

Table S2: Identification and functional classification of differentially expressed transcripts in horses with heaves during airway obstruction when compared to healthy controls and asymptomatic asthmatic horses.

Gene Identification	Homology	Sp	Identity
Fr Gene correspondance	Accession number		%
Sequences coding with known genes - Group I			
Immune signaling molecules			
1 ANXA1: annexin I	X95108	SC	85
1 BANK1: B-cell scaffold protein with ankyrin repeats 1	XM_001108807	MM	81
1 CCBP2: chemokine binding protein 2	XM_001497290	EC	99
1 CCL5: chemokine (C-C motif) ligand 5	NM_001081863	EC	100
1 CD74: CD74 molecule, major histocompatibility complex class II invariant chain	NM_001099770	EC	98
1 IK: IK cytokine, down-regulator of HLA II	NM_001103349	BT	94
1 IL6ST: interleukin 6 signal transducer	XM_517756	PT	77
2 LCN2: lipocalin 2	XM_001501148	EC	99
1 LCP2: lymphocyte cytosolic protein 2 (SH2 domain containing leukocyte protein of 76kDa)	XM_003310976	PT	82
1 PTGDR: prostaglandin D2 receptor (DP)	NM_001098034	BT	70
1 SFTPA1: surfactant protein A1	NM_001009728	OA	78
1 SPP1: secreted phosphoprotein 1	XM_001496174	EC	100
1 TXNIP: thioredoxin interacting protein	XM_002924566	AM	83
1 SOCS5: suppressor of cytokine signaling 5	XM_001498720	EC	99
Immune response			
1 BCAP29: B-cell receptor-associated protein 29	NM_001038075	BT	89
1 DOCK1: dedicator of cytokinesis 1	XM_001489764	EC	100
1 GBP2: guanylate binding protein 2, interferon-inducible	XM_001494427	EC	100
2 IGHA1: immunoglobulin heavy constant alpha 1	AY247966	EC	94
2 IGL@: immunoglobulin lambda locus	XM_001915391	EC	95
1 LRBA: LPS-responsive vesicle trafficking, beach and anchor containing	XM_001501505	EC	100
1 PSMC1: proteasome (prosome, macropain) 26S subunit, ATPase, 1	XM_001494090	EC	99
1 SEMA3C: sema domain, immunoglobulin domain (Ig) short basic domain secreted (semaphorin) 3C	XM_003252189	NL	80
1 SEPP1: selenoprotein P, plasma, 1	NM_001135605	EC	99
1 ZFAND5: zinc finger AN1-type domain 5	XM_001488383	EC	98
Intracellular signaling			
1 CHP: calcineurin B homologous protein	BT030715	BT	82
1 EVI2B: ecotropic viral integration site 2B	XM_001504035	EC	99
1 GAB1: GRB2-associated binding protein 1	NM_001101201	BT	83
1 MAPK1: mitogen-activated protein kinase 1	NM_002745	HS	94
1 MLLT4: myeloid/lymphoid or mixed-lineage leukemia (trithorax homolog, Drosophila); translocated to 4	XM_581038	BT	76
1 PLCXD3: phosphatidylinositol-specific phospholipase C, X domain containing 3	NM_001005473	HS	89
1 PPP3CB: protein phosphatase 3 (formerly 2B), catalytic subunit, beta isoform	XM_001502920	EC	99
1 PIP3NA: phosphatidylinositol transfer protein alpha	BC082976	HS	81
1 RAB18: member RAS oncogene family	XM_001494294	EC	99
1 TRPC4AP: transient receptor potential cation channel, subfamily C, member 4 associated protein	XM_001499199	EC	99
2 YWHAB: tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, beta polypeptide	AB169570	MF	83
1 ARPC5: actin-related protein 2/3 complex subunit 5	XM_001915096	EC	98
1 ZBTB8OS: zinc finger and BTB domain containing 8 opposite strand	XM_001503767	EC	96
Proteolytic enzymes			
2 GLRX: Glutaredoxin (Thioltransferase)	XM_846466	CF	79
1 LTA4H: Leukotriene A-4 hydrolase	XM_001494765	EC	100
1 PSMA5: proteasome (prosome, macropain) subunit alpha type 5	XM_001918054	EC	99
