

FINAL REPORT OF LABORATORY EXAMINATION

4011 Discovery Drive, Columbia, MO 65201

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idxxbioanalytics@idexx.com

www.idexxbioanalytics.com

IDEXX BioAnalytics Case # 26280-2019

Received: 9/18/2019

Completed: 9/25/2019

Submitted By

Justin Wilson
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 University of Missouri-RRRC
 Columbia, MO 65201

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Specimen Description

Species: rat
 Breed/Strain: HET RNU
 Description: Whole Animal
 Number of Specimens/Animals: 11
 Building/Facility: Discovery Ridge

Client ID	Investigator	Room #	Species	Strain /Breed	Sex	Rack	Date Placed
113-F	Bryda	W113	rat	HET RNU	F	1	6/17/2019
114-A	Bryda	W114	rat	HET RNU	F	1	6/17/2019
114-B	Bryda	W114	rat	HET RNU	F	2	6/17/2019
114-C	Bryda	W114	rat	HET RNU	F	3	6/17/2019
112-A	Bryda	W112	rat	HET RNU	F	1	6/17/2019
112-B	Bryda	W112	rat	HET RNU	F	2	6/17/2019
112-C	Bryda	W112	rat	HET RNU	F	3	6/17/2019
112-D	Bryda	W112	rat	HET RNU	F	4	6/17/2019
112-E	Bryda	W112	rat	HET RNU	F	5	6/17/2019
112-F	Bryda	W112	rat	HET RNU	F	6	6/17/2019
112-G	Bryda	W112	rat	HET RNU	F	7	6/17/2019

Services/Tests Performed: RRRC Rat Rederivation Necropsy Profile (1-11)

Serologic evaluation for antibodies to: *Clostridium piliforme*, *Mycoplasma pulmonis*, CAR bacillus, H1, Hantaan, KRV, LCMV, MAV1, PVM, RCV/SDAV, REO3, RMV, RPV, RTV, Sendai

PCR evaluation for: *Helicobacter bilis*, *Helicobacter ganmani*, *Helicobacter hepaticus*, *Helicobacter mastomyrinus*, *Helicobacter rodentium*, *Helicobacter spp.*, *Helicobacter typhlonius*, *Mycoplasma pulmonis*, *Pneumocystis carinii*, *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: *Corynebacterium kutscheri*, *Pasteurella multocida*, *Pasteurella pneumotropica* biotype Heyl, *Pasteurella pneumotropica* biotype Jawetz, *Salmonella enterica*, *Streptococcus pneumoniae*

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

Summary: Reactivity to *Clostridium piliforme* was detected by MFI in sample 112-G; however, the follow-up *Clostridium piliforme* IFA test result was negative. The overall conclusion is that the sample is negative for antibodies to *Clostridium piliforme*. This pattern of reactivity is indicative of non-specific antibody adherence.

Please see the report for details.

NECROPSY

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

SEROLOGY SUMMARY

	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-E
CAR bacillus	-	-	-	-	-	-	-	-	-
Hantaan	-	-	-	-	-	-	-	-	-
LCMV	-	-	-	-	-	-	-	-	-
<i>Mycoplasma pulmonis</i>	-	-	-	-	-	-	-	-	-
MAV1	-	-	-	-	-	-	-	-	-
RPV	-	-	-	-	-	-	-	-	-
RMV	-	-	-	-	-	-	-	-	-
KRV	-	-	-	-	-	-	-	-	-
H1	-	-	-	-	-	-	-	-	-
PVM	-	-	-	-	-	-	-	-	-
RCV/SDAV	-	-	-	-	-	-	-	-	-
REO3	-	-	-	-	-	-	-	-	-
RTV	-	-	-	-	-	-	-	-	-
Sendai	-	-	-	-	-	-	-	-	-
<i>Clostridium piliforme</i>	-	-	-	-	-	-	-	-	-
Rat IgG	N	N	N	N	N	N	N	N	N

	112-F	112-G
CAR bacillus	-	-
Hantaan	-	-
LCMV	-	-
<i>Mycoplasma pulmonis</i>	-	-
MAV1	-	-
RPV	-	-
RMV	-	-
KRV	-	-
H1	-	-
PVM	-	-
RCV/SDAV	-	-
REO3	-	-
RTV	-	-
Sendai	-	-
<i>Clostridium piliforme</i>	-	-
Rat IgG	N	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	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-E
<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	112-F	112-G
<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>	-	-

lung	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-E
<i>Pneumocystis carinii</i>	-	-	-	-	-	-	-	-	-

lung	112-F	112-G
<i>Pneumocystis carinii</i>	-	-

oral swab	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-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	-	-	-	-	-	-	-	-	-

oral swab	112-F	112-G
<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

	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-E
parasites	-	-	-	-	-	-	-	-	-

	112-F	112-G
parasites	-	-

MICROBIOLOGY

Specimen/Source: cecum

Isolate	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-E
<i>Salmonella enterica</i>	-	-	-	-	-	-	-	-	-

Specimen/Source: cecum

Isolate	112-F	112-G
<i>Salmonella enterica</i>	-	-

Specimen/Source: oral swab

Isolate	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-E
<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	112-F	112-G
<i>Corynebacterium kutscheri</i>	-	-
<i>Pasteurella multocida</i>	-	-

Isolate	112-F	112-G
<i>Pasteurella pneumotropica</i> biotype Heyl	-	-
<i>Pasteurella pneumotropica</i> biotype Jawetz	-	-
<i>Streptococcus pneumoniae</i>	-	-

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

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IDEXX BioAnalytics Case # 26280-2019

