

	Title: Blood Volumes	SOP #	AV 40-404
		Version #	1
Page #	1 of 3	Implementation Date	11/4/2016
Department	Attending Veterinarian	Next Review Date	11/4/2019

Standard Operating Procedure

1. Purpose

To provide guidance regarding safe volumes for blood collection from animals.

2. Scope

All animal units collecting blood from animals.

3. Responsibilities

The Principal Investigator must ensure that personnel are trained on appropriate volumes for blood collection from animals.

4. Procedure

The volume of blood collected for research or teaching purposes from most mammals is generally not a problem. However, repeated blood sample collection in mice, rats, hamsters, guinea pigs, small cats, birds and some fish can be problematic because of their small body size. In order to prevent anemia, electrolyte imbalance, hypovolemic shock or other complications, the following guidelines should be followed.

- As a general rule, 1% of an animal's body weight (measured in grams) can be collected in blood (measured in millimeters) within a 24-hour period, every 14 days.
 - For example, 0.3 ml can be collected once every two weeks from a 30-gram mouse. Alternatively, 0.05 ml of blood can be collected hourly for 6 consecutive hours from a 30-gram mouse, every two weeks.
 - Although blood volume is rapidly restored in an animal after blood collection, a two-week "rest period" is needed for blood constituents (e.g., red blood cells, platelets, clotting factors) to be regenerated by the body.
- If blood samples need to be collected once a week, it is recommended that not more than 0.5% of the animal's body weight in blood be removed within a 24-hour period.
 - For example, 0.15 ml can be collected from a 30-gram mouse. This volume can be further divided if blood samples need to be collected more frequently. For example, 0.03 ml can be collected once a day for five days from a 30-gram

	Title: Blood Volumes	SOP #	AV 40-404
		Version #	1
Page #	2 of 3	Implementation Date	11/4/2016
Department	Attending Veterinarian	Next Review Date	11/4/2019

mouse, provided the mouse is given a one week (or greater) “rest period” before blood is collected again.

- The key to determining how much and how frequently blood can be drawn depends on the “rest period” between blood collections.

5. *References*

1. Blood Volumes. UC Davis Safety Services, 2016. (<http://ehs.ucdavis.edu/article/blood-volumes>).
2. Institute of Laboratory Animal Resources: Guide for the Care and use of Laboratory Animals, National Academy Press, Eighth Edition (http://www.nap.edu/catalog.php?record_id=12910).
3. Animal Welfare Act and Animal Welfare Regulations. United States Department of Agriculture, 2013 (https://www.aphis.usda.gov/animal_welfare/downloads/Animal%20Care%20Blue%20Book%20-%202013%20-%20FINAL.pdf).
4. National Institutes of Health: Public Health Service Policy on Humane Care and Use of Laboratory Animals (<http://grants.nih.gov/grants/olaw/references/phspol.htm>).
5. The Federation of Animal Science Societies: Guide for the Care and Use of Agricultural Animals in Research and Teaching, 3rd Edition, 2010 (http://www.fass.org/docs/agguide3rd/Ag_Guide_3rd_ed.pdf).

6. *Definitions*

1. AV – Attending Veterinarian – responsible for the health and well-being of all laboratory animals used at the institution
2. AVMA – American Veterinary Medical Association – a not-for-profit organization for advancing the science and practice of veterinary medicine to improve animal and human health
3. SOP – Standard Operating Procedure – established or prescribed methods to be followed routinely for the performance of designated operations or in designated situations
4. IACUC – Institutional Animal Care and Use Committee – responsible for assessment and oversight of the institution’s animal care program components and facilities
5. Chair – Chairperson of the IACUC
6. PI – Principal Investigator – a Central Oregon Community College employee having the background and training in scientific and administrative oversight necessary to conduct and manage the proposed study



Title: Blood Volumes

SOP #	AV 40-404
Version #	1
Implementation Date	11/4/2016
Next Review Date	11/4/2019

Page #	3 of 3
Department	Attending Veterinarian

7. AUP – Animal Care and Use Protocol – protocol created by the principal investigator of the proposed research, testing, or educational study
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9. COCC – Central Oregon Community College
10. Guide – the *Guide for the Care and use of Laboratory Animals*
11. AWA – Animal Welfare Act – requires that minimum standards of care and treatment be provided for certain animals bred for commercial sale, used in research, transported commercially, or exhibited to the public
12. PHS – Public Health Service – establishes guidelines for the proper care of animals to be used in research
13. Clinical veterinarian – the Attending Veterinarian or designee

Revision	Author	Revisions Made	Effective Date	Approval
1	Cindy Elston	<ul style="list-style-type: none">• New SOP	11/4/16	Cindy Elston (AV)
		<ul style="list-style-type: none">•		