TB Suite/Phase I BSL-3 Emergency Response Packet

TAKE THIS PACKET WITH YOU!

- Emergency Contact Information
- Workers’ Compensation Information
- Directions to Authorized Treating Physicians
- Directions to Fort Collins Emergency Room
- Biosafety Incident Report Form
- Infectious Agent Fact Sheets:

| Mycobacterium abscessus (MDR) |
| Mycobacterium avium (BSL2)   |
| Mycobacterium bovis           |
| Mycobacterium chelonae (BSL2) |
| Mycobacterium massilense (BSL2) |
| Mycobacterium spp., nontuberculous |
| Mycobacterium tuberculosis (MDR Included) |

Updated 12/2014
The most up to date version of this document can be found in the Biosafety or Occupational Health Websites under the “Illness Procedure and “Emergency Response Packet” Bar:  http://www.ehs.colostate.edu/WOHSP/Bsl3Packets.aspx
# Emergency Phone Numbers

<table>
<thead>
<tr>
<th>BIOSAFETY EMERGENCY NUMBER</th>
<th>491-0270</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDRC On-Call</td>
<td>491-IDRC (491-4372)</td>
</tr>
<tr>
<td>Fort Collins Emergency Room</td>
<td>495-7000</td>
</tr>
<tr>
<td>Occupational Health Coordinator</td>
<td>491-3102, 420-8172</td>
</tr>
</tbody>
</table>
Workers’ Compensation Procedure

Updated 12/2014

NOTE: Workers Compensation Statutes change frequently, and every effort has been made to update this document accordingly. However, Risk Management is the source for the most current Workers’ Compensation procedures: http://www.ehs.colostate.edu/WWorkComp/Home.aspx

- First Report of Injury must be INITIATED as soon as possible
  - Online link: required forms: https://wsnet.colostate.edu/cwis86/EHslogin/default.aspx?From=WorkComp

- Medical attention must be sought by a CSU Authorized Treating Physician
  - For a complete list of CSU Authorized Treating Physicians: http://www.ehs.colostate.edu/WWorkComp/HealthContPrint.aspx

- All claims are subject to review and may not be covered under Workers Compensation unless found compensable under current Worker’s Compensation Statutes.
  - **GO TO A CSU AUTHORIZED TREATING PHYSICIAN WHENEVER POSSIBLE** as initial visit costs will be covered through Workers Compensation even if it is determined that your illness is not work related. If you must go to the ER or an Urgent Care provider for the specific reasons listed above, you and/or your insurance carrier will be responsible for all health care costs for illnesses/injuries that are NOT related to your employment.
  - **However**, in order to assure that medical attention is sought appropriately for potentially work related illnesses, CSU may cover certain out of pocket costs for ER or Urgent Care services that are NOT covered under Colorado Workers’ Compensation Statutes (provided that the requirements of this procedure have been properly followed). In general, such coverage will not exceed $2,000.

- CSU Workers’ Compensation Website: http://www.ehs.colostate.edu/WWorkComp/Home.aspx
When to go to a CSU Authorized Treating Physician

- During regular business hours
  - When you **have a fever**, and you have been in the **BSL-3 barrier in the last 5 days**
  - When you have a **KNOWN exposure** to or an injury **INVolving TUBERCULOSIS**
  - When you have a minor injury

- When told by the ER, Urgent Care, or Workers’ Compensation to follow up after an Emergency Room or Urgent Care visit

- Due to limitations in Workers’ Compensation coverage for ER or Urgent Care visits, see a CSU Designated Care Provider whenever possible.
  - For details see Workers’ Compensation Procedure in this packet, or “BSL3 Illness Procedures” online at [http://www.ehs.colostate.edu/WBiosafety/Home.aspx](http://www.ehs.colostate.edu/WBiosafety/Home.aspx) under the bar labeled “BSL3 Illness Procedures, Info, and Emergency Response Packets”.

