Laboratory Outreach Communication System (LOCS) Call

Monday, January 23, 2023, at 3:00PM ET

- **Welcome**
  - Sean Courtney, CDC Division of Laboratory Systems
- **SARS-CoV-2 Variants Update**
  - Natalie Thornburg, CDC Division of Viral Diseases
- **Reclassification of the Brucella Genus: Public Health Impacts**
  - Rebekah Tiller and Melissa Bell, CDC Division of High-Consequence Pathogens and Pathology
- **2022 U.S. Monkeypox (Mpox) Outbreak & Federal Select Agent Program Regulations Update**
  - Shaw Gargis, CDC Division of Select Agents and Toxins
- **FDA Update**
  - Tim Stenzel, US Food and Drug Administration

About DLS

Vision

Exemplary laboratory science and practice advance clinical care, public health, and health equity.

Mission

Improve public health, patient outcomes, and health equity by advancing clinical and public health laboratory quality and safety, data and biorepository science, and workforce competency.

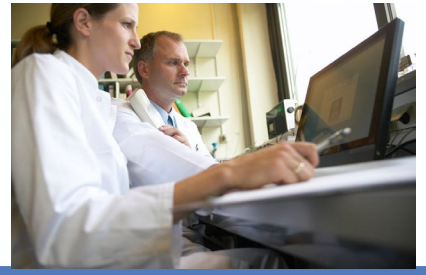
Four Goal Areas

Quality Laboratory Science

- Improve the quality and value of laboratory medicine and biorepository science for better health outcomes and public health surveillance

Highly Competent Laboratory Workforce

- Strengthen the laboratory workforce to support clinical and public health laboratory practice



Safe and Prepared Laboratories

- Enhance the safety and response capabilities of clinical and public health laboratories

