

Supporting information for

Combining confocal microscopy, dSTORM, and mass spectroscopy to unveil the evolution of the protein corona associated with nanostructured lipid carriers during blood-brain barrier crossing

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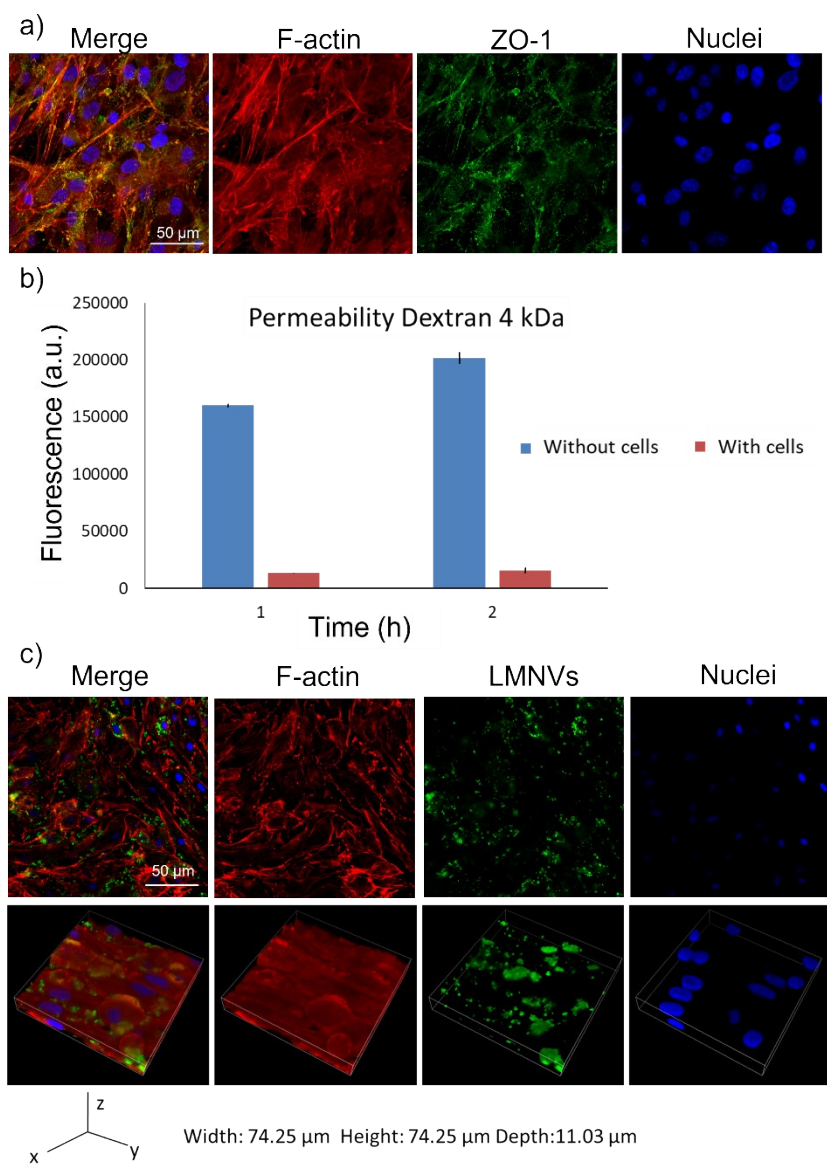


Figure S1. Characterization of the BBB *in vitro* model and interaction of LMNVs with bEnd.3 cells. a) Confocal images showing the expression ZO-1 by bEnd.3 cells (in red F-actin, in green ZO-1, in blue nuclei); b) analysis of the passage of fluorescent dextran 4 kDa at different time points (in blue the passage through a transwell without cells and in red the passage through a transwell seeded with bEnd.3 cells); c) confocal images and 3D rendering showing the internalization of LMNVs by bEnd.3 cells (in red F-actin, in green LMNVs, in blue nuclei).

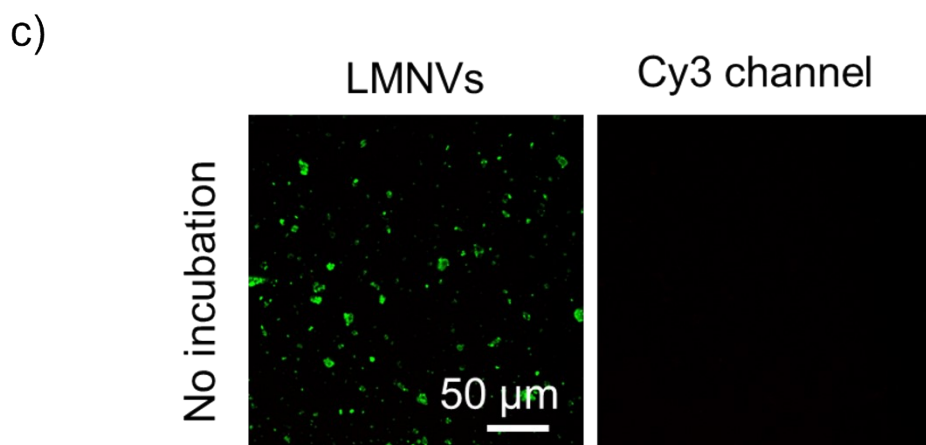
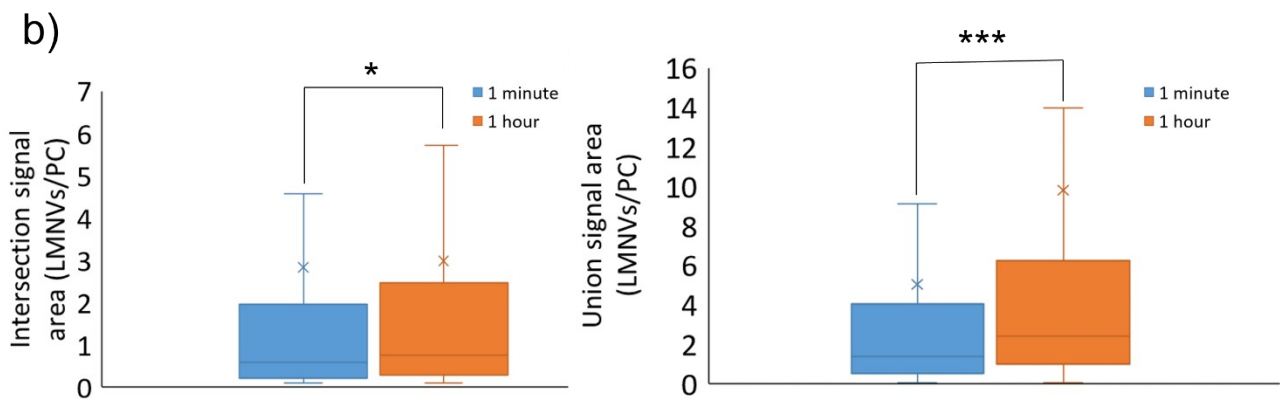
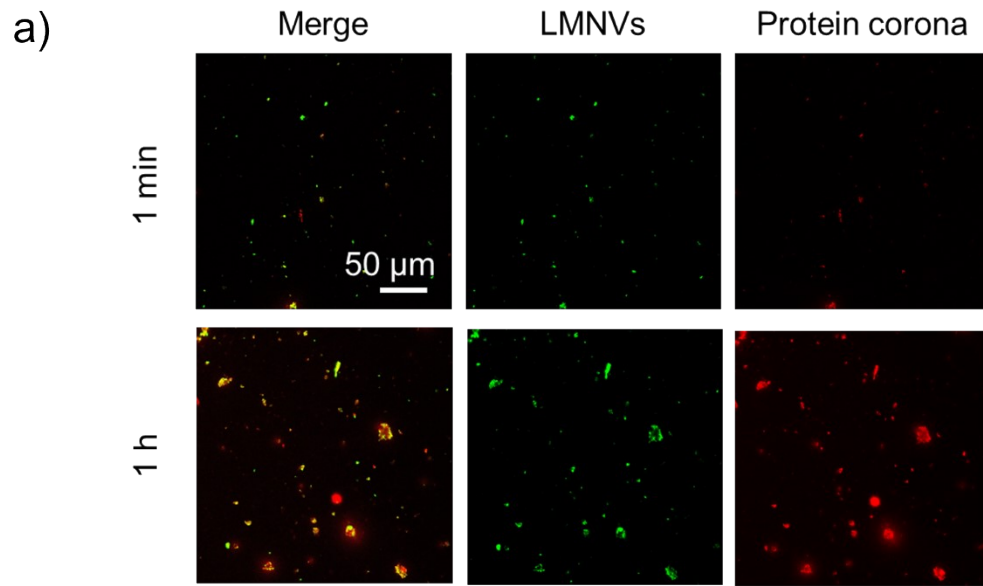


Figure S2. a) Confocal images showing the PC formation associated with LMNVs after different period of incubation; b) analysis of the intersection and union area of LMNVs and PC signals in different conditions; c) control confocal images showing LMNVs incubated with non-stained FBS (* $p < 0.05$, *** $p < 0.001$).

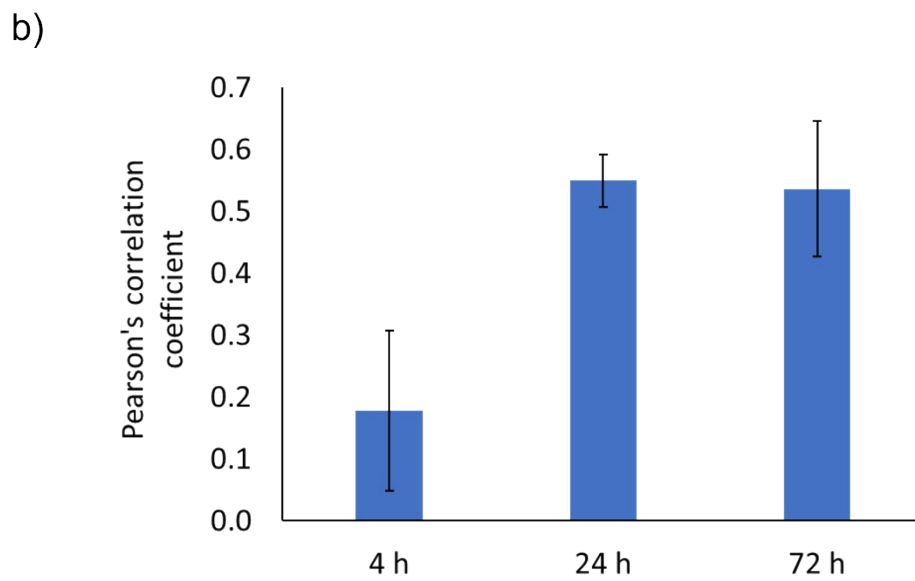
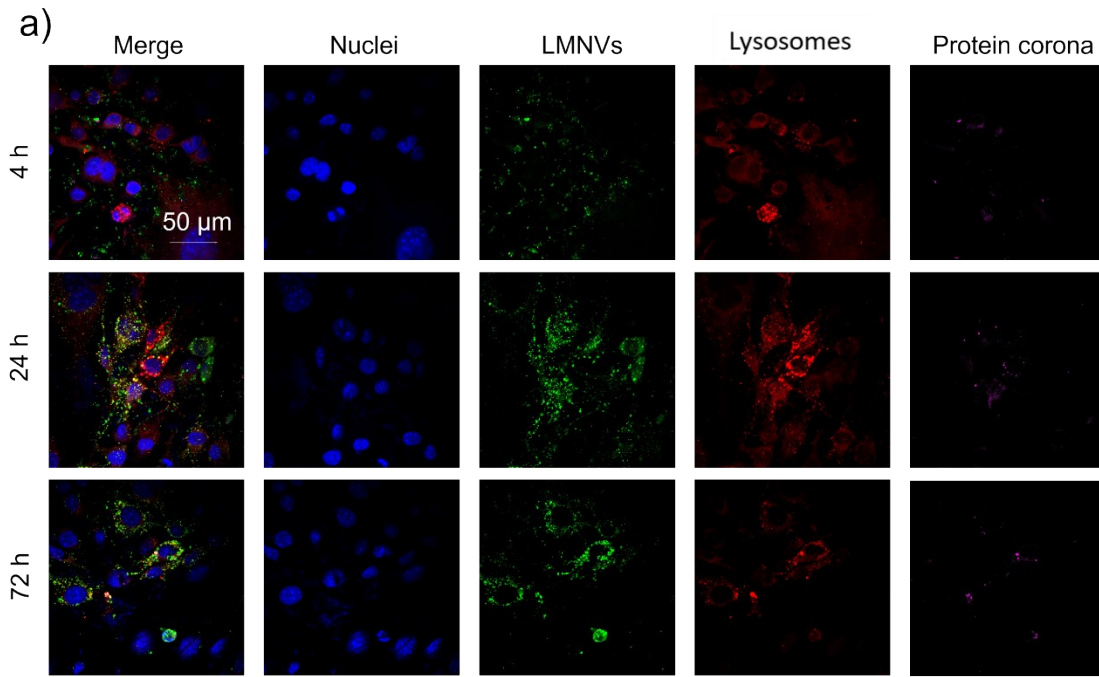


Figure S3. Analysis of LMNVs co-localization with lysosomes. a) confocal images showing the intracellular localization of LMNVs at different time points (in blue nuclei, in green LMNVs, in red lysosomes, in magenta protein corona); b) plot showing the Pearson's correlation coefficient between LMNV and lysosome fluorescence signals at different time points.

