



Animal Blood Volume Sampling – Standard Operating Procedures			
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1. Overview

Purpose

The Drexel University Animal Care and Use Committee has established these procedures to specify blood sampling volumes which can be obtained without having an adverse effect on research animals.

2. Blood Sampling

2.1 Background

Moderate (10-20%), and even small (less than 10%) blood loss can have profound physiologic effects on research animals. Effects may be species, age and sex dependent and may affect the outcome of experiments.

The sample volume selected should always be the minimum necessary for the experimental need. Appropriate restraint must be employed to prevent injury to the animal and staff. Refer to ACU-206 for appropriate blood collection locations and methods.

2.2 Single Blood Sample

A single blood sample within a 14-day (two week) period must not exceed 10% of blood volume. This 10% blood volume may be estimated as 1% of body weight (in grams) expressed in ml.

Examples:

- 1% x 200 gm rat = 2.0 ml/14 days
- 1% x 2.5 kg rabbit = 25 ml/14 days
- 1% x 25 gm mouse = 0.025 ml/14 days

Recognize that older animals have less blood per 100 gm and that the "1% rule" would result in blood loss of 18% in a 400-gm rat. Blood volumes can also vary by strain.

2.3 Multiple Blood Samples

If it is necessary to take multiple samples, smaller blood volumes should be drawn. The maximum blood volume that may be drawn per week is no more than 7.5% of the total blood volume, which would be 0.75% (or 0.0075) times the weight in grams, converted to μl . For a 25 g mouse, this is equivalent to 187.5 μl per week. If sampling occurs every two weeks, up to 10% of the total blood volume may be drawn. For a 25g mouse, this is equivalent to 250 μl every two weeks.

2.4 Terminal Samples

Blood samples taken from animals that will not recover from anesthesia are not covered by this procedure. There are other combinations of blood volumes over various amounts of time which may be acceptable, pending IACUC review.



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3. Responsibilities

3.1 Drexel University IACUC Responsibilities

The Drexel University IACUC and the IACUC Office are responsible for maintaining this guidance document, training, and monitoring. All exceptions to this procedure must be approved by the IACUC. For inquiries regarding these procedures, please contact the Director of Animal Welfare, a part of the Office for Research & Innovation (ORI), or the Attending Veterinarian.

3.2 Principal Investigator’s Responsibilities

The Investigator is responsible for ensuring that each individual obtaining blood from animals follows this procedure.

3.3 ULAR Responsibilities

ULAR or the Animal Welfare Education Specialist is responsible for providing training on the appropriate methods for obtaining blood samples from various species of animals.

4. Revisions

Edition 001/Effective Date: 12/2003 – Original Document

Edition 001/Review Date: 02/08/2012

Edition 001/Review Date:06/2021

Edition 002/Review/Revision Date: 06/12/2024 and Effective Date: 06/26/2024 – Revised Document

- Updated formatting to new template.
- Change title to “Animal Blood Volume Sampling Procedures”
- Section 2.2 – Changed timeframe from a 28-day period to a 14-day (two week) period where a single blood sample must not exceed 10% of blood volume.
- Section 2.2 - Addition of “Blood volumes can also vary by strain.”
- Section 2.3 – Addition of “which would be 0.75% (or 0.0075) times the weight in grams, converted to μl .”
- Section 3.1 – Addition of Drexel IACUC responsibilities
- Section 3.2 – Addition of “Animal Welfare Education Specialist”