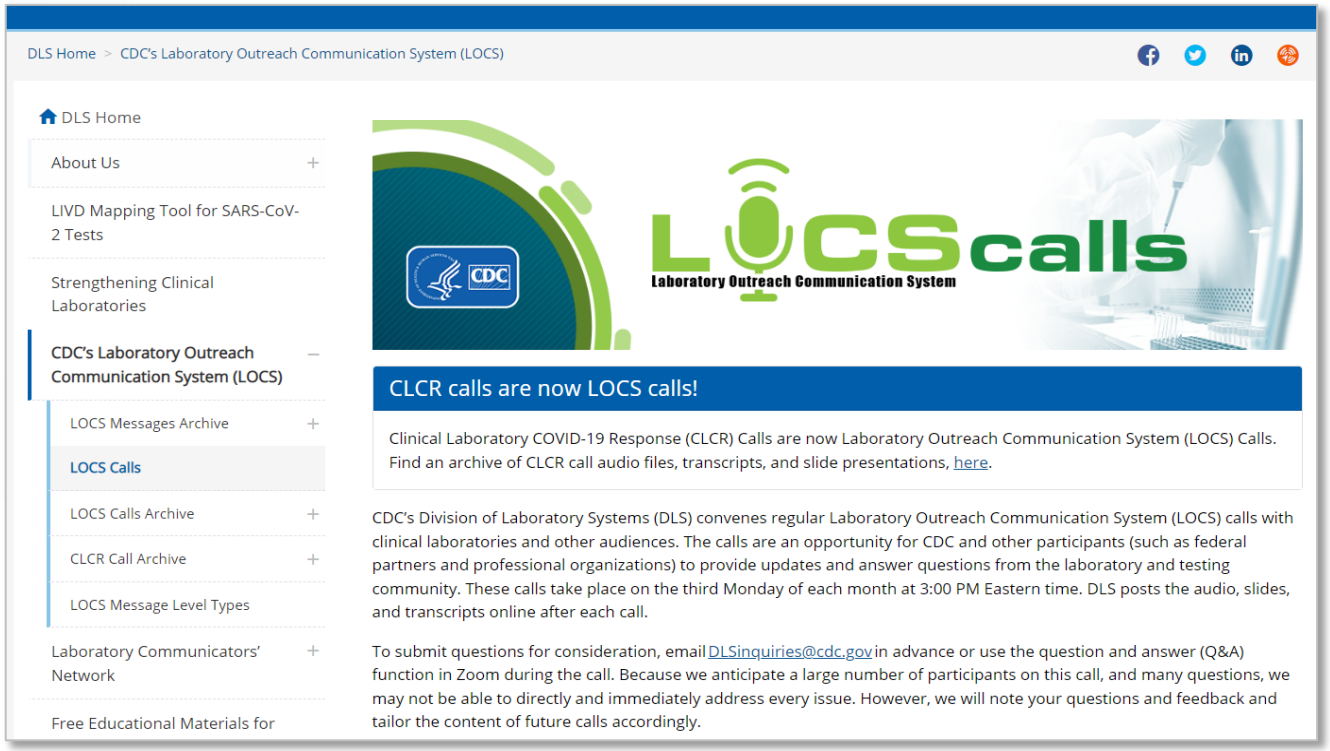
Accessible and Usable Laboratory Data

- Increase access and use of laboratory data to support response, surveillance, and patient care

LOCS Calls

https://www.cdc.gov/locs/calls

Find LOCS Call information, transcripts, and audio recordings on this page



We Want to Hear From You!

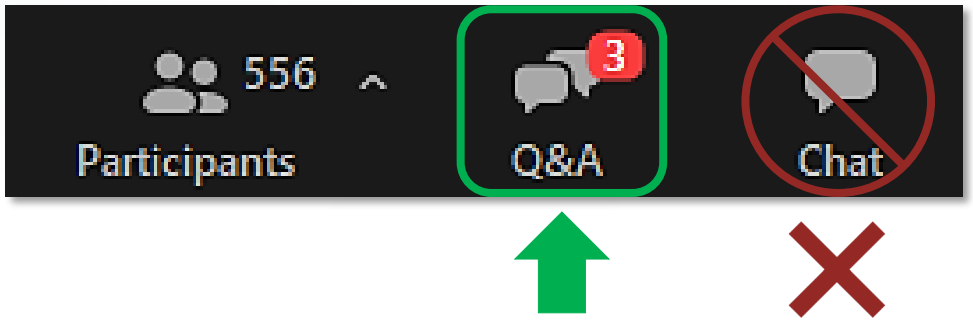
Training and Workforce Development

Questions about education and training?

Contact LabTrainingNeeds@cdc.gov

How to Ask a Question

- **Using the Zoom Webinar System**
  - Click the **Q&A button** in the Zoom webinar system
  - Type your question in the **Q&A box** and submit it
  - Please do not submit a question using the chat button



- For media questions, please contact CDC Media Relations at media@cdc.gov
- If you are a patient, please direct any questions to your healthcare provider

Slide decks may contain presentation material from panelists who are not affiliated with CDC. Presentation content from external panelists may not necessarily reflect CDC's official position on the topic(s) covered.

SARS-CoV-2 Variants Update

Natalie Thornburg
CDC Division of Viral Diseases

Reclassification of the *Brucella* Genus: Public Health Impacts

Zoonoses and Select Agent Laboratory

Bacterial Special Pathogens Branch

Brucella species: 2022

List of Prokaryotic names with Standing in Nomenclature (LPSN)

Classical *Brucella* species

1. Brucella abortus (Schmidt 1901) Meyer and Shaw 1920 (Approved Lists 1980)
2. Brucella canis Carmichael and Bruner 1968 (Approved Lists 1980)
3. Brucella ceti Foster et al. 2007
4. Brucella inopinata Scholz et al. 2010
5. Brucella melitensis (Hughes 1893) Meyer and Shaw 1920 (Approved Lists 1980)
6. Brucella microti Scholz et al. 2008
7. Brucella neotomae Stoenner and Lackman 1957 (Approved Lists 1980)
8. Brucella pinnipedialis Foster et al. 2007
9. Brucella ovis Buddle 1956 (Approved Lists 1980)
10. Brucella papionis Whatmore et al. 2014
11. Brucella suis Huddleson 1929 (Approved Lists 1980)
12. Brucella vulpis Scholz et al. 2016

There are several novel *Brucella* strains that have been described from frogs, bats, Australian rodents and a sting ray that have not been designated as species.

