

Supplementary material

Supplementary Figures

Supplementary Figure 1: Representations of some of the differentially expressed proteins between samples from five different grades of SARS-CoV-2-infected patients. The normalized quantitative values of individual proteins across all sample groups are depicted as box plots, which were generated using the Qlucore Omics Explorer version 3.7 (Lund, Sweden) (<https://glucore.com>).

Supplementary Figure 2: Comparative analyses of the canonical pathways and toxicity function of the different pairwise analyses of COVID-19 patients showing higher gene expression changes between severe and asymptomatic COVID-19 pairs than between mild or moderate and asymptomatic disease pairs. The figure was generated using the Ingenuity pathway Analysis (www.qiagen.com)

Supplementary Figure 3 A: The disease annotations of some of the 193 protein expression signatures among the different grades of SARS-CoV-2 infections with certain organs involved, including kidney, lung, and liver.

Some of the implicated proteins are shown in pink. Some of these proteins act as growth factors, peptidases, transporters, and transmembrane receptors.

Supplementary Fig. 3 B-C: The cellular processes, disease implications, and functional annotations of some of the 193 protein expression signatures among the different grades of SARS-CoV-2 infections.

The cellular processes include activation of antigen-presenting cells, receptor-mediated endocytosis, and complement pathway. Some of these processes eventually affect the host immune system, resulting in different clinical manifestations of COVID-19, such as coagulation, inflammatory response, hemostasis, and complement activation. The figure was generated using the Ingenuity pathway Analysis (www.qiagen.com)

Supplementary Tables

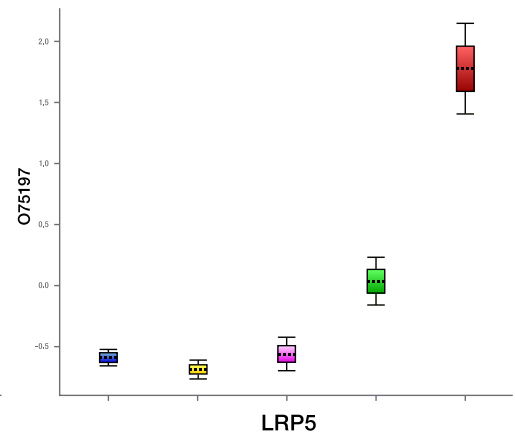
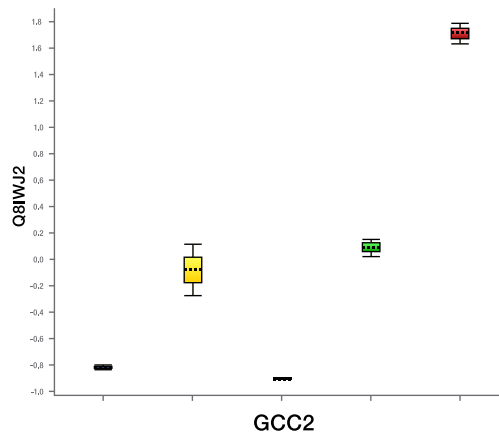
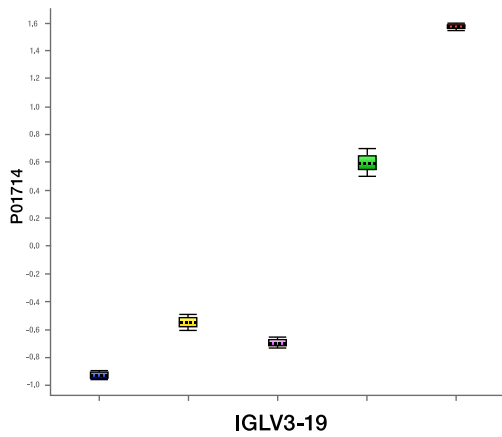
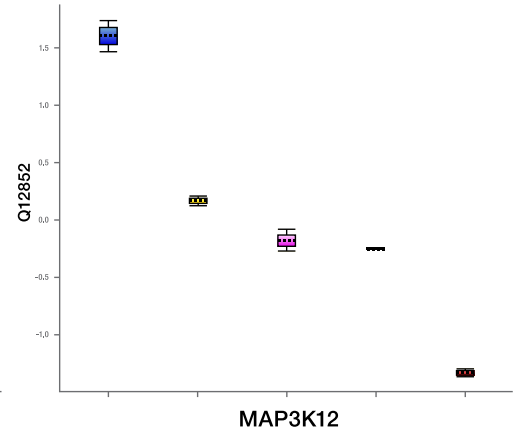
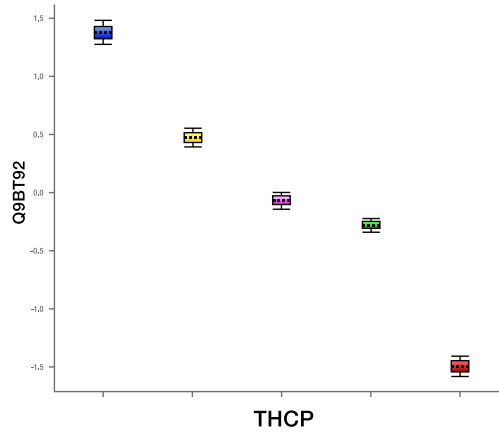
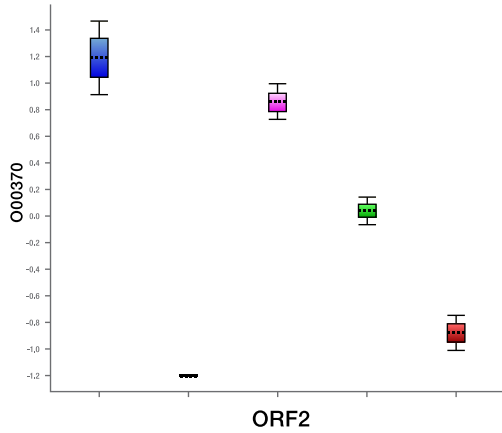
Supplementary Table S1: List of the 193 differentially expressed proteins between samples from five different grades of COVID-19 patients. (Highlighted in bold are some of the proteins that were previously identified by Messner et al. (12)).

Supplementary Table S2: List of the 91 differentially expressed proteins between samples from MERS-CoV patients with different disease severity and samples from control subjects.

Supplementary Table S3: Functional and cellular processes of the 49 overlapping proteins between 193 and 91 differentially expressed proteins in COVID-19 and MERS-CoV, respectively.

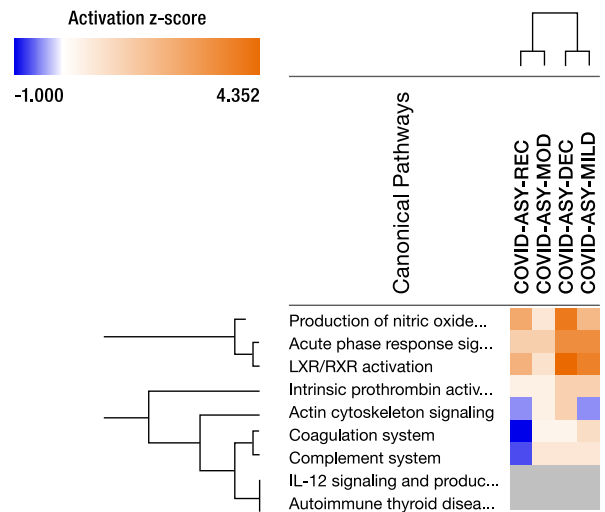
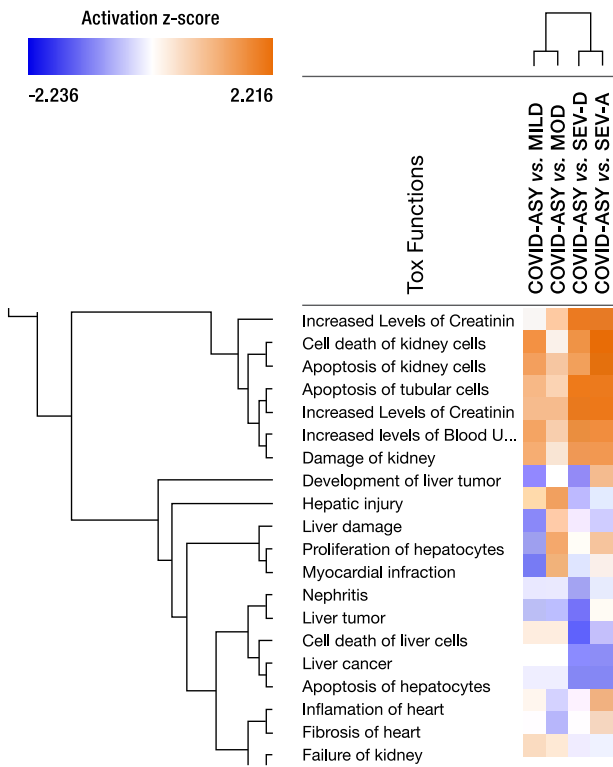
Supplementary Table S4: List of the 49 overlapping proteins between 193 and 91 differentially expressed proteins in COVID-19 and MERS-CoV respectively with their expressions shown among the COVID-19 samples. (Highlighted in bold are some of the proteins that have also been previously identified by Messner et al (12)).

Supplementary Figure 1: Representations of some of the differentially expressed proteins between samples from five different grades of SARS-CoV-2-infected patients. The normalized quantitative values of individual proteins across all sample groups are depicted as box plots, which were generated using the Qlucore Omics Explorer version 3.7 (Lund, Sweden) (<https://qlucore.com>).

