A. Purpose

Radioactive materials use in animals requires prior approval by the Radiation Safety Officer (RSO) and Institutional Animal Care and Use Committee (IACUC). Only a principal investigator (PI) may apply for permission to use radioactive materials in animals.

B. Applicability/scope

This protocol applies to Columbia University. This includes the Morningside, Nevis, LDEO, Barnard College, Manhattanville and Medical Center campuses.

C. Definitions

ALARA – as low as reasonably achievable

IACUC – Institutional Animal Care and Use Committee

MC: Medical Center Campus

MS: Morningside Campus, NEVIS, LDEO, Manhattanville, Barnard College

PI – Principal Investigator – The individual who has a permit to order, use and store radioactive materials.

RASCAL – Research and Compliance Administration System

RSO - Radiation Safety Officer – This term includes the Chief RSO, RSO for Research Programs and the RSO for Clinical Programs.

D. Procedures

1. Training

All individuals who handle the radioactivity, administer it to the animals, provide husbandry services (feeding, changing bedding and cages, etc.), sacrifice and dissect carcasses and/or handle waste must complete all required training. This training includes RASCAL modules mandated by Institutional Animal Care and Use Committee (IACUC) policies and the Radiation Safety course. At the time of submission of the application to use radioactivity in animals all individuals described above must be current with all required initial or refresher training as applicable.

2. Application

The use of radioactivity in animal research should be described in detail in a protocol submitted through the Research and Compliance Administration System (RASCAL)
portal. Specifically, an Appendix G form should be included in the submission. The Radiation Safety Office will review this appendix for compliance with applicable radiation safety policies and procedures and to ensure that the radiation safety training of all individuals who will handle the radioactive animals is current.

3. Radioactive Material Use in Animals

The PI must ensure that protective measures are taken to maintain radiation exposure as low as reasonably achievable (ALARA). This includes the use of proper shielding of the animal, animal carcasses, waste and radioactive material, limiting the work time and conducting surveys for contamination during and after any procedures. Eating and drinking is prohibited in all radioactive material use labs.

4. Radioactive Animal Clearances

Animals injected with short half-life isotopes will need to be cleared by radiation safety program personnel prior to return to the ICM or general population. These should be scheduled by the lab as necessary. If an animal is determined to be cleared from radioactivity the lab manager and PI will receive a clearance document from the RSO.

5. Radioactive Animal Carcasses

The animal carcasses must be placed inside a labeled (# of animals, isotope, activity, date), sealed, clear plastic bag and stored in the freezer. It is suggested to place one carcass per bag.

Any carcass that contains $^{3}$H or $^{14}$C in less than 0.05 uCi/g is exempt and can be disposed of as regulated medical waste. Any other activities of $^{3}$H or $^{14}$C will need to be disposed as radioactive waste. Please store these carcasses in the freezer until the hazardous waste team schedules the campus-wide disposal date. Carcasses with other isotopes that can be held for decay (short half-life isotopes such as $^{32}$P, $^{131}$I, $^{18}$F, $^{99m}$Tc) must be cleared by the RSO prior to disposal in the ICM. Once cleared, all radioactive material labels will be removed and a clearance document shall be provided. A copy of the clearance document should be given to the Vivarium.

6. Room and Equipment Clearances

Any rooms where radioactive material is regularly used, stored or administered must have “Caution Radioactive Material” signs posted and be surveyed on a monthly basis. If a room is not regularly used with radioactive materials, the caution sign must be posted until radiation safety program personnel have surveyed and cleared the room after the experiment.

If an animal is injected with a short-lived isotope and requires holding for decay in the ICM or other room, caution signage must be present. The room must be surveyed and
cleared after the isotope has decayed 10 half-lives or to background levels, whichever is longer. The holding cage must also be surveyed for contamination by radiation safety program personnel. If an animal is necropsied, then the necropsy room must also be surveyed after at least 10 half-lives from the initial point of dose injection.

E. Emergency contact

Public Safety: MS: (212) 854-2797 or MC: (212) 305-8100

Radiation Safety Program: MC: (212) 305-0303 MS: (212) 854-8749

Workforce Health and Safety (MC Only): (212) 305-7580

F. Medical Surveillance

N/A

G. Recordkeeping

All survey and clearance documents provided by the radiation safety program must be filed in the radiation safety binder in the survey report section.

H. Appendices

N/A

I. Forms

N/A

J. References

N/A

K. Acknowledgements (optional)

N/A