Arizona State University
Institutional Animal Care and Use Committee

STANDARD INSTITUTIONAL GUIDELINE

INTRANASAL AND ORAL ADMINISTRATION IN MICE

Purpose
While antibody production is typically induced via intramuscular, subcutaneous, or intraperitoneal injections of antigen, there is an increased interest in less invasive, less complex, and more clinically relevant means of delivering antigens and vaccines.

Delivery of Antigen or Vaccine
All procedures should be done using personal protective equipment and a biosafety cabinet if required for the room housing the animals.

Intranasal
1. The mouse is restrained by holding it by the scruff in dorsal recumbancy.
2. 5-10 microliters (μL) of material is then delivered by the individual restraining the mouse or a second individual into a nostril using a mechanical pipette. The mouse is carefully monitored for signs of distress (excessive struggling, mucus membrane color changes, ventilatory changes) while the procedure is being performed.
3. If needed, this procedure can be repeated in the other nostril.
4. The mouse is then returned to its cage and observed for any signs of distress, which would be immediately apparent.
5. Delivery of material is conducted at intervals and durations as described in the IACUC-approved protocol.

Oral
1. The mouse is restrained in a vertical (i.e., head up) position by holding the mouse by the scruff.
2. If stomach neutralization is required before delivery, the mouse is first administered 50-100ul of sodium bicarbonate in a 1ml syringe with a curved or straight ball-tipped gavage needle (e.g., 22g x 1in) attached.
3. If administering the material in a pipette, 5-25ul is slowly dripped into the mouse’s mouth, allowing time for the animal to swallow each drop. The animal should be held for approximately 20 additional seconds to ensure that the material is consumed.
4. If administering the material (up to 200ul) by gastric gavage, a gavage needle should be marked with a Sharpie to note the distance from the tip of the nose to just past the rib cage (see image below). This helps ensure that the needle is correctly inserted into the stomach. The gavage needle is gently and slowly passed down the esophagus until the mark on the needle reaches the mouse’s nose. If resistance is noted while being inserted, the gavage needle is retracted and repositioned.
5. Once the needle is properly positioned, the material is slowly administered, while the mouse is monitored for signs of distress (as described above) or the emergence of fluid from the nostrils. The needle can then be carefully removed and the mouse returned to its cage.
6. Delivery of material is conducted at intervals and durations as described in the IACUC protocol.

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