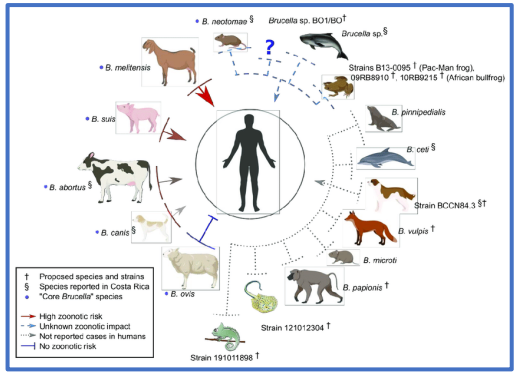
New *Brucella* species, previously Ochrobactrum

13. Brucella anthropi (Holmes et al. 1988) Hördt et al. 2020
14. Brucella ciceri (Imran et al. 2010) Hördt et al. 2020
15. Brucella cytisi (Zurdo-Piñeiro et al. 2007) Hördt et al. 2020
16. Brucella daejeonensis (Woo et al. 2011) Hördt et al. 2020
17. Brucella endophytica (Li et al. 2016) Hördt et al. 2020
18. Brucella gallinifaecis (Kämpfer et al. 2003) Hördt et al. 2020
19. Brucella grignonensis (Lebuhn et al. 2000) Hördt et al. 2020
20. Brucella haematophila (Kämpfer et al. 2007) Hördt et al. 2020
21. Brucella intermedia (Velasco et al. 1998) Hördt et al. 2020
22. Brucella lupini (Trujillo et al. 2006) Hördt et al. 2020
23. Brucella oryzae (Tripathi et al. 2006) Hördt et al. 2020
24. Brucella pecoris (Kämpfer et al. 2011) Hördt et al. 2020
25. Brucella pituitosa (Huber et al. 2010) Hördt et al. 2020
26. Brucella pseudintermedia (Teyssier et al. 2007) Hördt et al. 2020
27. Brucella pseudogrignonensis (Kämpfer et al. 2007) Hördt et al. 2020
28. Brucella rhizosphaerae (Kämpfer et al. 2008) Hördt et al. 2020
29. Brucella thiophenivorans (Kämpfer et al. 2008) Hördt et al. 2020
30. Brucella tritici (Lebuhn et al. 2000) Hördt et al. 2020

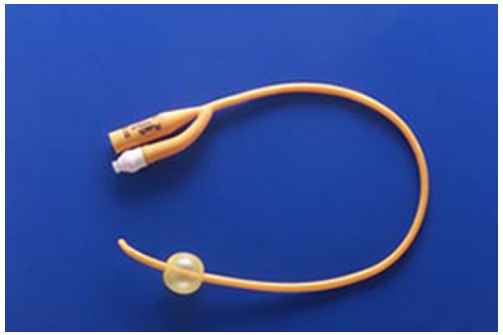
Ochrobactrum vs Brucella species

	Brucella Ochrobactrum species	*Classical Brucella (B. melitenis, B. suis, B. abortus, B. canis)*
Natural Habitat	Soil and water or in hospital environment	Animal reservoirs, zoonotic
Clinical significance	Rare, infections typically occur through use of contaminated equipment, or in hospital wounds from catheters, opportunistic	Insidious, invasion of multiple tissue types, development of chronic syndrome and focal complications
Reportable Disease	No	Brucellosis
Antimicrobial treatment	imipenem, the newer fluoroquinolones and the aminoglycosides (amikacin or gentamicin)	doxycycline and rifampin (6 weeks)
Antimicrobial Resistance	Yes	Rare

***Brucella* spp.**



***Ochrobactrum* sp.**



Ochrobactrum as a Pathogen

microorganisms

Review

The Genus *Ochrobactrum* as Major Opportunistic Pathogens

Michael P. Ryan [1,2] and J. Tony Pembroke [2,*]

Investigation of the scientific/medical literature presented a wide variety of infections resultant from *Ochrobactrum* spp. and these were resistant to a wide variety of antibiotics.

Table 1 Clinical features of reported cases of bacteremia caused by *Ochrobactrum anthropi*

