

September 2022

### REFERENCE SERVICES IN MICROBIOLOGY - MICROBIAL DISEASES LABORATORY

1. Reference services at the Microbial Diseases Laboratory (MDL) supplement the diagnostic and reference services of local public health laboratories. For general submission inquiries, please call (510) 412-3700 or email [MDL.Submissions@cdph.ca.gov](mailto:MDL.Submissions@cdph.ca.gov).
2. Local health departments should be prepared to supply necessary containers, forms, and information to laboratories and physicians in their jurisdiction.
3. When indicated in the table below, call MDL before collecting and sending specimens.
4. Please fill out laboratory submission forms completely including all clinical and laboratory data requested. Failure to do so may delay testing. The submission form can be found on the MDL website, and linked here: [MDL Electronic submission form](#).
5. Observe proper packaging and labeling requirements mandated by Federal Regulations for shipment or courier of specimens to MDL.
6. Applicable shipping and packaging regulations should be followed. If refrigeration (or freezing) is required, be sure refrigerant is adequate for time in transit. Indicate on outside of package if it is to be refrigerated or frozen upon arrival at MDL.
7. Specimens must be appropriately labeled with two unique patient identifiers, including **first and last name** and one other unique identifier such as submitter's accession number, medical record number and/or date of birth.
8. All specimens to the CDC should be submitted through the local public health laboratory for forwarding to the CDC unless otherwise indicated or previously arranged. Please notify MDL of CDC submissions by faxing a copy of your completed [CDC 50.34 form](#) to the MDL at 510- 412-3706, or sending notification via secure email to [MDL.Submissions@cdph.ca.gov](mailto:MDL.Submissions@cdph.ca.gov) . Please note, effective December 2021, to use the CDC 50.34 you will be required to download an application. Please select "CDPH, Microbial Diseases Laboratory" for the Institution Name from the dropdown list on the form under State PHL. If you need assistance, please email [MDL.Submissions@cdph.ca.gov](mailto:MDL.Submissions@cdph.ca.gov).
9. **Potential Bioterrorism Agent Protocol:**
  1. **Notify the nearest FBI Field Office immediately when suspected bioterrorism events and/or environmental exposure situations arise.**  
(California locations: Los Angeles, Sacramento, San Diego, and San Francisco).
  2. **Contact your local Public Health Laboratory or the Microbial Diseases Laboratory for assistance in obtaining LRN-B Reference testing.**  
**Potential bioterrorism agents include:** *Bacillus anthracis*, *Francisella tularensis*, *Brucella* species (*B. abortus*, *B. melitensis*, *B. suis*), *Yersinia pestis*, *Burkholderia pseudomallei*/*Burkholderia mallei*, botulinum neurotoxin-producing species of *Clostridium*, botulinum neurotoxin

**-SERVICES IN BACTERIAL DISEASES SECTION  
REFERENCE BACTERIOLOGY UNIT-**

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<i>Borrelia species</i>	Confirmation or identification	Blood Smear or EDTA Blood	CDC	Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> before submitting specimens. CDC approval required before shipping samples.
Carbapenemase Resistant <i>Enterobacteriaceae</i> (CRE), <i>Pseudomonas aeruginosa</i> (CRPA), and <i>Acinetobacter baumannii</i> (CRAB)	Carbapenemase detection (phenotypic testing)	Pure culture	MDL or CDC	Pan-non-susceptible isolates should be routinely submitted for surveillance purposes. Routine testing for carbapenemase production by the Modified Carbapenem Inactivation Method (mCIM) test at MDL is limited to <i>Escherichia coli</i> , <i>Klebsiella oxytoca</i> , <i>Klebsiella pneumoniae</i> , <i>Enterobacter species</i> , and <i>Pseudomonas aeruginosa</i> that are either (1) resistant to at least one carbapenem (i.e., imipenem, ertapenem, doripenem, or meropenem), or (2) documented to possess a carbapenemase by another phenotypic test.  For testing on other CRE not list above, please see the comments in the next section (Carbapenemase gene detection).

