

Table S1. List of 180 significantly down-regulated genes ($\log_2(\text{Fold change}) < -1$, $p < 0.05$) in ovary after exposure to Cu NPs (12.5 mg/kg/d) for 14day.

gene	Description	$\log_2(\text{Fold_change})$	p-value
Mmp13	matrix metallopeptidase 13	-8.84	0
Edn2	endothelin 2	-5.19	0.0016
Mir451	microRNA mir-451	-4.82	0.0002
Sfrp4	secreted frizzled-related protein 4	-4.17	0
RGD1559493	similar to Hypothetical protein MGC58608	-3.84	0.0016
Arntl	aryl hydrocarbon receptor nuclear translocator-like	-3.36	0
Syt13	synaptotagmin XIII	-3.11	0
Mirlet7i	microRNA let-7i	-3.11	0.0013
Gpihbp1	glycosylphosphatidylinositol anchored high density lipoprotein	-3.1	0
Atp6v0d2	ATPase, H ⁺ transporting, lysosomal V0 subunit D2	-3.06	0.0001
Wnt2b	wingless-type MMTV integration site family, member 2B	-3.03	0
Tspan33	tetraspanin 33	-3	0
Loxl2	lysyl oxidase-like 2	-2.77	0
Bpifc	BPI fold containing family C	-2.73	0.0001
Prrx2	paired related homeobox 2	-2.72	0
Tnfrsf12a	tumor necrosis factor receptor superfamily, member 12a	-2.63	0
Chrnb4	cholinergic receptor, nicotinic, beta 4 (neuronal)	-2.62	0
Mir26a	microRNA mir-26a	-2.61	0.0007
Sgms2	sphingomyelin synthase 2	-2.6	0
Hbgef	heparin-binding EGF-like growth factor	-2.59	0.0002
Scgb1a1	secretoglobin, family 1A, member 1 (uteroglobin)	-2.54	0
Gfod1	glucose-fructose oxidoreductase domain containing 1	-2.51	0
Igfbp3	insulin-like growth factor binding protein 3	-2.39	0
Gpr183	G protein-coupled receptor 183	-2.36	0.0014
Vtcn1	V-set domain containing T cell activation inhibitor 1	-2.35	0
Plin2	perilipin 2	-2.34	0
B3gnt8	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase	-2.31	0.0006
Cdkn1a	cyclin-dependent kinase inhibitor 1A	-2.24	0
Pla2g1b	phospholipase A2, group IB, pancreas	-2.22	0
Padi3	peptidyl arginine deiminase, type III	-2.17	0.0008
Slc51a	solute carrier family 51, alpha subunit	-2.17	0
Tns4	tensin 4	-2.15	0
Chrna7	cholinergic receptor, nicotinic, alpha 7 (neuronal)	-2.11	0
Ca2	carbonic anhydrase 2	-2.08	0.0015
Lpcat2	lysophosphatidylcholine acyltransferase 2	-2.06	0.0011
Ptgfr	prostaglandin F receptor	-2.05	0
Megf10	multiple EGF-like domains 10	-2.04	0.0001
Chka	choline kinase alpha	-2.03	0
Tbc1d9	TBC1 domain family, member 9 (with GRAM domain)	-2.03	0.0003
Sema3d	sema domain, immunoglobulin domain (Ig), short basic domain,	-2.01	0
Scx	scleraxis	-2.01	0
Tub	tubby homolog (mouse)	-1.91	0
Mfge8	milk fat globule-EGF factor 8 protein	-1.88	0
Apoa1	apolipoprotein A-I	-1.82	0.0024
Mxra8	matrix-remodelling associated 8	-1.81	0

