

Mallard Differential Expression Analyses

Amanda Dolinski & Jared J. Homola

These analyses examine differential gene expression in ileum and bursa tissues for LPAIV-infected mallards. The ileum analyses were conducted at the gene level, and the bursa analyses were conducted at the transcript and gene level. The analyses were conducted for the following comparisons:

1. LPAIV-infected and uninfected control mallards at 1, 2, 5, 15, and 29 DPI
2. LPAIV-infected mallards at different DPI at 1, 2, 5, 15, and 29 DPI
3. Virus Shed Level at 1, 2, and 5 DPI

The overall approach was to:

1. Filter lowly expressed transcripts by requiring expression of >0.5 counts per million in at least 25% of the birds.
2. Require a false discovery rate (FDR) corrected alpha value of 0.1 and a required log fold count difference (LFC) of 0.5 to establish differential expression.
3. To account for sex-based differences and variation in sequencing pool, sex and pool were included as covariates in each analysis.
4. Gene names (HGNC symbols) were assigned based on ENSEMBL annotation information that accompanied the reference genome.
5. KEGG pathway analyses were performed using the “kegga” function of “limma”. Pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes or transcripts (DEG, DET) per analysis.

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LPAIV-Infected and Controls by DPI - Ileum - Gene

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This is an analysis of differential expression at the gene level between LPAIV-infected and uninfected control mallard ileum samples at each day post-infection (DPI).

Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	CtlvI1	0
Up	CtlvI1	0
Down	CtlvI2	0
Up	CtlvI2	0
Down	CtlvI5	0
Up	CtlvI5	0
Down	I1vI2	1
Up	I1vI2	0
Down	I1vI5	0
Up	I1vI5	0
Down	I2vI5	0
Up	I2vI5	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red

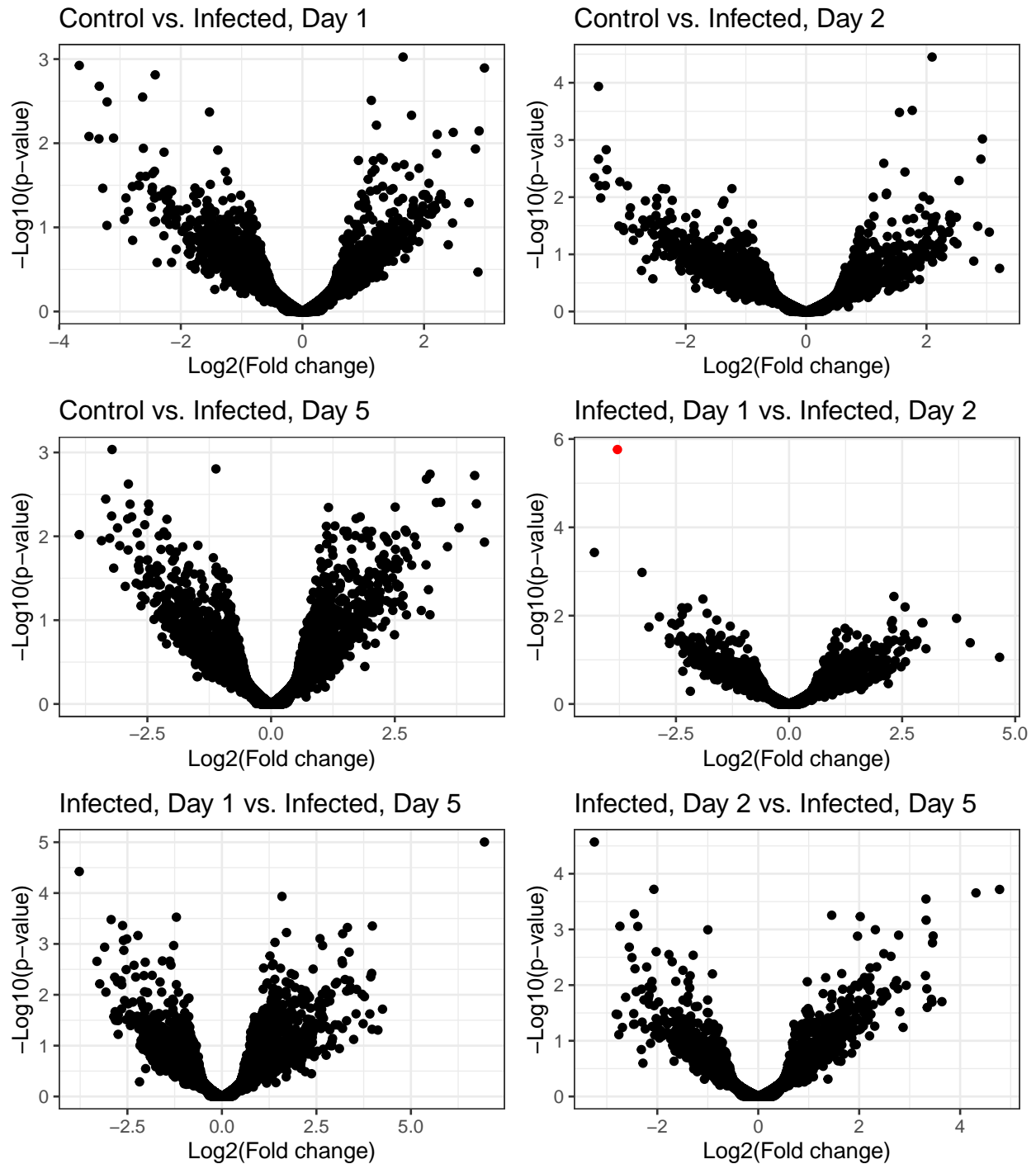


Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference

ensembl_gene_id	hgnc_symbol	CtlvI1	CtlvI2	CtlvI5	I1vI2	I1vI5	I2vI5
ENSAPLG00020006537	S100A12	ns	ns	ns	-3.79	ns	ns

Table 3: Gene functions

	gene_biotype	hgnc_symbol	description
ENSAPLG00020006537	protein_coding	S100A12	S100 calcium binding protein A12 [Source:HGNC Symbol;Acc:HGNC:10489]

LPAIV-Infected and Controls by DPI - Bursa - Gene

Amanda Dolinski & Jared J. Homola

20 March, 2021

This is an analysis of differential expression at the gene level between LPAIV-infected and uninfected control mallard bursa samples at each day post-infection (DPI).

Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	CtlvI1	0
Up	CtlvI1	0
Down	CtlvI2	0
Up	CtlvI2	0
Down	CtlvI5	0
Up	CtlvI5	0
Down	CtlvI15	0
Up	CtlvI15	0
Down	CtlvI29	0
Up	CtlvI29	0
Down	I1vI2	0
Up	I1vI2	0
Down	I1vI5	0
Up	I1vI5	0
Down	I1vI15	0
Up	I1vI15	0
Down	I1vI29	0
Up	I1vI29	0
Down	I2vI5	0
Up	I2vI5	0
Down	I2vI15	0
Up	I2vI15	0
Down	I2vI29	2
Up	I2vI29	0
Down	I5vI15	0
Up	I5vI15	0
Down	I5vI29	0
Up	I5vI29	0
Down	I15vI29	0
Up	I15vI29	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red

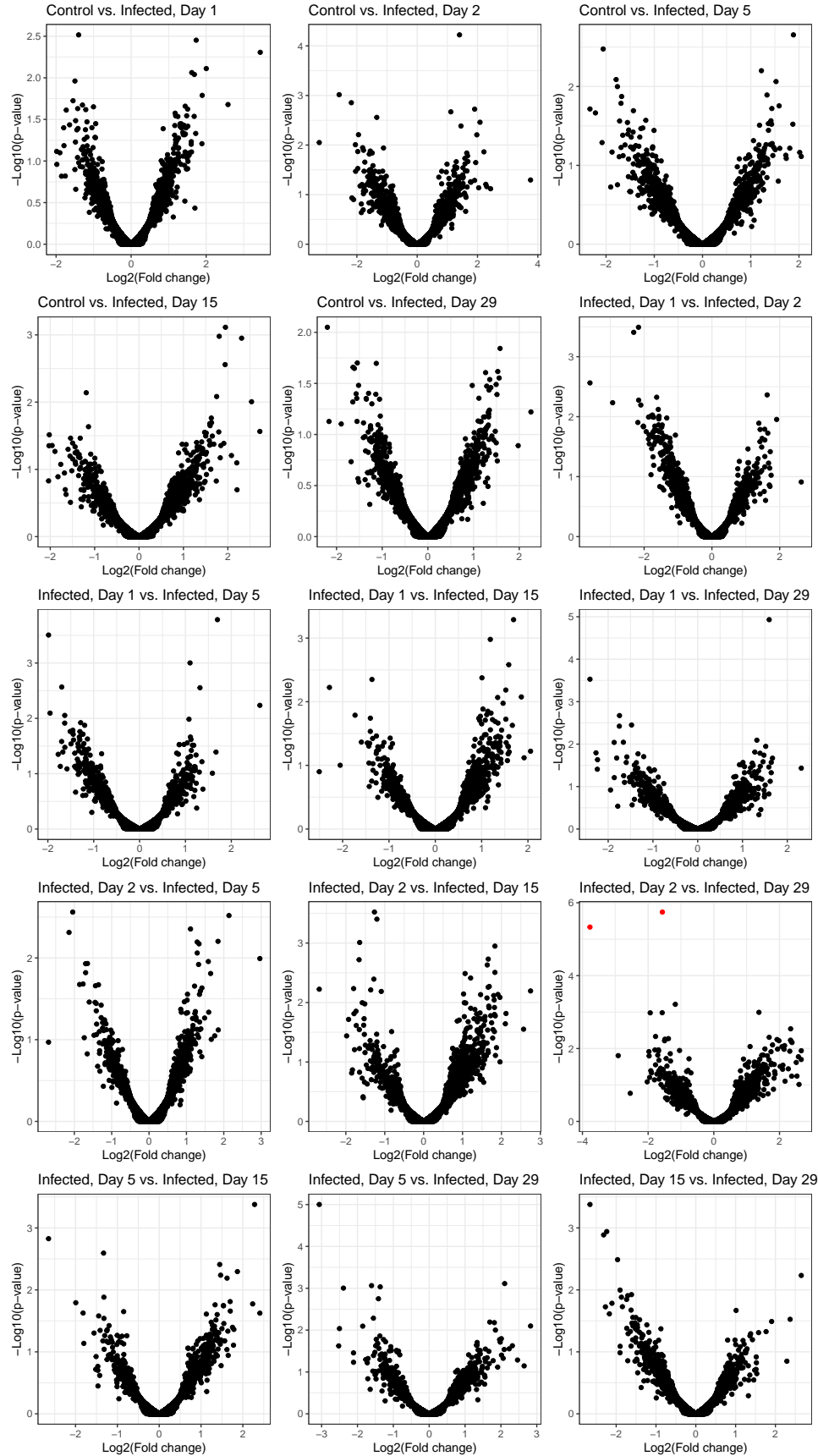


Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference

hgnc_symbol	CtlvI1	CtlvI2	CtlvI5	CtlvI15	CtlvI29	I1vI2	I1vI5	I1vI15	I1vI29	I2vI5	I2vI15	I2vI29	I5vI15	I5vI29	I15vI29
FOSB	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	-3.77	ns	ns	ns
HSPA8	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	-1.57	ns	ns	ns

Table 3: Gene functions

	gene_biotype	hgnc_symbol	description
ENSAPLG00020015991	protein_coding	FOSB	FosB proto-oncogene, AP-1 transcription factor subunit [Source:HGNC Symbol;Acc:HGNC:3797]
ENSAPLG00020017110	protein_coding	HSPA8	heat shock protein family A (Hsp70) member 8 [Source:NCBI gene;Acc:101801738]

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Spliceosome	path:apla03040	32	1	0.0091481	ENSAPLG00020017110	HSPA8	101801738
MAPK signaling pathway	path:apla04010	74	1	0.0211549	ENSAPLG00020017110	HSPA8	101801738
Protein processing in endoplasmic reticulum	path:apla04141	35	1	0.0100057	ENSAPLG00020017110	HSPA8	101801738
Endocytosis	path:apla04144	63	1	0.0180103	ENSAPLG00020017110	HSPA8	101801738

LPAIV-Infected and Controls by DPI - Bursa - Transcript

Amanda Dolinski & Jared J. Homola

20 March, 2021

This is an analysis of differential expression at the transcript level between LPAIV-infected and uninfected control mallard bursa samples at each day post-infection (DPI).

Differential expression analysis

Table 1: Count of DE transcripts. For a transcript to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	CtlvI1	0
Up	CtlvI1	0
Down	CtlvI2	0
Up	CtlvI2	0
Down	CtlvI5	0
Up	CtlvI5	0
Down	CtlvI15	0
Up	CtlvI15	0
Down	CtlvI29	0
Up	CtlvI29	0
Down	I1vI2	0
Up	I1vI2	0
Down	I1vI5	0
Up	I1vI5	0
Down	I1vI15	0
Up	I1vI15	0
Down	I1vI29	0
Up	I1vI29	0
Down	I2vI5	0
Up	I2vI5	0
Down	I2vI15	0
Up	I2vI15	0
Down	I2vI29	1
Up	I2vI29	0
Down	I5vI15	0
Up	I5vI15	0
Down	I5vI29	0
Up	I5vI29	0
Down	I15vI29	0
Up	I15vI29	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red

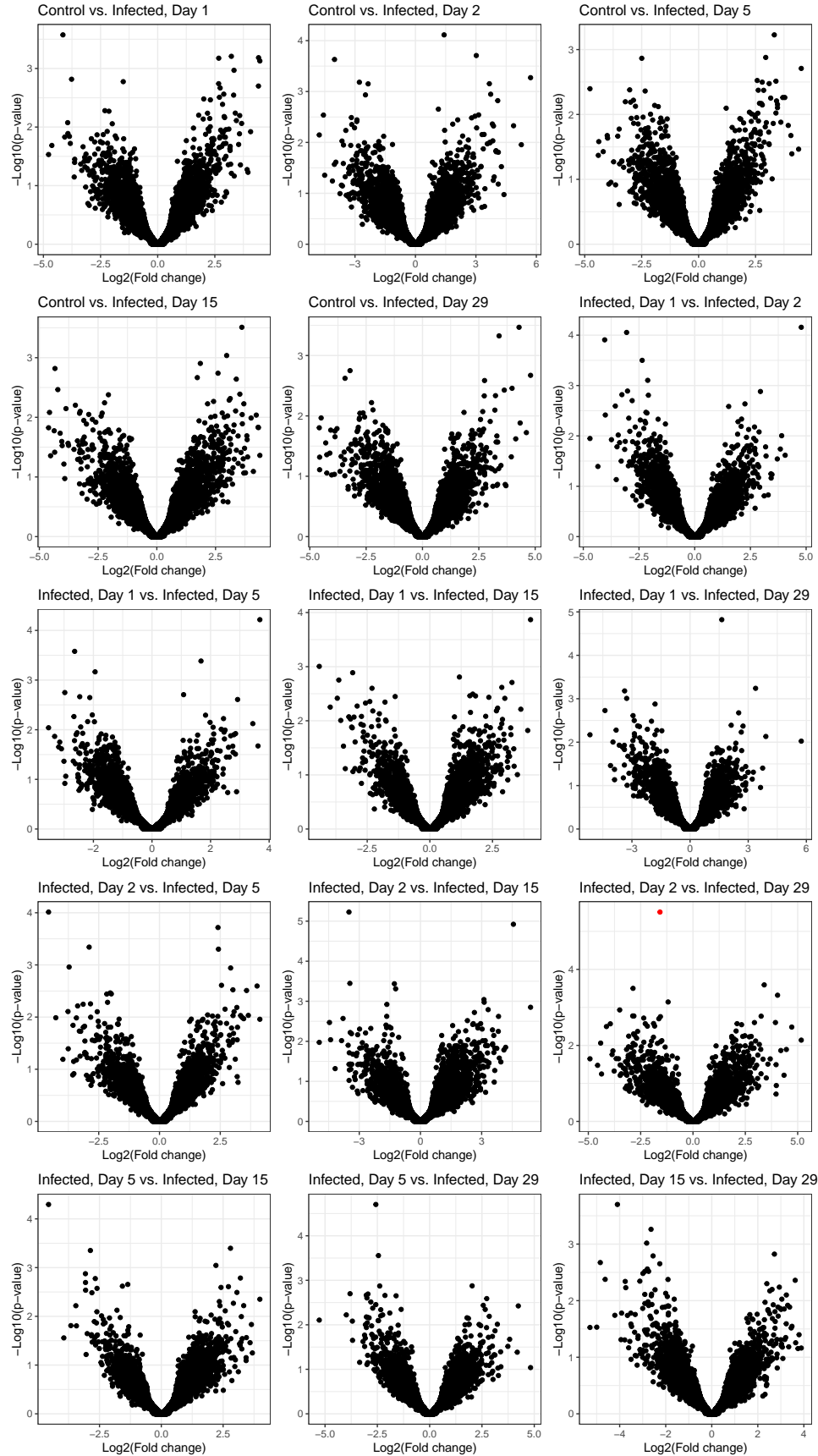


Table 2: Annotations for differentially expressed transcript. ns denotes non-significant transcripts for each comparison and numerical values are the log(fold change) difference

hgnc_symbol	CtlvI1	CtlvI2	CtlvI5	CtlvI15	CtlvI29	I1vI2	I1vI5	I1vI15	I1vI29	I2vI5	I2vI15	I2vI29	I5vI15	I5vI29	I15vI29
HSPA8	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	-1.58	ns	ns	ns

Table 3: Transcript functions

	transcript_biotype	hgnc_symbol	description
ENSAPLT00020026836	protein_coding	HSPA8	heat shock protein family A (Hsp70) member 8 [Source:NCBI gene;Acc:101801738]

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed transcripts

Pathway	PathwayID	N	DE	P.DE	ensembl_transcript_id	hgnc_symbol	entrezgene_id
Spliceosome	path:apla03040	32	1	0.0091481	ENSAPLT00020026833	HSPA8	101801738
Spliceosome	path:apla03040	32	1	0.0091481	ENSAPLT00020026836	HSPA8	101801738
MAPK signaling pathway	path:apla04010	74	1	0.0211549	ENSAPLT00020026833	HSPA8	101801738
MAPK signaling pathway	path:apla04010	74	1	0.0211549	ENSAPLT00020026836	HSPA8	101801738
Protein processing in endoplasmic reticulum	path:apla04141	35	1	0.0100057	ENSAPLT00020026833	HSPA8	101801738
Protein processing in endoplasmic reticulum	path:apla04141	35	1	0.0100057	ENSAPLT00020026836	HSPA8	101801738
Endocytosis	path:apla04144	63	1	0.0180103	ENSAPLT00020026833	HSPA8	101801738
Endocytosis	path:apla04144	63	1	0.0180103	ENSAPLT00020026836	HSPA8	101801738

Shed Level I1 - Ileum - Gene

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19 March, 2021

This is an analysis of differential expression at the gene level between low, moderate, and high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for ileum samples on 1 day post infection (DPI).

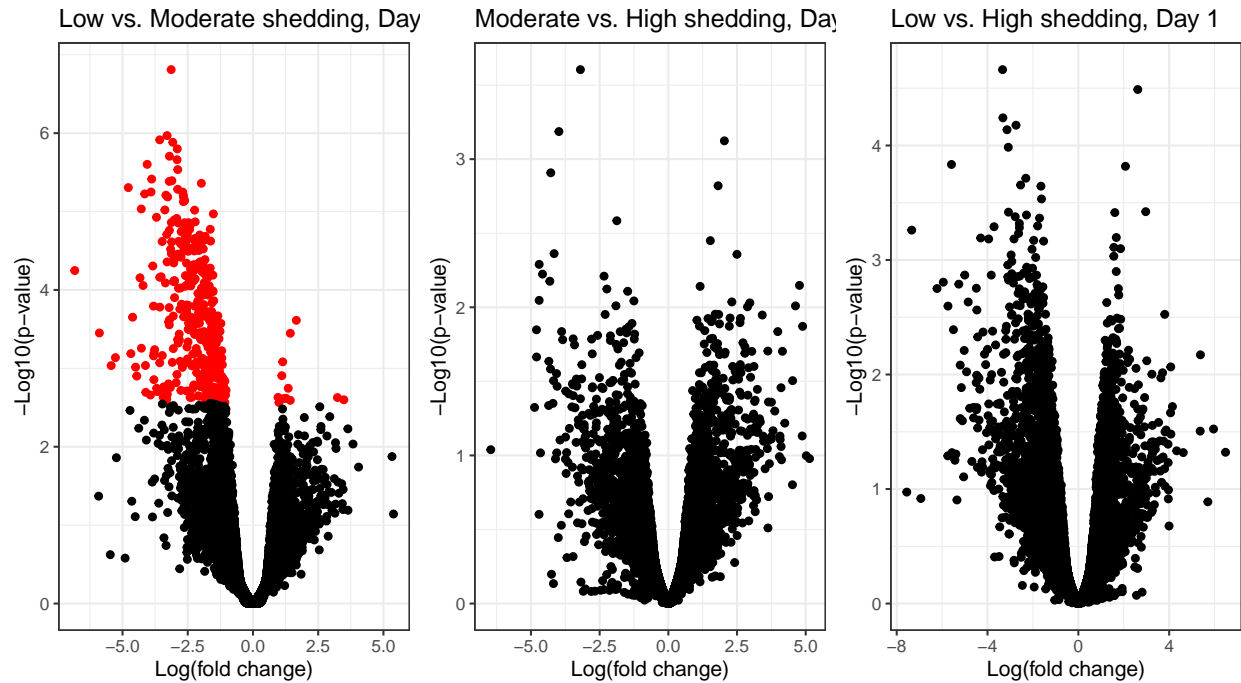
Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	394
Up	LvM	12
Down	MvH	0
Up	MvH	0
Down	LvH	0
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Heatmap

Hierarchical clustering of transcripts/genes and samples. Shown is a heat map illustrating the relative expression levels of each transcript (rows) in each sample (column). Rows are hierarchically clustered by expression. Log2-transformed expression values are z-transformed.