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
	Carbapenemase gene detection (real time PCR based methods)	Pure culture		<p>Appropriate isolates for carbapenemase gene detection testing at MDL are members of the <i>Enterobacterales</i> and <i>Pseudomonas aeruginosa</i> having a non-susceptible MIC to a carbapenem using current Clinical Laboratory Standards Institute (CLSI) standards <b>and</b> a positive or indeterminate mCIM or Modified Hodge Test (MHT) if phenotypic testing has been performed.</p> <p>Isolates must be submitted with the isolate identification, associated antibiogram containing MICs to the beta- lactams, and the phenotypic results, if performed.</p> <p>Testing for carbapenemase production or genes in other organisms, including <i>Acinetobacter baumannii</i> and other <i>Enterobacterales</i> (e.g. <i>Providencia</i>, <i>Proteus</i>, <i>Morganella</i>, <i>Citrobacter</i>, and <i>Serratia</i> spp.), may be performed by MDL, the regional ARLN lab or at CDC. This testing is performed on a case-by-case basis and requires approval prior to submission.</p> <p>Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.</p>

	Additional testing including Expanded AST testing through ARLN/CDC	Pure culture	ARLN	Pan-non-susceptible isolates should be routinely submitted. Additional testing may be done by the regional ARLN lab or at CDC. Testing of non pan-non-susceptible isolates, is done on a case-by-case basis and requires approval prior to submission. Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
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ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<i>Legionella</i>	Confirmation or identification	Pure culture	MDL	Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
<i>Listeria monocytogenes</i>	Subtyping	Pure culture	MDL or CDC	Please submit all isolates for laboratory surveillance purposes only. Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
Miscellaneous bacteria, including aerobic <i>Actinomycetes</i> , anaerobes, gram-positive and gram-negative rods and cocci  <b>Excludes</b> <i>Enterobacteriaceae</i> ( <i>Enterics</i> ), <i>Vibrionaceae</i> ( <i>Vibrio spp.</i> ), <i>Mycobacteriaceae</i> ( <i>Mycobacteria</i> ), potential Select Agents, and Vaccine Preventable Pathogens	Confirmation or identification	Pure culture	MDL	Assistance with identification of miscellaneous bacteria when the clinical and laboratory data indicate involvement of the isolate in a disease process. Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information. <ul style="list-style-type: none"> <li>• For Enterics and <i>Vibrio</i> spp., see “Services in Foodborne &amp; Waterborne Diseases Section”</li> <li>• For Mycobacteria, see “Services in Mycobacteriology”</li> <li>• For Select Agents, see “Services in High Risk Pathogens”</li> <li>• For Vaccine Preventable Pathogens, see “Services in Vaccine Preventable Pathogens &amp; Molecular Bacteriology Unit”</li> </ul>
Miscellaneous bacteria, including aerobic <i>Actinomycetes</i> , anaerobes, gram-positive and gram-negative rods and cocci	Serologic Grouping and Typing  Biotyping	Pure culture	CDC	Performed only on isolates from sterile clinical sources. Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<i>Neisseria gonorrhoeae</i>	Confirmation, identification, or AST	Pure culture	MDL/ CDC (AST)	Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
<i>Staphylococcus aureus</i>	Confirmation or identification	Pure culture	MDL	Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
	Confirmation of AST	Pure culture	CDC	
Group A <i>Streptococci</i> , beta-hemolytic	M & T Typing	Pure culture	CDC	Service restricted to special cases where type may be significant (epidemiologic studies, etc.). CDC determines testing availability.  Please contact the Bacterial Diseases Section at (510) 412-3903, or email Hillary Berman-Watson at <a href="mailto:Hillary.Berman-Watson@cdph.ca.gov">Hillary.Berman-Watson@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.

