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Title:	**Adenoviral Guidelines**		
Document Type:	Procedure	Document #:	UHT0001940
Program:	Research	Effective Date:	January 1, 2015
Executive Sponsor:	Vice President, Research and Innovation	Last Reviewed:	September 30, 2022
Owner/Lead:	Director, Research Facilities	Last Revised:	October 16, 2018
Approval Body:	Research Facilities	Review Cycle:	3 year
Applicable Sites:	☐ **Unity Health** ☐ **Providence** ☐ **St. Joseph's** ☒ **St. Michael's**		

1.0 PURPOSE

Adenoviruses commonly cause respiratory illness but may also cause gastroenteritis, conjunctivitis, cystitis and rash illness depending on the infective serotype. They are replication-defective and their DNA does not integrate into the genome and are not replicated during cell division. However, adenoviruses may combine with naturally occurring viruses in humans or animals and regain the ability to replicate. Adenovirus vectors are non-enveloped, double stranded DNA vectors. They can be genetically engineered to insert a gene of interest into a eukaryotic cell and are commonly used as research tools.

2.0 PROCEDURE

Modes of transmission of Adenovirus:

- Direct contact with mucous membrane (eyes, nose and mouth)
- Inhalation of aerosols
- Penetration through skin (via needle puncture, scratches, cuts, animal bites or scratches etc.)
- Ingestion

Containment level:

- Work with Adenovirus (not limited to: pipetting, harvesting infected cells, loading and opening containers) must be conducted under a certified Biological Safety Cabinet (BSC) and using consistent biosafety containment level 2 practices as outlined by the Public Health Agency of Canada's (PHAC) Canadian Biosafety Standards and Guidelines (2nd edition, 2015) within the cell culture room or the virus lab.
- No work with risk group 2 virus/vector is permitted on the open bench.

Requirements:

- Principal Investigator (PI) must have an active Biosafety permit and approval for Adenoviral work. An SOP must be provided to the research biosafety officer for risk assessment. The risk assessment would determine if the experiment should be conducted in the virus lab or the cell culture suites.
- Virus work training from a RCF specialist is a must prior to starting adenoviral work.
- PIs must inform their staff of any risks associated with working with a specific Adenoviruses.
- Pregnant or immunocompromised workers should notify their PI before undertaking any work with any Adenoviruses.

Personal Protective Equipment (PPE):

1. Gloves (double gloving is recommended)
2. Lab coat with purple collar
3. Lab appropriate clothing, including closed-toed shoes
    - Proper personal protective equipment must be worn at all times within the room.
    - Only put on the gloves once inside the room.
    - Gloves should always be worn when handling cells, flasks, etc. used in the BSC and incubators.
    - Gloves must be removed before exiting the cell culture/virus room.
    - If you need to pass between two adjacent rooms, remove one glove to open the door.

Work practices:

Researchers working with adenoviruses must follow the general practices for handling infectious substances as outlined in the PHAC's Canadian Biosafety Standards and Guidelines (2nd edition, 2015). The following practices are also required-

- Verify that all the materials and equipment you are working and are easily accessible.
- Laboratory door must be closed with the biosafety sign posted on the door when work is in progress.
- All work with the adenovirus must be done under a certified BSC. Proper techniques must be followed as outlined in the Biological Safety Cabinet Guidelines (found on the Intranet).
- The centrifuge must be wiped and sprayed with Virox or an appropriate disinfectant after use.

- Limit the use of sharps. All waste generated must be decontaminated with 1:10 bleach within the BSC prior to proper disposal.
- If cells are infected with adenovirus and are non-packaging cells, they can be taken out of the cell culture room to harvest.

Proper waste disposal and decontamination:

- After working with the adenoviral vector, BSC surface must be thoroughly disinfected with virox wipes.
- Equipment used that has been in contact with the adenoviral vector must be decontaminated with virox wipes followed by 70% ethanol.
- All biological waste must be decontaminated with 1:10 bleach and must be disposed in a yellow biohazard receptacle with bag.
- If the work is being done in the virus lab, the biohazard waste must be disposed by the researcher- collect the waste in the yellow bag, tightly seal the bag with tape, spray the outside of the bag with 70% ethanol and deposit the bag in the biohazard collection bin outside the virus lab.
- Liquid waste must be placed in a tight sealed container and treated with 1:10 bleach for 30 min before disposing down the drain.

Use of Incubators:

- There are two incubators in the virus room. All users must book the incubators by using the calendar posted on the incubators. Add your name and contact details. Make sure the incubator has enough water.
- All work should be done in vented tissue culture flasks. However, if tissue culture plates are used, they must be stored in the incubators in sealable containers, which can be opened in the incubators to allow gaseous exchange.
- The incubators should be decontaminated and cleaned every 6 months.

Spill response

- Alert the area occupants and evacuate the room for 30 min until all aerosols have settled before going back to clean the spill. Secure the area to avoid traffic.
- Put on all appropriate PPE (gloves, lab coat, goggles/face shield, mask) before entering affected area.
- Remove any sharps using forceps or scoop and place in a biohazard sharps container.

- Place paper towels or absorbent material around the spill and allow the spill to be absorbed. Use forceps to discard towels or absorbent material into a yellow biohazardous bag. Repeat until majority of the spill has been absorbed.
- Apply 10% Virox or 1:10 bleach to the area of the spill and leave for 30 minutes.
- Clean the spill area with fresh paper towel. Repeat as necessary and thoroughly wipe the area until dry.
- Clean the area with a hospital approved detergent. Ensure that that the area is thoroughly dry.
- Discard absorbent materials, respirator and gloves in the labeled yellow biohazard bag and tightly close the bag.
- Place the lab coat in an autoclavable bag and autoclave. Goggles and other reusable items should be soaked in a 1:10 dilution of bleach.
- Wash hands thoroughly
- Contact your PI to inform them of the spill. Complete an event tracker.

First Aid

- In case of accidental splash or inoculation/mucosal absorption of substance potentially contaminated with adenoviral vectors, immediately wash the area with soap and running water for a minimum of 15 minutes.
- If eyes get potentially contaminated, immediately flush the eyes at an eyewash station for a minimum of 15 minutes.
- For accidental ingestion, please report to the Emergency Room.
- Report to Corporate Health and Safety for follow-up.
- Report the incident to your supervisor and fill out the online incident report (Event tracker on the Intranet).

3.0 DEFINITIONS

Term/Acronym	Definition
PHAC	The Public Health Agency of Canada
BSC	Biosafety cabinet
Virox	Accelerated Hydrogen Peroxide
PI	Principal investigator
PPE	Personal Protective Equipment

Version	Approval/Sub-approval body	Approval date
01	Research Biosafety Committee	January 1, 2015
02	Research Biosafety Committee	January 1, 2016
03	Research Biosafety Committee	October 16,2018
04	Research Biosafety Committee	January 1, 2019
05	Director Research Facilities	September 30, 2022