CSU AUTHORIZED TREATING PHYSICIANS

For NON-EMERGENCY incidents

If you go to the Emergency Room, follow-up with one of these providers

A complete list of designated providers can be found at: http://www.ehs.colostate.edu/WWorkComp/HealthContPrint.aspx
University of Colorado Health Occupational Health Services
4674 Snow Mesa Drive, Suite 200
Fort Collins, CO
(970) 495-8450
Mon-Fri, 7:00am - 6:00pm
**Workwell Fort Collins**
1600 Specht Point Road, Suite 115  
Fort Collins, CO  
(970) 672-5100  
Mon- Fri, 8:00am - 5:00pm

**Workwell Loveland**
1608 Topaz Drive  
Loveland, CO  
(970) 593-0125  
Mon-Fri, 8:00am - 5:00pm

**FROM Foothills Campus to Workwell, Fort Collins**
- Turn Right on Overland Trail.  
- Turn Left on W. Prospect Road.  
- Turn Right at Specht Point Drive.  
- Workwell is located on the first floor.  
Approximate drive time is 15 minutes.

**FROM Main and South Campuses to Workwell, Fort Collins**
- Head East on Prospect Road.  
- Turn Right at Specht Point Drive.  
- Workwell is located on the first floor.  
Approximate drive time is 15 minutes.
When to go to the Emergency Room

• When you have a KNOWN EXPOSURE to a BSL-3 infectious agent (other than Tuberculosis)

• When you have a major injury

• **WHEN A CSU AUTHORIZED TREATING PROVIDER IS CLOSED** and you have a fever within 5 days of being in the BSL-3 barrier and/or have symptoms associated with disease due to pathogens worked with.
  
  – IF YOU GO TO THE EMERGENCY ROOM OR URGENT CARE AND ARE DIRECTED TO DO SO, YOU MUST FOLLOW UP WITH ONE OF THE CSU AUTHORIZED TREATING PHYSICIAN THE NEXT BUSINESS DAY.

• Complete list: [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)

• If you go to the Emergency Room or Urgent Care, it is your responsibility to follow up by providing them with your Workers’ Compensation claim number and billing information:
  
  P.O. Box 4998
  Greenwood Village, CO 80155
  Phone: (303) 804-2000
  Fax: (303) 804-2005
  Toll-Free: (888) 428-4671
Emergency Room Directions

Please do not drive yourself. Have someone take you. Contact Biosafety if you need a ride. 491-0270
EMERGENCY ROOM NEAREST TO CSU

Go to Emergency Room closest to you

Poudre Valley Hospital
Emergency Dept (Colorado Health Medical Group)
1024 South Lemay Ave
Fort Collins, CO
(970) 495-7000
24 hours, 7 days per week

FROM FOOTHILLS CAMPUS
• Turn Left on Overland Trail
• Turn Right on W. Mulberry Street
• Turn Right on Riverside Avenue
• Turn Right at S. Lemay Avenue
• Hospital is on the East side of the road.

Approximate drive time is 15 minutes.

FROM MAIN AND SOUTH CAMPUSES
• Head East on Prospect or Drake
• Turn Left at Lemay Avenue
• Hospital is on the East side of the road.

Approximate drive time is 10 minutes.
Poudre Valley Hospital Harmony
URGENT CARE
Go to an Urgent Care closest to you

FROM FOOTHILLS CAMPUS
• Turn Left on Overland Trail
• Turn Right on Mulberry Ave
• Turn Right on Riverside Ave
• Turn Left on E. Prospect Rd
• Turn Right on Timberline Rd
• Turn Left on E. Harmony Rd
• Facility is on the South side of Harmony Road
• Follow signs to Urgent Care

Approximate drive time is 21 minutes

FROM MAIN AND SOUTH CAMPUS
• Head East on Prospect Rd
• Turn Right on Timberline Rd
• Turn Left on E. Harmony Rd
• Facility is on the South side of Harmony Road
• Follow signs to Urgent Care

Approximate drive time is 20 minutes

PVHs Harmony Urgent Care
2127 E. Harmony Road
Daily, 8 a.m. to 8 p.m.
(970) 297-6250
# Biosafety Incident Report Form

*THIS IS NOT A WORKERS’ COMPENSATION INCIDENT REPORT FORM*

If this is an injury, have you filled out a workers’ compensation form?  □ Yes  □ No

## Personal Information

<table>
<thead>
<tr>
<th>Date:</th>
<th>CSU ID:</th>
</tr>
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<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>First Name:</th>
<th>Last Name:</th>
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<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Email:</th>
<th>Phone Number:</th>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>Alt. Phone Number:</th>
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</table>

## Emergency Contact Information

<table>
<thead>
<tr>
<th>Name:</th>
<th>Phone #:</th>
<th>Alt. Phone #:</th>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>Name:</th>
<th>Phone #:</th>
<th>Alt. Phone #:</th>
</tr>
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<tbody>
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</tbody>
</table>