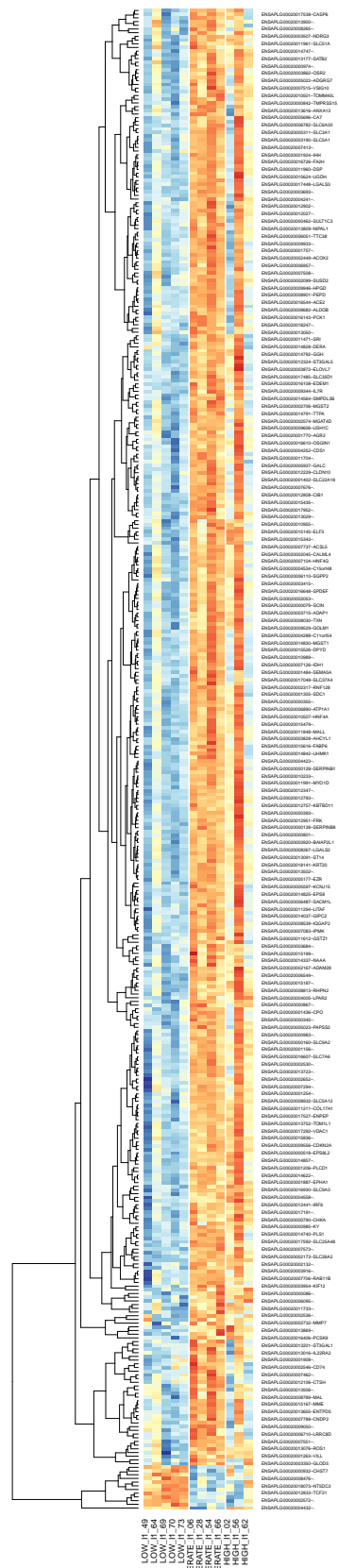


Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020009971	NA	-3.14	ns	ns
ENSAPLG00020017224	TMIGD1	-3.29	ns	ns
ENSAPLG00020012347	NA	-3.57	ns	ns
ENSAPLG00020003993	SLC26A3	-3.07	ns	ns
ENSAPLG00020008023	NA	-2.9	ns	ns
ENSAPLG00020000355	NA	-3.2	ns	ns
ENSAPLG00020014622	NA	-2.91	ns	ns
ENSAPLG00020017527	ENPEP	-4.05	ns	ns
ENSAPLG00020011650	NA	-2.88	ns	ns
ENSAPLG00020005345	HSD11B2	-3.88	ns	ns
ENSAPLG00020012793	NA	-3.11	ns	ns
ENSAPLG00020012345	NA	-3.21	ns	ns
ENSAPLG00020012808	CIB1	-1.98	ns	ns
ENSAPLG00020001436	CPO	-4.78	ns	ns
ENSAPLG00020004405	NA	-2.89	ns	ns
ENSAPLG00020011785	MEP1B	-3.91	ns	ns
ENSAPLG00020013153	TMEM45B	-2.69	ns	ns
ENSAPLG00020016143	PCK1	-4.15	ns	ns
ENSAPLG00020009050	NA	-2.67	ns	ns
ENSAPLG00020017498	NA	-3.34	ns	ns
ENSAPLG00020015167	MME	-3.27	ns	ns
ENSAPLG00020017973	NA	-2.66	ns	ns
ENSAPLG00020017592	SLC25A48	-2.62	ns	ns
ENSAPLG00020006064	CDH17	-2.67	ns	ns
ENSAPLG00020013723	NA	-4.28	ns	ns
ENSAPLG00020018141	KRT20	-3.38	ns	ns
ENSAPLG00020015435	NA	-2.24	ns	ns
ENSAPLG00020013123	TMEM98	-1.52	ns	ns
ENSAPLG00020000842	TMPRSS15	-3.7	ns	ns
ENSAPLG00020008267	LGALS2	-2.92	ns	ns
ENSAPLG00020018001	EPCAM	-3.02	ns	ns
ENSAPLG00020004423	NA	-2.21	ns	ns
ENSAPLG00020016534	NA	-3.13	ns	ns
ENSAPLG00020014284	NA	-2.47	ns	ns
ENSAPLG00020011211	COL17A1	-2.62	ns	ns
ENSAPLG00020003693	NA	-2.86	ns	ns
ENSAPLG00020011706	NA	-2.41	ns	ns
ENSAPLG00020007573	NA	-1.64	ns	ns
ENSAPLG00020006051	TTC38	-2.43	ns	ns
ENSAPLG00020005378	NA	-2.68	ns	ns
ENSAPLG00020012951	FRK	-3.2	ns	ns
ENSAPLG00020014037	GIPC2	-2.56	ns	ns
ENSAPLG00020005311	SLC3A1	-2.75	ns	ns
ENSAPLG00020006549	NA	-2.52	ns	ns
ENSAPLG00020007419	DPEP1	-3.3	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020016930	SLC9A3	-2.04	ns	ns
ENSAPLG00020006890	ATP1A1	-1.83	ns	ns
ENSAPLG00020010233	NA	-2.59	ns	ns
ENSAPLG00020001143	NA	-2.22	ns	ns
ENSAPLG00020012418	LAMB3	-2.27	ns	ns
ENSAPLG00020017952	NA	-2.19	ns	ns
ENSAPLG00020000494	CHP1	-1.9	ns	ns
ENSAPLG00020001906	PKP2	-1.62	ns	ns
ENSAPLG00020002706	MGST2	-2.85	ns	ns
ENSAPLG00020015616	FABP6	-3.48	ns	ns
ENSAPLG00020000151	TSPAN8	-2.56	ns	ns
ENSAPLG00020016544	ACE2	-3.12	ns	ns
ENSAPLG00020015566	GPA33	-2.77	ns	ns
ENSAPLG00020016543	NA	-2.14	ns	ns
ENSAPLG00020014791	TPPA	-2.73	ns	ns
ENSAPLG00020014857	NA	-2.21	ns	ns
ENSAPLG00020006231	SLC2A9	-2.11	ns	ns
ENSAPLG00020014740	PLS1	-2.65	ns	ns
ENSAPLG00020007507	CAMK2N1	-2.38	ns	ns
ENSAPLG00020010989	NA	-2.07	ns	ns
ENSAPLG00020016607	SLC7A6	-1.9	ns	ns
ENSAPLG00020006270	NA	-3.15	ns	ns
ENSAPLG00020017885	SASH3	-2.54	ns	ns
ENSAPLG00020000518	EPS8L2	-2.07	ns	ns
ENSAPLG00020012324	ST3GAL5	-2.25	ns	ns
ENSAPLG00020000801	NA	-2.48	ns	ns
ENSAPLG00020003402	KCNJ16	-2.74	ns	ns
ENSAPLG00020000565	MTTP	-3.13	ns	ns
ENSAPLG00020000829	WIPF3	-2.89	ns	ns
ENSAPLG00020001571	NA	-2.76	ns	ns
ENSAPLG00020017864	NA	-3.01	ns	ns
ENSAPLG00020003768	GUCY2C	-1.84	ns	ns
ENSAPLG00020000772	HPGDS	-2.02	ns	ns
ENSAPLG00020012865	NA	-3.29	ns	ns
ENSAPLG00020015787	SLC34A2	-3.04	ns	ns
ENSAPLG00020014148	NA	-2.08	ns	ns
ENSAPLG00020008901	PEPD	-2.54	ns	ns
ENSAPLG00020000079	SCIN	-2.26	ns	ns
ENSAPLG00020003936	NA	-2.32	ns	ns
ENSAPLG00020010507	HNF4A	-1.9	ns	ns
ENSAPLG00020001757	NA	-3.84	ns	ns
ENSAPLG00020002285	SELENOP	-2.29	ns	ns
ENSAPLG00020014639	ZNRF2	-1.64	ns	ns
ENSAPLG00020000393	NA	-2.12	ns	ns
ENSAPLG00020016726	FA2H	-2.39	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020006634	SLC10A2	-6.83	ns	ns
ENSAPLG00020005177	EZR	-1.97	ns	ns
ENSAPLG00020009297	ALDH1A1	-2.28	ns	ns
ENSAPLG00020007706	RAB11B	-1.92	ns	ns
ENSAPLG00020017048	SLC37A4	-1.8	ns	ns
ENSAPLG00020007083	IPMK	-1.53	ns	ns
ENSAPLG00020013029	NA	-2.59	ns	ns
ENSAPLG00020000585	SLC25A6	-1.79	ns	ns
ENSAPLG00020001276	MAL2	-2.52	ns	ns
ENSAPLG00020001971	PTPRF	-1.71	ns	ns
ENSAPLG00020015318	REG4	-3.52	ns	ns
ENSAPLG00020002045	CALML4	-2.39	ns	ns
ENSAPLG00020001209	APOB	-3.57	ns	ns
ENSAPLG00020005745	MAPK6	-1.73	ns	ns
ENSAPLG00020000987	NA	-4.33	ns	ns
ENSAPLG00020011294	LITAF	-2.45	ns	ns
ENSAPLG00020013091	ST14	-2.21	ns	ns
ENSAPLG00020013502	NA	-2.29	ns	ns
ENSAPLG00020017792	KCNK1	-2.35	ns	ns
ENSAPLG00020009933	NA	-3.02	ns	ns
ENSAPLG00020014564	SMPDL3B	-2.27	ns	ns
ENSAPLG00020017448	LGALS3	-3	ns	ns
ENSAPLG00020004994	SOWAHB	-2.3	ns	ns
ENSAPLG00020007676	NA	-3.04	ns	ns
ENSAPLG00020009946	HPGD	-1.87	ns	ns
ENSAPLG00020009556	CDKN2A	-3.36	ns	ns
ENSAPLG00020009238	NA	-2.5	ns	ns
ENSAPLG00020006749	AP1S3	-2.43	ns	ns
ENSAPLG00020013076	ROS1	-2.38	ns	ns
ENSAPLG00020008932	SLC5A12	-4.21	ns	ns
ENSAPLG00020003415	NA	-1.68	ns	ns
ENSAPLG00020007548	CDA	-2.39	ns	ns
ENSAPLG00020004636	NA	-2.6	ns	ns
ENSAPLG00020007325	NA	-2.78	ns	ns
ENSAPLG00020014792	GGH	-1.97	ns	ns
ENSAPLG00020015613	PDZK1	-2.85	ns	ns
ENSAPLG00020017191	NA	-1.86	ns	ns
ENSAPLG00020002317	RNF128	-1.67	ns	ns
ENSAPLG00020006716	CYP46A1	-1.54	ns	ns
ENSAPLG00020007126	IDH1	-1.76	ns	ns
ENSAPLG00020003507	NDRG3	-1.53	ns	ns
ENSAPLG00020016325	CLDN3	-2.11	ns	ns
ENSAPLG00020000128	SERPINB1	-1.92	ns	ns
ENSAPLG00020014830	MGST1	-1.71	ns	ns
ENSAPLG00020000086	NA	-2.02	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020002536	NA	-3	ns	ns
ENSAPLG00020014825	EPS8	-1.5	ns	ns
ENSAPLG00020007737	ACSL5	-2.11	ns	ns
ENSAPLG00020001206	PLCD1	-1.57	ns	ns
ENSAPLG00020005287	NA	-2.74	ns	ns
ENSAPLG00020000358	NA	-1.89	ns	ns
ENSAPLG00020000138	SERPINB8	-2.54	ns	ns
ENSAPLG00020017883	XPNPEP2	-2.54	ns	ns
ENSAPLG00020004729	HKDC1	-2.47	ns	ns
ENSAPLG00020000836	NA	-3.81	ns	ns
ENSAPLG00020006908	NA	-2.23	ns	ns
ENSAPLG00020013809	NIPAL1	-3.57	ns	ns
ENSAPLG00020000985	KY	-3.21	ns	ns
ENSAPLG00020001770	AGR2	-2.8	ns	ns
ENSAPLG00020009266	GDA	-2.04	ns	ns
ENSAPLG00020012429	NA	-2.55	ns	ns
ENSAPLG00020004419	GPX2	-2.02	ns	ns
ENSAPLG00020003282	ATP8B1	-1.58	ns	ns
ENSAPLG00020002449	ACOX2	-1.73	ns	ns
ENSAPLG00020001408	LRRC52	-2.08	ns	ns
ENSAPLG00020011820	NA	-2.52	ns	ns
ENSAPLG00020007901	IGSF5	-1.67	ns	ns
ENSAPLG00020003642	EPS8L3	-1.89	ns	ns
ENSAPLG00020009132	MTFP1	-1.57	ns	ns
ENSAPLG00020005023	PAPSS2	-1.91	ns	ns
ENSAPLG00020016108	EDEM1	-1.34	ns	ns
ENSAPLG00020003190	SLC5A1	-3.05	ns	ns
ENSAPLG00020000160	SLC9A2	-2.6	ns	ns
ENSAPLG00020003828	AHCYL1	-1.56	ns	ns
ENSAPLG00020017468	TSPAN1	-2.66	ns	ns
ENSAPLG00020003916	NA	-4.61	ns	ns
ENSAPLG00020012939	NA	-2.01	ns	ns
ENSAPLG00020005357	TMEM41B	-1.46	ns	ns
ENSAPLG00020005597	KCNJ15	-2.31	ns	ns
ENSAPLG00020015382	PRDX6	-1.68	ns	ns
ENSAPLG00020001924	IHH	-1.72	ns	ns
ENSAPLG00020002546	CD74	-1.56	ns	ns
ENSAPLG00020000944	TMEM37	-2.1	ns	ns
ENSAPLG00020004842	NA	-2.23	ns	ns
ENSAPLG00020013675	NA	-3.2	ns	ns
ENSAPLG00020001402	SLC22A18	-2.37	ns	ns
ENSAPLG00020009261	NA	-2.19	ns	ns
ENSAPLG00020003126	NA	1.66	ns	ns
ENSAPLG00020008539	IQGAP2	-1.45	ns	ns
ENSAPLG00020013655	ENTPD5	-1.65	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020006782	SLC6A20	-3.23	ns	ns
ENSAPLG00020015187	NA	-2.09	ns	ns
ENSAPLG00020001074	UPP1	-2.47	ns	ns
ENSAPLG00020009606	USH1C	-2.18	ns	ns
ENSAPLG00020002574	MGAT4D	-2.05	ns	ns
ENSAPLG00020014842	UHMK1	-1.23	ns	ns
ENSAPLG00020011704	NA	-2.14	ns	ns
ENSAPLG00020009900	NA	-3.21	ns	ns
ENSAPLG00020013616	ANXA13	-2.31	ns	ns
ENSAPLG00020015199	NA	-1.55	ns	ns
ENSAPLG00020004417	CLTA	-1.59	ns	ns
ENSAPLG00020012229	CLDN10	-2.48	ns	ns
ENSAPLG00020018096	SLC2A5	-2.31	ns	ns
ENSAPLG00020007104	HNF4G	-1.53	ns	ns
ENSAPLG00020002670	FAM3D	-2.43	ns	ns
ENSAPLG00020004877	NA	-1.37	ns	ns
ENSAPLG00020002173	SLC26A2	-1.31	ns	ns
ENSAPLG00020017706	CPT1A	-1.26	ns	ns
ENSAPLG00020000121	TSTA3	-1.53	ns	ns
ENSAPLG00020011960	DSP	-1.89	ns	ns
ENSAPLG00020009344	IL7R	-1.5	ns	ns
ENSAPLG00020011751	NA	-1.88	ns	ns
ENSAPLG00020015145	ELF3	-1.85	ns	ns
ENSAPLG00020003920	BAIAP2L1	-1.59	ns	ns
ENSAPLG00020008979	LGR4	-1.34	ns	ns
ENSAPLG00020006921	MCU	-1.6	ns	ns
ENSAPLG00020012073	TYMP	-2.04	ns	ns
ENSAPLG00020011733	NA	-5.89	ns	ns
ENSAPLG00020002572	NA	1.43	ns	ns
ENSAPLG00020000584	EPB41L4B	-1.63	ns	ns
ENSAPLG00020002792	CHDH	-1.61	ns	ns
ENSAPLG00020017247	POF1B	-1.76	ns	ns
ENSAPLG00020003684	NA	-2.83	ns	ns
ENSAPLG00020002274	P2RY4	-2.24	ns	ns
ENSAPLG00020013726	NA	-2.14	ns	ns
ENSAPLG00020012757	KBTD11	-1.67	ns	ns
ENSAPLG00020004259	NA	-1.68	ns	ns
ENSAPLG00020013654	SUOX	-1.48	ns	ns
ENSAPLG00020002167	ADAM28	-1.3	ns	ns
ENSAPLG00020005937	GALC	-1.54	ns	ns
ENSAPLG00020017485	SLC35D1	-1.59	ns	ns
ENSAPLG00020012441	IRF6	-1.72	ns	ns
ENSAPLG00020011170	GSTO1	-2	ns	ns
ENSAPLG00020007413	NA	-2.89	ns	ns
ENSAPLG00020008912	ANKS4B	-1.69	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020013417	WDR72	-2.82	ns	ns
ENSAPLG00020014333	PPIF	-1.76	ns	ns
ENSAPLG00020004956	CBR1	-1.76	ns	ns
ENSAPLG00020011848	MALL	-1.71	ns	ns
ENSAPLG00020017618	PLS3	-1.41	ns	ns
ENSAPLG00020000462	SULT1C3	-2.49	ns	ns
ENSAPLG00020014337	NAAA	-1.72	ns	ns
ENSAPLG00020001908	NA	-2.86	ns	ns
ENSAPLG00020001137	EHHADH	-1.79	ns	ns
ENSAPLG00020016046	NA	-1.41	ns	ns
ENSAPLG00020014747	NA	-1.51	ns	ns
ENSAPLG00020010501	TOMM40L	-1.62	ns	ns
ENSAPLG00020000974	NA	-1.58	ns	ns
ENSAPLG00020005943	CRYBG1	-1.47	ns	ns
ENSAPLG00020016387	NA	-2.53	ns	ns
ENSAPLG00020007788	CNDP2	-1.72	ns	ns
ENSAPLG00020013900	NA	-4.28	ns	ns
ENSAPLG00020002053	NA	-2.17	ns	ns
ENSAPLG00020007508	NA	-3.05	ns	ns
ENSAPLG00020004558	NA	-3.77	ns	ns
ENSAPLG00020001484	SEMA5A	-1.2	ns	ns
ENSAPLG00020017538	CASP6	-1.45	ns	ns
ENSAPLG00020011991	MYO1D	-1.42	ns	ns
ENSAPLG00020013201	ST3GAL1	-1.62	ns	ns
ENSAPLG00020000867	NA	-2.12	ns	ns
ENSAPLG00020013050	NA	-3.79	ns	ns
ENSAPLG00020001887	EPHA1	-1.51	ns	ns
ENSAPLG00020015556	PALMD	-1.53	ns	ns
ENSAPLG00020007294	NA	-4.68	ns	ns
ENSAPLG00020007551	NA	-1.47	ns	ns
ENSAPLG00020014852	NA	-2.3	ns	ns
ENSAPLG00020017275	CLRN3	-3.48	ns	ns
ENSAPLG00020002409	NA	-3.81	ns	ns
ENSAPLG00020012091	NA	-5.27	ns	ns
ENSAPLG00020002530	NA	-1.19	ns	ns
ENSAPLG00020016648	SPDEF	-1.93	ns	ns
ENSAPLG00020006957	NA	-1.57	ns	ns
ENSAPLG00020013016	IL22RA2	-2.52	ns	ns
ENSAPLG00020013752	TOM1L1	-1.38	ns	ns
ENSAPLG00020008989	SLC9A3R1	-1.95	ns	ns
ENSAPLG00020007744	CDH1	-1.92	ns	ns
ENSAPLG00020003954	KIF12	-1.79	ns	ns
ENSAPLG00020005588	ANXA7	-1.54	ns	ns
ENSAPLG00020003595	NA	-2.79	ns	ns
ENSAPLG00020011116	SLC35A1	-1.37	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020012833	TCF21	1.14	ns	ns
ENSAPLG00020015960	NA	-2.16	ns	ns
ENSAPLG00020007495	CMAS	-1.31	ns	ns
ENSAPLG00020011280	NA	-3.09	ns	ns
ENSAPLG00020002099	SUSD2	-3.57	ns	ns
ENSAPLG00020005696	CA7	-2.6	ns	ns
ENSAPLG00020015479	NA	-1.9	ns	ns
ENSAPLG00020012902	NA	-2.31	ns	ns
ENSAPLG00020002996	ISOC1	-1.49	ns	ns
ENSAPLG00020010829	PNPLA7	-1.17	ns	ns
ENSAPLG00020004252	CDS1	-1.93	ns	ns
ENSAPLG00020003872	ELOVL7	-2.14	ns	ns
ENSAPLG00020002202	MOGAT2	-2.7	ns	ns
ENSAPLG00020016610	OSGIN1	-1.83	ns	ns
ENSAPLG00020004697	HAAO	-4.12	ns	ns
ENSAPLG00020012861	TMEM14A	-1.65	ns	ns
ENSAPLG00020013506	NA	-5.44	ns	ns
ENSAPLG00020006662	DCXR	-1.44	ns	ns
ENSAPLG00020010311	NA	-2.34	ns	ns
ENSAPLG00020011506	SLC23A1	-1.86	ns	ns
ENSAPLG00020013917	NA	-4.5	ns	ns
ENSAPLG00020000579	NA	-2.71	ns	ns
ENSAPLG00020001305	SDC1	-1.33	ns	ns
ENSAPLG00020017678	SLC25A22	-1.41	ns	ns
ENSAPLG00020003187	SLC44A2	-1.48	ns	ns
ENSAPLG00020012027	NA	-1.61	ns	ns
ENSAPLG00020006732	LRRC8B	-1.29	ns	ns
ENSAPLG00020008013	NA	-1.29	ns	ns
ENSAPLG00020006215	NA	-1.85	ns	ns
ENSAPLG00020011612	GSTZ1	-1.42	ns	ns
ENSAPLG00020005022	ADGRG7	-2.16	ns	ns
ENSAPLG00020008813	RHPN2	-1.4	ns	ns
ENSAPLG00020005038	ABCG2	-1.84	ns	ns
ENSAPLG00020005842	GATA6	-1.45	ns	ns
ENSAPLG00020008789	MAL	-2.91	ns	ns
ENSAPLG00020006487	SACM1L	-1.29	ns	ns
ENSAPLG00020002414	ANXA2	-1.4	ns	ns
ENSAPLG00020018082	OVOL2	-1.35	ns	ns
ENSAPLG00020015765	NA	1.1	ns	ns
ENSAPLG00020004288	C11orf54	-1.38	ns	ns
ENSAPLG00020000995	NA	-4.45	ns	ns
ENSAPLG00020000345	NA	-1.39	ns	ns
ENSAPLG00020016212	NIBAN2	-1.19	ns	ns
ENSAPLG00020001156	NA	-1.54	ns	ns
ENSAPLG00020000715	PDE9A	-1.91	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020015526	DPYD	-1.41	ns	ns
ENSAPLG00020010955	NA	-1.73	ns	ns
ENSAPLG00020011471	SRI	-1.34	ns	ns
ENSAPLG00020017603	NA	-1.93	ns	ns
ENSAPLG00020006710	LRRC8D	-1.14	ns	ns
ENSAPLG00020007462	NA	-2.02	ns	ns
ENSAPLG00020010518	KIAA1522	-1.67	ns	ns
ENSAPLG00020014070	NECAP1	-1.2	ns	ns
ENSAPLG00020018247	NA	-3.8	ns	ns
ENSAPLG00020007046	DUSP15	-1.17	ns	ns
ENSAPLG00020001832	NA	-1.08	ns	ns
ENSAPLG00020015629	KLB	-1.77	ns	ns
ENSAPLG00020016406	PCSK9	-2.94	ns	ns
ENSAPLG00020011961	SLC51A	-1.86	ns	ns
ENSAPLG00020015106	CYP4F8	-1.95	ns	ns
ENSAPLG00020007203	NA	-3.24	ns	ns
ENSAPLG00020015819	ABHD14B	-1.78	ns	ns
ENSAPLG00020015856	KRTCAP3	-2.01	ns	ns
ENSAPLG00020005477	FAR2	-1.13	ns	ns
ENSAPLG00020017509	SLC5A9	-2.26	ns	ns
ENSAPLG00020013140	EAF2	-1.77	ns	ns
ENSAPLG00020014876	NA	-1.62	ns	ns
ENSAPLG00020008773	SLC16A5	-2.01	ns	ns
ENSAPLG00020002652	NA	-3.28	ns	ns
ENSAPLG00020009982	NA	-3.42	ns	ns
ENSAPLG00020004526	SLC5A11	-1.52	ns	ns
ENSAPLG00020004241	NA	-3.17	ns	ns
ENSAPLG00020011484	NA	-1.36	ns	ns
ENSAPLG00020015961	RTCA	-1.34	ns	ns
ENSAPLG00020015958	MYL9	1.35	ns	ns
ENSAPLG00020017868	NA	-3.69	ns	ns
ENSAPLG00020006110	SGPP2	-1.79	ns	ns
ENSAPLG00020003862	OSR2	-1.64	ns	ns
ENSAPLG00020008868	GAS2	-2.31	ns	ns
ENSAPLG00020001254	NA	-3.6	ns	ns
ENSAPLG00020009529	GOLM1	-1.82	ns	ns
ENSAPLG00020008030	TXN	-1.64	ns	ns
ENSAPLG00020000790	CHKA	-1.31	ns	ns
ENSAPLG00020012106	CTSH	-1.03	ns	ns
ENSAPLG00020015836	NA	-2.76	ns	ns
ENSAPLG00020017437	LAMC2	-1.63	ns	ns
ENSAPLG00020008682	ALDOB	-2.54	ns	ns
ENSAPLG00020011085	MVP	-1.25	ns	ns
ENSAPLG00020009630	SH3BGRL2	-1.18	ns	ns
ENSAPLG00020015343	NA	-1.6	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020000937	NA	-1.18	ns	ns
ENSAPLG00020013031	NA	-3.67	ns	ns
ENSAPLG00020002132	NA	-3.36	ns	ns
ENSAPLG00020013177	SATB2	-1.14	ns	ns
ENSAPLG00020000059	NA	-1.76	ns	ns
ENSAPLG00020006095	NA	-4.11	ns	ns
ENSAPLG00020015597	RBM47	-1.25	ns	ns
ENSAPLG00020018031	ITGB6	-1.66	ns	ns
ENSAPLG00020014286	NA	-1.53	ns	ns
ENSAPLG00020017865	NA	-1.75	ns	ns
ENSAPLG00020002109	CLIC3	-3.28	ns	ns
ENSAPLG00020000006	MAOA	-1.26	ns	ns
ENSAPLG00020003350	GLOD5	-3.93	ns	ns
ENSAPLG00020005631	PTPRC	-1.05	ns	ns
ENSAPLG00020016574	ESRP2	-1.28	ns	ns
ENSAPLG00020007723	NA	-2.1	ns	ns
ENSAPLG00020008265	NA	-1.47	ns	ns
ENSAPLG00020018055	NA	-1.66	ns	ns
ENSAPLG00020016374	CCL5	-2.05	ns	ns
ENSAPLG00020002732	MMP7	-2.34	ns	ns
ENSAPLG00020012851	NA	-3.44	ns	ns
ENSAPLG00020013395	SULF1	0.96	ns	ns
ENSAPLG00020000503	NA	-2.41	ns	ns
ENSAPLG00020008476	NA	3.24	ns	ns
ENSAPLG00020000938	DBI	-1.5	ns	ns
ENSAPLG00020014931	NA	-1.55	ns	ns
ENSAPLG00020017292	VDAC1	-1.4	ns	ns
ENSAPLG00020018073	NT5DC3	1.27	ns	ns
ENSAPLG00020014924	DGKG	1.19	ns	ns
ENSAPLG00020001263	VILL	-1.84	ns	ns
ENSAPLG00020015624	UGDH	-1.4	ns	ns
ENSAPLG00020013869	NA	-3.3	ns	ns
ENSAPLG00020004432	NA	3.48	ns	ns
ENSAPLG00020004005	LPAR2	-1.46	ns	ns
ENSAPLG00020000983	NA	-1.42	ns	ns
ENSAPLG00020000932	CHST7	1.43	ns	ns
ENSAPLG00020009415	NA	-1.47	ns	ns
ENSAPLG00020007515	VSIG10	-1.33	ns	ns
ENSAPLG00020015822	NA	-1.19	ns	ns
ENSAPLG00020014828	DERA	-1.5	ns	ns
ENSAPLG00020001819	SOSTDC1	-1.57	ns	ns
ENSAPLG00020003715	ADAP1	-1.21	ns	ns
ENSAPLG00020000745	SLC37A1	-1.08	ns	ns
ENSAPLG00020007187	CDH19	1	ns	ns
ENSAPLG00020004534	C15orf48	-1.55	ns	ns