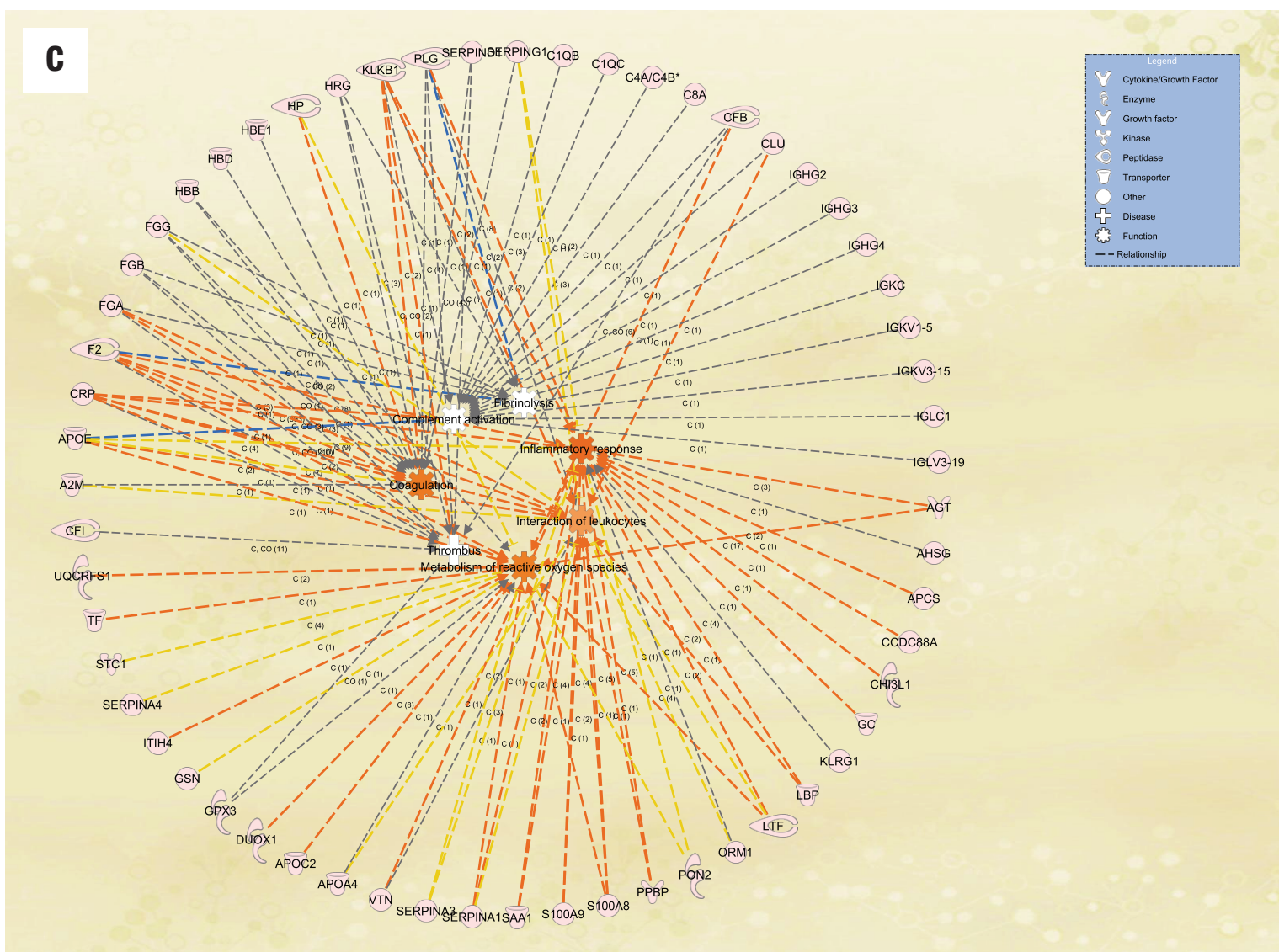
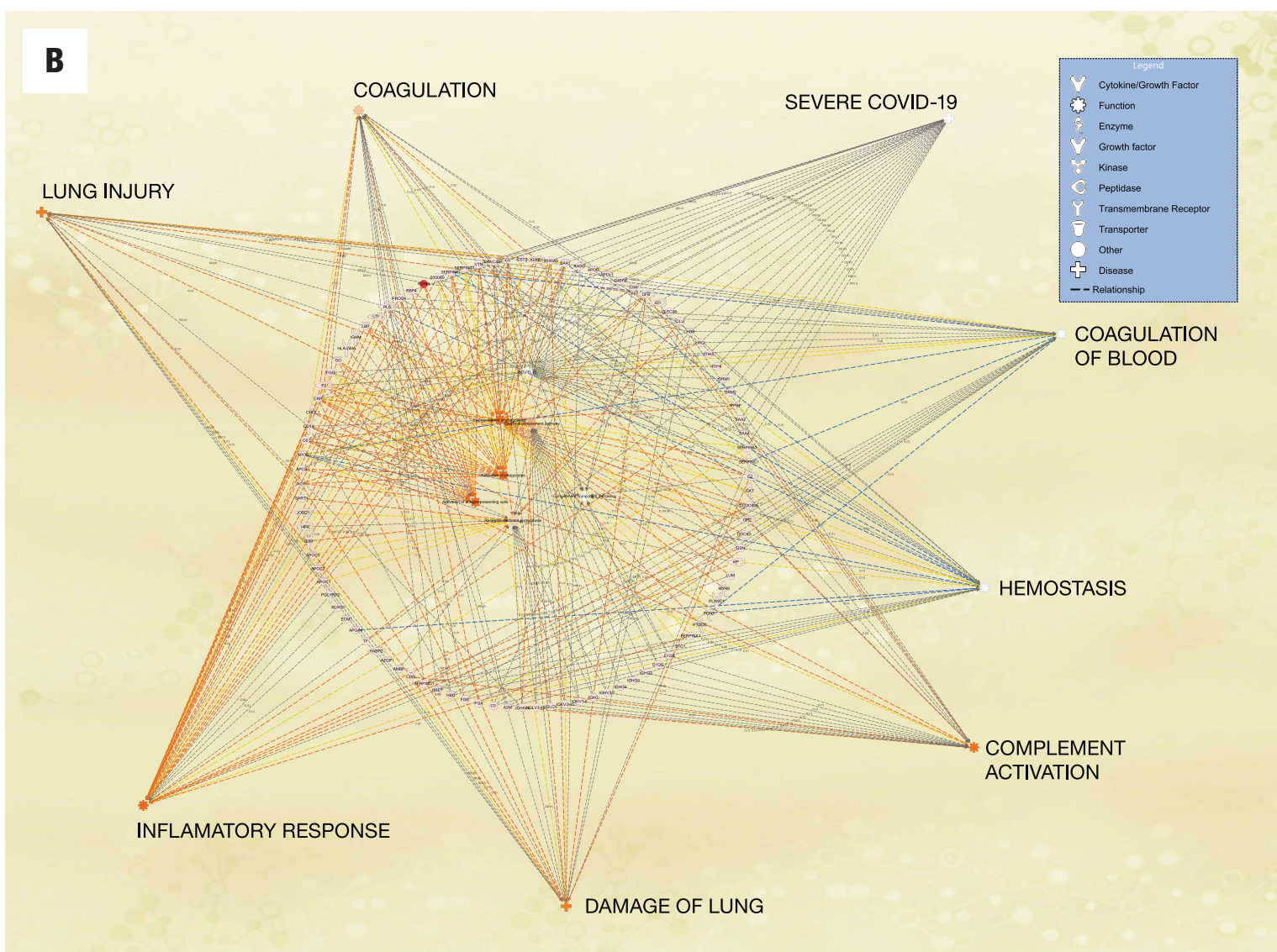
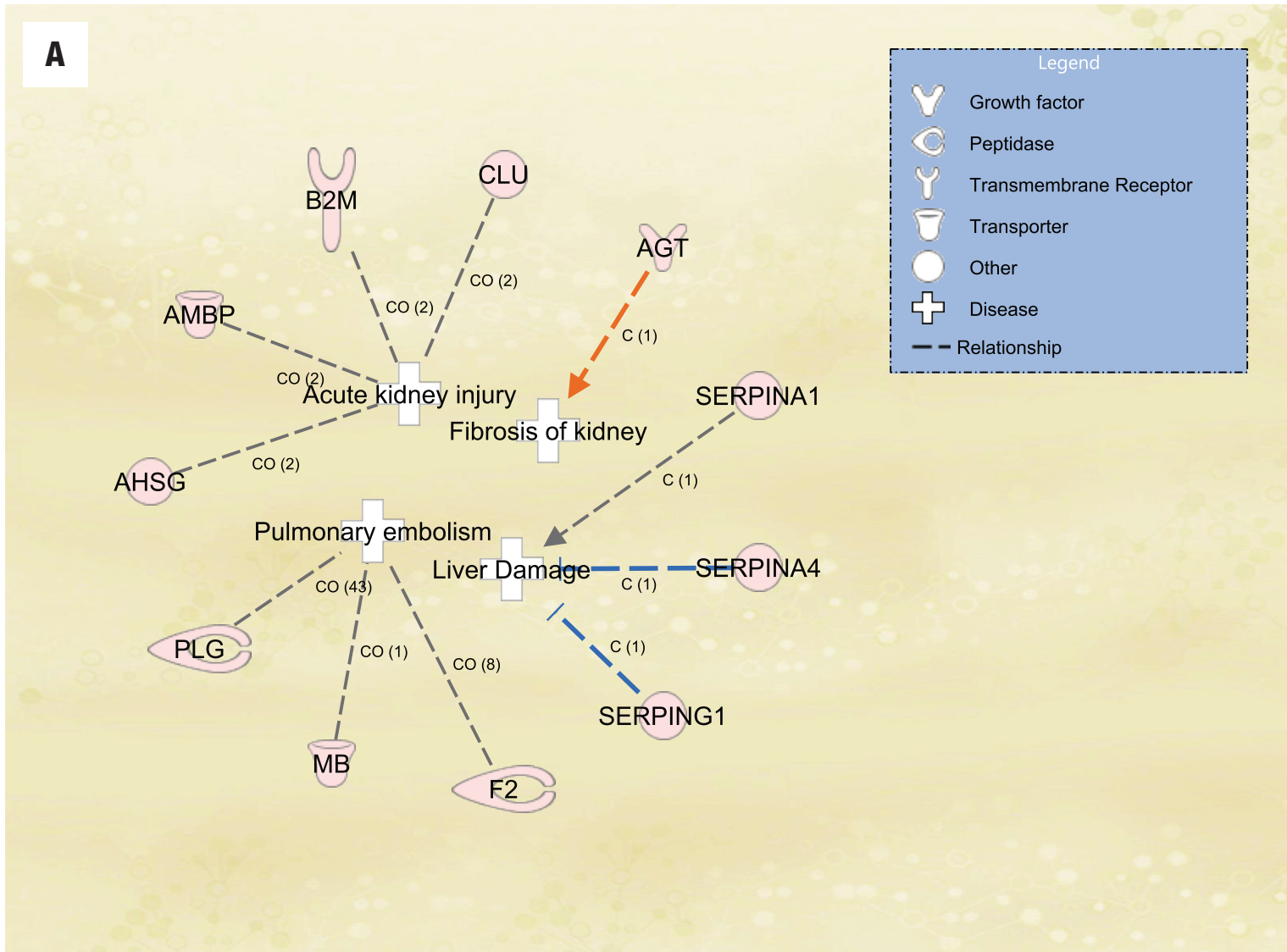


■ CVD19-ASYMPT
 ■ CVD19-MILD
 ■ CVD19-MOD
 ■ CVD-19-SEV-R
 ■ CVD-19-SEV-D

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Supplementary Figure 3 A: The disease annotations of some of the 193 protein expression signatures among the different grades of SARS-CoV-2 infections with certain organs involved, including kidney, lung, and liver. Some of the implicated proteins are shown in pink. Some of these proteins act as growth factors, peptidases, transporters, and transmembrane receptors. Supplementary Fig. 3 B-C: The cellular processes, disease implications, and functional annotations of some of the 193 protein expression signatures among the different grades of SARS-CoV-2 infections. The cellular processes include activation of antigen-presenting cells, receptor-mediated endocytosis, and complement pathway. Some of these processes eventually affect the host immune system, resulting in different clinical manifestations of COVID-19, such as coagulation, inflammatory response, hemostasis, and complement activation. The figure was generated using the Ingenuity pathway Analysis (www.qiagen.com)



Supplementary Table S1: List of the 193 differentially expressed proteins between samples from five different grades of COVID-19 patients. (Highlighted in bold are some of the proteins that were previously identified by Messner et al. (12)).