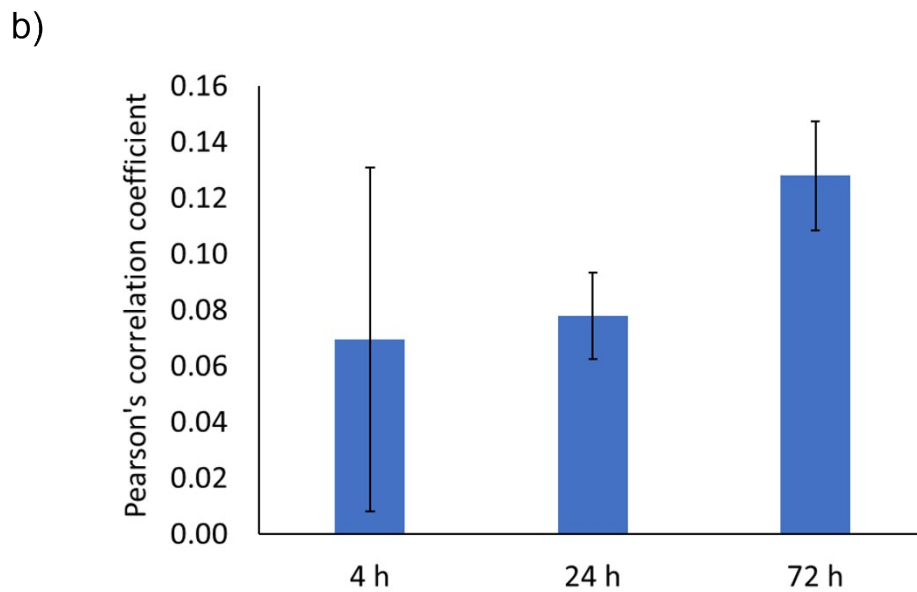
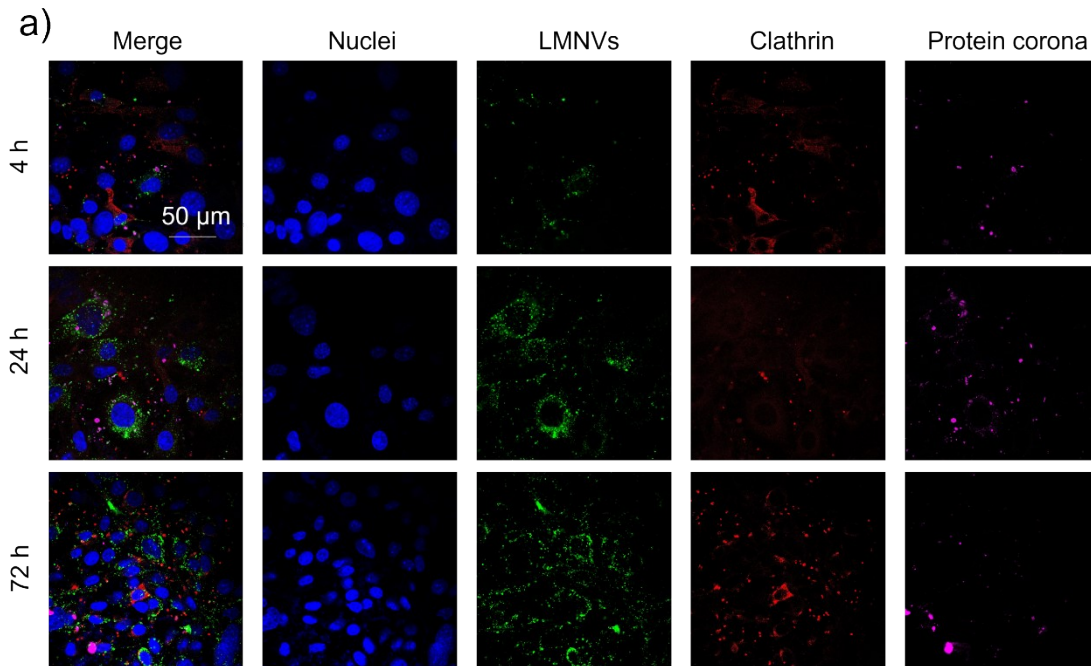


Figure S4. Analysis of LMNVs co-localization with clathrin-positive vesicles. a) Confocal images showing the intracellular localization of LMNVs at different time points (in blue nuclei, in green LMNVs, in red clathrin-positive vesicles, in magenta protein corona); b) plot showing the Pearson's correlation coefficient between LMNV and clathrin-positive vesicle fluorescence signals at different time points.

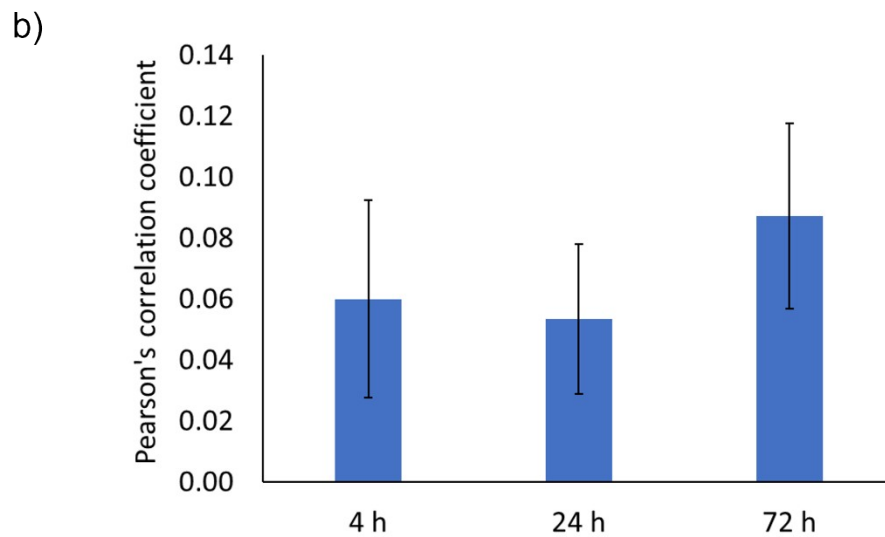
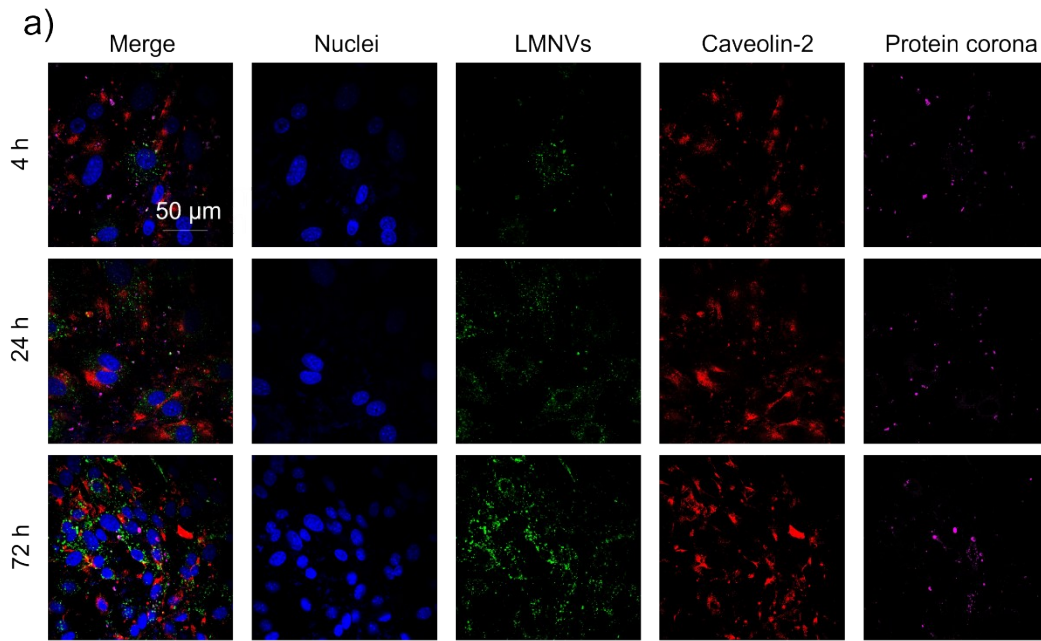


Figure S5. Analysis of LMNVs co-localization with caveolin-positive vesicles. a) Confocal images showing the intracellular localization of LMNVs at different time points (in blue nuclei, in green LMNVs, in red caveoline-positive, in magenta protein corona); b) plot showing the Pearson's correlation coefficient between LMNVs and caveoline-positive vesicle fluorescence signals at different time points.

Table S1. Proteins present in LMNV-PC after BBB passage.

Taxonomy	Cluster	Gene names	Protein names
Mus musculus	Cluster 208	Cs;Csl	Citrate synthase;Citrate synthase, mitochondrial
Mus musculus	Cluster 179	Kpna2	Importin subunit alpha-1
Mus musculus	Cluster -422	Atp5b	ATP synthase subunit beta, mitochondrial
Bos taurus	Cluster -422	KIF22	Kinesin-like protein KIF22
Bos taurus	Cluster -422	N/A	N/A
Bos taurus	Cluster -422	N/A	N/A
Mus musculus	Cluster -422	Eno1	Alpha-enolase;Enolase
Mus musculus	Cluster -422	Lmna	Prelamin-A/C;Lamin-A/C
Mus musculus	Cluster -422	Wdr90	WD repeat-containing protein 90
Mus musculus	Cluster -422	Cd151	CD151 antigen
Mus musculus	Cluster -422	Mdn1	N/A
Mus musculus	Cluster -422	S100a4	Protein S100-A4
Mus musculus	Cluster -422	Hsp90b1	Endoplasmin
Mus musculus	Cluster -422	Mtco2	Cytochrome c oxidase subunit 2
Bos taurus	Cluster -422	CAST	Calpastatin
Mus musculus	Cluster -422	Anxa2	Annexin;Annexin A2
Mus musculus	Cluster -422	Itgb1	Integrin beta-1
Mus musculus	Cluster -422	Prr30	Proline-rich protein 30
Mus musculus	Cluster -422	Pgk1	Phosphoglycerate kinase 1;Phosphoglycerate kinase
Mus musculus	Cluster -422	Tpt1	Translationally-controlled tumor protein
Mus musculus	Cluster -422	Sqstm1	Sequestosome-1
Bos taurus	Cluster -422	N/A	N/A
Mus musculus	Cluster -422	Aldoa;Aldoart1	Fructose-bisphosphate aldolase;Fructose-bisphosphate aldolase A
Mus musculus	Cluster -422	Pgam1	Phosphoglycerate mutase 1
Bos taurus	Cluster -422	N/A	N/A
Mus musculus	Cluster -422	Lrrc59	Leucine-rich repeat-containing protein 59
Mus musculus	Cluster -422	Tymp	Thymidine phosphorylase
Mus musculus	Cluster -422	Xirp2	Xin actin-binding repeat-containing protein 2

Bos taurus	Cluster -422	MYL12B	Myosin regulatory light chain 12B
Mus musculus	Cluster -422	Psap	Prosaposin
Mus musculus	Cluster -422	Ftl1;Ftl2	Ferritin;Ferritin light chain 1;Ferritin light chain 2
Mus musculus	Cluster -422	Mfge8	Lactadherin
Mus musculus	Cluster -422	Fv4	MLV-related proviral Env polyprotein;Surface protein;Transmembrane protein;Retrovirus-related Env polyprotein from Fv-4 locus
Mus musculus	Cluster -422	Iqgap1	Ras GTPase-activating-like protein IQGAP1
Bos taurus	Cluster -422	ERO1A	ERO1-like protein alpha
Mus musculus	Cluster -422	Pdia3	Protein disulfide-isomerase A3
Mus musculus	Cluster -422	Slc25a4	ADP/ATP translocase 1
Mus musculus	Cluster -422	Etfb	Electron transfer flavoprotein subunit beta
Mus musculus	Cluster -422	Ddost	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase 48 kDa subunit
Mus musculus	Cluster -422	Shmt2	Serine hydroxymethyltransferase
Mus musculus	Cluster -422	Vim	Vimentin
Bos taurus	Cluster -422	N/A	N/A
Mus musculus	Cluster -422	Sars	N/A
Mus musculus	Cluster -422	Gm20390;Nme2	Nucleoside diphosphate kinase;Nucleoside diphosphate kinase B
Mus musculus	Cluster -422	Ssr4	Translocon-associated protein subunit delta
Mus musculus	Cluster -422	Fth1	Ferritin heavy chain;Ferritin heavy chain, N-terminally processed
Mus musculus	Cluster -422	Gapdh;Gm3839	Glyceraldehyde-3-phosphate dehydrogenase
Mus musculus	Cluster 219	Lrg1	N/A
Mus musculus	Cluster -424	Prss55	Serine protease 55
Mus musculus	Cluster 44	Msn	Moesin
Mus musculus	Cluster -425	Dld	Dihydrolipoyl dehydrogenase, mitochondrial
Bos taurus	Cluster -425	SOD1	Superoxide dismutase [Cu-Zn];Superoxide dismutase [Cu-Zn] {ECO:0000256 RuleBase:RU000393}
Mus musculus	Cluster -425	Cd63	CD63 antigen
Mus musculus	Cluster -425	Ndufa6	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6
Mus musculus	Cluster -425	02-set	Septin-2
Mus musculus	Cluster -425	Eprs	Bifunctional glutamate/proline--tRNA ligase;Glutamate--tRNA ligase;Proline--tRNA ligase

Mus musculus	Cluster -425	Prdx6	Peroxiredoxin-6
Mus musculus	Cluster -425	Actn4	Alpha-actinin-4
Mus musculus	Cluster -425	Mrps36	28S ribosomal protein S36, mitochondrial
Mus musculus	Cluster -425	Itga5	Integrin alpha-5;Integrin alpha-5 heavy chain;Integrin alpha-5 light chain
Mus musculus	Cluster -425	Prc1	Protein regulator of cytokinesis 1
Mus musculus	Cluster -425	Ptgs2	Prostaglandin G/H synthase 2
Mus musculus	Cluster -425	Ckap4	Cytoskeleton-associated protein 4
Mus musculus	Cluster -425	Prdx3	Thioredoxin-dependent peroxide reductase, mitochondrial
Mus musculus	Cluster -425	Plec	Plectin
Mus musculus	Cluster -425	Grpel1	GrpE protein homolog 1, mitochondrial
Mus musculus	Cluster -425	Pmpca	Mitochondrial-processing peptidase subunit alpha
Mus musculus	Cluster -425	Ndufs2	NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial
Mus musculus	Cluster -425	Ndufa10	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial
Mus musculus	Cluster -425	Capns1	Calpain small subunit 1
Mus musculus	Cluster -425	Acads	Short-chain specific acyl-CoA dehydrogenase, mitochondrial
Mus musculus	Cluster -425	Pitrm1	Presequence protease, mitochondrial
Mus musculus	Cluster -425	Rcn2	Reticulocalbin-2
Mus musculus	Cluster -425	Pon2	Serum paraoxonase/arylesterase 2
Mus musculus	Cluster -425	Ogfr	Opioid growth factor receptor
Mus musculus	Cluster -425	Mogs	Mannosyl-oligosaccharide glucosidase
Mus musculus	Cluster -425	Tpm4	Tropomyosin alpha-4 chain
Mus musculus	Cluster -425	Calcr1	Calcitonin gene-related peptide type 1 receptor
Mus musculus	Cluster -425	Cat	Catalase
Mus musculus	Cluster -425	Cct2	T-complex protein 1 subunit beta
Mus musculus	Cluster -425	Cd93	Complement component C1q receptor
Mus musculus	Cluster -425	Lap3	Cytosol aminopeptidase
Mus musculus	Cluster -425	Mthfd11	Monofunctional C1-tetrahydrofolate synthase, mitochondrial

Mus musculus	Cluster -425	Tpbg	Trophoblast glycoprotein
Mus musculus	Cluster -425	Eif3f	Eukaryotic translation initiation factor 3 subunit F
Mus musculus	Cluster -425	Nid1	Nidogen-1
Mus musculus	Cluster -425	Rpl7	60S ribosomal protein L7
Mus musculus	Cluster -425	Anxa4	Annexin;Annexin A4
Mus musculus	Cluster -425	Tln1	Talin-1
Mus musculus	Cluster -425	Plscr3	Phospholipid scramblase 3
Mus musculus	Cluster -425	Apob	Apolipoprotein B-100;Apolipoprotein B-48
Mus musculus	Cluster -425	Pdia4	Protein disulfide-isomerase A4
Mus musculus	Cluster -425	Acat1	Acetyl-CoA acetyltransferase, mitochondrial
Mus musculus	Cluster -425	Gpd2	Glycerol-3-phosphate dehydrogenase, mitochondrial;Glycerol-3-phosphate dehydrogenase
Mus musculus	Cluster -425	Wdr1	WD repeat-containing protein 1
Mus musculus	Cluster -425	Cap1	Adenylyl cyclase-associated protein 1
Mus musculus	Cluster -425	Cyb5r1	NADH-cytochrome b5 reductase 1
Mus musculus	Cluster -425	Acadv1	Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
Mus musculus	Cluster -425	Golim4	Golgi integral membrane protein 4
Mus musculus	Cluster -425	N/A	N/A
Mus musculus	Cluster -425	Eth1	Persulfide dioxygenase ETHE1, mitochondrial
Mus musculus	Cluster -425	Cox4i1	Cytochrome c oxidase subunit 4 isoform 1, mitochondrial
Mus musculus	Cluster -425	Colgalt1	Procollagen galactosyltransferase 1
Mus musculus	Cluster -425	Tmem109	Transmembrane protein 109
Mus musculus	Cluster -425	Pacsin2	Protein kinase C and casein kinase substrate in neurons protein 2
Mus musculus	Cluster -425	Vars	Valine--tRNA ligase
Mus musculus	Cluster -425	Myh10	Myosin-10
Mus musculus	Cluster -425	Htra1	Serine protease HTRA1
Mus musculus	Cluster -425	Znf106	Zinc finger protein 106
Mus musculus	Cluster -425	Entpd1	Ectonucleoside triphosphate diphosphohydrolase 1

