Biological Agent Reference Sheet (BARS)

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BIOLOGICAL AGENT REFERENCE SHEET

Babesia spp.

CHARACTERISTICS	
Morphology	Microscopic (1-2.5 µm) protozoan parasites that infect red blood cells and are spread by certain ticks.
Growth Conditions	*Babesia* species are cultured in hamster erythrocytes and cell culture with fetal calf serum, RPMI 1640 medium, and antibiotics.

HEALTH HAZARDS	
Host Range	Rodents (mainly White-Footed Mouse), *Ixodes scapularis* ticks, and humans.
Modes of Transmission	Bite by infected tick; blood transfusion with contaminated blood; infected mother to baby; needle stick; open wound.
Signs and Symptoms	Can be asymptomatic. Common symptoms include: • Flu-like symptoms – fever, chills, sweats • Malaise, arthralgia, headache • Gastrointestinal symptoms – anorexia and nausea, abdominal pain, vomiting • Dark urine • Less common: cough, sore throat, depression, photophobia, red eyes • Mild enlargement of spleen, mild enlargement of liver, or jaundice may occur in some patients • Persons without a spleen can develop severe disease, even death
Infectious Dose	Unknown.
Incubation Period	1-6 weeks following tick bite; 1-9+ weeks following transfusion

MEDICAL PRECAUTIONS / TREATMENT	
Prophylaxis	Apply repellents with DEET to skin and clothing; avoid areas with overgrown grasses or brush; lessen amount of exposed skin; shower soon after being outdoors; check body for ticks; intervene before blood donation if donor has ever been infected.
Vaccines	None available.
Treatment	Babesiosis is usually treated for at least 7-10 days with a combination of two medications atovaquone PLUS azithromycin; OR clindamycin PLUS quinine.
Surveillance	Unknown.
Emory Requirements	Report any exposure.

LABORATORY HAZARDS	
Laboratory Acquired Infections (LAIs)	None reported.
Sources	*BMBL: 5th Edition*

SUPPLEMENTAL REFERENCES	
CDC	http://www.cdc.gov/parasites/babesiosis/
BMBL: 5th Edition	http://www.cdc.gov/OD/ohs/biosfty/bmbl5/BMBL_5th_Edition.pdf

CONTAINMENT REQUIREMENTS	
BSL-2	For activities with infective stages of the parasite. PPE in conjunction with a BSC are required when working with cultures, tissue homogenates, or blood containing parasites.
ABSL-2+	For activities with infective stages of the parasite.

SPILL PROCEDURES	
Small	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply an EPA registered disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before disposal and cleanup of spill materials.
Large	For assistance, contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), or 404-727-6111 from a campus phone, or the Spill Response Team (404-727-2888).

EXPOSURE PROCEDURES		
Mucous membrane	Flush eyes, mouth or nose for 15 minutes at eyewash station.	
Other Exposure	Wash area with soap and water for 15 minutes.	
Reporting	Immediately report incident to supervisor, complete an employee incident report in PeopleSoft.	
Medical Follow-up	7am-4pm (OIM): EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)	After Hours: OIM NP On Call 404-686-5500 PIC# 50464
	Needle Stick (OIM): EUH (404-686-8587) EUHM (404-686-2352)	Yerkes: Maureen Thompson Office (404-727-8012) Cell (404-275-0963)

VIABILITY	
Disinfection	Unknown.
Inactivation	Unknown.
Survival Outside Host	Unknown.

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
Minimum PPE Requirements	At minimum, personnel are required to don gloves, closed toed shoes, lab coat, and appropriate face and eye protection prior to working with *Babesia* species. Additional PPE may be required depending on lab specific SOPs.
Additional Precautions	All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC). The use of needles, syringes, and other sharp objects should be strictly limited. Additional precautions should be considered with work involving animals or large scale activities.