Supplementary Table S1 List of the 193 differentially expressed proteins between samples from five different grades of COVID-19 patients

Accession	Gene Name	Peptide count	Unique peptides	Confidence score	Anova (p)	q-Value	Max fold change	Power	Highest mean condition	Lowest mean condition	Description
Q12805	EFEMP1	1	1	5.86	1.3E-06	4.4E-06	Infinity	1	CVD19-SEVERE-D	CVD19-ASYMPT	EGF-containing fibulin-like extracellular matrix protein 1
Q96B86	RGMA	2	1	11.12	3.1E-07	1.9E-06	Infinity	1	CVD19-MODERATE	CVD19-MILD	Repulsive guidance molecule A
Q9Y2R4	DDX52	2	1	12.44	5.0E-05	8.5E-05	Infinity	1	CVD19-SEVERE-D	CVD19-ASYMPT	Probable ATP-dependent RNA helicase DDX52
Q9NVI1	FANCI	2	1	11.75	1.7E-06	5.6E-06	Infinity	1	CVD19-SEVERE-D	CVD19-ASYMPT	Fanconi anemia group I protein
Q8IYE0	CCDC146	4	1	24.84	1.4E-11	2.1E-09	Infinity	1	CVD19-SEVERE-R	CVD19-ASYMPT	Coiled-coil domain-containing protein 146
P17027	ZNF23	2	2	11.17	2.4E-14	7.2E-12	Infinity	1	CVD19-MODERATE	CVD19-MILD	Zinc finger protein 23
A4FU28	CTAGE9	3	1	18.20	5.5E-07	2.3E-06	Infinity	1	CVD19-SEVERE-R	CVD19-MILD	cTAGE family member 9
Q7L014	DDX46	2	1	17.33	1.6E-08	3.4E-07	2403.18	1	CVD19-SEVERE-R	CVD19-MILD	Probable ATP-dependent RNA helicase DDX46
Q13188	STK3	2	1	20.30	1.7E-09	7.8E-08	1519.60	1	CVD19-ASYMPT	CVD19-MILD	Serine/threonine-protein kinase 3
Q09MP3	RAD51AP2	3	2	31.38	1.8E-09	7.8E-08	438.21	1	CVD19-ASYMPT	CVD19-MILD	RAD51-associated protein 2
Q9H6A0	DENND2D	1	1	12.83	7.6E-08	9.1E-07	183.82	1	CVD19-MODERATE	CVD19-MILD	DENN domain-containing protein 2D
Q96CA5	BIRC7	2	1	19.79	9.2E-08	1.0E-06	116.77	1	CVD19-ASYMPT	CVD19-MILD	Baculoviral IAP repeat-containing protein 7
Q02809	PLOD1	6	5	39.34	1.1E-05	2.3E-05	109.86	1	CVD19-ASYMPT	CVD19-SEVERE-D	Procollagen-lysine ₂ -oxoglutarate 5-dioxygenase 1
P52823	STC1	2	1	17.73	3.8E-05	6.7E-05	106.13	1	CVD19-ASYMPT	CVD19-MILD	Stanniocalcin-1
P18065	IGFBP2	2	2	16.06	9.3E-05	1.5E-04	86.96	1	CVD19-SEVERE-D	CVD19-ASYMPT	Insulin-like growth factor-binding protein 2

Q9NYA4	MTMR4	2	1	11.43	4.4E-05	7.5E-05	79.75	1	CVD19-SEVERE-D	CVD19-MODERATE	Myotubularin-related protein 4
O75037	KIF21B	3	1	30.68	3.9E-07	2.0E-06	79.07	1	CVD19-ASYMPT	CVD19-SEVERE-D	Kinesin-like protein KIF21B
P22557	ALAS2	2	1	12.38	3.6E-06	9.9E-06	71.08	1	CVD19-SEVERE-D	CVD19-ASYMPT	5-aminolevulinate synthase_ erythroid-specific_mitochondrial
P12036	NEFH	3	2	17.01	8.7E-06	1.9E-05	64.58	1	CVD19-ASYMPT	CVD19-SEVERE-D	Neurofilament heavy polypeptide
P80723	BASP1	3	3	27.95	1.5E-08	3.4E-07	64.46	1	CVD19-MILD	CVD19-SEVERE-R	Brain acid soluble protein 1
P32119	PRDX2	11	9	102.95	2.2E-07	1.6E-06	59.40	1	CVD19-ASYMPT	CVD19-SEVERE-D	Peroxiredoxin-2
P02144	MB	4	4	33.29	2.5E-07	1.7E-06	50.75	1	CVD19-SEVERE-D	CVD19-ASYMPT	Myoglobin
P28161	GSTM2	2	1	12.98	2.6E-08	4.0E-07	48.47	1	CVD19-ASYMPT	CVD19-SEVERE-D	Glutathione S-transferase Mu 2
P01602	IGKV1-5	3	1	29.18	9.2E-07	3.5E-06	47.94	1	CVD19-SEVERE-R	CVD19-ASYMPT	Immunoglobulin kappa variable 1-5
P22352	GPX3	5	3	39.26	2.0E-05	3.9E-05	46.49	1	CVD19-SEVERE-D	CVD19-ASYMPT	Glutathione peroxidase 3
Q8N8H1	ZNF321P	1	1	11.22	1.9E-08	3.8E-07	44.00	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Putative protein ZNF321
Q4G0X9	CCDC40	4	3	29.33	1.0E-07	1.1E-06	43.74	1	CVD19-SEVERE-R	CVD19-SEVERE-D	Coiled-coil domain-containing protein 40
Q3V6T2	CCDC88A	4	3	22.00	2.8E-06	8.1E-06	42.81	1	CVD19-SEVERE-D	CVD19-ASYMPT	Girdin
P02741	CRP	4	4	53.43	4.6E-06	1.1E-05	35.33	1	CVD19-SEVERE-D	CVD19-ASYMPT	C-reactive protein
P02788	LTF	5	4	30.44	9.6E-07	3.5E-06	32.70	1	CVD19-MILD	CVD19-SEVERE-R	Lactotransferrin
Q9BX63	BRIP1	4	3	30.19	4.8E-07	2.2E-06	32.43	1	CVD19-ASYMPT	CVD19-SEVERE-D	Fanconi anemia group J protein
Q9Y3B9	RRP15	1	1	10.07	4.6E-06	1.1E-05	30.22	1	CVD19-SEVERE-D	CVD19-ASYMPT	RRP15-like protein
P61925	PK1A	1	1	6.38	4.6E-06	1.1E-05	28.19	1	CVD19-SEVERE-D	CVD19-MODERATE	cAMP-dependent protein kinase inhibitor alpha
P10501		1	1	13.48	1.5E-05	3.1E-05	28.11	1	CVD19-SEVERE-D	CVD19-MODERATE	Outer capsid glycoprotein VP7

Q8IXQ9	ETFBKMT	2	1	14.65	5.5E-06	1.3E-05	28.01	1	CVD19-ASYMPT	CVD19-SEVERE-D	Electron transfer flavoprotein beta subunit lysine methyltransferase
P02100	HBE1	3	1	21.63	4.4E-07	2.1E-06	27.29	1	CVD19-SEVERE-R	CVD19-SEVERE-D	Hemoglobin subunit epsilon
P0DJI9	SAA2	10	3	143.11	2.5E-07	1.7E-06	27.24	1	CVD19-SEVERE-D	CVD19-MODERATE	Serum amyloid A-2 protein
P36222	CH3L1	6	6	32.79	6.9E-06	1.6E-05	26.00	1	CVD19-ASYMPT	CVD19-MILD	Chitinase-3-like protein 1
P02679	FGG	15	15	170.01	2.1E-07	1.5E-06	25.38	1	CVD19-MILD	CVD19-SEVERE-R	Fibrinogen gamma chain
P60709	ACTB	4	2	30.97	3.0E-07	1.9E-06	24.81	1	CVD19-SEVERE-D	CVD19-MILD	Actin_cytoplasmic 1
O00566	MPHOSPH10	3	2	16.76	1.2E-06	4.3E-06	24.33	1	CVD19-SEVERE-R	CVD19-SEVERE-D	U3 small nucleolar ribonucleoprotein protein MPP10
P0DJI8	SAA1	11	3	149.00	3.7E-07	2.0E-06	23.58	1	CVD19-SEVERE-D	CVD19-MILD	Serum amyloid A-1 protein
P06790	E2	2	2	18.79	2.2E-06	6.9E-06	22.37	1	CVD19-ASYMPT	CVD19-SEVERE-D	Regulatory protein E2
P61769	B2M	2	2	13.15	3.5E-07	1.9E-06	21.77	1	CVD19-SEVERE-D	CVD19-ASYMPT	Beta-2-microglobulin
Q9C091	GREB1L	4	2	24.77	4.0E-06	1.0E-05	20.61	1	CVD19-SEVERE-R	CVD19-MILD	GREB1-like protein
P48751	SLC4A3	2	1	12.73	4.7E-07	2.2E-06	20.42	1	CVD19-MODERATE	CVD19-MILD	Anion exchange protein 3
Q9BXI3	NT5C1A	2	2	20.06	5.4E-07	2.3E-06	20.36	1	CVD19-SEVERE-R	CVD19-MILD	Cytosolic 5'-nucleotidase 1A
O43719	HTATSF1	8	6	51.23	3.1E-05	5.6E-05	19.49	1	CVD19-MILD	CVD19-SEVERE-R	HIV Tat-specific factor 1
P00915	CA1	4	4	30.80	4.1E-05	7.1E-05	17.90	1	CVD19-ASYMPT	CVD19-MILD	Carbonic anhydrase 1
P02746	C1QB	1	1	10.64	7.1E-05	1.1E-04	17.63	1	CVD19-MILD	CVD19-ASYMPT	Complement C1q subcomponent subunit B
Q10587	TEF	1	1	6.30	1.0E-05	2.1E-05	17.52	1	CVD19-SEVERE-R	CVD19-MILD	Thyrotroph embryonic factor
Q96L93	KIF16B	8	7	69.24	1.4E-07	1.3E-06	16.95	1	CVD19-ASYMPT	CVD19-SEVERE-D	Kinesin-like protein KIF16B
Q6P587	FAHD1	1	1	6.27	3.3E-07	1.9E-06	16.74	1	CVD19-	CVD19-	Acylpyruvase FAHD1_

