Supplementary Table 1. Brief summaries of genes found in figures 1-6, including protein name, predicted related response and function.

Nr	Gene name	Name of the encoded protein or RNA	Response related to	Function or status	Found in Figure	References
1	IL1B	Interleukin 1 beta (IL-1B)	Proinflammatory responses of the innate immune system	Proinflammatory cytokine produced by the cells of the innate immune system.	1-4	[1]
2	PTGS2	Prostaglandin-Endoperoxide Synthase 2	Proinflammatory responses of the innate and adaptive immune system	Ptgs2 is induced to high levels during inflammation.	1-4	[2]
3	CXCL2	C-X-C Motif Chemokine Ligand 2	Proinflammatory responses of the innate immune system	Chemoattractant in innate immune cells.	1-4	[3,4]
4	CXCL3	C-X-C motif chemokine ligand 3	Proinflammatory responses of the innate immune system	Knockdown of CXCL3-inhibits apoptosis and inflammation in lipopolysaccharide-treated BEAS-2B and HPAEC by inactivating the MAPKs pathway	1-4	[5]
5	PTX3	Pentraxin 3	Proinflammatory responses of the innate immune system	Produced by innate immunity cells, playing an essential role by tuning inflammation and matrix deposition.	1-4	[6]
6	ATP2B1-AS1	Non-protein coding RNA: ATP2B1 Antisense RNA 1	Proinflammatory responses of the innate immune system	ATP2B1-AS1 exacerbates sepsis-induced cell apoptosis and inflammation by regulating miR-23a-3p/TLR4 axis.	1-4	[7]
7	ZFP36	ZFP36 Ring Finger Protein	Anti-inflammatory responses of the adaptive immune system	T cell homeostasis is contingent on the ZFP36 family of RNA-binding proteins, whereas T cell priming is dependent on ZFP36L1 and ZFP36L2. ZFP36 RNA-binding proteins have been demonstrated to impede T cell activation and anti-viral immunity.	1-4	[8,9]
8	SGK1	Serum/Glucocorticoid Regulated Kinase 1	Anti-inflammatory responses of the innate immune system	SGK1 promotes Alternative Macrophage Polarization and Restrains Inflammation through FoxO1 and STAT3 signalling	1-4	[10]
9	ATF3 (dual role)	Activating transcription factor 3 (ATF3)	Both proinflammatory and anti-inflammatory responses of the	ATF3 increases the production of pro-inflammatory cytokines and chemokines by enhancing AP1S2 expression by binding to AP1S2 promoters in inflammation.	1-4	[11]

			innate immune system	ATF3 negatively regulates TLR-signalling pathways, thus inhibiting the production of inflammatory cytokines.		
10	CXCL8	C-X-C Motif Chemokine Ligand 8	Proinflammatory responses of the innate immune system	Lymphocyte recruitment through CXCL8.	1-4	[12]
11	BLNK	B Cell Linker	Proinflammatory responses of the adaptive immune system	The adaptor protein BLNK is required for B cell antigen receptor-induced activation of nuclear factor-kappa B and cell cycle entry and survival of B lymphocytes. BLNK represents a central linker protein that bridges the B cell receptor–associated kinases with a multitude of signalling pathways and may regulate the biologic outcomes of B cell function and development.	1-4	[13,14]
12	SPIB	Transcription Factor Spi-B	Anti-inflammatory responses of the adaptive immune system	SPIB expression in fibroblastic reticular cells (FRCs) in the lymph nodes is critical for the expansion of the FRC network, which parallels and regulates the early priming and proliferation of CD8+ T cells during viral infection.	1-4	[15]
13	FCRLA	Fc Receptor Like A	Proinflammatory responses of the adaptive immune system	FCRLA is a resident endoplasmic reticulum protein that is associated with intracellular Igs, IgM, IgG and IgA. High expression of FCRLA in subset(s) of terminally differentiated B-cells suggests that, being an ER protein, FCRLA may participate in the regulation of immunoglobulin assembly and secretion.	1-4	[16,17]
14	FAM30A	Family With Sequence Similarity 30 Member A	Proinflammatory responses of the adaptive immune system	The expression of lncRNA FAM30A is high in B cells and correlates with the expression of immunoglobulin genes located in its genomic vicinity.	1-4	[18]
15	SNX22	Sorting Nexin 22	Anti-inflammatory responses of the adaptive immune system	Genome-wide shRNA screening identifies SNX22, which is required for HIV-1 Nef-induced downregulation of CD4 in HeLa CD4+ cells.	1-4	[19]
16	FCRL2	Fc Receptor Like 2	Proinflammatory responses of the adaptive immune system	FCRL2 gene encodes a member of the immunoglobulin receptor superfamily and is one of several Fc receptor-like glycoproteins clustered on the long arm of chromosome 1.	1-4	[20]
17	CD19	CD19 Molecule	Proinflammatory responses of the adaptive immune system	CD19 encodes a member of the immunoglobulin gene superfamily. Expression of this cell surface protein is restricted to B cell lymphocytes. This protein is a reliable marker for pre-B	1-4	[21]