Received: 9/18/2019

Completed: 9/25/2019

SEROLOGY DETAILS

	Baseline	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-E
CAR bacillus										
CAR bacillus purified bacteria	MFI > 3.750	-	-	-	-	-	-	-	-	-
Hantaan										
Hantaan NP	MFI > 4.000	-	-	-	-	-	-	-	-	-
LCMV										
LCMV recombinant	MFI > 3.000	-	-	-	-	-	-	-	-	-
Mycoplasma pulmonis										
<i>M. pulmonis</i> purified bacteria	MFI > 4.250	-	-	-	-	-	-	-	-	-
MAV1										
MAV1 purified virus	MFI > 3.750	-	-	-	-	-	-	-	-	-
RPV										
RPV purified virus	MFI > 2.500	-	-	-	-	-	-	-	-	-
NS1 ¹	MFI > 3.750	-	-	-	-	-	-	-	-	-
RMV										
RMV VP2 recombinant	MFI > 2.000	-	-	-	-	-	-	-	-	-
NS1 ¹	MFI > 3.750	-	-	-	-	-	-	-	-	-
KRV										
KRV purified virus	MFI > 3.250	-	-	-	-	-	-	-	-	-
NS1 ¹	MFI > 3.750	-	-	-	-	-	-	-	-	-
H1										
H1 purified virus	MFI > 1.750	-	-	-	-	-	-	-	-	-
NS1 ¹	MFI > 3.750	-	-	-	-	-	-	-	-	-
PVM										
PVM purified virus	MFI > 2.500	-	-	-	-	-	-	-	-	-
RCV/SDAV										
RCV/SDAV purified virus	MFI > 3.750	-	-	-	-	-	-	-	-	-

	Baseline	113-F	114-A	114-B	114-C	112-A	112-B	112-C	112-D	112-E
RCV/SDAV Spike	MFI > 3.750	-	-	-	-	-	-	-	-	-
REO3										
REO3 purified virus	MFI > 4.900	-	-	-	-	-	-	-	-	-
RTV										
RTV purified virus	MFI > 2.000	-	-	-	-	-	-	-	-	-
TMEV purified virus	MFI > 2.000	-	-	-	-	-	-	-	-	-
Sendai										
Sendai purified virus	MFI > 3.750	-	-	-	-	-	-	-	-	-
<i>Clostridium piliforme</i>										
<i>Clostridium piliforme</i> purified bacteria	MFI > 4.950	-	-	-	-	-	-	-	-	-
<i>Clostridium piliforme</i>	IFA									

	Baseline	112-F	112-G
CAR bacillus			
CAR bacillus purified bacteria	MFI > 3.750	-	-
Hantaan			
Hantaan NP	MFI > 4.000	-	-
LCMV			
LCMV recombinant	MFI > 3.000	-	-
<i>Mycoplasma pulmonis</i>			
<i>M. pulmonis</i> purified bacteria	MFI > 4.250	-	-
MAV1			
MAV1 purified virus	MFI > 3.750	-	-
RPV			
RPV purified virus	MFI > 2.500	-	-
NS1 ¹	MFI > 3.750	-	-
RMV			
RMV VP2 recombinant	MFI > 2.000	-	-
NS1 ¹	MFI > 3.750	-	-
KRV			
KRV purified virus	MFI > 3.250	-	-
NS1 ¹	MFI > 3.750	-	-
H1			
H1 purified virus	MFI > 1.750	-	-
NS1 ¹	MFI > 3.750	-	-
PVM			
PVM purified virus	MFI > 2.500	-	-
RCV/SDAV			

	Baseline	112-F	112-G
RCV/SDAV purified virus	MFI > 3.750	-	-
RCV/SDAV Spike	MFI > 3.750	-	-
REO3			
REO3 purified virus	MFI > 4.900	-	-
RTV			
RTV purified virus	MFI > 2.000	-	-
TMEV purified virus	MFI > 2.000	-	-
Sendai			
Sendai purified virus	MFI > 3.750	-	-
<i>Clostridium piliforme</i>			
<i>Clostridium piliforme</i> purified bacteria	MFI > 4.950	-	+12
<i>Clostridium piliforme</i>	IFA		-

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.

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www.idexbioanalytics.com

IDEXX BioAnalytics Case # 26570-2019

Received: 9/18/2019

Completed: 9/20/2019

Submitted By

Resource Center Animals-RRRC
University of Missouri-RRRC
Columbia, MO 65201

Phone: 573-884-7970

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RhoadesJN@missouri.edu; dewitta@missouri.edu;
sharmaabh@missouri.edu

Specimen Description

Species: rat

Description: Pelt Swab

Number of Specimens/Animals: 4

ID	Client ID	Investigator	Room #	Species
1	W112 rat pin worm and fur mite swab racks 1-4A	Bryda	W112	rat
2	W112 rat pin worm and fur mite swab racks 4B-7	Bryda	W112	rat
3	W113 rat pin worm and fur mite swab	Bryda	W113	rat
4	W114 rat pin worm and fur mite swab	Bryda	W114	rat

Services/Tests Performed: Pinworm and Fur Mite Panel - rat (1-4)

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

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

Summary: All test results were negative.

PCR EVALUATION

pelt swab	1	2	3	4
<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 #: **2019045087**

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 - Rat 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 #: 2019045087

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 - Rat 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> 112	<u>2</u> 113	<u>3</u> 114
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 #: **2019045087**

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 - Rat sentinel PCR "A" rooms

Sample Information

Number	Code	Species	Colony	Investigator	Facility	Location	Strain	Placem ent Date
1	112	Rat	DCRC Sentinel	Bryda	Discovery Ridge	W112	HET RNU	6/17/19
2	113	Rat	DCRC Sentinel	Bryda	Discovery Ridge	W113	HET RNU	6/17/19
3	114	Rat	DCRC Sentinel	Bryda	Discovery Ridge	W114	HET RNU	6/17/19