PURPOSE & Description

The purpose of this SOP is to delineate the minimum standards for the use of Pertussis toxin when administered to rodents by injection. Pertussis toxin (PT) is a biological toxin produced by the bacterium *Bordetella pertussis*, the organism responsible for whooping cough. During infection, PT is released and triggers inflammation in the respiratory tract, which hampers the clearance of mucus and other secretions from the lungs. In addition to its local effects, the toxin can cause systemic symptoms—such as elevated white blood cell counts—and helps the bacteria evade the host's immune response.

Scope

This SOP applies to the Principal Investigator (PI) and their laboratory staff.

Responsibilities

PIs are responsible for training of their laboratory staff and continued participation in following safety guidelines.

PI and laboratory staff are responsible for following the [Policy on Handling Animals Exposed to Biological Hazards](https://iacuc.ufl.edu/secure/wp-content/uploads/sites/3/Policy-on-Handling-Animals-Exposed-to-Biological-Hazards.pdf).

Definitions

* **Clear time** – The period of time required to allow for excretion of a hazardous chemical before standard handling practices can be used.
* **Safety-engineered sharps** –a non-needle sharp or needle device with a built-in safety feature or mechanisms that effectively reduces the risk of an exposure incident. More information on safety engineered sharps can be found here: [[UF EHS Safety-Engineered Sharps Fact Sheet](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D)](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D).

Hazard Identification & Control Measures

**Potential Hazards**

* **Physical Hazards**
  + Needlestick
* **Chemical Hazards**
  + Respiratory Target Organ
  + Skin Irritation
  + Eye Irritation

**Engineering Controls / Administrative Controls**

* Use of an Animal Transfer Station (ATS) or higher engineering control such as a Biosafety Cabinet (BSC) or Chemical Fume Hood (CFH) is required for agent administration and cage manipulation.
* Syringes used for injection should comply with the details outlined in [UF EHS Safety-Engineered Sharps Fact Sheet](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D).
* Rodents should be appropriately restrained prior to administration, as described in the approved Animal Use Protocol (AUP).
* Gloves should be changed frequently, at a minimum when contaminated with pertussis toxin or torn, and before handling animals in other experimental groups.
* Hands and arms should be washed with soap and water upon completion of procedure.

**Personal Protective Equipment (PPE)**

* Appropriate lab attire including skin protection, closed shoes, and eye protection.
* Long-sleeve gown or long-sleeve dedicated lab coat
* Gloves - Single

Procedure

* Prior to working with biological hazards in rodents, all work must be described in an approved AUP.

Special Handling and Storage Requirements

* The pertussis toxin clear time is 72 hours after the last administration. The procedures inthis SOP must be followed when handling animals and bedding for 72 hours after the final toxin administration.
* Pertussis toxin storage and transport containers should be shatter-resistant, rigid, shock-resistant, leak-proof, and made of a non-reactive material which can be easily cleaned and decontaminated in the event of a leak.
* Personal protective equipment as described above must be worn when handling Pertussis toxin, in addition to any PPE requirements of the animal room. Hands and arms should be washed with soap and water after removing PPE.
* Needles and sharps used with Pertussis toxin must be disposed of immediately in a sharps container. Do not reuse, bend, or recap needles. Safety-engineered sharps should be used whenever possible.
* An approved solution must be used for decontamination of equipment and areas exposed to Pertussis toxin (e.g. Peroxigard RTU).

Waste Disposal Procedures

* Contaminated and/or potentially contaminated laboratory PPE and laboratory consumables must be inactivated by autoclaving (121oC and 15 psi for 60 minutes) or chemical inactivation with sodium hypochlorite (30 minutes of contact time at a 5000ppm) prior to disposal.
* Contaminated and/or potentially contaminated bedding and PPE originating within the animal facility must be inactivated by autoclaving (121oC and 15 psi for 60 minutes) or chemical inactivation with sodium hypochlorite (30 minutes of contact time at a 5000ppm prior to disposal.
* Unused portions of prepared Pertussis toxin (including spill cleanup) must be inactivated by chemical inactivation with full-strength sodium hypochlorite (30 minutes of contact time) prior to disposal through [EHS Hazardous Waste Management](https://www.ehs.ufl.edu/forms/hazardous-waste-forms/).
* Rodents euthanized or found dead prior to the clear time are identified, labeled, and disposed of according to standard ACS practices.

Emergency Response (Spill & Accident Procedures)

**Spills**

* If a small spill occurs, clean up with an approved solution (e.g. at least 5000ppm sodium hypochlorite). Collect spilled material and clean up material into appropriately labeled, nonmetallic waste container.
* For large spills, call EH&S Chemical and Radioactive Waste Disposal group at 352-392-8400 for clean-up assistance.
* See [UF EHS Spill Response](https://www.ehs.ufl.edu/departments/research-safety-services/hazardous-waste-management/spill-response/#:~:text=Call%20EH&S%20Chemical%20and%20Radioactive%20Waste) for additional information.

**Needlesticks**

* Allow to bleed freely. If necessary, control bleeding by applying direct pressure with a sterile gauze or bandage.
* Immediately wash with copious quantities of soap and water.
  + If eyes or mucous membranes are exposed, irrigate the area for at least 15 minutes with water.
* Seek medical treatment.
* Report the incident to the PI/supervisor and Environmental Health and Safety (352) 392-1591 and submit an online Injury /Incident Report (<https://apps.ehs.ufl.edu/incidents/>).

**If an emergency occurs outside of normal work hours, contact the University Police Department at 352-392-1111 or call 911.**

**Emergency Contact Numbers:**

* Principal Investigator: xxx-xxx-xxxx
* Lab Manager: xxx-xxx-xxxx
* Poison Control Center: 800-222-1222
* Emergency: 911
* EH&S: 352-392-1591

**Physical Address on Campus:**

[Add your lab’s address here.]

References

* [Policy on Handling Animals Exposed to Biological Hazards](https://iacuc.ufl.edu/secure/wp-content/uploads/sites/3/Policy-on-Handling-Animals-Exposed-to-Biological-Hazards.pdf)
* [[UF EHS Safety-Engineered Sharps Fact Sheet](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D)](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D)
* [UF EHS Spill Response](https://www.ehs.ufl.edu/departments/research-safety-services/hazardous-waste-management/spill-response/#:~:text=Call%20EH&S%20Chemical%20and%20Radioactive%20Waste)
* [EHS Hazardous Waste Management](https://www.ehs.ufl.edu/forms/hazardous-waste-forms/)

Documents and attachments

List applicable forms and attachments here.