

University Animal Care Committee Standard Operating Procedure		
<b>Document No:</b> 10.9.2	<b>Subject: Intraperitoneal Injection (Rats)</b>	
<b>Date Issued:</b> July 7 <sup>th</sup> , 2011	<b>Revision:</b> 4	<b>Page No:</b> 1

**Location:** Queen's University

**Responsibility:** Principal Investigators, Research Staff, Veterinary Staff

**Purpose:** The purpose of this Standard Operating Procedure (SOP) is to describe the intraperitoneal injection in rats.

## 1. Introduction and Definitions:

**Abbreviations:** Animal Care Services **ACS**, Principal Investigator **PI**, subcutaneous **SC**, intravenous **IV**, intraperitoneal **IP**, intramuscular **IM**, per os **PO**, per rectum **PR**

Recommended Needle Sizes and Volumes <i>Length of needle: ½ to ¾ inch</i>	
	Intraperitoneal IP
Recommended Gauge (maximum)	26 (23)
Good Practice Volume (Max per site)	1 ml (10ml)

The injection methods described within an Animal Use Protocol (AUP) must be followed at all times. The following guidelines provide recommended injection sites, needle sizes and maximum dose volumes. "Good Practices" include:

- All animals securely and safely restrained prior to injecting.
- Only three attempts per site should be practiced. If unsuccessful, allow another (trained and competent) person to collect the sample.
- Use the appropriate gauge needle and volume for the injection site based on the size of the rat.
- Before injecting any substance, aspirate first to ensure appropriate placement of the needle (excluding intravenous injections).
- Always inject with the bevel up on the needle.
- Always ensure the substances you are injecting are sterile, and use sterile technique.
- Every animal requires a new sterile syringe and a new sterile needle. With small volumes, it is preferable to dilute the injectable agent to a 50% or less solution to

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ensure accurate dosing.

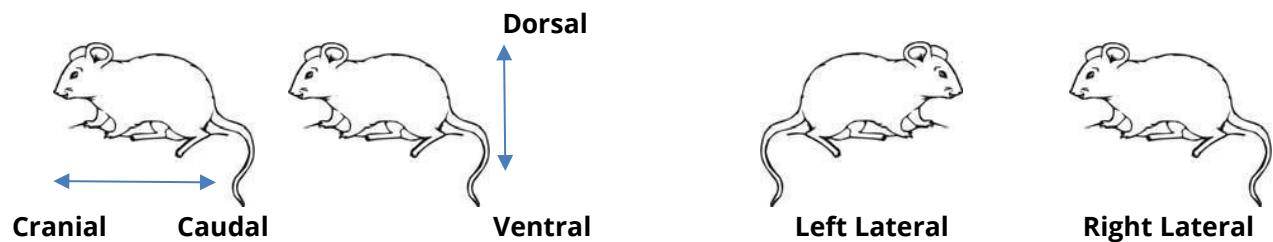
- Disinfecting the skin with alcohol is mandatory for intravenous, intraperitoneal, intramuscular, intradermal, and all biohazardous injections.
- Choose the appropriate administration route for the substance to be injected.

## 2. Materials:

- Sterile syringes
- Sterile needles (21-27 gauge)
- 70% alcohol
- Injectable solution

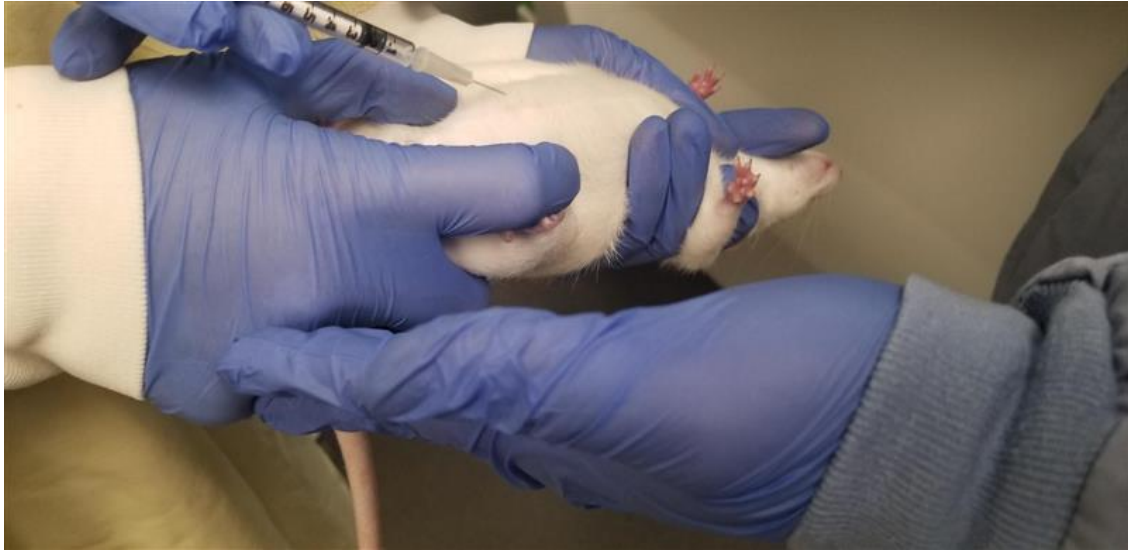
## 3. Procedures:

### Anatomical Terms of Location



- Every animal requires a new sterile syringe and a new sterile needle.
- Load the syringe and needle with appropriate volume to be injected.
- Safely restrain the animal in dorsal recumbency with the head tilted slightly downward to provide a clear view of the abdomen.
- Identify the midline of the abdomen. The optimal side to inject IP in a rat is their right side because the rat has a very large cecum which usually lies on the animal's left side.
- Disinfect the site with 70% alcohol.
- The needle should be inserted bevel up in line with the natural extension of the hip, between the two lower nipples and angled at 45 degrees to the abdomen.
- Aspirate to ensure the placement of the needle is correct. Proper placement should yield negative pressure and no aspirate in the hub of the needle. If any fluids are seen; stop, reload with new syringe and needle, check injection site for trauma, reposition needle and attempt again.
- After ensuring proper placement, inject.

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**Alternative Intraperitoneal technique:** This hold was developed for animals that are accustomed to handling. It alleviates stress to the animal, and allows for clear visualization of the needle hub.



Figure 3. Novel hold for IP injections in rats. A) Standard suspender hold; B) Novel roll-over hold (right-handed user); C) Novel roll-over hold (left-handed user).

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**References:**

**SOP Revision History:**

Date	New Version
January 24, 2012	Annual Review
September 22, 2015	Triennial Review
February 28, 2019	Triennial Review
February 28, 2022	Triennial Review
December 12, 2022	Triennial Review, split apart separate injection methods, updated format and reviewed/updated maximum injection volumes