				cells, but its expression diminishes during terminal B cell differentiation in antibody secreting plasma cells.		
18	CD22	CD22 Molecule	Anti-inflammatory responses of the adaptive immune system	In CD19+ CD22+ CD9+ B cells, CD22 mediates the effects of Gal9 to promote immunotherapy for allergic diseases by inducing B10 cells. In an antigen-specific manner, the B10 cells suppressed CD4+ T cell activities, and alleviated experimental AR. CD22 regulates the time course of both B cell division and antibody response.	1-4	22 23
19	MS4A1	Membrane Spanning 4-Domains A1	Proinflammatory responses of the adaptive immune system	MS4A1 encodes a B-lymphocyte surface molecule which plays a role in the development and differentiation of B-cells into plasma cells.	1-4	24
20	IGHM	Immunoglobuli n Heavy Constant Mu	Proinflammatory responses of the adaptive immune system	Autosomal recessive agammaglobulinemia due to defect in µ heavy chain caused by a novel mutation in the IGHM gene	1-4	25
21	FOXP1	Forkhead Box P1	Anti-inflammatory responses of the adaptive immune system	Foxp1 binds to the conserved noncoding sequence 2 (CNS2) element of the Foxp3 locus and helps maintain Treg suppressive function by stabilizing the Foxp3 expression. Foxp1 and Foxp3 coordinate the regulation of cytotoxic T-lymphocyte-associated protein 4 (CTLA-4) expression levels.	5	26
22	ZFP36L2	ZFP36 Ring Finger Protein Like 2	Anti-inflammatory responses of the adaptive immune system	T cell homeostasis is contingent on the ZFP36 family of RNA-binding proteins, whereas T cell priming is dependent on ZFP36L1 and ZFP36L2. ZFP36 RNA-binding proteins have been demonstrated to impede T cell activation and anti-viral immunity.	5	8,9
23	LAS1L	LAS1 Like Ribosome Biogenesis Factor	60S ribosomal subunit synthesis and regulate the biological function of cardiac fibroblasts	LAS1L interacts with PELP1, TEX10, and WDR18, the mammalian homologues of the budding yeast Rix1 complex, along with NOL9 and SENP3, to form a novel nucleolar complex that cofractionates with the 60S preribosomal subunit. Circ_LAS1L/miR-125b/SFRP5 pathway can regulate the biological function of CF and may play an important role in the process of myocardial fibrosis, thus providing an important theoretical basis for the regulation of myocardial fibrosis after myocardial infarction.	5	27,28
24	PIGL	N-Acetylglucosami	Proinflammatory responses of the	Specifically, nuclear PIGL disrupts the interaction between cMyc/BRD4 on the	5	29

