

Clemson University

Institutional Animal Care and Use Committee (IACUC)

Policy Number: 4.2

Policy Title: Studies Involving Tumors in Rodents

Section 1: Purpose

The following policy provides guidance on conducting tumor studies in rodents.

Section 2: Scope

This policy applies to all animal use protocols that involve rodents inoculated with tumor cells or studies that potentially results in a tumor burden.

Section 3: Policy

Study Considerations

- Tumor kinetics – A thorough knowledge of the biology of the tumor model aids in the selection of appropriate humane endpoints.
- Viral status – Cell lines or tumor tissues may be contaminated with viruses, which may serve as a source of infection for animals in the study, as well as other colonies in the facility.
- Solid tumor inoculation – Solid tumors should be minced into fine pieces or dispersed prior to transplantation to minimize trauma. For mice, transplantation of tumor fragments less than 1mm is preferred. Larger fragments may require anesthesia and a surgical procedure to implant.
- Transplantation site – Whenever possible the tumor should be placed such that it can grow with minimal impact on the animal's ability to ambulate and perform normal bodily functions.

Conducting Tumor Studies

- Notify Animal Resources personnel every time a new tumor inoculation occurs within a study and the expected outcomes (e.g. tumor growth rate)
- The following information must be recorded on the cage card provided by the Office of Animal Resources:
 - Date of injection
 - Animal weight on day of injection
 - Tumorigenic agent/cell line
 - Dose/number of cells administered
 - Site of administration/injection

Humane Endpoints in Tumor Studies

All Animal Use Protocols (AUPs) involving tumorigenesis must include criteria that establish the clinical endpoints at which animals are to be euthanized. General criteria for consideration of euthanasia include but are not limited to:

- Maximum tumor size $\geq 20\%$ of body weight on the day of injection.
 - Tumor size is calculated using the following formula:
 - Tumor mass (mg) = Tumor volume (mm^3)
 - Tumor volume (mm^3) = (Tumor length (mm) x Tumor width (mm) x Tumor height (mm))/2
- Tumor diameter exceeding 20mm in mice or 40mm in rats.
- Ulceration of a tumor regardless of tumor size.
- Interference with movement, normal body functions, or the function of vital organs.
- Signs of distress such as labored breathing are evident regardless of tumor size.
- An inability of the animal to eat or drink.

Frequency of Monitoring Tumor Growth

- Tumor growth should be measured three times weekly at intervals no greater than three days apart by the PI or designee.
- In the case of rapidly growing tumors or situations where the progress of clinical signs is likely to be rapid, tumor growth should be monitored daily.

When the tumor size approaches 10% of body weight or any of the humane endpoint criteria are observed, a veterinarian from the Office of Animal Resources will evaluate animals. The University Veterinarian has the authority to require the euthanasia of an animal experiencing pain or distress.