1 USP47: ubiquitin specific peptidase 47	XM_001501192	EC	99
Extracellular proteins			
1 APOOL: apolipoprotein O-like	NM_198450	HS	88
1 CCDC80: coiled-coil domain containing 80	XM_001502981	EC	100
2 COL1A2: collagen type I alpha 2	XM_001492939	EC	99
1 COL3A1: collagen type III alpha 1	XM_001917620	EC	99
Transmembrane proteins			
1 EDNRA: endothelin receptor type A	XM_862339	CF	80
1 MAL2: mal, T-cell differentiation protein 2	XM_001142529	PT	82
1 NIPAI: non-imprinted in Prader-Willi/Angelman syndrome 1	XM_523025	PT	81

1	PMP22 : peripheral myelin protein 22	XM_002800299	MM	86
1	TMEM19 : transmembrane protein 19	NM_018279	HS	73
1	LAPTM5 : lysosomal protein transmembrane 5	XM_001503920	EC	78
Complement components				
1	C4BPA : complement component 4 binding protein alpha	XM_001492532	EC	99
Regulatory proteins				
1	ARHGAP25 : Rho GTPase activating protein 25	NM_001046392	BT	75
1	CCNB1 : Cyclin B1	XM_001491280	EC	100
1	FTH1 : ferritin heavy polypeptide 1	NM_001100413	EC	99
1	GM2A : GM2 ganglioside activator	NM_001205547	BT	81
1	GPBP1 : GC-rich promoter binding protein 1	XM_001495419	EC	100
1	HSPC159 : galectin-related protein	NM_001205831	BT	90
1	MOBKL1B : MOB1, Mps One Binder kinase activator-like 1B (yeast)	NM_001132280	PA	77
1	NPHP3 : nephronophthisis 3 (adolescent)	AB258811	EC	82
1	NR2F2 : nuclear receptor subfamily 2 group F member 2	NM_174402	BT	97
1	PRDX6 : peroxiredoxin 6	XM_001496832	EC	99
1	SLITRK4 : SLIT and NTRK-like family member 4	XM_001490209	EC	100
1	SRI : sorcin	XM_001492148	EC	99
2	TPT1 : tumor protein, translationally-controlled 1	XM_001491304	EC	99
1	YWHAZ : tyrosine 3/tryptophan 5 -monooxygenase activation protein zeta polypeptide	XM_001492988	EC	99
Cell growth and proliferation				
1	CUL2 : cullin 2	XM_851747	CF	95
1	DONSON : downstream neighbor of SON	XM_001494421	EC	99
1	GPC4 : glypican 4	XM_001097252	MM	80
1	IGF1 : insulin-like growth factor I	XM_001156521	PT	75
1	USP16 : ubiquitin specific peptidase 16	NM_001032410	HS	93
Cell adhesion molecules				
1	GPM6A : glycoprotein M6A	XM_001493131	EC	99
1	VCAN : versican	NG_012682	HS	94
Structural proteins				
1	ACTB : beta-actin	AB289605	TT	90
1	EPB41L2 : erythrocyte membrane protein band 4.1-like 2	XM_002690221	BT	93
3	FGA : fibrinogen alpha chain	XM_001915158	EC	100
2	ACTG1 : gamma actin 1	XM_001488883	EC	99
1	RPL10 : ribosomal protein L10	XM_001915513	EC	100
1	OPA1 : optic atrophy 1	XM_001500454	EC	99
1	DCN : decorin	NM_001081925	EC	99
2	PLS3 : plastin 3	XM_001488277	EC	99
1	SMC5 : structural maintenance of chromosomes 5	XM_001489222	EC	99
1	VIM : Vimentin	XM_001916285	EC	99
Transport proteins				
1	ABCE1 : ATP-binding cassette sub-family E (OABP) member 1	DQ148409	HS	72
1	ATP6V1D : ATPase, H ⁺ transporting, lysosomal 34kDa, V1 subunit D	XM_001499730	EC	98
1	ATP11B : ATPase class VI type 11B	XM_001496792	EC	100
1	EXOC1 : Exocyst complex component 1	XM_001492690	EC	99
1	FTHL : ferritin light polypeptide	XM_001251063	BT	79
1	KCTD20 : potassium channel tetramerisation domain containing 20	NM_001101093	BT	78
1	IPO5 : importin 5	XM_001492682	EC	97
1	SEC61G : Sec61 gamma subunit	NM_001040586	BT	94
1	SLCO3A1 : solute carrier organic anion transporter family, member 3A1	XM_001916720	EC	99
1	UACA : uveal autoantigen with coiled-coil domains and ankyrin repeats	XM_002804842	MM	89
