
STANDARD OPERATING PROCEDURES (SOP)

Vaccinia Virus Usage

1. SCOPE

Cases of laboratory-associated infections with pox viruses (i.e. smallpox, vaccinia, yaba, tanapox) have been reported. Human poxvirus infection ranges from severe systemic febrile disease to less severe rarely fatal vesicular diseases. This SOP was designed to establish a system of information and safeguards that should be followed at the University of Pittsburgh when using vaccinia virus.

2. PROCEDURE

2.1 **Agent-** Vaccinia virus, human host poxvirus, smallpox vaccine

2.2 **Employees at risk-** Naturally or experimentally infected laboratory animals are a potential source of infection to exposed, unvaccinated laboratory personnel. Genetically engineered recombinant vaccinia viruses pose an additional potential risk to laboratory personnel, through direct contact or contact with clinical materials from infected volunteers or animals.

2.3 **Laboratory hazards**

2.3.1 Ingestion, parenteral inoculation, and droplet or aerosol exposure of mucous membranes or broken skin with infectious fluids or tissues, are the primary hazards to laboratory and animal personnel. The agents may be present in lesion fluids or crusts, respiratory secretions, or tissues of infected hosts. Some poxviruses are stable at ambient temperature when dried and may be transmitted by fomites.

2.3.2 The different strains of vaccinia virus used in the laboratory present different levels of risk to humans. Non-attenuated vaccinia strains, such as WR, NYCBOH, Copenhagen or Lister, present a greater risk to humans based on an increased ability to replicate in human cells. Highly attenuated strains, such as MVA, NYVAC, ALVAC, and TROVAC are unable to replicate or replicate poorly in human cells and do not initiate productive infection in humans. The recommendations for vaccinia immunization differ depending upon the strain of experimental virus and setting in which it will be used in the individual laboratory.

2.4 **Required Procedures**

2.4.1 All Principal Investigators (PI's) using vaccinia virus, recombinant vaccinia virus or any orthopox virus must be registered with the Biosafety Officer/EH&S. A registration document may be obtained from the web site www.ehs.pitt.edu or by calling the Biosafety Officer at 624-9505.

2.4.2 Biosafety Level 2 practices, containment equipment and facilities are required for all activities involving the use or manipulation of vaccinia virus.

2.4.3 Laboratories are inspected by EHS to verify appropriate BSL-2 containment and practices.

2.4.4 All individuals who directly handle a) cultures or b) animals contaminated or infected with non-attenuated vaccinia virus strains or other Orthopoxviruses that infect humans must be medically screened by Employee Health Services for contraindications to vaccinia exposure and will be counseled on the risks and benefits of vaccinia vaccination. These individuals will be offered vaccinia vaccination at no cost (provided no contraindications exist). Following this counsel, all individuals, as previously described, must sign a Vaccinia Vaccination Immunization

Acceptance/Declination Form prior to work with vaccinia at the University of Pittsburgh. The original form will be maintained by Employee Health Services and a copy submitted to the Biosafety Officer, Public Safety Building, 4th Floor, 3412 Forbes Avenue, will be filed with the PI's registration.

- 2.4.5 Vaccination is NOT recommended for individuals working only with highly attenuated vaccinia strains, such as MVA, NYVAC, ALVAC, and TROVAC. However, these individuals must be medically screened by Employee Health Services prior to initiating work with these attenuated strains.
- 2.4.6 It shall be the responsibility of the Principal Investigator to assure that individuals with potential vaccinia virus exposure as described in section 2.4.4 and 2.4.5 are enrolled in the medical screening component of this Procedure prior to initial exposure to vaccinia virus. All individuals with current potential exposure to vaccinia virus will undergo medical screening before January 31, 2004.
- 2.4.7 Individuals having a medical contraindication to vaccinia exposure as determined by the Employee Health Services will be prohibited from performing tasks with potential vaccinia exposure. The determination of prohibited tasks will be made by the employee's supervisor in consultation with the Department of Environmental Health and Safety, and if necessary, the Office of General Counsel, Office of the Provost (faculty and students), Human Resources (staff), and the University Biohazards Committee.
- 2.4.8 Laboratory personnel not directly handling or manipulating cultures of vaccinia virus or animals exposed to vaccinia virus, but working in the same lab where non-attenuated vaccinia virus strains are utilized shall be offered medical screening for potential contraindications to vaccinia exposure. It shall be the responsibility of the Principal Investigator to assure that individuals in labs where vaccinia virus is utilized as described in section 2.4.8 are offered medical screening through Employee Health Services.
- 2.4.9 Non-lab personnel, such as janitors or trades workers, who may enter labs where vaccinia is used, are exempted from the vaccination and medical screening requirements. All work areas must be disinfected prior to their entry. Agents must not be in active use when non-lab personnel are in the lab.
- 2.4.10 Laboratory personnel must wear personal protective equipment when handling these agents to include at a minimum a lab coat and liquid barrier gloves. Refer to the University of Pittsburgh Biosafety Manual Section IV for more details on Biosafety level 2 requirements.

3. APPROVAL

The University of Pittsburgh's Biohazards Committee and EH&S have reviewed and approved this SOP as attested by the signatures of the Committee Chairperson and the Biosafety Officer.

Committee Chairperson

Date

Biosafety Officer

Date