GUIDELINES FOR MAXIMUM TUMOR BEARING IN LABORATORY RODENTS

These maximum tumor size guidelines are intended only to suggest an upper limit on allowable solid tumor size in tumor-passage and tumor therapy protocols. Any exceptions to these guidelines need to be justified to and approved by the Institutional Animal Care and Use Committee (IACUC). The overriding consideration for humane endpoints of oncological experiments must be the overall health of the animal. Any tumor-bearing animal must be humanely euthanized if the tumor becomes ulcerated or necrotic.

<table>
<thead>
<tr>
<th>Species</th>
<th>Tumor Passage</th>
<th>Animals with Therapeutic Intervention</th>
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</thead>
<tbody>
<tr>
<td>Mouse ~ 25 g</td>
<td>One tumor no larger than 1.3 cm or Two tumors neither of which measures &gt; 1.0 cm or Body Score ≤ 2 (see chart on following page)</td>
<td>One tumor no larger than 2 cm or Two tumors neither of which measures &gt; 1.3 cm or Body Score ≤ 2</td>
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<tr>
<td>Rat ~250 g</td>
<td>One tumor no larger than 2.8 cm or Two tumors neither of which measures &gt; 2.3 cm or Body Score ≤ 2</td>
<td>One tumor no larger than 4 cm or Two tumors neither of which measures &gt; 2.8 cm or Body Score ≤ 2</td>
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Animals with subcutaneous tumors or tumor implants should be monitored at least daily once tumors are palpable. For subcutaneous solid tumors that can be measured with calipers, the above table gives the greatest maximum dimension in any one direction (diameter) for mice and rats. Investigators must maintain records of tumor size. The following Body Condition Score should also be used, especially in rodents with tumors within the body cavity.

Tumors located in areas with limited tissue mass (example–on the calf muscle) must be watched carefully. The tumor should not interfere with or inhibit movement. Animals bearing tumors in such locations are likely to need to be euthanized before the tumors reach the above stated dimensions.
BC 1
Mouse is emaciated.
- Skeletal structure extremely prominent;
  little or no flesh cover.
- Vertebrae distinctly segmented.

BC 2
Mouse is underconditioned.
- Segmentation of vertebral column evident.
- Dorsal pelvic bones are readily palpable.

BC 3
Mouse is well-conditioned.
- Vertebrae and dorsal pelvis not prominent;
  palpable with slight pressure.

BC 4
Mouse is overconditioned.
- Spine is a continuous column.
- Vertebrae palpable only with firm pressure.

BC 5
Mouse is obese.
- Mouse is smooth and bulky.
- Bone structure disappears under flesh and subcutaneous fat.

A "+" or a "-" can be added to the body condition score if additional increments are necessary (i.e. ...2+, 2, 2-...)
Lymphoid tumors, ascetic tumors, and animal models of tumor metastasis all present special problems with assessment of tumor burden. An animal bearing these kinds of tumors must be monitored very carefully for mobility, eating and drinking habits, and signs of pain, distress, or morbidity. (See the IACUC’s Guidelines on Terminating Experiments That Induce Morbidity.)

The following clinical signs are indications of morbidity. Tumor-bearing animals exhibiting these signs should be euthanized based on severity of clinical signs determined by a clinical veterinarian or veterinary technician.

- Persistent anorexia or dehydration
- Unable to maintain an upright posture or to ambulate
- Muscle atrophy or emaciation
- Lethargy or failure to respond to gentle stimuli
- Hypothermia
- Unconsciousness or coma
- Bloodstained or mucopurulent discharge from any orifice
- Labored respiration – particularly if accompanied by nasal discharge or cyanosis
- Enlarged lymph nodes or spleen
- Anemia
- Ulcerated tumors
- Significant abdominal distension
- Incontinence, inappetence or prolonged diarrhea