

## **Supplemental Material to:**

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**Acquired resistance to metformin in breast cancer cells triggers transcriptome reprogramming toward a degradome-related metastatic stem-like profile**

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**Supplementary Table 1. Gene transcripts differentially up-regulated in metformin-refractory MCF-7/MET-R cells vs. metformin-naive MCF-7 parental cells.**

<b>Symbol</b>	<b>Entrez Gene Name</b>	<b><math>\Delta</math></b>
<b>KLK11</b>	kallikrein-related peptidase 11	30,460
<b>CTSF</b>	cathepsin F	24,119
<b>TNFSF10</b>	tumor necrosis factor (ligand) superfamily, member 10	17,960
<b>TNFAIP2</b>	tumor necrosis factor, alpha-induced protein 2	13,558
<b>TMTC1</b>	transmembrane and tetratricopeptide repeat containing 1	13,390
<b>DCLK1</b>	doublecortin-like kinase 1	12,452
<b>MGLL</b>	monoglyceride lipase	12,360
<b>WISP2</b>	WNT1 inducible signaling pathway protein 2	10,812
<b>FRAS1</b>	Fraser syndrome 1	10,342
<b>CYP1B1</b>	cytochrome P450, family 1, subfamily B, polypeptide 1	10,268
<b>SUSD3</b>	sushi domain containing 3	10,089
<b>SPATS2L</b>	spermatogenesis associated, serine-rich 2-like	9,871
<b>UGT1A6</b>	UDP glucuronosyltransferase 1 family, polypeptide A6	9,710
<b>COL3A1</b>	collagen, type III, alpha 1	9,040
<b>SLC16A2</b>	solute carrier family 16, member 2 (thyroid hormone transporter)	8,509
<b>TMPRSS2</b>	transmembrane protease, serine 2	8,120
<b>SLIT2</b>	slit homolog 2 (Drosophila)	8,104
<b>RAMP3</b>	receptor (G protein-coupled) activity modifying protein 3	7,873
<b>CD44</b>	CD44 molecule (Indian blood group)	7,760
<b>AKR1C3</b>	aldo-keto reductase family 1, member C3	7,533
<b>NDRG1</b>	N-myc downstream regulated 1	7,301
<b>LXN</b>	latexin	6,865
<b>LOC440335</b>	uncharacterized LOC440335	6,704
<b>CCDC147-AS1</b>	CCDC147 antisense RNA 1 (head to head)	6,386
<b>DACH1</b>	dachshund homolog 1 (Drosophila)	6,216
<b>SCIN</b>	scinderin	6,121
<b>GPR68</b>	G protein-coupled receptor 68	6,098
<b>NMB</b>	neuromedin B	6,095
<b>ACE2</b>	angiotensin I converting enzyme (peptidyl-dipeptidase A) 2	6,093
<b>RBP7</b>	retinol binding protein 7, cellular	6,062

<b>CAMK2D</b>	calcium/calmodulin-dependent protein kinase II delta	5,990
<b>CTSH</b>	cathepsin H	5,946
<b>FRMD3</b>	FERM domain containing 3	5,694
<b>SESN3</b>	sestrin 3	5,546
<b>DHRS3</b>	dehydrogenase/reductase (SDR family) member 3	5,522
<b>KCNJ8</b>	potassium inwardly-rectifying channel, subfamily J, member 8	5,468
<b>NAPRT1</b>	nicotinate phosphoribosyltransferase domain containing 1	5,320
<b>CXCL12</b>	chemokine (C-X-C motif) ligand 12	5,260
<b>PAK6</b>	p21 protein (Cdc42/Rac)-activated kinase 6	5,192
<b>B3GNT5</b>	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 5	5,190
<b>C15orf59</b>	chromosome 15 open reading frame 59	5,136
<b>PPM1K</b>	protein phosphatase, Mg2+/Mn2+ dependent, 1K	5,121
<b>LAMA3</b>	laminin, alpha 3	5,100
<b>ACSS1</b>	acyl-CoA synthetase short-chain family member 1	5,013
<b>LINC00478</b>	long intergenic non-protein coding RNA 478	4,980
<b>MCOLN2</b>	mucolipin 2	4,864
<b>HOXB-AS1</b>	HOXB cluster antisense RNA 1	4,847
<b>MUC1</b>	mucin 1, cell surface associated	4,807
<b>CA12</b>	carbonic anhydrase XII	4,700
<b>KCNJ3</b>	potassium inwardly-rectifying channel, subfamily J, member 3	4,697
<b>TCEAL8</b>	transcription elongation factor A (SII)-like 8	4,682
<b>PSG6</b>	pregnancy specific beta-1-glycoprotein 6	4,676
<b>HPDL</b>	4-hydroxyphenylpyruvate dioxygenase-like	4,625
<b>LOC100505806</b>	uncharacterized LOC100505806	4,608
<b>NELL2</b>	NEL-like 2 (chicken)	4,417
<b>RGS16</b>	regulator of G-protein signaling 16	4,370
<b>DOCK10</b>	dedicator of cytokinesis 10	4,365
<b>AMIGO2</b>	adhesion molecule with Ig-like domain 2	4,364
<b>TBC1D9</b>	TBC1 domain family, member 9 (with GRAM domain)	4,334
<b>IGH</b>	immunoglobulin heavy locus	4,299
<b>EPAS1</b>	endothelial PAS domain protein 1	4,280
<b>CXCR7</b>	chemokine (C-X-C motif) receptor 7	4,221
<b>MMP16</b>	matrix metalloproteinase 16 (membrane-inserted)	4,218
<b>ST3GAL1</b>	ST3 beta-galactoside alpha-2,3-sialyltransferase 1	4,210
<b>DDAH1</b>	dimethylarginine dimethylaminohydrolase 1	4,185

<b>CITED4</b>	Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 4	4,042
<b>CALCR</b>	calcitonin receptor	4,042
<b>S100A8</b>	S100 calcium binding protein A8	4,007
<b>CPAMD8</b>	C3 and PZP-like, alpha-2-macroglobulin domain containing 8	3,978
<b>SIGLEC15</b>	sialic acid binding Ig-like lectin 15	3,935
<b>SLC24A3</b>	solute carrier family 24 (sodium/potassium/calcium exchanger), member 3	3,838
<b>CA2</b>	carbonic anhydrase II	3,806
<b>FBXO2</b>	F-box protein 2	3,759
<b>HMGCLL1</b>	3-hydroxymethyl-3-methylglutaryl-CoA lyase-like 1	3,758
<b>RNF145</b>	ring finger protein 145	3,715
<b>LOC100506630</b>	uncharacterized LOC100506630	3,645
<b>TSKU</b>	tsukushi, small leucine rich proteoglycan	3,643
<b>TLE4</b>	transducin-like enhancer of split 4 (E(sp1) homolog, Drosophila)	3,633
<b>SLC6A14</b>	solute carrier family 6 (amino acid transporter), member 14	3,620
<b>VLDLR</b>	very low density lipoprotein receptor	3,578
<b>CPLX3</b>	complexin 3	3,575
<b>IFFO2</b>	intermediate filament family orphan 2	3,558
<b>KANK1</b>	KN motif and ankyrin repeat domains 1	3,540
<b>SCARNA17</b>	small Cajal body-specific RNA 17	3,521
<b>TGFBI</b>	transforming growth factor, beta-induced, 68kDa	3,495
<b>FAM5C</b>	family with sequence similarity 5, member C	3,494
<b>NFIL3</b>	nuclear factor, interleukin 3 regulated	3,486
<b>LDHB</b>	lactate dehydrogenase B	3,473
<b>ARHGEF10L</b>	Rho guanine nucleotide exchange factor (GEF) 10-like	3,420
<b>SLC1A2</b>	solute carrier family 1 (glial high affinity glutamate transporter), member 2	3,417
<b>MAFB</b>	v-maf musculoaponeurotic fibrosarcoma oncogene homolog B (avian)	3,393
<b>MBNL2</b>	muscleblind-like splicing regulator 2	3,391
<b>LYN</b>	v-yes-1 Yamaguchi sarcoma viral related oncogene homolog	3,380
<b>TMPRSS4</b>	transmembrane protease, serine 4	3,368
<b>LAMB3</b>	laminin, beta 3	3,365
<b>TMEM37</b>	transmembrane protein 37	3,355
<b>RILP</b>	Rab interacting lysosomal protein	3,323
<b>MALAT1</b>	metastasis associated lung adenocarcinoma transcript 1 (non-protein coding)	3,320
<b>MYOF</b>	myoferlin	3,300
<b>IFI6</b>	interferon, alpha-inducible protein 6	3,293

