

Supplementary

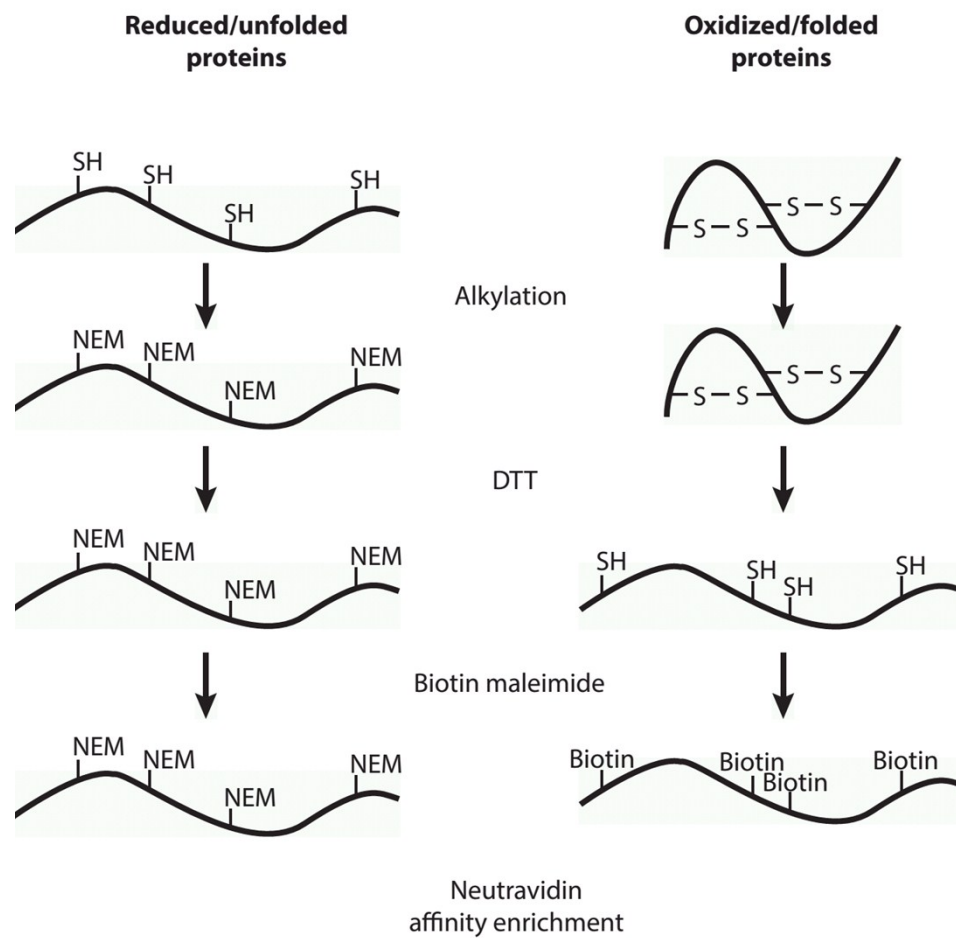


Figure S 1. Experimental workflow to enrich proteins reversibly oxidized subsequent to HAL-PDT treatment.

Table S1. This table is the HAL-PDT dataset and presents high confidence proteins reversibly oxidized by HAL-PDT in A431 cells

The columns denoted ‘CDP’, ‘dbGSH’ and ‘RedoxDB’ are marked if the proteins are also found in the databases Cell Death Proteomics (Arntzen *et al*, 2013; Arntzen & Thiede, 2012), dbGSH (Chen *et al*, 2014) and RedoxDB (Sun *et al*, 2012), respectively. The column denoted A431 gives proteins identified in A431 cells (Lundberg *et al*, 2010). The columns denoted Pc4 and Gd give proteins identified to be reversibly oxidized after Pc4-PDT (Tsaytler *et al*, 2008) and oxidized after gadolinium-PDT (Qi *et al*, 2015).

Gene Symbol	Uniprot ID	Protein Name	Gene ontology (cellular component)	dbGSH	Redox DB	Cell Death	A431	Pc4	Gd
AACS	Q86V21	Acetoacetyl-CoA synthetase	cytosol				+		
ABCC1	P33527-8	Isoform 8 of Multidrug resistance-associated protein 1	basolateral plasma membrane			+	+		
ABCD3	F5GYC1	ATP-binding cassette sub-family D member 3					+		+
ABCF2	Q9UG63	Isoform 2 of ATP-binding cassette sub-family F member 2	ATP-binding cassette (ABC) transporter complex				+		
ACACB	O00763-2	Isoform 2 of Acetyl-CoA carboxylase 2	cytosol				+		
ACADM	B7Z9I1	Medium-chain-specific acyl-CoA dehydrogenase, mitochondrial (Fragment)	mitochondrion				+	+	
ACAT1	P24752	Acetyl-CoA acetyltransferase, mitochondrial (Fragment)	extracellular exosome	+			+		
ACOT9	Q9Y305-2	Isoform 2 of Acyl-coenzyme A thioesterase 9, mitochondrial	mitochondrion				+		
ACSL3	O95573	Long-chain-fatty-acid--CoA ligase 3	endoplasmic reticulum				+		
ACSL4	O60488-2	Isoform Short of Long-chain-fatty-acid--CoA ligase 4	cytoplasm	+			+		+
ACTA1	A6NL76	Actin, alpha skeletal muscle		+			+		+
ACTA2	F6UVQ4	Actin, aortic smooth muscle (Fragment)		+	+		+		
ACTC1	P68032	Actin, alpha cardiac muscle 1	actin filament	+	+		+		+