		nyl-Phosphatidylinositol De-N-Acetylase	innate and adaptive immune system	distant promoter of target genes and thus decreased the expression of CCL2 and CCL20, which are involved in shaping the immunosuppressive TME by recruiting macrophages and regulatory T cells. PIGL phosphorylation at Y81 by FGFR2 abolishes the interaction of PIGL with importin α/β1, thus retaining PIGL in the cytosol and facilitating tumour evasion by releasing CCL2 and CCL20.		
25	CDKN1B	Cyclin-dependent kinase inhibitor 1B	Proinflammatory responses of the adaptive immune system	CDKN1B expression is associated with gene sets for the upregulation of T-cell receptor signalling pathways and downregulation of CD8+ T cells.	5	[30]
26	CDHR3	Cadherin-Related Family Member 3	Cell-cell adhesion	A transmembrane protein with six intracellular cadherin domains, implicated in asthma and other respiratory diseases. Precise function unknown but belonging to a family of cadherin transmembrane proteins.	5	[31]
27	ARHGEF 9	Cdc42 Guanine Nucleotide Exchange Factor 9	Cell cycle progression	Protein encoded by this gene switches between the activated (GTP-bound) and inactivated (GDP-bound) state, regulating the activity of CDC42 and other genes. Implicated in a number of neuronal disorders.	5	[32]
28	PIK3R1	Phosphoinositide-3-Kinase Regulatory Subunit 1	Proinflammatory responses of the adaptive immune system	PIK3R1 loss of function mutation decreases intrinsic B cell class switching and induces defective Tfh cell function.	5	[33]
29	DHRS3	Dehydrogenase /Reductase 3	Downregulated by inflammation	DHRS3 mRNA is doubled by retinoic acid but reduced by >90% after treatment with lipopolysaccharide (LPS) in the absence and presence of retinoic acid.	5	[34]
30	NDRG2	N-Myc Downstream-Regulated Gene 2	Proinflammatory responses of the adaptive immune system	NDRG2 expression in breast cancer cells downregulates PD-L1 expression and restores T Cell proliferation in tumour-coculture.	5	[35]
31	RBM33	RNA Binding Motif Protein 33	Proinflammatory responses of the innate and adaptive immune system	Recombinant Brugia malayi pepsin inhibitor (rBm33) modulates the host immune responses by skewing towards Th1 responses characterized by secretion of inflammatory molecules such as TNF-α, IL-6, nitric oxide (NO).	5	[36]
32	NOL4L	Nucleolar Protein 4 Like	Cell cycle progression	Predicted to be involved in tumour progression and metastasis, and observed to influence the PI3K/AKT pathway	5	[37]

33	EPB41L4A-AS1	EPB41L4A Antisense RNA 1	Proinflammatory responses of the innate and adaptive immune system	EPB41L4A-AS1 knockdown activates the NF-κB signalling pathway through a MYD88-dependent regulatory mechanism, promotes glycolysis, and ultimately enhanced the inflammatory response.	5	[38]
34	MAPKAPK5-AS1	MAPKAPK5 Antisense RNA 1	Proinflammatory responses of the innate and adaptive immune system	Long noncoding RNA MAPKAPK5-AS1 promotes lipopolysaccharide-induced inflammatory damage in the myocardium by sponging microRNA-124-3p/E2F3	5	[39]
35	SNHG6	Small Nucleolar RNA Host Gene 6	Proinflammatory responses of the innate and adaptive immune system	Suppression of long noncoding RNA SNHG6 alleviates cigarette smoke-induced lung inflammation by modulating NF-κB signalling.	5	[40]
36	PTGS2	Prostaglandin-Endoperoxide Synthase 2	Proinflammatory responses of the innate and adaptive immune system	Ptgs2 is induced to high levels during inflammation.	5	[2]
37	FAM20A	Family With Sequence Similarity 20, Member A	Both proinflammatory and anti-inflammatory responses of the immune system	Mutant cells with a significant reduction in FAM20A mRNA and protein levels exhibit a significant increase in inflammatory gene expression, that is, IL-1β and TGF-β1, whereas IL-6 and NFκB1 expression was significantly reduced.	5	[41]
38	EGR1	Early Growth Response Protein 1	Pro-inflammatory responses of the immune system	Stimulates multiple inflammatory mediators after viral infection.	5	[42]
39	EGR2	Early Growth Response Protein 2	Pro- and anti-inflammatory responses of the immune system	Deletion of both transcription factors Egr2 and Egr3 in lymphocytes resulted in a lethal autoimmune syndrome with excessive serum proinflammatory cytokines but also impaired antigen receptor-induced proliferation of B and T cells.	5	[43]
40	SDF2	Stromal Derived Factor 2	Pro-apoptotic activity	SDF2 participates in the cell death program of the UPR during labour, a condition also characterized by cell death for the weakening of the chorion layer at the site of rupture.	5	[44]
41	FERMT3	FERM Domain containing Kindlin 3	Proinflammatory responses of the adaptive immune system	Mutation in FERMT3 leads to adaptive immune defects in a patient with leukocyte adhesion deficiency type III.	5	[45]
42	FCGR1A	Fc Gamma Receptor 1a	Pro-inflammatory responses of the	Also known as CD64, is a transmembrane glycoprotein with CD32 and CD16	5	[46]

