLTC* (C) expressions stratified by lymph node status in IBC.

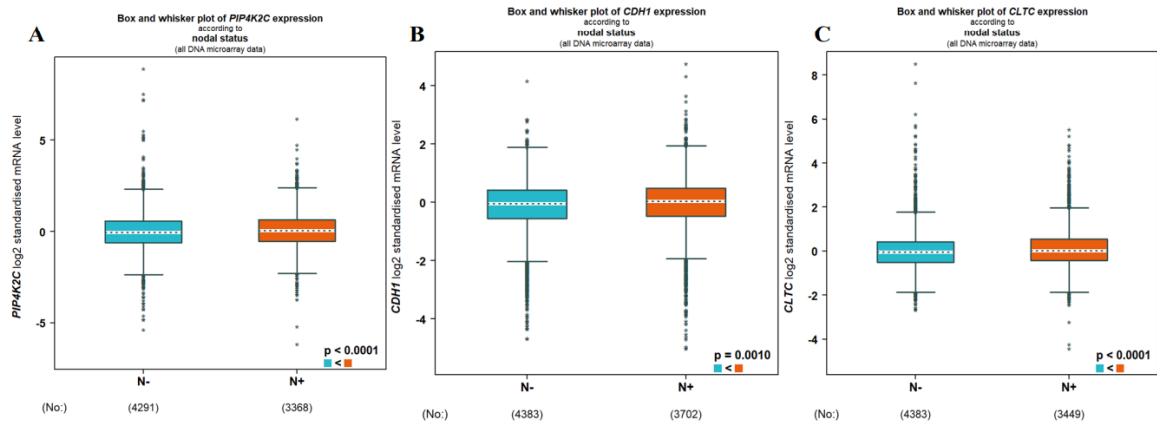


Figure 3. Box plots of *PIP4K2C* (A), *CDH1* (B) and *CLTC* (C) expressions stratified by histological subtype in IBC.

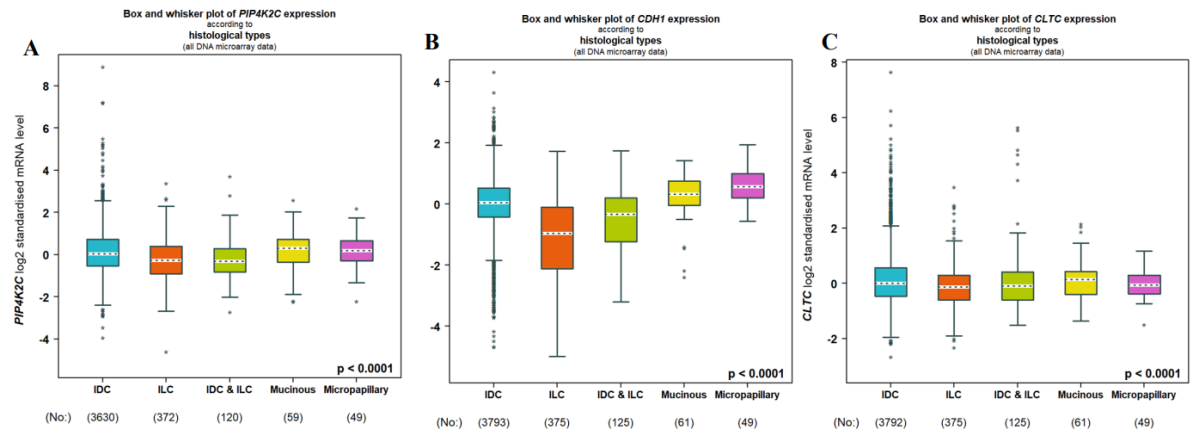


Figure 4. Box plots of *PIP4K2C* (A), *CDH1* (B) and *CLTC* (C) expressions stratified by Nottingham prognostic index.