ACTG2	C9JFL5	Actin, gamma-enteric smooth muscle (Fragment)		+			+		
ACTN2	P35609	Alpha-actinin-2	actin filament			+			
ACTR1B	P42025	Beta-centractin	centrosome				+		
ADPRHL2	Q9NX46	Poly(ADP-ribose) glycohydrolase ARH3	mitochondrial matrix				+		
ADSL	P30566	Adenylosuccinate lyase (Fragment)	cytosol	+	+				
AFAP1L2	F6QUH3	Actin filament-associated protein 1-like 2 (Fragment)	cytoplasm				+		
AIM1	Q9Y4K1	Absent in melanoma 1 protein					+		
AIMP1	Q12904	Aminoacyl tRNA synthase complex-interacting multifunctional protein 1	aminoacyl-tRNA synthetase multienzyme complex	+			+		+
ALYREF	E9PB61	THO complex subunit 4	intracellular membrane-bounded organelle			+	+		+
ANXA1	Q5T3N0	Annexin (Fragment)	cytoplasm		+	+	+		+
ANXA4	Q6P452	Annexin				+	+		+
AP3B2	Q13367-3	Isoform 3 of AP-3 complex subunit beta-2	AP-3 adaptor complex						
AP3D1	O14617-3	Isoform 3 of AP-3 complex subunit delta-1	endosome membrane	+		+	+		
APEX1	G3V5M0	DNA-(apurinic or apyrimidinic site) lyase (Fragment)	intracellular	+	+	+	+	+	
ARHGAP1	Q07960	Rho GTPase-activating protein 1	cytoplasm			+	+		+
ARHGEF2	Q5VY93	Rho guanine nucleotide exchange factor 2		+		+	+		
ARPC2	O15144	Actin-related protein 2/3 complex subunit 2 (Fragment)	actin cytoskeleton			+	+		+
ASAP2	O43150-2	Isoform 2 of Arf-GAP with SH3 domain, ANK repeat and PH domain-containing protein 2	Golgi cisterna membrane						
ASNS	F8WEJ5	Asparagine synthetase [glutamine-hydrolyzing]		+		+	+		

ATAD3C	Q5T2N8	ATPase family AAA domain-containing protein 3C							
ATM	Q13315	Serine-protein kinase ATM	cytoplasmic membrane-bounded vesicle						
ATP1B1	V9GYR2	Sodium/potassium-transporting ATPase subunit beta (Fragment)	sodium:potassium-exchanging ATPase complex				+		
ATP6V1A	P38606	V-type proton ATPase catalytic subunit A	apical plasma membrane				+		+
AZGP1	P25311	Zinc-alpha-2-glycoprotein	extracellular exosome				+		
BCAP31	C9JSP1	B-cell receptor-associated protein 31 (Fragment)	endoplasmic reticulum			+	+		+
BCLAF1	H0YF00	Bcl-2-associated transcription factor 1 (Fragment)	nucleus			+	+		+
CAND2	F8WBB8	Cullin-associated NEDD8-dissociated protein 2	nucleus						
CANX	P27824	Calnexin	axon			+	+	+	+
CAPZB	B1AK87	Capping protein (Actin filament) muscle Z-line, beta, isoform CRA	actin filament		+	+	+		+
CARM1	Q86X55-2	Isoform 2 of Histone-arginine methyltransferase CARM1	cytoplasm				+		
CARS	P49589-2	Isoform 2 of Cysteine--tRNA ligase, cytoplasmic	cytoplasm				+	+	
CBR1	P16152	Carbonyl reductase [NADPH] 1	cytosol	+	+		+	+	+
CBR3	O75828	Carbonyl reductase [NADPH] 3	cytoplasm			+	+		
CC2D1A	Q6P1N0-2	Isoform 2 of Coiled-coil and C2 domain-containing protein 1A	cytoplasm				+		
CCAR1	Q8IX12-2	Isoform 2 of Cell division cycle and apoptosis regulator protein 1	nucleoplasm	+			+		
CDC45	O75419-2	Isoform 2 of Cell division control protein 45 homolog	centrosome				+		
CDK1	P06493	Cyclin-dependent kinase 1 (Fragment)	centrosome			+	+		+

CDC2	A0A024QZP7	Cell division cycle 2, G1 to S and G2 to M, isoform CRA				+	+		+
CHD4	F5GWX5	Chromodomain-helicase-DNA-binding protein 4	nucleoplasm	+		+	+		+
CKAP4	Q07065	Cytoskeleton-associated protein 4	cytoskeleton				+		+
COG5	Q9UP83-3	Isoform 3 of Conserved oligomeric Golgi complex subunit 5	cytosol				+		
COLGALT1	Q8NBJ5	Procollagen galactosyltransferase 1	endoplasmic reticulum lumen	+			+		+
COPS2	P61201	COP9 signalosome complex subunit 2	COP9 signalosome				+		
CPSF3	G5E9W3	Cleavage and polyadenylation specific factor 3, 73kDa, isoform CRA		+			+		+
CPSF6	Q16630	Cleavage and polyadenylation specificity factor subunit 6	membrane	+		+	+		+
CPSF3L	H0YE15	Integrator complex subunit 11 (Fragment)					+		
CPT1A	P50416-2	Isoform 2 of Carnitine O-palmitoyltransferase 1, liver isoform	integral component of mitochondrial outer membrane			+			
CSK	H3BU69	Tyrosine-protein kinase CSK (Fragment)	extrinsic component of cytoplasmic side of plasma membrane	+			+		
CTNNB1	Q8WYA6-4	Isoform 4 of Beta-catenin-like protein 1	cytoplasm				+		
CTPS1	P17812	Isoform 2 of CTP synthase 1	cytosol	+			+		
CTTN	Q14247	Src substrate cortactin	cell cortex			+	+	+	+
CUL3	Q13618-2	Isoform 2 of Cullin-3	Cul3-RING ubiquitin ligase complex				+		
CUL4A	A0A087WWN2	Cullin-4A					+		
CUL4B	Q13620-3	Isoform 3 of Cullin-4B	Cul4B-RING E3 ubiquitin ligase			+	+		