<b>SLITRK4</b>	SLIT and NTRK-like family, member 4	3,291
<b>TFPI</b>	tissue factor pathway inhibitor (lipoprotein-associated coagulation inhibitor)	3,267
<b>LUC7L3</b>	LUC7-like 3 ( <i>S. cerevisiae</i> )	3,260
<b>PLXND1</b>	plexin D1	3,260
<b>CDH26</b>	cadherin 26	3,233
<b>CEBPD</b>	CCAAT/enhancer binding protein (C/EBP), delta	3,195
<b>HK2</b>	hexokinase 2	3,190
<b>OXCT1</b>	3-oxoacid CoA transferase 1	3,183
<b>SPNS2</b>	spinster homolog 2 ( <i>Drosophila</i> )	3,181
<b>SEPP1</b>	selenoprotein P, plasma, 1	3,178
<b>SIPA1</b>	signal-induced proliferation-associated 1	3,163
<b>TUBA4A</b>	tubulin, alpha 4a	3,155
<b>HCAR1</b>	hydroxycarboxylic acid receptor 1	3,155
<b>SPAG4</b>	sperm associated antigen 4	3,151
<b>S100A6</b>	S100 calcium binding protein A6	3,129
<b>FOSL2</b>	FOS-like antigen 2	3,126
<b>DDIT3</b>	DNA-damage-inducible transcript 3	3,120
<b>BTG2</b>	BTG family, member 2	3,112
<b>NBEA</b>	neurobeachin	3,093
<b>DNAJA4</b>	DnaJ (Hsp40) homolog, subfamily A, member 4	3,080
<b>C5orf42</b>	chromosome 5 open reading frame 42	3,070
<b>HOXB3</b>	homeobox B3	3,069
<b>HYI</b>	hydroxypyruvate isomerase (putative)	3,050
<b>CMTM3</b>	CKLF-like MARVEL transmembrane domain containing 3	3,045
<b>RANGRF</b>	RAN guanine nucleotide release factor	3,035
<b>PSG8</b>	pregnancy specific beta-1-glycoprotein 8	3,021
<b>PLA2G16</b>	phospholipase A2, group XVI	3,019
<b>ADCY1</b>	adenylate cyclase 1 (brain)	3,009
<b>SLCO3A1</b>	solute carrier organic anion transporter family, member 3A1	2,998
<b>USP31</b>	ubiquitin specific peptidase 31	2,997
<b>SYBU</b>	syntabulin (syntaxin-interacting)	2,975
<b>MDK</b>	midkine (neurite growth-promoting factor 2)	2,955
<b>KIAA1875</b>	KIAA1875	2,940
<b>PURB</b>	purine-rich element binding protein B	2,938
<b>HRK</b>	harakiri, BCL2 interacting protein (contains only BH3 domain)	2,937

<b>NKAIN1</b>	Na+/K+ transporting ATPase interacting 1	2,934
<b>TGFBR2</b>	transforming growth factor, beta receptor II (70/80kDa)	2,933
<b>GOLGA8S</b>	golgin A8 family, member S	2,932
<b>NCKAP5</b>	NCK-associated protein 5	2,920
<b>CTSC</b>	cathepsin C	2,888
<b>IFT122</b>	intraflagellar transport 122 homolog (Chlamydomonas)	2,885
<b>LOC283454</b>	uncharacterized LOC283454	2,877
<b>PON2</b>	paraoxonase 2	2,851
<b>PDK1</b>	pyruvate dehydrogenase kinase, isozyme 1	2,820
<b>BTG3</b>	BTG family, member 3	2,818
<b>KLK8</b>	kallikrein-related peptidase 8	2,807
<b>L3MBTL3</b>	l(3)mbt-like 3 (Drosophila)	2,803
<b>USP25</b>	ubiquitin specific peptidase 25	2,801
<b>C11orf92</b>	chromosome 11 open reading frame 92	2,796
<b>HERC6</b>	HECT and RLD domain containing E3 ubiquitin protein ligase family member 6	2,794
<b>ARL4C</b>	ADP-ribosylation factor-like 4C	2,786
<b>EPHX2</b>	epoxide hydrolase 2, cytoplasmic	2,786
<b>IDH1</b>	isocitrate dehydrogenase 1 (NADP+), soluble	2,786
<b>EFNB2</b>	ephrin-B2	2,779
<b>UBE2QL1</b>	ubiquitin-conjugating enzyme E2Q family-like 1	2,772
<b>FAM63A</b>	family with sequence similarity 63, member A	2,771
<b>WWOX</b>	WW domain containing oxidoreductase	2,768
<b>SYT1</b>	synaptotagmin I	2,768
<b>ELF3</b>	E74-like factor 3 (ets domain transcription factor, epithelial-specific )	2,750
<b>GBE1</b>	glucan (1,4-alpha-), branching enzyme 1	2,749
<b>MPI</b>	mannose phosphate isomerase	2,745
<b>LOC100507303</b>	uncharacterized LOC100507303	2,744
<b>ATF3</b>	activating transcription factor 3	2,744
<b>PCED1B</b>	PC-esterase domain containing 1B	2,736
<b>NUPR1</b>	nuclear protein, transcriptional regulator, 1	2,731
<b>EPDR1</b>	ependymin related protein 1 (zebrafish)	2,727
<b>PLEKHF1</b>	pleckstrin homology domain containing, family F (with FYVE domain) member 1	2,720
<b>ANKRD22</b>	ankyrin repeat domain 22	2,716
<b>STEAP3</b>	STEAP family member 3, metalloreductase	2,710
<b>PSG9</b>	pregnancy specific beta-1-glycoprotein 9	2,710

<b>VCX2</b>	variable charge, X-linked 2	2,708
<b>CAB39L</b>	calcium binding protein 39-like	2,698
<b>ARHGAP44</b>	Rho GTPase activating protein 44	2,695
<b>EPHA4</b>	EPH receptor A4	2,690
<b>CYP27B1</b>	cytochrome P450, family 27, subfamily B, polypeptide 1	2,683
<b>SV2B</b>	synaptic vesicle glycoprotein 2B	2,670
<b>NUFIP2</b>	nuclear fragile X mental retardation protein interacting protein 2	2,665
<b>CGNL1</b>	cingulin-like 1	2,660
<b>KAT2B</b>	K(lysine) acetyltransferase 2B	2,656
<b>FAM198B</b>	family with sequence similarity 198, member B	2,651
<b>DOCK8</b>	dedicator of cytokinesis 8	2,648
<b>WSB1</b>	WD repeat and SOCS box containing 1	2,646
<b>PTRF</b>	polymerase I and transcript release factor	2,644
<b>VCX3A</b>	variable charge, X-linked 3A	2,631
<b>SDR42E1</b>	short chain dehydrogenase/reductase family 42E, member 1	2,627
<b>NABP1</b>	nucleic acid binding protein 1	2,626
<b>EPHA3</b>	EPH receptor A3	2,620
<b>SMTNL2</b>	smoothelin-like 2	2,620
<b>DMRTA1</b>	DMRT-like family A1	2,619
<b>HOXB2</b>	homeobox B2	2,617
<b>SCPEP1</b>	serine carboxypeptidase 1	2,608
<b>BMP5</b>	bone morphogenetic protein 5	2,601
<b>LIN7A</b>	lin-7 homolog A (C. elegans)	2,591
<b>SLC8A1</b>	solute carrier family 8 (sodium/calcium exchanger), member 1	2,589
<b>SKAP1</b>	src kinase associated phosphoprotein 1	2,584
<b>TESC</b>	tescalcin	2,582
<b>FUT8-AS1</b>	FUT8 antisense RNA 1	2,580
<b>SELENBP1</b>	selenium binding protein 1	2,577
<b>DRAM1</b>	DNA-damage regulated autophagy modulator 1	2,570
<b>PTGR1</b>	prostaglandin reductase 1	2,568
<b>GAD1</b>	glutamate decarboxylase 1 (brain, 67kDa)	2,567
<b>SNX7</b>	sorting nexin 7	2,567
<b>ENPP1</b>	ectonucleotide pyrophosphatase/phosphodiesterase 1	2,562
<b>HS6ST3</b>	heparan sulfate 6-O-sulfotransferase 3	2,555
<b>LOC388242</b>	coiled-coil domain containing 101 pseudogene	2,555