			adaptive immune system	receptors, encodes a high-affinity Fc-gamma receptor.		
43	BATF	Basic Leucine Zipper ATF-Like Transcription Factor	Anti-inflammatory responses of the adaptive immune system	BATF is required for Treg homeostasis and stability to prevent autoimmune pathology.	5	[47]
44	METTL7B	Thiol S-methyltransferase TMT1B	Pro-inflammatory responses of the immune system	METTL7B is upregulated in the blood and peripheral blood mononuclear cells (PBMC) of septic patients	5	[48]
45	C1QB	Complement C1q B Chain	Pro-inflammatory responses of the innate immune system	Subcomponent of the complement system of the innate immune system.	5	[49]
46	PEAK3	PEAK Family Member 3	Regulation of cell migration, invasion and proliferation	A pseudokinase without catalytic activity. Has signalling interactions with the adapter proteins CrkII and Grb2 and the scaffold protein 14-3-3m, controlling signal transduction in cell growth, motility and cancer.	5	[50]
47	FCGR1BP	Fc Gamma Receptor 1b, Pseudogene	Non-functional	This gene likely encodes a non-functional protein that is not detectable at the cell surface and binds ligand with low affinity.	5	[51]
48	PNP	Purine Nucleoside Phosphorylase	Pro-inflammatory responses of the adaptive immune system	CX-34 PNP inhibitor shows a complete inhibitory effect on the proliferation of T-cells in an in vitro system, whereas no influence was observed in B-cell lines. Mutations of PNP result in a rare autosomal recessive disease, which presents clinically as severe combined immunodeficiency (SCID).	5	[52,53]
49	SRA1	Steroid Receptor RNA Activator 1	Anti-inflammatory responses of the immune system	SR-A1-/- nice have an aggravated dextran sodium sulfate-induced acute and recurring colitis. This action was associated with a robust activation of both canonical and noncanonical NF-κB signalling in the colon.	5	[54]
50	FCGR1CP	Fc Gamma Receptor 1c, pseudogene	Non-functional	A pseudogene thought to encode a non-functional protein. Part of the Fc Gamma receptor 1 family.	5	[55]
51	RBL2	Retinoblastoma-Like Protein 2	Cell cycle regulation	Predicted to be involved in the initiation and maintenance of cell senescence, in response to CDK-inhibition.	6	[56]
52	FTL	Ferritin Light Chain	Iron homeostasis and acute phase protein	Encodes the ferritin light chain, a crucial component of the ferritin complex responsible for intracellular iron storage and regulation. Ferritin is implicated in	6	[57]