			complex						
CYB5R3	P00387-2	NADH-cytochrome b5 reductase 3	cytoplasm				+		+
DAP3	P51398-2	28S ribosomal protein S29, mitochondrial (Fragment)	mitochondrial inner membrane				+		
DDB1	F5H581	DNA damage-binding protein 1 (Fragment)		+			+	+	
DDRGK1	Q96HY6	DDRGK domain-containing protein 1	endoplasmic reticulum				+		
DDX5	P17844	Probable ATP-dependent RNA helicase DDX5	catalytic step 2 spliceosome	+		+	+		+
DDX6	P26196	Probable ATP-dependent RNA helicase DDX6	cytoplasm	+			+		+
DDX50	Q9BQ39	ATP-dependent RNA helicase DDX50	membrane				+		
DDX3X	A0A0J9YVQ7	ATP-dependent RNA helicase DDX3X (Fragment)		+			+	+	+
DDX3Y	O15523	ATP-dependent RNA helicase DDX3Y	cytoplasmic ribonucleoprotein granule	+		+	+		
DECR1	E5RJD2	2,4-dienoyl-CoA reductase, mitochondrial (Fragment)					+		
DEK	D6R9L5	Protein DEK (Fragment)		+			+		+
DHCR7	Q9UBM7	7-dehydrocholesterol reductase	endoplasmic reticulum				+		
DHX8	F5H658	ATP-dependent RNA helicase DHX8	cytoplasm				+		
DHX30	Q7L2E3-3	Isoform 3 of Putative ATP-dependent RNA helicase DHX30	cytoplasm	+			+		
DNAJB11	H7C2Y5	DnaJ homolog subfamily B member 11 (Fragment)					+		
DNAJC2	Q99543-2	Isoform 2 of DnaJ homolog subfamily C member 2	cytoplasm	+			+		
DNAJC3	Q13217	DnaJ homolog subfamily C member 3	cytoplasm				+		

DNAJC7	K7EJE9	DnaJ homolog subfamily C member 7 (Fragment)	cytoplasm	+		+	+		
DRG1	Q9Y295	Developmentally-regulated GTP-binding protein 1	cytoplasm				+		+
DYNC1I2	Q13409-6	Isoform 2E of Cytoplasmic dynein 1 intermediate chain 2	centrosome				+	+	
DYNC1LI2	J3KRI4	Cytoplasmic dynein 1 light intermediate chain 2 (Fragment)	cytoplasmic dynein complex	+			+		
ECHDC1	Q9NTX5-3	Isoform 3 of Ethylmalonyl-CoA decarboxylase	cytosol				+		
ECHS1	P30084	Enoyl-CoA hydratase, mitochondrial	extracellular exosome	+	+		+		+
EIF2B1	F5H0D0	Translation initiation factor eIF-2B subunit alpha					+		+
EIF2S2	P20042	Eukaryotic translation initiation factor 2 subunit 2	cytoplasm	+			+		
EIF3E	E5RGA2	Eukaryotic translation initiation factor 3 subunit E	cytoplasm				+		
EIF3G	K7ENA8	Eukaryotic translation initiation factor 3 subunit G (Fragment)	cytoplasm			+	+	+	
EIF3M	Q7L2H7-2	Isoform 2 of Eukaryotic translation initiation factor 3 subunit M	eukaryotic 43S preinitiation complex	+			+		
EIF4A3	I3L3H2	Eukaryotic initiation factor 4A-III (Fragment)	nucleoplasm			+	+		+
EMD	Q5HY57	Emerin	endoplasmic reticulum				+		
EPHB2	B1AKC9	Receptor protein-tyrosine kinase	integral component of plasma membrane				+		
EPPK1	A0A075B730	Epiplakin	cytoskeleton						
ERLIN1	B0QZ43	Erlin-1 (Fragment)					+		
ERLIN2	O94905	Erlin-2 (Fragment)	cytoplasm			+	+		
ERMP1	E7ER77	Endoplasmic reticulum metalloproteinase 1					+		
ESF1	Q9H501	ESF1 homolog	extracellular space				+		
EVPL	Q92817	Envoplakin	cornified envelope				+		