Rln1	relaxin 1	-1.81	0
Acpp	acid phosphatase, prostate	-1.8	0.0001
Prr13	proline rich 13	-1.78	0
Dusp1	dual specificity phosphatase 1	-1.78	0
Tpst2	tyrosylprotein sulfotransferase 2	-1.77	0
Lrrn3	leucine rich repeat neuronal 3	-1.76	0
Cdkn2b	cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)	-1.74	0
Cryba4	crystallin, beta A4	-1.73	0
LOC691921	hypothetical protein LOC691921	-1.71	0.0004
Epdr1	ependymin related protein 1 (zebrafish)	-1.68	0
Sri	sorcin	-1.67	0
Bcar1	breast cancer anti-estrogen resistance 1	-1.66	0
Ltn1	listerin E3 ubiquitin protein ligase 1	-1.65	0
Sorbs2	sorbin and SH3 domain containing 2	-1.65	0.0001
Ntmt1	N-terminal Xaa-Pro-Lys N-methyltransferase 1	-1.64	0
Dtd2	D-tyrosyl-tRNA deacylase 2 (putative)	-1.63	0.0001
LOC378467	promethin	-1.61	0
Fmo1	flavin containing monooxygenase 1	-1.6	0
Mgll	monoglyceride lipase	-1.58	0
Fabp6	fatty acid binding protein 6, ileal	-1.58	0
Ehd1	EH-domain containing 1	-1.58	0
Med10	mediator complex subunit 10	-1.57	0
Elmo1	engulfment and cell motility 1	-1.56	0
Wnt5b	wingless-type MMTV integration site family, member 5B	-1.54	0.0004
RT1-CE11	RT1 class I, locus CE11	-1.54	0
Cxcr4	chemokine (C-X-C motif) receptor 4	-1.53	0
Slc16a11	solute carrier family 16, member 11 (monocarboxylic acid	-1.53	0
Prss23	protease, serine, 23	-1.52	0
RT1-CE7	RT1 class I, locus CE7	-1.52	0
Ggt1	gamma-glutamyltransferase 1	-1.52	0
Mt1a	metallothionein 1a	-1.51	0
Gadd45a	growth arrest and DNA-damage-inducible, alpha	-1.5	0
Mt2A	metallothionein 2A	-1.5	0
Tubb2a	tubulin, beta 2A class IIa	-1.48	0
LOC679462	similar to Tetraspanin-15 (Tspan-15) (Transmembrane 4	-1.45	0
Rcan1	regulator of calcineurin 1	-1.44	0
Akr1c3	aldo-keto reductase family 1, member C3	-1.42	0
Anxa5	annexin A5	-1.42	0
Nudt4	nudix (nucleoside diphosphate linked moiety X)-type motif 4	-1.4	0
Crispld2	cysteine-rich secretory protein LCCL domain containing 2	-1.38	0
Maged2	melanoma antigen, family D, 2	-1.37	0
Dhx32	DEAH (Asp-Glu-Ala-His) box polypeptide 32	-1.37	0.0015
Dusp14	dual specificity phosphatase 14	-1.37	0
Hsd3b1	hydroxy-delta-5-steroid dehydrogenase, 3 beta- and steroid	-1.34	0
Hsd3b	3 beta-hydroxysteroid dehydrogenase/delta-5-delta-4 isomerase	-1.34	0
Hsd3b6	hydroxy-delta-5-steroid dehydrogenase, 3 beta- and steroid	-1.33	0
Adamts1	ADAM metallopeptidase with thrombospondin type 1 motif, 1	-1.32	0
Tmem140	transmembrane protein 140	-1.31	0.0008
Cmbl	carboxymethylenebutenolidase homolog (Pseudomonas)	-1.31	0

Dnaja4	DnaJ (Hsp40) homolog, subfamily A, member 4	-1.29	0