**- SERVICES IN BACTERIAL DISEASES SECTION  
VACCINE PREVENTABLE PATHOGENS & MOLECULAR BACTERIOLOGY UNIT -**

<b>ORGANISM OR DISEASE</b>	<b>SERVICES</b>	<b>SPECIMENS</b>	<b>SOURCE</b>	<b>COMMENTS</b>
<i>Bordetella pertussis</i>	Identification or Confirmation	Pure culture	MDL	Please contact the Bacterial Diseases Section at (510) 412-3700, or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
<i>Corynebacterium diphtheriae</i>	Identification or Confirmation, Toxigenicity testing	Pure culture	MDL/CDC	Please contact the Bacterial Diseases Section at (510) 412-3700, or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
<i>Haemophilus influenzae</i>	Identification or Confirmation, Serotyping	Pure culture from sterile site	MDL	Please contact the Bacterial Diseases Section at (510) 412-3700, or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
<i>Haemophilus influenzae</i>	Molecular Detection	Sterile-site specimen (Culture Negative)	MDL	Specimen submission requires high clinical suspicion of bacterial meningitis. Please contact the Bacterial Diseases Section at (510) 412-3700, or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
<i>Neisseria meningitidis</i>	Identification or Confirmation	Pure culture from sterile site or eye	MDL	Please contact the Bacterial Diseases Section at (510) 412-3700, or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information. Human isolates <b>MUST</b> be sent to local or state lab.
<i>Neisseria meningitidis</i>	Serogrouping	Pure culture or PCR-positive specimen from sterile site	MDL	Please contact the Bacterial Diseases Section at (510) 412-3700, or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.

<i>Neisseria meningitidis</i>	Molecular Detection	Sterile-site specimen (Culture negative)	MDL	Please contact the Bacterial Diseases Section at (510) 412-3700 or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
<b>ORGANISM OR DISEASE</b>	<b>SERVICES</b>	<b>SPECIMENS</b>	<b>SOURCE</b>	<b>COMMENTS</b>
<i>Streptococcus pneumoniae</i>	Serotyping	Pure culture from sterile site	CDC	Services restricted to special cases where serotyping may be significant (outbreak, potential vaccine failure, epidemiologic studies, etc.). Please contact the Bacterial Diseases Section at (510) 412-3700, or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.
<i>Streptococcus pneumoniae</i>	Molecular Detection	Sterile-site specimen (Culture Negative)	MDL	Specimen submission requires high clinical suspicion of bacterial meningitis. Please contact the Bacterial Diseases Section at (510) 412-3700, or email Jennifer Kyle at <a href="mailto:Jennifer.kyle@cdph.ca.gov">Jennifer.kyle@cdph.ca.gov</a> or Peng Zhang at <a href="mailto:Peng.Zhang@cdph.ca.gov">Peng.Zhang@cdph.ca.gov</a> for additional information.



## SERVICES IN IMMUNODIAGNOSTICS & MOLECULAR CHARACTERIZATION SECTION -

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<i>Salmonella</i>	Serotyping	Pure culture identified as <i>Salmonella</i> species	MDL	Submitted cultures are required to be previously identified as pure isolates of <i>Salmonella</i> species. Please contact the Immunodiagnosics Section at (510) 412-3913, or email Linda Sae-Jang at <a href="mailto:Linda.Sae-Jang@cdph.ca.gov">Linda.Sae-Jang@cdph.ca.gov</a> , or Yismashoa Gebremichael at <a href="mailto:Yismashoa.Gebremichael@cdph.ca.gov">Yismashoa.Gebremichael@cdph.ca.gov</a> , or Fengfeng Xu at <a href="mailto:Fengfeng.Xu@cdph.ca.gov">Fengfeng.Xu@cdph.ca.gov</a> for additional information.
Whole Genome Sequencing (WGS) Next-Generation Sequencing (NGS) Bacteria	Sequencing and Bioinformatics	Pure Culture	MDL	Isolates can be submitted after consultation. Please contact the Molecular Characterization Unit at (510) 412-3940, or email Rituparna Mukhopadhyay at <a href="mailto:Rituparna.Mukhopadhyay@cdph.ca.gov">Rituparna.Mukhopadhyay@cdph.ca.gov</a> .

