

FINAL REPORT OF LABORATORY EXAMINATION

4011 Discovery Drive, Columbia, MO 65201

1-800-669-0825 1-573-499-5700

idxxbioanalytics@idexx.com

www.idexxbioanalytics.com

IDEXX BioAnalytics Case # 26458-2019

Received: 9/18/2019

Completed: 9/26/2019

Submitted By

Justin Wilson
 University of Missouri-RCA-MMRRC
 University of Missouri-RCA-MMRRC
 Columbia, MO 65201

Phone: 573-884-2524
 Email: wilsonjus@missouri.edu; KorteS@missouri.edu;
 oconnore@missouri.edu; FranklinC@missouri.edu;
 watermanjd@missouri.edu; RhoadesJN@missouri.edu

Specimen Description

Species: mouse
 Breed/Strain: CR ATH HE
 Description: Whole Animal
 Number of Specimens/Animals: 10
 Building/Facility: Discovery Ridge

Client ID	Investigator	Room #	Species	Strain /Breed	Sex	Rack	Date Placed
116-A	Franklin	W116	mouse	CR ATH HE	F	1	6/17/2019
116-B	Franklin	W116	mouse	CR ATH HE	F	3	6/17/2019
116-C	Franklin	W116	mouse	CR ATH HE	F	4	6/17/2019
116-D	Franklin/Bryda	W116	mouse	CR ATH HE	F	5	6/17/2019
116-E	Franklin	W116	mouse	CR ATH HE	F	6	6/17/2019
113-A	Bryda	W113	mouse	CR ATH HE	F	2	6/17/2019
113-B	Bryda	W113	mouse	CR ATH HE	F	3	6/17/2019
113-C	Bryda	W113	mouse	CR ATH HE	F	4	6/17/2019
113-D	Bryda	W113	mouse	CR ATH HE	F	5	6/17/2019
113-E	Bryda	W113	mouse	CR ATH HE	F	6	6/17/2019

Services/Tests Performed: MU MMRRC Mouse Annual Sentinel Profile (1-10)

Serologic evaluation for antibodies to: *Clostridium piliforme*, *Mycoplasma pulmonis*, *Pneumocystis murina*, CAR bacillus, Ectromelia, EDIM, Hantaan, K virus, LCMV, LDEV, MAV1, MAV2, MCMV, MHV, MNV, MPV, MTV, MVM, Polyoma, PVM, REO3, Sendai, TMEV, *Encephalitozoon cuniculi*

PCR evaluation for: *Cryptosporidium* spp., *Helicobacter bilis*, *Helicobacter ganmani*, *Helicobacter hepaticus*, *Helicobacter mastomyrinus*, *Helicobacter rodentium*, *Helicobacter* spp., *Helicobacter typhlonius*, *Mycoplasma pulmonis*, *Streptobacillus moniliformis*, *Streptococcus* sp. beta hemolytic Group A, *Streptococcus* sp. beta hemolytic Group B, *Streptococcus* sp. beta hemolytic Group C, *Streptococcus* sp. beta hemolytic Group G

Parasitologic evaluation for: fur mites, mesostigmatid mites, lice, Spironucleus muris, Giardia muris, large

intestinal flagellates and amoeba, pinworms and tapeworms

Microbiologic evaluation for: *Bordetella bronchiseptica*, *Bordetella hinzii*, *Citrobacter rodentium*, *Corynebacterium bovis*, *Corynebacterium kutscheri*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, *Pasteurella multocida*, *Pasteurella pneumotropica* biotype Heyl, *Pasteurella pneumotropica* biotype Jawetz, *Salmonella enterica*, *Streptococcus pneumoniae*

General Comments: Discovery Ridge - 2019 Q3 'A' room mouse sentinel necropsies

Summary: All test results were negative. Please see the report for details.

NECROPSY

No gross lesions were detected in any of the body systems and organs examined.