Avpi1	arginine vasopressin-induced 1	-1.28	0
RGD1566239	similar to RIKEN cDNA 2810428I15	-1.27	0
Osgin1	oxidative stress induced growth inhibitor 1	-1.26	0
Nfe2l1	nuclear factor, erythroid derived 2,-like 1	-1.26	0
Nf2	neurofibromin 2 (merlin)	-1.25	0
Fam19a5	family with sequence similarity 19 (chemokine (C-C motif)-like),	-1.25	0.001
Zfp36	zinc finger protein 36	-1.24	0.0001
Tmem86a	transmembrane protein 86A	-1.24	0
Actg1	actin, gamma 1	-1.24	0
Plscr1	phospholipid scramblase 1	-1.22	0
Mtap	methylthioadenosine phosphorylase	-1.21	0.0004
Dhfr	dihydrofolate reductase	-1.2	0
Hp	haptoglobin	-1.2	0
Emc6	ER membrane protein complex subunit 6	-1.19	0.002
Cebpb	CCAAT/enhancer binding protein (C/EBP), beta	-1.18	0
Fdx1	ferredoxin 1	-1.17	0
Hk1	hexokinase 1	-1.17	0
Ostf1	osteoclast stimulating factor 1	-1.17	0
Spp1	secreted phosphoprotein 1	-1.17	0
Lsm1	LSM1 homolog, U6 small nuclear RNA associated (<i>S. cerevisiae</i>)	-1.14	0
Rheb	Ras homolog enriched in brain	-1.14	0
Atp6v0e1	ATPase, H ⁺ transporting, lysosomal, V0 subunit e1	-1.14	0
Myo10	myosin X	-1.13	0
Pam16	presequence translocase-associated motor 16 homolog (<i>S.</i>	-1.13	0
Eef1e1	eukaryotic translation elongation factor 1 epsilon 1	-1.12	0.0011
Lims1	LIM and senescent cell antigen-like domains 1	-1.11	0.0003
Pfkp	phosphofructokinase, platelet	-1.11	0
Msrb1	methionine sulfoxide reductase B1	-1.11	0
Ppfia1	protein tyrosine phosphatase, receptor type, f polypeptide	-1.11	0.0011
Ifrd1	interferon-related developmental regulator 1	-1.09	0.0023
Slc3a2	solute carrier family 3 (activators of dibasic and neutral amino	-1.08	0
Insig1	insulin induced gene 1	-1.08	0
Mrp63	mitochondrial ribosomal protein 63	-1.07	0
Ccdc104	coiled-coil domain containing 104	-1.07	0.0005
Timp1	TIMP metallopeptidase inhibitor 1	-1.07	0
Snapap	SNAP-associated protein	-1.06	0
Dhcr24	24-dehydrocholesterol reductase	-1.04	0
Gulp1	GULP, engulfment adaptor PTB domain containing 1	-1.04	0.0009
Tp53inp1	tumor protein p53 inducible nuclear protein 1	-1.03	0.001
Actn4	actinin alpha 4	-1.03	0
S100a4	S100 calcium-binding protein A4	-1.02	0.0003
Sipa1l3	signal-induced proliferation-associated 1 like 3	-1.02	0.0018
Psmb3	proteasome (prosome, macropain) subunit, beta type 3	-1.02	0
Scap	SREBF chaperone	-1.02	0
Tex264	testis expressed 264	-1.01	0.0002
Dad1	defender against cell death 1	-1	0

Table S2. List of 141 significantly up-regulated genes ($\log_2(\text{Fold change}) > 1$, $p < 0.05$) in ovary after exposure to Cu NPs (12.5 mg/kg/d) for 14d.