3	USO1 : USO1 vesicle docking protein homolog	XM_001490004	EC	99
Metabolic enzymes				
1	ACSL5 : acyl-CoA synthetase long-chain family member 5	NM_203380	HS	91
1	ACSS2 : acyl-CoA synthetase short-chain family member 2	NM_001076552	HS	82
1	PGFS : prostaglandin F synthase	NM_001081895	EC	99
1	ALDH1A1 : aldehyde dehydrogenase 1 family, member A1	XM_003267414	NL	84
1	EXT2 : exostosin 2	NM_207122	HS	76
1	FUCA1 : fucosidase alpha-L- 1, tissue	X92448	CF	79
1	GLB1 : galactosidase beta 1	XM_001490147	EC	99
2	LDHA : lactate dehydrogenase-A	GU808337	EC	99
1	METTL7A : methyltransferase like 7A	NM_001035439	BT	77
1	PDK1 : pyruvate dehydrogenase kinase isozyme 1	XM_534032	CF	80
1	PIGB : Phosphatidylinositol glycan anchor biosynthesis class B	XM_001501000	EC	99
1	PPT1 : palmitoyl-protein thioesterase 1	NM_001010944	CF	85

1	BPNT1: 3(2), 5-biphosphate nucleotidase 1	XM_001488034	EC	100
Protein binding				
1	CCDC82: coiled-coil domain containing 82	NM_024725	HS	86
1	OTUD4: OTU domain containing 4	XR_084597	BT	83
1	REEP5: receptor accessory protein 5	NM_001046605	BT	75
1	ST13: suppression of tumorigenicity 13 (colon carcinoma) (Hsp70 interacting protein)	BC052982	HS	84
1	WAC: WW domain-containing adapter with a coiled-coil	XM_611722	BT	94
Free radical metabolism				
1	CYB561D2: cytochrome b-561 domain containing 2	NM_007022	HS	79
1	MDH1: malate dehydrogenase 1, NAD (soluble)	NM_001009329	FC	93
1	NHLRC2: NHL repeat containing 2	XM_508046	PT	95
1	NDUFB8: NADH dehydrogenase (ubiquinone) 1 beta subcomplex 8 19kDa	XM_001500281	EC	99
1	TCP1: t-complex 1	XM_001500650	EC	99
DNA/RNA associated proteins				
1	BZW1: Basic leucine zipper and W2 domains 1	XM_001503602	EC	99
1	CSTF1: cleavage stimulation factor, 3 pre-RNA subunit 1	XM_001489360	EC	99
3	EEF1A1: eukaryotic translation elongation factor 1 alpha 1	NM_001081781	EC	99
1	EIF3D: eukaryotic translation initiation factor 3 subunit D	XM_001500445	EC	100
1	EIF3E: eukaryotic translation initiation factor 3 subunit E	BT025478	BT	94
1	GFM1: elongation factor, mitochondrial 1	BT025478	HS	71
1	HNRNPA0: heterogeneous nuclear ribonucleoprotein A0	XM_593096	BT	90
2	HNRNPA3: heterogeneous nuclear ribonucleoprotein A3	NM_194247	HS	97
1	HNRPDL: heterogeneous nuclear ribonucleoprotein D-like	AY246721	EC	99
1	HNRNPH2: heterogeneous nuclear ribonucleoprotein H2 (H')	XM_001493778	EC	99
2	LARP4: La ribonucleoprotein domain family member 4	XM_001504251	EC	100
1	LARP5: La ribonucleoprotein domain family member 5	BC152443	HS	87
1	MTRF1L: Mitochondrial translational release factor 1-like	XM_001501586	EC	99
1	RPL5: ribosomal protein L5	NM_001081885	EC	100
1	RPS18: ribosomal protein S18	XM_001497064	EC	100
1	RPS28: ribosomal protein S28	XM_001504640	EC	99
1	SNRPC: small nuclear ribonucleoprotein polypeptide C	XM_001498428	EC	99
1	SRP72: signal recognition particle 72kDa	XM_002918109	AM	82
1	XRCC2: X-ray repair complementing defective repair in Chinese hamster cells 2	XM_00149740	EC	100
2	DDX60: DEAD (Asp-Glu-Ala-Asp) box polypeptide 60	XM_001082147	MM	78
1	IWS1: IWS1 homolog	XM_001915606	EC	99
1	REXO2: RNA exonuclease 2 homolog	XM_001502187	EC	99
2	RPL21: ribosomal protein L21	XM_001491519	EC	99
1	RPS6: ribosomal protein S6	XM_001496363	EC	99
Gene transcription				