**- SERVICES IN FOODBORNE & WATERBORNE DISEASES SECTION -**

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
Cholera				See <i>Vibrio cholerae</i> .
<i>Enterobacteriaceae</i>	Confirmation or identification	Pure culture	MDL	<p>Assistance in identification of <i>Enterobacteriaceae</i> when the clinical laboratory and epidemiological data indicates involvement of the isolate in a disease or outbreak investigation. Prior arrangements must be made with MDL before submitting cultures. For <i>Salmonella</i> testing see Immunodiagnostic Services.</p> <p>Please contact the Food and Waterborne Diseases Section at (510) 412-3796, or email Greg Inami at <a href="mailto:Greg.Inami@cdph.ca.gov">Greg.Inami@cdph.ca.gov</a> or Stephanie Abromaitis at <a href="mailto:Stephanie.Abromaitis@cdph.ca.gov">Stephanie.Abromaitis@cdph.ca.gov</a> for additional information.</p>
Whole Genome Sequencing (WGS) for PulseNet	<p>Whole Genome Sequencing (WGS)</p> <p>Data upload to the PulseNet national database and NCBI</p>	Pure culture	MDL	<p>WGS is routinely performed on isolates of <i>Salmonella</i>, <i>E. coli</i> O157, and <i>Listeria</i>. Typing of non-O157 STEC, <i>Shigella</i>, <i>Campylobacter</i> and <i>Vibrio</i> is available when the clinical laboratory and epidemiological data indicates involvement of the isolate in a disease or outbreak investigation.</p> <p>Please contact the Food and Waterborne Diseases Section at (510) 412-3796, or email Linlin Li at <a href="mailto:Linlin.Li@cdph.ca.gov">Linlin.Li@cdph.ca.gov</a> or Stephanie Abromaitis at <a href="mailto:Stephanie.Abromaitis@cdph.ca.gov">Stephanie.Abromaitis@cdph.ca.gov</a> for additional information.</p>

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
Shiga toxin-producing <i>Escherichia coli</i> (STEC) including O157 and non-O157 strains	Serotyping  Shiga toxin testing (PCR)	Stool in Cary Blair transport medium shipped with cold packs.  GN or MAC broths shipped with cold packs.  Pure culture	MDL	<p>In accordance with Title 17, submit all STEC isolates or Shiga-toxin-positive fecal broths to the local or State public health laboratory for laboratory surveillance purposes.</p> <p>Note: GN or MAC broth is preferred over a stool specimen for the detection of STEC. If possible, please submit a STX-positive broth with 1-5 isolates identified as <i>E.coli</i>.</p> <p>Please contact the Food and Waterborne Diseases Section at (510) 412-3796, or email Greg Inami at <a href="mailto:Greg.Inami@cdph.ca.gov">Greg.Inami@cdph.ca.gov</a> or Stephanie Abromaitis at <a href="mailto:Stephanie.Abromaitis@cdph.ca.gov">Stephanie.Abromaitis@cdph.ca.gov</a> for additional information.</p>
<i>Shigella</i>	Serotyping Shiga toxin testing (PCR)	Pure culture	MDL	<p>In accordance with Title 17, all <i>Shigella</i> isolates must be submitted to the local or State public health laboratory for laboratory surveillance purposes.</p> <p>Please contact the Food and Waterborne Diseases Section at (510) 412-3796, or email Greg Inami at <a href="mailto:Greg.Inami@cdph.ca.gov">Greg.Inami@cdph.ca.gov</a> or Stephanie Abromaitis at <a href="mailto:Stephanie.Abromaitis@cdph.ca.gov">Stephanie.Abromaitis@cdph.ca.gov</a> for additional information.</p>