									SEVERE-D	ASYMPT	mitochondrial
Q15020	SART3	3	2	25.60	9.3E-07	3.5E-06	16.74	1	CVD19-SEVERE-D	CVD19-ASYMPT	Squamous cell carcinoma antigen recognized by T-cells 3
P69891	HBG1	6	5	38.24	1.8E-06	5.7E-06	16.69	1	CVD19-MODERATE	CVD19-SEVERE-D	Hemoglobin subunit gamma-1
Q96E93	KLRG1	1	1	5.82	3.7E-05	6.6E-05	16.27	1	CVD19-SEVERE-D	CVD19-ASYMPT	Killer cell lectin-like receptor subfamily G member 1
Q96NH3	TBC1D32	4	2	31.25	2.9E-07	1.8E-06	16.26	1	CVD19-SEVERE-D	CVD19-ASYMPT	Protein broad-minded
Q02952	AKAP12	5	3	31.88	4.2E-05	7.2E-05	15.29	1	CVD19-SEVERE-D	CVD19-ASYMPT	A-kinase anchor protein 12
P20742	PZP	25	13	249.95	2.3E-09	8.8E-08	15.01	1	CVD19-ASYMPT	CVD19-MILD	Pregnancy zone protein
Q9HB71	CACYBP	2	1	24.36	2.3E-05	4.4E-05	14.84	1	CVD19-SEVERE-D	CVD19-MODERATE	Calcyclin-binding protein
P04004	VTN	15	13	136.56	2.4E-06	7.0E-06	14.45	1	CVD19-SEVERE-D	CVD19-ASYMPT	Vitronectin
P02763	ORM1	15	12	181.21	3.1E-10	3.1E-08	13.33	1	CVD19-SEVERE-D	CVD19-ASYMPT	Alpha-1-acid glycoprotein 1
P01011	SERPINA3	33	32	321.95	2.0E-07	1.5E-06	13.16	1	CVD19-SEVERE-D	CVD19-ASYMPT	Alpha-1-antichymotrypsin
P36980	CFHR2	6	2	65.21	8.2E-06	1.8E-05	12.98	1	CVD19-MODERATE	CVD19-MILD	Complement factor H-related protein 2
P01861	IGHG4	13	7	143.11	1.3E-08	3.4E-07	12.85	1	CVD19-MILD	CVD19-SEVERE-R	Immunoglobulin heavy constant gamma 4
P02743	APCS	2	2	14.56	6.9E-08	8.7E-07	12.83	1	CVD19-SEVERE-D	CVD19-ASYMPT	Serum amyloid P-component
A0A0C4DH68	DH68 IGKV2-24	3	1	20.53	8.4E-05	1.3E-04	12.46	1	CVD19-SEVERE-D	CVD19-MODERATE	Immunoglobulin kappa variable 2-24
Q15165	PON2	2	2	10.26	6.6E-09	2.0E-07	12.28	1	CVD19-MODERATE	CVD19-SEVERE-D	Serum paraoxonase/arylesterase 2
P02675	FGB	26	26	284.37	4.2E-07	2.0E-06	12.14	1	CVD19-MILD	CVD19-ASYMPT	Fibrinogen beta chain
Q96KF7	SMIM8	1	1	11.93	4.0E-07	2.0E-06	12.11	1	CVD19-ASYMPT	CVD19-MILD	Small integral membrane protein 8
P06702	S100A9	4	4	43.09	2.3E-06	6.9E-06	11.51	1	CVD19-	CVD19-	Protein S100-A9

									SEVERE-D	SEVERE-R	
P02671	FGA	22	22	202.85	2.3E-06	6.9E-06	11.50	1	CVD19-MILD	CVD19-MODERATE	Fibrinogen alpha chain
P19652	ORM2	13	10	177.33	2.1E-08	3.9E-07	11.24	1	CVD19-SEVERE-D	CVD19-ASYMPT	Alpha-1-acid glycoprotein 2
P02750	LRG1	13	13	134.36	2.6E-06	7.4E-06	11.20	1	CVD19-SEVERE-D	CVD19-ASYMPT	Leucine-rich alpha-2-glycoprotein
Q9HAW4	CLSPN	2	1	16.94	5.1E-06	1.2E-05	10.91	1	CVD19-SEVERE-D	CVD19-ASYMPT	Claspin
P00739	HPR	28	13	264.49	9.7E-06	2.1E-05	10.83	1	CVD19-MILD	CVD19-SEVERE-R	Haptoglobin-related protein
P69905	HBA1	31	28	309.33	4.1E-07	2.0E-06	10.71	1	CVD19-MILD	CVD19-SEVERE-D	Hemoglobin subunit alpha
P02654	APOC1	3	3	49.07	2.7E-07	1.8E-06	10.68	1	CVD19-SEVERE-D	CVD19-MILD	Apolipoprotein C-I
Q86UX2	ITIH5	2	1	12.22	1.2E-06	4.1E-06	10.38	1	CVD19-ASYMPT	CVD19-SEVERE-D	Inter-alpha-trypsin inhibitor heavy chain H5
P08185	SERPINA6	5	5	36.85	1.0E-05	2.1E-05	10.32	1	CVD19-SEVERE-D	CVD19-ASYMPT	Corticosteroid-binding globulin
Q9UGL9	CRCT1	1	1	13.12	4.4E-08	5.8E-07	10.32	1	CVD19-ASYMPT	CVD19-MILD	Cysteine-rich C-terminal protein 1
P05155	SERPING1	18	16	174.03	1.4E-07	1.3E-06	10.25	1	CVD19-SEVERE-D	CVD19-ASYMPT	Plasma protease C1 inhibitor
P29622	SERPINA4	4	4	24.25	3.8E-05	6.7E-05	10.22	1	CVD19-MILD	CVD19-MODERATE	Kallistatin
O14972	VPS26C	3	2	16.73	3.1E-06	8.7E-06	10.20	1	CVD19-SEVERE-R	CVD19-MILD	Vacuolar protein sorting-associated protein 26C
Q07912	TNK2	3	1	19.17	6.5E-07	2.7E-06	10.12	1	CVD19-SEVERE-D	CVD19-ASYMPT	Activated CDC42 kinase 1
P00738	HP	47	30	495.49	5.8E-09	1.9E-07	10.00	1	CVD19-SEVERE-D	CVD19-ASYMPT	Haptoglobin
Q12852	MAP3K12	2	1	18.79	1.0E-05	2.1E-05	9.92	1	CVD19-ASYMPT	CVD19-SEVERE-D	Mitogen-activated protein kinase kinase kinase 12
O15068	MCF2L	4	2	26.69	2.0E-05	3.8E-05	9.79	1	CVD19-MILD	CVD19-SEVERE-R	Guanine nucleotide exchange factor DBS
P55081	MFAP1	2	1	16.06	1.3E-07	1.2E-06	9.39	1	CVD19-SEVERE-D	CVD19-ASYMPT	Microfibrillar-associated protein 1
P01009	SERPINA1	52	51	575.19	5.0E-07	2.2E-06	9.31	1	CVD19-	CVD19-	Alpha-1-antitrypsin

									SEVERE-D	ASYMPT	
Q14624	ITIH4	30	29	280.90	4.3E-06	1.1E-05	9.31	1	CVD19-MILD	CVD19-SEVERE-R	Inter-alpha-trypsin inhibitor heavy chain H4
P25311	AZGP1	22	21	219.22	2.6E-08	4.0E-07	9.28	1	CVD19-SEVERE-D	CVD19-ASYMPT	Zinc-alpha-2-glycoprotein
P01859	IGHG2	15	6	197.97	1.2E-08	3.3E-07	9.24	1	CVD19-MILD	CVD19-MODERATE	Immunoglobulin heavy constant gamma 2
P18428	LBP	6	6	52.84	5.8E-05	9.6E-05	9.09	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Lipopolysaccharide-binding protein
P01876	IGHA1	28	18	300.87	3.8E-08	5.2E-07	9.07	1	CVD19-SEVERE-D	CVD19-ASYMPT	Immunoglobulin heavy constant alpha 1
Q06033	ITIH3	6	5	51.45	6.9E-07	2.8E-06	8.91	1	CVD19-SEVERE-D	CVD19-MILD	Inter-alpha-trypsin inhibitor heavy chain H3
P01019	AGT	11	11	99.94	3.2E-07	1.9E-06	8.66	1	CVD19-SEVERE-D	CVD19-MODERATE	Angiotensinogen
Q8IYD8	FANCM	6	4	27.88	2.6E-08	4.0E-07	8.66	1	CVD19-SEVERE-R	CVD19-MILD	Fanconi anemia group M protein
P19113	HDC	2	1	16.01	1.8E-05	3.5E-05	8.60	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Histidine decarboxylase
P35542	SAA4	6	6	54.09	4.0E-05	7.0E-05	8.45	1	CVD19-MILD	CVD19-SEVERE-R	Serum amyloid A-4 protein
P04196	HRG	18	18	155.02	7.0E-07	2.8E-06	8.36	1	CVD19-ASYMPT	CVD19-SEVERE-R	Histidine-rich glycoprotein
Q9UPU3	SORCS3	6	5	33.30	3.9E-06	1.0E-05	8.11	1	CVD19-ASYMPT	CVD19-SEVERE-D	VPS10 domain-containing receptor SorCS3
P07357	C8A	3	3	21.61	2.3E-05	4.3E-05	8.10	1	CVD19-SEVERE-R	CVD19-MILD	Complement component C8 alpha chain
P00450	CP	42	41	426.33	1.3E-09	7.8E-08	7.93	1	CVD19-SEVERE-D	CVD19-ASYMPT	Ceruloplasmin
O60486	PLXNC1	5	4	28.60	3.7E-06	1.0E-05	7.84	1	CVD19-MODERATE	CVD19-MILD	Plexin-C1
P59666	DEFA3	2	2	11.31	5.2E-06	1.2E-05	7.81	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Neutrophil defensin 3
A4UHQ7	L - RNA-directed	4	3	22.85	5.7E-07	2.4E-06	7.79	1	CVD19-MILD	CVD19-SEVERE-D	RNA-directed RNA polymerase L
Q9NUZ1	ACOXL	4	3	22.40	4.0E-06	1.0E-05	7.51	1	CVD19-SEVERE-D	CVD19-ASYMPT	Acyl-coenzyme A oxidase-like protein
P07360	C8G	5	4	28.66	1.6E-05	3.3E-05	7.04	1	CVD19-	CVD19-	Complement component