SEROLOGY SUMMARY

	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
MTV	-	-	-	-	-	-	-	-	-
CAR bacillus	-	-	-	-	-	-	-	-	-
<i>Encephalitozoon cuniculi</i>	-	-	-	-	-	-	-	-	-
Ectromelia	-	-	-	-	-	-	-	-	-
EDIM	-	-	-	-	-	-	-	-	-
Hantaan	-	-	-	-	-	-	-	-	-
K virus	-	-	-	-	-	-	-	-	-
LCMV	-	-	-	-	-	-	-	-	-
LDEV	-	-	-	-	-	-	-	-	-
<i>Mycoplasma pulmonis</i>	-	-	-	-	-	-	-	-	-
MAV1	-	-	-	-	-	-	-	-	-
MAV2	-	-	-	-	-	-	-	-	-
MCMV	-	-	-	-	-	-	-	-	-
MHV	-	-	-	-	-	-	-	-	-
MNV	-	-	-	-	-	-	-	-	-
MPV	-	-	-	-	-	-	-	-	-
MVM	-	-	-	-	-	-	-	-	-
<i>Pneumocystis murina</i>	-	-	-	-	-	-	-	-	-
Polyoma	-	-	-	-	-	-	-	-	-
PVM	-	-	-	-	-	-	-	-	-
REO3	-	-	-	-	-	-	-	-	-
TMEV	-	-	-	-	-	-	-	-	-
Sendai	-	-	-	-	-	-	-	-	-
<i>Clostridium piliforme</i>	-	-	-	-	-	-	-	-	-
Mouse IgG	N	N	N	N	N	N	N	N	N

	113-E
MTV	-
CAR bacillus	-
<i>Encephalitozoon cuniculi</i>	-
Ectromelia	-
EDIM	-
Hantaan	-
K virus	-

	113-E
LCMV	-
LDEV	-
<i>Mycoplasma pulmonis</i>	-
MAV1	-
MAV2	-
MCMV	-
MHV	-
MNV	-
MPV	-
MVM	-
<i>Pneumocystis murina</i>	-
Polyoma	-
PVM	-
REO3	-
TMEV	-
Sendai	-
<i>Clostridium piliforme</i>	-
Mouse IgG	N

Legend: + = positive - = negative blank = test not performed EQ = equivocal HE = hemolysis precluded testing I = insufficient W = weak positive WB = Western Blot confirmatory analysis pending NS = non-specific reactivity N = normal IgG L = less than normal IgG

PCR EVALUATION

feces	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
<i>Cryptosporidium</i> spp.	-	-	-	-	-	-	-	-	-
<i>Helicobacter</i> spp.	-	-	-	-	-	-	-	-	-
<i>Helicobacter bilis</i>	-	-	-	-	-	-	-	-	-
<i>Helicobacter ganmani</i>	-	-	-	-	-	-	-	-	-
<i>Helicobacter hepaticus</i>	-	-	-	-	-	-	-	-	-
<i>Helicobacter mastomyrinus</i>	-	-	-	-	-	-	-	-	-
<i>Helicobacter rodentium</i>	-	-	-	-	-	-	-	-	-
<i>Helicobacter typhlonius</i>	-	-	-	-	-	-	-	-	-

feces	113-E
<i>Cryptosporidium</i> spp.	-
<i>Helicobacter</i> spp.	-
<i>Helicobacter bilis</i>	-
<i>Helicobacter ganmani</i>	-
<i>Helicobacter hepaticus</i>	-
<i>Helicobacter mastomyrinus</i>	-

feces	113-E
<i>Helicobacter rodentium</i>	-
<i>Helicobacter typhlonius</i>	-

oral swab	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
<i>Mycoplasma pulmonis</i>	-	-	-	-	-	-	-	-	-
<i>Streptobacillus moniliformis</i>	-	-	-	-	-	-	-	-	-
<i>Streptococcus</i> sp. beta hemolytic Group A	-	-	-	-	-	-	-	-	-
<i>Streptococcus</i> sp. beta hemolytic Group B	-	-	-	-	-	-	-	-	-
<i>Streptococcus</i> sp. beta hemolytic Group C	-	-	-	-	-	-	-	-	-
<i>Streptococcus</i> sp. beta hemolytic Group G	-	-	-	-	-	-	-	-	-