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<i>Vibrio cholerae</i>	Identification/biotyping  Serotyping  Toxin testing (PCR)	Pure culture	MDL	Biotyping for El Tor or Classical biotypes O1, Inaba, O139, O141 and Ogawa serogrouping. Service restricted to special epidemiological investigations. Please contact the Food and Waterborne Diseases Section at (510) 412-3796, or email Greg Inami at <a href="mailto:Greg.Inami@cdph.ca.gov">Greg.Inami@cdph.ca.gov</a> or Stephanie Abromaitis at <a href="mailto:Stephanie.Abromaitis@cdph.ca.gov">Stephanie.Abromaitis@cdph.ca.gov</a> for additional information.
<i>Vibrio</i> , other species	Identification	Pure culture	MDL	Cultures may be tested if warranted by epidemiologic investigation (arrangements must be made with MDL before submitting cultures). Please contact the Food and Waterborne Diseases Section at (510) 412-3796, or email Greg Inami at <a href="mailto:Greg.Inami@cdph.ca.gov">Greg.Inami@cdph.ca.gov</a> or Stephanie Abromaitis at <a href="mailto:Stephanie.Abromaitis@cdph.ca.gov">Stephanie.Abromaitis@cdph.ca.gov</a> for additional information.
<i>Yersinia enterocolitica</i>	Identification  Serotyping  Biotyping	Pure culture	MDL	Cultures may be tested if warranted by epidemiologic investigation (arrangements must be made with MDL before submitting cultures). Please contact the Food and Waterborne Diseases Section at (510) 412-3796, or email Greg Inami at <a href="mailto:Greg.Inami@cdph.ca.gov">Greg.Inami@cdph.ca.gov</a> or Stephanie Abromaitis at <a href="mailto:Stephanie.Abromaitis@cdph.ca.gov">Stephanie.Abromaitis@cdph.ca.gov</a> for additional information.
<i>Yersinia pseudotuberculosis</i>	Identification	Pure culture	MDL	Cultures may be tested if warranted by epidemiologic investigation (arrangements must be made with MDL before submitting cultures). Please contact the Food and Waterborne Diseases Section at (510) 412-3796, or email Greg Inami at <a href="mailto:Greg.Inami@cdph.ca.gov">Greg.Inami@cdph.ca.gov</a> or Stephanie Abromaitis at <a href="mailto:Stephanie.Abromaitis@cdph.ca.gov">Stephanie.Abromaitis@cdph.ca.gov</a> for additional information.

**- SERVICES IN HIGH RISK PATHOGENS SECTION -**

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<p>(Botulism – Adult)</p> <p>Botulinum neurotoxin and <i>Clostridium botulinum</i> and Botulinum neurotoxin producing species of <i>Clostridium</i></p>	<p>Isolation and identification</p> <p>Confirmation by direct toxin testing</p>	<p>Pure culture* Specimen*</p> <p>*Consult required prior to shipping</p>	<p>MDL</p> <p>CDC (for additional characteriza tion)</p>	<p><b>Potential bioterrorism agent (see note 8, page 1)</b>  <b>Call during Non-Business Hours</b>  <b>CDPH Duty Officer at 916-328-3605</b>            Call during Business Hours (for specimen requirements)            1) Jason Barash – Botulism Laboratory Supervisor - at  <a href="mailto:Jason.Barash@cdph.ca.gov">Jason.Barash@cdph.ca.gov</a> or call 510-231-7620, 510-231-7676 <b>OR</b>            2) Jayakumar (Jay) Poovassery – LRN-B Coordinator at  <a href="mailto:Jayakumar.Poovassery@cdph.ca.gov">Jayakumar.Poovassery@cdph.ca.gov</a> or call 510-307-8557, 510-621-8743 (cell)  <b>OR</b>            3) Kerry Padgett at <a href="mailto:Kerry.Padgett@cdph.ca.gov">Kerry.Padgett@cdph.ca.gov</a> or call 510-412-3738, 510-520-9406 (cell)  <b>Call during Non-Business Hours</b>            CDPH Duty Officer at 916-328-3605</p>
<p>(Botulism – Infant, age ≤16 months)</p> <p>Botulinum neurotoxin and <i>Clostridium botulinum</i> and Botulinum neurotoxin producing species of <i>Clostridium</i></p>	<p>Isolation and identification</p> <p>Confirmation by direct toxin testing</p>	<p>Solid or liquid (enema) fecal specimens*</p> <p>*Consult is required</p>	<p>MDL</p>	<p><b>Potential bioterrorism agent (see note 8, page 1)</b>  <b>Contact on-call physician 510-231-7600 (24/7/365)</b>            1) Jason Barash – Botulism Laboratory Supervisor - at  <a href="mailto:Jason.Barash@cdph.ca.gov">Jason.Barash@cdph.ca.gov</a> or call 510-231-7620, 510-231-7676 <b>OR</b>            2) Jayakumar (Jay) Poovassery – LRN-B Coordinator - at  <a href="mailto:Jayakumar.Poovassery@cdph.ca.gov">Jayakumar.Poovassery@cdph.ca.gov</a> or call 510-307-8557, 510-621-8743 (cell)  <b>OR</b>            3) Kerry Padgett <a href="mailto:Kerry.Padgett@cdph.ca.gov">Kerry.Padgett@cdph.ca.gov</a> or call 510-412-3738, 510-520-9406 (cell)</p>