									SEVERE-D	ASYMPT	C8 gamma chain
A5A3E0	POTEF	6	2	36.42	5.1E-07	2.3E-06	6.92	1	CVD19-SEVERE-D	CVD19-ASYMPT	POTE ankyrin domain family member F
P0C0L5	C4B	77	3	921.48	8.9E-07	3.4E-06	6.91	1	CVD19-SEVERE-D	CVD19-ASYMPT	Complement C4-B
P0C0L4	C4A	87	11	921.64	8.9E-07	3.4E-06	6.91	1	CVD19-SEVERE-D	CVD19-ASYMPT	Complement C4-A
P02774	GC	39	38	394.35	4.0E-06	1.0E-05	6.80	1	CVD19-SEVERE-D	CVD19-ASYMPT	Vitamin D-binding protein
P06727	APOA4	26	23	288.84	1.1E-07	1.1E-06	6.60	1	CVD19-SEVERE-D	CVD19-MODERATE	Apolipoprotein A-IV
Q9P2P5	HECW2	3	1	20.35	1.1E-09	7.8E-08	6.58	1	CVD19-ASYMPT	CVD19-SEVERE-D	E3 ubiquitin-protein ligase HECW2
P02656	APOC3	6	6	55.51	1.1E-06	3.9E-06	6.53	1	CVD19-SEVERE-D	CVD19-ASYMPT	Apolipoprotein C-III
P02768	ALB	167	159	1276.86	8.3E-08	9.4E-07	6.49	1	CVD19-MILD	CVD19-SEVERE-R	Serum albumin
P47985	UQCRRS1	1	1	12.96	2.5E-06	7.3E-06	6.41	1	CVD19-ASYMPT	CVD19-SEVERE-D	Cytochrome b-c1 complex subunit Rieske_mitochondrial
P02787	TF	100	95	1031.64	7.8E-08	9.1E-07	6.28	1	CVD19-MILD	CVD19-SEVERE-R	Serotransferrin
Q9NRD9	DUOX1	4	3	29.42	9.2E-06	2.0E-05	6.18	1	CVD19-ASYMPT	CVD19-MILD	Dual oxidase 1
P68871	HBB	44	35	363.70	3.2E-07	1.9E-06	6.11	1	CVD19-MILD	CVD19-SEVERE-D	Hemoglobin subunit beta
P02042	HBD	14	6	199.75	3.7E-06	9.9E-06	5.98	1	CVD19-MILD	CVD19-SEVERE-D	Hemoglobin subunit delta
Q8N3J2	METTL4	2	2	17.26	2.9E-07	1.8E-06	5.68	1	CVD19-SEVERE-D	CVD19-MILD	Methyltransferase-like protein 4
P04003	C4BPA	22	20	191.24	3.2E-06	8.8E-06	5.64	1	CVD19-ASYMPT	CVD19-SEVERE-R	C4b-binding protein alpha chain
P05090	APOD	8	8	65.36	2.2E-06	6.7E-06	5.57	1	CVD19-SEVERE-D	CVD19-ASYMPT	Apolipoprotein D
Q9BYX2	TBC1D2	3	2	19.54	9.2E-06	2.0E-05	5.57	1	CVD19-SEVERE-D	CVD19-ASYMPT	TBC1 domain family member 2A
P0DOY2	IGLC2	6	1	104.70	1.5E-07	1.3E-06	5.56	1	CVD19-SEVERE-D	CVD19-ASYMPT	Immunoglobulin lambda constant 2
P0CF74	IGLC6	7	1	86.28	1.5E-07	1.3E-06	5.56	1	CVD19-	CVD19-	Immunoglobulin lambda

									SEVERE-D	ASYMPT	constant 6
P01024	C3	125	118	1349.65	1.1E-06	3.8E-06	5.52	1	CVD19-MILD	CVD19-SEVERE-R	Complement C3
P19823	ITIH2	20	19	214.81	1.7E-06	5.5E-06	5.52	1	CVD19-MILD	CVD19-ASYMPT	Inter-alpha-trypsin inhibitor heavy chain H2
Q66GS9	CEP135	9	7	57.99	4.8E-06	1.2E-05	5.34	1	CVD19-SEVERE-R	CVD19-MILD	Centrosomal protein of 135 kDa
Q9UHR6	ZNHIT2	4	4	23.71	2.2E-05	4.1E-05	5.27	1	CVD19-SEVERE-D	CVD19-ASYMPT	Zinc finger HIT domain-containing protein 2
P01860	IGHG3	15	6	208.91	8.2E-07	3.2E-06	5.16	1	CVD19-SEVERE-D	CVD19-ASYMPT	Immunoglobulin heavy constant gamma 3
P80748	IGLV3-21	3	3	21.17	2.1E-05	3.9E-05	5.04	1	CVD19-SEVERE-D	CVD19-MODERATE	Immunoglobulin lambda variable 3-21
P01591	JCHAIN	9	9	72.14	8.8E-07	3.4E-06	4.98	1	CVD19-SEVERE-D	CVD19-ASYMPT	Immunoglobulin J chain
P49917	LIG4	5	3	27.24	1.3E-06	4.4E-06	4.97	1	CVD19-SEVERE-R	CVD19-MILD	DNA ligase 4
Q15040	JOSD1	1	1	6.43	2.4E-07	1.7E-06	4.97	1	CVD19-SEVERE-D	CVD19-ASYMPT	Josephin-1
Q13588	GRAP	2	1	11.47	2.5E-08	4.0E-07	4.84	1	CVD19-MILD	CVD19-SEVERE-R	GRB2-related adapter protein
P0DOX3	IgG-Delta	3	3	15.93	2.7E-05	5.1E-05	4.81	1	CVD19-ASYMPT	CVD19-SEVERE-D	Immunoglobulin delta heavy chain
Q5VU65	NUP210L	6	5	40.47	2.1E-05	4.0E-05	4.78	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Nuclear pore membrane glycoprotein 210-like
P05546	SERPIND1	11	11	94.45	3.9E-06	1.0E-05	4.71	1	CVD19-SEVERE-D	CVD19-MILD	Heparin cofactor 2
P19827	ITIH1	13	12	100.82	3.7E-05	6.6E-05	4.68	1	CVD19-ASYMPT	CVD19-SEVERE-D	Inter-alpha-trypsin inhibitor heavy chain H1
A0A0B4J1Y9	IGHV3-72	2	2	14.35	4.0E-06	1.0E-05	4.68	1	CVD19-SEVERE-D	CVD19-MODERATE	Immunoglobulin heavy variable 3-72
Q5K130	CLLU1-AS1	1	1	13.55	3.3E-07	1.9E-06	4.68	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Putative chronic lymphocytic leukemia up-regulated protein 1 opposite strand transcript protein
P00734	F2	26	26	195.44	1.7E-07	1.4E-06	4.64	1	CVD19-MILD	CVD19-ASYMPT	Prothrombin
P01714	IGLV3-19	1	1	6.91	7.6E-06	1.7E-05	4.46	1	CVD19-	CVD19-	Immunoglobulin lambda

									SEVERE-D	ASYMPT	variable 3-19
P03952	KLKB1	12	11	79.34	2.1E-05	3.9E-05	4.40	1	CVD19-SEVERE-R	CVD19-MODERATE	Plasma kallikrein
P02655	APOC2	4	4	46.78	2.4E-05	4.5E-05	4.29	1	CVD19-SEVERE-D	CVD19-MODERATE	Apolipoprotein C-II
P01619	IGKV3-20	3	3	27.41	2.0E-05	3.8E-05	4.27	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Immunoglobulin kappa variable 3-20
P02790	HPX	32	29	367.71	1.5E-06	5.0E-06	4.25	1	CVD19-SEVERE-D	CVD19-ASYMPT	Hemopexin
P22792	CPN2	7	6	52.21	1.2E-06	4.3E-06	4.25	1	CVD19-MILD	CVD19-MODERATE	Carboxypeptidase N subunit 2
P01834	IGKC	10	3	136.90	5.2E-07	2.3E-06	4.22	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Immunoglobulin kappa constant
P0DOX5	IgG-gamma	28	17	306.99	1.7E-07	1.4E-06	4.11	1	CVD19-SEVERE-D	CVD19-ASYMPT	Immunoglobulin gamma-1 heavy chain
P02765	AHSG	18	17	149.09	3.4E-07	1.9E-06	4.10	1	CVD19-MILD	CVD19-MODERATE	Alpha-2-HS-glycoprotein
Q93074	MED12	6	5	40.97	5.7E-06	1.3E-05	4.09	1	CVD19-ASYMPT	CVD19-SEVERE-R	Mediator of RNA polymerase II transcription subunit 12
P02775	PPBP	4	3	45.53	1.8E-07	1.4E-06	4.05	1	CVD19-SEVERE-D	CVD19-MODERATE	Platelet basic protein
P02652	APOA2	18	18	160.51	3.1E-08	4.5E-07	4.04	1	CVD19-MILD	CVD19-MODERATE	Apolipoprotein A-II
P02760	AMBP	16	15	183.85	7.6E-06	1.7E-05	4.01	1	CVD19-SEVERE-D	CVD19-MODERATE	Protein AMBP
Q9ULJ7	ANKRD50	2	1	12.07	6.9E-06	1.6E-05	3.66	1	CVD19-ASYMPT	CVD19-SEVERE-R	Ankyrin repeat domain-containing protein 50
P35749	MYH11	12	9	86.99	3.7E-06	9.9E-06	3.51	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Myosin-11
Q96PJ5	FCRL4	2	1	18.91	1.8E-05	3.5E-05	3.47	1	CVD19-SEVERE-D	CVD19-ASYMPT	Fc receptor-like protein 4
P0CG04	IGLC1	7	2	86.32	4.1E-07	2.0E-06	3.41	1	CVD19-SEVERE-D	CVD19-ASYMPT	Immunoglobulin lambda constant 1
B9A064	IGLL5	8	2	111.36	4.1E-07	2.0E-06	3.41	1	CVD19-SEVERE-D	CVD19-ASYMPT	Immunoglobulin lambda-like polypeptide 5
Q8TBH0	ARRDC2	1	1	5.26	4.9E-06	1.2E-05	3.39	1	CVD19-SEVERE-R	CVD19-MILD	Arrestin domain-containing protein 2
P02753	RBP4	7	7	69.65	3.0E-06	8.5E-06	3.37	1	CVD19-	CVD19-	Retinol-binding protein 4

