Tumor Guidelines: Humane Endpoint Criteria

The animal in question must be euthanized if any one of the following endpoint criteria is met:

**General Criteria for all Tumor Studies**

- Appears in distress, regardless of size of the tumor or the weight of the animal.
- Body Condition Score (BCS) < 2, (Ulman-Cullere and Foltz, 1999).
- Inability to eat and drink.
- Labored breathing—particularly if accompanied by nasal discharge and/or cyanosis. Diarrhea, incontinence, obstipation, or oliguria.
- Moribund or unable to move or failure to respond to gentle stimuli.
- Weight loss exceeding 20% of the body weight (the tumor mass should not be included in the calculation).

**Subcutaneous Masses**

- Palpable nodule of 1.5 cm in any dimension in a 25 gm mouse, 2.5 cm in a 250 gm rat, or a size according to this ratio for other body weights.
- Subcutaneous (SC) tumor in a mouse that is equal to or exceeds 1800 mm$^3$* in volume (1.8cm$^3$) or exceeds 1.5cm in any dimension.
- SQ tumor in a rat that is equal to or exceeds 8000 mm$^3$ (8.0 mm$^3$) in volume or exceeds 2.5 cm in any dimension.
- Ulcerated or necrotic area of tumor, regardless of size and weight.

**Internal Masses**

- Internal masses must have a measureable endpoint stated and approved in the IACUC protocol. The method of measurement may be through imaging or palpation.
- A score ≤3 on the Animal Assessment Metric as described by Paster, Villines and Hickman (2009) *Comparative Medicine 48, 234-41*.

*Based on a spherical volume calculation.*

Updated 4.14.14 by Dr. Aycock-Williams
Body Condition Score in Mice (Ulman-Cullere and Foltz, 1999)

**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-...)

*Figure 1.* Line drawings and descriptions of body-condition (BC) scoring.
Animal Assessment Metric  (According to Paster, Villines and Hickman (2009) Comparative Medicine 48, 234-41)

Please fill in your name, the date, animal number, scores and score total

Your Name:_________________________  A score of 5 indicates cancer probably present

Date: ______________________________  A score of 3 is cause for immediate euthanasia

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>SCORE</th>
<th>#_____</th>
<th>#_____</th>
<th>#_____</th>
<th>#_____</th>
<th>#_____</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>N: bright eyes; shiny; well-groomed hair coat</td>
<td>2</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Abn: unkempt hair coat, dull fur</td>
<td>1</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Abn: Hunching, piloerection</td>
<td>0</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td>Natural</td>
<td>N: Active; interactive in environment</td>
<td>3</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td>Behavior</td>
<td>Slight decrease in activity; less interactive</td>
<td>2</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Abn: Pronounced decrease in activity; isolated</td>
<td>1</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Abn: Possible self mutilation; hyperactive or immobile</td>
<td>0</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td>Provoked</td>
<td>N: quickly moves away</td>
<td>3</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td>Behavior</td>
<td>Slow to move away or exaggerated response</td>
<td>2</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Abn: moves away after an extended period of time</td>
<td>1</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Abn: Does not move away or reacts with excessively exaggerated response</td>
<td>0</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td>Body Condition</td>
<td>Obese</td>
<td>5</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td>Score</td>
<td>Overweight</td>
<td>4</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Normal</td>
<td>3</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>2</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td></td>
<td>Emaciated</td>
<td>1</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
<tr>
<td>Overall</td>
<td>TOTAL POINTS</td>
<td>1-13</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
<td>#_____</td>
</tr>
</tbody>
</table>