EXOC1	Q9NV70	Exocyst complex component 1	cytoplasm					+		
EXOC2	Q96KP1	Exocyst complex component 2	cytosol					+		
EXOC4	B7Z321	Isoform 2 of Exocyst complex component 4						+		
FAF2	Q96CS3	FAS-associated factor 2	endoplasmic reticulum	+				+		
FAM120A	Q9NZB2-4	Isoform D of Constitutive coactivator of PPAR-gamma-like protein 1	cytoplasm					+		
FAM49A	Q9H0Q0	Protein FAM49A	intracellular							
FANCI	Q9NV11	Isoform 1 of Fanconi anemia group I protein	cytoplasm					+		
FARSB	Q9NSD9	Phenylalanine--tRNA ligase beta subunit	cytoplasm					+	+	
FBL	M0QXL5	rRNA 2'-O-methyltransferase fibrillar (Fragment)	box C/D snoRNP complex				+	+		+
FDFT1	P37268-4	Isoform 4 of Squalene synthase	endoplasmic reticulum					+		
FERMT1	Q9BQL6	Fermitin family homolog 1	cell junction					+		
FLG2	Q5D862	Filaggrin-2	cytoplasm							
FUS	P35637	RNA-binding protein FUS	dendritic spine head				+	+	+	+
FXR1	P51114-3	Isoform 3 of Fragile X mental retardation syndrome-related protein 1	axon	+				+		
G3BP1	E5RI46	Ras GTPase-activating protein-binding protein 1 (Fragment)	intracellular				+	+		+
G3BP2	Q9UN86-2	Isoform B of Ras GTPase-activating protein-binding protein 2	cytoplasm				+	+		
GARS	H7C443	Glycine--tRNA ligase (Fragment)				+	+	+	+	+
GBP1	P32455	Guanylate-binding protein 1	cytosol					+		
GCLM	P48507	Glutamate--cysteine ligase regulatory subunit	cytosol					+		
GFPT1	Q06210-2	Isoform 2 of Glutamine--fructose-6-phosphate aminotransferase	cytosol				+	+		+

		[isomerizing] 1							
GMPS	P49915	GMP synthase [glutamine-hydrolyzing]	cytoplasm	+		+	+		+
GNAI2	P04899-6	Isoform 6 of Guanine nucleotide-binding protein G(i) subunit alpha-2	centrosome	+			+		
GNB1	F6X3N5	Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1 (Fragment)			+	+			
GNB2	C9JZN1	Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-2 (Fragment)			+	+			
GNB3	P16520-2	Isoform 2 of Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-3	dendrite						
GNB4	C9JD14	Guanine nucleotide-binding protein subunit beta-4 (Fragment)					+		
GPD2	F5GYK7	Glycerol-3-phosphate dehydrogenase	glycerol-3-phosphate dehydrogenase complex				+		+
GSPT1	P15170	Eukaryotic peptide chain release factor GTP-binding subunit ERF3A	cytosol			+	+		
GTPBP1	F5H716	GTP-binding protein 1 (Fragment)					+		
GYS1	P13807	Glycogen [starch] synthase, muscle	cytoplasm				+		
HACD3	H3BMZ1	Very-long-chain (3R)-3-hydroxyacyl-CoA dehydratase 3 (Fragment)					+		
HGH1	Q9BTY7	Protein HGH1 homolog		+					
HGS	O14964-2	Isoform 2 of Hepatocyte growth factor-regulated tyrosine kinase substrate	cytoplasm				+		
HK2	E9PB90	Hexokinase	cytosol	+			+		
HKDC1	Q2TB90	Putative hexokinase HKDC1	cytosol						+
HMCES	D6RAI0	Embryonic stem cell-specific 5-hydroxymethylcytosine-binding				+			

		protein (Fragment)							
HNRNPAB	Q99729-2	Isoform 2 of Heterogeneous nuclear ribonucleoprotein A/B	cytoplasm			+	+		
HNRNPH2	P55795	Heterogeneous nuclear ribonucleoprotein H2	membrane	+			+		
HNRNPR	O43390-3	Isoform 3 of Heterogeneous nuclear ribonucleoprotein R	catalytic step 2 spliceosome	+	+	+	+		+
HSD17B10	Q5H928	3-hydroxyacyl-CoA dehydrogenase type-2		+	+	+	+		+
HSDL2	Q6YN16-2	Isoform 2 of Hydroxysteroid dehydrogenase-like protein 2	membrane	+			+		
HSPA2	P54652	Heat shock-related 70 kDa protein 2	blood microparticle				+		+
HSPA5	P11021	78 kDa glucose-regulated protein	cell surface		+	+	+		+
HSPA8	E9PK54	Heat shock cognate 71 kDa protein (Fragment)		+	+	+	+		+
HSPA1L	P34931	Heat shock 70 kDa protein 1-like	blood microparticle				+		
HSPB1	P04792	Heat shock protein beta-1	cytoplasm		+	+	+		+
HUWE1	Q7Z6Z7-2	E3 ubiquitin-protein ligase HUWE1	cytoplasm			+	+		
IDH1	O75874	Isocitrate dehydrogenase [NADP] cytoplasmic	cytoplasm	+			+		+
IGF2BP2	Q9Y6M1-1	Isoform 2 of Insulin-like growth factor 2 mRNA-binding protein 2	cytoplasm				+		+
IMPDH1	C9K0R9	Inosine-5'-monophosphate dehydrogenase 1 (Fragment)	cell junction	+			+		
IMPDH2	E7ETK5	Inosine-5'-monophosphate dehydrogenase 2 (Fragment)		+	+	+	+	+	+
INCENP	Q9NQS7	Inner centromere protein	central element				+		
IPO8	O15397	Importin-8	cytosol				+		
IQGAP1	P46940	Ras GTPase-activating-like protein IQGAP1	actin filament	+		+	+		+
ITGA2	E9PB77	Integrin alpha-2	integrin complex				+		
KARS	Q15046	Lysine--tRNA ligase	aminoacyl-tRNA	+		+	+	+	