									SEVERE-D	MODERATE	
P00751	CFB	31	29	254.30	2.5E-06	7.3E-06	3.35	1	CVD19-MILD	CVD19-ASYMPT	Complement factor B
Q86T90	KIAA1328	2	1	12.71	5.3E-06	1.2E-05	3.28	1	CVD19-MILD	CVD19-SEVERE-R	Protein hinderin
Q16610	ECM1	5	5	27.20	3.6E-05	6.4E-05	3.14	1	CVD19-MODERATE	CVD19-SEVERE-R	Extracellular matrix protein 1
P01700	IGLV1-47	2	2	13.43	6.1E-05	1.0E-04	3.13	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Immunoglobulin lambda variable 1-47
P05156	CFI	16	14	117.60	1.9E-07	1.5E-06	3.09	1	CVD19-SEVERE-D	CVD19-ASYMPT	Complement factor I
Q8N9R8	SCAI	2	1	16.37	8.4E-05	1.3E-04	3.02	1	CVD19-SEVERE-D	CVD19-MODERATE	Protein SCAI
P02647	APOA1	58	55	551.11	8.2E-07	3.2E-06	2.94	1	CVD19-MILD	CVD19-MODERATE	Apolipoprotein A-I
P02747	C1QC	2	2	13.53	6.5E-05	1.0E-04	2.91	1	CVD19-MILD	CVD19-SEVERE-R	Complement C1q subcomponent subunit C
P01023	A2M	108	89	1095.40	9.9E-06	2.1E-05	2.87	1	CVD19-SEVERE-D	CVD19-MODERATE	Alpha-2-macroglobulin
Q8IWJ2	GCC2	5	3	36.33	6.2E-05	1.0E-04	2.86	1	CVD19-SEVERE-D	CVD19-MODERATE	GRIP and coiled-coil domain-containing protein 2
Q03591	CFHR1	9	4	78.33	5.6E-05	9.4E-05	2.85	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Complement factor H-related protein 1
P43652	AFM	25	23	192.08	1.1E-05	2.3E-05	2.82	1	CVD19-SEVERE-R	CVD19-MILD	Afamin
P02649	APOE	22	22	221.62	2.9E-05	5.3E-05	2.66	1	CVD19-SEVERE-D	CVD19-MILD	Apolipoprotein E
O94887	FARP2	4	3	21.02	3.2E-05	5.8E-05	2.64	1	CVD19-ASYMPT	CVD19-SEVERE-R	FERM_ ARHGEF and pleckstrin domain-containing protein 2
O14791	APOL1	4	4	24.46	5.4E-05	9.2E-05	2.59	1	CVD19-MILD	CVD19-ASYMPT	Apolipoprotein L1
P06396	GSN	13	13	76.00	7.4E-06	1.7E-05	2.59	1	CVD19-SEVERE-D	CVD19-ASYMPT	Gelsolin
P02686	MBP	2	2	11.09	6.3E-05	1.0E-04	2.55	1	CVD19-ASYMPT	CVD19-SEVERE-D	Myelin basic protein
P62736	ACTA2	4	3	22.72	1.8E-05	3.5E-05	2.50	1	CVD19-SEVERE-R	CVD19-ASYMPT	Actin_ aortic smooth muscle

P00747	PLG	35	35	314.73	3.2E-05	5.8E-05	2.49	1	CVD19-MILD	CVD19-SEVERE-R	Plasminogen
P10909	CLU	19	17	160.45	6.5E-05	1.0E-04	2.45	1	CVD19-SEVERE-D	CVD19-MILD	Clusterin
P01624	IGKV3-15	1	1	5.90	5.3E-05	9.0E-05	2.43	1	CVD19-MILD	CVD19-MODERATE	Immunoglobulin kappa variable 3-15
P0DOX6		19	6	172.03	2.0E-06	6.1E-06	2.32	1	CVD19-ASYMPT	CVD19-MILD	Immunoglobulin mu heavy chain
P01871	IGHM	18	5	226.80	2.0E-06	6.1E-06	2.32	1	CVD19-ASYMPT	CVD19-MILD	Immunoglobulin heavy constant mu
P05109	S100A8	3	2	27.72	6.8E-05	1.1E-04	2.29	1	CVD19-SEVERE-D	CVD19-MILD	Protein S100-A8
Q6ZN16	MAP3K15	5	3	33.38	5.8E-05	9.6E-05	2.18	1	CVD19-MILD	CVD19-ASYMPT	Mitogen-activated protein kinase kinase 15
P02748	C9	4	4	23.98	5.8E-05	9.6E-05	2.16	1	CVD19-MODERATE	CVD19-SEVERE-D	Complement component C9
Q9GZT3	SLIRP	1	1	12.71	4.7E-06	1.1E-05	2.14	1	CVD19-SEVERE-D	CVD19-MODERATE	SRA stem-loop-interacting RNA-binding protein_mitochondrial
Q9P219	CCDC88C	4	3	22.84	1.5E-06	4.9E-06	2.08	1	CVD19-MODERATE	CVD19-MILD	Protein Daple

Note

Highlighted in bold are some of the proteins that have also been previously identified by Messner et al (¹²).

Supplementary Table S2: List of the 91 differentially expressed proteins between samples from MERS-CoV patients with different disease severity and samples from control subjects.

Supplementary Table S2 List of the 91 differentially expressed proteins between samples from different severity of MERS-CoV patients and control subjects

Accession	Gene Name	Peptide Count	Unique Peptides	Confidence Score	Anova (P)	q-Value	Max Fold Change	Power	Highest Mean Condition	Lowest Mean Condition	Description
P01602	IGKV1-5	3	2	37.88	2.3E-06	5.2E-05	4.33	1	MERS-CoV-ICU-R	MERS-CoV-CONTROL	Immunoglobulin kappa variable 1-5
P02654	APOC1	4	4	58.12	9.2E-06	7.1E-05	21.11	1	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Apolipoprotein C-I
Q5TD97	FHL5	5	3	26.72	9.2E-06	7.1E-05	6.84	1	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Four and a half LIM domains protein 5
P61626	LYZ	2	1	12.29	1.4E-05	8.1E-05	1012.21	1	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Lysozyme C
Q9BXR6	CFHR5	3	2	25.91	2.2E-05	8.1E-05	6.22	1	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Complement factor H-related protein 5
P01767	IGHV3-53	6	1	57.78	2.7E-05	8.1E-05	8.23	1	MERS-CoV-ICU-D	MERS-CoV-ICU-R	Immunoglobulin heavy variable 3-53
P0DJH8	SAA1	15	9	186.66	2.8E-05	8.1E-05	66.86	1	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Serum amyloid A-1 protein
P02144	MB	1	1	6.32	4.0E-05	9.6E-05	4191.63	1	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Myoglobin
P80748	IGLV3-21	3	2	24.29	4.1E-05	9.6E-05	2.13	1	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Immunoglobulin lambda variable 3-21
Q9UK55	SERPINA10	6	6	41.55	5.0E-05	9.9E-05	17.39	1	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Protein Z-dependent protease inhibitor
P02741	CRP	11	10	92.35	5.1E-05	9.9E-05	9.27	1	MERS-CoV-ICU-	MERS-CoV-	C-reactive protein

									D	CONTROL	
O15068	MCF2L	5	4	33.79	8.2E-05	1.5E-04	2.63	1	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Guanine nucleotide exchange factor DBS
P08582	MELTF	3	1	14.19	1.5E-04	2.4E-04	4.23	1	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Melanotransferrin
Q9UBU6	FAM8A1	3	1	15.90	1.6E-04	2.4E-04	7.41	1	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Protein FAM8A1
A0A0A0MRZ8	IGKV3D-11	1	1	16.13	2.5E-04	3.4E-04	10.43	1	MERS-CoV-ICU-R	MERS-CoV-ICU-D	Immunoglobulin kappa variable 3D-11
Q81YU8	MICU2	2	1	18.49	2.5E-04	3.4E-04	5.47	1	MERS-CoV-ICU-R	MERS-CoV-CONTROL	Calcium uptake protein 2_mitochondrial
Q86VH2	KIF27	3	2	23.21	2.8E-04	3.5E-04	5.12	1	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Kinesin-like protein KIF27
Q9UJW3	DNMT3L	2	2	16.53	3.0E-04	3.7E-04	14.57	1	MERS-CoV-ICU-D	MERS-CoV-CONTROL	DNA (cytosine-5)-methyltransferase 3-like
P01880	IGHD	2	2	17.87	3.8E-04	4.4E-04	2.80	1.000	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Immunoglobulin heavy constant delta OS=Homo sapiens OX=9606 GN=IGHD PE=1 SV=3
P0DJ19	SAA2	11	5	174.31	4.5E-04	5.0E-04	15.06	1.000	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Serum amyloid A-2 protein
P02750	LRG1	19	19	238.03	7.5E-04	7.6E-04	15.84	1.000	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Leucine-rich alpha-2-glycoprotein
A0A075B6S2	IgG-kappa	2	2	20.58	7.7E-04	7.6E-04	2.34	1.000	MERS-CoV-ICU-R	MERS-CoV-ICU-D	Immunoglobulin kappa variable 2D-29
P0C1K2	TAT	1	1	11.12	7.9E-04	7.6E-04	2.82	1.000	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Protein Tat
P61769	B2M	3	3	29.21	9.5E-04	8.8E-04	10.23	1.000	MERS-CoV-ICU-	MERS-CoV-	Beta-2-microglobulin

									D	CONTROL	
P22792	CPN2	10	8	81.05	1.1E-03	9.6E-04	3.92	1.000	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Carboxypeptidase N subunit 2
P05452	CLEC3B	3	3	24.54	1.2E-03	9.6E-04	2.15	1.000	MERS-CoV-CONTROL	MERS-CoV-ICU-D	Tetranectin
P02768	ALB	121	114	1017.37	1.2E-03	9.6E-04	5.42	1.000	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Serum albumin
P53701	HCCS	2	2	11.73	1.3E-03	9.9E-04	8.51	1.000	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Cytochrome c-type heme lyase
P01762	IGHV3-11	3	1	30.91	1.3E-03	1.0E-03	4.24	0.998	MERS-CoV-ICU-R	MERS-CoV-ICU-D	Immunoglobulin heavy variable 3-11
O75161	NPHP4	3	2	17.96	1.4E-03	1.0E-03	3.10	1.000	MERS-CoV-CONTROL	MERS-CoV-ICU-D	Nephrocystin-4
P01019	AGT	15	15	138.04	1.5E-03	1.0E-03	6.46	0.999	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Angiotensinogen
A2RTY3	HEATR9	3	2	22.64	1.6E-03	1.1E-03	4.15	0.997	MERS-CoV-ICU-D	MERS-CoV-ICU-R	Protein HEATR9
P15169	CPN1	5	5	38.89	2.2E-03	1.5E-03	3.41	0.999	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Carboxypeptidase N catalytic chain
Q16763	UBE2S	1	1	5.76	2.7E-03	1.7E-03	3.87	0.994	MERS-CoV-ICU-R	MERS-CoV-CONTROL	Ubiquitin-conjugating enzyme E2 S
P24994	GB	3	2	18.53	2.8E-03	1.7E-03	2.07	0.996	MERS-CoV-CONTROL	MERS-CoV-ICU-D	Envelope glycoprotein B
P02746	C1QB	9	8	64.61	2.8E-03	1.7E-03	2.80	0.998	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Complement C1q subcomponent subunit B
A0A075B6N3	TRBV24-1	4	3	29.91	3.1E-03	1.8E-03	3.72	0.997	MERS-CoV-	MERS-CoV-ICU-	T cell receptor beta variable 24-1

