

Injection Volume and Needle Sizes by Species and Injection Route

Species	Subcutaneous (SC or SQ)	Intraperitoneal (IP)	Intravenous (IV)	Intramuscular (IM)	Oral (PO) gavage
Mouse---volume	40 ml/kg not to exceed more than 2 ml	40ml/kg but not to exceed 1 ml total volume	5 mg/kg; tail vein and retroorbital injection maximum volume of	0.05 ml/site (2 sites per day)	10 ml/kg
Mouse Recommended needle sizes	23 gauge needle or smaller	25-27-gauge needle	25-gauge needle or smaller	23 gauge or smaller needle	Size of gavage needle depends upon size of animal. Please check with Comparative Medicine for help.
Rat---volume	25 ml/kg, not to exceed more than 7 ml in large rats (~400 grams) average is 3-5 ml	25 ml/kg (5 -10 ml max)	5 mg/kg --larger volumes slow bolus (recommend maximum total volume of 0.5 ml)	0.2 ml/site. maximum of 2-4 sites depending on muscles and sites used	10-20 ml/kg
Rat Recommended needle sizes	22 gauge or smaller needle	23-25-gauge needle	23-gauge needle or smaller	23 gauge or smaller needle	Size of gavage needle depends upon size of animal. Please check with Comparative Medicine for help.

Please Note: There may be scientific justification for altering the volume (hemodynamic studies), or needle size (e.g. viscosity of fluid administered) from the suggested Guidelines. This must be justified in the IACUC protocol.