<b>PTPRF</b>	protein tyrosine phosphatase, receptor type, F	2,552
<b>PAM</b>	peptidylglycine alpha-amidating monooxygenase	2,550
<b>CAMK2N1</b>	calcium/calmodulin-dependent protein kinase II inhibitor 1	2,539
<b>PHKB</b>	phosphorylase kinase, beta	2,532
<b>RAB32</b>	RAB32, member RAS oncogene family	2,531
<b>LOXL1</b>	lysyl oxidase-like 1	2,529
<b>GNB4</b>	guanine nucleotide binding protein (G protein), beta polypeptide 4	2,526
<b>IRX4</b>	iroquois homeobox 4	2,525
<b>NREP</b>	neuronal regeneration related protein	2,518
<b>PPP1R3B</b>	protein phosphatase 1, regulatory subunit 3B	2,517
<b>CD97</b>	CD97 molecule	2,512
<b>RNF43</b>	ring finger protein 43	2,508
<b>SAT2</b>	spermidine/spermine N1-acetyltransferase family member 2	2,506
<b>TNFRSF10C</b>	tumor necrosis factor receptor superfamily, member 10c, decoy without an intracellular domain	2,505
<b>RPS27L</b>	ribosomal protein S27-like	2,504
<b>ACTR3C</b>	ARP3 actin-related protein 3 homolog C (yeast)	2,503
<b>PCDH10</b>	protocadherin 10	2,500
<b>CMBL</b>	carboxymethylenebutenolidase homolog (Pseudomonas)	2,492
<b>ULK3</b>	unc-51-like kinase 3 (C. elegans)	2,491
<b>GDF15</b>	growth differentiation factor 15	2,487
<b>CAPN12</b>	calpain 12	2,487
<b>FNDC3A</b>	fibronectin type III domain containing 3A	2,485
<b>C15orf52</b>	chromosome 15 open reading frame 52	2,480
<b>VDR</b>	vitamin D (1,25- dihydroxyvitamin D3) receptor	2,480
<b>NGLY1</b>	N-glycanase 1	2,476
<b>USP35</b>	ubiquitin specific peptidase 35	2,465
<b>SYTL2</b>	synaptotagmin-like 2	2,459
<b>SEMA5A</b>	sema domain, seven thrombospondin repeats (type 1 and type 1-like), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 5A	2,456
<b>AKR1C1/AKR1C2</b>	aldo-keto reductase family 1, member C2	2,450
<b>HMOX1</b>	heme oxygenase (decycling) 1	2,450
<b>ZNRF1</b>	zinc and ring finger 1, E3 ubiquitin protein ligase	2,445
<b>BAG2</b>	BCL2-associated athanogene 2	2,442
<b>PRRG1</b>	proline rich Gla (G-carboxyglutamic acid) 1	2,442
<b>ERMP1</b>	endoplasmic reticulum metallopeptidase 1	2,435



<b>LHFPL2</b>	lipoma HMGIC fusion partner-like 2	2,432
<b>EPHX4</b>	epoxide hydrolase 4	2,430
<b>KLK10</b>	kallikrein-related peptidase 10	2,430
<b>JUN</b>	jun proto-oncogene	2,430
<b>PCDH7</b>	protocadherin 7	2,430
<b>VPS13B</b>	vacuolar protein sorting 13 homolog B (yeast)	2,430
<b>NQO1</b>	NAD(P)H dehydrogenase, quinone 1	2,421
<b>BDKRB2</b>	bradykinin receptor B2	2,419
<b>XKRX</b>	XK, Kell blood group complex subunit-related, X-linked	2,415
<b>PLCG2</b>	phospholipase C, gamma 2 (phosphatidylinositol-specific)	2,407
<b>TAP1</b>	transporter 1, ATP-binding cassette, sub-family B (MDR/TAP)	2,403
<b>PLAU</b>	plasminogen activator, urokinase	2,400
<b>NECAB1</b>	N-terminal EF-hand calcium binding protein 1	2,393
<b>PDE7A</b>	phosphodiesterase 7A	2,391
<b>WWP1</b>	WW domain containing E3 ubiquitin protein ligase 1	2,390
<b>PPAP2B</b>	phosphatidic acid phosphatase type 2B	2,388
<b>BCAR3</b>	breast cancer anti-estrogen resistance 3	2,387
<b>STC1</b>	stanniocalcin 1	2,381
<b>CLIC4</b>	chloride intracellular channel 4	2,380
<b>SEMA4C</b>	sema domain, immunoglobulin domain (Ig), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 4C	2,369
<b>PYROXD2</b>	pyridine nucleotide-disulphide oxidoreductase domain 2	2,368
<b>CTBS</b>	chitinase, di-N-acetyl-	2,360
<b>KLRG2</b>	killer cell lectin-like receptor subfamily G, member 2	2,358
<b>ANKRD46</b>	ankyrin repeat domain 46	2,355
<b>ZNF185</b>	zinc finger protein 185 (LIM domain)	2,355
<b>GADD45A</b>	growth arrest and DNA-damage-inducible, alpha	2,350
<b>KRTCAP3</b>	keratinocyte associated protein 3	2,338
<b>ARFGEF1</b>	ADP-ribosylation factor guanine nucleotide-exchange factor 1 (brefeldin A-inhibited)	2,330
<b>FUT8</b>	fucosyltransferase 8 (alpha (1,6) fucosyltransferase)	2,330
<b>LOC284570</b>	uncharacterized LOC284570	2,328
<b>CNKSR3</b>	CNKSR family member 3	2,326
<b>JMJD7-PLA2G4B</b>	JMJD7-PLA2G4B readthrough	2,322
<b>CD302</b>	CD302 molecule	2,320
<b>ARHGEF28</b>	Rho guanine nucleotide exchange factor (GEF) 28	2,319

<b>ZDHHC2</b>	zinc finger, DHHC-type containing 2	2,319
<b>CPQ</b>	carboxypeptidase Q	2,316
<b>HERC5</b>	HECT and RLD domain containing E3 ubiquitin protein ligase 5	2,312
<b>CTSB</b>	cathepsin B	2,310
<b>MAN1C1</b>	mannosidase, alpha, class 1C, member 1	2,303
<b>DGAT2</b>	diacylglycerol O-acyltransferase 2	2,302
<b>BACE2</b>	beta-site APP-cleaving enzyme 2	2,300
<b>CCDC83</b>	coiled-coil domain containing 83	2,293
<b>PPFIA1</b>	protein tyrosine phosphatase, receptor type, f polypeptide (PTPRF), interacting protein (liprin), alpha 1	2,291
<b>SPOCD1</b>	SPOC domain containing 1	2,289
<b>CLMN</b>	calmin (calponin-like, transmembrane)	2,286
<b>SYNDIG1</b>	synapse differentiation inducing 1	2,281
<b>CD55</b>	CD55 molecule, decay accelerating factor for complement (Cromer blood group)	2,280
<b>IGFBP3</b>	insulin-like growth factor binding protein 3	2,280
<b>PDXDC2P</b>	pyridoxal-dependent decarboxylase domain containing 2, pseudogene	2,280
<b>NETO2</b>	neuropilin (NRP) and tolloid (TLL)-like 2	2,280
<b>FUK</b>	fucokinase	2,277
<b>WIPF1</b>	WAS/WASL interacting protein family, member 1	2,275
<b>IFITM1</b>	interferon induced transmembrane protein 1	2,272
<b>ANKRD23</b>	ankyrin repeat domain 23	2,269
<b>CAPG</b>	capping protein (actin filament), gelsolin-like	2,268
<b>CAST</b>	calpastatin	2,268
<b>PRICKLE1</b>	prickle homolog 1 (Drosophila)	2,267
<b>CYP1A1</b>	cytochrome P450, family 1, subfamily A, polypeptide 1	2,265
<b>GOLGA4</b>	golgin A4	2,262
<b>FTH1</b>	ferritin, heavy polypeptide 1	2,250
<b>ROBO1</b>	roundabout, axon guidance receptor, homolog 1 (Drosophila)	2,248
<b>KLF7</b>	Kruppel-like factor 7 (ubiquitous)	2,247
<b>TSC22D1</b>	TSC22 domain family, member 1	2,245
<b>PICALM</b>	phosphatidylinositol binding clathrin assembly protein	2,245
<b>LOC286254</b>	uncharacterized LOC286254	2,242
<b>APP</b>	amyloid beta (A4) precursor protein	2,240
<b>P2RY6</b>	pyrimidinergic receptor P2Y, G-protein coupled, 6	2,237
<b>KIAA1244</b>	KIAA1244	2,235
<b>PNRC2</b>	proline-rich nuclear receptor coactivator 2	2,235

