

Biological Agent Reference Sheet (BARS)

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BIOLOGICAL AGENT REFERENCE SHEET

Vaccinia Virus (VV)

CHARACTERISTICS	
<i>Morphology</i>	Family: Poxviridae Linear, double stranded DNA virus. It is usually 320-380 by 260-340 nm in size.
<i>Growth Conditions</i>	Two cell lines are used to propagate vaccinia virus for production of the smallpox vaccine: Vero monkey kidney cells and a human fibroblast cell line (MRC5).

HEALTH HAZARDS	
<i>Host Range</i>	Several mammals, including humans, rabbits, cows and river buffalo have been shown to contain the virus
<i>Modes of Transmission</i>	Vaccinia is spread by touching a vaccination site before it has healed or by touching bandages or clothing that have been contaminated with live virus from the smallpox vaccination site.
<i>Signs and Symptoms</i>	The vaccination is accompanied by fever, rash, lymphadenopathy, fatigue, myalgia and headaches in some patients. Accidental infection with the virus can occur through contact between the vaccination lesion and broken skin (inadvertent inoculation)
<i>Infectious Dose</i>	Unknown. Vaccine titer is usually 10 ⁸ pock-forming units per ml
<i>Incubation Period</i>	7-19 days; commonly 10-14 days

MEDICAL PRECAUTIONS / TREATMENT	
<i>Prophylaxis</i>	None
<i>Vaccines</i>	Live vaccinia virus every 10 years.
<i>Treatment</i>	Cidofovir and vaccinia immune globulin
<i>Surveillance</i>	Monitor for symptoms and confirm using PCR, electron microscopy and histology.
<i>Emory Requirements</i>	Report all incidents.

LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	5 laboratory acquired infections were reported until 2007.
<i>Sources</i>	Lesion fluids or crusts, respiratory secretions and infected tissues containing the virus.

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/vaccinia-virus-eng.php
<i>CDC</i>	http://www.bt.cdc.gov/agent/smallpox/vaccination/facts.asp#safety

CONTAINMENT	
<i>BSL2/ABSL2</i>	Containment Level 2 facilities with Biosafety Level 3 practices (BSL2+) are recommended. Viable materials should be manipulated in a biological safety cabinet.

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 an EPA registered disinfectant, 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.				
<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="width: 50%;"><u>7am-4pm (OIM):</u> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)</td> <td style="width: 50%;"><u>After Hours:</u> OIM NP On Call 404-686-5500 PIC# 50464</td> </tr> <tr> <td><u>Needle Stick (OIM):</u> EUH (404-686-8587) EUHM (404-686-2352)</td> <td><u>Yerkes:</u> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)</td> </tr> </table>	<u>7am-4pm (OIM):</u> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)	<u>After Hours:</u> OIM NP On Call 404-686-5500 PIC# 50464	<u>Needle Stick (OIM):</u> EUH (404-686-8587) EUHM (404-686-2352)	<u>Yerkes:</u> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)
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VIABILITY	
<i>Disinfection</i>	70% Ethanol, sodium hypochlorite (1-10% dilution of fresh bleach). If using bleach within a biosafety cabinet, always follow up with a 70% ethanol rinse.
<i>Inactivation</i>	Autoclave cultures for 30 minutes at 121°C, 15 psi. The virus in its aerosol form is also sensitive to UV light (254 nm).
<i>Survival Outside Host</i>	Up to 39 weeks at 6.7% moisture and 4°C

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>Vaccinia virus</i> . Additional PPE may be required depending on lab specific SOPs.
<i>Additional Precautions</i>	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.