			synthetase multienzyme complex						
KIF23	Q02241-3	Isoform 3 of Kinesin-like protein KIF23	centralspindlin complex				+		
KIF2A	O00139-2	Isoform 2 of Kinesin-like protein KIF2A	centrosome	+			+		
KLC2	Q9H0B6-2	Isoform 2 of Kinesin light chain 2	ciliary rootlet				+		
KRT17	K7EPJ9	Keratin, type I cytoskeletal 17 (Fragment)	intermediate filament						
KRT28	Q7Z3Y7	Keratin, type I cytoskeletal 28	cytoplasm						
KRT35	C4AM86	Keratin, type I cuticular Ha5	intermediate filament						
KRT78	Q8N1N4-2	Isoform 2 of Keratin, type II cytoskeletal 78	extracellular exosome						
KRT85	P78386	Keratin, type II cuticular Hb5	extracellular space						+
KRT33A	O76009	Keratin, type I cuticular Ha3-I	extracellular space						
KRT6B	P04259	Keratin, type II cytoskeletal 6B	extracellular exosome						
KRT87P	A6NCN2	Putative keratin-87 protein	extracellular space						
LANCL1	F8WDS9	LanC-like protein 1					+		
LAS1L	Q9Y4W2-4	Isoform 4 of Ribosomal biogenesis protein LAS1L	cytoplasm	+			+		
LCP1	P13796	Plastin-2	actin cytoskeleton	+	+	+	+		
LETM1	O95202	LETM1 and EF-hand domain-containing protein 1, mitochondrial	integral component of membrane	+			+		
LGALS3BP	Q08380	Galectin-3-binding protein	blood microparticle				+		
LMNA	P02545-3	Isoform ADelta10 of Prelamin-A/C	cytoplasm			+	+		+
LMNB1	A0A0D9SFE5	Lamin B1, isoform CRA	lamin filament	+		+	+		+
LRRC40	Q9H9A6	Leucine-rich repeat-containing protein 40	membrane	+		+	+		
LRRC47	Q8N1G4	Leucine-rich repeat-containing protein 47		+		+	+		
LSG1	Q9H089	Large subunit GTPase 1 homolog	Cajal body				+		

LSS	P48449-3	Isoform 2 of Lanosterol synthase	endoplasmic reticulum membrane				+		
MAD1L1	C9JPS1	Mitotic spindle assembly checkpoint protein MAD1 (Fragment)				+	+		
MAGEA1	P43355	Melanoma-associated antigen 1	cytoplasm				+		
MAGEA4	C9JIR1	Melanoma-associated antigen 4 (Fragment)					+	+	
MAGEA8	P43361	Melanoma-associated antigen 8							
MAGEA10	P43363	Melanoma-associated antigen 10	nucleus						
MAGEB3	O15480	Melanoma-associated antigen B3							
MAGEB16	A2A368	Melanoma-associated antigen B16							
MAGEB17	A8MXT2	Melanoma-associated antigen B17							
MAGEB18	Q96M61	Melanoma-associated antigen B18	cytoplasm						
MAGEC1	O60732-2	Isoform 2 of Melanoma-associated antigen C1					+		
MAGEC3	Q8TD91-2	Isoform 2 of Melanoma-associated antigen C3							
MAN1B1	H0YGV7	alpha-1,2-Mannosidase	membrane				+		
MAN2A1	Q16706	Alpha-mannosidase 2	cis-Golgi network				+		
MAP4	P27816-2	Microtubule-associated protein (Fragment)	cytoplasm	+	+	+	+	+	+
MAPK14	E7EX54	Mitogen-activated protein kinase 14 (Fragment)		+	+		+		
MARCKS	P29966	Myristoylated alanine-rich C-kinase substrate	actin cytoskeleton				+		+
DKFZp686L22104	Q68E03	Matrin-3	nucleus	+	+	+	+	+	+
MCMBP	Q9BTE3-2	Mini-chromosome maintenance complex-binding protein	cytoplasm	+		+	+		
MDC1	Q14676-2	Isoform 2 of Mediator of DNA damage checkpoint protein 1	chromosome				+	+	
MLH1	P40692-3	Isoform 3 of DNA mismatch repair protein Mlh1	chiasma				+	+	

MRPS9	P82933	28S ribosomal protein S9, mitochondrial	mitochondrial inner membrane	+			+		
MSN	P26038	Moesin	apical part of cell	+	+	+	+		+
MTA2	O94776	Metastasis-associated protein MTA2	histone deacetylase complex				+		
MTDH	E5RJU9	Protein LYRIC	endoplasmic reticulum				+		
MTIF2	P46199	Translation initiation factor IF-2, mitochondrial (Fragment)	mitochondrion				+		
MYH14	Q7Z406	Myosin-14	actomyosin				+		
NACA	F8VZJ2	Nascent polypeptide-associated complex subunit alpha				+	+		+
NANS	Q5TBR1	Sialic acid synthase (Fragment)		+	+		+		
NAPIL4	A8MXH2	Nucleosome assembly protein 1-like 4 (Fragment)	nucleus			+	+		+
NAPA	M0R0Y2	Alpha-soluble NSF attachment protein	SNARE complex				+		+
NBN	O60934	Nibrin	Mre11 complex				+		
NCAPG2	Q86XI2-2	Isoform 2 of Condensin-2 complex subunit G2	membrane				+		
NCEH1	H7C046	Neutral cholesterol ester hydrolase 1 (Fragment)					+		
NDUFS1	P28331-3	Isoform 3 of NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial	mitochondrial inner membrane	+	+		+		+
NFS1	B4DNL7	Isoform 3 of Cysteine desulfurase, mitochondrial	cytoplasm						
NHLRC2	Q8NBF2	NHL repeat-containing protein 2				+	+		
NOL6	Q9H6R4-2	Isoform 2 of Nucleolar protein 6	condensed nuclear chromosome				+		
NOP2	P46087	Probable 28S rRNA (cytosine(4447)-C(5))-methyltransferase	nucleolus			+	+		
NT5C3A	Q9H0P0-2	Isoform 3 of Cytosolic 5'-nucleotidase 3A	cytoplasm				+		