<b>DSCAM</b>	Down syndrome cell adhesion molecule	2,233
<b>SLC7A11</b>	solute carrier family 7 (anionic amino acid transporter light chain, xc- system), member 11	2,233
<b>HS6ST2</b>	heparan sulfate 6-O-sulfotransferase 2	2,230
<b>TPCN1</b>	two pore segment channel 1	2,230
<b>GPC4</b>	glypican 4	2,216
<b>SLC4A3</b>	solute carrier family 4, anion exchanger, member 3	2,212
<b>MAN1A1</b>	mannosidase, alpha, class 1A, member 1	2,212
<b>MTRNR2L2</b>	MT-RNR2-like 2	2,211
<b>NOL3</b>	nucleolar protein 3 (apoptosis repressor with CARD domain)	2,207
<b>MBOAT1</b>	membrane bound O-acyltransferase domain containing 1	2,201
<b>CALM1</b>	calmodulin 1 (phosphorylase kinase, delta)	2,193
<b>AIFM3</b>	apoptosis-inducing factor, mitochondrion-associated, 3	2,190
<b>CTNND2</b>	catenin (cadherin-associated protein), delta 2	2,190
<b>NCOA3</b>	nuclear receptor coactivator 3	2,190
<b>GPT2</b>	glutamic pyruvate transaminase (alanine aminotransferase) 2	2,189
<b>SLC22A5</b>	solute carrier family 22 (organic cation/carnitine transporter), member 5	2,188
<b>TRAF5</b>	TNF receptor-associated factor 5	2,186
<b>HOXB6</b>	homeobox B6	2,186
<b>SNHG12</b>	small nucleolar RNA host gene 12 (non-protein coding)	2,185
<b>STOML1</b>	stomatin (EPB72)-like 1	2,184
<b>HSF4</b>	heat shock transcription factor 4	2,183
<b>NUDT7</b>	nudix (nucleoside diphosphate linked moiety X)-type motif 7	2,182
<b>PEX19</b>	peroxisomal biogenesis factor 19	2,181
<b>KIAA0146</b>	KIAA0146	2,180
<b>LCN2</b>	lipocalin 2	2,178
<b>HEXB</b>	hexosaminidase B (beta polypeptide)	2,178
<b>HERC1</b>	HECT and RLD domain containing E3 ubiquitin protein ligase family member 1	2,171
<b>MTCH2</b>	mitochondrial carrier 2	2,169
<b>PSCA</b>	prostate stem cell antigen	2,168
<b>FHL2</b>	four and a half LIM domains 2	2,166
<b>CD47</b>	CD47 molecule	2,165
<b>C11orf93</b>	chromosome 11 open reading frame 93	2,163
<b>POC1B</b>	POC1 centriolar protein homolog B (Chlamydomonas)	2,161
<b>AKAP1</b>	A kinase (PRKA) anchor protein 1	2,160
<b>PRKAB2</b>	protein kinase, AMP-activated, beta 2 non-catalytic subunit	2,160

<b>RAMP1</b>	receptor (G protein-coupled) activity modifying protein 1	2,158
<b>NFE2</b>	nuclear factor (erythroid-derived 2), 45kDa	2,158
<b>KLHL13</b>	kelch-like family member 13	2,156
<b>CDKL5</b>	cyclin-dependent kinase-like 5	2,155
<b>ANO6</b>	anoctamin 6	2,153
<b>XPOT</b>	exportin, tRNA	2,151
<b>CALML4</b>	calmodulin-like 4	2,151
<b>OPLAH</b>	5-oxoprolinase (ATP-hydrolysing)	2,150
<b>TOB1</b>	transducer of ERBB2, 1	2,150
<b>STAT6</b>	signal transducer and activator of transcription 6, interleukin-4 induced	2,148
<b>FAM107B</b>	family with sequence similarity 107, member B	2,147
<b>PIM1</b>	pim-1 oncogene	2,146
<b>NCKAP1</b>	NCK-associated protein 1	2,145
<b>RAB7L1</b>	RAB7, member RAS oncogene family-like 1	2,144
<b>EPB41L4A-AS1</b>	EPB41L4A antisense RNA 1	2,141
<b>EIF3E</b>	eukaryotic translation initiation factor 3, subunit E	2,140
<b>ITGAV</b>	integrin, alpha V	2,140
<b>PTK2</b>	protein tyrosine kinase 2	2,140
<b>GUSBP4</b>	glucuronidase, beta pseudogene 4	2,134
<b>BNIP3</b>	BCL2/adenovirus E1B 19kDa interacting protein 3	2,133
<b>RHOBTB1</b>	Rho-related BTB domain containing 1	2,133
<b>PAQR6</b>	progesterin and adipoQ receptor family member VI	2,132
<b>TRAPPC13</b>	trafficking protein particle complex 13	2,131
<b>CACNG1</b>	calcium channel, voltage-dependent, gamma subunit 1	2,129
<b>HOXA10</b>	homeobox A10	2,129
<b>SRGAP1</b>	SLIT-ROBO Rho GTPase activating protein 1	2,127
<b>MAP2K1</b>	mitogen-activated protein kinase kinase 1	2,125
<b>ITFG1</b>	integrin alpha FG-GAP repeat containing 1	2,124
<b>SCHIP1</b>	schwannomin interacting protein 1	2,123
<b>IGDCC3</b>	immunoglobulin superfamily, DCC subclass, member 3	2,121
<b>ALDOC</b>	aldolase C, fructose-bisphosphate	2,121
<b>AARS</b>	alanyl-tRNA synthetase	2,121
<b>PTBP2</b>	polypyrimidine tract binding protein 2	2,119
<b>TUFT1</b>	tuftelin 1	2,118
<b>NIPAL2</b>	NIPA-like domain containing 2	2,118

<b>C4orf3</b>	chromosome 4 open reading frame 3	2,117
<b>SPG20</b>	spastic paraplegia 20 (Troyer syndrome)	2,117
<b>LOC338799</b>	uncharacterized LOC338799	2,114
<b>IFIH1</b>	interferon induced with helicase C domain 1	2,110
<b>CDK5RAP3</b>	CDK5 regulatory subunit associated protein 3	2,110
<b>HIPK2</b>	homeodomain interacting protein kinase 2	2,110
<b>VPS13C</b>	vacuolar protein sorting 13 homolog C ( <i>S. cerevisiae</i> )	2,108
<b>CLPX</b>	ClpX caseinolytic peptidase X homolog ( <i>E. coli</i> )	2,106
<b>SPAG9</b>	sperm associated antigen 9	2,104
<b>IMPA1</b>	inositol(myo)-1(or 4)-monophosphatase 1	2,103
<b>FGD3</b>	FYVE, RhoGEF and PH domain containing 3	2,103
<b>ARMCX2</b>	armadillo repeat containing, X-linked 2	2,102
<b>NFE2L1</b>	nuclear factor (erythroid-derived 2)-like 1	2,100
<b>PPP1R9A</b>	protein phosphatase 1, regulatory subunit 9A	2,099
<b>OBSL1</b>	obscurin-like 1	2,098
<b>MGST1</b>	microsomal glutathione S-transferase 1	2,097
<b>COBLL1</b>	cordon-bleu WH2 repeat protein-like 1	2,094
<b>TMEM68</b>	transmembrane protein 68	2,091
<b>C15orf61</b>	chromosome 15 open reading frame 61	2,090
<b>B2M</b>	beta-2-microglobulin	2,090
<b>STK39</b>	serine threonine kinase 39	2,089
<b>LONP2</b>	lon peptidase 2, peroxisomal	2,087
<b>PGM2L1</b>	phosphoglucomutase 2-like 1	2,086
<b>FAM171B</b>	family with sequence similarity 171, member B	2,085
<b>RASAL1</b>	RAS protein activator like 1 (GAP1 like)	2,084
<b>PIGK</b>	phosphatidylinositol glycan anchor biosynthesis, class K	2,083
<b>SDK1</b>	sidekick cell adhesion molecule 1	2,080
<b>HNRPDL</b>	heterogeneous nuclear ribonucleoprotein D-like	2,080
<b>CLMP</b>	CXADR-like membrane protein	2,080
<b>LAMC2</b>	laminin, gamma 2	2,079
<b>COL16A1</b>	collagen, type XVI, alpha 1	2,079
<b>FABP5</b>	fatty acid binding protein 5 (psoriasis-associated)	2,078
<b>MAN2A1</b>	mannosidase, alpha, class 2A, member 1	2,076
<b>PLD3</b>	phospholipase D family, member 3	2,071
<b>RHBDL3</b>	rhomboid, veinlet-like 3 ( <i>Drosophila</i> )	2,071