Mus musculus	Cluster -425	Acot2	Acyl-coenzyme A thioesterase 2, mitochondrial
Mus musculus	Cluster -425	Inf2	Inverted formin-2
Mus musculus	Cluster -425	Acadm	Medium-chain specific acyl-CoA dehydrogenase, mitochondrial
Mus musculus	Cluster -425	Pus3	tRNA pseudouridine synthase;tRNA pseudouridine(38/39) synthase
Mus musculus	Cluster -425	Sdha	Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial
Mus musculus	Cluster -425	Atp5a1	ATP synthase subunit alpha;ATP synthase subunit alpha, mitochondrial
Mus musculus	Cluster -425	Ccdc157	Coiled-coil domain-containing protein 157
Mus musculus	Cluster -425	Carhsp1	Calcium-regulated heat stable protein 1
Mus musculus	Cluster -425	Serpinb6;Serpinb6a	Serpin B6
Mus musculus	Cluster -425	Gm1305;Kif28p	Kinesin-like protein;Kinesin-like protein KIF28P
Mus musculus	Cluster -425	Atl3	Atlastin-3
Mus musculus	Cluster -425	Vdac2	Voltage-dependent anion-selective channel protein 2
Mus musculus	Cluster -425	Atp5h	ATP synthase subunit d, mitochondrial
Mus musculus	Cluster -425	Eci1	Enoyl-CoA delta isomerase 1, mitochondrial
Mus musculus	Cluster -425	Idh3b	Isocitrate dehydrogenase [NAD] subunit, mitochondrial
Mus musculus	Cluster -425	Cox7a2l	Cytochrome c oxidase subunit 7A-related protein, mitochondrial
Mus musculus	Cluster -425	Prdx4	Peroxiredoxin-4
Mus musculus	Cluster -425	Slirp	SRA stem-loop-interacting RNA-binding protein, mitochondrial
Mus musculus	Cluster -425	Dysf	Dysferlin
Mus musculus	Cluster -425	Pip4k2c	Phosphatidylinositol 5-phosphate 4-kinase type-2 gamma
Mus musculus	Cluster -425	Endod1	Endonuclease domain-containing 1 protein
Mus musculus	Cluster -425	Mapk1	Mitogen-activated protein kinase 1
Mus musculus	Cluster -425	Anp32b	Acidic leucine-rich nuclear phosphoprotein 32 family member B
Mus musculus	Cluster -425	Rnh1	Ribonuclease inhibitor
Mus musculus	Cluster -425	Ldha	L-lactate dehydrogenase;L-lactate dehydrogenase A chain
Mus musculus	Cluster -425	S100a11	Protein S100-A11
Mus musculus	Cluster -425	Acaa1a	3-ketoacyl-CoA thiolase A, peroxisomal

Mus musculus	Cluster -425	Ncln	Nicalin
Mus musculus	Cluster -425	Hadha	Long chain 3-hydroxyacyl-CoA dehydrogenase;Long-chain enoyl-CoA hydratase;Trifunctional enzyme subunit alpha, mitochondrial
Mus musculus	Cluster -425	Flna	Filamin-A
Mus musculus	Cluster -425	Nnt	NAD(P) transhydrogenase, mitochondrial
Bos taurus	Cluster -425	CL43	Collectin-43
Bos taurus	Cluster -425	COL3A1	N/A
Mus musculus	Cluster -425	Rpl4	60S ribosomal protein L4
Mus musculus	Cluster -425	Sdcbp	Syntenin-1
Mus musculus	Cluster -425	Dlst	Dihydrolipoyllysine-residue succinyltransferase component of 2-oxoglutarate dehydrogenase complex, mitochondrial
Mus musculus	Cluster -425	Ppp2r1a	Serine/threonine-protein phosphatase 2A 65 kDa regulatory subunit A alpha isoform
Mus musculus	Cluster -425	Rps271	40S ribosomal protein S27;40S ribosomal protein S27-like
Mus musculus	Cluster -425	Got2	Aspartate aminotransferase, mitochondrial
Mus musculus	Cluster -425	Hmox1	Heme oxygenase 1
Mus musculus	Cluster -425	Aldh112	Mitochondrial 10-formyltetrahydrofolate dehydrogenase
Mus musculus	Cluster -425	Tcp1	T-complex protein 1 subunit alpha
Mus musculus	Cluster -425	Acot10;Acot9	Acyl-coenzyme A thioesterase 10, mitochondrial;Acyl-coenzyme A thioesterase 9, mitochondrial
Mus musculus	Cluster -425	Bsg	Basigin
Mus musculus	Cluster -425	Pfkfb3	ATP-dependent 6-phosphofructokinase;ATP-dependent 6-phosphofructokinase, platelet type
Bos taurus	Cluster -425	N/A	N/A
Mus musculus	Cluster -425	Esyt1	Extended synaptotagmin-1
Mus musculus	Cluster -425	Eef1g	Elongation factor 1-gamma
Mus musculus	Cluster -425	Serpinh1	Serpin H1
Mus musculus	Cluster -425	Acaa2	3-ketoacyl-CoA thiolase, mitochondrial
Mus musculus	Cluster -425	Ahnak	N/A
Mus musculus	Cluster -425	9030617003 Rik	UPF0317 protein C14orf159 homolog, mitochondrial
Mus musculus	Cluster -425	Sucla2	Succinyl-CoA ligase [ADP-forming] subunit beta, mitochondrial
Mus musculus	Cluster -425	Ak3	GTP:AMP phosphotransferase AK3, mitochondrial
Mus musculus	Cluster -425	Slc3a2	4F2 cell-surface antigen heavy chain
Mus	Cluster -425	Uba1;Uba1y	Ubiquitin-like modifier-activating enzyme 1;Ubiquitin-like

musculus			modifier-activating enzyme 1 Y
Mus musculus	Cluster -425	Swap70	Switch-associated protein 70
Mus musculus	Cluster -425	Ehd2	EH domain-containing protein 2
Mus musculus	Cluster -425	Ttl4	Tubulin polyglutamylase TTL4
Mus musculus	Cluster -425	Wars	Tryptophan--tRNA ligase, cytoplasmic;T1-TrpRS;T2-TrpRS
Mus musculus	Cluster -425	S100a10	Protein S100-A10
Mus musculus	Cluster -425	Loxl4	Lysyl oxidase homolog 4
Mus musculus	Cluster -425	Stat1	Signal transducer and activator of transcription;Signal transducer and activator of transcription 1
Mus musculus	Cluster -425	Anxa3	Annexin;Annexin A3
Mus musculus	Cluster -425	Carkd	ATP-dependent (S)-NAD(P)H-hydrate dehydratase
Mus musculus	Cluster -425	Aldh2	Aldehyde dehydrogenase, mitochondrial
Mus musculus	Cluster -425	Psm3	26S proteasome non-ATPase regulatory subunit 3
Bos taurus	Cluster -425	N/A	N/A
Mus musculus	Cluster -425	Ero11	ERO1-like protein alpha
Mus musculus	Cluster -425	Dad1	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit DAD1
Mus musculus	Cluster -425	Por	NADPH--cytochrome P450 reductase
Mus musculus	Cluster -425	Hyal2	Hyaluronidase-2
Mus musculus	Cluster -425	Tgm2	Protein-glutamine gamma-glutamyltransferase 2
Mus musculus	Cluster -425	Bst2	Bone marrow stromal antigen 2
Mus musculus	Cluster -425	Sptbn1	Spectrin beta chain, non-erythrocytic 1
Mus musculus	Cluster -425	Plau	Urokinase-type plasminogen activator;Urokinase-type plasminogen activator chain B;Urokinase-type plasminogen activator long chain A;Urokinase-type plasminogen activator short chain A
Mus musculus	Cluster -425	Nans	N/A
Mus musculus	Cluster -425	Adpgk	ADP-dependent glucokinase
Mus musculus	Cluster -425	Prdx5	Peroxiredoxin-5, mitochondrial
Mus musculus	Cluster -425	Atpif1	ATPase inhibitor, mitochondrial
Mus musculus	Cluster -425	Ifitm2;Ifitm3	Interferon-induced transmembrane protein 2;Interferon-induced transmembrane protein 3
Mus musculus	Cluster -425	Tmem43	Transmembrane protein 43
Mus	Cluster -425	Eef1d	Elongation factor 1-delta

musculus			
Mus musculus	Cluster -425	Ctnnd1	Catenin delta-1
Mus musculus	Cluster -425	Clic1	Chloride intracellular channel protein 1
Mus musculus	Cluster -425	Flnb	Filamin-B
Mus musculus	Cluster -425	Fam129b	Niban-like protein 1
Mus musculus	Cluster -425	M6pr	Cation-dependent mannose-6-phosphate receptor
Mus musculus	Cluster -425	Dstn	Destrin
Mus musculus	Cluster -425	Bst1	ADP-ribosyl cyclase/cyclic ADP-ribose hydrolase 2
Mus musculus	Cluster -425	Ganab	Neutral alpha-glucosidase AB
Mus musculus	Cluster -425	2200002D01 Rik	N/A
Bos taurus	Cluster -425	N/A	N/A
Mus musculus	Cluster -425	H2-D1;H2-L	H-2 class I histocompatibility antigen, D-B alpha chain;H-2 class I histocompatibility antigen, L-D alpha chain;H-2 class I histocompatibility antigen, alpha chain
Mus musculus	Cluster -425	Tkt	Transketolase
Mus musculus	Cluster -425	Sod1	Superoxide dismutase [Cu-Zn]
Mus musculus	Cluster -425	Ppia	Peptidyl-prolyl cis-trans isomerase A;Peptidyl-prolyl cis-trans isomerase A, N-terminally processed
Mus musculus	Cluster -425	G6pdx;G6pd 2	Glucose-6-phosphate 1-dehydrogenase X;Glucose-6-phosphate 1-dehydrogenase;Glucose-6-phosphate 1-dehydrogenase 2
Mus musculus	Cluster -425	Bid	BH3-interacting domain death agonist;BH3-interacting domain death agonist p15;BH3-interacting domain death agonist p13;BH3-interacting domain death agonist p11
Bos taurus	Cluster -425	N/A	N/A
Mus musculus	Cluster -425	Ak4	Adenylate kinase 4, mitochondrial
Mus musculus	Cluster -425	Icam2	Intercellular adhesion molecule 2
Mus musculus	Cluster -425	Pfkl	ATP-dependent 6-phosphofructokinase, liver type
Mus musculus	Cluster -425	Atp1b3	Sodium/potassium-transporting ATPase subunit beta-3
Mus musculus	Cluster -425	Decr1	2,4-dienoyl-CoA reductase, mitochondrial
Mus musculus	Cluster -425	Myof	Myoferlin
Mus musculus	Cluster -425	Zmpste24	CAAX prenyl protease 1 homolog
Mus musculus	Cluster -425	Hspg2	Basement membrane-specific heparan sulfate proteoglycan core protein;Endorepellin;LG3 peptide
Mus musculus	Cluster -425	Uqcrc2	Cytochrome b-c1 complex subunit 2, mitochondrial
Mus	Cluster -425	Anxa7	Annexin A7

musculus			
Mus musculus	Cluster -425	Cyc1	Cytochrome c1, heme protein, mitochondrial
Bos taurus	Cluster -425	N/A	Mitochondrial inner membrane protease ATP23 {ECO:0000256 RuleBase:RU364057}
Mus musculus	Cluster -425	Atp5o	ATP synthase subunit O, mitochondrial
Bos taurus	Cluster -425	RXFP2	N/A
Mus musculus	Cluster -425	Ogdh	2-oxoglutarate dehydrogenase, mitochondrial
Bos taurus	Cluster -425	DDX11	N/A
Mus musculus	Cluster -425	mt-Co3	Cytochrome c oxidase subunit 3
Mus musculus	Cluster -425	Cyb5r3	NADH-cytochrome b5 reductase 3;NADH-cytochrome b5 reductase 3 membrane-bound form;NADH-cytochrome b5 reductase 3 soluble form;NADH-cytochrome b5 reductase
Mus musculus	Cluster -425	Pkm	Pyruvate kinase PKM
Bos taurus	Cluster -425	TF	Serotransferrin
Mus musculus	Cluster -425	Stom	Erythrocyte band 7 integral membrane protein
Mus musculus	Cluster -425	Pecam1	Platelet endothelial cell adhesion molecule
Mus musculus	Cluster -425	Cep290	Centrosomal protein of 290 kDa
Mus musculus	Cluster -425	Suclg1	Succinyl-CoA ligase [ADP/GDP-forming] subunit alpha, mitochondrial
Mus musculus	Cluster -425	Cox7a2	Cytochrome c oxidase subunit 7A2, mitochondrial
Mus musculus	Cluster -425	C1qbp	Complement component 1 Q subcomponent-binding protein, mitochondrial
Mus musculus	Cluster -425	Bcap31	B-cell receptor-associated protein 31
Mus musculus	Cluster -425	Idh2	Isocitrate dehydrogenase [NADP], mitochondrial
Mus musculus	Cluster -425	Cyb5b	Cytochrome b5 type B
Mus musculus	Cluster -425	Hadh	Hydroxyacyl-coenzyme A dehydrogenase, mitochondrial
Mus musculus	Cluster -425	P4hb	Protein disulfide-isomerase
Mus musculus	Cluster -425	Canx	Calnexin
Mus musculus	Cluster -425	Atp6v0d1	V-type proton ATPase subunit d 1
Bos taurus	Cluster -425	N/A	N/A
Mus musculus	Cluster -425	Glud1	Glutamate dehydrogenase 1, mitochondrial
Mus musculus	Cluster -425	Klhl26	Kelch-like protein 26
Mus musculus	Cluster -425	Ehd1	EH domain-containing protein 1
Mus	Cluster -425	Hspd1	60 kDa heat shock protein, mitochondrial