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020014981	NR1H4	-1.31	ns	ns

Table 3: Gene functions

	gene_biotype	hgnc_symbol	description
ENSAPLG00020009971	protein_coding	NA	NA
ENSAPLG00020017224	protein_coding	TMIGD1	transmembrane and immunoglobulin domain containing 1 [Source:HGNC Symbol;Acc:HGNC:32431]
ENSAPLG00020012347	pseudogene	NA	NA
ENSAPLG00020003993	protein_coding	SLC26A3	solute carrier family 26 member 3 [Source:HGNC Symbol;Acc:HGNC:3018]
ENSAPLG00020008023	protein_coding	NA	cadherin-1 [Source:NCBI gene;Acc:101794572]
ENSAPLG00020000355	protein_coding	NA	NA
ENSAPLG00020014622	protein_coding	NA	NA
ENSAPLG00020017527	protein_coding	ENPEP	glutamyl aminopeptidase [Source:HGNC Symbol;Acc:HGNC:3355]
ENSAPLG00020011650	protein_coding	NA	NA
ENSAPLG00020005345	protein_coding	HSD11B2	hydroxysteroid 11-beta dehydrogenase 2 [Source:NCBI gene;Acc:101790751]
ENSAPLG00020012793	lncRNA	NA	NA
ENSAPLG00020012345	protein_coding	NA	NA
ENSAPLG00020012808	protein_coding	CIB1	calcium and integrin binding 1 [Source:HGNC Symbol;Acc:HGNC:16920]
ENSAPLG00020001436	protein_coding	CPO	carboxypeptidase O [Source:HGNC Symbol;Acc:HGNC:21011]
ENSAPLG00020004405	protein_coding	NA	NA
ENSAPLG00020011785	protein_coding	MEP1B	meprin A subunit beta [Source:HGNC Symbol;Acc:HGNC:7020]
ENSAPLG00020013153	protein_coding	TMEM45B	transmembrane protein 45B [Source:NCBI gene;Acc:101794743]
ENSAPLG00020016143	protein_coding	PCK1	phosphoenolpyruvate carboxykinase 1 [Source:NCBI gene;Acc:101793637]
ENSAPLG00020009050	protein_coding	NA	receptor accessory protein 6 [Source:HGNC Symbol;Acc:HGNC:30078]
ENSAPLG00020017498	protein_coding	NA	cytochrome P450 4B1 [Source:NCBI gene;Acc:101798033]
ENSAPLG00020015167	protein_coding	MME	membrane metalloendopeptidase [Source:HGNC Symbol;Acc:HGNC:7154]
ENSAPLG00020017973	protein_coding	NA	NA
ENSAPLG00020017592	protein_coding	SLC25A48	solute carrier family 25 member 48 [Source:HGNC Symbol;Acc:HGNC:30451]
ENSAPLG00020006064	protein_coding	CDH17	cadherin 17 [Source:HGNC Symbol;Acc:HGNC:1756]
ENSAPLG00020013723	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020018141	protein_coding	KRT20	keratin 20 [Source:HGNC Symbol;Acc:HGNC:20412]
ENSAPLG00020015435	protein_coding	NA	NA
ENSAPLG00020013123	protein_coding	TMEM98	transmembrane protein 98 [Source:HGNC Symbol;Acc:HGNC:24529]
ENSAPLG00020000842	protein_coding	TMPRSS15	transmembrane serine protease 15 [Source:HGNC Symbol;Acc:HGNC:9490]
ENSAPLG00020008267	protein_coding	LGALS2	galectin 2 [Source:HGNC Symbol;Acc:HGNC:6562]
ENSAPLG00020018001	protein_coding	EPCAM	epithelial cell adhesion molecule [Source:NCBI gene;Acc:101802347]
ENSAPLG00020004423	protein_coding	NA	NA
ENSAPLG00020016534	protein_coding	NA	guanylin-like [Source:NCBI gene;Acc:101803958]
ENSAPLG00020014284	protein_coding	NA	UDP-glucuronosyltransferase 2A1 [Source:NCBI gene;Acc:101796668]
ENSAPLG00020011211	protein_coding	COL17A1	collagen type XVII alpha 1 chain [Source:HGNC Symbol;Acc:HGNC:2194]
ENSAPLG00020003693	protein_coding	NA	NA
ENSAPLG00020011706	lncRNA	NA	NA
ENSAPLG00020007573	protein_coding	NA	NA
ENSAPLG00020006051	protein_coding	TTC38	tetratricopeptide repeat domain 38 [Source:HGNC Symbol;Acc:HGNC:26082]
ENSAPLG00020005378	protein_coding	NA	NA
ENSAPLG00020012951	protein_coding	FRK	fyn related Src family tyrosine kinase [Source:HGNC Symbol;Acc:HGNC:3955]
ENSAPLG00020014037	protein_coding	GIPC2	GIPC PDZ domain containing family member 2 [Source:HGNC Symbol;Acc:HGNC:18177]
ENSAPLG00020005311	protein_coding	SLC3A1	solute carrier family 3 member 1 [Source:HGNC Symbol;Acc:HGNC:11025]
ENSAPLG00020006549	protein_coding	NA	NA
ENSAPLG00020007419	protein_coding	DPEP1	dipeptidase 1 [Source:NCBI gene;Acc:101797901]
ENSAPLG00020016930	protein_coding	SLC9A3	solute carrier family 9 member A3 [Source:NCBI gene;Acc:101792043]
ENSAPLG00020006890	protein_coding	ATP1A1	ATPase Na ⁺ /K ⁺ transporting subunit alpha 1 [Source:HGNC Symbol;Acc:HGNC:799]
ENSAPLG00020010233	pseudogene	NA	NA
ENSAPLG00020001143	lncRNA	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020012418	protein_coding	LAMB3	laminin subunit beta 3 [Source:HGNC Symbol;Acc:HGNC:6490]
ENSAPLG00020017952	lncRNA	NA	NA
ENSAPLG00020000494	protein_coding	CHP1	calcineurin like EF-hand protein 1 [Source:NCBI gene;Acc:101791495]
ENSAPLG00020001906	protein_coding	PKP2	plakophilin 2 [Source:HGNC Symbol;Acc:HGNC:9024]
ENSAPLG00020002706	protein_coding	MGST2	microsomal glutathione S-transferase 2 [Source:NCBI gene;Acc:101798388]
ENSAPLG00020015616	protein_coding	FABP6	fatty acid binding protein 6 [Source:HGNC Symbol;Acc:HGNC:3561]
ENSAPLG00020000151	protein_coding	TSPAN8	tetraspanin 8 [Source:HGNC Symbol;Acc:HGNC:11855]
ENSAPLG00020016544	protein_coding	ACE2	angiotensin I converting enzyme 2 [Source:HGNC Symbol;Acc:HGNC:13557]
ENSAPLG00020015566	protein_coding	GPA33	glycoprotein A33 [Source:HGNC Symbol;Acc:HGNC:4445]
ENSAPLG00020016543	protein_coding	NA	NA
ENSAPLG00020014791	protein_coding	TTPA	alpha tocopherol transfer protein [Source:HGNC Symbol;Acc:HGNC:12404]
ENSAPLG00020014857	protein_coding	NA	NA
ENSAPLG00020006231	protein_coding	SLC2A9	solute carrier family 2 member 9 [Source:HGNC Symbol;Acc:HGNC:13446]
ENSAPLG00020014740	protein_coding	PLS1	plastin 1 [Source:HGNC Symbol;Acc:HGNC:9090]
ENSAPLG00020007507	protein_coding	CAMK2N1	calcium/calmodulin dependent protein kinase II inhibitor 1 [Source:HGNC Symbol;Acc:HGNC:24190]
ENSAPLG00020010989	protein_coding	NA	NA
ENSAPLG00020016607	protein_coding	SLC7A6	solute carrier family 7 member 6 [Source:HGNC Symbol;Acc:HGNC:11064]
ENSAPLG00020006270	protein_coding	NA	NA
ENSAPLG00020017885	protein_coding	SASH3	SAM and SH3 domain containing 3 [Source:HGNC Symbol;Acc:HGNC:15975]
ENSAPLG00020000518	protein_coding	EPS8L2	EPS8 like 2 [Source:HGNC Symbol;Acc:HGNC:21296]
ENSAPLG00020012324	protein_coding	ST3GAL5	ST3 beta-galactoside alpha-2,3-sialyltransferase 5 [Source:NCBI gene;Acc:101803297]
ENSAPLG00020000801	protein_coding	NA	NA
ENSAPLG00020003402	protein_coding	KCNJ16	potassium inwardly rectifying channel subfamily J member 16 [Source:HGNC Symbol;Acc:HGNC:6262]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020000565	protein_coding	MTTP	microsomal triglyceride transfer protein [Source:HGNC Symbol;Acc:HGNC:7467]
ENSAPLG00020000829	protein_coding	WIPF3	WAS/WASL interacting protein family member 3 [Source:HGNC Symbol;Acc:HGNC:22004]
ENSAPLG00020001571	protein_coding	NA	acyl-coenzyme A amino acid N-acyltransferase 2 [Source:NCBI gene;Acc:101797844]
ENSAPLG00020017864	protein_coding	NA	NA
ENSAPLG00020003768	protein_coding	GUCY2C	guanylate cyclase 2C [Source:HGNC Symbol;Acc:HGNC:4688]
ENSAPLG00020000772	protein_coding	HPGDS	hematopoietic prostaglandin D synthase [Source:NCBI gene;Acc:101796320]
ENSAPLG00020012865	protein_coding	NA	NA
ENSAPLG00020015787	protein_coding	SLC34A2	solute carrier family 34 member 2 [Source:NCBI gene;Acc:101803835]
ENSAPLG00020014148	protein_coding	NA	NA
ENSAPLG00020008901	protein_coding	PEPD	peptidase D [Source:HGNC Symbol;Acc:HGNC:8840]
ENSAPLG00020000079	protein_coding	SCIN	scinderin [Source:NCBI gene;Acc:101801633]
ENSAPLG00020003936	protein_coding	NA	NA
ENSAPLG00020010507	protein_coding	HNF4A	hepatocyte nuclear factor 4 alpha [Source:HGNC Symbol;Acc:HGNC:5024]
ENSAPLG00020001757	protein_coding	NA	NA
ENSAPLG00020002285	protein_coding	SELENOP	selenoprotein P [Source:HGNC Symbol;Acc:HGNC:10751]
ENSAPLG00020014639	protein_coding	ZNRF2	zinc and ring finger 2 [Source:HGNC Symbol;Acc:HGNC:22316]
ENSAPLG00020000393	protein_coding	NA	serine peptidase inhibitor, Kunitz type 1 [Source:NCBI gene;Acc:101804600]
ENSAPLG00020016726	protein_coding	FA2H	fatty acid 2-hydroxylase [Source:HGNC Symbol;Acc:HGNC:21197]
ENSAPLG00020006634	protein_coding	SLC10A2	solute carrier family 10 member 2 [Source:HGNC Symbol;Acc:HGNC:10906]
ENSAPLG00020005177	protein_coding	EZR	ezrin [Source:NCBI gene;Acc:101796544]
ENSAPLG00020009297	protein_coding	ALDH1A1	aldehyde dehydrogenase 1 family member A1 [Source:HGNC Symbol;Acc:HGNC:402]
ENSAPLG00020007706	protein_coding	RAB11B	RAB11B, member RAS oncogene family [Source:HGNC Symbol;Acc:HGNC:9761]
ENSAPLG00020017048	protein_coding	SLC37A4	solute carrier family 37 member 4 [Source:HGNC Symbol;Acc:HGNC:4061]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020007083	protein_coding	IPMK	inositol polyphosphate multikinase [Source:HGNC Symbol;Acc:HGNC:20739]
ENSAPLG00020013029	protein_coding	NA	p53 apoptosis effector related to PMP22 [Source:NCBI gene;Acc:101797297]
ENSAPLG00020000585	protein_coding	SLC25A6	solute carrier family 25 member 6 [Source:HGNC Symbol;Acc:HGNC:10992]
ENSAPLG00020001276	protein_coding	MAL2	mal, T cell differentiation protein 2 [Source:NCBI gene;Acc:101798202]
ENSAPLG00020001971	protein_coding	PTPRF	protein tyrosine phosphatase receptor type F [Source:HGNC Symbol;Acc:HGNC:9670]
ENSAPLG00020015318	protein_coding	REG4	regenerating family member 4 [Source:HGNC Symbol;Acc:HGNC:22977]
ENSAPLG00020002045	protein_coding	CALML4	calmodulin like 4 [Source:HGNC Symbol;Acc:HGNC:18445]
ENSAPLG00020001209	protein_coding	APOB	apolipoprotein B [Source:HGNC Symbol;Acc:HGNC:603]
ENSAPLG00020005745	protein_coding	MAPK6	mitogen-activated protein kinase 6 [Source:HGNC Symbol;Acc:HGNC:6879]
ENSAPLG00020000987	lncRNA	NA	NA
ENSAPLG00020011294	protein_coding	LITAF	lipopolysaccharide induced TNF factor [Source:NCBI gene;Acc:101800838]
ENSAPLG00020013091	protein_coding	ST14	suppression of tumorigenicity 14 [Source:HGNC Symbol;Acc:HGNC:11344]
ENSAPLG00020013502	protein_coding	NA	NA
ENSAPLG00020017792	protein_coding	KCNK1	potassium two pore domain channel subfamily K member 1 [Source:NCBI gene;Acc:101804763]
ENSAPLG00020009933	protein_coding	NA	NA
ENSAPLG00020014564	protein_coding	SMPDL3B	sphingomyelin phosphodiesterase acid like 3B [Source:NCBI gene;Acc:101794818]
ENSAPLG00020017448	protein_coding	LGALS3	galectin 3 [Source:HGNC Symbol;Acc:HGNC:6563]
ENSAPLG00020004994	protein_coding	SOWAHB	soosondowah ankyrin repeat domain family member B [Source:HGNC Symbol;Acc:HGNC:32958]
ENSAPLG00020007676	protein_coding	NA	NA
ENSAPLG00020009946	protein_coding	HPGD	15-hydroxyprostaglandin dehydrogenase [Source:HGNC Symbol;Acc:HGNC:5154]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020009556	protein_coding	CDKN2A	cyclin-dependent kinase 4 inhibitor B-like [Source:NCBI gene;Acc:113840168]
ENSAPLG00020009238	protein_coding	NA	epoxide hydrolase 1 [Source:NCBI gene;Acc:101790722]
ENSAPLG00020006749	protein_coding	AP1S3	adaptor related protein complex 1 subunit sigma 3 [Source:NCBI gene;Acc:101795480]
ENSAPLG00020013076	protein_coding	ROS1	ROS proto-oncogene 1, receptor tyrosine kinase [Source:HGNC Symbol;Acc:HGNC:10261]
ENSAPLG00020008932	protein_coding	SLC5A12	solute carrier family 5 member 12 [Source:HGNC Symbol;Acc:HGNC:28750]
ENSAPLG00020003415	protein_coding	NA	Krueppel-like factor 5 [Source:NCBI gene;Acc:101791703]
ENSAPLG00020007548	protein_coding	CDA	cytidine deaminase [Source:HGNC Symbol;Acc:HGNC:1712]
ENSAPLG00020004636	protein_coding	NA	NA
ENSAPLG00020007325	protein_coding	NA	NA
ENSAPLG00020014792	protein_coding	GGH	gamma-glutamyl hydrolase [Source:NCBI gene;Acc:101790897]
ENSAPLG00020015613	protein_coding	PDZK1	PDZ domain containing 1 [Source:HGNC Symbol;Acc:HGNC:8821]
ENSAPLG00020017191	protein_coding	NA	NA
ENSAPLG00020002317	protein_coding	RNF128	ring finger protein 128 [Source:NCBI gene;Acc:101801390]
ENSAPLG00020006716	protein_coding	CYP46A1	cholesterol 24-hydroxylase [Source:NCBI gene;Acc:101792317]
ENSAPLG00020007126	protein_coding	IDH1	isocitrate dehydrogenase (NADP(+)) 1 [Source:NCBI gene;Acc:101801445]
ENSAPLG00020003507	protein_coding	NDRG3	NDRG family member 3 [Source:NCBI gene;Acc:101791985]
ENSAPLG00020016325	protein_coding	CLDN3	claudin 3 [Source:HGNC Symbol;Acc:HGNC:2045]
ENSAPLG00020000128	protein_coding	SERPINB1	serpin family B member 1 [Source:NCBI gene;Acc:101799613]
ENSAPLG00020014830	protein_coding	MGST1	microsomal glutathione S-transferase 1 [Source:NCBI gene;Acc:101802612]
ENSAPLG00020000086	protein_coding	NA	NA
ENSAPLG00020002536	protein_coding	NA	NA
ENSAPLG00020014825	protein_coding	EPS8	epidermal growth factor receptor pathway substrate 8 [Source:NCBI gene;Acc:101803561]
ENSAPLG00020007737	protein_coding	ACSL5	acyl-CoA synthetase long chain family member 5 [Source:NCBI gene;Acc:101801834]
ENSAPLG00020001206	protein_coding	PLCD1	phospholipase C delta 1 [Source:NCBI gene;Acc:101796325]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020005287	protein_coding	NA	Anas platyrhynchos fatty acyl-CoA hydrolase precursor, medium chain-like (LOC101790670), mRNA. [Source:RefSeq mRNA;Acc:NM_001310405]
ENSAPLG00020000358	protein_coding	NA	NA
ENSAPLG00020000138	protein_coding	SERPINB8	serpin family B member 8 [Source:HGNC Symbol;Acc:HGNC:8952]
ENSAPLG00020017883	protein_coding	XPNPEP2	X-prolyl aminopeptidase 2 [Source:HGNC Symbol;Acc:HGNC:12823]
ENSAPLG00020004729	protein_coding	HKDC1	hexokinase domain containing 1 [Source:HGNC Symbol;Acc:HGNC:23302]
ENSAPLG00020000836	protein_coding	NA	NA
ENSAPLG00020006908	protein_coding	NA	pantetheinase [Source:NCBI gene;Acc:101798228]
ENSAPLG00020013809	protein_coding	NIPAL1	NIPA like domain containing 1 [Source:HGNC Symbol;Acc:HGNC:27194]
ENSAPLG00020000985	protein_coding	KY	kyphoscoliosis peptidase [Source:HGNC Symbol;Acc:HGNC:26576]
ENSAPLG00020001770	protein_coding	AGR2	anterior gradient 2, protein disulphide isomerase family member [Source:HGNC Symbol;Acc:HGNC:328]
ENSAPLG00020009266	protein_coding	GDA	guanine deaminase [Source:HGNC Symbol;Acc:HGNC:4212]
ENSAPLG00020012429	protein_coding	NA	corticosteroid 11-beta-dehydrogenase isozyme 1-like [Source:NCBI gene;Acc:101804020]
ENSAPLG00020004419	protein_coding	GPX2	glutathione peroxidase 2 [Source:HGNC Symbol;Acc:HGNC:4554]
ENSAPLG00020003282	protein_coding	ATP8B1	ATPase phospholipid transporting 8B1 [Source:HGNC Symbol;Acc:HGNC:3706]
ENSAPLG00020002449	protein_coding	ACOX2	acyl-CoA oxidase 2 [Source:HGNC Symbol;Acc:HGNC:120]
ENSAPLG00020001408	protein_coding	LRRC52	leucine rich repeat containing 52 [Source:HGNC Symbol;Acc:HGNC:32156]
ENSAPLG00020011820	lncRNA	NA	NA
ENSAPLG00020007901	protein_coding	IGSF5	immunoglobulin superfamily member 5 [Source:HGNC Symbol;Acc:HGNC:5952]
ENSAPLG00020003642	protein_coding	EPS8L3	EPS8 like 3 [Source:HGNC Symbol;Acc:HGNC:21297]
ENSAPLG00020009132	protein_coding	MTFP1	mitochondrial fission process 1 [Source:HGNC Symbol;Acc:HGNC:26945]
ENSAPLG00020005023	protein_coding	PAPSS2	3'-phosphoadenosine 5'-phosphosulfate synthase 2 [Source:HGNC Symbol;Acc:HGNC:8604]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020016108	protein_coding	EDEM1	ER degradation enhancing alpha-mannosidase like protein 1 [Source:HGNC Symbol;Acc:HGNC:18967]
ENSAPLG00020003190	protein_coding	SLC5A1	solute carrier family 5 member 1 [Source:HGNC Symbol;Acc:HGNC:11036]
ENSAPLG00020000160	protein_coding	SLC9A2	solute carrier family 9 member A2 [Source:NCBI gene;Acc:101799841]
ENSAPLG00020003828	protein_coding	AHCYL1	adenosylhomocysteinase like 1 [Source:HGNC Symbol;Acc:HGNC:344]
ENSAPLG00020017468	protein_coding	TSPAN1	tetraspanin 1 [Source:HGNC Symbol;Acc:HGNC:20657]
ENSAPLG00020003916	protein_coding	NA	NA
ENSAPLG00020012939	protein_coding	NA	NA
ENSAPLG00020005357	protein_coding	TMEM41B	transmembrane protein 41B [Source:NCBI gene;Acc:101799875]
ENSAPLG00020005597	protein_coding	KCNJ15	potassium inwardly rectifying channel subfamily J member 15 [Source:NCBI gene;Acc:101795505]
ENSAPLG00020015382	protein_coding	PRDX6	peroxiredoxin 6 [Source:NCBI gene;Acc:101804478]
ENSAPLG00020001924	protein_coding	IHH	Indian hedgehog signaling molecule [Source:HGNC Symbol;Acc:HGNC:5956]
ENSAPLG00020002546	protein_coding	CD74	CD74 molecule [Source:HGNC Symbol;Acc:HGNC:1697]
ENSAPLG00020000944	protein_coding	TMEM37	transmembrane protein 37 [Source:NCBI gene;Acc:101805462]
ENSAPLG00020004842	protein_coding	NA	NA
ENSAPLG00020013675	protein_coding	NA	NA
ENSAPLG00020001402	protein_coding	SLC22A18	solute carrier family 22 member 18 [Source:HGNC Symbol;Acc:HGNC:10964]
ENSAPLG00020009261	protein_coding	NA	transmembrane protein 269 [Source:NCBI gene;Acc:101792812]
ENSAPLG00020003126	protein_coding	NA	NA
ENSAPLG00020008539	protein_coding	IQGAP2	IQ motif containing GTPase activating protein 2 [Source:HGNC Symbol;Acc:HGNC:6111]
ENSAPLG00020013655	protein_coding	ENTPD5	ectonucleoside triphosphate diphosphohydrolase 5 (inactive) [Source:HGNC Symbol;Acc:HGNC:3367]
ENSAPLG00020006782	protein_coding	SLC6A20	solute carrier family 6 member 20 [Source:HGNC Symbol;Acc:HGNC:30927]
ENSAPLG00020015187	protein_coding	NA	NA
ENSAPLG00020001074	protein_coding	UPP1	uridine phosphorylase 1 [Source:NCBI gene;Acc:101791376]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020009606	protein_coding	USH1C	USH1 protein network component harmonin [Source:HGNC Symbol;Acc:HGNC:12597]
ENSAPLG00020002574	protein_coding	MGAT4D	MGAT4 family member D [Source:HGNC Symbol;Acc:HGNC:43619]
ENSAPLG00020014842	protein_coding	UHMK1	U2AF homology motif kinase 1 [Source:HGNC Symbol;Acc:HGNC:19683]
ENSAPLG00020011704	protein_coding	NA	NA
ENSAPLG00020009900	protein_coding	NA	NA
ENSAPLG00020013616	protein_coding	ANXA13	annexin A13 [Source:NCBI gene;Acc:101799747]
ENSAPLG00020015199	protein_coding	NA	NA
ENSAPLG00020004417	protein_coding	CLTA	clathrin light chain A [Source:HGNC Symbol;Acc:HGNC:2090]
ENSAPLG00020012229	protein_coding	CLDN10	claudin 10 [Source:NCBI gene;Acc:101792303]
ENSAPLG00020018096	protein_coding	SLC2A5	solute carrier family 2, facilitated glucose transporter member 5 [Source:NCBI gene;Acc:101804741]
ENSAPLG00020007104	protein_coding	HNF4G	hepatocyte nuclear factor 4 gamma [Source:NCBI gene;Acc:101791472]
ENSAPLG00020002670	protein_coding	FAM3D	FAM3 metabolism regulating signaling molecule D [Source:HGNC Symbol;Acc:HGNC:18665]
ENSAPLG00020004877	protein_coding	NA	NA
ENSAPLG00020002173	protein_coding	SLC26A2	sulfate transporter [Source:NCBI gene;Acc:101802145]
ENSAPLG00020017706	protein_coding	CPT1A	carnitine palmitoyltransferase 1A [Source:HGNC Symbol;Acc:HGNC:2328]
ENSAPLG00020000121	protein_coding	TSTA3	tissue specific transplantation antigen P35B [Source:HGNC Symbol;Acc:HGNC:12390]
ENSAPLG00020011960	protein_coding	DSP	desmoplakin [Source:HGNC Symbol;Acc:HGNC:3052]
ENSAPLG00020009344	protein_coding	IL7R	interleukin 7 receptor [Source:HGNC Symbol;Acc:HGNC:6024]
ENSAPLG00020011751	protein_coding	NA	NA
ENSAPLG00020015145	protein_coding	ELF3	E74 like ETS transcription factor 3 [Source:NCBI gene;Acc:101798795]
ENSAPLG00020003920	protein_coding	BAIAP2L1	BAR/IMD domain containing adaptor protein 2 like 1 [Source:NCBI gene;Acc:101804329]
ENSAPLG00020008979	protein_coding	LGR4	leucine rich repeat containing G protein-coupled receptor 4 [Source:NCBI gene;Acc:101793537]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020006921	protein_coding	MCU	mitochondrial calcium uniporter [Source:HGNC Symbol;Acc:HGNC:23526]
ENSAPLG00020012073	protein_coding	TYMP	thymidine phosphorylase [Source:HGNC Symbol;Acc:HGNC:3148]
ENSAPLG00020011733	protein_coding	NA	NA
ENSAPLG00020002572	protein_coding	NA	bile acid receptor-like [Source:NCBI gene;Acc:101793639]
ENSAPLG00020000584	protein_coding	EPB41L4B	band 4.1-like protein 4B [Source:NCBI gene;Acc:101801218]
ENSAPLG00020002792	protein_coding	CHDH	choline dehydrogenase [Source:HGNC Symbol;Acc:HGNC:24288]
ENSAPLG00020017247	protein_coding	POF1B	POF1B actin binding protein [Source:HGNC Symbol;Acc:HGNC:13711]
ENSAPLG00020003684	protein_coding	NA	NA
ENSAPLG00020002274	protein_coding	P2RY4	pyrimidinergic receptor P2Y4 [Source:HGNC Symbol;Acc:HGNC:8542]
ENSAPLG00020013726	protein_coding	NA	NA
ENSAPLG00020012757	protein_coding	KBTBD11	kelch repeat and BTB domain containing 11 [Source:HGNC Symbol;Acc:HGNC:29104]
ENSAPLG00020004259	protein_coding	NA	NA
ENSAPLG00020013654	protein_coding	SUOX	sulfite oxidase [Source:HGNC Symbol;Acc:HGNC:11460]
ENSAPLG00020002167	protein_coding	ADAM28	ADAM metallopeptidase domain 28 [Source:HGNC Symbol;Acc:HGNC:206]
ENSAPLG00020005937	protein_coding	GALC	galactosylceramidase [Source:HGNC Symbol;Acc:HGNC:4115]
ENSAPLG00020017485	protein_coding	SLC35D1	solute carrier family 35 member D1 [Source:HGNC Symbol;Acc:HGNC:20800]
ENSAPLG00020012441	protein_coding	IRF6	interferon regulatory factor 6 [Source:HGNC Symbol;Acc:HGNC:6121]
ENSAPLG00020011170	protein_coding	GSTO1	glutathione S-transferase omega 1 [Source:NCBI gene;Acc:101796130]
ENSAPLG00020007413	protein_coding	NA	NA
ENSAPLG00020008912	protein_coding	ANKS4B	ankyrin repeat and sterile alpha motif domain containing 4B [Source:NCBI gene;Acc:101796031]
ENSAPLG00020013417	protein_coding	WDR72	WD repeat domain 72 [Source:HGNC Symbol;Acc:HGNC:26790]
ENSAPLG00020014333	protein_coding	PPIF	peptidylprolyl isomerase F [Source:NCBI gene;Acc:101802609]
ENSAPLG00020004956	protein_coding	CBR1	carbonyl reductase [NADPH] 1 [Source:NCBI gene;Acc:101794661]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020011848	protein_coding	MALL	mal, T cell differentiation protein like [Source:NCBI gene;Acc:101799110]
ENSAPLG00020017618	protein_coding	PLS3	plastin 3 [Source:NCBI gene;Acc:101791530]
ENSAPLG00020000462	protein_coding	SULT1C3	sulfotransferase 1C1 [Source:NCBI gene;Acc:101797216]
ENSAPLG00020014337	protein_coding	NAAA	N-acylethanolamine acid amidase [Source:NCBI gene;Acc:101804788]
ENSAPLG00020001908	protein_coding	NA	NA
ENSAPLG00020001137	protein_coding	EHHADH	enoyl-CoA hydratase and 3-hydroxyacyl CoA dehydrogenase [Source:HGNC Symbol;Acc:HGNC:3247]
ENSAPLG00020016046	protein_coding	NA	NA
ENSAPLG00020014747	pseudogene	NA	NA
ENSAPLG00020010501	protein_coding	TOMM40L	translocase of outer mitochondrial membrane 40 like [Source:HGNC Symbol;Acc:HGNC:25756]
ENSAPLG00020000974	protein_coding	NA	NA
ENSAPLG00020005943	protein_coding	CRYBG1	crystallin beta-gamma domain containing 1 [Source:HGNC Symbol;Acc:HGNC:356]
ENSAPLG00020016387	protein_coding	NA	NA
ENSAPLG00020007788	protein_coding	CNDP2	carnosine dipeptidase 2 [Source:HGNC Symbol;Acc:HGNC:24437]
ENSAPLG00020013900	protein_coding	NA	NA
ENSAPLG00020002053	protein_coding	NA	NA
ENSAPLG00020007508	protein_coding	NA	C-factor [Source:NCBI gene;Acc:101802025]
ENSAPLG00020004558	protein_coding	NA	NA
ENSAPLG00020001484	protein_coding	SEMA5A	semaphorin 5A [Source:NCBI gene;Acc:101800255]
ENSAPLG00020017538	protein_coding	CASP6	caspase 6 [Source:HGNC Symbol;Acc:HGNC:1507]
ENSAPLG00020011991	protein_coding	MYO1D	myosin ID [Source:NCBI gene;Acc:101791868]
ENSAPLG00020013201	protein_coding	ST3GAL1	ST3 beta-galactoside alpha-2,3-sialyltransferase 1 [Source:NCBI gene;Acc:101790636]
ENSAPLG00020000867	protein_coding	NA	NA
ENSAPLG00020013050	protein_coding	NA	NA
ENSAPLG00020001887	protein_coding	EPHA1	EPH receptor A1 [Source:HGNC Symbol;Acc:HGNC:3385]
ENSAPLG00020015556	protein_coding	PALMD	palmdelphin [Source:HGNC Symbol;Acc:HGNC:15846]
ENSAPLG00020007294	protein_coding	NA	NA
ENSAPLG00020007551	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020014852	protein_coding	NA	NA
ENSAPLG00020017275	protein_coding	CLRN3	clarin 3 [Source:HGNC Symbol;Acc:HGNC:20795]
ENSAPLG00020002409	protein_coding	NA	NA
ENSAPLG00020012091	protein_coding	NA	NA
ENSAPLG00020002530	protein_coding	NA	NA
ENSAPLG00020016648	protein_coding	SPDEF	SAM pointed domain containing ETS transcription factor [Source:HGNC Symbol;Acc:HGNC:17257]
ENSAPLG00020006957	protein_coding	NA	tumor protein D52 [Source:NCBI gene;Acc:101793343]
ENSAPLG00020013016	protein_coding	IL22RA2	interleukin 22 receptor subunit alpha 2 [Source:HGNC Symbol;Acc:HGNC:14901]
ENSAPLG00020013752	protein_coding	TOM1L1	target of myb1 like 1 membrane trafficking protein [Source:NCBI gene;Acc:101789953]
ENSAPLG00020008989	protein_coding	SLC9A3R1	SLC9A3 regulator 1 [Source:HGNC Symbol;Acc:HGNC:11075]
ENSAPLG00020007744	protein_coding	CDH1	cadherin 1 [Source:HGNC Symbol;Acc:HGNC:1748]
ENSAPLG00020003954	protein_coding	KIF12	kinesin family member 12 [Source:HGNC Symbol;Acc:HGNC:21495]
ENSAPLG00020005588	protein_coding	ANXA7	annexin A7 [Source:HGNC Symbol;Acc:HGNC:545]
ENSAPLG00020003595	protein_coding	NA	NA
ENSAPLG00020011116	protein_coding	SLC35A1	solute carrier family 35 member A1 [Source:HGNC Symbol;Acc:HGNC:11021]
ENSAPLG00020012833	protein_coding	TCF21	transcription factor 21 [Source:NCBI gene;Acc:101802353]
ENSAPLG00020015960	protein_coding	NA	NA
ENSAPLG00020007495	protein_coding	CMAS	cytidine monophosphate N-acetylneuraminic acid synthetase [Source:NCBI gene;Acc:101797002]
ENSAPLG00020011280	lncRNA	NA	NA
ENSAPLG00020002099	protein_coding	SUSD2	sushi domain containing 2 [Source:HGNC Symbol;Acc:HGNC:30667]
ENSAPLG00020005696	protein_coding	CA7	carbonic anhydrase 7 [Source:NCBI gene;Acc:101798320]
ENSAPLG00020015479	protein_coding	NA	NA
ENSAPLG00020012902	protein_coding	NA	NA
ENSAPLG00020002996	protein_coding	ISOC1	isochorismatase domain containing 1 [Source:HGNC Symbol;Acc:HGNC:24254]
ENSAPLG00020010829	protein_coding	PNPLA7	patatin like phospholipase domain containing 7 [Source:HGNC Symbol;Acc:HGNC:24768]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020004252	protein_coding	CDS1	CDP-diacylglycerol synthase 1 [Source:HGNC Symbol;Acc:HGNC:1800]
ENSAPLG00020003872	protein_coding	ELOVL7	ELOVL fatty acid elongase 7 [Source:HGNC Symbol;Acc:HGNC:26292]
ENSAPLG00020002202	protein_coding	MOGAT2	monoacylglycerol O-acyltransferase 2 [Source:HGNC Symbol;Acc:HGNC:23248]
ENSAPLG00020016610	protein_coding	OSGIN1	oxidative stress induced growth inhibitor 1 [Source:HGNC Symbol;Acc:HGNC:30093]
ENSAPLG00020004697	protein_coding	HAAO	3-hydroxyanthranilate 3,4-dioxygenase [Source:HGNC Symbol;Acc:HGNC:4796]
ENSAPLG00020012861	protein_coding	TMEM14A	transmembrane protein 14A [Source:HGNC Symbol;Acc:HGNC:21076]
ENSAPLG00020013506	protein_coding	NA	beta-microseminoprotein [Source:NCBI gene;Acc:101795347]
ENSAPLG00020006662	protein_coding	DCXR	dicarbonyl and L-xylulose reductase [Source:NCBI gene;Acc:101800610]
ENSAPLG00020010311	protein_coding	NA	NA
ENSAPLG00020011506	protein_coding	SLC23A1	solute carrier family 23 member 1 [Source:HGNC Symbol;Acc:HGNC:10974]
ENSAPLG00020013917	protein_coding	NA	NA
ENSAPLG00020000579	protein_coding	NA	NA
ENSAPLG00020001305	protein_coding	SDC1	syndecan 1 [Source:HGNC Symbol;Acc:HGNC:10658]
ENSAPLG00020017678	protein_coding	SLC25A22	solute carrier family 25 member 22 [Source:HGNC Symbol;Acc:HGNC:19954]
ENSAPLG00020003187	protein_coding	SLC44A2	solute carrier family 44 member 2 [Source:HGNC Symbol;Acc:HGNC:17292]
ENSAPLG00020012027	protein_coding	NA	NA
ENSAPLG00020006732	protein_coding	LRRC8B	leucine rich repeat containing 8 VRAC subunit B [Source:NCBI gene;Acc:101797625]
ENSAPLG00020008013	protein_coding	NA	NA
ENSAPLG00020006215	protein_coding	NA	NA
ENSAPLG00020011612	protein_coding	GSTZ1	glutathione S-transferase zeta 1 [Source:NCBI gene;Acc:101795954]
ENSAPLG00020005022	protein_coding	ADGRG7	adhesion G protein-coupled receptor G7 [Source:HGNC Symbol;Acc:HGNC:19241]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020008813	protein_coding	RHPN2	rhophilin Rho GTPase binding protein 2 [Source:NCBI gene;Acc:101802559]
ENSAPLG00020005038	protein_coding	ABCG2	ATP binding cassette subfamily G member 2 (Junior blood group) [Source:HGNC Symbol;Acc:HGNC:74]
ENSAPLG00020005842	protein_coding	GATA6	GATA binding protein 6 [Source:HGNC Symbol;Acc:HGNC:4174]
ENSAPLG00020008789	protein_coding	MAL	mal, T cell differentiation protein [Source:HGNC Symbol;Acc:HGNC:6817]
ENSAPLG00020006487	protein_coding	SACM1L	SAC1 like phosphatidylinositide phosphatase [Source:HGNC Symbol;Acc:HGNC:17059]
ENSAPLG00020002414	protein_coding	ANXA2	annexin A2 [Source:NCBI gene;Acc:101792273]
ENSAPLG00020018082	protein_coding	OVOL2	ovo like zinc finger 2 [Source:HGNC Symbol;Acc:HGNC:15804]
ENSAPLG00020015765	lncRNA	NA	NA
ENSAPLG00020004288	protein_coding	C11orf54	chromosome 11 open reading frame 54 [Source:HGNC Symbol;Acc:HGNC:30204]
ENSAPLG00020000995	protein_coding	NA	NA
ENSAPLG00020000345	protein_coding	NA	NA
ENSAPLG00020016212	protein_coding	NIBAN2	niban apoptosis regulator 2 [Source:HGNC Symbol;Acc:HGNC:25282]
ENSAPLG00020001156	protein_coding	NA	NA
ENSAPLG00020000715	protein_coding	PDE9A	phosphodiesterase 9A [Source:HGNC Symbol;Acc:HGNC:8795]
ENSAPLG00020015526	protein_coding	DPYD	dihydropyrimidine dehydrogenase [Source:HGNC Symbol;Acc:HGNC:3012]
ENSAPLG00020010955	protein_coding	NA	organic solute transporter subunit alpha [Source:NCBI gene;Acc:101796588]
ENSAPLG00020011471	protein_coding	SRI	sorcin [Source:HGNC Symbol;Acc:HGNC:11292]
ENSAPLG00020017603	protein_coding	NA	NA
ENSAPLG00020006710	protein_coding	LRRC8D	leucine rich repeat containing 8 VRAC subunit D [Source:NCBI gene;Acc:101797983]
ENSAPLG00020007462	protein_coding	NA	NA
ENSAPLG00020010518	protein_coding	KIAA1522	KIAA1522 [Source:HGNC Symbol;Acc:HGNC:29301]
ENSAPLG00020014070	protein_coding	NECAP1	NECAP endocytosis associated 1 [Source:HGNC Symbol;Acc:HGNC:24539]
ENSAPLG00020018247	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020007046	protein_coding	DUSP15	dual specificity phosphatase 15 [Source:HGNC Symbol;Acc:HGNC:16236]
ENSAPLG00020001832	protein_coding	NA	NA
ENSAPLG00020015629	protein_coding	KLB	klotho beta [Source:HGNC Symbol;Acc:HGNC:15527]
ENSAPLG00020016406	protein_coding	PCSK9	proprotein convertase subtilisin/kexin type 9 [Source:HGNC Symbol;Acc:HGNC:20001]
ENSAPLG00020011961	protein_coding	SLC51A	solute carrier family 51 subunit alpha [Source:HGNC Symbol;Acc:HGNC:29955]
ENSAPLG00020015106	protein_coding	CYP4F8	cytochrome P450 family 4 subfamily F member 8 [Source:HGNC Symbol;Acc:HGNC:2648]
ENSAPLG00020007203	protein_coding	NA	phospholipase A2 [Source:NCBI gene;Acc:101798383]
ENSAPLG00020015819	protein_coding	ABHD14B	abhydrolase domain containing 14B [Source:HGNC Symbol;Acc:HGNC:28235]
ENSAPLG00020015856	protein_coding	KRTCAP3	keratinocyte associated protein 3 [Source:HGNC Symbol;Acc:HGNC:28943]
ENSAPLG00020005477	protein_coding	FAR2	fatty acyl-CoA reductase 2 [Source:NCBI gene;Acc:101799736]
ENSAPLG00020017509	protein_coding	SLC5A9	solute carrier family 5 member 9 [Source:HGNC Symbol;Acc:HGNC:22146]
ENSAPLG00020013140	protein_coding	EAF2	ELL associated factor 2 [Source:NCBI gene;Acc:101800874]
ENSAPLG00020014876	protein_coding	NA	NA
ENSAPLG00020008773	protein_coding	SLC16A5	solute carrier family 16 member 5 [Source:HGNC Symbol;Acc:HGNC:10926]
ENSAPLG00020002652	protein_coding	NA	gamma-glutamyltransferase 1 [Source:NCBI gene;Acc:101799199]
ENSAPLG00020009982	protein_coding	NA	NA
ENSAPLG00020004526	protein_coding	SLC5A11	solute carrier family 5 member 11 [Source:HGNC Symbol;Acc:HGNC:23091]
ENSAPLG00020004241	protein_coding	NA	NA
ENSAPLG00020011484	protein_coding	NA	NA
ENSAPLG00020015961	protein_coding	RTCA	RNA 3'-terminal phosphate cyclase [Source:NCBI gene;Acc:101791727]
ENSAPLG00020015958	protein_coding	MYL9	myosin light chain 9 [Source:NCBI gene;Acc:101799368]
ENSAPLG00020017868	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020006110	protein_coding	SGPP2	sphingosine-1-phosphate phosphatase 2 [Source:HGNC Symbol;Acc:HGNC:19953]
ENSAPLG00020003862	protein_coding	OSR2	odd-skipped related transcription factor 2 [Source:NCBI gene;Acc:101789744]
ENSAPLG00020008868	protein_coding	GAS2	growth arrest specific 2 [Source:NCBI gene;Acc:101801280]
ENSAPLG00020001254	protein_coding	NA	NA
ENSAPLG00020009529	protein_coding	GOLM1	golgi membrane protein 1 [Source:HGNC Symbol;Acc:HGNC:15451]
ENSAPLG00020008030	protein_coding	TXN	thioredoxin [Source:NCBI gene;Acc:101804092]
ENSAPLG00020000790	protein_coding	CHKA	choline kinase alpha [Source:NCBI gene;Acc:101790851]
ENSAPLG00020012106	protein_coding	CTSH	cathepsin H [Source:HGNC Symbol;Acc:HGNC:2535]
ENSAPLG00020015836	protein_coding	NA	NA
ENSAPLG00020017437	protein_coding	LAMC2	laminin subunit gamma 2 [Source:HGNC Symbol;Acc:HGNC:6493]
ENSAPLG00020008682	protein_coding	ALDOB	aldolase, fructose-bisphosphate B [Source:NCBI gene;Acc:101796090]
ENSAPLG00020011085	protein_coding	MVP	major vault protein [Source:HGNC Symbol;Acc:HGNC:7531]
ENSAPLG00020009630	protein_coding	SH3BGL2	SH3 domain binding glutamate rich protein like 2 [Source:NCBI gene;Acc:101789719]
ENSAPLG00020015343	protein_coding	NA	NA
ENSAPLG00020000937	protein_coding	NA	NA
ENSAPLG00020013031	protein_coding	NA	NA
ENSAPLG00020002132	protein_coding	NA	NA
ENSAPLG00020013177	protein_coding	SATB2	SATB homeobox 2 [Source:HGNC Symbol;Acc:HGNC:21637]
ENSAPLG00020000059	protein_coding	NA	NA
ENSAPLG00020006095	protein_coding	NA	NA
ENSAPLG00020015597	protein_coding	RBM47	RNA binding motif protein 47 [Source:HGNC Symbol;Acc:HGNC:30358]
ENSAPLG00020018031	protein_coding	ITGB6	integrin subunit beta 6 [Source:HGNC Symbol;Acc:HGNC:6161]
ENSAPLG00020014286	protein_coding	NA	NA
ENSAPLG00020017865	protein_coding	NA	NA
ENSAPLG00020002109	protein_coding	CLIC3	chloride intracellular channel 3 [Source:HGNC Symbol;Acc:HGNC:2064]
ENSAPLG00020000006	protein_coding	MAOA	amine oxidase [flavin-containing] A [Source:NCBI gene;Acc:101793000]
ENSAPLG00020003350	protein_coding	GLOD5	glyoxalase domain containing 5 [Source:NCBI gene;Acc:101791203]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020005631	protein_coding	PTPRC	protein tyrosine phosphatase receptor type C [Source:HGNC Symbol;Acc:HGNC:9666]
ENSAPLG00020016574	protein_coding	ESRP2	epithelial splicing regulatory protein 2 [Source:HGNC Symbol;Acc:HGNC:26152]
ENSAPLG00020007723	protein_coding	NA	NA
ENSAPLG00020008265	protein_coding	NA	NA
ENSAPLG00020018055	protein_coding	NA	NA
ENSAPLG00020016374	protein_coding	CCL5	C-C motif chemokine ligand 5 [Source:HGNC Symbol;Acc:HGNC:10632]
ENSAPLG00020002732	protein_coding	MMP7	matrix metalloproteinase 7 [Source:NCBI gene;Acc:101793749]
ENSAPLG00020012851	lncRNA	NA	NA
ENSAPLG00020013395	protein_coding	SULF1	sulfatase 1 [Source:NCBI gene;Acc:101802299]
ENSAPLG00020000503	pseudogene	NA	NA
ENSAPLG00020008476	protein_coding	NA	NA
ENSAPLG00020000938	protein_coding	DBI	diazepam binding inhibitor, acyl-CoA binding protein [Source:HGNC Symbol;Acc:HGNC:2690]
ENSAPLG00020014931	protein_coding	NA	NA
ENSAPLG00020017292	protein_coding	VDAC1	voltage dependent anion channel 1 [Source:NCBI gene;Acc:101803948]
ENSAPLG00020018073	protein_coding	NT5DC3	5'-nucleotidase domain containing 3 [Source:HGNC Symbol;Acc:HGNC:30826]
ENSAPLG00020014924	protein_coding	DGKG	diacylglycerol kinase gamma [Source:HGNC Symbol;Acc:HGNC:2853]
ENSAPLG00020001263	protein_coding	VILL	villin like [Source:HGNC Symbol;Acc:HGNC:30906]
ENSAPLG00020015624	protein_coding	UGDH	UDP-glucose 6-dehydrogenase [Source:HGNC Symbol;Acc:HGNC:12525]
ENSAPLG00020013869	protein_coding	NA	tubulin alpha 8 [Source:HGNC Symbol;Acc:HGNC:12410]
ENSAPLG00020004432	protein_coding	NA	NA
ENSAPLG00020004005	protein_coding	LPAR2	lysophosphatidic acid receptor 2 [Source:HGNC Symbol;Acc:HGNC:3168]
ENSAPLG00020000983	protein_coding	NA	frizzled class receptor 5 [Source:NCBI gene;Acc:101800624]
ENSAPLG00020000932	protein_coding	CHST7	carbohydrate sulfotransferase 7 [Source:HGNC Symbol;Acc:HGNC:13817]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020009415	protein_coding	NA	NA
ENSAPLG00020007515	protein_coding	VSIG10	V-set and immunoglobulin domain containing 10 [Source:NCBI gene;Acc:101796525]
ENSAPLG00020015822	protein_coding	NA	aminoacylase-1 [Source:NCBI gene;Acc:101803141]
ENSAPLG00020014828	protein_coding	DERA	deoxyribose-phosphate aldolase [Source:NCBI gene;Acc:101803045]
ENSAPLG00020001819	protein_coding	SOSTDC1	sclerostin domain containing 1 [Source:NCBI gene;Acc:101802028]
ENSAPLG00020003715	protein_coding	ADAP1	ArfGAP with dual PH domains 1 [Source:NCBI gene;Acc:101792122]
ENSAPLG00020000745	protein_coding	SLC37A1	solute carrier family 37 member 1 [Source:HGNC Symbol;Acc:HGNC:11024]
ENSAPLG00020007187	protein_coding	CDH19	cadherin 19 [Source:HGNC Symbol;Acc:HGNC:1758]
ENSAPLG00020004534	protein_coding	C15orf48	chromosome 15 open reading frame 48 [Source:HGNC Symbol;Acc:HGNC:29898]
ENSAPLG00020014981	protein_coding	NR1H4	nuclear receptor subfamily 1 group H member 4 [Source:NCBI gene;Acc:101801467]