Fat1	FAT tumor suppressor homolog 1 (Drosophila)	1	0
Alas1	aminolevulinate, delta-, synthase 1	1.01	0
Rere	arginine-glutamic acid dipeptide (RE) repeats	1.01	0.0003
Glul	glutamate-ammonia ligase	1.01	0
Hnrpd1	heterogeneous nuclear ribonucleoprotein D-like	1.01	0
Slc25a28	solute carrier family 25 (mitochondrial iron transporter), member	1.02	0
Trafid1	TRAF type zinc finger domain containing 1	1.02	0.0006
Hsd17b1	hydroxysteroid (17-beta) dehydrogenase 1	1.03	0
Fgfr1	Fibroblast growth factor receptor 1	1.04	0.0008
Cd4	Cd4 molecule	1.05	0.0008
Cirbp	cold inducible RNA binding protein	1.05	0
Mmd2	monocyte to macrophage differentiation-associated 2	1.06	0
Atp6v0a1	ATPase, H ⁺ transporting, lysosomal V0 subunit A1	1.07	0
Slc12a4	solute carrier family 12 (potassium/chloride transporters), member	1.07	0.0009
Ddx39b	DEAD (Asp-Glu-Ala-Asp) box polypeptide 39B	1.07	0
Cited2	Cbp/p300-interacting transactivator, with Glu/Asp-rich	1.08	0
Fam213a	family with sequence similarity 213, member A	1.08	0
Coq10b	coenzyme Q10 homolog B (S. cerevisiae)	1.09	0
Hspb1	heat shock protein 1	1.09	0
Mat2a	methionine adenosyltransferase II, alpha	1.1	0
Etnk2	ethanolamine kinase 2	1.11	0.0003
Pced1a	PC-esterase domain containing 1A	1.11	0.0009
Baz1b	bromodomain adjacent to zinc finger domain, 1B	1.11	0.0001
Usp33	ubiquitin specific peptidase 33	1.11	0.0002
Kank1	KN motif and ankyrin repeat domains 1	1.11	0.0013
Gpnmb	glycoprotein (transmembrane) nmb	1.11	0
C4b	complement component 4B (Chido blood group)	1.12	0.0001
Crebf	CREB/ATF bZIP transcription factor	1.12	0.0008
Srek1	splicing regulatory glutamine/lysine-rich protein 1	1.13	0
Irf3	interferon regulatory factor 3	1.13	0
Rbmx	RNA binding motif protein, X-linked	1.13	0.0007
Slc25a30	solute carrier family 25, member 30	1.14	0
Hnrph1	heterogeneous nuclear ribonucleoprotein H1	1.14	0
Tsc22d3	TSC22 domain family, member 3	1.15	0
Ccl6	chemokine (C-C motif) ligand 6	1.15	0
Ankle2	ankyrin repeat and LEM domain containing 2	1.16	0.0005
Tmem178a	transmembrane protein 178A	1.17	0
Csdc2	cold shock domain containing C2, RNA binding	1.17	0.0004
Ptprs	protein tyrosine phosphatase, receptor type, S	1.17	0.0023
Ckap4	cytoskeleton-associated protein 4	1.18	0.0007
Il3ra	interleukin 3 receptor, alpha	1.19	0.0023
RGD1308297	similar to CG10084-PA	1.19	0.002
Cpsf7	cleavage and polyadenylation specific factor 7	1.2	0.0005
Sf3b1	splicing factor 3b, subunit 1	1.2	0
Srsf6	serine/arginine-rich splicing factor 6	1.2	0
C4a	complement component 4A (Rodgers blood group)	1.2	0

Mdm4	Mdm4 p53 binding protein homolog (mouse)	1.2	0.0017
Zc3h7a	zinc finger CCCH type containing 7 A	1.2	0.0025
LOC680227	LRRGT00193	1.21	0
Hmgb2	high mobility group box 2	1.22	0
Vnn1	vanin 1	1.22	0.0023
Tra2a	transformer 2 alpha homolog (Drosophila)	1.24	0
Cdkn1b	cyclin-dependent kinase inhibitor 1B	1.25	0
Cdk1	cyclin-dependent kinase 1	1.26	0.0011
Epn2	epsin 2	1.26	0.0011
Akap8	A kinase (PRKA) anchor protein 8	1.26	0.0001
Cited1	Cbp/p300-interacting transactivator with Glu/Asp-rich	1.26	0.0001