oral swab	113-E
<i>Mycoplasma pulmonis</i>	-
<i>Streptobacillus moniliformis</i>	-
<i>Streptococcus</i> sp. beta hemolytic Group A	-
<i>Streptococcus</i> sp. beta hemolytic Group B	-
<i>Streptococcus</i> sp. beta hemolytic Group C	-
<i>Streptococcus</i> sp. beta hemolytic Group G	-

Legend: + = positive - = negative id:id = pooled sample range id+id+id = non-range pooled sample NT or blank = no test performed wps = weak positive XX = Testing in progress

PARASITOLOGY

	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
parasites	-	-	-	-	-	-	-	-	-

	113-E
parasites	-

MICROBIOLOGY

Specimen/Source: cecum

Isolate	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
<i>Citrobacter rodentium</i>	-	-	-	-	-	-	-	-	-
<i>Klebsiella oxytoca</i>	-	-	-	-	-	-	-	-	-
<i>Klebsiella pneumoniae</i>	-	-	-	-	-	-	-	-	-
<i>Salmonella enterica</i>	-	-	-	-	-	-	-	-	-

Specimen/Source: cecum

Isolate	113-E
<i>Citrobacter rodentium</i>	-
<i>Klebsiella oxytoca</i>	-
<i>Klebsiella pneumoniae</i>	-
<i>Salmonella enterica</i>	-

Specimen/Source: oral swab

Isolate	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
<i>Bordetella bronchiseptica</i>	-	-	-	-	-	-	-	-	-
<i>Bordetella hinzii</i>	-	-	-	-	-	-	-	-	-
<i>Corynebacterium kutscheri</i>	-	-	-	-	-	-	-	-	-
<i>Pasteurella multocida</i>	-	-	-	-	-	-	-	-	-
<i>Pasteurella pneumotropica</i> biotype Heyl	-	-	-	-	-	-	-	-	-
<i>Pasteurella pneumotropica</i> biotype Jawetz	-	-	-	-	-	-	-	-	-
<i>Streptococcus pneumoniae</i>	-	-	-	-	-	-	-	-	-

Specimen/Source: oral swab

Isolate	113-E
<i>Bordetella bronchiseptica</i>	-
<i>Bordetella hinzii</i>	-
<i>Corynebacterium kutscheri</i>	-
<i>Pasteurella multocida</i>	-
<i>Pasteurella pneumotropica</i> biotype Heyl	-
<i>Pasteurella pneumotropica</i> biotype Jawetz	-
<i>Streptococcus pneumoniae</i>	-

Specimen/Source: skin swab

Isolate	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
<i>Corynebacterium bovis</i>	-	-	-	-	-	-	-	-	-

Specimen/Source: skin swab

Isolate	113-E
<i>Corynebacterium bovis</i>	-

Legend: + = agent recovered - = agent not recovered blank = test not performed n = no growth X = Preliminary