<b>FZD5</b>	frizzled family receptor 5	2,070
<b>TTC3</b>	tetratricopeptide repeat domain 3	2,070
<b>CPNE7</b>	copine VII	2,068
<b>TMEM64</b>	transmembrane protein 64	2,067
<b>TSPAN5</b>	tetraspanin 5	2,066
<b>PAK1</b>	p21 protein (Cdc42/Rac)-activated kinase 1	2,064
<b>AK4</b>	adenylate kinase 4	2,064
<b>MON2</b>	MON2 homolog ( <i>S. cerevisiae</i> )	2,062
<b>AIFM2</b>	apoptosis-inducing factor, mitochondrion-associated, 2	2,059
<b>PRKCA</b>	protein kinase C, alpha	2,059
<b>PLCB1</b>	phospholipase C, beta 1 (phosphoinositide-specific)	2,058
<b>VPS35</b>	vacuolar protein sorting 35 homolog ( <i>S. cerevisiae</i> )	2,055
<b>ANGPTL4</b>	angiopoietin-like 4	2,055
<b>DEF6</b>	differentially expressed in FDCP 6 homolog (mouse)	2,054
<b>DVL1</b>	dishevelled, dsh homolog 1 ( <i>Drosophila</i> )	2,050
<b>OLFM1</b>	olfactomedin 1	2,050
<b>EIF4A2</b>	eukaryotic translation initiation factor 4A2	2,049
<b>EFCAB4B</b>	EF-hand calcium binding domain 4B	2,049
<b>TTC7B</b>	tetratricopeptide repeat domain 7B	2,046
<b>LOC389607</b>	uncharacterized LOC389607	2,045
<b>KLF12</b>	Kruppel-like factor 12	2,043
<b>TTC39A</b>	tetratricopeptide repeat domain 39A	2,042
<b>CPNE3</b>	copine III	2,042
<b>NAP1L2</b>	nucleosome assembly protein 1-like 2	2,039
<b>MT-ND4</b>	NADH dehydrogenase, subunit 4 (complex I)	2,038
<b>FAM213A</b>	family with sequence similarity 213, member A	2,038
<b>AK2</b>	adenylate kinase 2	2,038
<b>RAB11FIP1</b>	RAB11 family interacting protein 1 (class I)	2,035
<b>SLC12A2</b>	solute carrier family 12 (sodium/potassium/chloride transporters), member 2	2,034
<b>PABPC1</b>	poly(A) binding protein, cytoplasmic 1	2,034
<b>LRRCC1</b>	leucine rich repeat and coiled-coil centrosomal protein 1	2,032
<b>DYRK2</b>	dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 2	2,031
<b>SLC16A14</b>	solute carrier family 16, member 14 (monocarboxylic acid transporter 14)	2,031
<b>RPL7</b>	ribosomal protein L7	2,031
<b>TMCO4</b>	transmembrane and coiled-coil domains 4	2,026

<b>HOMER3</b>	homer homolog 3 (Drosophila)	2,026
<b>TTC37</b>	tetratricopeptide repeat domain 37	2,024
<b>IGFBP6</b>	insulin-like growth factor binding protein 6	2,022
<b>RPS6KA2</b>	ribosomal protein S6 kinase, 90kDa, polypeptide 2	2,021
<b>RABGAP1L</b>	RAB GTPase activating protein 1-like	2,021
<b>TESK2</b>	testis-specific kinase 2	2,020
<b>KIT</b>	v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog	2,020
<b>FZD7</b>	frizzled family receptor 7	2,019
<b>KIAA1715</b>	KIAA1715	2,019
<b>CLN3</b>	ceroid-lipofuscinosis, neuronal 3	2,019
<b>WDR4</b>	WD repeat domain 4	2,018
<b>KIFAP3</b>	kinesin-associated protein 3	2,016
<b>MT-ND5</b>	NADH dehydrogenase, subunit 5 (complex I)	2,016
<b>SHISA9</b>	shisa homolog 9 (Xenopus laevis)	2,014
<b>C1orf21</b>	chromosome 1 open reading frame 21	2,013
<b>ANK1</b>	ankyrin 1, erythrocytic	2,012
<b>RPL30</b>	ribosomal protein L30	2,011
<b>EMC2</b>	ER membrane protein complex subunit 2	2,011
<b>SLC7A6OS</b>	solute carrier family 7, member 6 opposite strand	2,010
<b>CLCN6</b>	chloride channel, voltage-sensitive 6	2,008
<b>RCN1</b>	reticulocalbin 1, EF-hand calcium binding domain	2,005
<b>RPL23A</b>	ribosomal protein L23a	2,002
<b>XPR1</b>	xenotropic and polytropic retrovirus receptor 1	2,002
<b>CAPN13</b>	calpain 13	2,002
<b>IFRD1</b>	interferon-related developmental regulator 1	2,001
<b>GSE1</b>	Gse1 coiled-coil protein	2,000

**Supplementary Table 2. Gene transcripts differentially down-regulated in metformin-refractory MCF-7/MET-R cells vs. metformin-naive MCF-7 parental cells.**

<b>Symbol</b>	<b>Entrez Gene Name</b>	<b><math>\Delta</math></b>
<b>CXorf61</b>	chromosome X open reading frame 61	-23,026
<b>PMP22</b>	peripheral myelin protein 22	-14,517
<b>S100A14</b>	S100 calcium binding protein A14	-14,192

<b>TFF3</b>	trefoil factor 3 (intestinal)	-13,100
<b>DKK1</b>	dickkopf 1 homolog ( <i>Xenopus laevis</i> )	-12,359
<b>TFF1</b>	trefoil factor 1	-10,680
<b>BCL2</b>	B-cell CLL/lymphoma 2	-10,660
<b>CYP26B1</b>	cytochrome P450, family 26, subfamily B, polypeptide 1	-9,515
<b>MGP</b>	matrix Gla protein	-9,131
<b>S100A16</b>	S100 calcium binding protein A16	-8,254
<b>MSMB</b>	microseminoprotein, beta-	-8,130
<b>FKBP10</b>	FK506 binding protein 10, 65 kDa	-7,804
<b>ANXA6</b>	annexin A6	-7,526
<b>PRR15</b>	proline rich 15	-7,518
<b>RERG</b>	RAS-like, estrogen-regulated, growth inhibitor	-7,320
<b>SPARCL1</b>	SPARC-like 1 (hevin)	-7,227
<b>PXDN</b>	peroxidasin homolog ( <i>Drosophila</i> )	-7,150
<b>EFEMP1</b>	EGF containing fibulin-like extracellular matrix protein 1	-7,016
<b>LOC100288911</b>	uncharacterized LOC100288911	-6,489
<b>ASUN</b>	asunder, spermatogenesis regulator	-6,109
<b>FGFR1OP2</b>	FGFR1 oncogene partner 2	-6,100
<b>RASGRP1</b>	RAS guanyl releasing protein 1 (calcium and DAG-regulated)	-5,720
<b>MARCKS</b>	myristoylated alanine-rich protein kinase C substrate	-5,672
<b>CENPA</b>	centromere protein A	-5,413
<b>PKIB</b>	protein kinase (cAMP-dependent, catalytic) inhibitor beta	-5,346
<b>TP63</b>	tumor protein p63	-5,328
<b>DPYSL5</b>	dihydropyrimidinase-like 5	-5,256
<b>SEMA3B</b>	sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3B	-5,220
<b>XBP1</b>	X-box binding protein 1	-5,120
<b>FAM84A</b>	family with sequence similarity 84, member A	-4,810
<b>LOC100507584</b>	uncharacterized LOC100507584	-4,799
<b>PIF1</b>	PIF1 5'-to-3' DNA helicase homolog ( <i>S. cerevisiae</i> )	-4,658
<b>HPN</b>	hepsin	-4,647
<b>PODXL</b>	podocalyxin-like	-4,567
<b>TXNIP</b>	thioredoxin interacting protein	-4,403
<b>SYT17</b>	synaptotagmin XVII	-4,384
<b>KRT13</b>	keratin 13	-4,361
<b>N4BP3</b>	NEDD4 binding protein 3	-4,260



