Subcutaneous (SC or SQ) Injection in Rats and Mice SOP

Purpose
This Standard Operating Procedure (SOP) describes the procedure of subcutaneous injections into rats and mice. This SOP follows the CCAC guidelines for acceptable injection volumes in rodents.

Responsibility
Those trained persons listed on an approved Animal Care Committee protocol performing the procedure
All animal users injecting rodents must have successfully completed the UBC Animal Care Services (or equivalent) Rodent Biology and Husbandry course

References
Canadian Council on Animal Care (CCAC) guidelines (www.ccac.ca)

Recommendations
Use the manufacturer’s recommended route of injection since some drugs may have adverse side effects or cause discomfort if injected via a non-recommended route
The volume to be injected should be the least amount possible and not exceed the current recommended guidelines (see chart below)
Highly viscous liquids should be avoided as they are more difficult to inject and require a larger needle size
All substances for injection should be sterile since contamination can cause infection and irritation at the site of injection
Warm substances to room or body temperature since injection of cold substances can cause discomfort

<table>
<thead>
<tr>
<th>Species</th>
<th>Needle Gauge</th>
<th>Volume</th>
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<tbody>
<tr>
<td>Mouse (25 gm)</td>
<td>25-27g</td>
<td>&lt; 3 ml</td>
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<tr>
<td>Rat (200 gm)</td>
<td>25g</td>
<td>&lt; 10 ml</td>
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Materials
Syringes
Needles
Appropriate substance to be injected
Facecloth or small towel for rat restraint
**Procedure**

1. Prepare the syringe by placing the needle on the syringe. Line up the bevel with the numbers on the syringe.

2. Draw up, into the syringe and needle, the amount of solution to be administered.

3. **For mice:** scruff and restrain the animal with your non-dominant hand allowing access to an area with loose skin.  
   **For rats:** use a facecloth or small towel to restrain the rat and tent the loose skin with your non-dominant hand.

4. Holding the syringe in your dominant hand, and with the bevel of the needle facing upwards, insert the needle through the skin at the base of this tent.

5. Pull back on the plunger to ensure negative pressure prior to injecting. If there is negative pressure, proceed with the injection - depress the plunger until the solution has been fully administered.

6. If blood is drawn back into the hub of the needle, remove and try again with a new needle, syringe and solution.

7. Remove the needle and place directly into a sharps container without recapping.

8. Place the animal back into its cage and observe for any complications.

**Complications**

1. Bleeding at injection site – apply pressure until the bleeding stops and clean with gauze and water
2. Inflammation, abscesses or ulcers at the injection site due to pH of solution, contamination or tissue irritation