musculus			
Mus musculus	Cluster -425	Acadl	Long-chain specific acyl-CoA dehydrogenase, mitochondrial
Mus musculus	Cluster -425	Tsfm	Elongation factor Ts, mitochondrial
Mus musculus	Cluster -425	Rtn4	Reticulon-4
Mus musculus	Cluster -425	Aco2	Aconitate hydratase, mitochondrial
Mus musculus	Cluster -425	Ctsd	Cathepsin D
Mus musculus	Cluster -425	Tmed10	Transmembrane emp24 domain-containing protein 10
Mus musculus	Cluster -425	Ece1	Endothelin-converting enzyme 1
Mus musculus	Cluster -425	Rpl14	60S ribosomal protein L14
Mus musculus	Cluster -425	Myh9	Myosin-9
Mus musculus	Cluster -425	Eef2	Elongation factor 2
Mus musculus	Cluster -425	Anxa1	Annexin A1
Mus musculus	Cluster -425	Pebp1	Phosphatidylethanolamine-binding protein 1;Hippocampal cholinergic neurostimulating peptide
Mus musculus	Cluster -425	Anxa6	Annexin;Annexin A6
Mus musculus	Cluster -425	Maoa	Amine oxidase [flavin-containing] A
Mus musculus	Cluster -425	Calu	Calumenin
Mus musculus	Cluster -425	Capg	Macrophage-capping protein
Mus musculus	Cluster -425	Uqcrq	Cytochrome b-c1 complex subunit 8
Mus musculus	Cluster -425	Cd34	Hematopoietic progenitor cell antigen CD34
Mus musculus	Cluster -425	Cyb5a	Cytochrome b5
Mus musculus	Cluster -425	Sod2	Superoxide dismutase [Mn], mitochondrial
Mus musculus	Cluster -425	Rpn2	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 2
Mus musculus	Cluster -425	Pik3c2g	Phosphatidylinositol 4-phosphate 3-kinase C2 domain-containing subunit gamma
Mus musculus	Cluster -425	Adgrf5	N/A
Mus musculus	Cluster -425	Idh3g	Isocitrate dehydrogenase [NAD] subunit gamma 1, mitochondrial
Mus musculus	Cluster -425	Acot7	Cytosolic acyl coenzyme A thioester hydrolase
Mus musculus	Cluster -425	Sis	N/A
Mus	Cluster -425	Ephx1	Epoxide hydrolase 1

musculus			
Mus musculus	Cluster -425	Calr	Calreticulin
Mus musculus	Cluster -425	Uqerb	Cytochrome b-c1 complex subunit 7
Mus musculus	Cluster -425	Rpn1	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 1
Mus musculus	Cluster -425	Rps3a	40S ribosomal protein S3a
Mus musculus	Cluster -425	Hsp90aa1	Heat shock protein HSP 90-alpha
Mus musculus	Cluster -425	Gpi	Glucose-6-phosphate isomerase
Mus musculus	Cluster -425	Actn1	Alpha-actinin-1
Mus musculus	Cluster -425	Hint1	Histidine triad nucleotide-binding protein 1
Mus musculus	Cluster -425	Prkcsh	Glucosidase 2 subunit beta
Mus musculus	Cluster -425	Podxl	Podocalyxin
Mus musculus	Cluster -425	Hpcal1	Hippocalcin-like protein 1
Mus musculus	Cluster -425	Nos3	Nitric oxide synthase, endothelial;Nitric oxide synthase
Mus musculus	Cluster -425	Atp5c1	ATP synthase subunit gamma;ATP synthase subunit gamma, mitochondrial
Mus musculus	Cluster -425	Pfn1	Profilin-1
Mus musculus	Cluster -425	Alpl	Alkaline phosphatase;Alkaline phosphatase, tissue-nonspecific isozyme
Mus musculus	Cluster -425	Gdi2	Rab GDP dissociation inhibitor beta
Mus musculus	Cluster -425	Cnih4	Protein cornichon homolog 4
Mus musculus	Cluster -425	Hadhb	3-ketoacyl-CoA thiolase;Trifunctional enzyme subunit beta, mitochondrial
Mus musculus	Cluster -425	Uqcrc1	Cytochrome b-c1 complex subunit 1, mitochondrial
Mus musculus	Cluster -425	Itgav	Integrin alpha-V;Integrin alpha-V heavy chain;Integrin alpha-V light chain
Mus musculus	Cluster -425	Clec4a3	N/A
Mus musculus	Cluster -425	Atp5j2	ATP synthase subunit f, mitochondrial
Mus musculus	Cluster -425	Ndufb8	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial
Mus musculus	Cluster -425	Serpine1	Plasminogen activator inhibitor 1
Mus musculus	Cluster -425	Rpl6	60S ribosomal protein L6
Mus musculus	Cluster -425	Lonp1	Lon protease homolog, mitochondrial
Mus	Cluster -425	Rpl3	60S ribosomal protein L3

musculus			
Mus musculus	Cluster -425	Atp5f1	ATP synthase F(0) complex subunit B1, mitochondrial
Mus musculus	Cluster -425	Rars	Arginine--tRNA ligase, cytoplasmic
Mus musculus	Cluster -425	Aldh18a1	Delta-1-pyrroline-5-carboxylate synthase;Gamma-glutamyl phosphate reductase;Glutamate 5-kinase
Mus musculus	Cluster -425	Cav2	Caveolin;Caveolin-2
Mus musculus	Cluster -425	Rpl5	60S ribosomal protein L5
Mus musculus	Cluster -425	Nedd4	E3 ubiquitin-protein ligase NEDD4
Mus musculus	Cluster -425	Ubr4	E3 ubiquitin-protein ligase UBR4
Mus musculus	Cluster -425	Top2a	DNA topoisomerase 2-alpha
Mus musculus	Cluster -425	Prcp	Lysosomal Pro-X carboxypeptidase
Mus musculus	Cluster -425	Pgd	6-phosphogluconate dehydrogenase, decarboxylating
Mus musculus	Cluster -425	Sqrdl	Sulfide:quinone oxidoreductase, mitochondrial
Mus musculus	Cluster -425	Esd	S-formylglutathione hydrolase
Mus musculus	Cluster -420	Dpysl3	Dihydropyrimidinase-related protein 3
Mus musculus	Cluster -420	Pdhx	Pyruvate dehydrogenase protein X component, mitochondrial
Mus musculus	Cluster -420	Ncapg	N/A
Mus musculus	Cluster -420	Cdc42bpb	Serine/threonine-protein kinase MRCK beta
Mus musculus	Cluster -420	Tapbp	Tapasin
Mus musculus	Cluster -420	Pdia6	Protein disulfide-isomerase A6
Bos taurus	Cluster -420	N/A	N/A
Mus musculus	Cluster -420	Iars	Isoleucine--tRNA ligase, cytoplasmic
Mus musculus	Cluster -420	Pvr	N/A
Mus musculus	Cluster -420	Gsto1	Glutathione S-transferase omega-1
Mus musculus	Cluster -420	Ugt2b1;Ugt2b35;Ugt2b38;Ugt2b37;Ugt2b5;Ugt2b17	UDP-glucuronosyltransferase 2B17
Mus musculus	Cluster -420	Itga3	Integrin alpha-3;Integrin alpha-3 heavy chain;Integrin alpha-3 light chain
Mus musculus	Cluster -420	Plod2	Procollagen-lysine,2-oxoglutarate 5-dioxygenase 2
Mus	Cluster -420	Hspa5	78 kDa glucose-regulated protein

musculus			
Mus musculus	Cluster -420	Arsb	Arylsulfatase B
Mus musculus	Cluster -420	Pnpla6	Neuropathy target esterase
Mus musculus	Cluster -420	Gaa	Lysosomal alpha-glucosidase
Mus musculus	Cluster -420	Ndufa5	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5
Mus musculus	Cluster -420	Them6	Protein THEM6
Mus musculus	Cluster -420	Hsph1	Heat shock protein 105 kDa
Mus musculus	Cluster -420	Mecr	Trans-2-enoyl-CoA reductase, mitochondrial
Mus musculus	Cluster -420	Dnaja3	N/A
Mus musculus	Cluster -420	Ano6	Anoctamin-6
Mus musculus	Cluster -420	Irgm1	Immunity-related GTPase family M protein 1
Mus musculus	Cluster -420	Scamp2	Secretory carrier-associated membrane protein 2
Mus musculus	Cluster -420	Mp68	6.8 kDa mitochondrial proteolipid
Mus musculus	Cluster -420	Erp44	Endoplasmic reticulum resident protein 44
Mus musculus	Cluster -420	Ppa2	Inorganic pyrophosphatase 2, mitochondrial
Mus musculus	Cluster -420	Hk2	Hexokinase;Hexokinase-2
Mus musculus	Cluster -420	Cox5b	Cytochrome c oxidase subunit 5B, mitochondrial
Mus musculus	Cluster -420	Lbp	Lipopolysaccharide-binding protein
Mus musculus	Cluster -420	Pck2	Phosphoenolpyruvate carboxykinase [GTP], mitochondrial
Mus musculus	Cluster -420	Itpa	Inosine triphosphate pyrophosphatase
Mus musculus	Cluster -420	Lrpprc	Leucine-rich PPR motif-containing protein, mitochondrial
Mus musculus	Cluster -420	Lamp2	Lysosome-associated membrane glycoprotein 2
Mus musculus	Cluster -420	Mpst	3-mercaptopyruvate sulfurtransferase
Mus musculus	Cluster -420	Cpn10-rs1;Hspe1	10 kDa heat shock protein, mitochondrial
Mus musculus	Cluster -420	Ndufa3	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3
Mus musculus	Cluster -420	Stt3b	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit STT3B
Mus musculus	Cluster -420	Dnaja3	DnaJ homolog subfamily A member 3, mitochondrial
Mus	Cluster -420	Mrps34	28S ribosomal protein S34, mitochondrial

musculus			
Mus musculus	Cluster -420	Hsd17b4	Peroxisomal multifunctional enzyme type 2;(3R)-hydroxyacyl-CoA dehydrogenase;Enoyl-CoA hydratase 2
Mus musculus	Cluster -420	Dync1h1	Cytoplasmic dynein 1 heavy chain 1
Mus musculus	Cluster -420	Gsta1;Gsta2;Gsta3	Glutathione S-transferase;Glutathione S-transferase A1;Glutathione S-transferase A1, N-terminally processed;Glutathione S-transferase A3;Glutathione S-transferase A2
Mus musculus	Cluster -420	Ecm1	Extracellular matrix protein 1
Mus musculus	Cluster -420	Ide	Insulin-degrading enzyme
Mus musculus	Cluster -420	Itga2	Integrin alpha-2
Mus musculus	Cluster -420	Ccdc90b	Coiled-coil domain-containing protein 90B, mitochondrial
Mus musculus	Cluster -420	Dpp3	Dipeptidyl peptidase 3
Mus musculus	Cluster -420	Immt	MICOS complex subunit Mic60
Mus musculus	Cluster -420	Lrrc32	N/A
Mus musculus	Cluster -420	Synj2bp	Synaptojanin-2-binding protein
Mus musculus	Cluster -420	Krt76	Keratin, type II cytoskeletal 2 oral
Mus musculus	Cluster -420	Mthfd2	Bifunctional methylenetetrahydrofolate dehydrogenase/cyclohydrolase, mitochondrial;NAD-dependent methylenetetrahydrofolate dehydrogenase;Methenyltetrahydrofolate cyclohydrolase
Mus musculus	Cluster -420	Trap1	Heat shock protein 75 kDa, mitochondrial
Mus musculus	Cluster -420	Hexb	Beta-hexosaminidase subunit beta
Mus musculus	Cluster -420	Scp2	Non-specific lipid-transfer protein
Mus musculus	Cluster -420	Acot13	Acyl-coenzyme A thioesterase 13;Acyl-coenzyme A thioesterase 13, N-terminally processed
Mus musculus	Cluster -420	Fasn	Fatty acid synthase;[Acyl-carrier-protein] S-acetyltransferase;[Acyl-carrier-protein] S-malonyltransferase;3-oxoacyl-[acyl-carrier-protein] synthase;3-oxoacyl-[acyl-carrier-protein] reductase;3-hydroxyacyl-[acyl-carrier-protein] dehydratase;Enoyl-[acyl-carrier-protein] reductase;Oleoyl-[acyl-carrier-protein] hydrolase
Mus musculus	Cluster -420	N/A	Uncharacterized protein C17orf62 homolog
Mus musculus	Cluster -420	Tbcb	Tubulin-folding cofactor B
Mus musculus	Cluster -420	Copa	Coatomer subunit alpha;Proxenin;Xenin
Mus musculus	Cluster -420	Cdk18	Cyclin-dependent kinase 18
Mus musculus	Cluster -420	Coasy	Bifunctional coenzyme A synthase;Phosphopantetheine adenylyltransferase;Dephospho-CoA kinase

Mus musculus	Cluster -420	Slc25a24	Calcium-binding mitochondrial carrier protein SCaMC-1
Mus musculus	Cluster -420	Cd38	ADP-ribosyl cyclase/cyclic ADP-ribose hydrolase 1
Mus musculus	Cluster -420	Spryd4	SPRY domain-containing protein 4
Mus musculus	Cluster -420	Txnrd1	Thioredoxin reductase 1, cytoplasmic
Mus musculus	Cluster -420	Apmap	Adipocyte plasma membrane-associated protein
Mus musculus	Cluster -420	Psmel	Proteasome activator complex subunit 1
Mus musculus	Cluster -420	Eif5b	Eukaryotic translation initiation factor 5B
Mus musculus	Cluster -420	Farsb	Phenylalanine--tRNA ligase beta subunit
Mus musculus	Cluster -420	Gbe1	1,4-alpha-glucan-branching enzyme
Mus musculus	Cluster -420	Akr7a2	Aflatoxin B1 aldehyde reductase member 2
Mus musculus	Cluster -420	Fkbp9	Peptidyl-prolyl cis-trans isomerase FKBP9
Mus musculus	Cluster -420	Dnm3	Dynamin-3
Mus musculus	Cluster -420	Atp5j	ATP synthase-coupling factor 6, mitochondrial
Mus musculus	Cluster -420	N/A	N/A
Mus musculus	Cluster -420	Rnf213	E3 ubiquitin-protein ligase RNF213
Mus musculus	Cluster -420	Itsn2	N/A
Mus musculus	Cluster -420	Mars	Methionine--tRNA ligase, cytoplasmic
Mus musculus	Cluster -420	Tmtc3	Transmembrane and TPR repeat-containing protein 3
Mus musculus	Cluster -420	Usp14	Ubiquitin carboxyl-terminal hydrolase;Ubiquitin carboxyl-terminal hydrolase 14
Mus musculus	Cluster -420	Icam1	Intercellular adhesion molecule 1
Mus musculus	Cluster -420	Nomo1	Nodal modulator 1
Mus musculus	Cluster -420	Casp3	Caspase-3;Caspase-3 subunit p17;Caspase-3 subunit p12
Mus musculus	Cluster -420	Pgrmc2	Membrane-associated progesterone receptor component 2
Mus musculus	Cluster -420	Brcc3	Lys-63-specific deubiquitinase BRCC36
Mus musculus	Cluster -420	Gstz1	Maleylacetoacetate isomerase
Mus musculus	Cluster -420	Plin2	Perilipin-2
Mus musculus	Cluster -420	Atp1a1	Sodium/potassium-transporting ATPase subunit alpha-1

Mus musculus	Cluster -420	Hnrnpul2	Heterogeneous nuclear ribonucleoprotein U-like protein 2
Mus musculus	Cluster -420	Copg1	Coatomer subunit gamma-1
Mus musculus	Cluster -420	Rdh11	Retinol dehydrogenase 11
Mus musculus	Cluster -420	Nucb2	Nesfatin-1;Nucleobindin-2
Mus musculus	Cluster -420	Lgals1	Galectin-1
Mus musculus	Cluster -420	Acsf2	Acyl-CoA synthetase family member 2, mitochondrial
Mus musculus	Cluster -420	Mlk1	Mixed lineage kinase domain-like protein
Mus musculus	Cluster -420	Atad3	ATPase family AAA domain-containing protein 3
Mus musculus	Cluster -420	Cbr1	Carbonyl reductase [NADPH] 1
Mus musculus	Cluster -420	Palld	Palladin
Mus musculus	Cluster -420	Atp2a2	Sarcoplasmic/endoplasmic reticulum calcium ATPase 2
Mus musculus	Cluster -420	Lta4h	Leukotriene A-4 hydrolase
Mus musculus	Cluster -420	Uchl3;Uchl4	Ubiquitin carboxyl-terminal hydrolase isozyme L3;Ubiquitin carboxyl-terminal hydrolase isozyme L4
Mus musculus	Cluster -420	Caskin2	Caskin-2
Mus musculus	Cluster -420	Dctn1	Dynactin subunit 1
Bos taurus	Cluster -420	LOX	Protein-lysine 6-oxidase

Table S2. Proteins exclusive of LMNV-PC exposed just to FBS without the passage through the BBB.