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<p><b>Select Agents - Not Botulism</b></p> <p><i>Bacillus anthracis</i> (anthrax)</p> <p><i>Brucella</i> species</p> <p><i>Burkholderia mallei</i> or <i>Burkholderia pseudomallei</i></p> <p><i>Francisella tularensis</i> (tularemia)</p> <p><i>Yersinia pestis</i> (plague)</p>	Confirmation or identification	<p>Pure culture* Specimen* Environmental sample*</p> <p>*Consult required prior to shipping</p>	<p>MDL</p> <p>CDC (for additional characterization)</p>	<p><b>Potential bioterrorism agent (see note 8, page 1)</b></p> <p><b>Call during Non-Business Hours</b> <b>CDPH Duty Officer at 916-328-3605</b></p> <p>Call algorithm during Business Hours</p> <p>1) Jayakumar (Jay) Poovassery – LRN-B Coordinator – at <a href="mailto:Jayakumar.Poovassery@cdph.ca.gov">Jayakumar.Poovassery@cdph.ca.gov</a> or call 510-307-8557, 510-621-8743 (cell), <b>OR</b></p> <p>2) Mahtab Shahkarami at <a href="mailto:Mahtab.Shahkarami@cdph.ca.gov">Mahtab.Shahkarami@cdph.ca.gov</a> or call 510-307-9822, <b>OR</b></p> <p>3) Kerry Padgett at <a href="mailto:Kerry.Padgett@cdph.ca.gov">Kerry.Padgett@cdph.ca.gov</a> or call 510-620-5945, 510-520-9406 (cell)</p>

**- SERVICES IN MYCOBACTERIOLOGY –**

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<i>Mycobacteria</i>	Confirmation or Identification	Pure culture	MDL	<p>Primary identification using MALDI-TOF MS and/or partial 16S rRNA and cpn60 gene DNA sequencing. For mycobacteria isolated from sputum specimens, screening for clinical relevance by the local public health laboratory is expected. See Am J Respir Crit Care Med Vol 175. pp 367–416, 2007.</p> <p>For additional information, please contact the Mycobacterial Diseases Reference Laboratory at <a href="mailto:CDPHMDLMMP@cdph.ca.gov">CDPHMDLMMP@cdph.ca.gov</a>, or directly email Sphoorthy Rao (<a href="mailto:Sphoorthy.Rao@cdph.ca.gov">Sphoorthy.Rao@cdph.ca.gov</a>) or Varvara Kozyreva (<a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a>). Alternatively, call the laboratory at (510) 412-3924.</p>