FINAL REPORT OF LABORATORY EXAMINATION

4011 Discovery Drive, Columbia, MO 65201

1-800-669-0825 1-573-499-5700

idxxbioanalytics@idexx.com

www.idexxbioanalytics.com

IDEXX BioAnalytics Case # 26458-2019

Received: 9/18/2019

Completed: 9/26/2019

SEROLOGY DETAILS

	Baseline	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
MTV										
MTV	MFI > 3.000	-	-	-	-	-	-	-	-	-
CAR bacillus										
CAR bacillus purified bacteria	MFI > 3.750	-	-	-	-	-	-	-	-	-
Encephalitozoon cuniculi										
<i>E. cuniculi</i> purified antigen	MFI > 1.200	-	-	-	-	-	-	-	-	-
Ectromelia										
Ectromelia purified virus	MFI > 2.000	-	-	-	-	-	-	-	-	-
EDIM										
EDIM purified virus	MFI > 4.000	-	-	-	-	-	-	-	-	-
EDIM VP6 recombinant	MFI > 2.500	-	-	-	-	-	-	-	-	-
Hantaan										
Hantaan NP	MFI > 4.000	-	-	-	-	-	-	-	-	-
K virus										
K purified virus	MFI > 4.500	-	-	-	-	-	-	-	-	-
LCMV										
LCMV recombinant	MFI > 3.000	-	-	-	-	-	-	-	-	-
LDEV										
LDEV	MFI > 4.500	-	-	-	-	-	-	-	-	-
Mycoplasma pulmonis										
<i>M. pulmonis</i> purified bacteria	MFI > 4.250	-	-	-	-	-	-	-	-	-
MAV1										
MAV1 purified virus	MFI > 3.750	-	-	-	-	-	-	-	-	-
MAV2										
MAV2 purified virus	MFI > 4.500	-	-	-	-	-	-	-	-	-
MCMV										

If you have questions, please call our toll free number at 1-800-669-0825 or e-mail us at IdexxBioAnalytics@idexx.com.

	Baseline	116-A	116-B	116-C	116-D	116-E	113-A	113-B	113-C	113-D
MCMV purified virus	MFI > 3.500	-	-	-	-	-	-	-	-	-
MHV										
MHV purified virus	MFI > 2.500	-	-	-	-	-	-	-	-	-
MHV NC recombinant	MFI > 2.500	-	-	-	-	-	-	-	-	-
MNV										
MNV purified virus	MFI > 3.000	-	-	-	-	-	-	-	-	-
MNV VP1 recombinant	MFI > 4.000	-	-	-	-	-	-	-	-	-
MPV										
MPV VP2 recombinant	MFI > 2.000	-	-	-	-	-	-	-	-	-
NS1 ¹	MFI > 3.750	-	-	-	-	-	-	-	-	-
MVM										
MVM VP2 recombinant	MFI > 2.000	-	-	-	-	-	-	-	-	-
NS1 ¹	MFI > 3.750	-	-	-	-	-	-	-	-	-
<i>Pneumocystis murina</i>										
<i>P. murina</i>	MFI > 0.750	-	-	-	-	-	-	-	-	-
Polyoma										
Polyoma purified virus	MFI > 3.750	-	-	-	-	-	-	-	-	-
PVM										
PVM purified virus	MFI > 2.500	-	-	-	-	-	-	-	-	-
REO3										
REO3 purified virus	MFI > 4.900	-	-	-	-	-	-	-	-	-
TMEV										
TMEV purified virus	MFI > 2.250	-	-	-	-	-	-	-	-	-
RTV purified virus	MFI > 2.750	-	-	-	-	-	-	-	-	-
Sendai										
Sendai purified virus	MFI > 3.750	-	-	-	-	-	-	-	-	-
<i>Clostridium piliforme</i>										
<i>Clostridium piliforme</i> purified bacteria	MFI > 4.950	-	-	-	-	-	-	-	-	-

	Baseline	113-E
MTV		
MTV	MFI > 3.000	-
CAR bacillus		
CAR bacillus purified bacteria	MFI > 3.750	-
<i>Encephalitozoon cuniculi</i>		
<i>E. cuniculi</i> purified antigen	MFI > 1.200	-
Ectromelia		
Ectromelia purified virus	MFI > 2.000	-