Taxonomy	Cluster	Gene name	Uniprot full protein name
C	C	T	T
Bos taurus	Cluster 10	N/A	N/A
Bos taurus	Cluster 139	N/A	N/A
Bos taurus	Cluster -321	ACE	Angiotensin-converting enzyme {ECO:0000256 RuleBase:RU361144}
Bos taurus	Cluster -321	N/A	Tetraspanin {ECO:0000256 RuleBase:RU361218}
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	FTL;LOC783993	Ferritin {ECO:0000256 RuleBase:RU361145};Ferritin light chain
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	HSPB1	Heat shock protein beta-1
Bos taurus	Cluster -321	UGP2	UTP--glucose-1-phosphate uridylyltransferase
Bos taurus	Cluster -321	SULT1A1	Sulfotransferase 1A1
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	CTSC	Dipeptidyl peptidase 1
Bos taurus	Cluster -321	CD97	CD97 antigen
Bos taurus	Cluster -321	GPD1	Glycerol-3-phosphate dehydrogenase [NAD(+)], cytoplasmic
Bos taurus	Cluster -321	CTSA	Lysosomal protective protein
Bos taurus	Cluster -321	QPCT	Glutaminy-peptide cyclotransferase
Bos taurus	Cluster -321	HAGH	Hydroxyacylglutathione hydrolase, mitochondrial
Bos taurus	Cluster -321	AKR7A2	N/A
Bos taurus	Cluster -321	CHGB	Secretogranin-1
Bos taurus	Cluster -321	FABP1	Fatty acid-binding protein, liver
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	DMXL2	N/A
Bos taurus	Cluster -321	ISLR	Immunoglobulin superfamily containing leucine-rich repeat protein
Bos taurus	Cluster -321	APCS	Serum amyloid P-component
Bos taurus	Cluster -321	F11	Coagulation factor XI
Bos taurus	Cluster -321	N/A	Septin-2
Bos taurus	Cluster -321	CD109	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	DDAH2	N(G),N(G)-dimethylarginine dimethylaminohydrolase 2
Bos taurus	Cluster -321	MAN2B1	Lysosomal alpha-mannosidase
Bos taurus	Cluster -321	ASS1	Argininosuccinate synthase {ECO:0000305}
Bos taurus	Cluster -321	CAPNS1	Calpain small subunit 1
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	ME1	Malic enzyme {ECO:0000256 RuleBase:RU003426}
Bos taurus	Cluster -321	GSTM1;GSTM2	Glutathione S-transferase {ECO:0000256 RuleBase:RU003494};Glutathione S-transferase Mu 1
Bos taurus	Cluster -321	N/A	N/A

Bos taurus	Cluster -321	N/A	alpha-1,2-Mannosidase {ECO:0000256 RuleBase:RU361193}
Bos taurus	Cluster -321	CNTN1	Contactin-1
Bos taurus	Cluster -321	PROC	Vitamin K-dependent protein C
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	ERP44	Endoplasmic reticulum resident protein 44
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	ESD	S-formylglutathione hydrolase
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	FADD	FAS-associated death domain protein
Bos taurus	Cluster -321	ASL	Argininosuccinate lyase
Bos taurus	Cluster -321	WDR1	WD repeat-containing protein 1
Bos taurus	Cluster -321	LOC104968 478;SAA1	Serum amyloid A protein;Serum amyloid A protein {ECO:0000256 RuleBase:RU000539}
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	PHGDH	D-3-phosphoglycerate dehydrogenase;D-3-phosphoglycerate dehydrogenase {ECO:0000256 RuleBase:RU363003}
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	LAP3	Cytosol aminopeptidase
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	N/A	N/A
Bos taurus	Cluster -321	CAT	Catalase
Bos taurus	Cluster -321	CDH5	Cadherin-5
Bos taurus	Cluster -321	ATP6AP2	Renin receptor
Bos taurus	Cluster -321	MAT1A	S-adenosylmethionine synthase {ECO:0000256 RuleBase:RU000541};S-adenosylmethionine synthase isoform type-1
Bos taurus	Cluster -321	BANF1	Barrier-to-autointegration factor
Bos taurus	Cluster -321	C6	Complement component C6
Bos taurus	Cluster -321	CALR	Calreticulin
Bos taurus	Cluster -321	ANP32B	Acidic leucine-rich nuclear phosphoprotein 32 family member B
Bos taurus	Cluster -315	PI16	Peptidase inhibitor 16
Bos taurus	Cluster -315	SCG3	Secretogranin-3
Bos taurus	Cluster -315	ADAMTS13	N/A
Bos taurus	Cluster -315	PNPO	Pyridoxine-5'-phosphate oxidase
Bos taurus	Cluster -315	UMPS	Uridine 5'-monophosphate synthase
Bos taurus	Cluster -315	USP14	Ubiquitin carboxyl-terminal hydrolase 14
Bos taurus	Cluster -315	ACE2	Angiotensin-converting enzyme 2
Bos taurus	Cluster -315	SUGT1	Protein SGT1 homolog {ECO:0000250 UniProtKB:Q08446}
Bos taurus	Cluster -315	GSTP1	Glutathione S-transferase P
Bos taurus	Cluster -315	N/A	Galectin {ECO:0000256 RuleBase:RU102079}
Bos taurus	Cluster -315	BASP1	Brain acid soluble protein 1
Bos taurus	Cluster -315	ALPL	Alkaline phosphatase, tissue-nonspecific isozyme

Bos taurus	Cluster -315	BPGM;LOC 112447087	Bisphosphoglycerate mutase;Phosphoglycerate mutase {ECO:0000256 RuleBase:RU004511}
Bos taurus	Cluster -315	PARK7	Protein/nucleic acid deglycase DJ-1 {ECO:0000250 UniProtKB:Q99497}
Bos taurus	Cluster 46	MMP2	72 kDa type IV collagenase
Bos taurus	Cluster -233	KRT2	N/A
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	OGN	Mimecan
Bos taurus	Cluster -319	N/A	Fructose-bisphosphate aldolase {ECO:0000256 RuleBase:RU003994, ECO:0000256 SAAS:SAAS00336718}
Bos taurus	Cluster -319	APOC2	Apolipoprotein C-II
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	IDH1	Isocitrate dehydrogenase [NADP] {ECO:0000256 PIRNR:PIRNR000108};Isocitrate dehydrogenase [NADP] cytoplasmic
Bos taurus	Cluster -319	S100A12	Protein S100 {ECO:0000256 RuleBase:RU361184};Protein S100-A12
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	RPLP2	60S acidic ribosomal protein P2
Bos taurus	Cluster -319	HPRT1	Hypoxanthine-guanine phosphoribosyltransferase
Bos taurus	Cluster -319	APOH	Beta-2-glycoprotein 1
Bos taurus	Cluster -319	SORD	Sorbitol dehydrogenase
Bos taurus	Cluster -319	HBB	Hemoglobin subunit beta
Bos taurus	Cluster -319	NDRG2	Protein NDRG2
Bos taurus	Cluster -319	ADSL	Adenylosuccinate lyase;Adenylosuccinate lyase {ECO:0000256 RuleBase:RU361172}
Bos taurus	Cluster -319	PLA2G7	Platelet-activating factor acetylhydrolase;Platelet-activating factor acetylhydrolase {ECO:0000256 PIRNR:PIRNR018169}
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	CTSL;CTSV	Cathepsin L1;Cathepsin L2
Bos taurus	Cluster -319	PF4	C-X-C motif chemokine {ECO:0000256 RuleBase:RU361149};Platelet factor 4
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	FBP1	Fructose-1,6-bisphosphatase 1
Bos taurus	Cluster -319	APOB	N/A
Bos taurus	Cluster -319	CST3	Cystatin-C
Bos taurus	Cluster -319	PFN1	Profilin {ECO:0000256 RuleBase:RU003909};Profilin-1
Bos taurus	Cluster -319	GSTA2	Glutathione S-transferase A2
Bos taurus	Cluster -319	N/A	N/A
Bos taurus	Cluster -319	THBS4	Thrombospondin-4
Bos taurus	Cluster -319	TPT1	Translationally-controlled tumor protein
Bos taurus	Cluster -319	HABP2	Hyaluronan-binding protein 2
Bos taurus	Cluster -317	GPI	Glucose-6-phosphate isomerase
Bos taurus	Cluster -317	AKAP9	N/A

Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	AHCY	Adenosylhomocysteinase
Bos taurus	Cluster -317	GAS6	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	ATOX1	Copper transport protein ATOX1
Bos taurus	Cluster -317	TIMP3	Metalloproteinase inhibitor 3
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	EEF1B	Elongation factor 1-beta
Bos taurus	Cluster -317	PSAP	Prosaposin
Bos taurus	Cluster -317	AXL	N/A
Bos taurus	Cluster -317	EEF2	Elongation factor 2
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	DMKN	Dermokine
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	WARS	Tryptophan--tRNA ligase, cytoplasmic
Bos taurus	Cluster -317	OMD	Osteomodulin
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	TNNT2	Troponin T, cardiac muscle
Bos taurus	Cluster -317	SERPINA3; SERPINA3- 7	Serpin A3-7
Bos taurus	Cluster -317	PLVAP	N/A
Bos taurus	Cluster -317	EEF1D	Elongation factor 1-delta
Bos taurus	Cluster -317	MTAP	S-methyl-5'-thioadenosine phosphorylase {ECO:0000255 HAMAP-Rule:MF_03155};S-methyl-5'-thioadenosine phosphorylase {ECO:0000256 HAMAP-Rule:MF_03155}
Bos taurus	Cluster -317	ICAM1;ICA M3	Intercellular adhesion molecule 1;Intercellular adhesion molecule 3
Bos taurus	Cluster -317	SERPINH1	Serpin H1
Bos taurus	Cluster -317	ITIH2	N/A
Bos taurus	Cluster -317	N/A	Pyruvate kinase {ECO:0000256 RuleBase:RU000504}
Bos taurus	Cluster -317	AMY2B;LO C539383	Alpha-amylase {ECO:0000256 RuleBase:RU361134, ECO:0000256 SAAS:SAAS00280836}
Bos taurus	Cluster -317	APMAP	Adipocyte plasma membrane-associated protein
Bos taurus	Cluster -317	TAGLN2	Transgelin-2
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	HEXB	Beta-hexosaminidase {ECO:0000256 PIRNR:PIRNR001093}
Bos taurus	Cluster -317	TGFBI	Transforming growth factor-beta-induced protein ig-h3
Bos taurus	Cluster -317	IGFBP1	Insulin-like growth factor-binding protein 1
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	ANG1	Angiogenin-1
Bos taurus	Cluster -317	TKT	Transketolase
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	ITPA	Inosine triphosphate pyrophosphatase {ECO:0000255 HAMAP-Rule:MF_03148}

Bos taurus	Cluster -317	LOC512672	BOLA class I histocompatibility antigen, alpha chain BL3-6;BOLA class I histocompatibility antigen, alpha chain BL3-7
Bos taurus	Cluster -317	HSP90AA1	Heat shock protein HSP 90-alpha
Bos taurus	Cluster -317	FAM3C	Protein FAM3C
Bos taurus	Cluster -317	DAG1	Dystroglycan
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	DSTN	Destrin
Bos taurus	Cluster -317	CAND1	Cullin-associated NEDD8-dissociated protein 1
Bos taurus	Cluster -317	F10	Coagulation factor X
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	CAP1	Adenylyl cyclase-associated protein {ECO:0000256 RuleBase:RU000647};Adenylyl cyclase-associated protein 1
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	RNASE4	Ribonuclease 4
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	SMPD1	Sphingomyelin phosphodiesterase
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	RSU1	Ras suppressor protein 1
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	GH1	Somatotropin
Bos taurus	Cluster -317	COL6A3	N/A
Bos taurus	Cluster -317	GSTT1	Glutathione S-transferase theta-1
Bos taurus	Cluster -317	PGAM1	Phosphoglycerate mutase 1
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	PRDX6	Peroxiredoxin-6
Bos taurus	Cluster -317	SELENOP	Selenoprotein P {ECO:0000305}
Bos taurus	Cluster -317	PEBP1	Phosphatidylethanolamine-binding protein 1
Bos taurus	Cluster -317	N/A	Hemoglobin fetal subunit beta
Bos taurus	Cluster -317	CHAD	Chondroadherin
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	KRT6A	N/A
Bos taurus	Cluster -317	IGFBP2	Insulin-like growth factor-binding protein 2
Bos taurus	Cluster -317	TF	Serotransferrin
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	FTH1	Ferritin {ECO:0000256 RuleBase:RU361145};Ferritin heavy chain
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	NMI	N-myc-interactor
Bos taurus	Cluster -317	LOC528040	N/A
Bos taurus	Cluster -317	NUCB1	Nucleobindin-1
Bos taurus	Cluster -317	RBP4	Retinol-binding protein {ECO:0000256 PIRNR:PIRNR036893};Retinol-binding protein 4
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	GTF2E2	General transcription factor IIE subunit 2;Transcription initiation factor IIE subunit beta {ECO:0000256 PIRNR:PIRNR016398}

Bos taurus	Cluster -317	PAICS	N/A
Bos taurus	Cluster -317	S100B	Protein S100-B
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	PBLD	Phenazine biosynthesis-like domain-containing protein
Bos taurus	Cluster -317	CA3	Carbonic anhydrase 3
Bos taurus	Cluster -317	LOC616942	N/A
Bos taurus	Cluster -317	N/A	Lactoylglutathione lyase {ECO:0000256 RuleBase:RU361179}
Bos taurus	Cluster -317	LOC515150	N/A
Bos taurus	Cluster -317	BHMT	Betaine--homocysteine S-methyltransferase 1
Bos taurus	Cluster -317	OIT3	Oncoprotein-induced transcript 3 protein
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	COL18A1	N/A
Bos taurus	Cluster -317	CHGA	Chromogranin-A {ECO:0000303 PubMed:3018587, ECO:0000303 PubMed:3755681}
Bos taurus	Cluster -317	MBL	Mannose-binding protein C
Bos taurus	Cluster -317	LGALS1	Galectin-1
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	S100A4	Protein S100-A4
Bos taurus	Cluster -317	LOC513659	N/A
Bos taurus	Cluster -317	PDZK1	Na(+)/H(+) exchange regulatory cofactor NHE-RF3
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	VASP	Vasodilator-stimulated phosphoprotein
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	FERMT3	Fermitin family homolog 3
Bos taurus	Cluster -317	PSPH	Phosphoserine phosphatase
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	LPL	Lipoprotein lipase
Bos taurus	Cluster -317	20ALPHA-HSD;AKR1C3;AKR1C4;LOC527068;LOC538060;LOC782884;LOC785762	Dihydrodiol dehydrogenase 3;Prostaglandin F synthase 1;Prostaglandin F synthase 2
Bos taurus	Cluster -317	IGFBP5	Insulin-like growth factor-binding protein 5
Bos taurus	Cluster -317	PCTP	Phosphatidylcholine transfer protein
Bos taurus	Cluster -317	PDIA3	Protein disulfide-isomerase {ECO:0000256 RuleBase:RU361130};Protein disulfide-isomerase A3
Bos taurus	Cluster -317	PRL	Prolactin
Bos taurus	Cluster -317	N/A	N/A

Bos taurus	Cluster -317	DBI	Acyl-CoA-binding protein
Bos taurus	Cluster -317	TXN	Thioredoxin
Bos taurus	Cluster -317	N/A	Hexosyltransferase {ECO:0000256 RuleBase:RU363063}
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	N/A	N/A
Bos taurus	Cluster -317	HINT1	Histidine triad nucleotide-binding protein 1
Bos taurus	Cluster -317	CPPED1	Serine/threonine-protein phosphatase CPPED1
Bos taurus	Cluster -317	CNN2	Calponin {ECO:0000256 RuleBase:RU361224};Calponin-2

Table S3. Proteins conserved before and after the BBB passage.