1	BAZ2B: bromodomain adjacent to zinc finger domain 2B	BC012576	HS	94
1	CNOT7: CCR4-NOT transcription complex subunit 7	XM_001488465	EC	98
1	HBPI: HMG-box transcription factor 1	XM_001490734	EC	99
1	ZNF292: Zinc finger protein 292	XM_539029	CF	91
Metal ion binding				
1	RNF170: ring finger protein 170	XM_003311708	PT	79
1	ZFYVE26: zinc finger, FYVE domain containing 26	XM_592247	BT	85
Sequences coding with uncharacterize sequences - Group II				
1	GMPS: guanine monophosphate synthetase	XM_001488228	EC	99
7	Naqu mitochondrion	EF597513	EC	100
1	CCDC93: coiled-coil domain containing 93	XM_001488114	EC	97
1	LYRM7: Lym7 homolog (mouse)	NM_181705	HS	80
1	BAC clone CH251-347C9	AC159217	PT	74
1	DNA sequence from clone RP6-1107	AL031589	HS	73
1	uncharacterized protein FLJ36031-like	XM_002818333	PA	81
1	DNA sequence from clone RP11-520H16	AL359753	HS	74
1	clone XX-265A5	AC186686	CF	79
1	similar to KIAA2007 protein	XM_001492338	EC	98
1	chromosome 1 open reading frame 141 (C1orf141)	NM_001013674	HS	77
1	clone CH241-280K8	AC124156	EC	99
1	cDNA DKFZp459N1711	CR861340	PP	78
2	hypothetical protein LOC100053089	XM_001502380	EC	100
1	chromosome 8 open reading frame 4 (cDNA clone MGC:128767 IMAGE:7988712)	BC103283	BT	78
1	clone RP11-539E19	AC069079	HS	75
1	BAC clone GS1-345D13 from 7	AC002076	HS	74

1	DNA sequence from clone RP11-624L12	AL365364	HS	78
1	chromosome 14 DNA sequence BAC R-896J10 of library RPCI-11	AL132857	HS	74
1	BAC clone CH250-378K15	AC197276	MM	70
1	cDNA FLJ13585 fis, clone PLACE1009150	AK023647	HS	80
1	chromosome X, clone XX-146G22	AC186068	CF	76
1	clone:AMP010011G04, expressed in alveolar macrophage	AK230581	SC	79
1	DNA sequence from clone RP11-24J23	AL445205	HS	81
1	BAC clone CH242-347J6	CU606901	SC	84
1	chromosome 3 open reading frame 64	BC028935	HS	78
1	similar to hCG2043237	XM_001493651	EC	90
1	clone:LNG010075G10, expressed in lung	AK232078	SC	78
1	cDNA FLJ13585 fis, clone PLACE1009150	AK023647	HS	79
1	BAC clone CH271-148E8	AC198152	NL	87
2	similar to hCG2043240 (LOC100072855)	XM_001502913	EC	85
1	cDNA DKFZp586F1322 (from clone DKFZp586F1322)	AL050172	HS	95
1	BAC CH250-204L23	AC198166	RM	83
1	clone 2H576	HM175907	EC	82
1	CT020027B20G06 Equine Articular Cartilage cDNA Library (cDNA clone CT020027B20G06)	CX600828	EC	100
1	CT02034A2E06 Equine Articular Cartilage cDNA Library (cDNA clone CT02034A2E06)	CX603018	EC	96
1	HL01021B1E02 Equine lymphocyte cDNA Library (cDNA clone HL01021B1E02)	DN507572	EC	98
1	1514334 MARC 3PIG	DY410347	SC	76
1	rese39c_e2.y1 ese	EW147235	SC	77
1	CT02031A1G03 Equine Articular Cartilage cDNA Library (cDNA clone CT02031A1G03)	CX601918	EC	100
1	Genomic chr5			
1	Genomic chr10			
1	Genomic chr25			
2	Genomic chrUn			
1	Genomic chr27			
1	Genomic chrUn			
1	Genomic chr2			
1	Genomic chr13			

Fr (frequency) indicates the redundancy for each cDNA clone. Genes name used are recommended by the HUGO Gene Nomenclature Committee (HGNC) when applicable. SC, *Sus crofa*; MM, *Macaca mulatta*; EC, *Equus caballus*; BT, *Bos taurus*; PT, *Pan troglodytes*; OA, *Ovis aries*; HS, *Homo sapiens*; CF, *Canis familiaris*; FC, *Felis catus*; MF, *Macaca fascicularis*; NL, *Nomascus leucogenys*; RM, *Rhesus macaque*; AM, *Ailuropoda melanoleuca*; PA, *Pongo abelii*; TT, *Tursiops truncatus*; PP, *Pongo pygmaeus*; BAC, bacterial artificial chromosome.