Ddx5	DEAD (Asp-Glu-Ala-Asp) box helicase 5	1.27	0
Amhr2	anti-Mullerian hormone receptor, type II	1.27	0.0008
Srsf5	serine/arginine-rich splicing factor 5	1.28	0
RT1-CE4	RT1 class I, locus CE4	1.28	0.0002
Idua	iduronidase, alpha-L-	1.28	0
Gpcpd1	glycerophosphocholine phosphodiesterase GDE1 homolog (S. cerevisiae)	1.31	0.0004
Mmp11	matrix metallopeptidase 11	1.32	0
Mvk	mevalonate kinase	1.32	0
Hmox1	heme oxygenase (decycling) 1	1.33	0
Srrm2	serine/arginine repetitive matrix 2	1.34	0
Ddx17	DEAD (Asp-Glu-Ala-Asp) box polypeptide 17	1.34	0
Srd5a1	steroid-5-alpha-reductase, alpha polypeptide 1 (3-oxo-5 alpha-steroid reductase)	1.35	0.0005
Fcer2	Fc fragment of IgE, low affinity II, receptor for (CD23)	1.35	0.0024
Pnn	pinin, desmosome associated protein	1.36	0
Gigyf1	GRB10 interacting GYF protein 1	1.36	0.0024
Leng8	leukocyte receptor cluster (LRC) member 8	1.36	0
Fbln1	fibulin 1	1.37	0
Iffo1	intermediate filament family orphan 1	1.38	0.0012
Srsf11	serine/arginine-rich splicing factor 11	1.39	0
Appl2	adaptor protein, phosphotyrosine interaction, PH domain and leucine-rich repeats	1.39	0.0003
Zfp386	zinc finger protein 386 (Kruppel-like)	1.39	0.0007
Zgpat	zinc finger, CCCH-type with G patch domain	1.4	0.0019
Snrnp70	small nuclear ribonucleoprotein 70 (U1)	1.41	0
Luc7l3	LUC7-like 3 (S. cerevisiae)	1.41	0
Tmpo	thymopoietin	1.41	0
LOC100362110	LRRGT00155-like	1.42	0
Ankrd10	ankyrin repeat domain 10	1.42	0.0002
Hmox2-ps1	heme oxygenase (decycling) 2, pseudogene 1	1.43	0
RGD1359529	similar to chromosome 1 open reading frame 63	1.43	0
Fnbp4	formin binding protein 4	1.43	0.0002
Kcnk3	potassium channel, subfamily K, member 3	1.46	0
Nr1d2	nuclear receptor subfamily 1, group D, member 2	1.47	0
Adamts10	ADAM metallopeptidase with thrombospondin type 1 motif, 10	1.47	0
Nxf1	nuclear RNA export factor 1	1.47	0
Suv420h2	suppressor of variegation 4-20 homolog 2 (Drosophila)	1.47	0.0009
Vegfa	vascular endothelial growth factor A	1.47	0
Ccnl1	cyclin L1	1.48	0
Nid2	nidogen 2 (osteonidogen)	1.48	0.0004

Zmym3	zinc finger, MYM-type 3	1.48	0.0001
Txnip	thioredoxin interacting protein	1.49	0
Clk4	CDC-like kinase 4	1.5	0
Inhhb	inhibin beta-B	1.52	0
C2	complement component 2	1.52	0
Cldn11	claudin 11	1.53	0
Fam193b	family with sequence similarity 193, member B	1.53	0.0004
Enpp2	ectonucleotide pyrophosphatase/phosphodiesterase 2	1.53	0.002
Prpf4b	PRP4 pre-mRNA processing factor 4 homolog B (yeast)	1.56	0
Clasrp	CLK4-associating serine/arginine rich protein	1.56	0.0001
Lmnb1	lamin B1	1.57	0.0005
Clk1	CDC-like kinase 1	1.59	0
Bco2	beta-carotene oxygenase 2	1.6	0.0001
Top2a	topoisomerase (DNA) II alpha	1.6	0.0012
Wsb1	WD repeat and SOCS box-containing 1	1.64	0
Lig4	ligase IV, DNA, ATP-dependent	1.64	0.0006
Slco3a1	solute carrier organic anion transporter family, member 3a1	1.65	0.0002
Cyr61	cysteine-rich, angiogenic inducer, 61	1.65	0
Tacc3	transforming, acidic coiled-coil containing protein 3	1.65	0.0022
Phyhd1	phytanoyl-CoA dioxygenase domain containing 1	1.66	0.0007
