Biological Agent Reference Sheet (BARS)

This content of this document is for Emory University USE ONLY.

The information and contents of this Biological Agent Reference Sheet (including all text and graphics), whether available in print or electronic format (including any digital format, e-mail transmissions, or download from the website), shall be known hereinafter as “Reference Sheet Content”. The Reference Sheet Content is provided as a courtesy and is not intended as a sole source of guidance in the evaluation of Biological Agents. The Reference Sheet Content is not intended to substitute for medical advice, medical care, diagnosis or treatment obtained from a physician or health care provider. Please seek the advice of a physician or other qualified health provider with any questions you may have regarding a medical condition. Do not rely on the Reference Sheet Content for diagnosis, treatment, or medical advice. This Reference Sheet Content is for informational purposes and does not provide individualized medical care or treatment. No endorsement of any specific tests, products, or procedures is made by Reference Sheet Content or affiliated party, member, agent or employee of the Emory University Environmental Health and Safety Office.

EMORY UNIVERSITY | Environmental Health and Safety Office
Research Administration

1762 Clifton Road, Suite 1200
Atlanta, Georgia 30322
(404) 727-5922
FAX: (404) 727-9778

BIOLOGICAL AGENT REFERENCE SHEET

Vaccinia Virus (VV)

CHARACTERISTICS	
Morphology	Family: Poxviridae Linear, double stranded DNA virus. It is usually 320-380 by 260-340 nm in size.
Growth Conditions	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	
Host Range	Several mammals, including humans, rabbits, cows and river buffalo have been shown to contain the virus
Modes of Transmission	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.
Signs and Symptoms	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)
Infectious Dose	Unknown. Vaccine titer is usually 10^8 pock-forming units per ml
Incubation Period	7-19 days; commonly 10-14 days

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

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

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

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

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	Contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), 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	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.
Inactivation	Autoclave cultures for 30 minutes at 121°C, 15 psi. The virus in its aerosol form is also sensitive to UV light (254 nm).
Survival Outside Host	Up to 39 weeks at 6.7% moisture and 4ºC

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 *Vaccinia virus.* 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.