## Incident Information

Pathogen working with:

Does the pathogen contain recombinant DNA or synthetic nucleic acid molecules?  □ Yes  □ No

Location (building, room):  

Time of Incident:  

Incident Type (exposure, physical injury, etc.):  

Incident Description (Provide as much detail as possible and list external events that may have contributed to the incident):

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<table>
<thead>
<tr>
<th>Method</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Needlestick</td>
<td></td>
</tr>
<tr>
<td>☐ Blood or body fluids</td>
<td></td>
</tr>
<tr>
<td>☐ Spill</td>
<td></td>
</tr>
<tr>
<td>☐ Aerosol</td>
<td></td>
</tr>
<tr>
<td>☐ Animal Bite/Scratch</td>
<td></td>
</tr>
<tr>
<td>☐ Necropsy</td>
<td></td>
</tr>
<tr>
<td>☐ Broken glass</td>
<td></td>
</tr>
<tr>
<td>☐ Sharps Container</td>
<td></td>
</tr>
<tr>
<td>☐ Other (describe)</td>
<td></td>
</tr>
</tbody>
</table>

**Action(s) taken to control incident** (e.g. hand washing, spill clean-up, etc.):

- 
- 
- 
- 
- 

**Personal Protective Equipment (PPE) Worn at time of injury**

<table>
<thead>
<tr>
<th>PPE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Scrubs</td>
<td>☐ Tyvek</td>
</tr>
<tr>
<td>☐ Surgical gown</td>
<td>☐ PAPR</td>
</tr>
<tr>
<td>☐ N-95 respirator mask</td>
<td>☐ Face Shield</td>
</tr>
<tr>
<td>☐ Gloves</td>
<td>☐ Goggles</td>
</tr>
<tr>
<td>☐ Hair Cover</td>
<td>☐ Shoes</td>
</tr>
</tbody>
</table>

**Was there a PPE failure?**

If yes, explain:

- 
- 
- 

Print or scan and send to the Biosafety Office: 6021 Campus Delivery, 141 General Services Building, Fort Collins, CO 80523; E-mail scanned copies to [Heather.Blair@colostate.edu](mailto:Heather.Blair@colostate.edu), or [Joni.Triantis@colostate.edu](mailto:Joni.Triantis@colostate.edu)
**Mycobacterium spp (NOT M. tuberculosis Complex or M. abscessus-chelonae Complex)**

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

**CONTAINMENT AND SPECIAL PRECAUTIONS**

**Containment**
- BSL-2 Level practices, containment equipment and facilities are recommended for work involving potentially infectious materials.
- BSL3 Level practices, containment equipment, and facilities may be required for certain activities involving concentrated culture, animal work, and/or activities that could potentially generate aerosols. Consult with CSU Biosafety office related to such work.

**Special Considerations**
- Many of the strains worked with at CSU are drug resistant and researchers should be aware of strains being worked with and antibiotic resistance profiles.
- Physical conditions that increase susceptibility to infection include: compromised immune system; pre-existing lung damage (e.g. cystic fibrosis, emphysema, smokers); and diabetes. Persons taking certain medications such as TNF alpha inhibitors and post-menopausal caucasian women are also more susceptible to infection.

**HAZARD IDENTIFICATION**

**Disease:** Usually pulmonary, cutaneous or lymphatic also possible; Infections with M. avium are primarily lymphatic

**Transmission:** Ingestion, inhalation, injections, wounds or abrasions; direct contact with environmental contaminants or clinical specimens from animals. Found in water, soil, domestic and wild animals. *M. avium* and *M. marinum* are zoonotic.