Ogt	O-linked N-acetylglucosamine (GlcNAc) transferase	1.66	0
Cdc20	cell division cycle 20	1.66	0.0017
RT1-N3	RT1 class Ib, locus N3	1.66	0.0007
Sostdc1	sclerostin domain containing 1	1.67	0
Gabbr1	gamma-aminobutyric acid (GABA) B receptor 1	1.68	0.0002
Mest	mesoderm specific transcript homolog (mouse)	1.69	0
LOC499742	LRRG00137	1.69	0
Calb2	calbindin 2	1.71	0
Zfp692	zinc finger protein 692	1.72	0.0005
Tia1	TIA1 cytotoxic granule-associated RNA binding protein	1.72	0.0002
Slfn13	schlafen family member 13	1.72	0
Mt3	metallothionein 3	1.72	0.0001
Ube2c	ubiquitin-conjugating enzyme E2C	1.73	0.0004
LOC499136	LRRGT00021	1.74	0
Nrbp2	nuclear receptor binding protein 2	1.75	0
Akap81	A kinase (PRKA) anchor protein 8-like	1.75	0
Ccnl2	cyclin L2	1.77	0
Tmem184a	transmembrane protein 184A	1.77	0.0016
Aox1	aldehyde oxidase 1	1.77	0
Fads1	fatty acid desaturase 1	1.77	0
Coro6	coronin 6	1.79	0.0003
LOC498592	similar to CG32662-PA	1.82	0
Srxn1	sulfiredoxin 1	1.82	0
Car11	carbonic anhydrase 11	1.83	0.0003
Ikbke	inhibitor of kappa light polypeptide gene enhancer in B-cells,	1.85	0.0019
Ihh	Indian hedgehog	1.87	0
Apbb3	amyloid beta (A4) precursor protein-binding, family B, member 3	1.9	0.0005
Per1	period circadian clock 1	1.9	0
Pnirs	PNN-interacting serine/arginine-rich protein	1.92	0

Tk1	thymidine kinase 1, soluble	1.97	0
Slc26a2	solute carrier family 26 (sulfate transporter), member 2	1.97	0
Vcan	versican	2.01	0
Pla2g4b	phospholipase A2, group IVB (cytosolic)	2.05	0.0022
Akr1c19	aldo-keto reductase family 1, member C19	2.1	0
LOC100361645	LRRGT00075-like	2.13	0.0008
Mki67	antigen identified by monoclonal antibody Ki-67	2.14	0.0025
RT1-Db2	RT1 class II, locus Db2	2.16	0.0009
Mir3074	microRNA mir-3074	2.18	0.0019
Rrm2	ribonucleotide reductase M2	2.19	0.0002
Kcnt1	potassium channel, subfamily T, member 1	2.19	0
Dusp15	dual specificity phosphatase 15	2.2	0.0015
Mapk13	mitogen activated protein kinase 13	2.21	0.0001
Hexdc	hexosaminidase (glycosyl hydrolase family 20, catalytic domain)	2.22	0.0001
Ns5atp9	NS5A (hepatitis C virus) transactivated protein 9	2.33	0
Ccna2	cyclin A2	2.34	0.0007
Cntfr	ciliary neurotrophic factor receptor	2.4	0
Cpne7	copine VII	2.44	0
Tef	thyrotrophic embryonic factor	2.49	0
Them5	thioesterase superfamily member 5	2.49	0.0001
Mir145	microRNA mir-145	2.6	0.0001
Dbp	D site of albumin promoter (albumin D-box) binding protein	2.81	0
Per2	period circadian clock 2	2.84	0
RT1-N1	RT1 class Ib, locus N1	2.87	0
Per3	period circadian clock 3	2.88	0
Lilrb4	leukocyte immunoglobulin-like receptor, subfamily B, member 4	2.92	0
Pzp	pregnancy-zone protein	2.97	0.0013
RT1-N2	RT1 class Ib, locus N2	2.97	0
Prph	peripherin	3.01	0.0002
Pla2g2d	phospholipase A2, group IID	3.12	0.0009
Oas1a	2'-5' oligoadenylate synthetase 1A	3.23	0.0001
RT1-CE3	RT1 class I, locus CE3	3.84	0
LOC252890	Z39 small nucleolar RNA	4.24	0.0015
Lyc2	lysozyme C type 2	4.84	0.0012
Mir320	microRNA mir-320	5.25	0
Fam111a	family with sequence similarity 111, member A	5.66	0