				the innate immune response against bacteria.		
53	SAA1	Serum Amyloid A1	Pro-inflammatory responses of the innate immune system	During acute phase, SAA1 displaces apolipoprotein A1 from high density lipoprotein (HDL), leading to a loss of the anti-inflammatory properties of HDL. Highly expressed in monocytes and macrophages. One of the primary acute phase proteins	6	[58]
54	HTRA1	Serine Protease HTRA1	Proinflammatory responses of the innate and adaptive immune system	A variety of functions such as chaperones and serine proteases, notably represses TGF-beta family signalling by cleaving to proTGF-beta1 in the endoplasmic reticulum, causing its degradation.	6	[59]
55	SAA2	Serum Amyloid A2	Pro-inflammatory responses of the innate immune system	See SAA1	6	[58]
56	TXNL4A	Thioredoxin-Like Protein 4A	Pre-mRNA splicing	A member of the U5 small ribonucleoprotein particle (snRNP), involved in pre-mRNA splicing. Predicted to be essential for neural crest and craniofacial development.	6	[60]
57	PLA2G2A	Phospholipase A2, Membrane Associated	Pro-inflammatory responses of the innate and adaptive immune system	Pla2g2a promotes innate Th2-type immunity lymphocytes to increase B1a cells	6	[61]
58	C5	Complement C5	Pro-inflammatory responses of the innate immune system	Subcomponent of the complement system of the innate immune system. Contributes to the membrane attack complex.	6	[62]
59	C9	Complement C9	Pro-inflammatory responses of the innate immune system	Subcomponent of the complement system of the innate immune system. Contributes to the membrane attack complex.	6	[62]
60	LBP	Lipopolysaccharide Binding Protein	Pro-inflammatory responses of the innate immune system	Binds bacterial glycolipid to the CD14 receptor, eliciting monocyte responses. Plays a role in the acute phase protein network.	6	[63]
61	HAMP	Hepcidin Antimicrobial Peptide	Iron homeostasis and acute phase protein	Hepcidin, the principal regulator of the iron metabolism, is up-regulated in response to inflammatory stimuli, bone morphogenic proteins (BMPs) and iron excess. There are two murine hepcidin	6	[64]

				genes: hepcidin-1 (Hamp1) and hepcidin-2 (Hamp2). Hamp1 gene responds to both IL-6 and BMPs while Hamp2 responds to neither.		
62	CRP	C-Reactive Protein	Pro-inflammatory responses of the innate immune system	Plays a variety of key roles in the acute phase by binding to damaged, necrotic and microbial cells, promoting phagocytosis, and activating the complement system.	6	[65]
63	ITIH4	Inter-Alpha-Trypsin Inhibitor Heavy Chain 4	Pro-inflammatory responses of the innate immune system	Found to be a part of the acute phase response network, with increased concentration in serum that correlates with severity of disease.	6	[66]
64	FTH1	Ferritin Heavy Chain 1	Iron homeostasis and acute phase protein	Encodes the heavy subunit of ferritin, responsible for intracellular iron storage and regulation. Ferritin is implicated in the innate immune response to bacteria.	6	[57]
65	CLPSL1	Colipase Like 1	Unknown	Unknown	6	
66	ATP1B1	Sodium/Potassium-Transporting ATPase Subunit Beta-1	Pro-inflammatory responses of the innate immune system	The expression of ATP1B1 can inhibit viral replication and increase the levels of IFNs, IFN-stimulated genes, and inflammatory cytokines.	6	[67]
67	CA6	Carbonic Anhydrase 6	Carbonate dehydratase	Catalyses the reversible reaction between carbon dioxide and bicarbonate, maintaining pH homeostasis in various tissues and biological fluids.	6	[68]
68	SERPINA4	Kallistatin	Endopeptidase inhibition and acute phase protein	Also known as kallistatin, capable of binding to (thus regulating) kallikrein, which in turn is a serine protein which is capable of cleaving kininogen, releasing vasoactive kinin. The SNPs rs2093266 in the *SERPINA4* and rs1955656 in the *SERPINA5* are associated with the development of severe AKI (KDIGO stage 2–3) in critically ill patients with septic shock.	6	[69,70]
69	HSPA1A	Heat Shock kDa Protein 1A	Protein homeostasis and anti-inflammatory responses of the immune system	Stabilizes proteins and mediates the folding of newly translated proteins. HSPA1A inhibits pyroptosis and neuroinflammation after spinal cord injury via DUSP1 inhibition of the MAPK signalling pathway	6	[71,72]
70	BCHE	Butyrylcholinesterase	Choline hydrolysis and anti-inflammatory	A serine hydrolase that catalyses the hydrolysis of various esters. Also enhances the activity of proteases like trypsin.	6	[73,74]