**Communicability:** Person to person transmission not evident.

**Incubation:** From 2 to 3 weeks or higher

**Infectious dose:** unknown in human

**VIABILITY/INACTIVATION**

**Stability:** Can survive on surfaces and in soil for months.

**Inactivation:**
- Mycobacteria are very resistant to inactivation, and inactivation methods should consider susceptibility of the strain and species being worked with.
- Mycobacteria are autoclave sensitive, but longer cycles may be required
- The following disinfectants may be effective for inactivation, depending on species, strain, and conditions:
  - 5% phenol or 5% formaldehyde
  - 2% glutaraldehyde is not effective against all species
  - 70% ethanol for surface decontamination
  - Minimum concentration of 20% bleach (10,000 ppm available sodium hypochlorite) *(Note that bleach should not be used when waste will be subsequently processed by autoclaving)*
MEDICAL

Signs and Symptoms:

- Non-specific symptoms - fever, chills, fatigue muscle aches, weight loss
- Pulmonary disease
  - Cough
  - Night sweats
  - Chest pain
- Cutaneous form - acquired through wound or break in skin:
  - Most commonly acquired from *M. marinum*, *M. leprae*, and *M. ulcerans*
  - Red, warm, tender, swollen, and/or painful lesion becoming ulcerative
- Lymphadenitis (swollen glands)

Pre-exposure prophylaxis:

- None

Diagnosis:

- Symptom based
- Direct smear microscopy for acid fast bacilli
- Culture of clinical specimens
- Histopathology of aspirates or biopsies
- For pulmonary symptoms, at least two sputum and one bronchial wash specimens collected on separate days for AFB analysis; A CXR or HRCT of the lungs and exclusion of other disorders like TB.
- Genetic methods (PCR, DNA probes, DNA fingerprinting)

Treatment:

- Mycobacteria are inherently resistant to many drugs, and resistance depends on species and strain. Specific antibiotic regimes must be determined on a case-by-case basis.

  - Post-Exposure Prophylaxis
    - Prophylactic antibiotic regimen may be initiated, depending on the strain involved and the nature of the exposure
    - Rifabutin can be used in immuno-compromised individuals post exposure to *M. avium*
    - Patient is monitored for symptoms

  - Treatment of clinical cases:
    - Knowing the antibiotic sensitivity is helpful for guidance in determining the most appropriate treatment for each patient.
    - Persons who develop clinical signs are treated with a long-term combination of several antibiotics, which could include isoniazid, ethambutol, and/or macrolids,
    - Treatment of ulcerative lesions could include surgical removal of tissues.
WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed.
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to an Authorized Treating Physician
3. After the visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)
4. Employee follows up as directed.

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to report, to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (Formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to report, to inform where attention is being sought, and to arrange transportation if needed.
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
- CDC Web Page, Mycobacterium avium: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/mycobacteriumavium_t.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/mycobacteriumavium_t.htm)
- Lab Tests: [http://labtestsonline.org/understanding/conditions/ntm/](http://labtestsonline.org/understanding/conditions/ntm/)
- National Jewish Hospital Web Page: [http://www.nationaljewish.org/healthinfo/conditions/ntm/](http://www.nationaljewish.org/healthinfo/conditions/ntm/)

CONTENT REVIEW
This document has been reviewed by:
- CSU subject matter expert: Dr. Diane Ordway-Rodriguez
**Mycobacterium tuberculosis Complex (MTC)**
*(M. tuberculosis, M. bovis, M. microti, M. africanum, M. pinnipedii, M. caprae, and M. canetti)*

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

### CONTAINMENT AND SPECIAL PRECAUTIONS

**Containment**
- BSL-3 Level practices, containment equipment and facilities are required for work involving infectious materials, animals, cultures and for activities with a high potential for aerosol production
- BSL2 practices and containment equipment can be utilized for handling some clinical specimens. Consult with CSU Biosafety office related to such work.

**Special Considerations**
- Many of the strains worked with at CSU are drug resistant and researchers should be aware of strains being worked with and antibiotic resistance profiles.
- Immuno-compromised individuals and those with pre-existing lung damage (e.g. cystic fibrosis, emphysema, smokers) are more susceptible.

### HAZARD IDENTIFICATION

**Disease:** Tuberculosis (TB). There is more than one form of TB. For most people who breathe in TB bacteria and become infected, the body is able to fight the bacteria to stop them from growing. The bacteria are thought to remain alive in the body but can become active later. When there is infection but there are no signs or symptoms of TB, this is called latent TB infection and is manifest by evidence of a positive skin test or blood test (see below) but with no symptoms of disease. However, some people can go on to develop active TB from the latent infection. People with a compromised immune system such as certain immune problems, malignancies, medications, diabetes, other diseases and especially HIV are at particular risk of tuberculosis.