Taxonomy	Cluster	Gene name	Uniprot full protein name
Bos taurus	Cluster 71	N/A	N/A
Bos taurus	Cluster -89	TTR	Transthyretin
Bos taurus	Cluster -89	SERPINA1	Alpha-1-antitrypsin
Bos taurus	Cluster -89	N/A	N/A
Bos taurus	Cluster -89	AHSG	Alpha-2-HS-glycoprotein
Bos taurus	Cluster -142	APOA4	Apolipoprotein A-IV
Bos taurus	Cluster -142	F9	Coagulation factor IX
Bos taurus	Cluster -142	CLU	Clusterin
Bos taurus	Cluster -142	APOC4	Apolipoprotein C-IV
Bos taurus	Cluster -142	PROZ	Vitamin K-dependent protein Z
Bos taurus	Cluster -142	ITIH2	N/A
Bos taurus	Cluster -142	HBB	Hemoglobin fetal subunit beta;Hemoglobin subunit beta
Bos taurus	Cluster -142	CFB	Complement factor B
Bos taurus	Cluster -142	N/A	N/A
Bos taurus	Cluster -142	LBP	Lipopolysaccharide-binding protein
Bos taurus	Cluster -142	SERPINC1	Antithrombin-III
Bos taurus	Cluster -142	SERPINA3; SERPINA3- 7;SERPINA 3-8	Serpin A3-7;Serpin A3-8
Bos taurus	Cluster -142	HPX	Hemopexin
Bos taurus	Cluster -142	THAP5	THAP domain-containing protein 5
Bos taurus	Cluster -142	ALB	Serum albumin
Bos taurus	Cluster -142	agp;ORM1	Alpha-1-acid glycoprotein;Alpha-1-acid glycoprotein {ECO:0000256 PIRNR:PIRNR036899}
Bos taurus	Cluster 10	APOC3	Apolipoprotein C-III
Bos taurus	Cluster -139	APOA2	Apolipoprotein A-II
Bos taurus	Cluster -139	HBA	Hemoglobin subunit alpha
Bos taurus	Cluster -139	APOA1	Apolipoprotein A-I
Bos taurus	Cluster -139	N/A	N/A
Bos taurus	Cluster 32	N/A	N/A
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	KLKB1	Plasma kallikrein
Bos taurus	Cluster -144	N/A	Anion exchange protein {ECO:0000256 RuleBase:RU362035}
Bos taurus	Cluster -144	ANXA6	Annexin A6
Bos taurus	Cluster -144	VNN1	Pantetheinase
Bos taurus	Cluster -144	IGF2R	Cation-independent mannose-6-phosphate receptor
Bos taurus	Cluster -144	MST1	Hepatocyte growth factor-like protein
Bos taurus	Cluster -144	CPB2	Carboxypeptidase B2
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	LOC515150	N/A
Bos taurus	Cluster -144	LOC525947	N/A
Bos taurus	Cluster -144	CTRB1	N/A
Bos taurus	Cluster -144	SERPINF2	Alpha-2-antiplasmin

Bos taurus	Cluster -144	ITGB3	Integrin beta {ECO:0000256 RuleBase:RU000633}
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	VASN	N/A
Bos taurus	Cluster -144	F12	Coagulation factor XII
Bos taurus	Cluster -144	LGALS3BP	Galectin-3-binding protein
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	N/A	Fibulin-1 {ECO:0000256 PIRNR:PIRNR036313}
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	IGFBP3	Insulin-like growth factor-binding protein 3
Bos taurus	Cluster -144	GSTA1	Glutathione S-transferase {ECO:0000256 RuleBase:RU003494};Glutathione S-transferase A1
Bos taurus	Cluster -144	SPP1	Osteopontin;Osteopontin-K
Bos taurus	Cluster -144	GALK1	Galactokinase
Bos taurus	Cluster -144	CTSZ	Cathepsin Z
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	N/A	Tubulin beta chain {ECO:0000256 RuleBase:RU000352}
Bos taurus	Cluster -144	BLVRB	Flavin reductase (NADPH)
Bos taurus	Cluster -144	CLEC3B	Tetranectin
Bos taurus	Cluster -144	TG	Thyroglobulin
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	N/A	N/A
Bos taurus	Cluster -144	PGK1	Phosphoglycerate kinase {ECO:0000256 RuleBase:RU000532};Phosphoglycerate kinase 1
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	PLG	Plasminogen;Plasminogen {ECO:0000256 PIRNR:PIRNR001150}
Bos taurus	Cluster -143	A2M	Alpha-2-macroglobulin
Bos taurus	Cluster -143	A1BG	Alpha-1B-glycoprotein {ECO:0000250 UniProtKB:P04217}
Bos taurus	Cluster -143	KNG2	Kininogen-2
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	FETUB	Fetuin-B
Bos taurus	Cluster -143	AFP	Alpha-fetoprotein
Bos taurus	Cluster -143	SPP2	Secreted phosphoprotein 24
Bos taurus	Cluster -143	ADIPOQ	Adiponectin
Bos taurus	Cluster -143	GC	Vitamin D-binding protein
Bos taurus	Cluster -143	LTF;TF	Lactotransferrin;Serotransferrin
Bos taurus	Cluster -143	LOC784932; SERPINA3; SERPINA3-1;SERPINA 3-2;SERPINA 3-7	Serpina A3-1 {ECO:0000303 PubMed:18384666};Serpina A3-2;Serpina A3-7
Bos taurus	Cluster -143	SERPINA3; SERPINA3-	Serpina A3-1 {ECO:0000303 PubMed:18384666};Serpina A3-2;Serpina A3-3;Serpina A3-4;Serpina A3-8

		1;SERPINA 3- 2;SERPINA 3- 3;SERPINA 3- 4;SERPINA 3-8	
Bos taurus	Cluster -143	C1QB	Complement C1q subcomponent subunit B
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	MGP	Matrix Gla protein
Bos taurus	Cluster -143	CHIA	Acidic mammalian chitinase
Bos taurus	Cluster -143	SERPINA6	Corticosteroid-binding globulin
Bos taurus	Cluster -143	N/A	Pentaxin {ECO:0000256 RuleBase:RU362112}
Bos taurus	Cluster -143	GPLD1	Phosphatidylinositol-glycan-specific phospholipase D
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	FGA	Fibrinogen alpha chain
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	F5	Coagulation factor V
Bos taurus	Cluster -143	N/A	Sulfhydryl oxidase {ECO:0000256 RuleBase:RU371123}
Bos taurus	Cluster -143	C4;LOC107 131209	Complement C4
Bos taurus	Cluster -143	TPI1	Triosephosphate isomerase
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	N/A	Protein HP-20 homolog
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	FN1	Fibronectin
Bos taurus	Cluster -143	AFM	Afamin {ECO:0000303 PubMed:26902720}
Bos taurus	Cluster -143	LDHA	L-lactate dehydrogenase A chain
Bos taurus	Cluster -143	C1S	Complement C1s subcomponent
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	PROS1	Vitamin K-dependent protein S
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	CFD	Complement factor D
Bos taurus	Cluster -143	PTGR1	Prostaglandin reductase 1
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	BPIFB1	BPI fold-containing family B member 1
Bos taurus	Cluster -143	AMY2B;LO C539383	Alpha-amylase {ECO:0000256 RuleBase:RU361134, ECO:0000256 SAAS:SAAS00280836}
Bos taurus	Cluster -143	THBS1	Thrombospondin-1
Bos taurus	Cluster -143	SULT1E1	Estrogen sulfotransferase;Sulfotransferase {ECO:0000256 RuleBase:RU361155}
Bos taurus	Cluster -143	C7	Complement component C7
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	STIP1	Stress-induced-phosphoprotein 1
Bos taurus	Cluster -143	FGG	Fibrinogen gamma-B chain
Bos taurus	Cluster -143	CFH	Complement factor H

Bos taurus	Cluster -143	C9	Complement component C9
Bos taurus	Cluster -143	APOD	Apolipoprotein D;Apolipoprotein D {ECO:0000256 PIRNR:PIRNR036893}
Bos taurus	Cluster -143	KRT10	Keratin, type I cytoskeletal 10
Bos taurus	Cluster -143	FGB	Fibrinogen beta chain
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	ENO1	Alpha-enolase
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	GGH	Gamma-glutamyl hydrolase
Bos taurus	Cluster -143	APOE	Apolipoprotein E
Bos taurus	Cluster -143	APOB	
Bos taurus	Cluster -143	SERPINF1	Pigment epithelium-derived factor
Bos taurus	Cluster -143	N/A	Factor XIIa inhibitor
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	ITIH3	Inter-alpha-trypsin inhibitor heavy chain H3
Bos taurus	Cluster -143	SFTPB	Pulmonary surfactant-associated protein B
Bos taurus	Cluster -143	SAA4	Serum amyloid A-4 protein
Bos taurus	Cluster -143	C3	Complement C3
Bos taurus	Cluster -143	GSN	Gelsolin
Bos taurus	Cluster -143	F2	Prothrombin
Bos taurus	Cluster -143	B2M	Beta-2-microglobulin
Bos taurus	Cluster -143	AMBP	Protein AMBP
Bos taurus	Cluster -143	CPN1	Carboxypeptidase N catalytic chain
Bos taurus	Cluster -143	ITIH4	Inter-alpha-trypsin inhibitor heavy chain H4
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
Bos taurus	Cluster -143	SERPINA5	Plasma serine protease inhibitor
Bos taurus	Cluster -143	N/A	Clusterin {ECO:0000256 RuleBase:RU000629}
Bos taurus	Cluster -143	N/A	N/A
Bos taurus	Cluster -143	MB	Myoglobin
Bos taurus	Cluster -143	ITIH1	Inter-alpha-trypsin inhibitor heavy chain H1
Bos taurus	Cluster -143	HMGB2	High mobility group protein B2
Bos taurus	Cluster -143	LUM	Lumican
Bos taurus	Cluster -143	RGN	Regucalcin
Bos taurus	Cluster -143	SERPINA7	Thyroxine-binding globulin
Bos taurus	Cluster -143	F13A1	Coagulation factor XIII A chain
Bos taurus	Cluster -143	MFAP4	Microfibril-associated glycoprotein 4

Table S4. Protein exclusive of LMNVs exposed to medium conditioned by bEnd.3

Taxonomy	Gene names	Protein names
Bos taurus	HPCAL1	Hippocalcin-like protein 1
Bos taurus	CEP290	Centrosomal protein of 290 kDa
Bos taurus	PSME1	Proteasome activator complex subunit 1
Bos taurus	NAT1	Arylamine N-acetyltransferase 1
Bos taurus	FAHD2;FAHD2A	Fumarylacetoacetate hydrolase domain-containing protein 2
Bos taurus	IGFBP4	Insulin-like growth factor-binding protein 4
Bos taurus	HMBS	Porphobilinogen deaminase
Bos taurus	GPX3	Glutathione peroxidase {ECO:0000256 RuleBase:RU000499};Glutathione peroxidase 3
Bos taurus	EXT1	Exostosin-1
Bos taurus	CAPN2	Calpain-2 catalytic subunit
Bos taurus	ANXA1	Annexin {ECO:0000256 RuleBase:RU003540};Annexin A1
Bos taurus	DDX43	
Bos taurus	CFHR5	
Bos taurus	TNNI3	Troponin I, cardiac muscle
Bos taurus	TPD52	
Bos taurus	CEP44	Centrosomal protein of 44 kDa
Bos taurus	LDHB	L-lactate dehydrogenase B chain
Bos taurus	HSPA1A;HSPA1B	Heat shock 70 kDa protein 1A;Heat shock 70 kDa protein 1B
Bos taurus	C1QA	Complement C1q subcomponent subunit A
Bos taurus	CNDP2	Cytosolic non-specific dipeptidase
Bos taurus	CARF	Calcium-responsive transcription factor
Bos taurus	KNG1;KNG2	Kininogen-1;Kininogen-2
Bos taurus	COL5A1	
Bos taurus	CATHL2;CATHL3;CATHL5;CATHL6;CATHL7	Cathelicidin-2;Cathelicidin-3; Cathelicidin-5;Cathelicidin-6;Cathelicidin-7
Bos taurus	BTF3L4	Transcription factor BTF3 homolog 4
Bos taurus	CLU	Clusterin;Clusterin {ECO:0000256 RuleBase:RU000629}
Bos taurus		Homeobox protein engrailed-like {ECO:0000256 RuleBase:RU510713}
Bos taurus	SORD	Sorbitol dehydrogenase
Bos taurus	AKR1A1	Alcohol dehydrogenase [NADP(+)]
Bos taurus	HGD	N/A
Mus Musculus	Lamp1	Lysosome-associated membrane glycoprotein 1
Mus Musculus	Mcm3	DNA replication licensing factor MCM3
Mus Musculus	Eif3j1;Eif3j2	Eukaryotic translation initiation factor 3 subunit J-A;Eukaryotic translation initiation factor 3 subunit J-B
Mus Musculus	Nnmt	Nicotinamide N-methyltransferase
Mus Musculus	Ermp1	Endoplasmic reticulum metallopeptidase 1
Mus Musculus	Plau	Urokinase-type plasminogen activator;Urokinase-type plasminogen activator long chain A;Urokinase-type plasminogen activator short chain A;Urokinase-type plasminogen activator chain B
Mus Musculus	A2m	Histidine triad nucleotide-binding protein 1
Mus Musculus	Sars	Serine--tRNA ligase, cytoplasmic
Mus Musculus	Tinagl1	Tubulointerstitial nephritis antigen-like
Mus Musculus	Scamp3	Secretory carrier-associated membrane protein 3
Mus Musculus	Ndufa11	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex

		subunit 11
Mus Musculus	Shcbp1	SHC SH2 domain-binding protein 1
Mus Musculus	Ywhaz	14-3-3 protein zeta/delta
Mus Musculus	Actr10	Actin-related protein 10
Mus Musculus	St13	Hsc70-interacting protein
Mus Musculus	Dock6	Dedicator of cytokinesis protein 6
Mus Musculus	Tbcd	Tubulin-specific chaperone D
Mus Musculus	Acox1	
Mus Musculus	Rab3gap2	Rab3 GTPase-activating protein non-catalytic subunit
Mus Musculus	Col4a2	Collagen alpha-2(IV) chain;Canstatin
Mus Musculus	Hk2	Hexokinase-2;Hexokinase
Mus Musculus	Lman1	Protein ERGIC-53
Mus Musculus	Anxa5	Annexin A5
Mus Musculus	Naa60	
Mus Musculus	Tjp1	Tight junction protein ZO-1
Mus Musculus	Tor1aip1	Torsin-1A-interacting protein 1
Mus Musculus	Ndufv1	NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial
Mus Musculus	Tns1	
Mus Musculus	Usp9x	Ubiquitin carboxyl-terminal hydrolase;Probable ubiquitin carboxyl-terminal hydrolase FAF-X
Mus Musculus	Fam162a	Protein FAM162A
Mus Musculus	Hnrnpf	Heterogeneous nuclear ribonucleoprotein F;Heterogeneous nuclear ribonucleoprotein F, N-terminally processed
Mus Musculus	Plp2	Proteolipid protein 2
Mus Musculus	Dcakd	Dephospho-CoA kinase domain-containing protein
Mus Musculus	Kif23	Kinesin-like protein KIF23
Mus Musculus	Il17f	Interleukin-17F
Mus Musculus	G6pd2;G6pdx	Glucose-6-phosphate 1-dehydrogenase;Glucose-6-phosphate 1-dehydrogenase 2;Glucose-6-phosphate 1-dehydrogenase X
Mus Musculus	Abcf1	ATP-binding cassette sub-family F member 1
Mus Musculus	Snrnp200	U5 small nuclear ribonucleoprotein 200 kDa helicase
Mus Musculus	Hsd17b10	3-hydroxyacyl-CoA dehydrogenase type-2
Mus Musculus	Gars	Glycine--tRNA ligase
Mus Musculus	Plod1;Plod3	Procollagen-lysine,2-oxoglutarate 5-dioxygenase 1;Procollagen-lysine,2-oxoglutarate 5-dioxygenase 3
Mus Musculus	Ndufs6	NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial
Mus Musculus	Focad	Focadhesin
Mus Musculus	Fis1	Mitochondrial fission 1 protein
Mus Musculus	Clic4	Chloride intracellular channel protein 4
Mus Musculus	Coro1c	Coronin-1C
Mus Musculus	Lemd2	LEM domain-containing protein 2
Mus Musculus	Mllt4	Afadin
Mus Musculus	Ccdc22	Coiled-coil domain-containing protein 22
Mus Musculus	Rab8a	Ras-related protein Rab-8A
Mus Musculus	Sdpr	Serum deprivation-response protein
Mus Musculus	Fundc2	FUN14 domain-containing protein 2
Mus Musculus	Gm14214;Rpl7a	60S ribosomal protein L7a
Mus Musculus	Naa15	N-alpha-acetyltransferase 15, NatA auxiliary subunit
Mus Musculus	Trnt1	CCA tRNA nucleotidyltransferase 1, mitochondrial
Mus Musculus	Sptan1	Spectrin alpha chain, non-erythrocytic 1
Mus Musculus	Upfl	Regulator of nonsense transcripts 1
Mus Musculus	Scg5	Neuroendocrine protein 7B2;N-terminal peptide;C-terminal

		peptide
Mus Musculus	Uxs1	UDP-glucuronic acid decarboxylase 1
Mus Musculus	Apex1	DNA-(apurinic or apyrimidinic site) lyase;DNA-(apurinic or apyrimidinic site) lyase, mitochondrial
Mus Musculus	Capn2	Calpain-2 catalytic subunit
Mus Musculus	Hmox2	Heme oxygenase 2
Mus Musculus	Nos3	Nitric oxide synthase;Nitric oxide synthase, endothelial
Mus Musculus	Msln	Megakaryocyte-potentiating factor;Mesothelin;Mesothelin, cleaved form
Mus Musculus	Ctsl	Cathepsin L1;Cathepsin L1 heavy chain;Cathepsin L1 light chain
Mus Musculus	Cct8	T-complex protein 1 subunit theta
Mus Musculus	Adamts4	A disintegrin and metalloproteinase with thrombospondin motifs 4
Mus Musculus	G6pc2	Glucose-6-phosphatase 2
Mus Musculus	Mcf2	Multiple coagulation factor deficiency protein 2 homolog
Mus Musculus	Abrac1	Costars family protein ABRACL
Mus Musculus	Hadha	Trifunctional enzyme subunit alpha, mitochondrial;Long-chain enoyl-CoA hydratase;Long chain 3-hydroxyacyl-CoA dehydrogenase
Mus Musculus	Eea1	Early endosome antigen 1
Mus Musculus	Krt17;Krt42	Keratin, type I cytoskeletal 17;Keratin, type I cytoskeletal 42
Mus Musculus	Chtf18	Chromosome transmission fidelity protein 18 homolog
Mus Musculus	Gon4l	GON-4-like protein
Mus Musculus	Fshr	Follicle-stimulating hormone receptor
Mus Musculus	Serpind1	Heparin cofactor 2
Mus Musculus	Nipsnap3b	Protein NipSnap homolog 3B
Mus Musculus	Sec61b	Protein transport protein Sec61 subunit beta
Mus Musculus	Syne1	Nesprin-1
Mus Musculus	Uqcrrf1	Cytochrome b-c1 complex subunit 11;Cytochrome b-c1 complex subunit Rieske, mitochondrial
Mus Musculus	Banf1	Barrier-to-autointegration factor;Barrier-to-autointegration factor, N-terminally processed
Mus Musculus	Cep83	Centrosomal protein of 83 kDa
Mus Musculus	Bak1	Bcl-2 homologous antagonist/killer
Mus Musculus	Mtrf1	Peptide chain release factor 1, mitochondrial
Mus Musculus	Angptl3	Angiopoietin-related protein 3
Mus Musculus	Plvap	Plasmalemma vesicle-associated protein
Mus Musculus	Nsd1	Histone-lysine N-methyltransferase;Histone-lysine N-methyltransferase, H3 lysine-36 and H4 lysine-20 specific
Mus Musculus	Sorbs1	Sorbin and SH3 domain-containing protein 1
Mus Musculus	Asah1	Acid ceramidase;Acid ceramidase subunit alpha;Acid ceramidase subunit beta
Mus Musculus	Apool	MICOS complex subunit Mic27
Mus Musculus	Pla2g4a	Cytosolic phospholipase A2;Phospholipase A2;Lysophospholipase
Mus Musculus	Ehd4	EH domain-containing protein 4
Mus Musculus	Prkcdp	Protein kinase C delta-binding protein
Mus Musculus	Lmna	Lamin-A/C;Prelamin-A/C
Mus Musculus	Tpp1	Tripeptidyl-peptidase 1
Mus Musculus	Myct1	Myc target protein 1
Mus Musculus	Cdc37	Hsp90 co-chaperone Cdc37;Hsp90 co-chaperone Cdc37, N-terminally processed
Mus Musculus	Iars2	Isoleucine--tRNA ligase, mitochondrial

Mus Musculus	Krt2	Keratin, type II cytoskeletal 2 epidermal
Mus Musculus	Dync1li2	Cytoplasmic dynein 1 light intermediate chain 2
Mus Musculus	Nes	Nestin
Mus Musculus	Apoo	Apolipoprotein O
Mus Musculus	Rpl13	60S ribosomal protein L13
Mus Musculus	Fn1	Anastellin;Fibronectin
Mus Musculus	Racgap1	Rac GTPase-activating protein 1
Mus Musculus	Osbp110	Oxysterol-binding protein
Mus Musculus	Col6a6	Collagen alpha-6(VI) chain
Mus Musculus	Cpt1a	Carnitine O-palmitoyltransferase 1, liver isoform
Mus Musculus	Adsl	Adenylosuccinate lyase
Mus Musculus	Akr1b3;Akr1b1	Aldose reductase
Mus Musculus	Hk1	Hexokinase;Hexokinase-1
Mus Musculus	Sec13	Protein SEC13 homolog
Mus Musculus	Adam1a;Adam1b	Disintegrin and metalloproteinase domain-containing protein 1a;Disintegrin and metalloproteinase domain-containing protein 1b
Mus Musculus	Eif3l	Eukaryotic translation initiation factor 3 subunit L
Mus Musculus	Inhbb	Inhibin beta B chain
Mus Musculus	Timp3	Metalloproteinase inhibitor 3
Mus Musculus	Taldo1	Transaldolase
Mus Musculus	Fscn1	Fascin
Mus Musculus	Tm4sf1	Transmembrane 4 L6 family member 1
Mus Musculus	Tnc	Tenascin
Mus Musculus	Cd44	CD44 antigen
Mus Musculus	Ndufb4	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4
Mus Musculus	Pcyox1	Prenylcysteine oxidase
Mus Musculus	Lor	Loricrin
Mus Musculus	Uxs1	UDP-glucuronic acid decarboxylase 1
Mus Musculus	Apex1	DNA-(apurinic or apyrimidinic site) lyase;DNA-(apurinic or apyrimidinic site) lyase, mitochondrial
Mus Musculus	Capn2	Calpain-2 catalytic subunit
Mus Musculus	Hmox2	Heme oxygenase 2
Mus Musculus	Nos3	Nitric oxide synthase;Nitric oxide synthase, endothelial
Mus Musculus	Msln	Megakaryocyte-potentiating factor;Mesothelin;Mesothelin, cleaved form
Mus Musculus	Ctsl	Cathepsin L1;Cathepsin L1 heavy chain;Cathepsin L1 light chain
Mus Musculus	Cct8	T-complex protein 1 subunit theta
Mus Musculus	Adamts4	A disintegrin and metalloproteinase with thrombospondin motifs 4
Mus Musculus	G6pc2	Glucose-6-phosphatase 2
Mus Musculus	Mcf2	Multiple coagulation factor deficiency protein 2 homolog
Mus Musculus	Abrac1	Costars family protein ABRACL
Mus Musculus	Hadha	Trifunctional enzyme subunit alpha, mitochondrial;Long-chain enoyl-CoA hydratase;Long chain 3-hydroxyacyl-CoA dehydrogenase
Mus Musculus	Eea1	Early endosome antigen 1
Mus Musculus	Krt17;Krt42	Keratin, type I cytoskeletal 17;Keratin, type I cytoskeletal 42
Mus Musculus	Chtf18	Chromosome transmission fidelity protein 18 homolog
Mus Musculus	Gon4l	GON-4-like protein
Mus Musculus	Fshr	Follicle-stimulating hormone receptor
Mus Musculus	Serpind1	Heparin cofactor 2

Mus Musculus	Sun2	SUN domain-containing protein 2
Mus Musculus	Man2b1	Lysosomal alpha-mannosidase
Mus Musculus	Tagln2	Transgelin-2
Mus Musculus	Spp1	Osteopontin
Mus Musculus	Krt10	Keratin, type I cytoskeletal 10
Mus Musculus	Mgp	Matrix Gla protein
Mus Musculus	Gcn111	N/A
Mus Musculus	Mmp28	N/A
Mus Musculus	Tes	N/A
Mus Musculus	Zfp646	N/A
Mus Musculus	Cald1	N/A
Mus Musculus	IFT52	N/A
Mus Musculus	KMT2C	N/A

Table S5. Protein present in LMNV-PC common to LMNVs that crossed BBB and to LMNVs exposed to medium conditioned by bEnd.3 secretome.

Taxonomy	Gene names	Protein names
Mus Musculus	Nid1	Nidogen-1
Mus Musculus	Immt	MICOS complex subunit Mic60
Mus Musculus	Pgk1	Phosphoglycerate kinase 1;Phosphoglycerate kinase
Mus Musculus	Tln1	Talin-1
Mus Musculus	Hsd17b4	Peroxisomal multifunctional enzyme type 2;(3R)-hydroxyacyl-CoA dehydrogenase;Enoyl-CoA hydratase 2
Mus Musculus	Mecr	Trans-2-enoyl-CoA reductase, mitochondrial
Mus Musculus	Eef1d	Elongation factor 1-delta
Mus Musculus	Uqcrb	Cytochrome b-c1 complex subunit 7
Mus Musculus	Hspd1	60 kDa heat shock protein, mitochondrial
Mus Musculus	Tpt1	Translationally-controlled tumor protein
Mus Musculus	Podxl	Podocalyxin
Mus Musculus	Flnb	Filamin-B
Mus Musculus	Ppa1	Inorganic pyrophosphatase
Mus Musculus	Rpl5	60S ribosomal protein L5
Mus Musculus	Ehd1	EH domain-containing protein 1
Mus Musculus	Dnaje13	
Mus Musculus	Idh3b	Isocitrate dehydrogenase [NAD] subunit, mitochondrial
Mus Musculus	Sptbn1	Spectrin beta chain, non-erythrocytic 1
Mus Musculus	Pdia3	Protein disulfide-isomerase A3
Mus Musculus	Atp5a1	ATP synthase subunit alpha;ATP synthase subunit alpha, mitochondrial
Mus Musculus	Pdia4	Protein disulfide-isomerase A4
Mus Musculus	Atp5b	ATP synthase subunit beta, mitochondrial
Mus Musculus	Tapbp	Tapasin
Mus Musculus	Pmpca	Mitochondrial-processing peptidase subunit alpha
Mus Musculus	Ubr4	E3 ubiquitin-protein ligase UBR4
Mus Musculus	Pgd	6-phosphogluconate dehydrogenase, decarboxylating
Mus Musculus	Dstn	Destrin
Mus Musculus	Pgam1	Phosphoglycerate mutase 1
Mus Musculus	Tcp1	T-complex protein 1 subunit alpha
Mus Musculus	Hint1	Histidine triad nucleotide-binding protein 1
Mus Musculus	Rpl6	60S ribosomal protein L6
Mus Musculus	Mapk1	Mitogen-activated protein kinase 1
Mus Musculus	Atp2a2	Sarcoplasmic/endoplasmic reticulum calcium ATPase 2
Mus Musculus	Ppp2r1a	Serine/threonine-protein phosphatase 2A 65 kDa regulatory subunit A alpha isoform
Mus Musculus	Anxa4	Annexin;Annexin A4
Mus Musculus	Tmed10	Transmembrane emp24 domain-containing protein 10
Mus Musculus	Adpgk	ADP-dependent glucokinase
Mus Musculus	Icam1	Intercellular adhesion molecule 1
Mus Musculus	Mfge8	Lactadherin
Mus Musculus	Acadm	Medium-chain specific acyl-CoA dehydrogenase, mitochondrial
Mus Musculus	Gsto1	Glutathione S-transferase omega-1
Mus Musculus	Prss55	Serine protease 55
Mus Musculus	2200002D01Rik	N/A
Mus Musculus	Atp5j2	ATP synthase subunit f, mitochondrial
Mus Musculus	Tsfm	Elongation factor Ts, mitochondrial

