

## **Blood Collection 血液收集**

### **1. Purpose**

1.1 Collecting blood from mice and rats is necessary for a wide variety of scientific studies. The choice of method for blood withdrawal in these animals is dependent upon many factors like, the volume of blood needed, frequency of the sampling, health status of the animal to be bled, and the skill level of the technician.

### **2. Safety Requirements**

2.1 Frequency of blood collection is important. blood collection is limited up to 10% of total blood volume in healthy, normal, adult mice on a single occasion. 1.0% of an animal's total blood volume can be collected every 24 hour.

### **3. Associated Documents**

3.1 <https://www.jove.com/v/10246/blood-withdrawal-i>

3.2 <https://www.jove.com/v/10247/blood-withdrawal-ii>

### **4. Supplies**

4.1 hematocrit tubes

4.2 syringe

4.2.1 mice: 1 mL syringe with a 26 gauge needle

4.2.2 rats: 10 mL syringe with a 22 gauge needle

4.3 centrifuge tube with or without anticoagulants

### **5. Procedures**

#### **5.1 Retro-Orbital Bleeding 眼窩採血**

5.1.1 Micro hematocrit tubes that hold 50-75 microliters are preferred.

5.1.2 Lay down several paper towels or other insulating materials on the work surface. This is to maintain the animal's body heat during the procedure.

5.1.3 Place a finger on the top of the head and along the jaw line and pull the skin back and down to induce eye protrusion.

※Avoid applying pressure to the trachea as that may cause death by asphyxia.

5.1.4 Place the micro-hematocrit tube in the medial canthus of the eye and direct it caudally at a 30 to 45 degree angle from the plane of the nose.

5.1.5 Apply pressure while gently rotating the tube. This will cut through the conjunctival membranes and rupture the ocular plexus or sinus.

※Avoid pushing the tube so deep that you hit the bone at the back of the ocular cavity.

5.1.6 The blood will flow into the hematocrit tube by capillary action.

5.1.7 Once blood begins to flow, maintain pressure to keep the eye protruded.

5.1.8 To stop bleeding, release the skin and allow the eye to return to the normal position. Apply pressure to promote hemostasis.

#### **5.2 Submandibular Bleeding 臉頰採血**

- 5.2.1 Proper restraint minimizes side-to-side movement of the head and helps in ensuring accurate and safe venipuncture with the lancet.
- 5.2.2 With the tip of the lancet gently feel for the point at which the jawbone ends.
- 5.2.3 Hold the lancet perpendicular to the skin surface with the tip facing slightly toward the nose.
- 5.2.4 To puncture the vein, apply a firm push and pierce the skin up to the lancet shoulder.
- 5.2.5 Upon removal, the blood will begin to flow. To assist the flow, position the animal with the head lower than the heart.
- 5.2.6 To stop bleeding, blot the puncture site to achieve hemostasis and prevent excessive blood loss.
- 5.2.7 Release pressure on the scruff and return the animal to its cage.  
※NOT to exceed the maximum volume for survival blood collection.  
Serial samples can be taken by alternating the side used. Neither side should be used more often than every 5-7 days.

### 5.3 Heart Puncture 心臟採血

- 5.3.1 Euthanizing the animal using carbon dioxide.
- 5.3.2 Hold the rodent by the scruff with the body hanging vertically.
- 5.3.3 Insert the needle into the chest and puncture the heart.
- 5.3.4 Apply slight backpressure with the syringe. If the needle is in the heart, blood will flow into the syringe. Wait until the blood has filled the barrel before adding additional backpressure.