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Drug metabolism - cytochrome P450	path:apla00982	6	5	0.0000000	ENSAPLG00020000006	MAOA	101793000
Drug metabolism - cytochrome P450	path:apla00982	6	5	0.0000000	ENSAPLG00020011170	GSTO1	101796130
Drug metabolism - cytochrome P450	path:apla00982	6	5	0.0000000	ENSAPLG00020000772	HPGDS	101796320
Drug metabolism - cytochrome P450	path:apla00982	6	5	0.0000000	ENSAPLG00020002706	MGST2	101798388
Drug metabolism - cytochrome P450	path:apla00982	6	5	0.0000000	ENSAPLG00020014830	MGST1	101802612
Metabolism of xenobiotics by cytochrome P450	path:apla00980	8	5	0.0000004	ENSAPLG00020004956	CBR1	101794661
Metabolism of xenobiotics by cytochrome P450	path:apla00980	8	5	0.0000004	ENSAPLG00020011170	GSTO1	101796130
Metabolism of xenobiotics by cytochrome P450	path:apla00980	8	5	0.0000004	ENSAPLG00020000772	HPGDS	101796320
Metabolism of xenobiotics by cytochrome P450	path:apla00980	8	5	0.0000004	ENSAPLG00020002706	MGST2	101798388
Metabolism of xenobiotics by cytochrome P450	path:apla00980	8	5	0.0000004	ENSAPLG00020014830	MGST1	101802612
Glutathione metabolism	path:apla00480	16	6	0.0000011	ENSAPLG00020011170	GSTO1	101796130
Glutathione metabolism	path:apla00480	16	6	0.0000011	ENSAPLG00020000772	HPGDS	101796320
Glutathione metabolism	path:apla00480	16	6	0.0000011	ENSAPLG00020002706	MGST2	101798388
Glutathione metabolism	path:apla00480	16	6	0.0000011	ENSAPLG00020007126	IDH1	101801445
Glutathione metabolism	path:apla00480	16	6	0.0000011	ENSAPLG00020014830	MGST1	101802612
Glutathione metabolism	path:apla00480	16	6	0.0000011	ENSAPLG00020015382	PRDX6	101804478
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020013201	ST3GAL1	101790636
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020005345	HSD11B2	101790751
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020000790	CHKA	101790851
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020001074	UPP1	101791376
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020000006	MAOA	101793000

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts (*continued*)

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020016143	PCK1	101793637
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020004956	CBR1	101794661
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020011612	GSTZ1	101795954
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020008682	ALDOB	101796090
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020011170	GSTO1	101796130
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020000772	HPGDS	101796320
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020001206	PLCD1	101796325
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020007495	CMAS	101797002
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020005696	CA7	101798320
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020002706	MGST2	101798388
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020006662	DCXR	101800610
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020007126	IDH1	101801445
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020007737	ACSL5	101801834
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020014830	MGST1	101802612
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020014828	DERA	101803045
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020012324	ST3GAL5	101803297
Metabolic pathways	path:apla01100	328	22	0.0000062	ENSAPLG00020015382	PRDX6	101804478
Drug metabolism - other enzymes	path:apla00983	7	4	0.0000108	ENSAPLG00020001074	UPP1	101791376
Drug metabolism - other enzymes	path:apla00983	7	4	0.0000108	ENSAPLG00020011170	GSTO1	101796130
Drug metabolism - other enzymes	path:apla00983	7	4	0.0000108	ENSAPLG00020002706	MGST2	101798388
Drug metabolism - other enzymes	path:apla00983	7	4	0.0000108	ENSAPLG00020014830	MGST1	101802612
Glycosphingolipid biosynthesis - ganglio series	path:apla00604	5	2	0.0055646	ENSAPLG00020013201	ST3GAL1	101790636
Glycosphingolipid biosynthesis - ganglio series	path:apla00604	5	2	0.0055646	ENSAPLG00020012324	ST3GAL5	101803297
Peroxisome	path:apla04146	20	3	0.0117105	ENSAPLG00020005477	FAR2	101799736
Peroxisome	path:apla04146	20	3	0.0117105	ENSAPLG00020007126	IDH1	101801445
Peroxisome	path:apla04146	20	3	0.0117105	ENSAPLG00020007737	ACSL5	101801834
Citrate cycle (TCA cycle)	path:apla00020	9	2	0.0188040	ENSAPLG00020016143	PCK1	101793637
Citrate cycle (TCA cycle)	path:apla00020	9	2	0.0188040	ENSAPLG00020007126	IDH1	101801445
Pentose phosphate pathway	path:apla00030	9	2	0.0188040	ENSAPLG00020008682	ALDOB	101796090

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts (*continued*)

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Pentose phosphate pathway	path:apla00030	9	2	0.0188040	ENSAPLG00020014828	DERA	101803045
Tyrosine metabolism	path:apla00350	10	2	0.0231377	ENSAPLG00020000006	MAOA	101793000
Tyrosine metabolism	path:apla00350	10	2	0.0231377	ENSAPLG00020011612	GSTZ1	101795954
Arachidonic acid metabolism	path:apla00590	10	2	0.0231377	ENSAPLG00020004956	CBR1	101794661
Arachidonic acid metabolism	path:apla00590	10	2	0.0231377	ENSAPLG00020000772	HPGDS	101796320
Folate biosynthesis	path:apla00790	10	2	0.0231377	ENSAPLG00020014792	GGH	101790897
Folate biosynthesis	path:apla00790	10	2	0.0231377	ENSAPLG00020004956	CBR1	101794661
Tight junction	path:apla04530	46	4	0.0244090	ENSAPLG00020012229	CLDN10	101792303
Tight junction	path:apla04530	46	4	0.0244090	ENSAPLG00020005177	EZR	101796544
Tight junction	path:apla04530	46	4	0.0244090	ENSAPLG00020015958	MYL9	101799368
Tight junction	path:apla04530	46	4	0.0244090	ENSAPLG00020000584	EPB41L4B	101801218
Glycolysis / Gluconeogenesis	path:apla00010	14	2	0.0439460	ENSAPLG00020016143	PCK1	101793637
Glycolysis / Gluconeogenesis	path:apla00010	14	2	0.0439460	ENSAPLG00020008682	ALDOB	101796090
Biosynthesis of amino acids	path:apla01230	15	2	0.0499221	ENSAPLG00020008682	ALDOB	101796090
Biosynthesis of amino acids	path:apla01230	15	2	0.0499221	ENSAPLG00020007126	IDH1	101801445
PPAR signaling pathway	path:apla03320	16	2	0.0561725	ENSAPLG00020016143	PCK1	101793637
PPAR signaling pathway	path:apla03320	16	2	0.0561725	ENSAPLG00020007737	ACSL5	101801834
Nitrogen metabolism	path:apla00910	3	1	0.0711616	ENSAPLG00020005696	CA7	101798320
Histidine metabolism	path:apla00340	4	1	0.0937514	ENSAPLG00020000006	MAOA	101793000
Glycosphingolipid biosynthesis - globo and isoglobo series	path:apla00603	4	1	0.0937514	ENSAPLG00020013201	ST3GAL1	101790636
Adipocytokine signaling pathway	path:apla04920	22	2	0.0985526	ENSAPLG00020016143	PCK1	101793637
Adipocytokine signaling pathway	path:apla04920	22	2	0.0985526	ENSAPLG00020007737	ACSL5	101801834
Fatty acid biosynthesis	path:apla00061	5	1	0.1157981	ENSAPLG00020007737	ACSL5	101801834
Primary bile acid biosynthesis	path:apla00120	5	1	0.1157981	ENSAPLG00020006716	CYP46A1	101792317
Phenylalanine metabolism	path:apla00360	5	1	0.1157981	ENSAPLG00020000006	MAOA	101793000
2-Oxocarboxylic acid metabolism	path:apla01210	5	1	0.1157981	ENSAPLG00020007126	IDH1	101801445
Carbon metabolism	path:apla01200	25	2	0.1222411	ENSAPLG00020008682	ALDOB	101796090
Carbon metabolism	path:apla01200	25	2	0.1222411	ENSAPLG00020007126	IDH1	101801445
Lysosome	path:apla04142	25	2	0.1222411	ENSAPLG00020006749	AP1S3	101795480
Lysosome	path:apla04142	25	2	0.1222411	ENSAPLG00020011294	LITAF	101800838

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts (*continued*)

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Glycosaminoglycan biosynthesis - keratan sulfate	path:apla00533	6	1	0.1373146	ENSAPLG00020013201	ST3GAL1	101790636
Regulation of actin cytoskeleton	path:apla04810	54	3	0.1424166	ENSAPLG00020005177	EZR	101796544
Regulation of actin cytoskeleton	path:apla04810	54	3	0.1424166	ENSAPLG00020015958	MYL9	101799368
Regulation of actin cytoskeleton	path:apla04810	54	3	0.1424166	ENSAPLG00020000079	SCIN	101801633
Pentose and glucuronate interconversions	path:apla00040	7	1	0.1583135	ENSAPLG00020006662	DCXR	101800610
Glycine, serine and threonine metabolism	path:apla00260	7	1	0.1583135	ENSAPLG00020000006	MAOA	101793000
Calcium signaling pathway	path:apla04020	57	3	0.1597877	ENSAPLG00020001206	PLCD1	101796325
Calcium signaling pathway	path:apla04020	57	3	0.1597877	ENSAPLG00020014333	PPIF	101802609
Calcium signaling pathway	path:apla04020	57	3	0.1597877	ENSAPLG00020017292	VDAC1	101803948
FoxO signaling pathway	path:apla04068	31	2	0.1729822	ENSAPLG00020016143	PCK1	101793637
FoxO signaling pathway	path:apla04068	31	2	0.1729822	ENSAPLG00020009556	CDKN2A	113840168
NOD-like receptor signaling pathway	path:apla04621	33	2	0.1905952	ENSAPLG00020017292	VDAC1	101803948
NOD-like receptor signaling pathway	path:apla04621	33	2	0.1905952	ENSAPLG00020008030	TXN	101804092
Steroid hormone biosynthesis	path:apla00140	9	1	0.1988075	ENSAPLG00020005345	HSD11B2	101790751
Arginine and proline metabolism	path:apla00330	9	1	0.1988075	ENSAPLG00020000006	MAOA	101793000
Tryptophan metabolism	path:apla00380	9	1	0.1988075	ENSAPLG00020000006	MAOA	101793000
Pyruvate metabolism	path:apla00620	9	1	0.1988075	ENSAPLG00020016143	PCK1	101793637
Fructose and mannose metabolism	path:apla00051	10	1	0.2183264	ENSAPLG00020008682	ALDOB	101796090
Fatty acid degradation	path:apla00071	10	1	0.2183264	ENSAPLG00020007737	ACSL5	101801834
Salmonella infection	path:apla05132	69	3	0.2346314	ENSAPLG00020002414	ANXA2	101792273
Salmonella infection	path:apla05132	69	3	0.2346314	ENSAPLG00020015958	MYL9	101799368
Salmonella infection	path:apla05132	69	3	0.2346314	ENSAPLG00020008030	TXN	101804092
Pyrimidine metabolism	path:apla00240	11	1	0.2373752	ENSAPLG00020001074	UPP1	101791376
Ferroptosis	path:apla04216	11	1	0.2373752	ENSAPLG00020007737	ACSL5	101801834
Cellular senescence	path:apla04218	40	2	0.2536731	ENSAPLG00020017292	VDAC1	101803948
Cellular senescence	path:apla04218	40	2	0.2536731	ENSAPLG00020009556	CDKN2A	113840168

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts (*continued*)

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Mucin type O-glycan biosynthesis	path:apla00512	12	1	0.2559652	ENSAPLG00020013201	ST3GAL1	101790636
Amino sugar and nucleotide sugar metabolism	path:apla00520	14	1	0.2918119	ENSAPLG00020007495	CMAS	101797002
Fatty acid metabolism	path:apla01212	15	1	0.3090897	ENSAPLG00020007737	ACSL5	101801834
Influenza A	path:apla05164	17	1	0.3424052	ENSAPLG00020017292	VDAC1	101803948
Inositol phosphate metabolism	path:apla00562	18	1	0.3584626	ENSAPLG00020001206	PLCD1	101796325
Wnt signaling pathway	path:apla04310	56	2	0.3970545	ENSAPLG00020008979	LGR4	101793537
Wnt signaling pathway	path:apla04310	56	2	0.3970545	ENSAPLG00020002732	MMP7	101793749
Phosphatidylinositol signaling system	path:apla04070	21	1	0.4043458	ENSAPLG00020001206	PLCD1	101796325
Cell adhesion molecules	path:apla04514	25	1	0.4605142	ENSAPLG00020012229	CLDN10	101792303
Glycerophospholipid metabolism	path:apla00564	26	1	0.4737178	ENSAPLG00020000790	CHKA	101790851
Necroptosis	path:apla04217	27	1	0.4866020	ENSAPLG00020017292	VDAC1	101803948
Vascular smooth muscle contraction	path:apla04270	30	1	0.5234135	ENSAPLG00020015958	MYL9	101799368
TGF-beta signaling pathway	path:apla04350	32	1	0.5464926	ENSAPLG00020009556	CDKN2A	113840168
Cell cycle	path:apla04110	36	1	0.5893877	ENSAPLG00020009556	CDKN2A	113840168
Biosynthesis of cofactors	path:apla01240	39	1	0.6189039	ENSAPLG00020014792	GGH	101790897
Focal adhesion	path:apla04510	42	1	0.6463216	ENSAPLG00020015958	MYL9	101799368
Insulin signaling pathway	path:apla04910	43	1	0.6550203	ENSAPLG00020016143	PCK1	101793637

Shed Level I1 - Bursa - Gene

Amanda Dolinski & Jared J. Homola

19 March, 2021

This is an analysis of differential expression at the gene level between low, moderate, and high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for bursa samples on 1 day post infection (DPI).

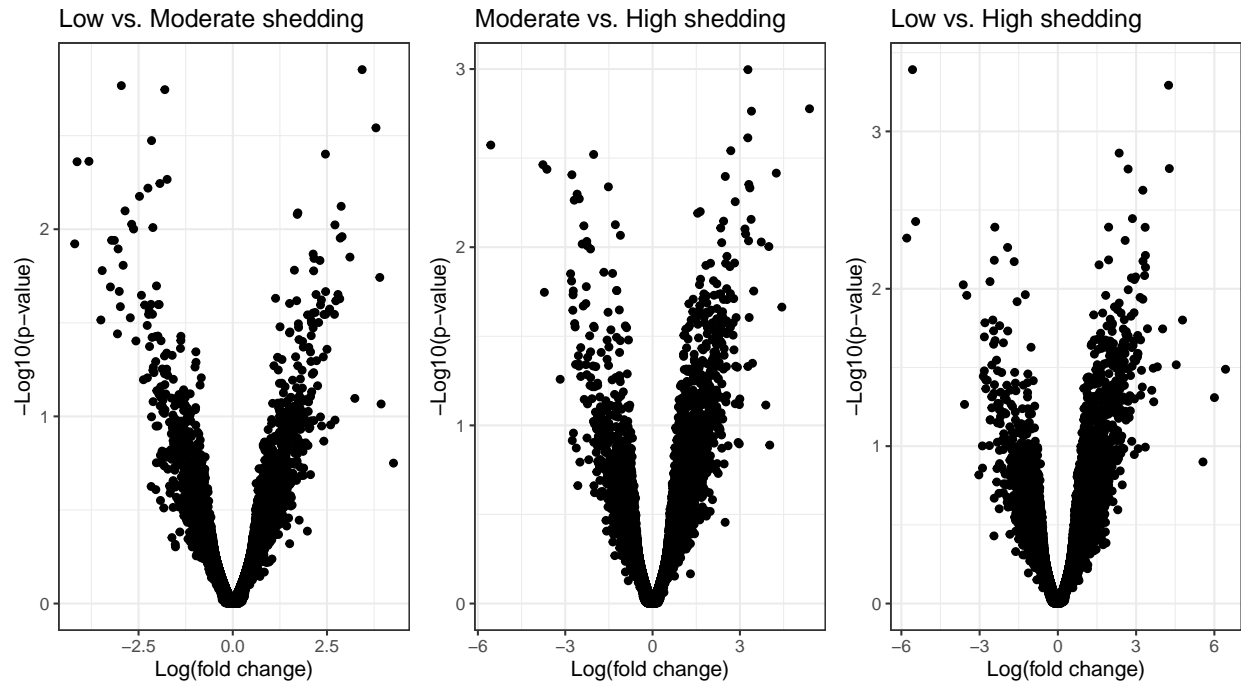
Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	0
Up	LvM	0
Down	MvH	0
Up	MvH	0
Down	LvH	0
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Shel Level I1 - Bursa - Trans

Amanda Dolinski & Jared J. Homola

19 March, 2021

This is an analysis of differential expression at the transcript level between low, moderate, and high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for bursa samples on 1 day post infection (DPI).

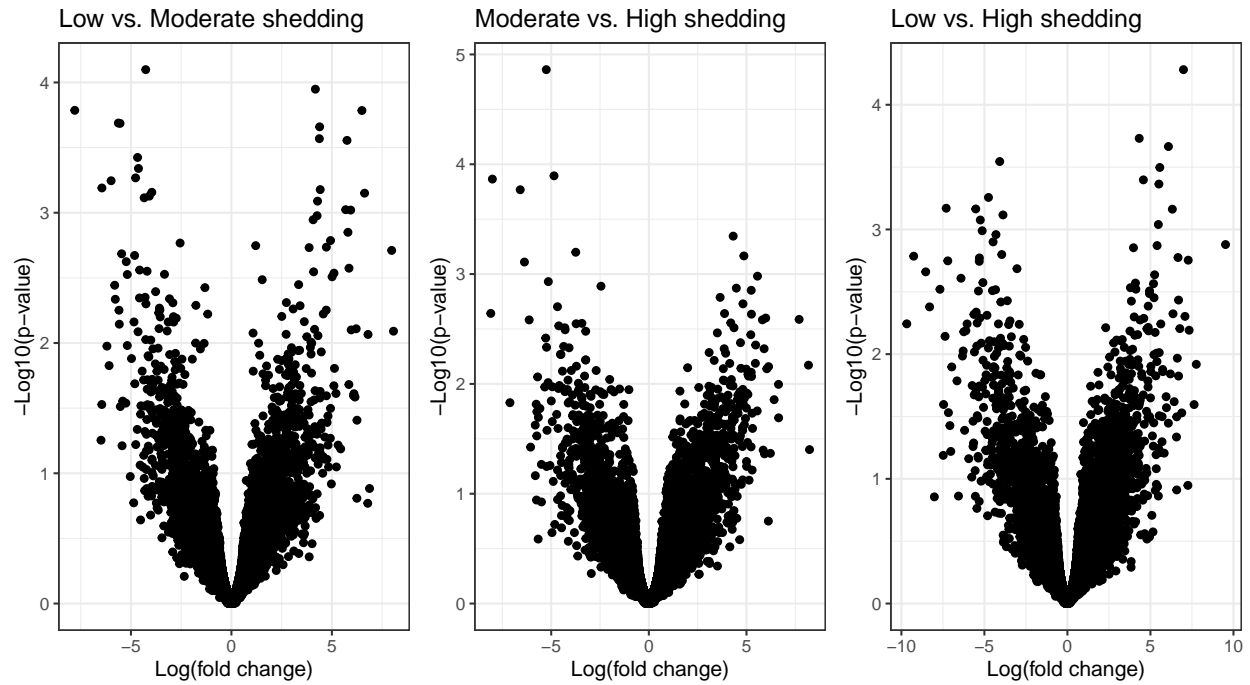
Differential expression analysis

Table 1: Count of DE transcripts: For a transcript to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	0
Up	LvM	0
Down	MvH	0
Up	MvH	0
Down	LvH	0
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Shed Level I2 (LvMvH) - Ileum - Gene

Amanda Dolinski & Jared J. Homola

20 March, 2021

This is an analysis of differential expression at the gene level between low, moderate, and high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for ileum samples on 2 days post infection (DPI).

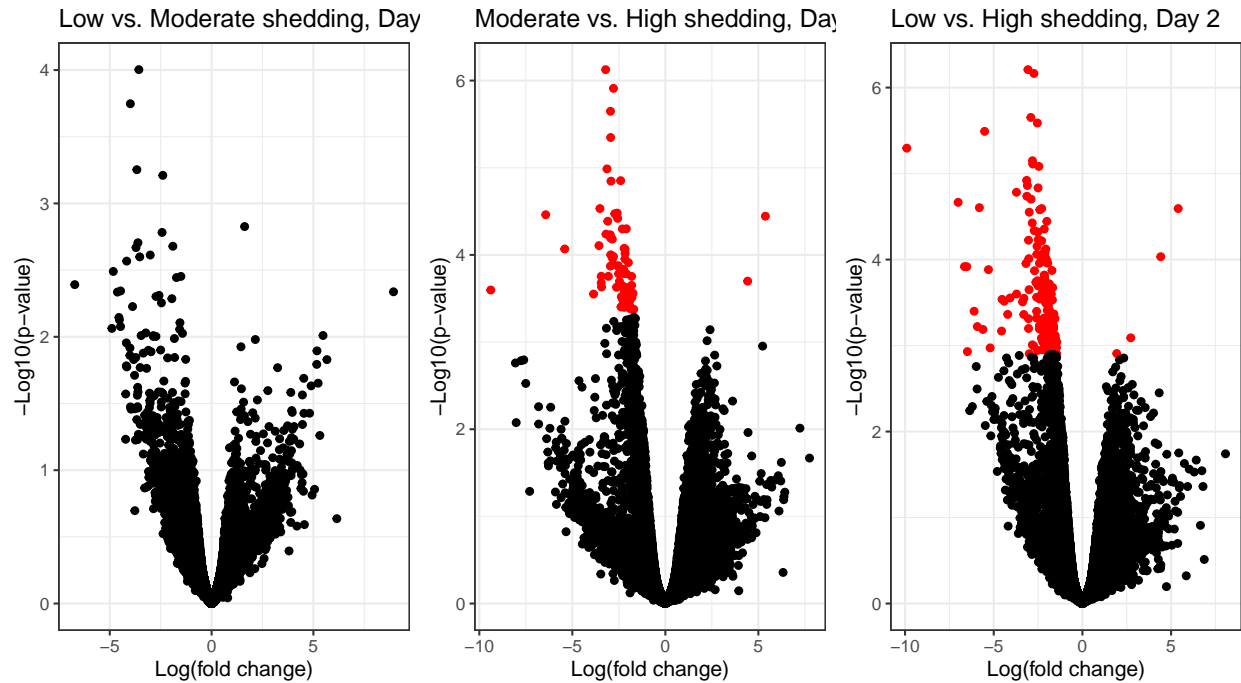
Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	0
Up	LvM	0
Down	MvH	72
Up	MvH	2
Down	LvH	179
Up	LvH	4

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Heatmap

Hierarchical clustering of transcripts/genes and samples. Shown is a heat map illustrating the relative expression levels of each transcript (rows) in each sample (column). Rows are hierarchically clustered by expression. Log2-transformed expression values are z-transformed.



Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference

ensembl_gene_id	hgnc_symbol	LvM.II	MvH.II	LvH.II
ENSAPLG00020003397	NA	ns	ns	-5.81
ENSAPLG00020010004	HBE1	ns	-2.79	ns
ENSAPLG00020018214	NA	ns	ns	-2.75
ENSAPLG00020016150	NA	ns	ns	-3.71
ENSAPLG00020007861	NA	ns	ns	-6.52
ENSAPLG00020017381	GAL3ST2	ns	ns	-6.48
ENSAPLG00020000083	EPSTI1	ns	ns	-5.61
ENSAPLG00020015505	NA	ns	-6.43	-4.41
ENSAPLG00020009161	NA	ns	-2.96	-1.8
ENSAPLG00020007786	NA	ns	-3.45	-2.29
ENSAPLG00020010743	NA	ns	ns	-4.56
ENSAPLG00020007115	UQCR10	ns	-1.82	ns
ENSAPLG00020013510	MSMB	ns	ns	-5.3
ENSAPLG00020002959	HOXB5	ns	ns	-2.25
ENSAPLG00020000181	NA	ns	ns	-5.93
ENSAPLG00020001280	COLEC10	ns	ns	-2.6
ENSAPLG00020015348	NA	ns	ns	-2.04
ENSAPLG00020016679	NA	ns	ns	-5.2
ENSAPLG00020016326	CZIB	ns	ns	-2.07
ENSAPLG00020000531	NA	ns	-2.51	-1.95
ENSAPLG00020014982	C1orf174	ns	ns	-2.41
ENSAPLG00020016057	SNRPE	ns	-3.86	-3.18
ENSAPLG00020006913	SLIRP	ns	-2.37	-1.83
ENSAPLG00020009577	ATG10	ns	ns	-2.31
ENSAPLG00020000633	NA	ns	ns	-3.31
ENSAPLG00020005368	HOXD10	ns	ns	-4.21
ENSAPLG00020005700	NHP2	ns	ns	-2.16
ENSAPLG00020010278	RPL29	ns	-3.57	-3.02
ENSAPLG00020001335	NA	ns	ns	-2.58
ENSAPLG00020017134	RPS8	ns	-1.99	ns
ENSAPLG00020007815	RAB8A	ns	-3.52	-3
ENSAPLG00020000220	GNPDA2	ns	-2.54	-2.03
ENSAPLG00020004318	NA	ns	ns	-6.1
ENSAPLG00020013192	NA	ns	ns	-3.04
ENSAPLG00020005132	RPL21	ns	-2.95	-2.46
ENSAPLG00020017163	SNRPG	ns	ns	-3.3
ENSAPLG00020014118	MRPS23	ns	-3.06	-2.58
ENSAPLG00020013395	SULF1	ns	ns	-1.79
ENSAPLG00020015268	RBM17	ns	ns	-1.63
ENSAPLG00020016388	ATP6V1G1	ns	ns	-1.72
ENSAPLG00020007056	SCARNA13	ns	ns	-3.37
ENSAPLG00020017924	NA	ns	ns	-3
ENSAPLG00020001435	NA	ns	ns	-6.65
ENSAPLG00020005407	ESF1	ns	ns	-1.82
ENSAPLG00020001937	NA	ns	ns	-7.01

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.II	MvH.II	LvH.II
ENSAPLG00020002410	NA	ns	-2.54	-2.14
ENSAPLG00020013162	NDUFA2	ns	-2.95	-2.57
ENSAPLG00020018382	FAM207A	ns	ns	-1.9
ENSAPLG00020007015	NA	ns	-2.16	-1.75
ENSAPLG00020001896	LIN7A	ns	ns	-2.82
ENSAPLG00020018412	NA	ns	-3.43	-3.04
ENSAPLG00020011227	CDK6	ns	ns	-2.17
ENSAPLG00020014809	SDHAF4	ns	ns	-2.07
ENSAPLG00020016899	NA	ns	-2.72	-2.35
ENSAPLG00020004385	CEP112	ns	-2.2	-1.85
ENSAPLG00020010967	PTMA	ns	ns	-1.93
ENSAPLG00020005936	NA	ns	-3.14	-2.81
ENSAPLG00020004637	SREK1IP1	ns	-3.45	-3.72
ENSAPLG00020013945	NA	ns	ns	-1.86
ENSAPLG00020000737	CCDC59	ns	ns	-2.24
ENSAPLG00020008708	MAK16	ns	ns	-2.17
ENSAPLG00020003653	NA	ns	ns	-2.42
ENSAPLG00020004137	NA	ns	-2.81	-2.55
ENSAPLG00020015168	AKAP8L	ns	ns	-1.97
ENSAPLG00020005013	SEPTIN11	ns	ns	-1.61
ENSAPLG00020001932	DNAJC2	ns	-2.21	-2.49
ENSAPLG00020016668	UQCC2	ns	ns	-2.58
ENSAPLG00020017673	NA	ns	ns	-3.01
ENSAPLG00020014025	NA	ns	-9.38	-9.9
ENSAPLG00020000200	SSBP1	ns	-2.27	-2.52
ENSAPLG00020001710	NA	ns	ns	-1.74
ENSAPLG00020013207	HSPD1	ns	ns	-2.06
ENSAPLG00020013457	MNS1	ns	ns	-2.41
ENSAPLG00020016079	NA	ns	ns	-4.08
ENSAPLG00020006588	S100A13	ns	-2.93	-3.14
ENSAPLG00020002520	HMGB3	ns	ns	-2.2
ENSAPLG00020014600	NA	ns	ns	-1.79
ENSAPLG00020001537	MRPS31	ns	-2.21	-1.95
ENSAPLG00020018148	RPL17-C18orf32	ns	-2.56	-2.3
ENSAPLG00020013276	MFF	ns	ns	-2.1
ENSAPLG00020017567	NA	ns	ns	-2.5
ENSAPLG00020008338	RRP15	ns	ns	-1.82
ENSAPLG00020016139	RBM38	ns	ns	-2.15
ENSAPLG00020006774	SNRPD1	ns	ns	-2.62
ENSAPLG00020014268	YTHDC1	ns	ns	-1.59
ENSAPLG00020011613	KLHL23	ns	ns	-2.06
ENSAPLG00020017703	GAL	ns	ns	-2.42
ENSAPLG00020004174	ATP5ME	ns	-2.05	-1.84
ENSAPLG00020013884	CALD1	ns	-2.47	-2.27
ENSAPLG00020013716	LUC7L3	ns	-2.08	-1.86

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.II	MvH.II	LvH.II
ENSAPLG00020006209	NA	ns	ns	-3.04
ENSAPLG00020008145	C6orf62	ns	ns	1.94
ENSAPLG00020000710	ZC3H13	ns	ns	-1.78
ENSAPLG00020003902	SURF6	ns	ns	-2.29
ENSAPLG00020011878	SEC61G	ns	ns	-2.19
ENSAPLG00020012120	PNO1	ns	-2.24	-2.4
ENSAPLG00020006850	SMC4	ns	ns	-1.71
ENSAPLG00020011218	SEC11A	ns	-2.83	-2.72
ENSAPLG00020017231	NSRP1	ns	-2.32	-2.15
ENSAPLG00020012047	CD83	ns	ns	-1.88
ENSAPLG00020002876	RPL35	ns	-1.7	-1.46
ENSAPLG00020015261	NA	ns	-2.95	-2.83
ENSAPLG00020013295	FABP7	ns	ns	-2.42
ENSAPLG00020003431	TMA16	ns	ns	-2.7
ENSAPLG00020015217	GNL3	ns	-2.01	-1.86
ENSAPLG00020001993	ST13	ns	ns	-1.71
ENSAPLG00020012928	IQCK	ns	-3.19	-3.1
ENSAPLG00020016540	NA	ns	-5.41	-5.51
ENSAPLG00020001697	EEF1B2	ns	ns	-1.64
ENSAPLG00020000116	HMGB2	ns	-2.92	-2.8
ENSAPLG00020001069	MED4	ns	ns	-1.76
ENSAPLG00020014649	RPL14	ns	-2.01	-1.86
ENSAPLG00020001127	SH3KBP1	ns	ns	-1.85
ENSAPLG00020000260	TPT1	ns	-1.81	-1.61
ENSAPLG00020004234	HNRNPH3	ns	-2.62	-2.53
ENSAPLG00020013030	RPS15A	ns	ns	-1.59
ENSAPLG00020011627	PPIG	ns	-1.98	-2.12
ENSAPLG00020014155	NA	ns	-1.74	-1.55
ENSAPLG00020017587	MACROH2A1	ns	ns	-2.02
ENSAPLG00020015758	METAP2	ns	ns	-1.53
ENSAPLG00020005086	CCNI	ns	ns	2.73
ENSAPLG00020003784	DNASE1L3	ns	ns	-2.26
ENSAPLG00020002757	TMEM123	ns	-2.4	-2.54
ENSAPLG00020014572	DNAJC8	ns	-2.02	-1.9
ENSAPLG00020017705	NA	ns	ns	-2.16
ENSAPLG00020016242	MRPS25	ns	-2.59	-2.5
ENSAPLG00020012926	RPL36	ns	-2.17	-2.05
ENSAPLG00020004926	C7orf25	ns	ns	-1.98
ENSAPLG00020000777	ATP6V1D	ns	ns	-2.23
ENSAPLG00020004302	RBBP6	ns	-1.9	-2.03
ENSAPLG00020010879	MRPS15	ns	ns	-1.98
ENSAPLG00020004933	NA	ns	-1.95	-1.85
ENSAPLG00020009267	DNAJC21	ns	ns	-1.84
ENSAPLG00020016502	NA	ns	ns	-1.94
ENSAPLG00020010584	STK4	ns	ns	-1.76

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.II	MvH.II	LvH.II
ENSAPLG00020007628	GOLIM4	ns	ns	-1.92
ENSAPLG00020006174	NA	ns	-2.2	-2.12
ENSAPLG00020000367	CCDC127	ns	ns	-2.07
ENSAPLG00020014477	NA	ns	-3.21	-3.07
ENSAPLG00020005213	CENPH	ns	ns	-2.53
ENSAPLG00020015119	NA	ns	-1.96	-1.87
ENSAPLG00020007838	NA	ns	-1.91	-2.01
ENSAPLG00020016202	NA	ns	ns	-1.9
ENSAPLG00020017656	HNRNPAB	ns	-1.81	-1.67
ENSAPLG00020004810	NA	ns	ns	-1.53
ENSAPLG00020008021	PHC3	ns	ns	-1.66
ENSAPLG00020000432	RPA3	ns	-2.85	-2.89
ENSAPLG00020011118	NA	ns	ns	-2.07
ENSAPLG00020012656	NA	ns	ns	-4.53
ENSAPLG00020000651	ITSN2	ns	-1.79	-1.69
ENSAPLG00020009491	NA	ns	-2.39	-2.42
ENSAPLG00020001984	RBX1	ns	-2.3	-2.34
ENSAPLG00020002314	BRD7	ns	ns	-1.62
ENSAPLG00020010505	LRPAP1	ns	-2.1	-2
ENSAPLG00020014346	BMS1	ns	ns	-1.77
ENSAPLG00020001752	NA	ns	ns	-1.81
ENSAPLG00020013148	NA	ns	ns	-1.72
ENSAPLG00020005721	LEO1	ns	ns	-1.46
ENSAPLG00020010330	NA	ns	-3.09	-3.13
ENSAPLG00020014437	CNTRL	ns	ns	-1.91
ENSAPLG00020015547	NA	ns	5.38	5.4
ENSAPLG00020016332	NA	ns	-2.06	-2.1
ENSAPLG00020017841	LRRFIP1	ns	ns	-1.68
ENSAPLG00020004175	NDUFAB1	ns	-1.87	-1.83
ENSAPLG00020003471	RBM25	ns	-2.1	-2.06
ENSAPLG00020004333	CCAR1	ns	ns	-1.53
ENSAPLG00020008201	SMC3	ns	ns	-1.66
ENSAPLG00020013608	SLTM	ns	ns	-1.93
ENSAPLG00020007784	HMG1	ns	ns	-1.81
ENSAPLG00020017723	NA	ns	ns	-1.44
ENSAPLG00020017133	NA	ns	-2.94	-2.91
ENSAPLG00020004162	HEXIM1	ns	-2.79	-2.73
ENSAPLG00020016978	NDUF10	ns	-2.31	-2.32
ENSAPLG00020017984	NA	ns	ns	-1.7
ENSAPLG00020015549	NA	ns	4.42	4.42
ENSAPLG00020004528	HMGB1	ns	ns	-1.6
ENSAPLG00020007776	NA	ns	-2.31	-2.29
ENSAPLG00020006871	CCNK	ns	-2.16	-2.15
ENSAPLG00020017534	GAR1	ns	ns	-2.09
ENSAPLG00020012649	PNISR	ns	ns	-1.55

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020004993	PRPF38B	ns	ns	-1.77
ENSAPLG00020012923	LMNB2	ns	ns	-1.63
ENSAPLG00020002715	NA	ns	ns	-1.67
ENSAPLG00020008730	SDE2	ns	ns	-1.72
ENSAPLG00020016535	ZRSR2	ns	ns	-1.65
ENSAPLG00020001134	HNRNPA2B1	ns	-2.25	-2.25

Table 3: Gene functions

	gene_biotype	hgnc_symbol	description
ENSAPLG00020003397	lncRNA	NA	NA
ENSAPLG00020010004	protein_coding	HBE1	hemoglobin subunit rho [Source:NCBI gene;Acc:101798111]
ENSAPLG00020018214	protein_coding	NA	NA
ENSAPLG00020016150	protein_coding	NA	NA
ENSAPLG00020007861	protein_coding	NA	ribosomal protein L23 [Source:NCBI gene;Acc:101793494]
ENSAPLG00020017381	protein_coding	GAL3ST2	galactose-3-O-sulfotransferase 2 [Source:HGNC Symbol;Acc:HGNC:24869]
ENSAPLG00020000083	protein_coding	EPSTI1	epithelial stromal interaction 1 [Source:HGNC Symbol;Acc:HGNC:16465]
ENSAPLG00020015505	protein_coding	NA	NA
ENSAPLG00020009161	protein_coding	NA	NA
ENSAPLG00020007786	protein_coding	NA	lymphotactin [Source:NCBI gene;Acc:101802825]
ENSAPLG00020010743	snoRNA	NA	NA
ENSAPLG00020007115	protein_coding	UQCR10	ubiquinol-cytochrome c reductase, complex III subunit X [Source:HGNC Symbol;Acc:HGNC:30863]
ENSAPLG00020013510	protein_coding	MSMB	beta-microseminoprotein-like [Source:NCBI gene;Acc:101795539]
ENSAPLG00020002959	protein_coding	HOXB5	homeobox B5 [Source:NCBI gene;Acc:101798635]
ENSAPLG00020000181	protein_coding	NA	NA
ENSAPLG00020001280	protein_coding	COLEC10	collectin subfamily member 10 [Source:HGNC Symbol;Acc:HGNC:2220]
ENSAPLG00020015348	protein_coding	NA	NA
ENSAPLG00020016679	protein_coding	NA	NA
ENSAPLG00020016326	protein_coding	CZIB	CXXC motif containing zinc binding protein [Source:NCBI gene;Acc:101802639]
ENSAPLG00020000531	protein_coding	NA	NA
ENSAPLG00020014982	protein_coding	C1orf174	chromosome 1 open reading frame 174 [Source:HGNC Symbol;Acc:HGNC:27915]
ENSAPLG00020016057	protein_coding	SNRPE	small nuclear ribonucleoprotein polypeptide E [Source:HGNC Symbol;Acc:HGNC:11161]
ENSAPLG00020006913	protein_coding	SLIRP	SRA stem-loop interacting RNA binding protein [Source:HGNC Symbol;Acc:HGNC:20495]
ENSAPLG00020009577	protein_coding	ATG10	autophagy related 10 [Source:HGNC Symbol;Acc:HGNC:20315]
ENSAPLG00020000633	protein_coding	NA	granulocyte-macrophage colony-stimulating factor receptor subunit alpha [Source:NCBI gene;Acc:101793812]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020005368	protein_coding	HOXD10	homeobox D10 [Source:NCBI gene;Acc:101802231]
ENSAPLG00020005700	protein_coding	NHP2	NHP2 ribonucleoprotein [Source:HGNC Symbol;Acc:HGNC:14377]
ENSAPLG00020010278	protein_coding	RPL29	ribosomal protein L29 [Source:HGNC Symbol;Acc:HGNC:10331]
ENSAPLG00020001335	protein_coding	NA	NA
ENSAPLG00020017134	protein_coding	RPS8	ribosomal protein S8 [Source:NCBI gene;Acc:101797133]
ENSAPLG00020007815	protein_coding	RAB8A	RAB8A, member RAS oncogene family [Source:NCBI gene;Acc:101791620]
ENSAPLG00020000220	protein_coding	GNPDA2	glucosamine-6-phosphate deaminase 2 [Source:NCBI gene;Acc:101800556]
ENSAPLG00020004318	snoRNA	NA	NA
ENSAPLG00020013192	protein_coding	NA	NA
ENSAPLG00020005132	protein_coding	RPL21	ribosomal protein L21 [Source:NCBI gene;Acc:101802323]
ENSAPLG00020017163	protein_coding	SNRPG	small nuclear ribonucleoprotein polypeptide G [Source:HGNC Symbol;Acc:HGNC:11163]
ENSAPLG00020014118	protein_coding	MRPS23	mitochondrial ribosomal protein S23 [Source:HGNC Symbol;Acc:HGNC:14509]
ENSAPLG00020013395	protein_coding	SULF1	sulfatase 1 [Source:NCBI gene;Acc:101802299]
ENSAPLG00020015268	protein_coding	RBM17	RNA binding motif protein 17 [Source:NCBI gene;Acc:101791010]
ENSAPLG00020016388	protein_coding	ATP6V1G1	ATPase H ⁺ transporting V1 subunit G1 [Source:NCBI gene;Acc:101792649]
ENSAPLG00020007056	scaRNA	SCARNA13	small Cajal body-specific RNA 13 [Source:HGNC Symbol;Acc:HGNC:32570]
ENSAPLG00020017924	protein_coding	NA	NA
ENSAPLG00020001435	protein_coding	NA	NA
ENSAPLG00020005407	protein_coding	ESF1	ESF1 nucleolar pre-rRNA processing protein homolog [Source:HGNC Symbol;Acc:HGNC:15898]
ENSAPLG00020001937	snoRNA	NA	small nucleolar RNA, C/D box 89 [Source:HGNC Symbol;Acc:HGNC:32750]
ENSAPLG00020002410	protein_coding	NA	NA
ENSAPLG00020013162	protein_coding	NDUFA2	NADH:ubiquinone oxidoreductase subunit A2 [Source:NCBI gene;Acc:101798419]
ENSAPLG00020018382	protein_coding	FAM207A	family with sequence similarity 207 member A [Source:HGNC Symbol;Acc:HGNC:15811]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020007015	protein_coding	NA	NA
ENSAPLG00020001896	protein_coding	LIN7A	lin-7 homolog A, crumbs cell polarity complex component [Source:HGNC Symbol;Acc:HGNC:17787]
ENSAPLG00020018412	protein_coding	NA	NA
ENSAPLG00020011227	protein_coding	CDK6	cyclin dependent kinase 6 [Source:HGNC Symbol;Acc:HGNC:1777]
ENSAPLG00020014809	protein_coding	SDHAF4	succinate dehydrogenase complex assembly factor 4 [Source:NCBI gene;Acc:101798652]
ENSAPLG00020016899	protein_coding	NA	NA
ENSAPLG00020004385	protein_coding	CEP112	centrosomal protein 112 [Source:NCBI gene;Acc:101799665]
ENSAPLG00020010967	protein_coding	PTMA	prothymosin alpha [Source:NCBI gene;Acc:101805158]
ENSAPLG00020005936	protein_coding	NA	NA
ENSAPLG00020004637	protein_coding	SREK1IP1	SREK1 interacting protein 1 [Source:HGNC Symbol;Acc:HGNC:26716]
ENSAPLG00020013945	protein_coding	NA	NA
ENSAPLG00020000737	protein_coding	CCDC59	coiled-coil domain containing 59 [Source:HGNC Symbol;Acc:HGNC:25005]
ENSAPLG00020008708	protein_coding	MAK16	MAK16 homolog [Source:HGNC Symbol;Acc:HGNC:13703]
ENSAPLG00020003653	protein_coding	NA	NA
ENSAPLG00020004137	protein_coding	NA	NA
ENSAPLG00020015168	protein_coding	AKAP8L	A-kinase anchoring protein 8 like [Source:HGNC Symbol;Acc:HGNC:29857]
ENSAPLG00020005013	protein_coding	SEPTIN11	septin 11 [Source:NCBI gene;Acc:101790998]
ENSAPLG00020001932	protein_coding	DNAJC2	DnaJ heat shock protein family (Hsp40) member C2 [Source:NCBI gene;Acc:101791264]
ENSAPLG00020016668	protein_coding	UQCC2	ubiquinol-cytochrome-c reductase complex assembly factor 2 [Source:NCBI gene;Acc:101789867]
ENSAPLG00020017673	lncRNA	NA	NA
ENSAPLG00020014025	snoRNA	NA	NA
ENSAPLG00020000200	protein_coding	SSBP1	single stranded DNA binding protein 1 [Source:NCBI gene;Acc:101801333]
ENSAPLG00020001710	protein_coding	NA	NA
ENSAPLG00020013207	protein_coding	HSPD1	heat shock protein family D (Hsp60) member 1 [Source:HGNC Symbol;Acc:HGNC:5261]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020013457	protein_coding	MNS1	meiosis specific nuclear structural 1 [Source:HGNC Symbol;Acc:HGNC:29636]
ENSAPLG00020016079	protein_coding	NA	NA
ENSAPLG00020006588	protein_coding	S100A13	S100 calcium binding protein A13 [Source:HGNC Symbol;Acc:HGNC:10490]
ENSAPLG00020002520	protein_coding	HMGB3	high mobility group box 3 [Source:NCBI gene;Acc:101802179]
ENSAPLG00020014600	protein_coding	NA	NA
ENSAPLG00020001537	protein_coding	MRPS31	mitochondrial ribosomal protein S31 [Source:NCBI gene;Acc:101793760]
ENSAPLG00020018148	protein_coding	RPL17-C18orf32	60S ribosomal protein L17 [Source:NCBI gene;Acc:101799070]
ENSAPLG00020013276	protein_coding	MFF	mitochondrial fission factor [Source:NCBI gene;Acc:101797795]
ENSAPLG00020017567	lncRNA	NA	NA
ENSAPLG00020008338	protein_coding	RRP15	ribosomal RNA processing 15 homolog [Source:HGNC Symbol;Acc:HGNC:24255]
ENSAPLG00020016139	protein_coding	RBM38	RNA binding motif protein 38 [Source:NCBI gene;Acc:101789447]
ENSAPLG00020006774	protein_coding	SNRPD1	small nuclear ribonucleoprotein D1 polypeptide [Source:HGNC Symbol;Acc:HGNC:11158]
ENSAPLG00020014268	protein_coding	YTHDC1	YTH domain containing 1 [Source:HGNC Symbol;Acc:HGNC:30626]
ENSAPLG00020011613	protein_coding	KLHL23	kelch like family member 23 [Source:HGNC Symbol;Acc:HGNC:27506]
ENSAPLG00020017703	protein_coding	GAL	galanin and GMAP prepropeptide [Source:NCBI gene;Acc:101799195]
ENSAPLG00020004174	protein_coding	ATP5ME	ATP synthase membrane subunit e [Source:HGNC Symbol;Acc:HGNC:846]
ENSAPLG00020013884	protein_coding	CALD1	caldesmon 1 [Source:NCBI gene;Acc:101804696]
ENSAPLG00020013716	protein_coding	LUC7L3	LUC7 like 3 pre-mRNA splicing factor [Source:NCBI gene;Acc:101805320]
ENSAPLG00020006209	lncRNA	NA	NA
ENSAPLG00020008145	protein_coding	C6orf62	chromosome 2 C6orf62 homolog [Source:NCBI gene;Acc:101789548]
ENSAPLG00020000710	protein_coding	ZC3H13	zinc finger CCCH-type containing 13 [Source:NCBI gene;Acc:101790300]
ENSAPLG00020003902	protein_coding	SURF6	surfeit 6 [Source:HGNC Symbol;Acc:HGNC:11478]
ENSAPLG00020011878	protein_coding	SEC61G	SEC61 translocon subunit gamma [Source:HGNC Symbol;Acc:HGNC:18277]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020012120	protein_coding	PNO1	partner of NOB1 homolog [Source:HGNC Symbol;Acc:HGNC:32790]
ENSAPLG00020006850	protein_coding	SMC4	structural maintenance of chromosomes 4 [Source:NCBI gene;Acc:101803192]
ENSAPLG00020011218	protein_coding	SEC11A	SEC11 homolog A, signal peptidase complex subunit [Source:HGNC Symbol;Acc:HGNC:17718]
ENSAPLG00020017231	protein_coding	NSRP1	nuclear speckle splicing regulatory protein 1 [Source:HGNC Symbol;Acc:HGNC:25305]
ENSAPLG00020012047	protein_coding	CD83	CD83 molecule [Source:HGNC Symbol;Acc:HGNC:1703]
ENSAPLG00020002876	protein_coding	RPL35	ribosomal protein L35 [Source:NCBI gene;Acc:101801991]
ENSAPLG00020015261	protein_coding	NA	podocalyxin like [Source:HGNC Symbol;Acc:HGNC:9171]
ENSAPLG00020013295	protein_coding	FABP7	fatty acid binding protein 7 [Source:HGNC Symbol;Acc:HGNC:3562]
ENSAPLG00020003431	protein_coding	TMA16	translation machinery associated 16 homolog [Source:HGNC Symbol;Acc:HGNC:25638]
ENSAPLG00020015217	protein_coding	GNL3	G protein nucleolar 3 [Source:HGNC Symbol;Acc:HGNC:29931]
ENSAPLG00020001993	protein_coding	ST13	ST13 Hsp70 interacting protein [Source:NCBI gene;Acc:101796439]
ENSAPLG00020012928	protein_coding	IQCK	IQ motif containing K [Source:HGNC Symbol;Acc:HGNC:28556]
ENSAPLG00020016540	lncRNA	NA	NA
ENSAPLG00020001697	protein_coding	EEF1B2	eukaryotic translation elongation factor 1 beta 2 [Source:HGNC Symbol;Acc:HGNC:3208]
ENSAPLG00020000116	protein_coding	HMGB2	high mobility group box 2 [Source:NCBI gene;Acc:101798886]
ENSAPLG00020001069	protein_coding	MED4	mediator complex subunit 4 [Source:HGNC Symbol;Acc:HGNC:17903]
ENSAPLG00020014649	protein_coding	RPL14	ribosomal protein L14 [Source:HGNC Symbol;Acc:HGNC:10305]
ENSAPLG00020001127	protein_coding	SH3KBP1	SH3 domain containing kinase binding protein 1 [Source:HGNC Symbol;Acc:HGNC:13867]
ENSAPLG00020000260	protein_coding	TPT1	tumor protein, translationally-controlled 1 [Source:NCBI gene;Acc:101801417]
ENSAPLG00020004234	protein_coding	HNRNPH3	heterogeneous nuclear ribonucleoprotein H3 [Source:HGNC Symbol;Acc:HGNC:5043]
ENSAPLG00020013030	protein_coding	RPS15A	ribosomal protein S15a [Source:HGNC Symbol;Acc:HGNC:10389]
ENSAPLG00020011627	protein_coding	PPIG	peptidylprolyl isomerase G [Source:NCBI gene;Acc:101795716]
ENSAPLG00020014155	protein_coding	NA	forkhead box P1 [Source:NCBI gene;Acc:101793751]
ENSAPLG00020017587	protein_coding	MACROH2A1	core histone macro-H2A.1 [Source:NCBI gene;Acc:101795967]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020015758	protein_coding	METAP2	methionyl aminopeptidase 2 [Source:HGNC Symbol;Acc:HGNC:16672]
ENSAPLG00020005086	protein_coding	CCNI	cyclin I [Source:HGNC Symbol;Acc:HGNC:1595]
ENSAPLG00020003784	protein_coding	DNASE1L3	deoxyribonuclease 1 like 3 [Source:HGNC Symbol;Acc:HGNC:2959]
ENSAPLG00020002757	protein_coding	TMEM123	transmembrane protein 123 [Source:HGNC Symbol;Acc:HGNC:30138]
ENSAPLG00020014572	protein_coding	DNAJC8	DnaJ heat shock protein family (Hsp40) member C8 [Source:NCBI gene;Acc:101795020]
ENSAPLG00020017705	protein_coding	NA	NA
ENSAPLG00020016242	protein_coding	MRPS25	mitochondrial ribosomal protein S25 [Source:NCBI gene;Acc:101797514]
ENSAPLG00020012926	protein_coding	RPL36	ribosomal protein L36 [Source:HGNC Symbol;Acc:HGNC:13631]
ENSAPLG00020004926	protein_coding	C7orf25	chromosome 2 C7orf25 homolog [Source:NCBI gene;Acc:101794594]
ENSAPLG00020000777	protein_coding	ATP6V1D	ATPase H+ transporting V1 subunit D [Source:NCBI gene;Acc:101792552]
ENSAPLG00020004302	protein_coding	RBBP6	RB binding protein 6, ubiquitin ligase [Source:HGNC Symbol;Acc:HGNC:9889]
ENSAPLG00020010879	protein_coding	MRPS15	mitochondrial ribosomal protein S15 [Source:HGNC Symbol;Acc:HGNC:14504]
ENSAPLG00020004933	protein_coding	NA	proteasome 20S subunit alpha 2 [Source:NCBI gene;Acc:101798370]
ENSAPLG00020009267	protein_coding	DNAJC21	DnaJ heat shock protein family (Hsp40) member C21 [Source:HGNC Symbol;Acc:HGNC:27030]
ENSAPLG00020016502	protein_coding	NA	mitochondrial contact site and cristae organizing system subunit 10 [Source:HGNC Symbol;Acc:HGNC:32068]
ENSAPLG00020010584	protein_coding	STK4	serine/threonine kinase 4 [Source:HGNC Symbol;Acc:HGNC:11408]
ENSAPLG00020007628	protein_coding	GOLIM4	golgi integral membrane protein 4 [Source:NCBI gene;Acc:101794073]
ENSAPLG00020006174	protein_coding	NA	NA
ENSAPLG00020000367	protein_coding	CCDC127	coiled-coil domain containing 127 [Source:HGNC Symbol;Acc:HGNC:30520]
ENSAPLG00020014477	protein_coding	NA	NA
ENSAPLG00020005213	protein_coding	CENPH	centromere protein H [Source:HGNC Symbol;Acc:HGNC:17268]
ENSAPLG00020015119	protein_coding	NA	cyclin dependent kinase 11A [Source:NCBI gene;Acc:101804863]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020007838	protein_coding	NA	scaffold attachment factor B1 [Source:NCBI gene;Acc:101803767]
ENSAPLG00020016202	protein_coding	NA	ribosomal protein L32 [Source:NCBI gene;Acc:101792873]
ENSAPLG00020017656	protein_coding	HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B [Source:HGNC Symbol;Acc:HGNC:5034]
ENSAPLG00020004810	protein_coding	NA	NA
ENSAPLG00020008021	protein_coding	PHC3	polyhomeotic homolog 3 [Source:HGNC Symbol;Acc:HGNC:15682]
ENSAPLG00020000432	protein_coding	RPA3	replication protein A3 [Source:NCBI gene;Acc:101797991]
ENSAPLG00020011118	protein_coding	NA	NA
ENSAPLG00020012656	snoRNA	NA	NA
ENSAPLG00020000651	protein_coding	ITSN2	intersectin 2 [Source:HGNC Symbol;Acc:HGNC:6184]
ENSAPLG00020009491	protein_coding	NA	NA
ENSAPLG00020001984	protein_coding	RBX1	ring-box 1 [Source:NCBI gene;Acc:101796040]
ENSAPLG00020002314	protein_coding	BRD7	bromodomain containing 7 [Source:NCBI gene;Acc:101793901]
ENSAPLG00020010505	protein_coding	LRPAP1	LDL receptor related protein associated protein 1 [Source:HGNC Symbol;Acc:HGNC:6701]
ENSAPLG00020014346	protein_coding	BMS1	BMS1 ribosome biogenesis factor [Source:HGNC Symbol;Acc:HGNC:23505]
ENSAPLG00020001752	protein_coding	NA	NA
ENSAPLG00020013148	protein_coding	NA	NA
ENSAPLG00020005721	protein_coding	LEO1	LEO1 homolog, Paf1/RNA polymerase II complex component [Source:NCBI gene;Acc:101792546]
ENSAPLG00020010330	protein_coding	NA	NA
ENSAPLG00020014437	protein_coding	CNTRL	centriolin [Source:HGNC Symbol;Acc:HGNC:1858]
ENSAPLG00020015547	rRNA	NA	NA
ENSAPLG00020016332	protein_coding	NA	NA
ENSAPLG00020017841	protein_coding	LRRFIP1	LRR binding FLII interacting protein 1 [Source:HGNC Symbol;Acc:HGNC:6702]
ENSAPLG00020004175	protein_coding	NDUFAB1	NADH:ubiquinone oxidoreductase subunit AB1 [Source:NCBI gene;Acc:106016795]
ENSAPLG00020003471	protein_coding	RBM25	RNA binding motif protein 25 [Source:HGNC Symbol;Acc:HGNC:23244]
ENSAPLG00020004333	protein_coding	CCAR1	cell division cycle and apoptosis regulator 1 [Source:HGNC Symbol;Acc:HGNC:24236]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020008201	protein_coding	SMC3	structural maintenance of chromosomes 3 [Source:NCBI gene;Acc:101804870]
ENSAPLG00020013608	protein_coding	SLTM	SAFB like transcription modulator [Source:HGNC Symbol;Acc:HGNC:20709]
ENSAPLG00020007784	protein_coding	HMGN1	high mobility group nucleosome binding domain 1 [Source:HGNC Symbol;Acc:HGNC:4984]
ENSAPLG00020017723	protein_coding	NA	NA
ENSAPLG00020017133	protein_coding	NA	60S ribosomal protein L36a [Source:NCBI gene;Acc:101801033]
ENSAPLG00020004162	protein_coding	HEXIM1	HEXIM P-TFb complex subunit 1 [Source:HGNC Symbol;Acc:HGNC:24953]
ENSAPLG00020016978	protein_coding	NDUFB10	NADH:ubiquinone oxidoreductase subunit B10 [Source:HGNC Symbol;Acc:HGNC:7696]
ENSAPLG00020017984	protein_coding	NA	NA
ENSAPLG00020015549	rRNA	NA	NA
ENSAPLG00020004528	protein_coding	HMGB1	high mobility group box 1 [Source:NCBI gene;Acc:101797353]
ENSAPLG00020007776	protein_coding	NA	NA
ENSAPLG00020006871	protein_coding	CCNK	cyclin K [Source:HGNC Symbol;Acc:HGNC:1596]
ENSAPLG00020017534	protein_coding	GAR1	GAR1 ribonucleoprotein [Source:HGNC Symbol;Acc:HGNC:14264]
ENSAPLG00020012649	protein_coding	PNISR	PNN interacting serine and arginine rich protein [Source:NCBI gene;Acc:101802814]
ENSAPLG00020004993	protein_coding	PRPF38B	pre-mRNA processing factor 38B [Source:NCBI gene;Acc:101794269]
ENSAPLG00020012923	protein_coding	LMNB2	lamin B2 [Source:NCBI gene;Acc:101791346]
ENSAPLG00020002715	protein_coding	NA	small nuclear ribonucleoprotein D3 polypeptide [Source:NCBI gene;Acc:101800642]
ENSAPLG00020008730	protein_coding	SDE2	SDE2 telomere maintenance homolog [Source:HGNC Symbol;Acc:HGNC:26643]
ENSAPLG00020016535	protein_coding	ZRSR2	zinc finger CCH-type, RNA binding motif and serine/arginine rich 2 [Source:HGNC Symbol;Acc:HGNC:23019]
ENSAPLG00020001134	protein_coding	HNRNPA2B1	heterogeneous nuclear ribonucleoprotein A2/B1 [Source:NCBI gene;Acc:101789543]