**Transmission:** Direct contact with mucous membranes or broken skin, injection, injection, aerosols, fomites; M. bovis can be transmitted by eating or drinking contaminated, unpasteurized milk products, and by inhalation of bacteria in the exhalation of infected animals

**Communicability:** Person to person by the aerosol route

**Incubation:** 2-12 weeks from infection to the development of a positive TB skin test or blood test for TB.

**Infectious dose:** as low as 1-10 bacilli, organisms can be stable in the environment

### VIABILITY/INACTIVATION

**Stability:** Can survive on surfaces and in soil for months.

**Inactivation:**
- Mycobacteria are very resistant to inactivation, and inactivation methods should species and strain being worked with.
- Mycobacteria are autoclave sensitive, but longer cycles may be required
The following disinfectants may be effective for inactivation, depending on species, strain, and conditions:

- Sensitive to 5% phenol or 5% formaldehyde, 2% glutaraldehyde.
- Minimum of 20% bleach (10,000 ppm available sodium hypochlorite) *(Note that bleach should not be used when waste will be subsequently processed by autoclaving)*
- For a list of EPA Registered tuberculocidal products:
  [http://www.epa.gov/oppad001/list_b_tuberculocide.pdf](http://www.epa.gov/oppad001/list_b_tuberculocide.pdf)

**MEDICAL**

**Signs and symptoms:**
- A cough that lasts 3 weeks or longer
- Pain in the chest
- Coughing up sputum and/or blood
- Weakness or fatigue
- Weight loss
- No appetite
- Chills
- Fever
- Night sweats

**Pre-exposure prophylaxis:**
BCG vaccine is available but not used routinely in the United States.

**CSU TB Surveillance:** All personnel with the potential for occupational exposure to the MTB complex must be enrolled in the TB Surveillance Program. This consists of routine tuberculin skin testing every 6 or 12 months, depending on risk.

**Diagnosis:**
- TB Tuberculin Skin Test: Consists of injecting a small amount of tuberculin fluid (purified protein derivative of TB) under the skin to check for an inflammatory reaction (induration). Test must be read 48 to 72 hours by a trained health care professional.
- Blood test: Interferon-Gamma Release Assay (IGRA) may be used and is often done on individuals that are TB skin test positive or BCG vaccinated to determine if the skin reaction could be specific to tuberculosis.
- Chest X-Ray
- Culture of sputum
- Direct smear microscopy for acid fast bacilli
- Genetic methods (PCR, DNA probes, DNA fingerprinting)

**Treatment:**
- **Post-Exposure Prophylaxis**
  - Prophylactic antibiotic regimen may be initiated, depending on the strain involved and the nature of the exposure.
  - Skin testing is performed the day of the incident, then 10 weeks later and patient is monitored for symptoms.
- **Treatment of clinical cases:**
  - Persons who develop latent infection are offered treatment (usually isoniazid for 9 months). Treatment for active disease due to tuberculosis is dependent on the antibiotic susceptibility of the strain of *M. tuberculosis*. 

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**Disclaimer**
This document is for informational purposes ONLY. This document should not be used in lieu of professional medical attention, and medical professionals should seek appropriate resources for diagnosis and treatment. **
Treatment could be a combination of isoniazid (INH), rifampin (RIF), ethambutol (EMB) and pyrazinamide (PZA) if the strain is fully susceptible.

**WHAT TO DO IF AN EXPOSURE OCCURS**

**Employees, Graduate Students, Work Study**

1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed.
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to an Authorized Treating Physician.
3. After the visit, individual fills out the following forms:
   - Workers' Compensation (within 4 days or as soon as possible): [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)
4. Employee follows up as directed.

**Student Not Paid by CSU**

1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed.
3. Student goes to CSU Health Network (Formerly Hartshorn Health Services)

**Volunteers and Visitors**

1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed.
3. Individual goes to their personal physician, or as otherwise directed by their physician

**REFERENCES**

- MMWR Recommended Treatment of Exposed Individuals: [http://www.cdc.gov/mmwr/preview/mmwrhtml/00031296.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/00031296.htm)
- MMWR Recommended Treatment of Infected Individuals: [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5211a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5211a1.htm)
- Sanger Institute: [http://www.sanger.ac.uk/resources/downloads/bacteria/mycobacterium.html](http://www.sanger.ac.uk/resources/downloads/bacteria/mycobacterium.html)
CONTENT REVIEW
This document has been reviewed by:

- CSU subject matter experts: Drs. Karen Dobos and Mary Jackson