<b>KIF20A</b>	kinesin family member 20A	-4,200
<b>ID1</b>	inhibitor of DNA binding 1, dominant negative helix-loop-helix protein	-4,139
<b>FAM25A</b>	family with sequence similarity 25, member A	-4,136
<b>HMMR</b>	hyaluronan-mediated motility receptor (RHAMM)	-4,063
<b>C1QTNF6</b>	C1q and tumor necrosis factor related protein 6	-4,061
<b>OSBPL6</b>	oxysterol binding protein-like 6	-4,052
<b>UGT2B15</b>	UDP glucuronosyltransferase 2 family, polypeptide B15	-3,989
<b>SYTL5</b>	synaptotagmin-like 5	-3,985
<b>LOC728392</b>	uncharacterized LOC728392	-3,959
<b>GALM</b>	galactose mutarotase (aldose 1-epimerase)	-3,880
<b>PREX1</b>	phosphatidylinositol-3,4,5-trisphosphate-dependent Rac exchange factor 1	-3,834
<b>DLC1</b>	deleted in liver cancer 1	-3,770
<b>C12orf60</b>	chromosome 12 open reading frame 60	-3,751
<b>DNAJC22</b>	DnaJ (Hsp40) homolog, subfamily C, member 22	-3,680
<b>RLN2</b>	relaxin 2	-3,667
<b>DBNDD2</b>	dysbindin (dystrobrevin binding protein 1) domain containing 2	-3,636
<b>CAV1</b>	caveolin 1, caveolae protein, 22kDa	-3,630
<b>PLK1</b>	polo-like kinase 1	-3,620
<b>BIRC5</b>	baculoviral IAP repeat containing 5	-3,600
<b>TMEM150C</b>	transmembrane protein 150C	-3,591
<b>FAM83D</b>	family with sequence similarity 83, member D	-3,554
<b>SPDEF</b>	SAM pointed domain containing ets transcription factor	-3,552
<b>EGR1</b>	early growth response 1	-3,542
<b>UBALD2</b>	UBA-like domain containing 2	-3,453
<b>SIDT1</b>	SID1 transmembrane family, member 1	-3,451
<b>S100A10</b>	S100 calcium binding protein A10	-3,432
<b>AUTS2</b>	autism susceptibility candidate 2	-3,417
<b>PTTG2</b>	pituitary tumor-transforming 2	-3,397
<b>SGCE</b>	sarcoglycan, epsilon	-3,380
<b>CDH18</b>	cadherin 18, type 2	-3,305
<b>LRG1</b>	leucine-rich alpha-2-glycoprotein 1	-3,304
<b>ADIPOR2</b>	adiponectin receptor 2	-3,300
<b>FAM133A</b>	family with sequence similarity 133, member A	-3,300
<b>SCUBE2</b>	signal peptide, CUB domain, EGF-like 2	-3,244
<b>UGT2B17</b>	UDP glucuronosyltransferase 2 family, polypeptide B17	-3,240

<b>LMCD1</b>	LIM and cysteine-rich domains 1	-3,215
<b>SEMA3C</b>	sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3C	-3,208
<b>OGDHL</b>	oxoglutarate dehydrogenase-like	-3,195
<b>UBE2C</b>	ubiquitin-conjugating enzyme E2C	-3,180
<b>SH3BGRL</b>	SH3 domain binding glutamic acid-rich protein like	-3,163
<b>GPR143</b>	G protein-coupled receptor 143	-3,153
<b>LMBR1</b>	limb region 1 homolog (mouse)	-3,150
<b>SLC4A10</b>	solute carrier family 4, sodium bicarbonate transporter, member 10	-3,150
<b>PLEKHA4</b>	pleckstrin homology domain containing, family A (phosphoinositide binding specific) member 4	-3,146
<b>COL4A6</b>	collagen, type IV, alpha 6	-3,146
<b>NOXO1</b>	NADPH oxidase organizer 1	-3,132
<b>KREMEN2</b>	kringle containing transmembrane protein 2	-3,118
<b>DLGAP5</b>	discs, large (Drosophila) homolog-associated protein 5	-3,111
<b>KAZALD1</b>	Kazal-type serine peptidase inhibitor domain 1	-3,092
<b>EIF4E2</b>	eukaryotic translation initiation factor 4E family member 2	-3,079
<b>ASCL1</b>	achaete-scute complex homolog 1 (Drosophila)	-3,071
<b>GTSE1</b>	G-2 and S-phase expressed 1	-3,040
<b>REEP2</b>	receptor accessory protein 2	-3,034
<b>FZD2</b>	frizzled family receptor 2	-3,034
<b>AURKA</b>	aurora kinase A	-3,026
<b>SEMA6A</b>	sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6A	-3,022
<b>CCNB1</b>	cyclin B1	-3,020
<b>AFAP1L2</b>	actin filament associated protein 1-like 2	-3,013
<b>ANXA8L2</b>	annexin A8-like 2	-3,002
<b>CENPF</b>	centromere protein F, 350/400kDa	-2,998
<b>SGCG</b>	sarcoglycan, gamma (35kDa dystrophin-associated glycoprotein)	-2,994
<b>KNSTRN</b>	kinetochore-localized astrin/SPAG5 binding protein	-2,960
<b>FZD4</b>	frizzled family receptor 4	-2,955
<b>PTTG1</b>	pituitary tumor-transforming 1	-2,945
<b>LFNG</b>	LFNG O-fucosylpeptide 3-beta-N-acetylglucosaminyltransferase	-2,939
<b>DHRS2</b>	dehydrogenase/reductase (SDR family) member 2	-2,920
<b>SCD5</b>	stearoyl-CoA desaturase 5	-2,910
<b>CCNA2</b>	cyclin A2	-2,890
<b>CDC25C</b>	cell division cycle 25C	-2,889
<b>GJB7</b>	gap junction protein, beta 7, 25kDa	-2,862

<b>C14orf132</b>	chromosome 14 open reading frame 132	-2,860
<b>CDKN3</b>	cyclin-dependent kinase inhibitor 3	-2,847
<b>TP53I3</b>	tumor protein p53 inducible protein 3	-2,819
<b>CA8</b>	carbonic anhydrase VIII	-2,811
<b>H2AFJ</b>	H2A histone family, member J	-2,810
<b>BFSP2</b>	beaded filament structural protein 2, phakinin	-2,804
<b>SOCS3</b>	suppressor of cytokine signaling 3	-2,800
<b>GPRC5A</b>	G protein-coupled receptor, family C, group 5, member A	-2,800
<b>NDC80</b>	NDC80 kinetochore complex component	-2,784
<b>HIST1H2AM</b>	histone cluster 1, H2ag	-2,769
<b>ASPM</b>	asp (abnormal spindle) homolog, microcephaly associated (Drosophila)	-2,764
<b>C19orf21</b>	chromosome 19 open reading frame 21	-2,751
<b>UGT2B10</b>	UDP glucuronosyltransferase 2 family, polypeptide B10	-2,750
<b>AMOTL1</b>	angiomin like 1	-2,750
<b>RAB36</b>	RAB36, member RAS oncogene family	-2,737
<b>AREG/AREGB</b>	amphiregulin	-2,733
<b>DOK7</b>	docking protein 7	-2,731
<b>ITPRIPL2</b>	inositol 1,4,5-trisphosphate receptor interacting protein-like 2	-2,730
<b>CDV3</b>	CDV3 homolog (mouse)	-2,690
<b>TUBB3</b>	tubulin, beta 3 class III	-2,690
<b>RRM2</b>	ribonucleotide reductase M2	-2,688
<b>SDS</b>	serine dehydratase	-2,688
<b>BHLHE41</b>	basic helix-loop-helix family, member e41	-2,683
<b>LGALS3BP</b>	lectin, galactoside-binding, soluble, 3 binding protein	-2,678
<b>EDN1</b>	endothelin 1	-2,670
<b>FLJ20021</b>	uncharacterized LOC90024	-2,653
<b>C10orf107</b>	chromosome 10 open reading frame 107	-2,653
<b>TUBB4A</b>	tubulin, beta 4A class IVa	-2,652
<b>CDCA3</b>	cell division cycle associated 3	-2,650
<b>HIST1H2AH</b>	histone cluster 1, H2ah	-2,644
<b>C2CD4C</b>	C2 calcium-dependent domain containing 4C	-2,643
<b>ST6GALNAC2</b>	ST6 (alpha-N-acetyl-neuraminyl-2,3-beta-galactosyl-1,3)-N-acetylgalactosaminide alpha-2,6-sialyltransferase 2	-2,637
<b>FAM155A</b>	family with sequence similarity 155, member A	-2,629
<b>PSRC1</b>	proline/serine-rich coiled-coil 1	-2,623
<b>KPNA2</b>	karyopherin alpha 2 (RAG cohort 1, importin alpha 1)	-2,623