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
<p><i>Mycobacteria</i> (<i>Mycobacterium tuberculosis</i> Complex, MTBC)</p>	<p>Pyrosequencing (PSQ) for molecular direct detection of MTBC, and molecular-based Drug Susceptibility Testing (DST)</p>	<p>Acid-fast smear positive processed pulmonary sediments or sterile pulmonary and extrapulmonary specimens (1+ AFB or greater), at least 0.5 ml of sediments</p>	<p>MDL</p>	<p>The molecular technique used is pyrosequencing (PSQ). PSQ targets are used for detection of MTBC (including differentiation of <i>M. bovis</i>), and detection of mutations associated with isoniazid, rifampin, or quinolone resistance (injectable drug resistance tested upon request).</p> <p>For prior approval, please contact the Mycobacterial Drug Susceptibility Testing laboratory at <a href="mailto:CDPHTBDST@cdph.ca.gov">CDPHTBDST@cdph.ca.gov</a> or directly email Matthew Sylvester (<a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a>) or Varvara Kozyreva (<a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a>). Alternatively, call the laboratory at (510) 412- 3929.</p>



	Culture-based Drug Susceptibility Testing (DST)	Pure culture	MDL	<p>Testing for susceptibility to the first-line drugs isoniazid, rifampin, pyrazinamide, and ethambutol (or moxifloxacin if alternative first-line DST is requested) is restricted to cultures of MTBC from public health laboratories unable to provide this service, and to problem cultures from other laboratories. Submitter’s results must accompany the specimen. Testing for susceptibility to second-line drugs, including streptomycin, will be performed if requested, or if the isolate is resistant to any first-line drugs aside from pyrazinamide. The default second-line drug panel includes amikacin, capreomycin, ethionamide and moxifloxacin. If moxifloxacin testing was previously performed as part of alternative first-line DST and drug resistance to rifampin, isoniazid or moxifloxacin is observed, ethambutol will be included with the second-line DST panel. Streptomycin, kanamycin and rifabutin DST are available upon request only.</p> <p>Molecular detection of drug resistance by pyrosequencing may also be performed on cultures including mixed or contaminated cultures when there is known or suspected drug resistance.</p> <p>For additional information, please contact the Mycobacterial Drug Susceptibility Testing laboratory at <a href="mailto:CDPHTBDST@cdph.ca.gov">CDPHTBDST@cdph.ca.gov</a> or directly email Matthew Sylvester (<a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a>) or Varvara Kozyreva (<a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a>). Alternatively, call the laboratory at (510) 412- 3929.</p>
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	Referral for CDC Molecular Detection of Drug Resistance (MDDR) services	Isolates of MTBC and NAAT positive processed sediments	CDC	<p>Samples can be submitted to MDL for referral to MDDR testing at the CDC for molecular resistance detection for first-line (rifampin, isoniazid, ethambutol, pyrazinamide) and second-line (fluoroquinolones, amikacin, kanamycin, and capreomycin) drugs. MDDR testing is accompanied by conventional DST (rifampin, isoniazid, ethambutol, pyrazinamide, streptomycin, ofloxacin, ciprofloxacin, kanamycin, capreomycin, amikacin, ethionamide, and para-aminosalicylic acid). The submission criteria and details of services are specified in the CDC MDDR User Guide (updated January 2022):</p> <p><a href="https://www.cdc.gov/tb/topic/laboratory/mddrusersguide.pdf">https://www.cdc.gov/tb/topic/laboratory/mddrusersguide.pdf</a></p> <p>For additional information, please contact the Mycobacterial Drug Susceptibility Testing laboratory at <a href="mailto:CDPHTBDST@cdph.ca.gov">CDPHTBDST@cdph.ca.gov</a> or directly email Matthew Sylvester (<a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a>) or Varvara Kozyreva (<a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a>). Alternatively, call the laboratory at (510) 412- 3929.</p>
Tuberculosis				See <i>Mycobacteria</i> .