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Ribosome	path:apla03010	47	5	0.0006810	ENSAPLG00020016202	NA	101792873
Ribosome	path:apla03010	47	5	0.0006810	ENSAPLG00020007861	NA	101793494
Ribosome	path:apla03010	47	5	0.0006810	ENSAPLG00020007953	RPL23	101793494
Ribosome	path:apla03010	47	5	0.0006810	ENSAPLG00020017134	RPS8	101797133
Ribosome	path:apla03010	47	5	0.0006810	ENSAPLG00020018148	RPL17-C18orf32	101799070
Ribosome	path:apla03010	47	5	0.0006810	ENSAPLG00020017133	NA	101801033
Ribosome	path:apla03010	47	5	0.0006810	ENSAPLG00020002876	RPL35	101801991
Ribosome	path:apla03010	47	5	0.0006810	ENSAPLG00020005132	RPL21	101802323
Oxidative phosphorylation	path:apla00190	28	4	0.0007894	ENSAPLG00020000777	ATP6V1D	101792552
Oxidative phosphorylation	path:apla00190	28	4	0.0007894	ENSAPLG00020016388	ATP6V1G1	101792649
Oxidative phosphorylation	path:apla00190	28	4	0.0007894	ENSAPLG00020013162	NDUFA2	101798419
Oxidative phosphorylation	path:apla00190	28	4	0.0007894	ENSAPLG00020004175	NDUFAB1	106016795
DNA replication	path:apla03030	7	2	0.0046750	ENSAPLG00020000432	RPA3	101797991
DNA replication	path:apla03030	7	2	0.0046750	ENSAPLG00020000200	SSBP1	101801333
Mismatch repair	path:apla03430	7	2	0.0046750	ENSAPLG00020000432	RPA3	101797991
Mismatch repair	path:apla03430	7	2	0.0046750	ENSAPLG00020000200	SSBP1	101801333
Homologous recombination	path:apla03440	11	2	0.0117687	ENSAPLG00020000432	RPA3	101797991
Homologous recombination	path:apla03440	11	2	0.0117687	ENSAPLG00020000200	SSBP1	101801333
Nucleotide excision repair	path:apla03420	12	2	0.0139837	ENSAPLG00020001984	RBX1	101796040
Nucleotide excision repair	path:apla03420	12	2	0.0139837	ENSAPLG00020000432	RPA3	101797991
Base excision repair	path:apla03410	4	1	0.0603596	ENSAPLG00020004528	HMGB1	101797353
Necroptosis	path:apla04217	27	2	0.0642174	ENSAPLG00020017587	MACROH2A1	101795967
Necroptosis	path:apla04217	27	2	0.0642174	ENSAPLG00020004528	HMGB1	101797353
Phagosome	path:apla04145	28	2	0.0684900	ENSAPLG00020000777	ATP6V1D	101792552
Phagosome	path:apla04145	28	2	0.0684900	ENSAPLG00020016388	ATP6V1G1	101792649
Spliceosome	path:apla03040	32	2	0.0864619	ENSAPLG00020015268	RBM17	101791010
Spliceosome	path:apla03040	32	2	0.0864619	ENSAPLG00020004993	PRPF38B	101794269
Spliceosome	path:apla03040	32	2	0.0864619	ENSAPLG00020002715	NA	101800642
Cell cycle	path:apla04110	36	2	0.1056746	ENSAPLG00020001984	RBX1	101796040
Cell cycle	path:apla04110	36	2	0.1056746	ENSAPLG00020008201	SMC3	101804870
Oocyte meiosis	path:apla04114	37	2	0.1106468	ENSAPLG00020001984	RBX1	101796040

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts (*continued*)

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Oocyte meiosis	path:apla04114	37	2	0.1106468	ENSAPLG00020008201	SMC3	101804870
Autophagy - animal	path:apla04140	44	2	0.1470069	ENSAPLG00020007815	RAB8A	101791620
Autophagy - animal	path:apla04140	44	2	0.1470069	ENSAPLG00020004528	HMGB1	101797353
mTOR signaling pathway	path:apla04150	47	2	0.1632725	ENSAPLG00020000777	ATP6V1D	101792552
mTOR signaling pathway	path:apla04150	47	2	0.1632725	ENSAPLG00020016388	ATP6V1G1	101792649
Amino sugar and nucleotide sugar metabolism	path:apla00520	14	1	0.1960499	ENSAPLG00020000220	GNPDA2	101800556
Fanconi anemia pathway	path:apla03460	14	1	0.1960499	ENSAPLG00020000432	RPA3	101797991
Vascular smooth muscle contraction	path:apla04270	30	1	0.3741814	ENSAPLG00020013884	CALD1	101804696
TGF-beta signaling pathway	path:apla04350	32	1	0.3935216	ENSAPLG00020001984	RBX1	101796040
Apoptosis	path:apla04210	34	1	0.4122748	ENSAPLG00020012923	LMNB2	101791346
Protein processing in endoplasmic reticulum	path:apla04141	35	1	0.4214368	ENSAPLG00020001984	RBX1	101796040
Ubiquitin mediated proteolysis	path:apla04120	43	1	0.4898579	ENSAPLG00020001984	RBX1	101796040
Tight junction	path:apla04530	46	1	0.5134125	ENSAPLG00020007815	RAB8A	101791620
Metabolic pathways	path:apla01100	328	5	0.5810606	ENSAPLG00020000777	ATP6V1D	101792552
Metabolic pathways	path:apla01100	328	5	0.5810606	ENSAPLG00020016388	ATP6V1G1	101792649
Metabolic pathways	path:apla01100	328	5	0.5810606	ENSAPLG00020013162	NDUFA2	101798419
Metabolic pathways	path:apla01100	328	5	0.5810606	ENSAPLG00020000220	GNPDA2	101800556
Metabolic pathways	path:apla01100	328	5	0.5810606	ENSAPLG00020004175	NDUFAB1	106016795
Wnt signaling pathway	path:apla04310	56	1	0.5844755	ENSAPLG00020001984	RBX1	101796040
Endocytosis	path:apla04144	63	1	0.6280521	ENSAPLG00020007815	RAB8A	101791620
Neuroactive ligand-receptor interaction	path:apla04080	88	1	0.7500609	ENSAPLG00020017703	GAL	101799195

Shed Level I2 (LvMvH) - Bursa - Gene

Amanda Dolinski & Jared J. Homola

20 March, 2021

This is an analysis of differential expression at the gene level between between low, moderate, and high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for bursa samples on 2 days post infection (DPI).

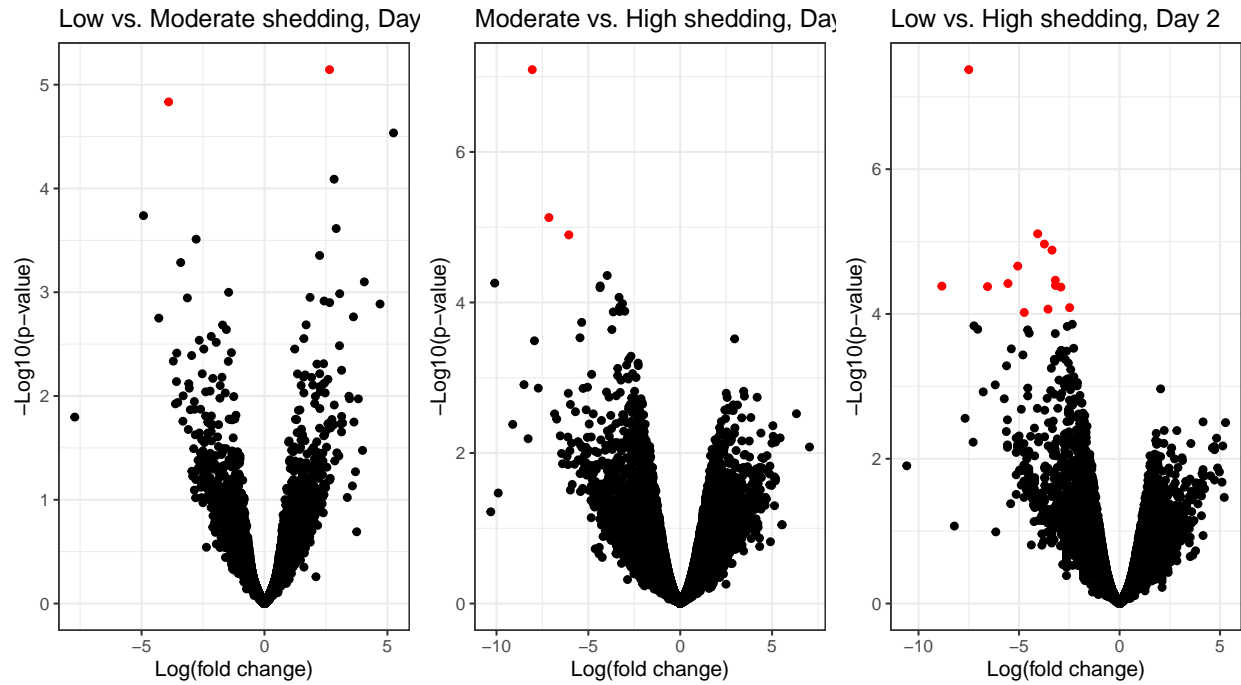
Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	1
Up	LvM	1
Down	MvH	3
Up	MvH	0
Down	LvH	14
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples ($\log_{2}\text{FC}$, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Heatmap

Hierarchical clustering of transcripts/genes and samples. Shown is a heat map illustrating the relative expression levels of each transcript (rows) in each sample (column). Rows are hierarchically clustered by expression. Log2-transformed expression values are z-transformed.

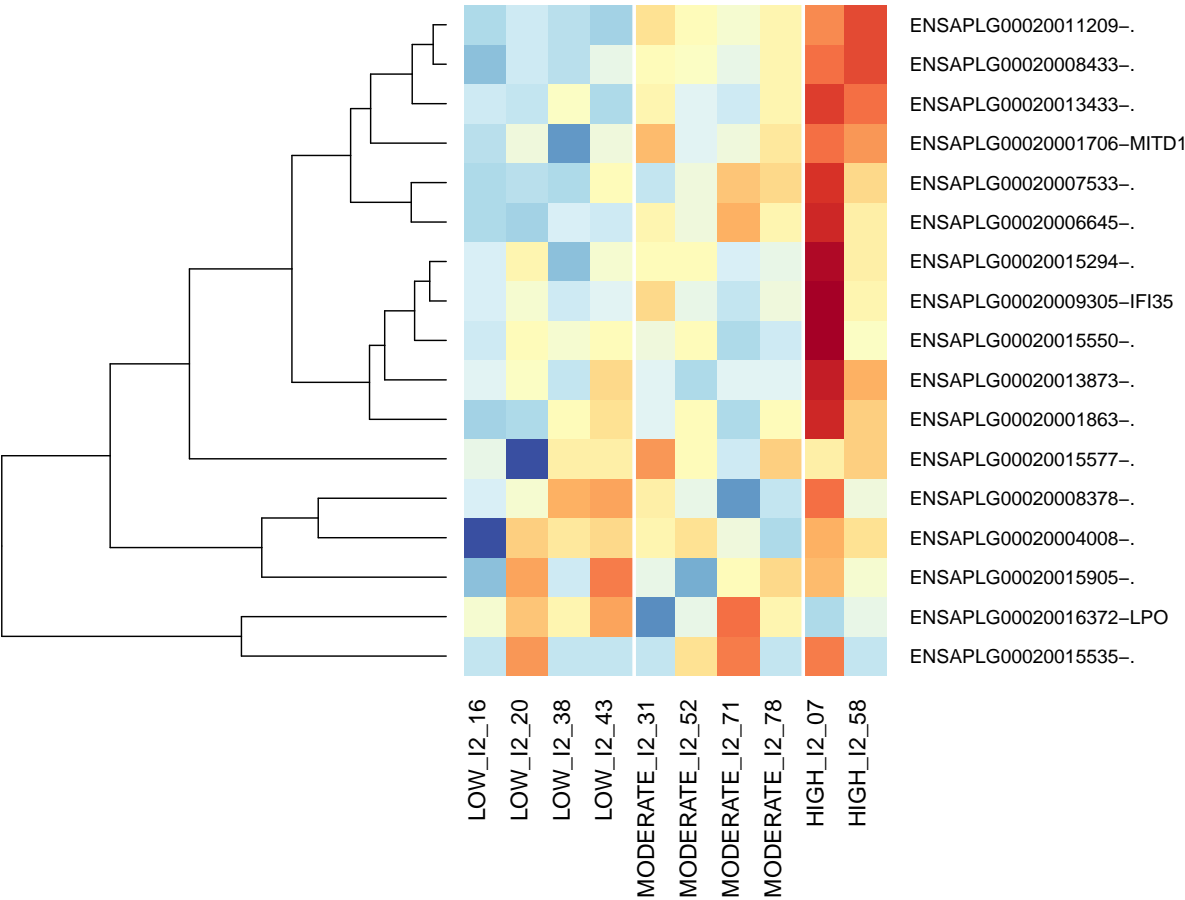


Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference

ensembl_gene_id	hgnc_symbol	LvM.I1	MvH.I1	LvH.I1
ENSAPLG00020016372	LPO	2.65	ns	ns
ENSAPLG00020015577	NA	-3.9	ns	ns
ENSAPLG00020015905	NA	ns	-7.15	ns
ENSAPLG00020011209	NA	ns	ns	-3.18
ENSAPLG00020008378	NA	ns	-6.06	-5.06
ENSAPLG00020013433	NA	ns	ns	-6.57
ENSAPLG00020013873	NA	ns	ns	-3.56
ENSAPLG00020006645	NA	ns	ns	-4.74
ENSAPLG00020015535	NA	ns	ns	-8.84
ENSAPLG00020004008	NA	ns	-8.05	-7.5
ENSAPLG00020008433	NA	ns	ns	-3.74
ENSAPLG00020001863	NA	ns	ns	-5.55
ENSAPLG00020009305	IFI35	ns	ns	-3.36
ENSAPLG00020001706	MITD1	ns	ns	-2.48
ENSAPLG00020015550	NA	ns	ns	-3.19
ENSAPLG00020015294	NA	ns	ns	-4.07
ENSAPLG00020007533	NA	ns	ns	-2.92

Table 3: Gene functions

	gene_biotype	hgnc_symbol	description
ENSAPLG00020016372	protein_coding	LPO	lactoperoxidase [Source:HGNC Symbol;Acc:HGNC:6678]
ENSAPLG00020015577	snRNA	NA	U1 spliceosomal RNA [Source:RFAM;Acc:RF00003]
ENSAPLG00020015905	protein_coding	NA	NA
ENSAPLG00020011209	protein_coding	NA	NA
ENSAPLG00020008378	protein_coding	NA	NA
ENSAPLG00020013433	protein_coding	NA	interferon-induced protein with tetratricopeptide repeats 5 [Source:NCBI gene;Acc:101797569]
ENSAPLG00020013873	protein_coding	NA	ubiquitin specific peptidase 18 [Source:NCBI gene;Acc:101803806]
ENSAPLG00020006645	snRNA	NA	U4 spliceosomal RNA [Source:RFAM;Acc:RF00015]
ENSAPLG00020015535	rRNA	NA	NA
ENSAPLG00020004008	protein_coding	NA	histone H4 [Source:NCBI gene;Acc:110351447]
ENSAPLG00020008433	protein_coding	NA	NA
ENSAPLG00020001863	protein_coding	NA	interferon-induced transmembrane protein 2 [Source:NCBI gene;Acc:106014264]
ENSAPLG00020009305	protein_coding	IFI35	interferon-induced 35 kDa protein [Source:NCBI gene;Acc:101791120]
ENSAPLG00020001706	protein_coding	MITD1	microtubule interacting and trafficking domain containing 1 [Source:NCBI gene;Acc:101797635]
ENSAPLG00020015550	rRNA	NA	NA
ENSAPLG00020015294	protein_coding	NA	NA
ENSAPLG00020007533	protein_coding	NA	NA

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes

Pathway *	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
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Shed Level I2 (LvMvH) - Bursa - Trans

Amanda Dolinski & Jared J. Homola

20 March, 2021

This is an analysis of differential expression at the transcript level between low, moderate, and high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for bursa samples on 2 days post infection (DPI).

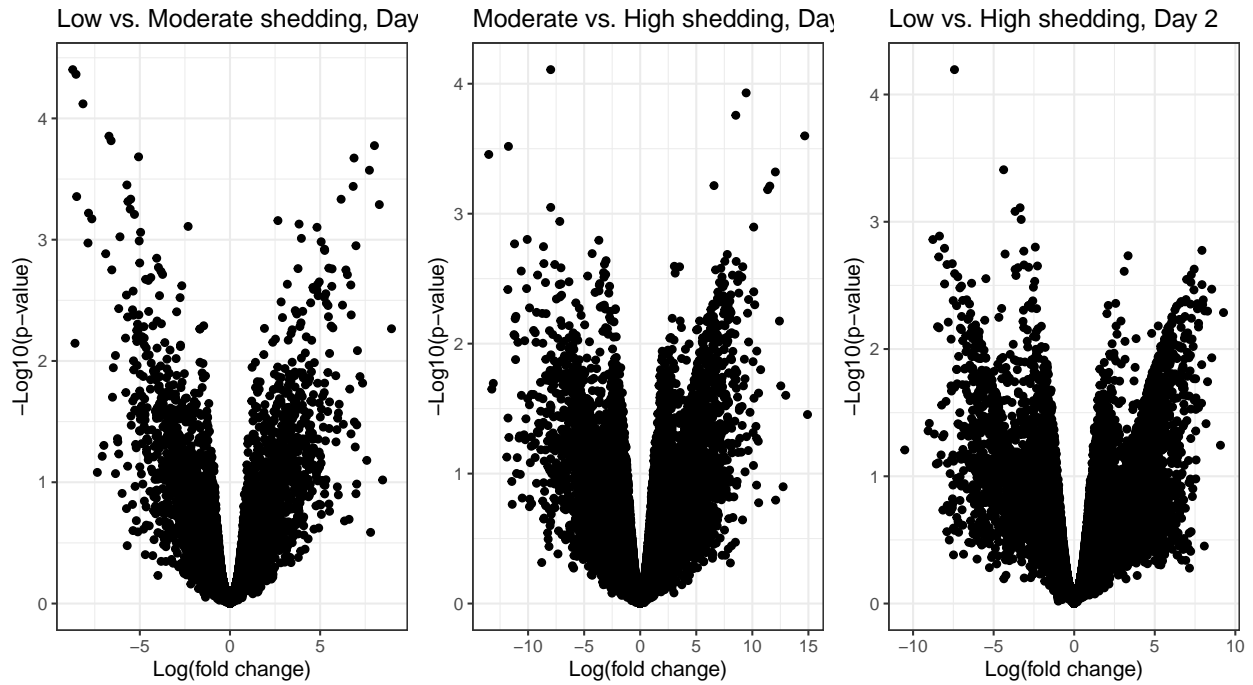
Differential expression analysis

Table 1: Count of DE transcripts. For a transcript to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	0
Up	LvM	0
Down	MvH	0
Up	MvH	0
Down	LvH	0
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples ($\log_{2}\text{FC}$, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Shed Level I2 (Alt.L vs Alt.H) - Ileum - Gene

Amanda Dolinski & Jared J. Homola

20 March, 2021

This is an analysis of differential expression at the gene level between Alt.low and Alt.high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for ileum samples on 2 days post infection (DPI).

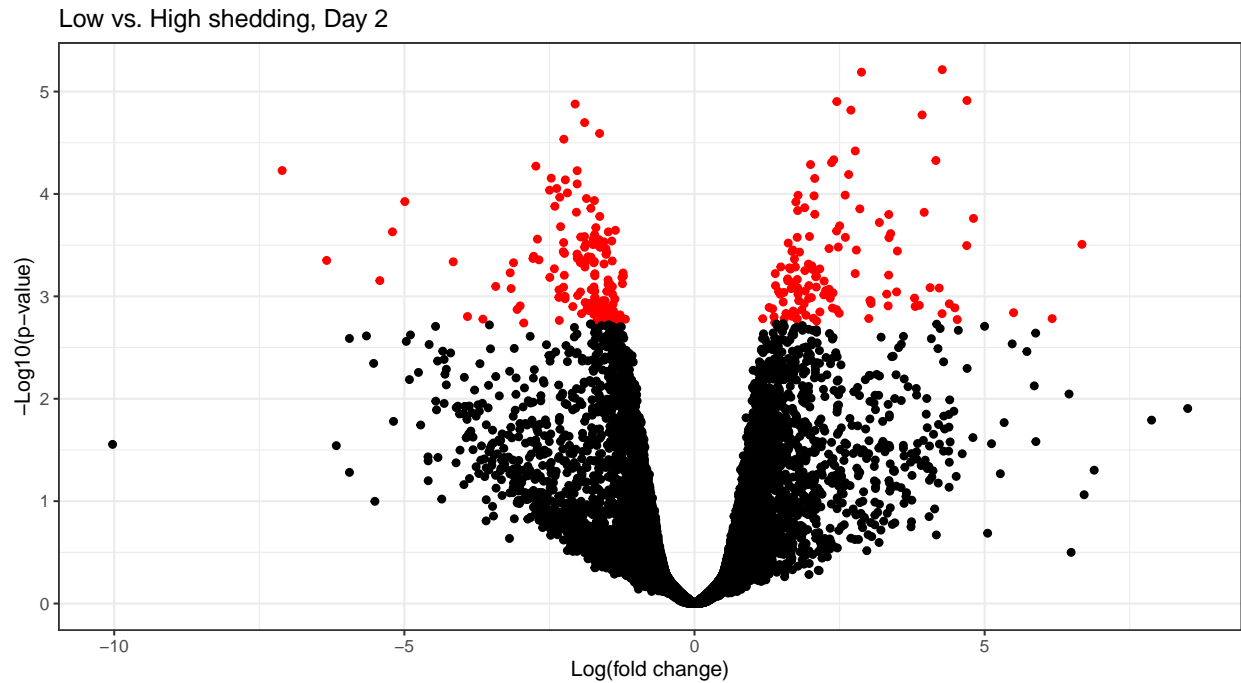
Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvH	145
Up	LvH	121

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Heatmap

Hierarchical clustering of transcripts/genes and samples. Shown is a heat map illustrating the relative expression levels of each transcript (rows) in each sample (column). Rows are hierarchically clustered by expression. Log₂-transformed expression values are z-transformed.



Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference

ensembl_gene_id	hgnc_symbol	LvH.I2
ENSAPLG00020006634	SLC10A2	4.27
ENSAPLG00020000169	INSIG1	2.88
ENSAPLG00020004842	NA	4.70
ENSAPLG00020009933	NA	2.45
ENSAPLG00020005700	NHP2	-2.06
ENSAPLG00020017865	NA	2.70
ENSAPLG00020000599	NA	3.92
ENSAPLG00020010967	PTMA	-1.89
ENSAPLG00020013395	SULF1	-1.64
ENSAPLG00020016240	NA	-2.25
ENSAPLG00020016475	NA	2.77
ENSAPLG00020000128	SERPINB1	2.40
ENSAPLG00020015547	NA	4.16
ENSAPLG00020003190	SLC5A1	2.36
ENSAPLG00020000454	NA	2.00
ENSAPLG00020014477	NA	-2.73
ENSAPLG00020017937	NA	-7.11
ENSAPLG00020016139	RBM38	-2.02
ENSAPLG00020017448	LGALS3	2.66
ENSAPLG00020017133	NA	-2.47
ENSAPLG00020017118	SLC20A1	2.07
ENSAPLG00020000200	SSBP1	-2.23
ENSAPLG00020001932	DNAJC2	-2.02
ENSAPLG00020004162	HEXIM1	-2.37
ENSAPLG00020010330	NA	-2.50
ENSAPLG00020002959	HOXB5	-2.19
ENSAPLG00020001757	NA	2.60
ENSAPLG00020006500	DEGS2	1.78
ENSAPLG00020000944	TMEM37	2.06
ENSAPLG00020002757	TMEM123	-2.32
ENSAPLG00020002520	HMGB3	-1.86
ENSAPLG00020004302	RBBP6	-1.72
ENSAPLG00020003397	NA	-4.99
ENSAPLG00020005852	NA	1.75
ENSAPLG00020015261	NA	-2.41
ENSAPLG00020006811	NT5C1A	1.90
ENSAPLG00020011227	CDK6	-1.79
ENSAPLG00020002672	NA	2.85
ENSAPLG00020014213	SLC35F5	1.78
ENSAPLG00020003902	SURF6	-2.04
ENSAPLG00020012091	NA	3.96
ENSAPLG00020013029	NA	2.07
ENSAPLG00020010267	NA	3.35
ENSAPLG00020015168	AKAP8L	-1.63
ENSAPLG00020017867	NA	4.81

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvH.I2
ENSAPLG00020015549	NA	3.19
ENSAPLG00020003954	KIF12	2.50
ENSAPLG00020000116	HMGB2	-2.31
ENSAPLG00020011627	PPIG	-1.70
ENSAPLG00020006142	HSP90AA1	-1.36
ENSAPLG00020017148	BEST4	2.45
ENSAPLG00020000710	ZC3H13	-1.49
ENSAPLG00020000083	EPSTI1	-5.20
ENSAPLG00020016469	NA	3.38
ENSAPLG00020011613	KLHL23	-1.72
ENSAPLG00020005023	PAPSS2	1.98
ENSAPLG00020008708	MAK16	-1.90
ENSAPLG00020016202	NA	-1.96
ENSAPLG00020005311	SLC3A1	2.60
ENSAPLG00020001286	NIPA2	1.77
ENSAPLG00020002099	SUSD2	3.35
ENSAPLG00020012928	IQCK	-2.71
ENSAPLG00020013207	HSPD1	-1.75
ENSAPLG00020014049	NEXN	-1.65
ENSAPLG00020005013	SEPTIN11	-1.43
ENSAPLG00020017709	HDGFL3	-1.56
ENSAPLG00020000432	RPA3	-2.25
ENSAPLG00020003110	PMM1	1.62
ENSAPLG00020012926	RPL36	-1.87
ENSAPLG00020004008	NA	6.68
ENSAPLG00020016518	C1QA	-1.75
ENSAPLG00020007838	NA	-1.65
ENSAPLG00020017868	NA	4.69
ENSAPLG00020016406	PCSK9	2.48
ENSAPLG00020017534	GAR1	-1.89
ENSAPLG00020004719	NA	-1.63
ENSAPLG00020016544	ACE2	2.32
ENSAPLG00020014600	NA	-1.53
ENSAPLG00020013554	NA	1.70
ENSAPLG00020001209	APOB	2.79
ENSAPLG00020001549	MS4A12	3.50
ENSAPLG00020012804	SEMA4B	1.68
ENSAPLG00020016242	MRPS25	-2.26
ENSAPLG00020017498	NA	1.81
ENSAPLG00020009767	DNAJA1	-1.51
ENSAPLG00020013457	MNS1	-2.24
ENSAPLG00020012120	PNO1	-2.02
ENSAPLG00020005407	ESF1	-1.52
ENSAPLG00020018214	NA	-2.77
ENSAPLG00020007776	NA	-1.83

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvH.I2
ENSAPLG00020006871	CCNK	-1.78
ENSAPLG00020018148	RPL17-C18orf32	-1.99
ENSAPLG00020007960	PRIMPOL	-2.02
ENSAPLG00020000633	NA	-2.78
ENSAPLG00020012224	DQX1	1.72
ENSAPLG00020006588	S100A13	-2.68
ENSAPLG00020001281	IGF2	-1.97
ENSAPLG00020015534	NA	-6.34
ENSAPLG00020006850	SMC4	-1.42
ENSAPLG00020001134	HNRNPA2B1	-1.73
ENSAPLG00020013433	NA	-4.16
ENSAPLG00020013884	CALD1	-1.88
ENSAPLG00020013295	FABP7	-1.97
ENSAPLG00020004637	SREK1IP1	-3.12
ENSAPLG00020010505	LRPAP1	-1.74
ENSAPLG00020013148	NA	-1.56
ENSAPLG00020005086	CCNI	1.96
ENSAPLG00020000056	NA	2.02
ENSAPLG00020007744	CDH1	1.49
ENSAPLG00020013201	ST3GAL1	1.74
ENSAPLG00020004234	HNRNPH3	-1.89
ENSAPLG00020008145	C6orf62	1.63
ENSAPLG00020009491	NA	-2.42
ENSAPLG00020012902	NA	2.16
ENSAPLG00020008060	MTMR6	1.65
ENSAPLG00020008527	F2RL1	2.04
ENSAPLG00020007419	DPEP1	1.90
ENSAPLG00020008862	NR4A3	-3.18
ENSAPLG00020003248	HSPA5	-1.23
ENSAPLG00020009971	NA	2.77
ENSAPLG00020017468	TSPAN1	1.39
ENSAPLG00020006174	NA	-1.72
ENSAPLG00020006938	PLA2G12B	3.35
ENSAPLG00020011218	SEC11A	-2.24
ENSAPLG00020010879	MRPS15	-1.72
ENSAPLG00020004346	NA	-1.22
ENSAPLG00020012404	NA	2.10
ENSAPLG00020013723	NA	2.09
ENSAPLG00020017567	NA	-2.49
ENSAPLG00020017110	HSPA8	-1.25
ENSAPLG00020000801	NA	1.61
ENSAPLG00020013712	AP5Z1	1.77
ENSAPLG00020005718	LSM14B	-1.49
ENSAPLG00020006179	NA	-5.42
ENSAPLG00020007607	NA	1.61