<b>GALNT12</b>	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 12 (GalNAc-T12)	-2,619
<b>IL4R</b>	interleukin 4 receptor	-2,608
<b>TEX19</b>	testis expressed 19	-2,606
<b>TROAP</b>	trophinin associated protein	-2,602
<b>PMEPA1</b>	prostate transmembrane protein, androgen induced 1	-2,601
<b>RAB31</b>	RAB31, member RAS oncogene family	-2,600
<b>SPANXC</b>	SPANX family, member C	-2,596
<b>CD36</b>	CD36 molecule (thrombospondin receptor)	-2,592
<b>FHL1</b>	four and a half LIM domains 1	-2,588
<b>CRIP2</b>	cysteine-rich protein 2	-2,587
<b>CCDC117</b>	coiled-coil domain containing 117	-2,583
<b>KCNK5</b>	potassium channel, subfamily K, member 5	-2,577
<b>ATP8A2</b>	ATPase, aminophospholipid transporter, class I, type 8A, member 2	-2,568
<b>PDZK1</b>	PDZ domain containing 1	-2,563
<b>ABCG1</b>	ATP-binding cassette, sub-family G (WHITE), member 1	-2,554
<b>ITGA2</b>	integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor)	-2,548
<b>SKA3</b>	spindle and kinetochore associated complex subunit 3	-2,540
<b>NXNL2</b>	nucleoredoxin-like 2	-2,531
<b>ZSCAN18</b>	zinc finger and SCAN domain containing 18	-2,525
<b>TUBB6</b>	tubulin, beta 6 class V	-2,522
<b>SSPN</b>	sarcospan	-2,519
<b>ARNT2</b>	aryl-hydrocarbon receptor nuclear translocator 2	-2,517
<b>FOS</b>	FBJ murine osteosarcoma viral oncogene homolog	-2,517
<b>GALNT16</b>	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 16	-2,514
<b>ZFP36L2</b>	ZFP36 ring finger protein-like 2	-2,501
<b>CENPE</b>	centromere protein E, 312kDa	-2,500
<b>PLCB4</b>	phospholipase C, beta 4	-2,487
<b>LEPREL4</b>	leprecan-like 4	-2,487
<b>NMU</b>	neuromedin U	-2,485
<b>SMOC2</b>	SPARC related modular calcium binding 2	-2,481
<b>DCDC2</b>	doublecortin domain containing 2	-2,478
<b>FSD1</b>	fibronectin type III and SPRY domain containing 1	-2,477
<b>GALNT14</b>	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 14 (GalNAc-T14)	-2,470
<b>ZNF417/ZNF587</b>	zinc finger protein 587	-2,470
<b>ODC1</b>	ornithine decarboxylase 1	-2,467

<b>BUB1</b>	BUB1 mitotic checkpoint serine/threonine kinase	-2,462
<b>NTMT1</b>	N-terminal Xaa-Pro-Lys N-methyltransferase 1	-2,460
<b>POLR2L</b>	polymerase (RNA) II (DNA directed) polypeptide L, 7.6kDa	-2,459
<b>NT5DC2</b>	5'-nucleotidase domain containing 2	-2,459
<b>NPY1R</b>	neuropeptide Y receptor Y1	-2,456
<b>ADIRF</b>	adipogenesis regulatory factor	-2,451
<b>PTPRC</b>	protein tyrosine phosphatase, receptor type, C	-2,450
<b>PRKAR2B</b>	protein kinase, cAMP-dependent, regulatory, type II, beta	-2,447
<b>KIAA1211</b>	KIAA1211	-2,446
<b>FAM64A</b>	family with sequence similarity 64, member A	-2,440
<b>HSCB</b>	HscB iron-sulfur cluster co-chaperone homolog (E. coli)	-2,440
<b>NRBP1</b>	nuclear receptor binding protein 1	-2,439
<b>MGAT4A</b>	mannosyl (alpha-1,3-)-glycoprotein beta-1,4-N-acetylglucosaminyltransferase, isozyme A	-2,437
<b>BMP7</b>	bone morphogenetic protein 7	-2,430
<b>CDC20</b>	cell division cycle 20	-2,430
<b>EYA2</b>	eyes absent homolog 2 (Drosophila)	-2,429
<b>TSR2</b>	TSR2, 20S rRNA accumulation, homolog (S. cerevisiae)	-2,420
<b>KRT80</b>	keratin 80	-2,417
<b>SERPINH1</b>	serpin peptidase inhibitor, clade H (heat shock protein 47), member 1, (collagen binding protein 1)	-2,411
<b>ABAT</b>	4-aminobutyrate aminotransferase	-2,410
<b>TNFAIP8L1</b>	tumor necrosis factor, alpha-induced protein 8-like 1	-2,409
<b>FOXM1</b>	forkhead box M1	-2,409
<b>NT5C2</b>	5'-nucleotidase, cytosolic II	-2,405
<b>EFCAB11</b>	EF-hand calcium binding domain 11	-2,399
<b>FKBP1B</b>	FK506 binding protein 1B, 12.6 kDa	-2,399
<b>HSD17B11</b>	hydroxysteroid (17-beta) dehydrogenase 11	-2,396
<b>TBC1D16</b>	TBC1 domain family, member 16	-2,392
<b>TGFB1</b>	transforming growth factor, beta 1	-2,380
<b>POC1A</b>	POC1 centriolar protein homolog A (Chlamydomonas)	-2,377
<b>SMTN</b>	smoothelin	-2,376
<b>KCNMB4</b>	potassium large conductance calcium-activated channel, subfamily M, beta member 4	-2,374
<b>BIK</b>	BCL2-interacting killer (apoptosis-inducing)	-2,371
<b>ADAMTS9</b>	ADAM metallopeptidase with thrombospondin type 1 motif, 9	-2,370
<b>LOC100996341</b>	putative uncharacterized protein FLJ11871-like	-2,365
<b>KIF5C</b>	kinesin family member 5C	-2,356

<b>FBXO15</b>	F-box protein 15	-2,353
<b>VAV1</b>	vav 1 guanine nucleotide exchange factor	-2,352
<b>FILIP1L</b>	filamin A interacting protein 1-like	-2,345
<b>C7orf41</b>	chromosome 7 open reading frame 41	-2,341
<b>TPX2</b>	TPX2, microtubule-associated, homolog (Xenopus laevis)	-2,337
<b>C6orf52</b>	chromosome 6 open reading frame 52	-2,337
<b>KIF4A</b>	kinesin family member 4A	-2,337
<b>LOC93622</b>	Morf4 family associated protein 1-like 1 pseudogene	-2,336
<b>GINS4</b>	GINS complex subunit 4 (Sld5 homolog)	-2,333
<b>MAP9</b>	microtubule-associated protein 9	-2,330
<b>ZMYND8</b>	zinc finger, MYND-type containing 8	-2,330
<b>PVT1</b>	Pvt1 oncogene (non-protein coding)	-2,327
<b>N4BP2L2</b>	NEDD4 binding protein 2-like 2	-2,322
<b>TACC1</b>	transforming, acidic coiled-coil containing protein 1	-2,320
<b>YPEL1</b>	yippee-like 1 (Drosophila)	-2,318
<b>EHD2</b>	EH-domain containing 2	-2,313
<b>UBL3</b>	ubiquitin-like 3	-2,310
<b>COQ2</b>	coenzyme Q2 homolog, prenyltransferase (yeast)	-2,305
<b>TSPAN4</b>	tetraspanin 4	-2,300
<b>VASH1</b>	vasohibin 1	-2,299
<b>HIST1H4A</b>	histone cluster 1, H4a	-2,295
<b>AURKB</b>	aurora kinase B	-2,285
<b>COL5A1</b>	collagen, type V, alpha 1	-2,283
<b>S100A13</b>	S100 calcium binding protein A13	-2,282
<b>TPRN</b>	taperin	-2,282
<b>PGLYRP2</b>	peptidoglycan recognition protein 2	-2,280
<b>PRRT3</b>	proline-rich transmembrane protein 3	-2,275
<b>SCD</b>	stearoyl-CoA desaturase (delta-9-desaturase)	-2,270
<b>APOLD1</b>	apolipoprotein L domain containing 1	-2,269
<b>DOK4</b>	docking protein 4	-2,266
<b>STRA13</b>	stimulated by retinoic acid 13	-2,266
<b>DNAJB5</b>	DnaJ (Hsp40) homolog, subfamily B, member 5	-2,265
<b>LYPD1</b>	LY6/PLAUR domain containing 1	-2,264
<b>RIMS4</b>	regulating synaptic membrane exocytosis 4	-2,258
<b>GSTZ1</b>	glutathione S-transferase zeta 1	-2,251