Ref/year	Age/sex	Source of isolate	Underlying disease	CRB	Acq	Therapy	Outcome
4/1984	21/F	Blood	Astrocytoma	Yes	C	TMP-SMZ/Gen	Cured
5/1989	23/F	Blood, urine	Hodgkin's disease, BMT	No	N	TMP-SMZ	Cured
1/1992	3/F	Blood	Retinoblastoma	Yes	N	TMP-SMZ/Ami	Cured
6/1992	13/F	Blood[1], catheter	Rhabdomyosarcoma	Yes	ND	CR	Cured
	33/F	Blood, catheter	Thymoma	Yes	ND	CR	Cured
	70/F	Blood[1]	Peritonitis	Yes	N	Gen/CR	Cured
	43/M	Blood, catheter	Pancreatitis	Yes	N	Gen/CR	Cured
	28/F	Blood, catheter	Renal failure[a]	Yes	N	Gen/CR	Cured
	71/F	Blood	Postcardiac surgery	Yes	N	Gen/CR	Died[b]
	65/M	Blood	Post-thoracic surgery	Yes	N	Cip/Imi	Died[b]
10/1993	74/F	Blood	Alcoholism	No	C	Amox-clav/Ami/DB	Cured
7/1993	7/F	Blood	Acute leukemia	Yes	N	Imi/Gen/CR	Cured
8/1993	67/F	Blood	Acute leukemia	Yes	N	Cef/Net	Cured
	59/F	Blood[2]	Acute leukemia	Yes	N	Pip/Net/Flu/CR	Cured
	18/F	Blood	Acute leukemia	Yes	N	Imi	Relapsed
	2/F	Blood	Acute leukemia	Yes	N	Ami/CR	Cured
3/1994	33/F	Blood	Crohn's disease	Yes	N	Imi	Relapsed
	56/F	Blood	Gastric ulcer	ND	N	Pip/Gen	Cured
2/1994	23/M	Blood	Kidney transplant	No	N	None	Cured
	19/M	Blood	Kidney transplant	No	N	None	Cured
	38/F	Blood	Kidney, pancreas transplant	No	N	None	Cured
	41/M	Blood	Heart, kidney transplant	No	N	None	Cured
	34/M	Blood	Kidney transplant	No	N	None	Cured
9/1994	14/F	Blood	Acute leukemia	No	N	Pip/Gen/Flu	Cured
PR/1995	26/F	Blood[3], lung	Granulocytic sarcoma	No	C	Cip	Cured
	67/F	Blood	Multiple myeloma	Yes	N	Gen/CR	Cured

CRB = catheter-related bacteremia, Acq = acquisition; TMP-SMZ = trimethoprim-sulfamethoxazole; Gen = gentamicin; BMT = bone marrow transplant; Ami = amikacin; CR = catheter removal; Cip = ciprofloxacin; Imi = imipenem; Amox-clav = amoxicillin-clavulanic acid; DB = debridement; Cef = ceftazidime; Net = netilmicin; Pip = piperacillin; Flu = fluconazole.
Polymicrobial bacteremia: 1 = *Comamonas acidovorans*; 2 = *Candida albicans*; 3 = *Burkholderia cepacia*.
a = after caesarean section; b = not related to study.

The Public Health Impact

	Issue	Resolution
Sentinel Lab Diagnostics	Rapid ID systems have updated libraries with new nomenclature i.e. *Brucella (Ochrobactrum) anthropi*	Update ASM *Brucella* Rule-Out flow chart to include these new *Brucella (Ochrobactrum)* spp.
Brucella LRN Algorithm	Designed to differentiate 'classical' bio-threat *Brucella* species (*B. suis, B. abortus, B. melitensis* and *B. canis*)	Clarify use of the *Brucella* LRN algorithm with the new *Brucella (Ochrobactrum)* species
Biosafety	BMBL recommends working with '*Brucella'* spp. in BSL3 laboratory	Clarification on biosafety recommendations for working with 'new' *Brucella/Ochro* species
Patient management	*Brucella* identification of *intermedia/anthropi* **could create confusion** for physicians and mis-directing antibiotic therapy for *Ochrobactrum* infections	Provide clarification to clinical community of distinction between classical *Brucella* species causing brucellosis vs *Brucella ochrobactrum* species and appropriate treatment regimens
Reporting	*Brucella (Ochrobactrum*) species do not cause brucellosis.	Clarify *Brucella s*pecies causing brucellosis in CSTE case definition

Brucella ID ≠ Brucellosis

- Blood culture positive patient
- ***Bacteria identified as Brucella anthropi or Brucella intermedia by 16s*.**
- Resulted as '***Brucella* spp."**
- How would physician treat them?
- Brucellosis is typically treated using doxycycline and rifampin in combination for a minimum of 6-8 weeks.
- Recommended treatment of ***O. intermedium/anthropi*** infection is imipenem, the newer fluoroquinolones and the aminoglycosides (amikacin or gentamicin)

Aerobic Blood Culture (Preliminary result)

Blood Culture Result	**Positive Blood Culture (A)**

In aerobic bottle Brucella species (Crit)
. - Brucella intermedia or Brucella anthropi
Organism sent to reference laboratory for identification and susceptibility testing.