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvH.I2
ENSAPLG00020005570	NA	2.23
ENSAPLG00020012947	TMC5	1.71
ENSAPLG00020009798	MYH10	-1.24
ENSAPLG00020017923	NA	-1.46
ENSAPLG00020014122	CUEDC1	-1.49
ENSAPLG00020008069	SLC25A39	1.97
ENSAPLG00020004160	CHMP7	1.40
ENSAPLG00020016150	NA	-3.43
ENSAPLG00020010029	PSIP1	-1.42
ENSAPLG00020016332	NA	-1.73
ENSAPLG00020009172	NA	2.10
ENSAPLG00020003431	TMA16	-2.26
ENSAPLG00020007013	NA	4.06
ENSAPLG00020013655	ENTPD5	1.78
ENSAPLG00020017400	LTF	4.22
ENSAPLG00020007056	SCARNA13	-3.16
ENSAPLG00020006137	CLCN2	1.67
ENSAPLG00020005007	NA	2.32
ENSAPLG00020016978	NDUFB10	-1.78
ENSAPLG00020014247	CHCHD1	-2.33
ENSAPLG00020014649	RPL14	-1.74
ENSAPLG00020006419	NA	1.77
ENSAPLG00020005808	NA	2.26
ENSAPLG00020000998	NA	1.91
ENSAPLG00020003471	RBM25	-1.72
ENSAPLG00020007628	GOLIM4	-1.51
ENSAPLG00020004659	FAM160A1	1.45
ENSAPLG00020013396	SLC39A5	3.48
ENSAPLG00020009577	ATG10	-1.97
ENSAPLG00020006983	CD82	1.54
ENSAPLG00020002150	PEX11A	2.39
ENSAPLG00020014346	BMS1	-1.41
ENSAPLG00020015377	PLPP6	3.31
ENSAPLG00020010374	DUSP22	1.48
ENSAPLG00020000914	STEAP3	1.78
ENSAPLG00020016962	NA	2.23
ENSAPLG00020005132	RPL21	-2.01
ENSAPLG00020001280	COLEC10	-2.23
ENSAPLG00020001278	NA	-1.72
ENSAPLG00020005936	NA	-2.34
ENSAPLG00020005014	ARL3	-1.71
ENSAPLG00020007014	SCARNA7	2.01
ENSAPLG00020003980	NA	3.79
ENSAPLG00020014911	NA	2.34
ENSAPLG00020000733	CLCN1	1.97

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvH.I2
ENSAPLG00020010981	B3GNT7	-2.23
ENSAPLG00020016511	NA	-1.37
ENSAPLG00020008932	SLC5A12	3.02
ENSAPLG00020001710	NA	-1.54
ENSAPLG00020014887	PENK	-1.58
ENSAPLG00020001887	EPHA1	1.80
ENSAPLG00020017609	NA	3.04
ENSAPLG00020017136	GLA	1.53
ENSAPLG00020001537	MRPS31	-1.74
ENSAPLG00020001984	RBX1	-1.88
ENSAPLG00020007039	GNG11	-1.73
ENSAPLG00020013276	MFF	-1.64
ENSAPLG00020017703	GAL	-1.82
ENSAPLG00020007551	NA	3.04
ENSAPLG00020005538	NA	4.39
ENSAPLG00020008847	OTOP2	1.89
ENSAPLG00020015268	RBM17	-1.40
ENSAPLG00020010257	NA	3.87
ENSAPLG00020013175	NA	-1.85
ENSAPLG00020008354	NA	-3.00
ENSAPLG00020013809	NIPAL1	3.34
ENSAPLG00020000836	NA	3.80
ENSAPLG00020014982	C1orf174	-2.10
ENSAPLG00020011508	NA	-1.64
ENSAPLG00020012943	LLGL2	1.29
ENSAPLG00020001127	SH3KBP1	-1.49
ENSAPLG00020001098	CLDN23	4.49
ENSAPLG00020015217	GNL3	-1.57
ENSAPLG00020011820	NA	2.38
ENSAPLG00020016819	LSM5	-1.76
ENSAPLG00020007929	PCP4	-1.77
ENSAPLG00020000150	CLPTM1L	1.35
ENSAPLG00020004926	C7orf25	-1.57
ENSAPLG00020017163	SNRPG	-3.06
ENSAPLG00020013563	SQLE	2.45
ENSAPLG00020016326	CZIB	-1.69
ENSAPLG00020015348	NA	-1.86
ENSAPLG00020012473	BORCS6	1.85
ENSAPLG00020000367	CCDC127	-1.82
ENSAPLG00020016388	ATP6V1G1	-1.40
ENSAPLG00020000737	CCDC59	-1.75
ENSAPLG00020013911	CIDEA	1.70
ENSAPLG00020013608	SLTM	-1.49
ENSAPLG00020008194	NA	2.16
ENSAPLG00020017784	RBM34	-1.51

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the log(fold change) difference (*continued*)

ensembl_gene_id	hgnc_symbol	LvH.I2
ENSAPLG00020014366	NA	5.50
ENSAPLG00020007784	HMG1	-1.69
ENSAPLG00020004856	NA	2.49
ENSAPLG00020007461	C1QTNF12	-1.41
ENSAPLG00020007661	DCAF10	1.58
ENSAPLG00020003570	TMEM38B	1.74
ENSAPLG00020015441	NA	4.27
ENSAPLG00020003784	DNASE1L3	-1.95
ENSAPLG00020000777	ATP6V1D	-1.74
ENSAPLG00020004175	NDUFAB1	-1.56
ENSAPLG00020003970	NA	-1.28
ENSAPLG00020017587	MACROH2A1	-1.54
ENSAPLG00020018452	NA	1.92
ENSAPLG00020003501	NA	1.68
ENSAPLG00020015421	NA	-3.91
ENSAPLG00020018368	CNTFR	-1.35
ENSAPLG00020001752	NA	-1.37
ENSAPLG00020006956	NA	1.37
ENSAPLG00020000218	RUNX2	-1.60
ENSAPLG00020000876	MSMO1	2.05
ENSAPLG00020008627	NQO1	3.00
ENSAPLG00020017392	GNPNAT1	-1.24
ENSAPLG00020004784	ABCG8	6.16
ENSAPLG00020017887	ZDHHC9	1.55
ENSAPLG00020003282	ATP8B1	1.18
ENSAPLG00020003402	KCNJ16	1.76
ENSAPLG00020001364	NA	1.77
ENSAPLG00020012855	NA	-1.54
ENSAPLG00020017723	NA	-1.26
ENSAPLG00020011903	GABBR2	-3.65
ENSAPLG00020004257	RANBP1	-1.19
ENSAPLG00020002342	NA	4.53
ENSAPLG00020000505	H2AZ1	-1.51
ENSAPLG00020013945	NA	-1.49
ENSAPLG00020013110	CHRA1	-2.33
ENSAPLG00020017952	NA	2.10
ENSAPLG00020013793	NA	-1.32
ENSAPLG00020001696	ANGPT1	-1.69
ENSAPLG00020017100	NA	-1.36
ENSAPLG00020004684	NA	1.38
ENSAPLG00020010278	RPL29	-2.94

Table 3: Gene functions

	gene_biotype	hgnc_symbol	description
ENSAPLG00020006634	protein_coding	SLC10A2	solute carrier family 10 member 2 [Source:HGNC Symbol;Acc:HGNC:10906]
ENSAPLG00020000169	protein_coding	INSIG1	insulin induced gene 1 [Source:HGNC Symbol;Acc:HGNC:6083]
ENSAPLG00020004842	protein_coding	NA	NA
ENSAPLG00020009933	protein_coding	NA	NA
ENSAPLG00020005700	protein_coding	NHP2	NHP2 ribonucleoprotein [Source:HGNC Symbol;Acc:HGNC:14377]
ENSAPLG00020017865	protein_coding	NA	NA
ENSAPLG00020000599	protein_coding	NA	NA
ENSAPLG00020010967	protein_coding	PTMA	prothymosin alpha [Source:NCBI gene;Acc:101805158]
ENSAPLG00020013395	protein_coding	SULF1	sulfatase 1 [Source:NCBI gene;Acc:101802299]
ENSAPLG00020016240	protein_coding	NA	nuclear GTPase SLIP-GC-like [Source:NCBI gene;Acc:101803350]
ENSAPLG00020016475	protein_coding	NA	NA
ENSAPLG00020000128	protein_coding	SERPINB1	serpin family B member 1 [Source:NCBI gene;Acc:101799613]
ENSAPLG00020015547	rRNA	NA	NA
ENSAPLG00020003190	protein_coding	SLC5A1	solute carrier family 5 member 1 [Source:HGNC Symbol;Acc:HGNC:11036]
ENSAPLG00020000454	protein_coding	NA	NA
ENSAPLG00020014477	protein_coding	NA	NA
ENSAPLG00020017937	protein_coding	NA	NA
ENSAPLG00020016139	protein_coding	RBM38	RNA binding motif protein 38 [Source:NCBI gene;Acc:101789447]
ENSAPLG00020017448	protein_coding	LGALS3	galectin 3 [Source:HGNC Symbol;Acc:HGNC:6563]
ENSAPLG00020017133	protein_coding	NA	60S ribosomal protein L36a [Source:NCBI gene;Acc:101801033]
ENSAPLG00020017118	protein_coding	SLC20A1	solute carrier family 20 member 1 [Source:HGNC Symbol;Acc:HGNC:10946]
ENSAPLG00020000200	protein_coding	SSBP1	single stranded DNA binding protein 1 [Source:NCBI gene;Acc:101801333]
ENSAPLG00020001932	protein_coding	DNAJC2	DnaJ heat shock protein family (Hsp40) member C2 [Source:NCBI gene;Acc:101791264]
ENSAPLG00020004162	protein_coding	HEXIM1	HEXIM P-TFb complex subunit 1 [Source:HGNC Symbol;Acc:HGNC:24953]
ENSAPLG00020010330	protein_coding	NA	NA
ENSAPLG00020002959	protein_coding	HOXB5	homeobox B5 [Source:NCBI gene;Acc:101798635]
ENSAPLG00020001757	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020006500	protein_coding	DEGS2	delta 4-desaturase, sphingolipid 2 [Source:HGNC Symbol;Acc:HGNC:20113]
ENSAPLG00020000944	protein_coding	TMEM37	transmembrane protein 37 [Source:NCBI gene;Acc:101805462]
ENSAPLG00020002757	protein_coding	TMEM123	transmembrane protein 123 [Source:HGNC Symbol;Acc:HGNC:30138]
ENSAPLG00020002520	protein_coding	HMGB3	high mobility group box 3 [Source:NCBI gene;Acc:101802179]
ENSAPLG00020004302	protein_coding	RBBP6	RB binding protein 6, ubiquitin ligase [Source:HGNC Symbol;Acc:HGNC:9889]
ENSAPLG00020003397	lncRNA	NA	NA
ENSAPLG00020005852	protein_coding	NA	NA
ENSAPLG00020015261	protein_coding	NA	podocalyxin like [Source:HGNC Symbol;Acc:HGNC:9171]
ENSAPLG00020006811	protein_coding	NT5C1A	5'-nucleotidase, cytosolic 1A [Source:HGNC Symbol;Acc:HGNC:17819]
ENSAPLG00020011227	protein_coding	CDK6	cyclin dependent kinase 6 [Source:HGNC Symbol;Acc:HGNC:1777]
ENSAPLG00020002672	protein_coding	NA	NA
ENSAPLG00020014213	protein_coding	SLC35F5	solute carrier family 35 member F5 [Source:HGNC Symbol;Acc:HGNC:23617]
ENSAPLG00020003902	protein_coding	SURF6	surfeit 6 [Source:HGNC Symbol;Acc:HGNC:11478]
ENSAPLG00020012091	protein_coding	NA	NA
ENSAPLG00020013029	protein_coding	NA	p53 apoptosis effector related to PMP22 [Source:NCBI gene;Acc:101797297]
ENSAPLG00020010267	protein_coding	NA	NA
ENSAPLG00020015168	protein_coding	AKAP8L	A-kinase anchoring protein 8 like [Source:HGNC Symbol;Acc:HGNC:29857]
ENSAPLG00020017867	protein_coding	NA	NA
ENSAPLG00020015549	rRNA	NA	NA
ENSAPLG00020003954	protein_coding	KIF12	kinesin family member 12 [Source:HGNC Symbol;Acc:HGNC:21495]
ENSAPLG00020000116	protein_coding	HMGB2	high mobility group box 2 [Source:NCBI gene;Acc:101798886]
ENSAPLG00020011627	protein_coding	PPIG	peptidylprolyl isomerase G [Source:NCBI gene;Acc:101795716]
ENSAPLG00020006142	protein_coding	HSP90AA1	heat shock protein 90 alpha family class A member 1 [Source:NCBI gene;Acc:101800442]
ENSAPLG00020017148	protein_coding	BEST4	bestrophin 4 [Source:HGNC Symbol;Acc:HGNC:17106]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020000710	protein_coding	ZC3H13	zinc finger CCCH-type containing 13 [Source:NCBI gene;Acc:101790300]
ENSAPLG00020000083	protein_coding	EPSTI1	epithelial stromal interaction 1 [Source:HGNC Symbol;Acc:HGNC:16465]
ENSAPLG00020016469	protein_coding	NA	NA
ENSAPLG00020011613	protein_coding	KLHL23	kelch like family member 23 [Source:HGNC Symbol;Acc:HGNC:27506]
ENSAPLG00020005023	protein_coding	PAPSS2	3'-phosphoadenosine 5'-phosphosulfate synthase 2 [Source:HGNC Symbol;Acc:HGNC:8604]
ENSAPLG00020008708	protein_coding	MAK16	MAK16 homolog [Source:HGNC Symbol;Acc:HGNC:13703]
ENSAPLG00020016202	protein_coding	NA	ribosomal protein L32 [Source:NCBI gene;Acc:101792873]
ENSAPLG00020005311	protein_coding	SLC3A1	solute carrier family 3 member 1 [Source:HGNC Symbol;Acc:HGNC:11025]
ENSAPLG00020001286	protein_coding	NIPA2	NIPA magnesium transporter 2 [Source:NCBI gene;Acc:101797252]
ENSAPLG00020002099	protein_coding	SUSD2	sushi domain containing 2 [Source:HGNC Symbol;Acc:HGNC:30667]
ENSAPLG00020012928	protein_coding	IQCK	IQ motif containing K [Source:HGNC Symbol;Acc:HGNC:28556]
ENSAPLG00020013207	protein_coding	HSPD1	heat shock protein family D (Hsp60) member 1 [Source:HGNC Symbol;Acc:HGNC:5261]
ENSAPLG00020014049	protein_coding	NEXN	nexilin F-actin binding protein [Source:HGNC Symbol;Acc:HGNC:29557]
ENSAPLG00020005013	protein_coding	SEPTIN11	septin 11 [Source:NCBI gene;Acc:101790998]
ENSAPLG00020017709	protein_coding	HDGFL3	HDGF like 3 [Source:HGNC Symbol;Acc:HGNC:24937]
ENSAPLG00020000432	protein_coding	RPA3	replication protein A3 [Source:NCBI gene;Acc:101797991]
ENSAPLG00020003110	protein_coding	PMM1	phosphomannomutase 1 [Source:HGNC Symbol;Acc:HGNC:9114]
ENSAPLG00020012926	protein_coding	RPL36	ribosomal protein L36 [Source:HGNC Symbol;Acc:HGNC:13631]
ENSAPLG00020004008	protein_coding	NA	histone H4 [Source:NCBI gene;Acc:110351447]
ENSAPLG00020016518	protein_coding	C1QA	complement C1q A chain [Source:HGNC Symbol;Acc:HGNC:1241]
ENSAPLG00020007838	protein_coding	NA	scaffold attachment factor B1 [Source:NCBI gene;Acc:101803767]
ENSAPLG00020017868	protein_coding	NA	NA
ENSAPLG00020016406	protein_coding	PCSK9	proprotein convertase subtilisin/kexin type 9 [Source:HGNC Symbol;Acc:HGNC:20001]
ENSAPLG00020017534	protein_coding	GAR1	GAR1 ribonucleoprotein [Source:HGNC Symbol;Acc:HGNC:14264]
ENSAPLG00020004719	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020016544	protein_coding	ACE2	angiotensin I converting enzyme 2 [Source:HGNC Symbol;Acc:HGNC:13557]
ENSAPLG00020014600	protein_coding	NA	NA
ENSAPLG00020013554	protein_coding	NA	NA
ENSAPLG00020001209	protein_coding	APOB	apolipoprotein B [Source:HGNC Symbol;Acc:HGNC:603]
ENSAPLG00020001549	protein_coding	MS4A12	membrane spanning 4-domains A12 [Source:HGNC Symbol;Acc:HGNC:13370]
ENSAPLG00020012804	protein_coding	SEMA4B	semaphorin 4B [Source:HGNC Symbol;Acc:HGNC:10730]
ENSAPLG00020016242	protein_coding	MRPS25	mitochondrial ribosomal protein S25 [Source:NCBI gene;Acc:101797514]
ENSAPLG00020017498	protein_coding	NA	cytochrome P450 4B1 [Source:NCBI gene;Acc:101798033]
ENSAPLG00020009767	protein_coding	DNAJA1	DnaJ heat shock protein family (Hsp40) member A1 [Source:HGNC Symbol;Acc:HGNC:5229]
ENSAPLG00020013457	protein_coding	MNS1	meiosis specific nuclear structural 1 [Source:HGNC Symbol;Acc:HGNC:29636]
ENSAPLG00020012120	protein_coding	PNO1	partner of NOB1 homolog [Source:HGNC Symbol;Acc:HGNC:32790]
ENSAPLG00020005407	protein_coding	ESF1	ESF1 nucleolar pre-rRNA processing protein homolog [Source:HGNC Symbol;Acc:HGNC:15898]
ENSAPLG00020018214	protein_coding	NA	NA
ENSAPLG00020007776	protein_coding	NA	NA
ENSAPLG00020006871	protein_coding	CCNK	cyclin K [Source:HGNC Symbol;Acc:HGNC:1596]
ENSAPLG00020018148	protein_coding	RPL17-C18orf32	60S ribosomal protein L17 [Source:NCBI gene;Acc:101799070]
ENSAPLG00020007960	protein_coding	PRIMPOL	primase and DNA directed polymerase [Source:NCBI gene;Acc:101789508]
ENSAPLG00020000633	protein_coding	NA	granulocyte-macrophage colony-stimulating factor receptor subunit alpha [Source:NCBI gene;Acc:101793812]
ENSAPLG00020012224	protein_coding	DQX1	DEAQ-box RNA dependent ATPase 1 [Source:HGNC Symbol;Acc:HGNC:20410]
ENSAPLG00020006588	protein_coding	S100A13	S100 calcium binding protein A13 [Source:HGNC Symbol;Acc:HGNC:10490]
ENSAPLG00020001281	protein_coding	IGF2	insulin like growth factor 2 [Source:NCBI gene;Acc:101799111]
ENSAPLG00020015534	lncRNA	NA	NA
ENSAPLG00020006850	protein_coding	SMC4	structural maintenance of chromosomes 4 [Source:NCBI gene;Acc:101803192]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020001134	protein_coding	HNRNPA2B1	heterogeneous nuclear ribonucleoprotein A2/B1 [Source:NCBI gene;Acc:101789543]
ENSAPLG00020013433	protein_coding	NA	interferon-induced protein with tetratricopeptide repeats 5 [Source:NCBI gene;Acc:101797569]
ENSAPLG00020013884	protein_coding	CALD1	caldesmon 1 [Source:NCBI gene;Acc:101804696]
ENSAPLG00020013295	protein_coding	FABP7	fatty acid binding protein 7 [Source:HGNC Symbol;Acc:HGNC:3562]
ENSAPLG00020004637	protein_coding	SREK1IP1	SREK1 interacting protein 1 [Source:HGNC Symbol;Acc:HGNC:26716]
ENSAPLG00020010505	protein_coding	LRPAP1	LDL receptor related protein associated protein 1 [Source:HGNC Symbol;Acc:HGNC:6701]
ENSAPLG00020013148	protein_coding	NA	NA
ENSAPLG00020005086	protein_coding	CCNI	cyclin I [Source:HGNC Symbol;Acc:HGNC:1595]
ENSAPLG00020000056	protein_coding	NA	NA
ENSAPLG00020007744	protein_coding	CDH1	cadherin 1 [Source:HGNC Symbol;Acc:HGNC:1748]
ENSAPLG00020013201	protein_coding	ST3GAL1	ST3 beta-galactoside alpha-2,3-sialyltransferase 1 [Source:NCBI gene;Acc:101790636]
ENSAPLG00020004234	protein_coding	HNRNPH3	heterogeneous nuclear ribonucleoprotein H3 [Source:HGNC Symbol;Acc:HGNC:5043]
ENSAPLG00020008145	protein_coding	C6orf62	chromosome 2 C6orf62 homolog [Source:NCBI gene;Acc:101789548]
ENSAPLG00020009491	protein_coding	NA	NA
ENSAPLG00020012902	protein_coding	NA	NA
ENSAPLG00020008060	protein_coding	MTMR6	myotubularin related protein 6 [Source:HGNC Symbol;Acc:HGNC:7453]
ENSAPLG00020008527	protein_coding	F2RL1	F2R like trypsin receptor 1 [Source:HGNC Symbol;Acc:HGNC:3538]
ENSAPLG00020007419	protein_coding	DPEP1	dipeptidase 1 [Source:NCBI gene;Acc:101797901]
ENSAPLG00020008862	protein_coding	NR4A3	nuclear receptor subfamily 4 group A member 3 [Source:HGNC Symbol;Acc:HGNC:7982]
ENSAPLG00020003248	protein_coding	HSPA5	heat shock protein family A (Hsp70) member 5 [Source:HGNC Symbol;Acc:HGNC:5238]
ENSAPLG00020009971	protein_coding	NA	NA
ENSAPLG00020017468	protein_coding	TSPAN1	tetraspanin 1 [Source:HGNC Symbol;Acc:HGNC:20657]
ENSAPLG00020006174	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020006938	protein_coding	PLA2G12B	phospholipase A2 group XIIB [Source:HGNC Symbol;Acc:HGNC:18555]
ENSAPLG00020011218	protein_coding	SEC11A	SEC11 homolog A, signal peptidase complex subunit [Source:HGNC Symbol;Acc:HGNC:17718]
ENSAPLG00020010879	protein_coding	MRPS15	mitochondrial ribosomal protein S15 [Source:HGNC Symbol;Acc:HGNC:14504]
ENSAPLG00020004346	protein_coding	NA	NA
ENSAPLG00020012404	protein_coding	NA	ectoderm-neural cortex protein 1-like [Source:NCBI gene;Acc:101796579]
ENSAPLG00020013723	protein_coding	NA	NA
ENSAPLG00020017567	lncRNA	NA	NA
ENSAPLG00020017110	protein_coding	HSPA8	heat shock protein family A (Hsp70) member 8 [Source:NCBI gene;Acc:101801738]
ENSAPLG00020000801	protein_coding	NA	NA
ENSAPLG00020013712	protein_coding	AP5Z1	adaptor related protein complex 5 subunit zeta 1 [Source:HGNC Symbol;Acc:HGNC:22197]
ENSAPLG00020005718	protein_coding	LSM14B	LSM family member 14B [Source:HGNC Symbol;Acc:HGNC:15887]
ENSAPLG00020006179	lncRNA	NA	NA
ENSAPLG00020007607	pseudogene	NA	NA
ENSAPLG00020005570	protein_coding	NA	NA
ENSAPLG00020012947	protein_coding	TMC5	transmembrane channel like 5 [Source:HGNC Symbol;Acc:HGNC:22999]
ENSAPLG00020009798	protein_coding	MYH10	myosin heavy chain 10 [Source:HGNC Symbol;Acc:HGNC:7568]
ENSAPLG00020017923	protein_coding	NA	NA
ENSAPLG00020014122	protein_coding	CUEDC1	CUE domain containing 1 [Source:NCBI gene;Acc:101796593]
ENSAPLG00020008069	protein_coding	SLC25A39	solute carrier family 25 member 39 [Source:HGNC Symbol;Acc:HGNC:24279]
ENSAPLG00020004160	protein_coding	CHMP7	charged multivesicular body protein 7 [Source:HGNC Symbol;Acc:HGNC:28439]
ENSAPLG00020016150	protein_coding	NA	NA
ENSAPLG00020010029	protein_coding	PSIP1	PC4 and SFRS1 interacting protein 1 [Source:HGNC Symbol;Acc:HGNC:9527]
ENSAPLG00020016332	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020009172	protein_coding	NA	NA
ENSAPLG00020003431	protein_coding	TMA16	translation machinery associated 16 homolog [Source:HGNC Symbol;Acc:HGNC:25638]
ENSAPLG00020007013	protein_coding	NA	NA
ENSAPLG00020013655	protein_coding	ENTPD5	ectonucleoside triphosphate diphosphohydrolase 5 (inactive) [Source:HGNC Symbol;Acc:HGNC:3367]
ENSAPLG00020017400	protein_coding	LTF	transferrin [Source:NCBI gene;Acc:101795303]
ENSAPLG00020007056	scaRNA	SCARNA13	small Cajal body-specific RNA 13 [Source:HGNC Symbol;Acc:HGNC:32570]
ENSAPLG00020006137	protein_coding	CLCN2	chloride voltage-gated channel 2 [Source:HGNC Symbol;Acc:HGNC:2020]
ENSAPLG00020005007	protein_coding	NA	NA
ENSAPLG00020016978	protein_coding	NDUFB10	NADH:ubiquinone oxidoreductase subunit B10 [Source:HGNC Symbol;Acc:HGNC:7696]
ENSAPLG00020014247	protein_coding	CHCHD1	coiled-coil-helix-coiled-coil-helix domain containing 1 [Source:HGNC Symbol;Acc:HGNC:23518]
ENSAPLG00020014649	protein_coding	RPL14	ribosomal protein L14 [Source:HGNC Symbol;Acc:HGNC:10305]
ENSAPLG00020006419	protein_coding	NA	NA
ENSAPLG00020005808	protein_coding	NA	NA
ENSAPLG00020000998	protein_coding	NA	NA
ENSAPLG00020003471	protein_coding	RBM25	RNA binding motif protein 25 [Source:HGNC Symbol;Acc:HGNC:23244]
ENSAPLG00020007628	protein_coding	GOLIM4	golgi integral membrane protein 4 [Source:NCBI gene;Acc:101794073]
ENSAPLG00020004659	protein_coding	FAM160A1	family with sequence similarity 160 member A1 [Source:HGNC Symbol;Acc:HGNC:34237]
ENSAPLG00020013396	protein_coding	SLC39A5	solute carrier family 39 member 5 [Source:HGNC Symbol;Acc:HGNC:20502]
ENSAPLG00020009577	protein_coding	ATG10	autophagy related 10 [Source:HGNC Symbol;Acc:HGNC:20315]
ENSAPLG00020006983	protein_coding	CD82	CD82 molecule [Source:HGNC Symbol;Acc:HGNC:6210]
ENSAPLG00020002150	protein_coding	PEX11A	peroxisomal biogenesis factor 11 alpha [Source:HGNC Symbol;Acc:HGNC:8852]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020014346	protein_coding	BMS1	BMS1 ribosome biogenesis factor [Source:HGNC Symbol;Acc:HGNC:23505]
ENSAPLG00020015377	protein_coding	PLPP6	phospholipid phosphatase 6 [Source:HGNC Symbol;Acc:HGNC:23682]
ENSAPLG00020010374	protein_coding	DUSP22	dual specificity phosphatase 22 [Source:NCBI gene;Acc:101801078]
ENSAPLG00020000914	protein_coding	STEAP3	STEAP3 metalloredutase [Source:HGNC Symbol;Acc:HGNC:24592]
ENSAPLG00020016962	scaRNA	NA	small Cajal body-specific RNA 2 [Source:HGNC Symbol;Acc:HGNC:32558]
ENSAPLG00020005132	protein_coding	RPL21	ribosomal protein L21 [Source:NCBI gene;Acc:101802323]
ENSAPLG00020001280	protein_coding	COLEC10	collectin subfamily member 10 [Source:HGNC Symbol;Acc:HGNC:2220]
ENSAPLG00020001278	protein_coding	NA	NA
ENSAPLG00020005936	protein_coding	NA	NA
ENSAPLG00020005014	protein_coding	ARL3	ADP ribosylation factor like GTPase 3 [Source:NCBI gene;Acc:101803144]
ENSAPLG00020007014	scaRNA	SCARNA7	small Cajal body-specific RNA 7 [Source:HGNC Symbol;Acc:HGNC:32563]
ENSAPLG00020003980	protein_coding	NA	histone H4 [Source:NCBI gene;Acc:110351447]
ENSAPLG00020014911	protein_coding	NA	NA
ENSAPLG00020000733	protein_coding	CLCN1	chloride voltage-gated channel 1 [Source:HGNC Symbol;Acc:HGNC:2019]
ENSAPLG00020010981	protein_coding	B3GNT7	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 7 [Source:HGNC Symbol;Acc:HGNC:18811]
ENSAPLG00020016511	pseudogene	NA	NA
ENSAPLG00020008932	protein_coding	SLC5A12	solute carrier family 5 member 12 [Source:HGNC Symbol;Acc:HGNC:28750]
ENSAPLG00020001710	protein_coding	NA	NA
ENSAPLG00020014887	protein_coding	PENK	proenkephalin [Source:NCBI gene;Acc:101789452]
ENSAPLG00020001887	protein_coding	EPHA1	EPH receptor A1 [Source:HGNC Symbol;Acc:HGNC:3385]
ENSAPLG00020017609	protein_coding	NA	solute carrier family 6 member 14 [Source:NCBI gene;Acc:101802830]
ENSAPLG00020017136	protein_coding	GLA	galactosidase alpha [Source:HGNC Symbol;Acc:HGNC:4296]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020001537	protein_coding	MRPS31	mitochondrial ribosomal protein S31 [Source:NCBI gene;Acc:101793760]
ENSAPLG00020001984	protein_coding	RBX1	ring-box 1 [Source:NCBI gene;Acc:101796040]
ENSAPLG00020007039	protein_coding	GNG11	guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-11 [Source:NCBI gene;Acc:101794407]
ENSAPLG00020013276	protein_coding	MFF	mitochondrial fission factor [Source:NCBI gene;Acc:101797795]
ENSAPLG00020017703	protein_coding	GAL	galanin and GMAP prepropeptide [Source:NCBI gene;Acc:101799195]
ENSAPLG00020007551	protein_coding	NA	NA
ENSAPLG00020005538	protein_coding	NA	NA
ENSAPLG00020008847	protein_coding	OTOP2	otopetrin 2 [Source:HGNC Symbol;Acc:HGNC:19657]
ENSAPLG00020015268	protein_coding	RBM17	RNA binding motif protein 17 [Source:NCBI gene;Acc:101791010]
ENSAPLG00020010257	protein_coding	NA	NA
ENSAPLG00020013175	protein_coding	NA	NA
ENSAPLG00020008354	protein_coding	NA	NA
ENSAPLG00020013809	protein_coding	NIPAL1	NIPA like domain containing 1 [Source:HGNC Symbol;Acc:HGNC:27194]
ENSAPLG00020000836	protein_coding	NA	NA
ENSAPLG00020014982	protein_coding	C1orf174	chromosome 1 open reading frame 174 [Source:HGNC Symbol;Acc:HGNC:27915]
ENSAPLG00020011508	pseudogene	NA	NA
ENSAPLG00020012943	protein_coding	LLGL2	LLGL scribble cell polarity complex component 2 [Source:HGNC Symbol;Acc:HGNC:6629]
ENSAPLG00020001127	protein_coding	SH3KBP1	SH3 domain containing kinase binding protein 1 [Source:HGNC Symbol;Acc:HGNC:13867]
ENSAPLG00020001098	protein_coding	CLDN23	claudin 23 [Source:NCBI gene;Acc:110352719]
ENSAPLG00020015217	protein_coding	GNL3	G protein nucleolar 3 [Source:HGNC Symbol;Acc:HGNC:29931]
ENSAPLG00020011820	lncRNA	NA	NA
ENSAPLG00020016819	protein_coding	LSM5	LSM5 homolog, U6 small nuclear RNA and mRNA degradation associated [Source:NCBI gene;Acc:101801966]
ENSAPLG00020007929	protein_coding	PCP4	Purkinje cell protein 4 [Source:HGNC Symbol;Acc:HGNC:8742]
ENSAPLG00020000150	protein_coding	CLPTM1L	CLPTM1 like [Source:NCBI gene;Acc:101791962]
ENSAPLG00020004926	protein_coding	C7orf25	chromosome 2 C7orf25 homolog [Source:NCBI gene;Acc:101794594]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020017163	protein_coding	SNRPG	small nuclear ribonucleoprotein polypeptide G [Source:HGNC Symbol;Acc:HGNC:11163]
ENSAPLG00020013563	protein_coding	SQLE	squalene epoxidase [Source:HGNC Symbol;Acc:HGNC:11279]
ENSAPLG00020016326	protein_coding	CZIB	CXXC motif containing zinc binding protein [Source:NCBI gene;Acc:101802639]
ENSAPLG00020015348	protein_coding	NA	NA
ENSAPLG00020012473	protein_coding	BORCS6	BLOC-1 related complex subunit 6 [Source:HGNC Symbol;Acc:HGNC:25939]
ENSAPLG00020000367	protein_coding	CCDC127	coiled-coil domain containing 127 [Source:HGNC Symbol;Acc:HGNC:30520]
ENSAPLG00020016388	protein_coding	ATP6V1G1	ATPase H ⁺ transporting V1 subunit G1 [Source:NCBI gene;Acc:101792649]
ENSAPLG00020000737	protein_coding	CCDC59	coiled-coil domain containing 59 [Source:HGNC Symbol;Acc:HGNC:25005]
ENSAPLG00020013911	protein_coding	CIDEA	cell death inducing DFFA like effector a [Source:HGNC Symbol;Acc:HGNC:1976]
ENSAPLG00020013608	protein_coding	SLTM	SAFB like transcription modulator [Source:HGNC Symbol;Acc:HGNC:20709]
ENSAPLG00020008194	protein_coding	NA	NA
ENSAPLG00020017784	protein_coding	RBM34	RNA binding motif protein 34 [Source:HGNC Symbol;Acc:HGNC:28965]
ENSAPLG00020014366	protein_coding	NA	NA
ENSAPLG00020007784	protein_coding	HMGN1	high mobility group nucleosome binding domain 1 [Source:HGNC Symbol;Acc:HGNC:4984]
ENSAPLG00020004856	protein_coding	NA	NA
ENSAPLG00020007461	protein_coding	C1QTNF12	C1q and TNF related 12 [Source:HGNC Symbol;Acc:HGNC:32308]
ENSAPLG00020007661	protein_coding	DCAF10	DDB1 and CUL4 associated factor 10 [Source:HGNC Symbol;Acc:HGNC:23686]
ENSAPLG00020003570	protein_coding	TMEM38B	transmembrane protein 38B [Source:HGNC Symbol;Acc:HGNC:25535]
ENSAPLG00020015441	protein_coding	NA	NA
ENSAPLG00020003784	protein_coding	DNASE1L3	deoxyribonuclease 1 like 3 [Source:HGNC Symbol;Acc:HGNC:2959]
ENSAPLG00020000777	protein_coding	ATP6V1D	ATPase H ⁺ transporting V1 subunit D [Source:NCBI gene;Acc:101792552]

