



Standard Operating Procedure: Blood Collection from the Jugular Vein or Anterior Vena Cava in Guinea Pigs

These SOPs were developed by the Office of the University Veterinarian and reviewed by Virginia Tech IACUC to provide a reference and guidance to investigators during protocol preparation and IACUC reviewers during protocol review. They can be used as referenced descriptions for procedures on IACUC protocols.

However, it is the sole responsibility of the Principal Investigator to ensure that the referenced SOPs adequately cover and accurately represent procedures to be undertaken in any research project. Any modification to procedure as described in the SOP must be outlined in each IACUC protocol application (e.g. if the Principal Investigator plans to use a needle size that is not referenced in the SOP, simply state that alteration in the IACUC protocol itself).

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I. Procedure Summary and Goal

- a. Describes procedures for the collection of small blood samples from the jugular vein or anterior vena cava as a survival procedure in the guinea pig.
- b. Considerations
 - i. Either side may be utilized but vessels on the right are often more accessible.
 - ii. Please refer to the Guidelines for Injections in Rodents and Rabbits, Virginia Tech Office of the University Veterinarian for recommended volumes and needles sizes.
 - iii. Blood volume collection determination (ARAC Guidelines)
 1. The total circulating blood volume of a rodent is estimated to be approximately 8% of body weight.
 2. Of the circulating blood volume, approximate percentages of the total volume which can safely be removed are as follows:
 - a. 10% every two to four weeks
 - b. 7.5% every seven days
 - c. 1% every 24 hours.

II. Personal Protective Equipment (PPE) and Hygiene

- a. Ensure appropriate PPE is used to protect technician from accidental exposure to blood and other body fluids, such as:
 - i. Gloves
 - ii. Eye protection
 - iii. Mask
 - iv. Other PPE as required by protocol/facility
- b. Hands should be washed and/or gloves changed between animals.
- c. Promptly dispose of used sharps in the provided leak-proof, puncture resistant sharps container.

III. Supply List

- a. Anesthesia (injectable or inhalant)
- b. 22 gauge or smaller needles, syringes (e.g., 1cc tuberculin, 3cc)
- c. Gauze

IV. Detailed Procedure

- a. Procedure
 - i. Anesthetize the animal in dorsal recumbency.

- ii. Locate the area of the thoracic inlet (dorsal to the junction of the uppermost portion of the sternum and first rib).
- iii. Insert a 22-25 gauge 5/8 to 1 inch needle at a 30-45 degree angle, maintaining gentle aspiration pressure upon entry.
- iv. Direct the needle toward the midline of the thorax to a depth of 10-16mm until blood appears in the hub of the needle.
- v. Apply gentle pressure to the site for 1 minute to prevent hematoma formation.
- vi. Dispose of the needle into the approved sharps container.
- vii. If anesthetized, monitor animal until fully awake and able to walk normally.

V. Variations

VI. Potential Adverse Events, Mitigation, or Treatment

- a. Distress due to restraint, overheating, blood loss
 - i. Release restraint, gently stimulate mouse until it recovers and is walking
 - ii. Contact veterinary staff if animal does not recover normally
- b. Hematoma, local trauma, infection, or irritation at blood collection site
 - i. Contact veterinary staff

VII. References

- a. American Association of Laboratory Animal Science. Laboratory Animal Technician Training Manual. (Memphis, TN: Drumwright and Co, 2007)
- b. Charles River SOP 2577-2 – Blood Collection Methods for Use in Studies
- c. Turner, P.V., Brabb, T., Pekow, C., and Vasbinder, M. Administration of Substances to Laboratory Animals: Routes of Administration and Factors to Consider. J Am Assoc Lab Anim Sci.; 50(5): 600–613. (2011 September) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3189662/>