[redacted]

Comments:
In Aerobic Bottle: gram negative rods 09/02/21 7:57 PM lm

This is a Corrected Report: Brucella species 09/10/21 3:58 PM

Was Previously Reported as: Presumptive Ochrobactrum intermedium

pathogens

MDPI

Review

Pathogenicity and Its Implications in Taxonomy: The *Brucella* and *Ochrobactrum* Case

Edgardo Moreno [1,*], José María Blasco [2], Jean Jacques Letesson [3], Jean Pierre Gorvel [4,*] and Ignacio Moriyón [5]

American Society for Microbiology Rule-Out Testing

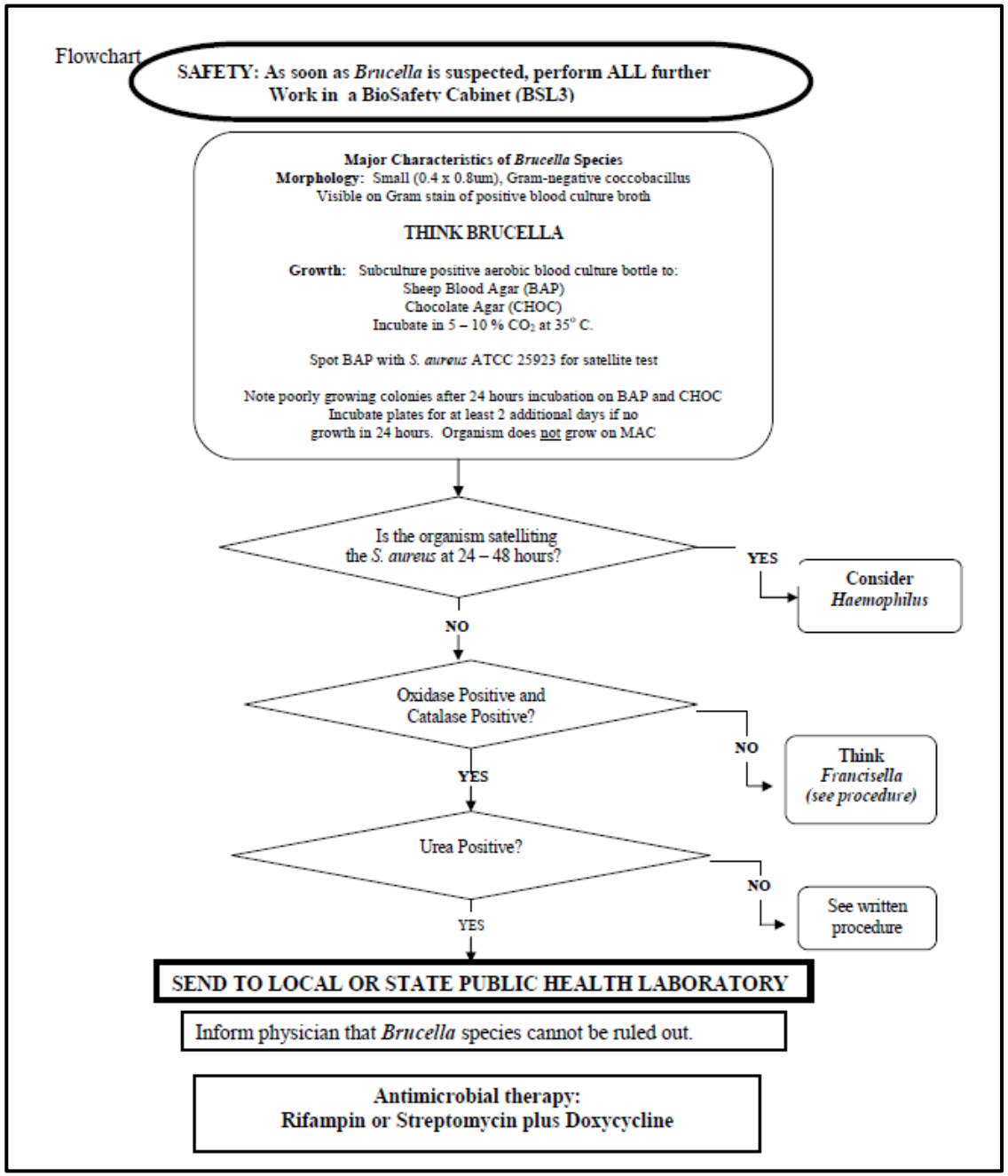
SENTINEL LEVEL CLINICAL LABORATORY GUIDELINES FOR SUSPECTED AGENTS OF BIOTERRORISM AND EMERGING INFECTIOUS DISEASES