NT5DC1	Q5TFE4	5'-nucleotidase domain-containing protein 1		+			+		
NUB1	Q9Y5A7-2	Isoform 2 of NEDD8 ultimate buster 1	cytoplasm				+		
NUP43	Q8NFH3	Nucleoporin Nup43	condensed chromosome kinetochore			+	+		
NUP50	Q9UKX7-2	Isoform 2 of Nuclear pore complex protein Nup50	cytoplasm	+		+	+		
NUP85	J3KT10	Nuclear pore complex protein Nup85					+		
NUP98	P52948-6	Isoform 6 of Nuclear pore complex protein Nup98-Nup96	cytosol	+			+		
NUP133	Q8WUM0	Nuclear pore complex protein Nup133	condensed chromosome kinetochore				+		+
NXF1	E9PIN3	Nuclear RNA export factor 1 (Fragment)	cytoplasm				+		+
NXN	Q6DKJ4	Nucleoredoxin	cytosol				+		
OGDH	F5H801	2-oxoglutarate dehydrogenase, mitochondrial					+		
OGDHL	Q9ULD0-3	Isoform 3 of 2-oxoglutarate dehydrogenase-like, mitochondrial	mitochondrial matrix						
OGFR	A0A0A0MRN5	Opioid growth factor receptor	membrane				+		
OSBP	P22059	Oxysterol-binding protein 1	cell junction				+		
OSBPL8	F8VQX7	Oxysterol-binding protein (Fragment)				+	+		
OTUB1	F5H3F0	Ubiquitin thioesterase OTUB1					+		
OXCT1	P55809-2	Isoform 2 of Succinyl-CoA:3-ketoacid coenzyme A transferase 1, mitochondrial	mitochondrial matrix			+	+		+
P4HB	I3L3U6	Protein disulfide-isomerase (Fragment)	cell		+	+	+		+
PABPC1	P11940-2	Polyadenylate-binding protein 1 (Fragment)	catalytic step 2 spliceosome	+		+	+		+
PABPC3	Q9H361	Polyadenylate-binding protein 3	cytoplasm			+	+		

PAFAH1B1	P43034	Platelet-activating factor acetylhydrolase IB subunit alpha	astral microtubule				+	+	
PCBP3	P57721-2	Isoform 2 of Poly(rC)-binding protein 3	cytosol	+					
PCK2	H0YML5	Phosphoenolpyruvate carboxykinase [GTP], mitochondrial			+		+		
PDP1	Q9P0J1	[Pyruvate dehydrogenase [acetyl-transferring]]-phosphatase 1, mitochondrial	mitochondrial matrix				+		
PDS5B	Q9NTI5-2	Isoform 2 of Sister chromatid cohesion protein PDS5 homolog B	chromatin				+		
PFAS	J3KT98	Phosphoribosylformylglycinamide synthase (Fragment)	cytoplasm	+			+		+
PFKL	P17858	ATP-dependent 6-phosphofructokinase, liver type	6-phosphofructokinase complex	+			+		+
PFKM	P08237	ATP-dependent 6-phosphofructokinase, muscle type	6-phosphofructokinase complex	+			+		+
PFN1	P07737	Profilin 1, isoform CRA	blood microparticle	+	+	+	+		+
PGM2	Q96G03	Phosphoglucomutase-2	cytosol				+		
PLCB3	Q01970-2	Isoform 2 of 1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase beta-3	cytosol				+		+
PLS1	C9JAM8	Plastin-1 (Fragment)					+		+
PLS3	P13797-3	Isoform 3 of Plastin-3	cytoplasm	+	+		+	+	+
POLA2	E9PIQ6	DNA polymerase alpha subunit B (Fragment)	alpha DNA polymerase:primase complex				+		
POLR1A	B9ZVN9	DNA-directed RNA polymerase	cytoplasm				+		
POLR1C	D6RDJ3	DNA-directed RNA polymerases I and III subunit RPAC1 (Fragment)					+		
POLR2B	C9J2Y9	DNA-directed RNA polymerase	nucleoplasm				+		
PON2	A0A0J9YYG4	Serum paraoxonase/arylesterase 2					+		
POR	P16435	NADPH--cytochrome P450	cytosol				+	+	+

		reductase							
PPA1	Q5SQT6	Inorganic pyrophosphatase	cytoplasm	+	+		+	+	+
PPM1G	O15355	Protein phosphatase 1G	cytoplasm		+	+	+	+	+
PRDX2	P32119-2	Isoform 2 of Peroxiredoxin-2	cytoplasm		+	+	+		
PRDX6	P30041	Peroxiredoxin-6	cytoplasm	+	+	+	+		+
PRKAR1A	K7EM13	cAMP-dependent protein kinase type I-alpha regulatory subunit (Fragment)				+			
PRMT5	H0YJ77	Protein arginine N-methyltransferase 5 (Fragment)		+			+		
PRPF4	O43172-2	Isoform 2 of U4/U6 small nuclear ribonucleoprotein Prp4	Cajal body				+	+	
PSMD6	H7C531	26S proteasome non-ATPase regulatory subunit 6 (Fragment)	proteasome regulatory particle				+		
PSMD12	O00232	26S proteasome non-ATPase regulatory subunit 12	cytosol	+			+		+
PSME3	P61289	Proteasome activator complex subunit 3 (Fragment)	cytoplasm	+		+	+		+
PSMG2	K7ENR6	Proteasome assembly chaperone 2					+		
PTCD3	Q96EY7-2	Isoform 2 of Pentatricopeptide repeat domain-containing protein 3, mitochondrial	mitochondrial inner membrane	+			+		
PTK2	E9PEI4	Focal adhesion kinase 1	extrinsic component of cytoplasmic side of plasma membrane			+			
PTPN1	P18031	Tyrosine-protein phosphatase non-receptor type 1	cytoplasmic side of endoplasmic reticulum membrane	+	+		+		
RAB25	A0A0C4DGX5	Ras-related protein Rab-25	membrane				+		
RAB2A	P61019	Ras-related protein Rab-2A (Fragment)	endoplasmic reticulum membrane				+		+
RABGAP1	Q9Y3P9	Isoform 2 of Rab GTPase-activating protein 1	centrosome						