									CONTROL	R	
P35858	IGFALS	16	15	109.65	3.1E-03	1.8E-03	5.50	0.984	MERS-CoV-ICU-D	MERS-CoV-ICU-R	Insulin-like growth factor-binding protein complex acid labile subunit
P13671	C6	27	24	206.27	3.2E-03	1.8E-03	3.26	0.997	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Complement component C6
Q14624	ITIH4	49	46	510.91	3.4E-03	1.9E-03	2.06	0.991	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Inter-alpha-trypsin inhibitor heavy chain H4
Q8IZU1	FAM9A	2	2	17.57	3.8E-03	2.0E-03	6.86	0.994	MERS-CoV-ICU-R	MERS-CoV-CONTROL	Protein FAM9A
P04278	SHBG	4	3	22.66	4.3E-03	2.1E-03	5.35	0.990	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Sex hormone-binding globulin
Q961Y4	CPB2	5	4	30.46	4.3E-03	2.1E-03	2.32	0.984	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Carboxypeptidase B2
Q9Y4P8	WIPI2	3	2	27.43	4.9E-03	2.4E-03	8.86	0.988	MERS-CoV-ICU-D	MERS-CoV-CONTROL	WD repeat domain phosphoinositide-interacting protein 2
P02675	FGB	63	62	651.32	5.1E-03	2.4E-03	3.85	0.981	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Fibrinogen beta chain
Q9Y2V7	COG6	3	2	27.28	5.2E-03	2.4E-03	2.03	0.984	MERS-CoV-CONTROL	MERS-CoV-ICU-D	Conserved oligomeric Golgi complex subunit 6
P00751	CFB	35	33	410.83	5.3E-03	2.4E-03	4.57	0.975	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Complement factor B
P01009	SERPINA1	68	66	652.18	5.4E-03	2.4E-03	4.13	0.976	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Alpha-1-antitrypsin
P01011	SERPINA3	39	36	375.56	5.4E-03	2.4E-03	4.09	0.981	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Alpha-1-antichymotrypsin
P25311	AZGP1	22	20	243.28	6.1E-03	2.7E-03	5.28	0.977	MERS-CoV-ICU-	MERS-CoV-	Zinc-alpha-2-glycoprotein

									D	CONTROL	
Q15020	SART3	6	3	42.83	6.2E-03	2.7E-03	4.33	0.978	MERS-CoV-CONTROL	MERS-CoV-ICU-D	Squamous cell carcinoma antigen recognized by T-cells 3
Q9BQY6	WFDC6	1	1	12.09	6.5E-03	2.7E-03	4.70	0.968	MERS-CoV-ICU-D	MERS-CoV-CONTROL	WAP four-disulfide core domain protein 6
P02655	APOC2	4	4	53.36	6.7E-03	2.7E-03	2.12	0.974	MERS-CoV-CONTROL	MERS-CoV-ICU-D	Apolipoprotein C-II
P02753	RBP4	11	10	109.70	7.4E-03	3.0E-03	3.05	0.960	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Retinol-binding protein 4
P02766	TTR	3	3	28.40	8.1E-03	3.2E-03	4.74	0.949	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Transthyretin
P0DL12	SMIM17	1	1	5.42	8.3E-03	3.2E-03	2.51	0.942	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Small integral membrane protein 17
P02679	FGG	42	40	558.08	8.4E-03	3.2E-03	4.05	0.943	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Fibrinogen gamma chain
Q77376	VPU	1	1	5.37	8.7E-03	3.2E-03	Infinity	0.936	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Protein Vpu
P02760	AMBP	16	15	182.80	8.7E-03	3.2E-03	3.87	0.951	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Protein AMBP
P02656	APOC3	6	5	57.82	8.7E-03	3.2E-03	3.04	0.960	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Apolipoprotein C-III
P09871	C1S	19	18	142.82	9.0E-03	3.2E-03	2.24	0.937	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Complement C1s subcomponent
Q6ZRV3	LINC00696	2	2	15.96	9.1E-03	3.2E-03	5.57	0.936	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Putative uncharacterized protein encoded by LINC00696
P08603	CFH	65	55	721.35	1.1E-02	3.7E-03	3.60	0.909	MERS-CoV-ICU-	MERS-CoV-	Complement factor H

									D	CONTROL	
P01764	IGHV3-23	4	1	36.55	1.1E-02	3.7E-03	2.44	0.869	MERS-CoV-ICU-R	MERS-CoV-ICU-D	Immunoglobulin heavy variable 3-23
Q81020	E1	3	1	33.15	1.2E-02	3.9E-03	3.44	0.899	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Replication protein E1
P10643	C7	27	25	222.30	1.3E-02	4.0E-03	2.03	0.926	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Complement component C7
P02671	FGA	72	66	681.22	1.3E-02	4.1E-03	3.08	0.892	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Fibrinogen alpha chain
P04004	VTN	23	21	196.08	1.3E-02	4.2E-03	2.99	0.894	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Vitronectin
P02748	C9	25	22	235.24	1.4E-02	4.3E-03	3.22	0.885	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Complement component C9
A0A075B6I9	IGLV7-46	1	1	6.44	1.5E-02	4.3E-03	3.08	0.843	MERS-CoV-ICU-R	MERS-CoV-ICU-D	Immunoglobulin lambda variable 7-46
P08185	SERPINA6	11	11	74.63	1.5E-02	4.3E-03	3.97	0.879	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Corticosteroid-binding globulin
P51884	LUM	13	12	111.67	1.5E-02	4.3E-03	2.12	0.816	MERS-CoV-ICU-R	MERS-CoV-ICU-D	Lumican
Q99966	CITED1	1	1	11.62	1.5E-02	4.3E-03	2.27	0.903	MERS-CoV-ICU-R	MERS-CoV-CONTROL	Cbp/p300-interacting transactivator 1
P12605	F	3	2	32.38	1.5E-02	4.3E-03	4.90	0.885	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Fusion glycoprotein F0
P04003	C4BPA	23	21	244.10	1.5E-02	4.3E-03	2.40	0.816	MERS-CoV-ICU-D	MERS-CoV-ICU-R	C4b-binding protein alpha chain
P07360	C8G	9	7	75.41	1.9E-02	5.0E-03	3.11	0.799	MERS-CoV-ICU-	MERS-CoV-	Complement component C8 gamma chain

									D	CONTROL	
P02763	ORM1	21	13	192.10	2.0E-02	5.1E-03	2.23	0.836	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Alpha-1-acid glycoprotein 1
P19652	ORM2	13	9	168.28	2.1E-02	5.2E-03	3.16	0.803	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Alpha-1-acid glycoprotein 2
Q8NCR0	B3GALNT2	3	2	17.34	2.3E-02	5.7E-03	3.29	0.823	MERS-CoV-ICU-R	MERS-CoV-CONTROL	UDP-GalNAc:beta-1_3-N-acetylgalactosaminyltransferase 2
P35542	SAA4	6	6	44.55	2.3E-02	5.7E-03	2.11	0.834	MERS-CoV-CONTROL	MERS-CoV-ICU-D	Serum amyloid A-4 protein
P61129	ZC3H6	2	1	22.10	2.4E-02	5.8E-03	17.46	0.834	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Zinc finger CCCH domain-containing protein 6
Q96LZ3	PPP3R2	3	3	14.46	2.5E-02	5.9E-03	2.69	0.818	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Calcineurin subunit B type 2
P01877	IGHA2	20	1	216.24	2.6E-02	6.0E-03	2.50	0.805	MERS-CoV-CONTROL	MERS-CoV-ICU-R	Immunoglobulin heavy constant alpha 2
Q81WB9	TEX2	1	1	4.79	3.3E-02	7.3E-03	172.02	0.762	MERS-CoV-CONTROL	MERS-CoV-ICU-D	Testis-expressed protein 2
P02749	APOH	20	20	241.96	3.8E-02	8.1E-03	3.20	0.700	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Beta-2-glycoprotein 1
P05155	SERPING1	21	19	222.54	3.8E-02	8.1E-03	3.00	0.693	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Plasma protease C1 inhibitor
P22352	GPX3	6	5	45.64	3.9E-02	8.2E-03	2.25	0.709	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Glutathione peroxidase 3
P27169	PON1	13	12	163.45	4.0E-02	8.2E-03	2.46	0.602	MERS-CoV-ICU-D	MERS-CoV-ICU-R	Serum paraoxonase/arylesterase 1
P04217	A1BG	25	23	243.13	4.0E-02	8.2E-03	2.20	0.654	MERS-CoV-ICU-	MERS-CoV-	Alpha-1B-glycoprotein

									D	CONTROL	
Q8IX95	CTAGE3P	2	1	16.90	4.0E-02	8.2E-03	2.05	0.717	MERS-CoV-ICU-R	MERS-CoV-CONTROL	Putative cTAGE family member 3
P00746	CFD	6	6	40.74	0.04633	9.2E-03	3.09	0.644	MERS-CoV-ICU-D	MERS-CoV-CONTROL	Complement factor D

Supplementary Table S3: Functional and cellular processes of the 49 overlapping proteins between 193 and 91 differentially expressed proteins in COVID-19 and MERS-CoV, respectively.
Supplementary Table S4: List of the 49 overlapping

Supplementary Table S3: Functional and cellular processes of the 49 overlapping proteins between 193 and 91 differentially expressed proteins in COVID-19 and MERS CoV respectively

Innate Immune System	Hemostasis	Complement cascade regulation	Platelet degranulation	Initial triggering of complement	Scavenger Receptors	Neutrophil degranulation	FCGR activation/ NF-κB activation
IGKV1-5	SERPING1	SERPING1	SERPING1	GKV1-5	IGKV1-5	A1BG	IGKV1-5
CFHR5	IGKV1-5	IGKV1-5	A1BG	IGLV3-21	SAA1	LRG1	IGLV3-21
C9	A1BG	CFHR5	ITIH4	IGHV3-53	IGLV3-21	CFD	IGHV3-53
FGB	ITIH4	C4BPA	ALB	IGHV3-23	AMBP	SERPINA3	IGHV3-23
FGA	ALB	C9	CFD	IGHV3-11	IGHV3-53	ORM1	IGHV3-11
B2M	CFD	C1QB	FGB	C1QB	IGHV3-23	SERPINA1	
LRG1	FGB	CFD	FGA	CFD	ALB	B2M	
IGHV3-53	FGA	CRP	CLEC3B	CRP	IGHV3-11	ORM2	
FGG	CLEC3B	CFB	FGG	CFB			
IGHV3-11	IGLV3-21	IGLV3-21	SERPINA3				
CPN2	IGHV3-53	IGHV3-53	ORM1				
SERPING1	IGHV3-23	IGHV3-23	SERPINA1				
SAA1	FGG	IGHV3-11	ORM2				
A1BG	IGHV3-11	CPN2					
C4BPA	SERPINA3	VTN					
C1QB	ORM1	C8G					
CFD	SERPINA1	C6					
CRP	ZC3H6						
CFB	ORM2						
IGLV3-21							
IGHV3-23							

SERPINA3
ORM1
VTN
SERPINA1
C8G
C6

Supplementary Table S4: List of the 49 overlapping proteins between 193 and 91 differentially expressed proteins in COVID-19 and MERS-CoV respectively with their expressions shown among the COVID-19 samples. (Highlighted in bold are some of the proteins that have also been previously identified by Messner et al (12)).

Supplementary Table S4: List of the 49 overlapping proteins between 193 and 91 differentially expressed proteins in COVID-19 and MERS CoV respectively with their expressions shown among the CODID-19 samples.

Accession	Gene Name	Peptide count	Unique peptides	Confidence score	Anova (p)	q-Value	Max fold change	Power	Highest mean condition	Lowest mean condition	Description
P02144	MB	4	4	33.29	2.5E-07	1.68E-06	50.75	1	CVD19-SEVERE-D	CVD19-ASYMPT	Myoglobin
P01602	IGKV1-5	3	1	29.18	9.2E-07	3.45E-06	47.94	1	CVD19-SEVERE-R	CVD19-ASYMPT	Immunoglobulin kappa variable 1-5
P22352	GPX3	5	3	39.26	2.0E-05	3.92E-05	46.49	1	CVD19-SEVERE-D	CVD19-ASYMPT	Glutathione peroxidase 3
P02741	CRP	4	4	53.43	4.6E-06	1.14E-05	35.33	1	CVD19-SEVERE-D	CVD19-ASYMPT	C-reactive protein
P0DJ19	SAA2	10	3	143.11	2.5E-07	1.68E-06	27.24	1	CVD19-SEVERE-D	CVD19-MODERATE	Serum amyloid A-2 protein
P02679	FGG	15	15	170.01	2.1E-07	1.54E-06	25.38	1	CVD19-MILD	CVD19-SEVERE-R	Fibrinogen gamma chain
P0DJ18	SAA1	11	3	149.00	3.7E-07	1.96E-06	23.58	1	CVD19-SEVERE-D	CVD19-MILD	Serum amyloid A-1 protein
P61769	B2M	2	2	13.15	3.5E-07	1.91E-06	21.77	1	CVD19-SEVERE-D	CVD19-ASYMPT	Beta-2-microglobulin
P02746	C1QB	1	1	10.64	7.1E-05	1.12E-04	17.63	1	CVD19-MILD	CVD19-ASYMPT	Complement C1q subcomponent subunit B
Q15020	SART3	3	2	25.60	9.3E-07	3.45E-06	16.74	1	CVD19-SEVERE-D	CVD19-ASYMPT	Squamous cell carcinoma antigen recognized by T-cells 3
P04004	VTN	15	13	136.56	2.4E-06	6.97E-06	14.45	1	CVD19-SEVERE-D	CVD19-ASYMPT	Vitronectin
P02763	ORM1	15	12	181.21	3.1E-10	3.08E-08	13.33	1	CVD19-SEVERE-D	CVD19-ASYMPT	Alpha-1-acid glycoprotein 1
P01011	SERPINA3	33	32	321.95	2.0E-07	1.52E-06	13.16	1	CVD19-SEVERE-D	CVD19-ASYMPT	Alpha-1-antichymotrypsin
P02675	FGB	26	26	284.37	4.2E-07	2.01E-06	12.14	1	CVD19-MILD	CVD19-ASYMPT	Fibrinogen beta chain

P02671	FGA	22	22	202.85	2.3E-06	6.93E-06	11.50	1	CVD19-MILD	CVD19-MODERATE	Fibrinogen alpha chain
P19652	ORM2	13	10	177.33	2.1E-08	3.92E-07	11.24	1	CVD19-SEVERE-D	CVD19-ASYMPT	Alpha-1-acid glycoprotein 2
P02750	LRG1	13	13	134.36	2.6E-06	7.42E-06	11.20	1	CVD19-SEVERE-D	CVD19-ASYMPT	Leucine-rich alpha-2-glycoprotein
P02654	APOC1	3	3	49.07	2.7E-07	1.80E-06	10.68	1	CVD19-SEVERE-D	CVD19-MILD	Apolipoprotein C-I
P08185	SERPINA6	5	5	36.85	1.0E-05	2.12E-05	10.32	1	CVD19-SEVERE-D	CVD19-ASYMPT	Corticosteroid-binding globulin
P05155	SERPING1	18	16	174.03	1.4E-07	1.28E-06	10.25	1	CVD19-SEVERE-D	CVD19-ASYMPT	Plasma protease C1 inhibitor
O15068	MCF2L	4	2	26.69	2.0E-05	3.83E-05	9.79	1	CVD19-MILD	CVD19-SEVERE-R	Guanine nucleotide exchange factor DBS
P01009	SERPINA1	52	51	575.19	5.0E-07	2.24E-06	9.31	1	CVD19-SEVERE-D	CVD19-ASYMPT	Alpha-1-antitrypsin
Q14624	ITIH4	30	29	280.90	4.3E-06	1.08E-05	9.31	1	CVD19-MILD	CVD19-SEVERE-R	Inter-alpha-trypsin inhibitor heavy chain H4
P25311	AZGP1	22	21	219.22	2.6E-08	4.01E-07	9.28	1	CVD19-SEVERE-D	CVD19-ASYMPT	Zinc-alpha-2-glycoprotein
P01019	AGT	11	11	99.94	3.2E-07	1.86E-06	8.66	1	CVD19-SEVERE-D	CVD19-MODERATE	Angiotensinogen
P35542	SAA4	6	6	54.09	4.0E-05	6.99E-05	8.45	1	CVD19-MILD	CVD19-SEVERE-R	Serum amyloid A-4 protein
P07360	C8G	5	4	28.66	1.6E-05	3.30E-05	7.04	1	CVD19-SEVERE-D	CVD19-ASYMPT	Complement component C8 gamma chain
P02656	APOC3	6	6	55.51	1.1E-06	3.88E-06	6.53	1	CVD19-SEVERE-D	CVD19-ASYMPT	Apolipoprotein C-III
P02768	ALB	167	159	1276.86	8.3E-08	9.35E-07	6.49	1	CVD19-MILD	CVD19-SEVERE-R	Serum albumin 2
P02787	TF	100	95	1031.64	7.8E-08	9.13E-07	6.28	1	CVD19-MILD	CVD19-SEVERE-R	Serotransferrin
P04003	C4BPA	22	20	191.24	3.2E-06	8.83E-06	5.64	1	CVD19-ASYMPT	CVD19-SEVERE-R	C4b-binding protein alpha chain
P80748	IGLV3-21	3	3	21.17	2.1E-05	3.93E-05	5.04	1	CVD19-SEVERE-D	CVD19-MODERATE	Immunoglobulin lambda variable 3-21

P02655	APOC2	4	4	46.78	2.4E-05	4.53E-05	4.29	1	CVD19-SEVERE-D	CVD19-MODERATE	Apolipoprotein C-II
P22792	CPN2	7	6	52.21	1.2E-06	4.25E-06	4.25	1	CVD19-MILD	CVD19-MODERATE	Carboxypeptidase N subunit 2
P02760	AMBP	16	15	183.85	7.6E-06	1.69E-05	4.01	1	CVD19-SEVERE-D	CVD19-MODERATE	Protein AMBP
P02753	RBP4	7	7	69.65	3.0E-06	8.46E-06	3.37	1	CVD19-SEVERE-D	CVD19-MODERATE	Retinol-binding protein 4
P00751	CFB	31	29	254.30	2.5E-06	7.30E-06	3.35	1	CVD19-MILD	CVD19-ASYMPT	Complement factor B
P05156	CFI	16	14	117.60	1.9E-07	1.50E-06	3.09	1	CVD19-SEVERE-D	CVD19-ASYMPT	Complement factor I
P02647	APOA1	58	55	551.11	8.2E-07	3.24E-06	2.94	1	CVD19-MILD	CVD19-MODERATE	Apolipoprotein A-I
P01023	A2M	108	89	1095.40	9.9E-06	2.10E-05	2.87	1	CVD19-SEVERE-D	CVD19-MODERATE	Alpha-2-macroglobulin
Q03591	CFHR1	9	4	78.33	5.6E-05	9.39E-05	2.85	1	CVD19-SEVERE-D	CVD19-SEVERE-R	Complement factor H-related protein 1
P06396	GSN	13	13	76.00	7.4E-06	1.67E-05	2.59	1	CVD19-SEVERE-D	CVD19-ASYMPT	Gelsolin
P02748	C9	4	4	23.98	5.8E-05	9.59E-05	2.16	1	CVD19-MODERATE	CVD19-SEVERE-D	Complement component C9
P00746	CFD	3	3	18.75	2.1E-03	2.42E-03	42.77	0.99	CVD19-SEVERE-D	CVD19-ASYMPT	Complement factor D
Q9Y2V7	COG6	2	1	21.87	1.6E-04	2.37E-04	8.77	1	CVD19-MODERATE	CVD19-MILD	Conserved oligomeric Golgi complex subunit 6
P61129	ZC3H6	3	1	33.32	4.9E-04	6.45E-04	6.61	0.99	CVD19-MILD	CVD19-SEVERE-R	Zinc finger CCCH domain-containing protein 6
P04217	A1BG	19	18	203.48	2.5E-03	2.82E-03	4.34	0.99	CVD19-SEVERE-D	CVD19-ASYMPT	Alpha-1B-glycoprotein

P05452	CLEC3B	3	3	15.86	1.4E-04	2.07E-04	3.14	1	CVD19-SEVERE-D	CVD19-MODERATE	Tetranectin
P13671	C6	13	12	78.51	1.2E-04	1.86E-04	2.75	1	CVD19-MILD	CVD19-SEVERE-R	Complement component
P51884	LUM	4	3	28.59	5.9E-04	7.57E-04	2.55	0.99	CVD19-SEVERE-D	CVD19-ASYMP	Lumican