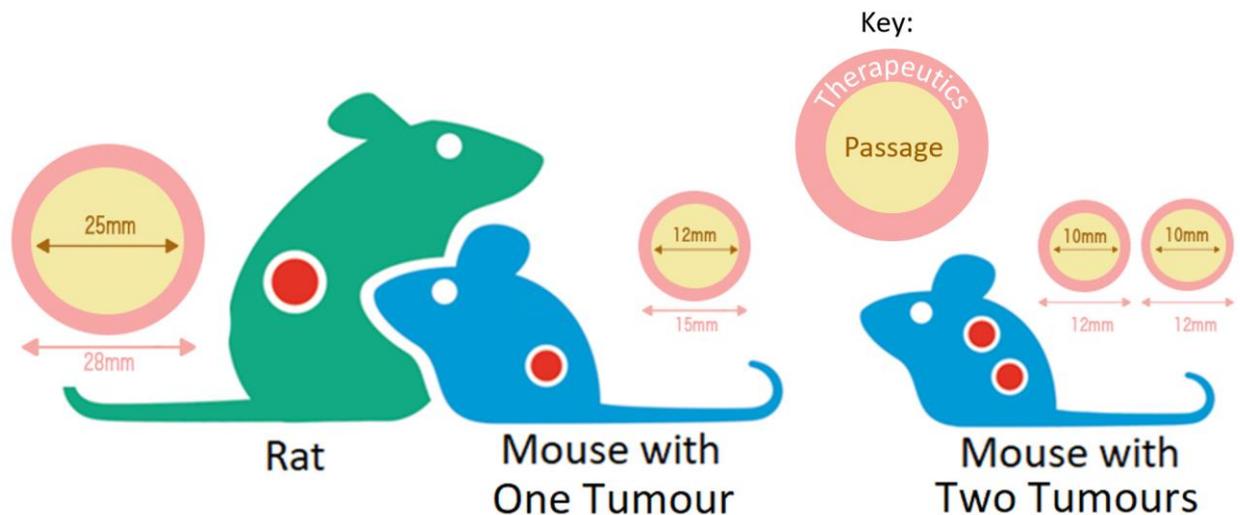


CULATR Guidelines for the Welfare and Use of Animals in Cancer Research

For experiments using animals for cancer research, the below Guidelines for the Welfare and Use of Animals in Cancer Research<sup>1</sup> must be followed to ensure minimal animal sufferings.

- a. Subcutaneous tumor transplantation on the back or in the flank are considered to cause the least distress. Implantation of tumours in the footpad, tail, brain and eye will require special justification.
- b. For an animal carrying a single tumor, the mean diameter should not normally exceed 12mm in mice or 25mm in rats for passage studies, or 15mm and 28mm respectively, for therapeutic studies. Where two tumors per animal are grown in contralateral flanks, the size should not exceed the maximum burden of a single tumor, i.e. 10mm for passage and 12mm for therapeutic studies.



*Diagram showing the maximum mean diameter of a tumor for passage (as denoted by yellow circles) and therapeutic studies (as denoted by pink circles) before intervention. Exceptions to these advised size limits must provide scientific justification.*

- c. If abdominal paracentesis or “tapping” of ascitic fluid to collect monoclonal antibodies is performed, the maximum number of tapping is 3, with the last tap as terminal procedure.
- d. Calipers should be used to measure the size of a subcutaneous tumor while suitable imaging equipment should be used to facilitate the development of more defined endpoints.
- e. Every tumor-bearing animal should be inspected daily and additional, more detailed, examination undertaken as appropriate. Animals must be humanely euthanized before they exceed the maximum tumor size or other humane end-point, unless under the supervision and authorization of a CCMR veterinarian.
- f. Clinical signs necessitating immediate intervention include but are not limited to:
  - i. Failure to eat or drink for over 24-48h resulting in emaciation or dehydration
  - ii. Rapid weight loss reaching 20% at any time or 15% for 72h compared to pre-treatment weight of adult animals or age-matched, vehicle-treated controls
  - iii. Persistent hypothermia
  - iv. Bloodstained or mucopurulent discharge from any orifice
  - v. Labored respiration, particular if accompanied by nasal discharge and/or cyanosis
  - vi. Hindlimb paralysis or weakness
  - vii. Anemia as indicated by symptoms such as pale feet, or hematological measures
  - viii. Significant abdominal distension or where ascites burden exceeds 10% of the bodyweight of age-matched controls. 20% increase in body girth should be the maximum normally allowed
  - ix. Incontinence or diarrhea over 48 hours
  - x. Ulceration or large tumors that interfere with locomotion or cause abnormal vocalization, animal behavior or function
  - xi. Ulceration or exudation of the tumor for more than 48 hours
- g. Severe symptoms should rarely occur in well-designed experimental studies. Should severe symptoms occur, immediate veterinary care or humane euthanasia must be administered.
- h. The use of death as an endpoint is unacceptable, and animals should not be allowed to become moribund.

Reference:

Workman P et al. Guidelines for the welfare and use of animals in cancer research. Committee of the National Cancer Research Institute. Guidelines for the welfare and use of animals in cancer research. Br J Cancer. 2010 May 25;102(11):1555-77. doi: 10.1038/sj.bjc.6605642. PMID: 20502460