



## BLOOD COLLECTION POLICY

### Overview/Purpose

Blood collection / sampling is a common and important procedure utilized in the research setting. This policy provides guidance on blood collection activities necessary for research.

### Definitions

1. **Venipuncture or Phlebotomy** - Removal of blood using a closed (i.e. hypodermic syringe) or open (i.e. lancet) method to collect venous or arterial blood.

### Requirements

1. **Blood Collection:** The selected blood collection technique, volume, and frequency must be outlined in the approved IACUC protocol. In general, phlebotomy from a peripheral site is preferred over a central vessel. Retro-orbital blood collection in rodents is discouraged, and must be justified in the IACUC protocol if this method is used. Animals must not be returned to the housing location until complete hemostasis is achieved. Hemostasis can be achieved using digital pressure or clotting agents such as Kwik-Stop powder. Caution should only be used for hemostasis when the animal is anesthetized.
2. **Volume of Blood Collected:** Regardless of species, the maximum volume of blood collected must not exceed 1.5% of the total body weight over a 2 week period. A single blood draw must not exceed 1% of the total body weight. Animals that are young, aged, stressed; have undergone research procedures; or are suffering from systemic disease may not tolerate the removal of this volume, and therefore you should consider a smaller volume in those situations.

Example calculations of a 1% blood volume removal are below (assuming 1 ml of blood equals 1 gm):

- a. 0.15 ml from a 15 gm mouse
- b. 3 ml from a 300 gm rat
- c. 35 ml from a 3.5 kg rabbit
- d. 400 ml from a 40 kg dog

3. **Terminal Blood Collection:** Terminal blood collection, including cardiac puncture, must only be performed while an animal is under general anesthesia for a non-survival procedure. Death must be verified upon completion using a secondary method of euthanasia as described in your IACUC protocol.

### References

1. Abatan O, Welch KB and Nemzek JA. Evaluation of Saphenous Venipuncture and Modified Tail-Clip for Blood Collection in Mice. *JAALAS* 47(3):8 – 15. 2008.
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3. Whittaker A, Francisco C, Howarth G. 2015. Effects on Animal Wellbeing and Sample Quality of 2 Techniques for Collecting Blood from the Facial Vein of Mice. *JAALAS* 54(1):80-84.

4. Hoff J. 2000. Methods of Blood Collection in the Mouse. Lab Animal 29(10):47-53.
5. Teilmann AC, Nygaard Madsen A, Holst B, Hau J, Rozell B, et al. (2014) Physiological and Pathological Impact of Blood Sampling by Retro-Bulbar Sinus Puncture and Facial Vein Phlebotomy in Laboratory Mice. PLoS ONE 9(11): e113225. doi:10.1371/journal.pone.0113225
6. Kesavan R, Parasuraman S, and Raveendran R. 2010. Blood Sample Collection in Small Laboratory Animals. Journal of Pharmacology & Pharmacotherapeutics 1(2): 87-93. doi: 10.4103/0976-500X.72350

## **History of Revisions**

**006-00** - Original policy; approved 10/25/2002

**006-01** – Revised to reflect the volumes for types of collection samples; approved 01/25/2008

**006-02** – Revised to focus on activities that must be conducted; approved 06/17/2011

**006-03** – Policy revisions reflect the requirements for various blood collection methods; approved 08/15/2014

**006-04** – Policy revision includes a training statement in the requirements for blood collection methods; approved 06/16/2017

**006-05** – Policy revisions reflect the requirements for various blood collection methods; approved 06/19/2020