	Baseline	113-E
EDIM		
EDIM purified virus	MFI > 4.000	-
EDIM VP6 recombinant	MFI > 2.500	-
Hantaan		
Hantaan NP	MFI > 4.000	-
K virus		
K purified virus	MFI > 4.500	-
LCMV		
LCMV recombinant	MFI > 3.000	-
LDEV		
LDEV	MFI > 4.500	-
<i>Mycoplasma pulmonis</i>		
<i>M. pulmonis</i> purified bacteria	MFI > 4.250	-
MAV1		
MAV1 purified virus	MFI > 3.750	-
MAV2		
MAV2 purified virus	MFI > 4.500	-
MCMV		
MCMV purified virus	MFI > 3.500	-
MHV		
MHV purified virus	MFI > 2.500	-
MHV NC recombinant	MFI > 2.500	-
MNV		
MNV purified virus	MFI > 3.000	-
MNV VP1 recombinant	MFI > 4.000	-
MPV		
MPV VP2 recombinant	MFI > 2.000	-
NS1 ¹	MFI > 3.750	-
MVM		
MVM VP2 recombinant	MFI > 2.000	-
NS1 ¹	MFI > 3.750	-
<i>Pneumocystis murina</i>		
<i>P. murina</i>	MFI > 0.750	-
Polyoma		
Polyoma purified virus	MFI > 3.750	-
PVM		
PVM purified virus	MFI > 2.500	-
REO3		
REO3 purified virus	MFI > 4.900	-
TMEV		

	Baseline	113-E
TMEV purified virus	MFI > 2.250	-
RTV purified virus	MFI > 2.750	-
Sendai		
Sendai purified virus	MFI > 3.750	-
<i>Clostridium piliforme</i>		
<i>Clostridium piliforme</i> purified bacteria	MFI > 4.950	-

NS1¹: NS1 protein is highly conserved among rodent parvoviruses and thus serves as a generic assay for parvovirus seroconversion.

Legend: + = positive - = negative blank = test not performed EQ = equivocal HE = hemolysis precluded testing I = insufficient W = weak positive WB = Western Blot confirmatory analysis pending NS = non-specific reactivity N = normal IgG L = less than normal IgG

Positive MFI results are reported as "+" followed by a number from 1 to 33 in thousands rounded off to the nearest thousand.

FINAL REPORT OF LABORATORY EXAMINATION

4011 Discovery Drive, Columbia, MO 65201

1-800-669-0825 1-573-499-5700

idxxbioanalytics@idexx.com

www.idexxbioanalytics.com

IDEXX BioAnalytics Case # 26569-2019

Received: 9/18/2019

Completed: 9/20/2019

Submitted By

Resource Center Animals-MMRRC
University of Missouri-RCA-MMRRC
Columbia, MO 65201

Phone: 573-884-7970

Email: watermanjd@missouri.edu; oneilla@missouri.edu;
oconnore@missouri.edu; RhoadesJN@missouri.edu;
dewitta@missouri.edu; sharmaabh@missouri.edu

Specimen Description

Species: mouse

Description: Pelt Swab

Number of Specimens/Animals: 3

Building/Facility: Discovery Ridge

ID	Client ID	Investigator	Room #	Species
1	W113 mouse pin worm and fur mite swab	Bryda	W113	mouse
2	W114 mouse pin worm and fur mite swab	Bryda	W114	mouse
3	W116 mouse pin worm and fur mite swab	Bryda	W116	mouse

Services/Tests Performed: Pinworm and Fur Mite Panel - mouse (1-3)

PCR evaluation for: *Aspicularis tetraptera*, *Myocoptes*, *Radfordia/Myobia*, *Syphacia muris*, *Syphacia obvelata*

General Comments: AOBMMRRC Quarterly Pin Worm and Fur Mite Testing.

Summary: All test results were negative.