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020004175	protein_coding	NDUFAB1	NADH:ubiquinone oxidoreductase subunit AB1 [Source:NCBI gene;Acc:106016795]
ENSAPLG00020003970	protein_coding	NA	Cbl proto-oncogene like 1 [Source:NCBI gene;Acc:101798354]
ENSAPLG00020017587	protein_coding	MACROH2A1	core histone macro-H2A.1 [Source:NCBI gene;Acc:101795967]
ENSAPLG00020018452	protein_coding	NA	NA
ENSAPLG00020003501	protein_coding	NA	NA
ENSAPLG00020015421	protein_coding	NA	NA
ENSAPLG00020018368	protein_coding	CNTFR	ciliary neurotrophic factor receptor [Source:HGNC Symbol;Acc:HGNC:2170]
ENSAPLG00020001752	protein_coding	NA	NA
ENSAPLG00020006956	protein_coding	NA	NA
ENSAPLG00020000218	protein_coding	RUNX2	RUNX family transcription factor 2 [Source:HGNC Symbol;Acc:HGNC:10472]
ENSAPLG00020000876	protein_coding	MSMO1	methylsterol monooxygenase 1 [Source:NCBI gene;Acc:101804996]
ENSAPLG00020008627	protein_coding	NQO1	NAD(P)H quinone dehydrogenase 1 [Source:HGNC Symbol;Acc:HGNC:2874]
ENSAPLG00020017392	protein_coding	GNPNAT1	glucosamine-phosphate N-acetyltransferase 1 [Source:NCBI gene;Acc:101791122]
ENSAPLG00020004784	protein_coding	ABCG8	ATP binding cassette subfamily G member 8 [Source:HGNC Symbol;Acc:HGNC:13887]
ENSAPLG00020017887	protein_coding	ZDHHC9	zinc finger DHHC-type palmitoyltransferase 9 [Source:HGNC Symbol;Acc:HGNC:18475]
ENSAPLG00020003282	protein_coding	ATP8B1	ATPase phospholipid transporting 8B1 [Source:HGNC Symbol;Acc:HGNC:3706]
ENSAPLG00020003402	protein_coding	KCNJ16	potassium inwardly rectifying channel subfamily J member 16 [Source:HGNC Symbol;Acc:HGNC:6262]
ENSAPLG00020001364	protein_coding	NA	NA
ENSAPLG00020012855	protein_coding	NA	NA
ENSAPLG00020017723	protein_coding	NA	NA
ENSAPLG00020011903	protein_coding	GABBR2	gamma-aminobutyric acid type B receptor subunit 2 [Source:NCBI gene;Acc:101800740]
ENSAPLG00020004257	protein_coding	RANBP1	RAN binding protein 1 [Source:HGNC Symbol;Acc:HGNC:9847]
ENSAPLG00020002342	protein_coding	NA	NA

Table 3: Gene functions (*continued*)

	gene_biotype	hgnc_symbol	description
ENSAPLG00020000505	protein_coding	H2AZ1	histone H2A.Z [Source:NCBI gene;Acc:101790248]
ENSAPLG00020013945	protein_coding	NA	NA
ENSAPLG00020013110	protein_coding	CHRAC1	chromatin accessibility complex subunit 1 [Source:NCBI gene;Acc:101795150]
ENSAPLG00020017952	lncRNA	NA	NA
ENSAPLG00020013793	protein_coding	NA	snail family transcriptional repressor 2 [Source:NCBI gene;Acc:101804065]
ENSAPLG00020001696	protein_coding	ANGPT1	angiopoietin 1 [Source:NCBI gene;Acc:101795228]
ENSAPLG00020017100	protein_coding	NA	NA
ENSAPLG00020004684	protein_coding	NA	NA
ENSAPLG00020010278	protein_coding	RPL29	ribosomal protein L29 [Source:HGNC Symbol;Acc:HGNC:10331]

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
DNA replication	path:apla03030	7	2	0.0048467	ENSAPLG00020000432	RPA3	101797991
DNA replication	path:apla03030	7	2	0.0048467	ENSAPLG00020000200	SSBP1	101801333
Mismatch repair	path:apla03430	7	2	0.0048467	ENSAPLG00020000432	RPA3	101797991
Mismatch repair	path:apla03430	7	2	0.0048467	ENSAPLG00020000200	SSBP1	101801333
Necroptosis	path:apla04217	27	3	0.0082384	ENSAPLG00020000505	H2AZ1	101790248
Necroptosis	path:apla04217	27	3	0.0082384	ENSAPLG00020017587	MACROH2A1	101795967
Necroptosis	path:apla04217	27	3	0.0082384	ENSAPLG00020006142	HSP90AA1	101800442
Oxidative phosphorylation	path:apla00190	28	3	0.0091254	ENSAPLG00020000777	ATP6V1D	101792552
Oxidative phosphorylation	path:apla00190	28	3	0.0091254	ENSAPLG00020016388	ATP6V1G1	101792649
Oxidative phosphorylation	path:apla00190	28	3	0.0091254	ENSAPLG00020004175	NDUFAB1	106016795
Homologous recombination	path:apla03440	11	2	0.0121919	ENSAPLG00020000432	RPA3	101797991
Homologous recombination	path:apla03440	11	2	0.0121919	ENSAPLG00020000200	SSBP1	101801333
Spliceosome	path:apla03040	32	3	0.0132187	ENSAPLG00020015268	RBM17	101791010
Spliceosome	path:apla03040	32	3	0.0132187	ENSAPLG00020017110	HSPA8	101801738
Spliceosome	path:apla03040	32	3	0.0132187	ENSAPLG00020016819	LSM5	101801966
Nucleotide excision repair	path:apla03420	12	2	0.0144838	ENSAPLG00020001984	RBX1	101796040
Nucleotide excision repair	path:apla03420	12	2	0.0144838	ENSAPLG00020000432	RPA3	101797991
Protein processing in endoplasmic reticulum	path:apla04141	35	3	0.0168750	ENSAPLG00020001984	RBX1	101796040
Protein processing in endoplasmic reticulum	path:apla04141	35	3	0.0168750	ENSAPLG00020006142	HSP90AA1	101800442
Protein processing in endoplasmic reticulum	path:apla04141	35	3	0.0168750	ENSAPLG00020017110	HSPA8	101801738
Glycosphingolipid biosynthesis - globo and isoglobo series	path:apla00603	4	1	0.0614510	ENSAPLG00020013201	ST3GAL1	101790636
Phagosome	path:apla04145	28	2	0.0707301	ENSAPLG00020000777	ATP6V1D	101792552
Phagosome	path:apla04145	28	2	0.0707301	ENSAPLG00020016388	ATP6V1G1	101792649
Steroid biosynthesis	path:apla00100	5	1	0.0762249	ENSAPLG00020000876	MSMO1	101804996
Glycosphingolipid biosynthesis - ganglio series	path:apla00604	5	1	0.0762249	ENSAPLG00020013201	ST3GAL1	101790636

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts (*continued*)

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Glycosaminoglycan biosynthesis - keratan sulfate	path:apla00533	6	1	0.0907705	ENSAPLG00020013201	ST3GAL1	101790636
MAPK signaling pathway	path:apla04010	74	3	0.1093467	ENSAPLG00020001696	ANGPT1	101795228
MAPK signaling pathway	path:apla04010	74	3	0.1093467	ENSAPLG00020001281	IGF2	101799111
MAPK signaling pathway	path:apla04010	74	3	0.1093467	ENSAPLG00020017110	HSPA8	101801738
Neuroactive ligand-receptor interaction	path:apla04080	88	3	0.1594164	ENSAPLG00020014887	PENK	101789452
Neuroactive ligand-receptor interaction	path:apla04080	88	3	0.1594164	ENSAPLG00020017703	GAL	101799195
Neuroactive ligand-receptor interaction	path:apla04080	88	3	0.1594164	ENSAPLG00020011903	GABBR2	101800740
Ferroptosis	path:apla04216	11	1	0.1601918	ENSAPLG00020017400	LTF	101795303
Ribosome	path:apla03010	47	2	0.1680508	ENSAPLG00020018148	RPL17-C18orf32	101799070
Ribosome	path:apla03010	47	2	0.1680508	ENSAPLG00020005132	RPL21	101802323
mTOR signaling pathway	path:apla04150	47	2	0.1680508	ENSAPLG00020000777	ATP6V1D	101792552
mTOR signaling pathway	path:apla04150	47	2	0.1680508	ENSAPLG00020016388	ATP6V1G1	101792649
Mucin type O-glycan biosynthesis	path:apla00512	12	1	0.1734380	ENSAPLG00020013201	ST3GAL1	101790636
Amino sugar and nucleotide sugar metabolism	path:apla00520	14	1	0.1993179	ENSAPLG00020017392	GNPNAT1	101791122
Fanconi anemia pathway	path:apla03460	14	1	0.1993179	ENSAPLG00020000432	RPA3	101797991
Progesterone-mediated oocyte maturation	path:apla04914	22	1	0.2951142	ENSAPLG00020006142	HSP90AA1	101800442
Cell adhesion molecules	path:apla04514	25	1	0.3280567	ENSAPLG00020001098	CLDN23	110352719
RNA degradation	path:apla03018	29	1	0.3696385	ENSAPLG00020016819	LSM5	101801966
Vascular smooth muscle contraction	path:apla04270	30	1	0.3796327	ENSAPLG00020013884	CALD1	101804696
TGF-beta signaling pathway	path:apla04350	32	1	0.3991567	ENSAPLG00020001984	RBX1	101796040
NOD-like receptor signaling pathway	path:apla04621	33	1	0.4086911	ENSAPLG00020006142	HSP90AA1	101800442
Metabolic pathways	path:apla01100	328	6	0.4129475	ENSAPLG00020013201	ST3GAL1	101790636
Metabolic pathways	path:apla01100	328	6	0.4129475	ENSAPLG00020017392	GNPNAT1	101791122

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes/transcripts (*continued*)

Pathway	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
Metabolic pathways	path:apla01100	328	6	0.4129475	ENSAPLG00020000777	ATP6V1D	101792552
Metabolic pathways	path:apla01100	328	6	0.4129475	ENSAPLG00020016388	ATP6V1G1	101792649
Metabolic pathways	path:apla01100	328	6	0.4129475	ENSAPLG00020000876	MSMO1	101804996
Metabolic pathways	path:apla01100	328	6	0.4129475	ENSAPLG00020004175	NDUFAB1	106016795
Apelin signaling pathway	path:apla04371	35	1	0.4273165	ENSAPLG00020007039	GNG11	101794407
Cell cycle	path:apla04110	36	1	0.4364120	ENSAPLG00020001984	RBX1	101796040
Oocyte meiosis	path:apla04114	37	1	0.4453656	ENSAPLG00020001984	RBX1	101796040
Ubiquitin mediated proteolysis	path:apla04120	43	1	0.4962273	ENSAPLG00020001984	RBX1	101796040
Tight junction	path:apla04530	46	1	0.5199117	ENSAPLG00020001098	CLDN23	110352719
Wnt signaling pathway	path:apla04310	56	1	0.5912320	ENSAPLG00020001984	RBX1	101796040
Endocytosis	path:apla04144	63	1	0.6348560	ENSAPLG00020017110	HSPA8	101801738
Salmonella infection	path:apla05132	69	1	0.6685843	ENSAPLG00020006142	HSP90AA1	101800442

Shed Level I2 (Alt.L vs Alt.H) - Bursa - Gene

Amanda Dolinski & Jared J. Homola

20 March, 2021

This is an analysis of differential expression at the gene level between Alt.low and Alt.high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for bursa samples on 2 days post infection (DPI).

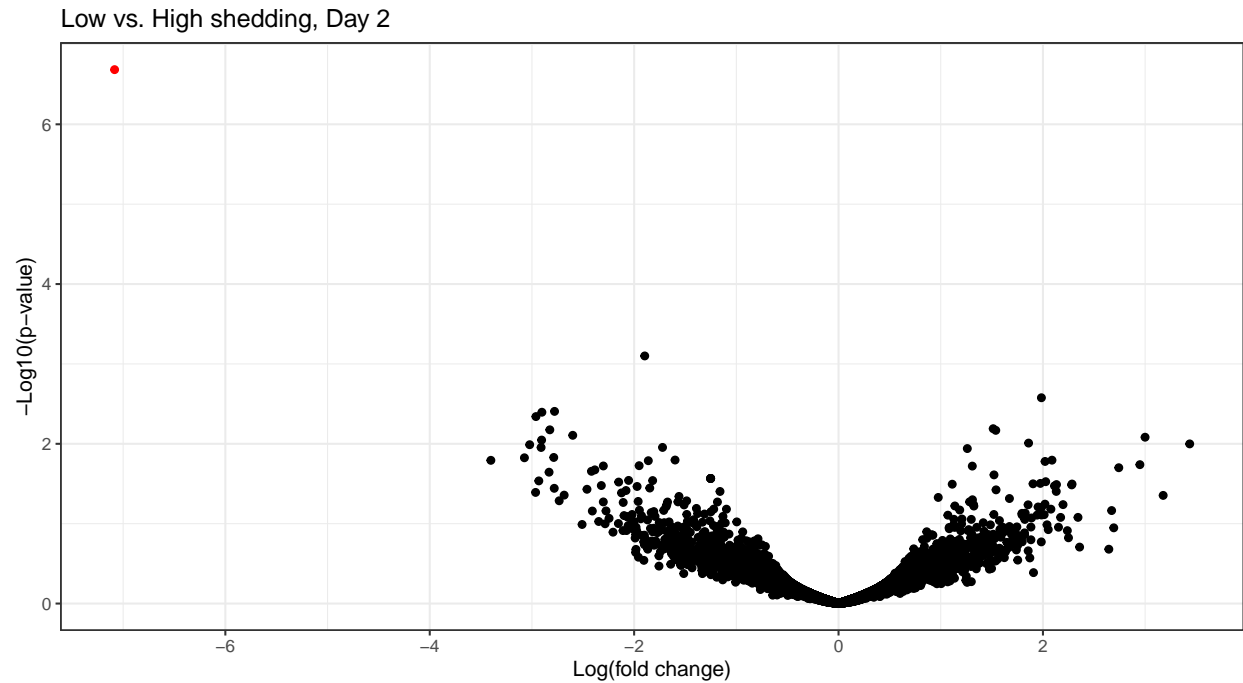
Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvH	1
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Heatmap

Hierarchical clustering of transcripts/genes and samples. Shown is a heat map illustrating the relative expression levels of each transcript (rows) in each sample (column). Rows are hierarchically clustered by expression. \log_2 -transformed expression values are z-transformed.

Table 2: Annotations for differentially expressed genes. ns denotes non-significant genes for each comparison and numerical values are the $\log(\text{fold change})$ difference

ensembl_gene_id	hgnc_symbol	LvH.I2
ENSAPLG00020007861	NA	-7.08

Table 3: Gene functions

	gene_biotype	hgnc_symbol	description
ENSAPLG00020007861	protein_coding	NA	ribosomal protein L23 [Source:NCBI gene;Acc:101793494]

Table 4: KEGG pathway analysis: pathways with p-values <0.05 were determined as over-represented (enriched) pathways of differentially expressed genes

Pathway *	PathwayID	N	DE	P.DE	ensembl_gene_id	hgnc_symbol	entrezgene_id
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Shed Level I2 (Alt.L vs Alt.H) - Bursa - Trans

Amanda Dolinski & Jared J. Homola

20 March, 2021

This is an analysis of differential expression at the transcript level between Alt.low and Alt.high LPAIV shedding mallards based on cloacal swab virus titers measured on the day of sacrifice for bursa samples on 2 days post infection (DPI).

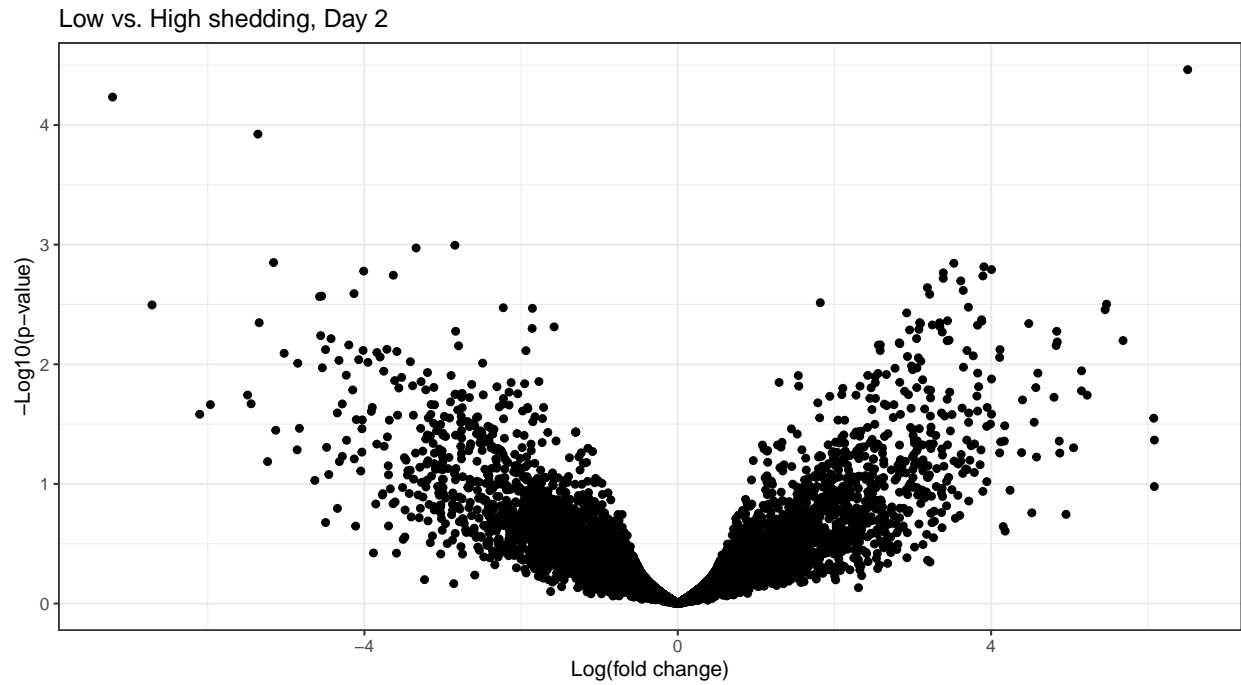
Differential expression analysis

Table 1: Count of DE transcripts. For a transcript to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvH	0
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Shed Level I5 (LvMvH) - Ileum - Gene

Amanda Dolinski & Jared J. Homola

19 March, 2021

This is an analysis of differential expression at the gene level between between low, moderate, and high LPAIV shedding mallards based on cloacal swab virus titers averaged across 1-5 days post-infection (DPI) for infected mallard ileum samples collected on 5 DPI.

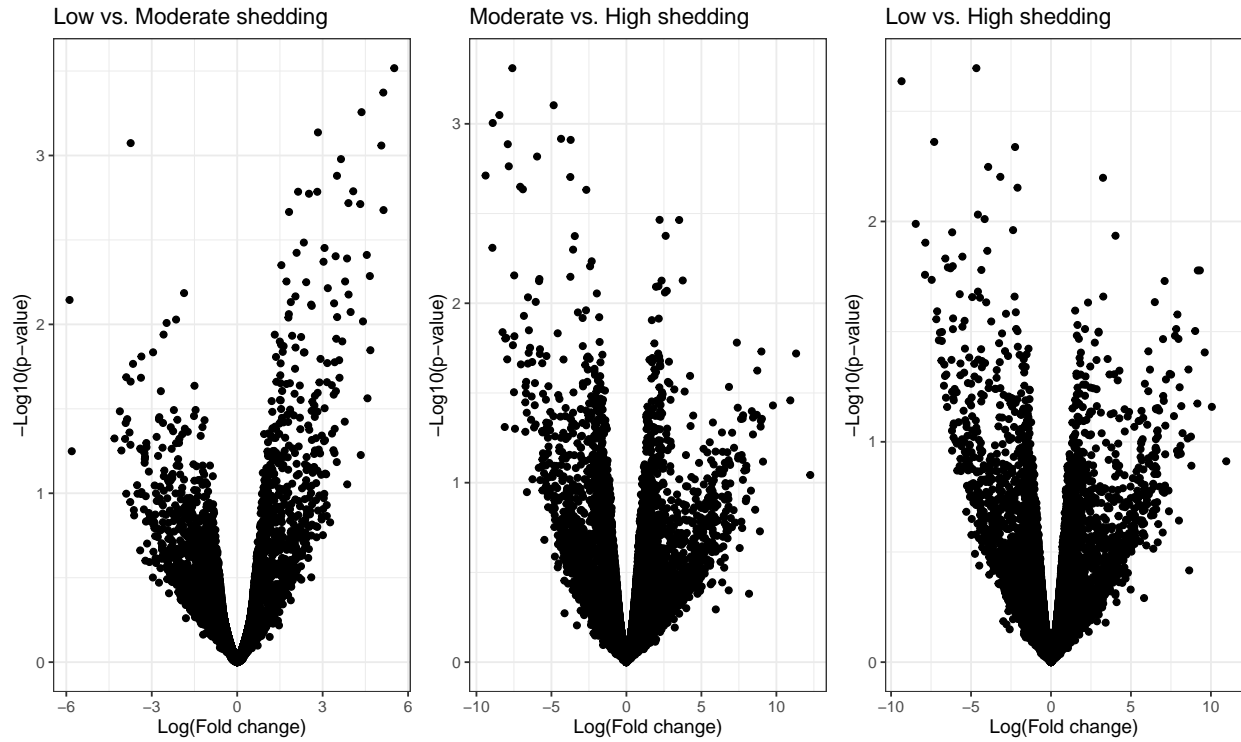
Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	0
Up	LvM	0
Down	MvH	0
Up	MvH	0
Down	LvH	0
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Shed Level I5 (LvMvH) - Bursa - Gene

Amanda Dolinski & Jared J. Homola

19 March, 2021

This is an analysis of differential expression at the gene level between shedding rate groupings based on average shedding rates for infected mallard bursa samples collected on 5 DPI.

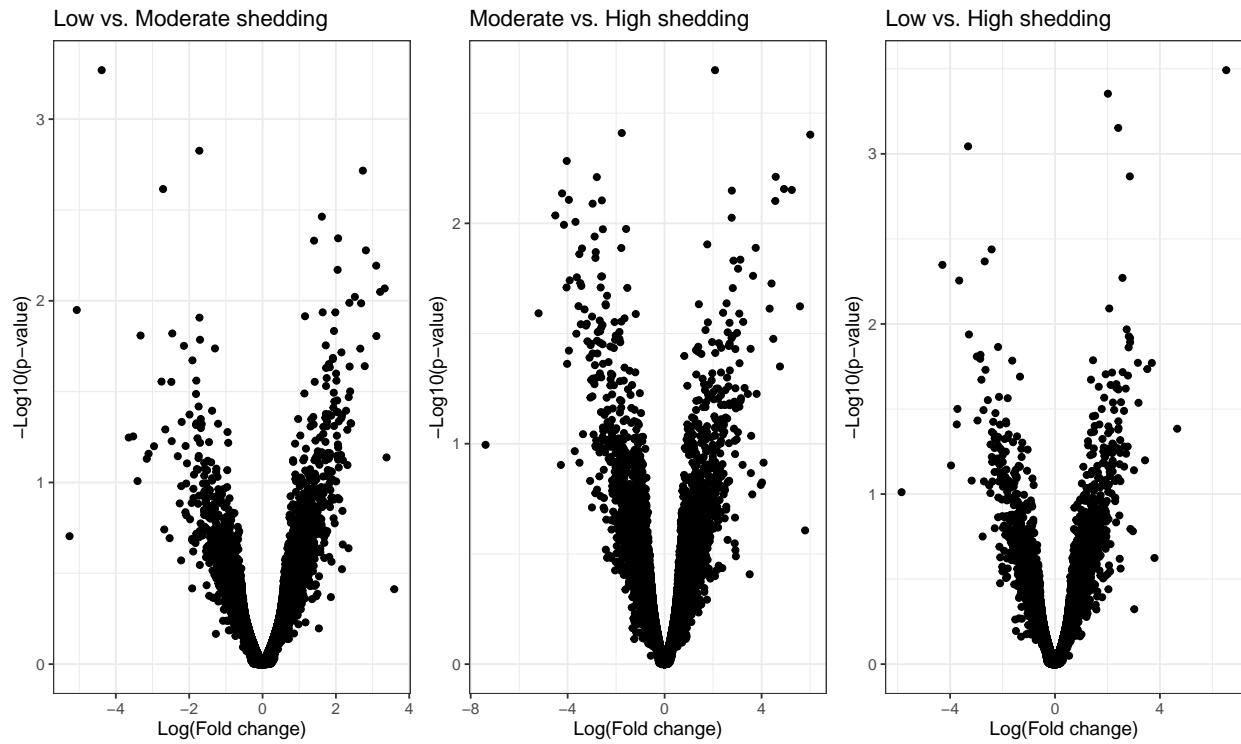
Differential expression analysis

Table 1: Count of DE genes. For a gene to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	0
Up	LvM	0
Down	MvH	0
Up	MvH	0
Down	LvH	0
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red



Shed Level I5 (LvMvH) - Bursa - Transcript

Amanda Dolinski & Jared J. Homola

19 March, 2021

This is an analysis of differential expression at the transcript level between low, moderate, and high LPAIV shedding mallards based on cloacal swab virus titers averaged across 1-5 days post-infection (DPI) for bursa samples collected on 5 DPI.

Differential expression analysis

Table 1: Count of DE transcripts. For a transcript to be considered differentially expressed, we require a p-value of 0.1 with a false discovery rate correction and a log fold change difference of 0.5.

Direction	Comparison	N
Down	LvM	0
Up	LvM	0
Down	MvH	0
Up	MvH	0
Down	LvH	0
Up	LvH	0

Volcano plot

Volcano plot reporting $-\log_{10}(\text{p-values})$ as a function of $\log_2(\text{fold change})$ between the samples (logFC, x axis). Transcripts/genes that are identified as significantly differentially expressed following a false discovery rate correction ($q = 0.10$) are shown in red

