

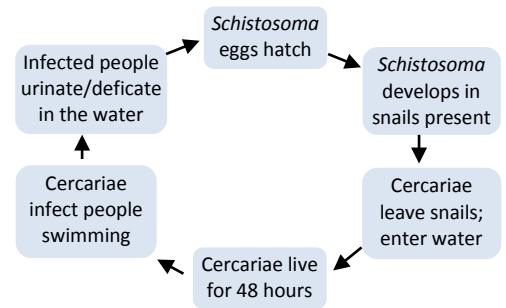
## **Biological Agent Reference Sheet (BARS)**

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## BIOLOGICAL AGENT REFERENCE SHEET

### *Schistosoma spp.*

CHARACTERISTICS	
<i>Morphology</i>	Trematode, flatworm. There are 2 sexual forms. Adult worms are 12-16 mm in length and 0.3-0.6 mm in width and male worms are shorter and thicker than the females. Eggs are round or oval. Cercariae (infective larva) are 400-600 µm in length and contain a pear-shaped head and a forked tail.
<i>Growth Conditions</i>	 <pre> graph TD     A[Infected people urinate/defecate in the water] --&gt; B[Schistosoma eggs hatch]     B --&gt; C[Schistosoma develops in snails present]     C --&gt; D[Cercariae leave snails; enter water]     D --&gt; E[Cercariae live for 48 hours]     E --&gt; F[Cercariae infect people swimming]     F --&gt; A                     </pre>

HEALTH HAZARDS	
<i>Host Range</i>	<i>S. heamatobium</i> and <i>S. mansoni</i> : humans <i>S. japonicum</i> : humans, dogs, cats, pigs, water buffalo, horses and rodents.
<i>Modes of Transmission</i>	Skin contact with fresh water contaminated with cercariae (infective larval forms of <i>Schistosoma</i> ).
<i>Signs and Symptoms</i>	Rash/itchy skin appears within days of initial infection. After 1-2 months, fever, chills, cough, and muscle aches develop. When <i>Schistosoma</i> eggs travel to the liver or intestine/bladder inflammation and scarring appears. Years of infection can cause damage to the liver, intestines, lungs, and bladder. Occasionally, damage occurs in the spinal cord/brain leading to seizures and paralysis.
<i>Infectious Dose</i>	Unknown
<i>Incubation Period</i>	2-6 weeks

MEDICAL PRECAUTIONS / TREATMENT	
<i>Prophylaxis</i>	None available
<i>Vaccines</i>	None available
<i>Treatment</i>	Administer appropriate drug therapy: <ul style="list-style-type: none"> <li>• All are sensitive to praziquantel.</li> <li>• <i>S. mansoni</i> is sensitive to oxamniquine.</li> <li>• <i>S. japonicum</i> is sensitive to metrifonate.</li> </ul>
<i>Surveillance</i>	Monitor for symptoms and confirm by testing stool, urine, or blood using microscopy or antibody detection.
<i>Emory Requirements</i>	Report any exposures.

LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	In 1987, there was one documented LAI.
<i>Sources</i>	Feces, biopsy specimens, urine, contact with infected freshwater.

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	<a href="http://www.phac-aspc.gc.ca/msds-ftss/msds136e-eng.php">http://www.phac-aspc.gc.ca/msds-ftss/msds136e-eng.php</a>
<i>BMBL: 5<sup>th</sup> Edition</i>	<a href="http://www.cdc.gov/OD/ohs/biosfty/bmb15/BMBL_5th_Edition.pdf">http://www.cdc.gov/OD/ohs/biosfty/bmb15/BMBL_5th_Edition.pdf</a>
<i>CDC Guidelines</i>	<a href="https://www.cdc.gov/parasites/schistosomiasis/index.html">https://www.cdc.gov/parasites/schistosomiasis/index.html</a>

CONTAINMENT REQUIREMENTS	
<i>BSL-2</i>	Required for all work with infective stages of <i>Schistosoma</i> and potentially infected body tissues, fluids, and freshwater.

SPILL PROCEDURES	
<i>Small</i>	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply a freshly made solution of 10% sodium hypochlorite, working from the perimeter towards the center. Allow 30 minutes of contact time before disposal and cleanup of spill materials.
<i>Large</i>	Contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), or The Spill Response Team (404-727-2888).

EXPOSURE PROCEDURES					
<i>Mucous membrane</i>	Flush eyes, mouth or nose for 15 minutes at eyewash station.				
<i>Other Exposure</i>	Wash area with soap and water for 15 minutes; rinse with ethanol. Cercariae require 1-2 minutes to penetrate skin.				
<i>Reporting</i>	Immediately report incident to supervisor, complete an employee incident report in PeopleSoft.				
<i>Medical Follow up</i>	<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"><b>7am-4pm (OIM):</b> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)</td> <td style="vertical-align: top;"><b>After Hours:</b> OIM NP On Call 404-686-5500 PIC# 50464</td> </tr> <tr> <td style="vertical-align: top;"><b>Needle Stick (OIM):</b> EUH (404-686-8587) EUHM (404-686-2352)</td> <td style="vertical-align: top;"><b>Yerkes:</b> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)</td> </tr> </table>	<b>7am-4pm (OIM):</b> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)	<b>After Hours:</b> OIM NP On Call 404-686-5500 PIC# 50464	<b>Needle Stick (OIM):</b> EUH (404-686-8587) EUHM (404-686-2352)	<b>Yerkes:</b> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)
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VIABILITY	
<i>Disinfection</i>	All infective stages are susceptible to 2% glutaraldehyde, 10% sodium hypochlorite. Surface cercariae are susceptible to 70% ethanol.
<i>Inactivation</i>	Sensitive to freezing.
<i>Survival Outside Host</i>	Unknown

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
<i>Minimum PPE Requirements</i>	At minimum, personnel are required to don gloves, closed toed shoes, lab coat, and appropriate face and eye protection prior to working with <i>Schistosoma</i> . Additional PPE may be required depending on lab specific SOPs.
<i>Additional Precautions</i>	Wash hands and change gloves frequently.