PCR EVALUATION

pelt swab	1	2	3
<i>Aspiculuris tetraptera</i>	-	-	-
<i>Syphacia muris</i>	-	-	-
<i>Syphacia obvelata</i>	-	-	-
<i>Myocoptes</i>	-	-	-
<i>Radfordia/Myobia</i>	-	-	-

Legend: + = positive - = negative id:id = pooled sample range id+id+id = non-range pooled sample NT or blank = no test performed wps = weak positive XX = Testing in progress

Test Results

Order #: **2019045086**

LTM Customer ID: 39099
University of Missouri
U Missouri OAR

Charles River Research Animal Diagnostic Services
(CR RADS)
261 Ballardvale Street
Receiving Dock, Bldg 22
Wilmington MA 01887 USA

OAR Room 01
1720 E Campus Drive
Columbia, MO 65201 USA

Billing Information

Payment Method

Standing Purchase PO#: COLUM-C0000431778
Order Exp. 6/2020

University of Missouri
1720 E Campus Drive
Columbia, MO 65201 USA

Details

Sample(s) from: DCRC

Collection Date
18-Sep-2019

Arrival Date
24-Sep-2019

Approval Date
27-Sep-2019

Notes

Disco - 2019 Q3 - Mice sentinel PCR "A" rooms

Diagnostic Summary

Test	Colony	Tested	+	+/-	?	PDG
All results NEGATIVE						

+ = Positive, +/- = Equivocal, ? = Indeterminate, PDG = Pending

To assure the health status of your research animal colonies, it is essential that you understand the sources, pathobiology, diagnosis and control of pathogens and other adventitious infectious agents that may cause research interference. We have summarized this important information in infectious agent **Technical Sheets**, which you can view by visiting http://www.criver.com/info/disease_sheets.

Test Results

Order #: **2019045086**

LTM Customer ID: 39099
University of Missouri
U Missouri OAR

Charles River Research Animal Diagnostic Services
(CR RADS)
261 Ballardvale Street
Receiving Dock, Bldg 22
Wilmington MA 01887 USA

OAR Room 01
1720 E Campus Drive
Columbia, MO 65201 USA

Sample(s) from: DCRC

Notes

Disco - 2019 Q3 - Mice sentinel PCR "A" rooms

Molecular Diagnostics: Infectious Disease PCR

Results approved by Thor, Savin on 27 Sep 2019

U Missouri Mite and Pinworm Screen PCR

	<u>1</u> 113	<u>2</u> 116
Mite PCR	-	-
Pinworm PCR	-	-

Remarks

- = Negative, +/- = Equivocal; + = Positive; I = Inconclusive.

An equivocal result indicates inconsistent amplification detected by real-time PCR.

Inconclusive indicates failure of control result.

Nucleic Acid Recovery Control (NRC)/Inhibition Control: A low copy exogenous nucleic acid was added to sample lysis prior to nucleic acid isolation to serve as both a control to monitor for nucleic acid recovery and PCR inhibition. An RNA NRC also monitors reverse transcription for RNA virus assays. Nucleic acid recovery and PCR inhibition is monitored by a PCR assay specific for the NRC template. Unless otherwise stated, the control results passed for this order.

Any samples reported as equivocal or positive result in this report has been confirmed by re-extracting nucleic acid and repeating real-time PCR amplification to confirm the initial testing result.

Recommended sample types are essential to accurate results. Missing or inappropriate sample types can effect detection. If this report contains an unexpected result or are unsure of recommended sample types, please contact Lab Services@crl.com before taking any action. Additional or alternative testing may be essential to reaching an accurate diagnosis. We will be glad to test newly submitted samples for the positive agents up to the number of unexpected results in this order.

Test Results

Order #: **2019045086**

LTM Customer ID: 39099
University of Missouri
U Missouri OAR

Charles River Research Animal Diagnostic Services
(CR RADS)
261 Ballardvale Street
Receiving Dock, Bldg 22
Wilmington MA 01887 USA

OAR Room 01
1720 E Campus Drive
Columbia, MO 65201 USA

Sample(s) from: DCRC

Notes

Disco - 2019 Q3 - Mice sentinel PCR "A" rooms

Sample Information

Number	Code	Species	Colony	Investigator	Facility	Location	Strain	Placem ent Date
1	113	Mouse	DCRC Sentinel	Bryda	Discovery Ridge	W113	CR ATH HE	6/17/19
2	116	Mouse	DCRC Sentinel	Franklin / Bryda	Discovery Ridge	W116	CR ATH HE	6/17/19