<b>LOC389831</b>	uncharacterized LOC389831	-2,250
<b>ACTG2</b>	actin, gamma 2, smooth muscle, enteric	-2,250
<b>LRFN4</b>	leucine rich repeat and fibronectin type III domain containing 4	-2,249
<b>LRRC73</b>	leucine rich repeat containing 73	-2,248
<b>GALNT10</b>	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 10 (GalNAc-T10)	-2,219
<b>PCYT2</b>	phosphate cytidyltransferase 2, ethanolamine	-2,217
<b>KRT24</b>	keratin 24	-2,215
<b>ABLIM1</b>	actin binding LIM protein 1	-2,213
<b>ALYREF</b>	Aly/REF export factor	-2,210
<b>CACNG6</b>	calcium channel, voltage-dependent, gamma subunit 6	-2,204
<b>COL4A5</b>	collagen, type IV, alpha 5	-2,202
<b>SYNGR2</b>	synaptogyrin 2	-2,200
<b>FAM72D</b>	family with sequence similarity 72, member D	-2,193
<b>FBP2</b>	fructose-1,6-bisphosphatase 2	-2,192
<b>SMPDL3A</b>	sphingomyelin phosphodiesterase, acid-like 3A	-2,190
<b>ARHGAP11A</b>	Rho GTPase activating protein 11A	-2,190
<b>SKA2</b>	spindle and kinetochore associated complex subunit 2	-2,190
<b>DTYMK</b>	deoxythymidylate kinase (thymidylate kinase)	-2,186
<b>GAS2L3</b>	growth arrest-specific 2 like 3	-2,186
<b>MAP6D1</b>	MAP6 domain containing 1	-2,185
<b>LINC00473</b>	long intergenic non-protein coding RNA 473	-2,180
<b>APBB2</b>	amyloid beta (A4) precursor protein-binding, family B, member 2	-2,179
<b>UCK1</b>	uridine-cytidine kinase 1	-2,178
<b>NAV2</b>	neuron navigator 2	-2,173
<b>ID4</b>	inhibitor of DNA binding 4, dominant negative helix-loop-helix protein	-2,172
<b>TACC3</b>	transforming, acidic coiled-coil containing protein 3	-2,170
<b>CYR61</b>	cysteine-rich, angiogenic inducer, 61	-2,170
<b>RGS3</b>	regulator of G-protein signaling 3	-2,167
<b>NEK2</b>	NIMA-related kinase 2	-2,167
<b>CSTF3</b>	cleavage stimulation factor, 3' pre-RNA, subunit 3, 77kDa	-2,163
<b>MUC3A</b>	mucin 3A, cell surface associated	-2,162
<b>B9D2</b>	B9 protein domain 2	-2,160
<b>C19orf33</b>	chromosome 19 open reading frame 33	-2,160
<b>ARL16</b>	ADP-ribosylation factor-like 16	-2,160
<b>FJX1</b>	four jointed box 1 (Drosophila)	-2,155

<b>CCDC71L</b>	coiled-coil domain containing 71-like	-2,152
<b>MSL3</b>	male-specific lethal 3 homolog (Drosophila)	-2,149
<b>PHF19</b>	PHD finger protein 19	-2,147
<b>NCAPG</b>	non-SMC condensin I complex, subunit G	-2,142
<b>CCNB2</b>	cyclin B2	-2,141
<b>CADM1</b>	cell adhesion molecule 1	-2,140
<b>NAB1</b>	NGFI-A binding protein 1 (EGR1 binding protein 1)	-2,140
<b>KIF18A</b>	kinesin family member 18A	-2,139
<b>CCDC134</b>	coiled-coil domain containing 134	-2,138
<b>SAMD11</b>	sterile alpha motif domain containing 11	-2,133
<b>CALML5</b>	calmodulin-like 5	-2,132
<b>ARHGEF39</b>	Rho guanine nucleotide exchange factor (GEF) 39	-2,131
<b>SLC22A15</b>	solute carrier family 22, member 15	-2,130
<b>HJURP</b>	Holliday junction recognition protein	-2,130
<b>RGS22</b>	regulator of G-protein signaling 22	-2,129
<b>SLC27A4</b>	solute carrier family 27 (fatty acid transporter), member 4	-2,123
<b>NXP3</b>	neurexophilin 3	-2,120
<b>MXD3</b>	MAX dimerization protein 3	-2,115
<b>CYB561D2</b>	cytochrome b561 family, member D2	-2,112
<b>HN1</b>	hematological and neurological expressed 1	-2,110
<b>GEMIN6</b>	gem (nuclear organelle) associated protein 6	-2,109
<b>GPS1</b>	G protein pathway suppressor 1	-2,103
<b>MEGF9</b>	multiple EGF-like-domains 9	-2,102
<b>ARL6IP1</b>	ADP-ribosylation factor-like 6 interacting protein 1	-2,101
<b>ORAI2</b>	ORAI calcium release-activated calcium modulator 2	-2,097
<b>UGT2B11</b>	UDP glucuronosyltransferase 2 family, polypeptide B11	-2,096
<b>CENPM</b>	centromere protein M	-2,091
<b>KLHDC3</b>	kelch domain containing 3	-2,090
<b>KRTAP4-1</b>	keratin associated protein 4-1	-2,090
<b>ITGB5</b>	integrin, beta 5	-2,089
<b>SPC25</b>	SPC25, NDC80 kinetochore complex component, homolog (S. cerevisiae)	-2,087
<b>BAG1</b>	BCL2-associated athanogene	-2,083
<b>HID1</b>	HID1 domain containing	-2,082
<b>PTTG3P</b>	pituitary tumor-transforming 3, pseudogene	-2,081
<b>OGFOD3</b>	2-oxoglutarate and iron-dependent oxygenase domain containing 3	-2,079



<b>LYPD6</b>	LY6/PLAUR domain containing 6	-2,078
<b>CKS2</b>	CDC28 protein kinase regulatory subunit 2	-2,077
<b>TIMP2</b>	TIMP metalloproteinase inhibitor 2	-2,076
<b>KIN</b>	KIN, antigenic determinant of recA protein homolog (mouse)	-2,073
<b>CHMP4B</b>	charged multivesicular body protein 4B	-2,072
<b>LRIG1</b>	leucine-rich repeats and immunoglobulin-like domains 1	-2,072
<b>MFSD12</b>	major facilitator superfamily domain containing 12	-2,070
<b>TNFRSF11B</b>	tumor necrosis factor receptor superfamily, member 11b	-2,070
<b>MED18</b>	mediator complex subunit 18	-2,067
<b>SMARCD3</b>	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily d, member 3	-2,066
<b>SUSD2</b>	sushi domain containing 2	-2,064
<b>ARHGAP36</b>	Rho GTPase activating protein 36	-2,064
<b>MMD</b>	monocyte to macrophage differentiation-associated	-2,061
<b>CXCR4</b>	chemokine (C-X-C motif) receptor 4	-2,060
<b>DENND1A</b>	DENN/MADD domain containing 1A	-2,058
<b>SEPT9</b>	septin 9	-2,056
<b>ITGB1BP1</b>	integrin beta 1 binding protein 1	-2,050
<b>CFD</b>	complement factor D (adipsin)	-2,050
<b>C9orf3</b>	chromosome 9 open reading frame 3	-2,050
<b>TUBB4B</b>	tubulin, beta 4B class IVb	-2,049
<b>PEG10</b>	paternally expressed 10	-2,049
<b>H2AFX</b>	H2A histone family, member X	-2,049
<b>SNX17</b>	sorting nexin 17	-2,049
<b>RIN1</b>	Ras and Rab interactor 1	-2,043
<b>KCNF1</b>	potassium voltage-gated channel, subfamily F, member 1	-2,042
<b>KIF11</b>	kinesin family member 11	-2,041
<b>RTN2</b>	reticulon 2	-2,041
<b>CXXC4</b>	CXXC finger protein 4	-2,040
<b>RHOH</b>	ras homolog family member H	-2,040
<b>NFYB</b>	nuclear transcription factor Y, beta	-2,038
<b>ADI1</b>	acireductone dioxygenase 1	-2,036
<b>CHMP6</b>	charged multivesicular body protein 6	-2,034
<b>PRADC1</b>	protease-associated domain containing 1	-2,034
<b>RTKN2</b>	rhotekin 2	-2,022
<b>C7orf29</b>	chromosome 7 open reading frame 29	-2,022

<b>MKI67</b>	antigen identified by monoclonal antibody Ki-67	-2,020
<b>HTRA1</b>	HtrA serine peptidase 1	-2,020
<b>CLDN4</b>	claudin 4	-2,016
<b>UROS</b>	uroporphyrinogen III synthase	-2,016
<b>ARFIP2</b>	ADP-ribosylation factor interacting protein 2	-2,016
<b>ARMC7</b>	armadillo repeat containing 7	-2,012
<b>SLC31A2</b>	solute carrier family 31 (copper transporters), member 2	-2,012
<b>GPER</b>	G protein-coupled estrogen receptor 1	-2,010
<b>NAB2</b>	NGFI-A binding protein 2 (EGR1 binding protein 2)	-2,010
<b>UBA5</b>	ubiquitin-like modifier activating enzyme 5	-2,007
<b>SLC9A3R2</b>	solute carrier family 9, subfamily A (NHE3, cation proton antiporter 3), member 3 regulator 2	-2,004
<b>NT5C</b>	5', 3'-nucleotidase, cytosolic	-2,003
<b>FAM83B</b>	family with sequence similarity 83, member B	-2,001