RARS	E5RJM9	Arginine--tRNA ligase, cytoplasmic	cytoplasm	+			+		+
RBM14	Q96PK6	RNA-binding protein 14	mediator complex	+		+			
RDH11	Q8TC12-3	Isoform 3 of Retinol dehydrogenase 11	endoplasmic reticulum membrane				+		
RFC1	H0Y8U4	Replication factor C subunit 1 (Fragment)	cell junction			+	+		
RFC2	F8WC37	Replication factor C subunit 2		+			+		
ROCK2	O75116	Rho-associated protein kinase 2	centrosome			+	+		
RPL3	B5MCW2	60S ribosomal protein L3 (Fragment)	cytoplasm	+		+	+		+
RPL4	P36578	60S ribosomal protein L4	cytoplasm	+			+		
RPL8	E9PP36	60S ribosomal protein L8	cytoplasm				+		+
RPL11	Q5VVC9	60S ribosomal protein L11 (Fragment)	ribosome			+	+		
RPL13	P26373	60S ribosomal protein L13	cytoplasm			+	+		+
RPL14	E7EPB3	60S ribosomal protein L14	ribosome	+		+	+		
RPL7A	Q5T8U2	60S ribosomal protein L7a	ribosome			+	+		
RPN1	P04843	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 1	endoplasmic reticulum membrane	+			+		+
RPS2	H0YEN5	40S ribosomal protein S2 (Fragment)	cytoplasm	+		+	+		
RPS6	A2A3R5	40S ribosomal protein S6	cytoplasm	+			+		+
RPS4X	A6NH36	40S ribosomal protein S4, X isoform	ribosome	+		+	+		+
RPS6KA1	E9PRI4	Isoform 3 of Ribosomal protein S6 kinase alpha-1	cytoplasm				+		
RRAGC	Q9HB90	Ras-related GTP-binding protein C	cytoplasm				+		
RRAGD	Q9NQL2	Ras-related GTP-binding protein D	cytoplasm				+		
RRM1	E9PL69	Ribonucleoside-diphosphate reductase large subunit	cytoplasm				+	+	
RTCB	Q9Y3I0	tRNA-splicing ligase RtcB homolog	cytoplasm	+			+		+
SAE1	Q9UBE0-3	Isoform 3 of SUMO-activating enzyme subunit 1	cytoplasm			+	+		
SAMHD1	Q9Y3Z3	Isoform 4 of Deoxynucleoside	intracellular				+	+	

		triphosphate triphosphohydrolase SAMHD1							
SART1	O43290	U4/U6.U5 tri-snRNP-associated protein 1	Cajal body	+			+		
SBNO1	A3KN83-4	Isoform 4 of Protein strawberry notch homolog 1					+		
SBNO2	Q9Y2G9-3	Isoform 2 of Protein strawberry notch homolog 2					+		
SCAMP3	O14828-2	Isoform 2 of Secretory carrier-associated membrane protein 3	extracellular exosome			+	+		
SCRN1	Q12765-3	Isoform 3 of Secernin-1	cytoplasm				+		
SEC61A2	A6NK38	Protein transport protein Sec61 subunit alpha isoform 2	membrane				+		
SEPT9	Q9UHD8	Septin-9	actin cytoskeleton	+			+	+	
SERPINB5	P36952	Isoform 2 of Serpin B5	cytoplasm				+		
SF3B4	Q15427	Splicing factor 3B subunit 4	nucleoplasm				+		
SFXN1	D6RAE9	Sideroflexin-1	membrane				+		+
SHMT1	P34896-3	Isoform 3 of Serine hydroxymethyltransferase, cytosolic	cytoplasm				+		+
SIN3A	Q96ST3	Paired amphipathic helix protein Sin3a	chromatin			+	+		
SKIV2L	Q15477	Helicase SKI2W	nucleoplasm				+		
SLAIN1	Q5T6P2	SLAIN motif-containing protein 1 (Fragment)							
SLC1A5	Q15758	Neutral amino acid transporter B(0)	extracellular exosome				+		+
SLC25A3	Q00325-2	Isoform B of Phosphate carrier protein, mitochondrial	extracellular exosome				+		+
SLC25A5	P05141	ADP/ATP translocase 2	extracellular exosome	+		+	+		+
SMARCC2	Q8TAQ2	SWI/SNF complex subunit SMARCC2	nBAF complex				+		
SNX1	H0YK42	Sorting nexin-1	endosome			+		+	
SNX5	Q5QPE4	Sorting nexin-5 (Fragment)	endosome				+		