***Brucella* species**

American Society for Microbiology (ASM)

Revised March 2016

https://www.asm.org/Articles/Policy/Laboratory-Response-Network-LRN-Sentinel-Level-C

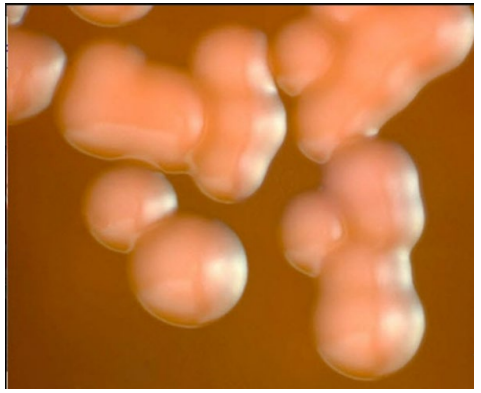


Ochrobactrum vs Brucella species

	Classical Brucella	*Ochrobactrum*
Culture	Obligate aerobic, 48-72-hour growth	Obligate aerobic, 24-hour growth
Gram stain	Gram-negative, coccobacilli or short rods	Gram-negative, rods with parallel sides
Cell size	0.5–0.7×0.6–1.5µm	1.0 × 1.5–2.0 µm
Morphology	colonies are very small, smooth, round, glittering and translucent	colonies are big, creamy, smooth shiny, mucoid
MacConkey	No Growth	Growth
Motility	Non-motile	Motile (variable)
Hemolysis	No hemolysis	No hemolysis
Catalase	Positive	Positive
Oxidase	Positive	Positive
Urease	Positive	Variable

Brucella sp.

Ochrobactrum sp.



Current Recommendations

Level	Circumstance	Recommendation
Clinical laboratory	Isolate identified as a "*Brucella (Ochrobactrum) anthropi* or *Brucella (Ochrobactrum) intermedium*" on a rapid identification system or genomic test	1. Evaluate using the **ASM rule-out testing** 2. If unable to differentiate using microbiological methods, refer to SPHL for rule-out testing
Clinical laboratory	Isolate identified as a "*Brucella* spp" on a rapid identification system	1. Evaluate using the **ASM rule-out testing** 2. Refer to SPHL for rule-out testing if unable to differentiate using microbiological methods
State PHL	Isolate is negative on the *Brucella* LRN PCR	1. Report "No *Brucella* DNA detected"- no further testing required 2. If desired, submit isolate to CDC's Special Bacteriology Reference Laboraotry for further identification
Clinical community	Patient is infected with *Brucella (Ochrobactrum) species (i.e anthropi, intermedium,* other)	Treat for *Ochrobactrum* infection
State Epidemiologist	Patient infected with *Brucella (Ochrobactrum)* species (*i.e anthropi, intermedium,* other)	Do NOT report as brucellosis

Questions?

Bacterial Special Pathogens Branch: bzb@cdc.gov
Zoonoses and Select Agent Laboratory: zsal@cdc.gov
Rebekah Tiller: eto3@cdc.gov
Melissa Bell: jqv7@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

2022 U.S. Mpox Outbreak & FSAP Regulations

LOCS Call

Shaw Gargis, PhD

Associate Director for Science (Acting)

Division of Select Agent and Toxins

1/23/2023

Mpox Regulatory language

- §73.3 HHS select agents and toxins

  (b) HHS select agents and toxins:

  Monkeypox virus (Mpox)

  (d) HHS select agents or toxins that meet any of the following criteria are excluded from the requirements of this part:

  12) Any South American genotypes of Eastern Equine Encephalitis Virus and **any West African Clade of monkeypox virus provided that the individual or entity can identify that the agent is within the exclusion category.**