Mus Musculus	Vim	Vimentin
Mus Musculus	Sucla2	Succinyl-CoA ligase [ADP-forming] subunit beta, mitochondrial
Mus Musculus	Calr	Calreticulin
Mus Musculus	Ano6	Anoctamin-6
Mus Musculus	Irgm1	Immunity-related GTPase family M protein 1
Mus Musculus	Rps3a	40S ribosomal protein S3a
Mus Musculus	Hadhb	3-ketoacyl-CoA thiolase;Trifunctional enzyme subunit beta, mitochondrial
Mus Musculus	Atp1a1	Sodium/potassium-transporting ATPase subunit alpha-1
Mus Musculus	Dctn1	Dynactin subunit 1
Mus Musculus	Lgals1	Galectin-1
Mus Musculus	Rtn4	Reticulon-4
Mus Musculus	Myh10	Myosin-10
Mus Musculus	Serpinh1	Serpin H1
Mus Musculus	Mthfd11	Monofunctional C1-tetrahydrofolate synthase, mitochondrial
Mus Musculus	Ifitm3	Interferon-induced transmembrane protein 3
Mus Musculus	Rpn1	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 1
Mus Musculus	Hspg2	Basement membrane-specific heparan sulfate proteoglycan core protein;Endorepellin;LG3 peptide
Mus Musculus	Ctsd	Cathepsin D
Mus Musculus	Aldh1l2	Mitochondrial 10-formyltetrahydrofolate dehydrogenase
Mus Musculus	Pkm	Pyruvate kinase PKM
Mus Musculus	Gapdh;Gm3839	Glyceraldehyde-3-phosphate dehydrogenase
Mus Musculus	Got2	Aspartate aminotransferase, mitochondrial
Mus Musculus	Pecam1	Platelet endothelial cell adhesion molecule
Mus Musculus	Ganab	Neutral alpha-glucosidase AB
Mus Musculus	Capg	Macrophage-capping protein
Mus Musculus	Pre1	Protein regulator of cytokinesis 1
Mus Musculus	Cd34	Hematopoietic progenitor cell antigen CD34
Mus Musculus	Stat1	Signal transducer and activator of transcription;Signal transducer and activator of transcription 1
Mus Musculus	Rcn2	Reticulocalbin-2
Mus Musculus	Cyb5r1	NADH-cytochrome b5 reductase 1
Mus Musculus	Iqgap1	Ras GTPase-activating-like protein IQGAP1
Mus Musculus	Loxl4	Lysyl oxidase homolog 4
Mus Musculus	Acadl	Long-chain specific acyl-CoA dehydrogenase, mitochondrial
Mus Musculus	Capns1	Calpain small subunit 1
Mus Musculus	Eci1	Enoyl-CoA delta isomerase 1, mitochondrial
Mus Musculus	Tmem109	Transmembrane protein 109
Mus Musculus	Pitrm1	Presequence protease, mitochondrial
Mus Musculus	Atp5h	ATP synthase subunit d, mitochondrial
Mus Musculus	Wdr1	WD repeat-containing protein 1
Mus Musculus	Pfkl	ATP-dependent 6-phosphofructokinase, liver type
Mus Musculus	Myh9	Myosin-9
Mus Musculus	Mpst	3-mercaptopyruvate sulfurtransferase
Mus Musculus	Ephx1	Epoxide hydrolase 1
Mus Musculus	Dysf	Dysferlin
Mus Musculus	C1qbp	Complement component 1 Q subcomponent-binding protein, mitochondrial
Mus Musculus	Anxa1	Annexin A1
Mus Musculus	Anxa3	Annexin;Annexin A3

Mus Musculus	Cyb5b	Cytochrome b5 type B
Mus Musculus	Rars	Arginine--tRNA ligase, cytoplasmic
Mus Musculus	Esd	S-formylglutathione hydrolase
Mus Musculus	Myof	Myoferlin
Mus Musculus	Ahnak	
Mus Musculus	Acot10;Acot9	Acyl-coenzyme A thioesterase 10, mitochondrial;Acyl-coenzyme A thioesterase 9, mitochondrial
Mus Musculus	Lars	Leucine--tRNA ligase, cytoplasmic
Mus Musculus	Maoa	Amine oxidase [flavin-containing] A
Mus Musculus	Gdi2	Rab GDP dissociation inhibitor beta
Mus Musculus	Dync1h1	Cytoplasmic dynein 1 heavy chain 1
Mus Musculus	S100a4	Protein S100-A4
Mus Musculus	Eno1	Alpha-enolase;Enolase
Mus Musculus	Adgrf5	
Mus Musculus	Mrps34	28S ribosomal protein S34, mitochondrial
Mus Musculus	Plec	Plectin
Mus Musculus	Bst2	Bone marrow stromal antigen 2
Mus Musculus	Inf2	Inverted formin-2
Mus Musculus	Cyc1	Cytochrome c1, heme protein, mitochondrial
Mus Musculus	H2-D1	H-2 class I histocompatibility antigen, D-B alpha chain
Mus Musculus	Uqcrc2	Cytochrome b-c1 complex subunit 2, mitochondrial
Mus Musculus	Rpn2	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 2
Mus Musculus	Flna	Filamin-A
Mus Musculus	Pck2	Phosphoenolpyruvate carboxykinase [GTP], mitochondrial

Table S6: Protein detected in LMNV-PC present in LMNVs exposed to only FBS and in LMNVs exposed to medium conditioned by bEnd.3, but not present in the case of LMNVs that crossed BBB.

Taxonomy	Gene names	Protein Names
Bos Taurus	LGALS1	Galectin-1
Bos Taurus	SERPINH1	Serpin H1
Bos Taurus	TPT1	Translationally-controlled tumor protein
Bos Taurus	ALDOB	Fructose-bisphosphate aldolase {ECO:0000256 RuleBase:RU003994, ECO:0000256 SAAS:SAAS00336718};Fructose-bisphosphate aldolase B
Bos Taurus	PHGDH	D-3-phosphoglycerate dehydrogenase;D-3-phosphoglycerate dehydrogenase {ECO:0000256 RuleBase:RU363003}
Bos Taurus	HPX	Hemopexin
Bos Taurus		Lactoylglutathione lyase {ECO:0000256 RuleBase:RU361179}
Bos Taurus	CPB2	Carboxypeptidase B2
Bos Taurus	COL18A1	
Bos Taurus	COL6A3	
Bos Taurus	TAGLN2	Transgelin-2
Bos Taurus	FBP1	Fructose-1,6-bisphosphatase 1
Bos Taurus	LOC104968478;SAA1	Serum amyloid A protein;Serum amyloid A protein {ECO:0000256 RuleBase:RU000539}
Bos Taurus	CPPED1	Serine/threonine-protein phosphatase CPPED1
Bos Taurus	PGAM1	Phosphoglycerate mutase 1
Bos Taurus	LOC513659	
Bos Taurus	CHGB	Secretogranin-1
Bos Taurus	PF4	C-X-C motif chemokine {ECO:0000256 RuleBase:RU361149}
Bos Taurus	PLA2G7	Platelet-activating factor acetylhydrolase;Platelet-activating factor acetylhydrolase {ECO:0000256 PIRNR:PIRNR018169}
Bos Taurus	EIF3J	Eukaryotic translation initiation factor 3 subunit J {ECO:0000255 HAMAP-Rule:MF_03009};Eukaryotic translation initiation factor 3 subunit J {ECO:0000256 HAMAP-Rule:MF_03009}
Bos Taurus	MCF2	
Bos Taurus	PROC	Vitamin K-dependent protein C
Bos Taurus		Sulfhydryl oxidase {ECO:0000256 RuleBase:RU371123}
Bos Taurus	HSPB1	Heat shock protein beta-1
Bos Taurus	GSTM1;GSTM2;LOC100295687	Glutathione S-transferase {ECO:0000256 RuleBase:RU003494};Glutathione S-transferase Mu 1
Bos Taurus	PBLD	Phenazine biosynthesis-like domain-containing protein
Bos Taurus	LAP3	Cytosol aminopeptidase
Bos Taurus	PRDX6	Peroxiredoxin-6
Bos Taurus	CTSL;CTSV	Cathepsin L1;Cathepsin L2
Bos Taurus	CAT	Catalase
Bos Taurus	APCS	Serum amyloid P-component
Bos Taurus	APOH	Beta-2-glycoprotein 1
Bos Taurus	CHGA	Chromogranin-A {ECO:0000303 PubMed:3018587, ECO:0000303 PubMed:3755681}
Bos Taurus	CST3	Cystatin-C
Bos Taurus	PDZK1	Na(+)/H(+) exchange regulatory cofactor NHE-RF3
Bos Taurus	HABP2	Hyaluronan-binding protein 2
Bos Taurus	CAPNS1	Calpain small subunit 1
Bos Taurus	S100A12	Protein S100 {ECO:0000256 RuleBase:RU361184};Protein

		S100-A12
Bos Taurus	THBS4	Thrombospondin-4
Bos Taurus	ESD	S-formylglutathione hydrolase
Bos Taurus	LOC528040	
Bos Taurus	HINT1	Histidine triad nucleotide-binding protein 1
Bos Taurus	TNNT2	Troponin T, cardiac muscle
Bos Taurus	SELENOP	Selenoprotein P {ECO:0000305}
Bos Taurus	TIMP3	Metalloproteinase inhibitor 3
Bos Taurus	PEBP1	Phosphatidylethanolamine-binding protein 1
Bos Taurus	IGFBP3	Insulin-like growth factor-binding protein 3
Bos Taurus	TGFBI	Transforming growth factor-beta-induced protein ig-h3
Bos Taurus	CTSC	Dipeptidyl peptidase 1
Bos Taurus	FABP1	Fatty acid-binding protein, liver
Bos Taurus		Fructose-bisphosphate aldolase {ECO:0000256 RuleBase:RU003994, ECO:0000256 SAAS:SAAS00336718}
Bos Taurus	RBP4	Retinol-binding protein {ECO:0000256 PIRNR:PIRNR036893};Retinol-binding protein 4
Bos Taurus	ITPA	Inosine triphosphate pyrophosphatase {ECO:0000255 HAMAP- Rule:MF_03148}
Bos Taurus	HINT1	Histidine triad nucleotide-binding protein 1
Bos Taurus	TNNT2	Troponin T, cardiac muscle

Table S7. Protein present in LMNV-PC in all experimental conditions

Taxonomy	Gene names	Protein Names
Bos Taurus	ENO1	Alpha-enolase
Bos Taurus	TTR	Transthyretin
Bos Taurus	PGK1	Phosphoglycerate kinase {ECO:0000256 RuleBase:RU000532};Phosphoglycerate kinase 1
Bos Taurus		Fibulin-1 {ECO:0000256 PIRNR:PIRNR036313}
Bos Taurus	A1BG	Alpha-1B-glycoprotein {ECO:0000250 UniProtKB:P04217}
Bos Taurus	APOD	Apolipoprotein D;Apolipoprotein D {ECO:0000256 PIRNR:PIRNR036893}
Bos Taurus	APOC3	Apolipoprotein C-III
Bos Taurus	SERPINA7	Thyroxine-binding globulin
Bos Taurus	AMBP	Protein AMBP
Bos Taurus	STIP1	Stress-induced-phosphoprotein 1
Bos Taurus	SERPINF2	Alpha-2-antiplasmin
Bos Taurus	GSTA1	Glutathione S-transferase {ECO:0000256 RuleBase:RU003494};Glutathione S-transferase A1
Bos Taurus	ITIH3	Inter-alpha-trypsin inhibitor heavy chain H3
Bos Taurus	APOA2	Apolipoprotein A-II
Bos Taurus	PROZ	Vitamin K-dependent protein Z
Bos Taurus	PTGR1	Prostaglandin reductase 1
Bos Taurus	VASN	
Bos Taurus	CHIA	Acidic mammalian chitinase
Bos Taurus	CPN1	Carboxypeptidase N catalytic chain
Bos Taurus	SPP1	Osteopontin;Osteopontin-K
Bos Taurus	ITIH1	Inter-alpha-trypsin inhibitor heavy chain H1
Bos Taurus	SULT1E1	Estrogen sulfotransferase;Sulfotransferase {ECO:0000256 RuleBase:RU361155}
Bos Taurus	MB	Myoglobin
Bos Taurus		Factor XIIa inhibitor
Bos Taurus	OMD	Osteomodulin
Bos Taurus	C4;LOC107131209	Complement C4
Bos Taurus	CFD	Complement factor D
Bos Taurus	GPLD1	Phosphatidylinositol-glycan-specific phospholipase D
Bos Taurus	MGP	Matrix Gla protein
Bos Taurus	LDHA	L-lactate dehydrogenase A chain
Bos Taurus	SERPINA1	Alpha-1-antiproteinase
Bos Taurus	LUM	Lumican
Bos Taurus	AFP	Alpha-fetoprotein
Bos Taurus	FGB	Fibrinogen beta chain
Bos Taurus	SERPINA5	Plasma serine protease inhibitor
Bos Taurus	AFM	Afamin {ECO:0000303 PubMed:26902720}
Bos Taurus	C9	Complement component C9
Bos Taurus	RGN	Regucalcin
Bos Taurus	F9	Coagulation factor IX
Bos Taurus	SAA4	Serum amyloid A-4 protein
Bos Taurus	GGH	Gamma-glutamyl hydrolase
Bos Taurus	TPI1	Triosephosphate isomerase
Bos Taurus	FGA	Fibrinogen alpha chain
Bos Taurus	SPP2	Secreted phosphoprotein 24
Bos Taurus	C7	Complement component C7
Bos Taurus	GSN	Gelsolin
Bos Taurus	SERPINA6	Corticosteroid-binding globulin

Bos Taurus	LOC784932;SERPINA3-7	Serpin A3-7
Bos Taurus	F5	Coagulation factor V
Bos Taurus	APOE	Apolipoprotein E
Bos Taurus	HBA	Hemoglobin subunit alpha
Bos Taurus	A2M	Alpha-2-macroglobulin
Bos Taurus	HBB	Hemoglobin fetal subunit beta;Hemoglobin subunit beta
Bos Taurus	GC	Vitamin D-binding protein
Bos Taurus	FN1	Fibronectin
Bos Taurus	APOA1	Apolipoprotein A-I
Bos Taurus	APOA4	Apolipoprotein A-IV
Bos Taurus	LBP	Lipopolysaccharide-binding protein
Bos Taurus	F2	Prothrombin
Bos Taurus	AHSG	Alpha-2-HS-glycoprotein
Bos Taurus	MST1	Hepatocyte growth factor-like protein
Bos Taurus	PLG	Plasminogen;Plasminogen {ECO:0000256 PIRNR:PIRNR001150}
Bos Taurus	BLVRB	Flavin reductase (NADPH)
Bos Taurus	FGG	Fibrinogen gamma-B chain
Bos Taurus	CFB	Complement factor B
Bos Taurus	ALB	Serum albumin
Bos Taurus	ITIH4	Inter-alpha-trypsin inhibitor heavy chain H4
Bos Taurus	PROS1	Vitamin K-dependent protein S
Bos Taurus	C3	Complement C3
Bos Taurus	LTF;TF	Lactotransferrin;Serotransferrin