**- SERVICES IN MYCOLOGY –**

<b>ORGANISM OR DISEASE</b>	<b>SERVICES</b>	<b>SPECIMENS</b>	<b>SOURCE</b>	<b>COMMENTS</b>
<i>Coccidioides immitis</i>	PCR MALDI-TOF MS Ribosomal DNA sequencing	Pure culture in screw capped tube	CDPH	For additional information, please contact the Mycology laboratory by directly emailing Matthew Sylvester ( <a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a> ) or Varvara Kozyreva ( <a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a> ). Alternatively, call the laboratory at (510) 412-3926.
<i>Coccidioides posadasii</i>	PCR MALDI-TOF MS Ribosomal DNA Sequencing	Pure culture in screw capped tube	CDPH	For additional information, please contact the Mycology laboratory by directly emailing Matthew Sylvester ( <a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a> ) or Varvara Kozyreva ( <a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a> ). Alternatively, call the laboratory at (510) 412-3926.
Fungi	MALDI-TOF MS Ribosomal DNA sequencing	Pure culture on solid media	CDPH	For additional information, please contact the Mycology laboratory by directly emailing Matthew Sylvester ( <a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a> ) or Varvara Kozyreva ( <a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a> ). Alternatively, call the laboratory at (510) 412-3926.
Leprosy				Contact Hansen's Disease Regional Center in Martinez, Los Angeles, or San Diego. Information is available online at <a href="#">Hansen's Disease Ambulatory Care Clinics</a> or call (800) 642- 2477.
Yeast	MALDI-TOF MS Ribosomal DNA Sequencing	Pure culture in screw capped tube	CDPH	For additional information, please contact the Mycology laboratory by directly emailing Matthew Sylvester ( <a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a> ) or Varvara Kozyreva ( <a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a> ). Alternatively, call the laboratory at (510) 412-3926.
Yeast and Mold	MALDI-TOF Ribosomal DNA Sequencing	Pure culture in screw capped tube	CDPH	For additional information, please contact the Mycology laboratory by directly emailing Matthew Sylvester ( <a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a> ) or Varvara Kozyreva ( <a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a> ). Alternatively, call the laboratory at (510) 412-3926.

<i>Histoplasma sp.</i>	MALDI-TOF Ribosomal DNA Sequencing	Pure culture in screw capped tube	CDC	For additional information, please contact the Mycology laboratory by directly emailing Matthew Sylvester ( <a href="mailto:Matthew.Sylvester@cdph.ca.gov">Matthew.Sylvester@cdph.ca.gov</a> ) or Varvara Kozyreva ( <a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a> ). Alternatively, call the laboratory at (510) 412-3926.
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**- SERVICES IN PARASITOLOGY -**

ORGANISM OR DISEASE	SERVICES	SPECIMENS	SOURCE	COMMENTS
Malaria	PCR	Whole blood	MDL	<p><i>Plasmodium</i> species multiplex PCR performed at MDL allows for speciation of <i>P. falciparum</i>, <i>P. vivax</i>, <i>P. ovale</i>, and <i>P. malariae</i>.</p> <p>For prior approval, please contact the Parasitic Diseases Reference Laboratory at <a href="mailto:CDPHMDLMMP@cdph.ca.gov">CDPHMDLMMP@cdph.ca.gov</a> or directly email Sphoorthy Rao (<a href="mailto:Sphoorthy.Rao@cdph.ca.gov">Sphoorthy.Rao@cdph.ca.gov</a>) or Varvara Kozyreva (<a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a>). Alternatively, call the laboratory at (510) 412-3924.</p>
Blood parasites	Identification, Confirmation	Whole blood, blood films, and other specified by CDC	CDC	<p>Specimens can be referred to the CDC upon request for examination of thick and thin blood films for blood parasites (malarial parasites, hemoflagellates, filarial worms, etc.).</p> <p>For prior approval, please contact the Parasitic Diseases Reference Laboratory at <a href="mailto:CDPHMDLMMP@cdph.ca.gov">CDPHMDLMMP@cdph.ca.gov</a> or directly email Sphoorthy Rao (<a href="mailto:Sphoorthy.Rao@cdph.ca.gov">Sphoorthy.Rao@cdph.ca.gov</a>) or Varvara Kozyreva (<a href="mailto:Varvara.Kozyreva@cdph.ca.gov">Varvara.Kozyreva@cdph.ca.gov</a>). Alternatively, call the laboratory at (510) 412-3924.</p>