SA Gram clarifying the regulatory status of materials

- Currently, there are two clades of Mpox virus:
  - Congo Basin clade (Clade I) and West African clade (Clades IIa and IIb).
  - Up to this point in the 2022 U.S. Mpox Outbreak, laboratory testing has indicated that the current outbreak is associated with the Clade IIb of the Mpox virus.
- Mpox virus is regulated as an HHS-only select agent [42 CFR 73.3(b)] and entities that possess, use, or transfer this agent must comply with the HHS Select Agent and Toxin Regulations [42 CFR 73] (“the regulations”) unless there is an applicable exemption or exclusion, such as the following:

SA Gram clarifying the regulatory status of materials: Exclusion

- West African Clade Exclusion (Clade IIa or IIb): The regulations provide that “any West African Clade of Mpox virus [is excluded from the requirements of the regulations] provided that the individual or entity can identify that the agent is within the exclusion category.” 42 CFR 73.3(d)(12).
- This exclusion would apply to material that has been identified as being or containing West African Clade (Clade II) Mpox virus.

SA Gram clarifying the regulatory status of materials: Exemption

- **Diagnostic Specimen Exemption:** The regulations provide that clinical or diagnostic laboratories or other entities that possess, use or transfer an HHS select agent contained in a specimen presented for diagnosis or verification will be exempt from the requirements of the regulations for such agent if the entity,
  1) reports the identification of the agent to the Federal Select Agent Program (FSAP) and other authorities as required by law,
  2) secures the select agent after identification, and
  3) transfers or destroys the material, in accordance with 42 CFR 73.5(a).

- This exemption would apply to material that has been identified as being or containing Mpox virus, but the clade has not been determined or the clade has been determined to be Congo Basin clade (Clade I).

SA Gram clarifying the regulatory status of materials

- An entity may retain this material if registered with FSAP and approved to possess Mpox virus.

- FSAP regulates material that has been identified as being or containing a select agent or toxin. Therefore, confirmed identifications of Orthopoxvirus that are presumptive identifications of Mpox virus, are not considered select agents by FSAP until identified to be Mpox virus or another select agent.

Regulatory status of material

Test result	Subject to the select agent requirements?
Non-variola *Orthopoxvirus*	No
Mpox virus clade undetermined	Yes
Mpox virus Clade I (Congo Basin clade)	Yes
Mpox virus clade II (West African clade)	No

Select Agent Reporting

Select agent less stringent reporting (Form 4)

- The HHS Select Agent and Toxin Regulations require entities, unless directed otherwise, to report the identification of a select agent or toxin to the Division of Select Agents and Toxins (DSAT) within seven days of identification by submitting an *APHIS/CDC Form 4 (Report of the Identification of a Select Agent or Toxin)*. Mpox virus is a select agent. *See* 42 CFR Part 73.
- In accordance with the HHS Select Agent and Toxin Regulations, 42 C.F.R. § 73.5 (a)(4)(iii), DSAT has authorized less stringent reporting requirements for the identification of Mpox virus due to the 2022 Mpox Outbreak.

Select agent less stringent reporting (Form 4)

- Until the conclusion of the Mpox virus outbreak as determined by the Centers for Disease Control and Prevention, clinical and diagnostic labs and other entities that possess HHS select agents and toxins may submit one consolidated report, using the APHIS/CDC Form 4, to report all identifications of Mpox virus for a 180-day period.
- All Mpox virus positive samples, not characterized to clade level or identified as Clade I of the Mpox virus, can be submitted on a single APHIS/CDC Form 4 with an accompanied spreadsheet listing the different sample providers, as long as the form submission date is within 180 days of the earliest sample identification date.

Select agent less stringent reporting (Form 4)

- Please note, Clade II (West African Clade) Mpox virus is excluded from the select agent regulatory requirements, including identification reporting.
  - Therefore, samples that have been identified to be or contain Clade II (West African Clade) Mpox virus, do not need to be reported to DSAT.
  - However, each identification of Mpox virus, clade undetermined, or Clade I (Congo Basin Clade) Mpox virus must be reported to DSAT using an individual or consolidated APHIS/CDC Form 4 report.
- If an entity reports an identification of Mpox virus, clade undetermined to DSAT and the sample is later determined to be the excluded Clade II (West African Clade) of Mpox virus, the entity should update DSAT once the identification is known by sending an email to CDCForm4@cdc.gov.
- The entity should also update the identification to the recipient of the sample material if previously transferred.

www.selectagents.gov

CDC Contact Information
Division of Select Agents and Toxins
lrsat@cdc.gov
404-718-2000

APHIS Contact Information
Division of Agricultural
Select Agents and Toxins
DASAT@usda.gov
301-851-2070

FDA Update

Tim Stenzel
US Food and Drug Administration

Next Scheduled Call

Monday, February 27th
3 PM - 4 PM ET

CDC Social Media

https://www.facebook.com/CDC

https://twitter.com/cdcgov

https://www.instagram.com/cdcgov

https://www.linkedin.com/company/cdc

Thank You For Your Time!