			responses of the immune system	Dysregulation of butyrylcholinesterase, BCHE gene SNP rs1803274, and pro-inflammatory cytokines in occupational workers		
71	ANTXR2	ANTXR Adhesion Molecule 2	Pro-inflammatory responses of the adaptive immune system	ANTXR2 variants is associated with positive HLA-B27 but not with HLA-B27-negative ankylosing spondylitis.	6	[75]
72	APOA4	Apolipoprotein A4	Lipid metabolism	APOA4 is a potent activator of lecithin-cholesterol acyltransferase. HDL anti-inflammatory function is impaired and associated with high SAA1 and low APOA4 levels in aneurysmal subarachnoid haemorrhage	6	[76,77]
73	AFM	Afamim	Anti-inflammatory responses of the adaptive immune system	Afamin has been shown to act as an extracellular chaperone for poorly soluble, acylated Wnt proteins, forming a stable, soluble complex with functioning Wnt proteins. Activation of Wnt/β-catenin signal induces dendritic cells to differentiate into immune tolerant regulatory dendritic cells in septic mice.	6	[78,79]
74	CDON	Cell Adhesion molecule-related/down-regulated by oncogenes	Cell-cell interactions	Part of the cell-surface receptor complex, and a member of the immunoglobulin superfamily. It mediates cell-cell interactions between muscle precursor cells.	6	[80]
75	HBA1	Haemoglobin Subunit Alpha 1	Oxygen Transport	The protein encoded by this gene is a subunit of haemoglobin.	6	[81]
76	PGLYRP2	Peptidoglycan Recognition Protein 2	Proinflammatory responses of the innate immune system and anti-inflammatory responses of the adaptive immune system	PGLYRP-2 and Nod2 are both required for arthritis in mice. Peptidoglycan recognition protein Pglyrp2 protects mice from psoriasis-like skin inflammation by promoting regulatory T cells and limiting Th17 responses.	6	[82,83]
77	CLEC3B	Tetranectin	Proinflammatory responses of the immune system	Plasma tetranectin levels and disease activity in patients with rheumatoid arthritis.	6	[84]
78	EHMT2	Histone-Lysine-N-Methyltransferase 2	Pro-inflammatory responses of the innate immune system	Treatment of primary bovine cells with the synthetic EHMT2 inhibitor (UNC0638) either before or shortly after virus infection results in a significant increase in transcript levels of bovine IFN-β (boIFN-β; 300-fold) and other IFN-inducible genes, including IFN-stimulated gene 15 (ISG-15), myxovirus resistance 1	6	[85]

				(Mx-1), Mx-2, RIG-I, 2',5'-oligoadenylate synthetase 1 (OAS-1), and protein kinase R (PKR). Expression of these factors correlated with a significant decrease in VSV and sMDV viral titers.		
79	CCDC126	Coiled-Coil Domain Containing Protein 126	Unknown function	Unknown function	6	
80	NPS	Neuropeptide S	Neural functions	NPSR expression is markedly increased in asthmatic humans and mice, mainly localized in bronchial epithelial cells. Using ovalbumin (OVA) and papain-induced asthma mouse models, NPSR-deficient mice exhibited significantly alleviated asthma, with reduced small airway lesions and inflammatory infiltration compared with wild-type mice. OVA and papain promote TFEB-mediated autophagy with increased ATG5 and LC3 II expression, and NPS effectively regulates the activation of TFEB and autophagy. In turn, specific TFEB knockdown can restore the effect of exogenous NPS and its receptor antagonist on the autophagy and cytokines secretion in bronchial epithelial cells.	6	[86]

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