SPR	P35270	Sepiapterin reductase	cytoplasm				+		+
SPTAN1	A0A0D9SF54	Spectrin alpha chain, non-erythrocytic 1					+	+	+
SPTLC1	O15269	Serine palmitoyltransferase 1	endoplasmic reticulum membrane					+	
SPTLC2	O15270	Serine palmitoyltransferase 2	endoplasmic reticulum membrane					+	
SRP68	Q9UHB9-2	Isoform 2 of Signal recognition particle subunit SRP68	cytoplasm	+				+	+
SRP72	O76094	Isoform 2 of Signal recognition particle subunit SRP72	cytoplasm	+			+	+	
SRPR	P08240	Isoform 2 of Signal recognition particle receptor subunit alpha	endoplasmic reticulum					+	+
SRRT	H7C3A1	Serrate RNA effector molecule homolog (Fragment)	nucleoplasm	+			+	+	
SSRP1	Q08945	FACT complex subunit SSRP1	chromosome	+			+	+	+
STAU1	O95793-2	Isoform 3 of Double-stranded RNA-binding protein Staufen homolog 1	cell body					+	+
STK24	Q9Y6E0-2	Isoform A of Serine/threonine-protein kinase 24	cytoplasm				+	+	
STRIP1	Q5VSL9-3	Isoform 3 of Striatin-interacting protein 1	cytoplasm					+	
STRIP2	Q9ULQ0-2	Isoform 2 of Striatin-interacting protein 2	cytoplasm					+	
STRN	O43815	Striatin	bicellular tight junction				+	+	
SUPV3L1	Q8IYB8	ATP-dependent RNA helicase SUPV3L1, mitochondrial	mitochondrial degradosome					+	
SWAP70	Q9UH65	Switch-associated protein 70	cytosol					+	+
SYMPK	A0A087WUE9	Symplekin		+			+	+	
TAF6	P49848	Transcription initiation factor TFIID subunit 6	cytoplasm					+	
TAP2	Q03519	Isoform 2 of Antigen peptide transporter 2	endoplasmic reticulum membrane					+	

TBC1D23	E9PGE5	TBC1 domain family member 23					+		
TBK1	Q9UHD2	Serine/threonine-protein kinase TBK1	cytoplasm				+		
TELO2	H3BRS3	Telomere length regulation protein TEL2 homolog				+	+		
TES	Q9UGI8-2	Isoform 2 of Testin	cell junction			+	+		
TKT	A0A0B4J1R6	Transketolase		+	+	+	+		+
TOP2B	E9PCY5	DNA topoisomerase 2 (Fragment)	DNA topoisomerase complex (ATP-hydrolyzing)	+			+		
TOR1AIP1	Q5JTV8	Torsin-1A-interacting protein 1	integral component of membrane	+		+	+		
TP63	Q9H3D4-10	Isoform 12 of Tumor protein 63	cytoplasm						
TRIM25	Q14258	E3 ubiquitin/ISG15 ligase TRIM25	cytoplasm	+			+	+	
TRIM29	Q14134-2	Tripartite motif-containing protein 29	cytoplasm				+	+	
TRMT6	Q9UJA5-4	Isoform 4 of tRNA (adenine(58)-N(1))-methyltransferase non-catalytic subunit TRM6	nucleus				+		
TRMT10C	Q7L0Y3	Mitochondrial ribonuclease P protein 1	mitochondrial nucleoid	+			+		
TSMF	C9JT21	Elongation factor Ts (Fragment)	mitochondrial matrix			+	+		
TUBB4B	P68371	Tubulin beta-4B chain	cytoskeleton		+	+	+	+	+
UAP1	Q16222	UDP-N-acetylhexosamine pyrophosphorylase	cytoplasm				+		
UBA6	A0AVT1-2	Isoform 2 of Ubiquitin-like modifier-activating enzyme 6	cytoplasm				+		
UBE4B	O95155-2	Isoform 2 of Ubiquitin conjugation factor E4 B	cytoplasm			+	+		
UBTF	E9PLT2	Nucleolar transcription factor 1 (Fragment)		+		+	+		
UCK2	Q9BZX2	Uridine-cytidine kinase 2	cytosol			+	+		

UQCRC1	P31930	Cytochrome b-c1 complex subunit 1, mitochondrial	mitochondrial inner membrane	+		+	+		+
UQCRC2	H3BP04	Cytochrome b-c1 complex subunit 2, mitochondrial (Fragment)	mitochondrion				+		+
USP8	A0A075B720	Ubiquitin carboxyl-terminal hydrolase 8	extrinsic component of endosome membrane				+		
USP39	B9A018	U4/U6.U5 tri-snRNP-associated protein 2					+		
VAT1	K7EM19	Synaptic vesicle membrane protein VAT-1 homolog (Fragment)					+		+
WBP11	Q9Y2W2	WW domain-binding protein 11	cytoplasm			+	+		
WDHD1	C9JW18	Isoform 2 of WD repeat and HMG-box DNA-binding protein 1	chromosome, centromeric region			+	+		
WRNIP1	Q96S55	ATPase WRNIP1	membrane	+			+		
XPNPEP1	G8JLB2	Xaa-Pro aminopeptidase 1	cytoplasm				+	+	
XPO4	F2Z2X4	Exportin-4	cytoplasm	+			+		
XPO5	E2QRM3	Exportin-5		+			+		
XRN2	Q9H0D6-2	Isoform 2 of 5'-3' exoribonuclease 2	aggresome	+		+	+		+
YWHAE	P62258-2	Isoform SV of 14-3-3 protein epsilon	axon	+	+	+	+		+
YWHAG	P61981	14-3-3 protein gamma	cytoplasmic vesicle membrane			+	+		+
YWHAQ	P27348	14-3-3 protein theta	cytoplasm	+	+	+	+	+	+
ZYX	H0Y2Y8	Zyxin (Fragment)	cytoplasm			+	+		