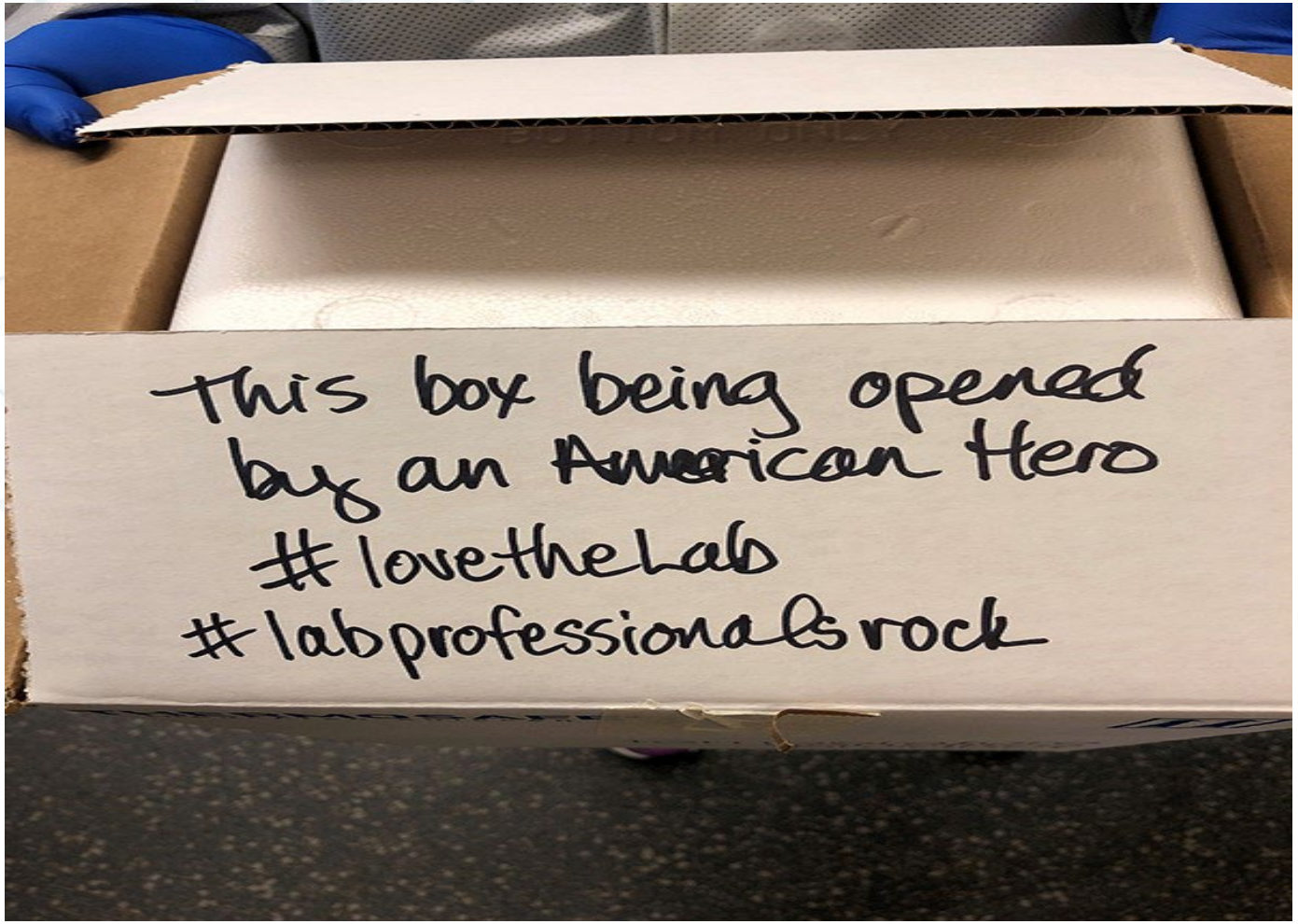


Photo submitted by the Microbiology Laboratory at The University of Pittsburgh Medical Center

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov