

# Standard Score Sheet for the assessment of wellbeing in mice: *solid tumour models*

[Animal facility or facilities:]

|                     |  |                         |  |
|---------------------|--|-------------------------|--|
| Project title:      |  |                         |  |
| Animal Ethics #     |  | Name of contact person: |  |
| Chief investigator: |  | Contact number:         |  |
| Research Group:     |  | After hours number:     |  |

Scoring of wellbeing will be performed relative to the following assessment criteria:

| Criteria                                  | Score           |                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | 0               | 1 (mild)                                                                                                                       | 2 (moderate)                                                                                                                                                                                                                                        | 3 (severe)                                                                                                                                                                                                                                                                                                 |
| Activity and responsiveness               | Normal          | Mild/slight reduction in activity relative to normal or previous observations                                                  | Isolated from cage-mates or obvious reduction in activity and responsiveness relative to normal or previous observations; alternatively, there is increased response to stimulus (e.g. appears agitated, twitching, easily started, or photophobic) | Stationary while awake for prolonged periods (>15min); when nudged, does not move, or makes poor attempts to move; collapsed and unable to right itself; persistent and prolonged fitting/trembling (>1min)                                                                                                |
| Facial grimace (see image 1)              | Not present     | Facial grimace is subtle or inconsistent (i.e. only 1 to 2 of the "indicators" demonstrated in image 1 are moderately present) | Facial grimace is moderate (i.e. at least 3 of the 5 "indicators" are "moderately present")                                                                                                                                                         | Facial grimace is obvious (i.e. at least 3 of the 5 "indicators" are "obviously present") however, there must also be indication of other generalised symptoms (e.g. hunching, reduced activity)                                                                                                           |
| Coat condition (see image 2)              | Normal          | Coat does not appear entirely smooth, clean and silky (i.e. the coat appears slightly 'rough')                                 | Some indication of piloerection is present (i.e. 'rough' coat), but it is not obvious over the mouse's entire surface area                                                                                                                          | Generalised piloerection, i.e. obvious, very rough coat over majority of the body's surface area (as demonstrated in image 2)                                                                                                                                                                              |
| Body position/posture (see image 3)       | Normal          | Mild hunching (see image 3)                                                                                                    | Moderate hunching                                                                                                                                                                                                                                   | Severe hunching: or arching and writhing (despite analgesia having been provided)                                                                                                                                                                                                                          |
| Respiratory function                      | Normal          | -                                                                                                                              | Increased respiratory effort (mild increases in respiratory rate, increased abdominal movement)                                                                                                                                                     | Increased respiratory effort compromising normal behaviours (i.e. the animal is lethargic, isolated and inappropriately responsive); or has slowed respiratory rate and gasping; or is open mouth breathing; or has blue mucous membranes or extremities; or noisy breathing (e.g. respiratory "clicking") |
| Body weight loss*                         | <5%             | 5-9% (relative to body weight recorded at the start of the experiment i.e. day 0)                                              | 10-14%                                                                                                                                                                                                                                              | ≥15%                                                                                                                                                                                                                                                                                                       |
| Tumour (dermal/subcutaneous) <sup>†</sup> | Not appreciable | <1cm <sup>3</sup> , and no associated inflammation grossly appreciable                                                         | <1cm <sup>3</sup> , and some associated inflammation (e.g. redness, swelling/oedema). No ulceration or broken skin. Monitoring should be more frequent (i.e. twice daily) and euthanasia considered if the tumour is approaching 1cm <sup>3</sup>   | =1cm <sup>3</sup> ; or <1cm <sup>3</sup> and any dermal ulceration (e.g. ulceration, broken skin or self-trauma at the site of the tumour).<br>Note: Tumour size should not be allowed to become larger than 1cm <sup>3</sup> .                                                                            |

\*please note: body weight may not need to be measured at each monitoring point, particularly if monitoring is occurring frequently (as the procedure can be stressful for mice). A common-sense approach, that suits the species and model must be taken e.g. experimental mice with slow growing subcutaneous tumours, that are otherwise asymptomatic, would rarely require body weight measurement more frequently than once a week. Further to this, body condition scoring should be used to supplement body weight assessment (see image 4). It is important to try to account for the weight of the tumour when it becomes large.

<sup>†</sup>The "tumour" criterion is only applicable to tumours that can be appreciated from examination with the naked eye (e.g. flank injected subcutaneous tumours). [Note: tumour volume is ideally measured using a hand held scanner but can be estimated by using Vernier callipers - measuring length (L) and width (W) then applying the following formula:  $\frac{1}{2} \times (L \times W \times W)$ , as per [Faustino-Rocha et al. 2013](#)]

| Cumulative Score: | Action, relative to cumulative score:                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0                 | = no action (in addition to routine care and monitoring)                                                                                                            |
| 1 to 4            | = symptoms observed, monitor at least daily (including all animals of similar treatment groups), if symptoms are unexpected seek veterinary advice                  |
| 5 to 11           | = monitor at least twice daily, provide food/water supplementation (e.g. wet mash or gel pack on the cage floor), if symptoms are unexpected seek veterinary advice |
| > 11              | = euthanasia is required (unless otherwise advised by a facility veterinarian)                                                                                      |

\*\*\* A score of 3 in any one category = euthanasia is required (unless otherwise advised by a facility veterinarian) \*\*

# Standard Score Sheet for the assessment of wellbeing in mice: *solid tumour models*

[Animal facility or facilities:]

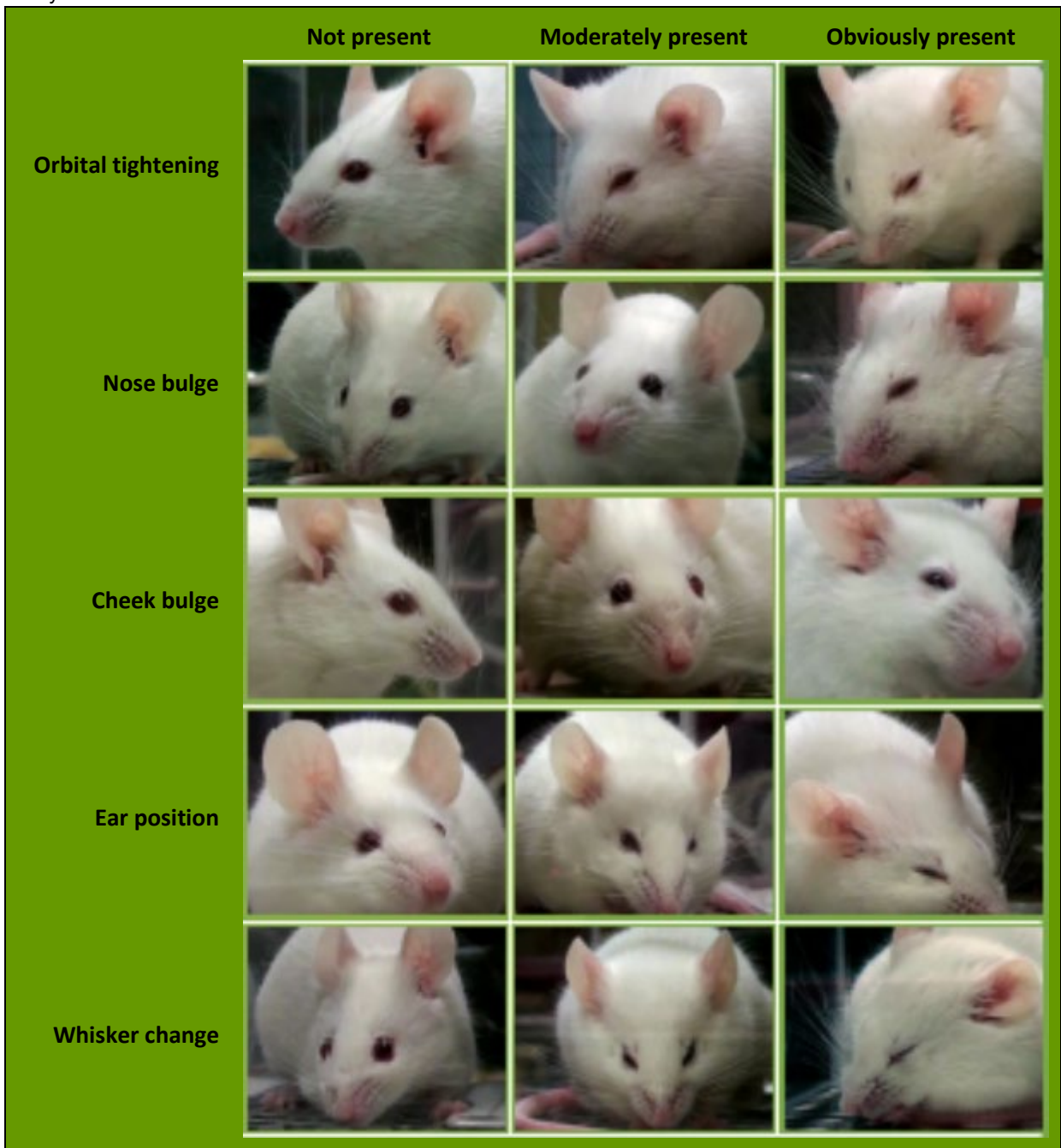


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Describe your expected tumour model progression including expected weight loss pattern:

**Image 1. The 5 “indicators” of facial grimace, as per Mouse Grimace Scale:** <https://www.nc3rs.org.uk/grimacescales>  
Please note: facial grimace can be subtle and requires experience to be able to assess accurately. If you are not comfortable assessing this parameter, you must seek training and support for this purpose – contact your Chief Investigator and the relevant animal facility staff.

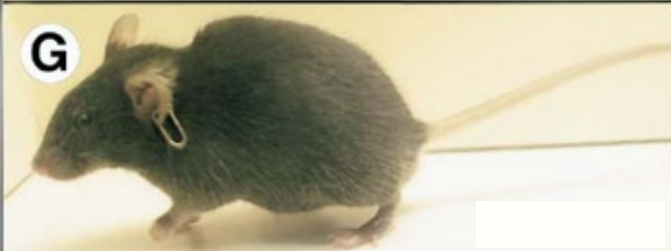
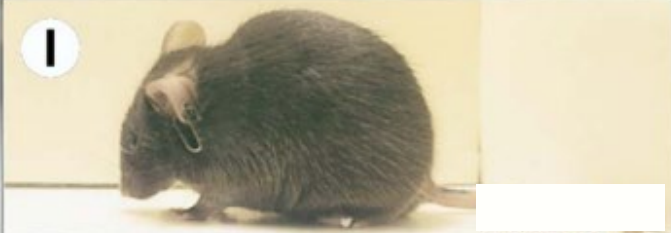


**Image 2. Score 3 (severe) for the criteria: “coat condition”. This mouse has diffuse piloerection,** image source: <https://www.humane-endpoints.info/en>



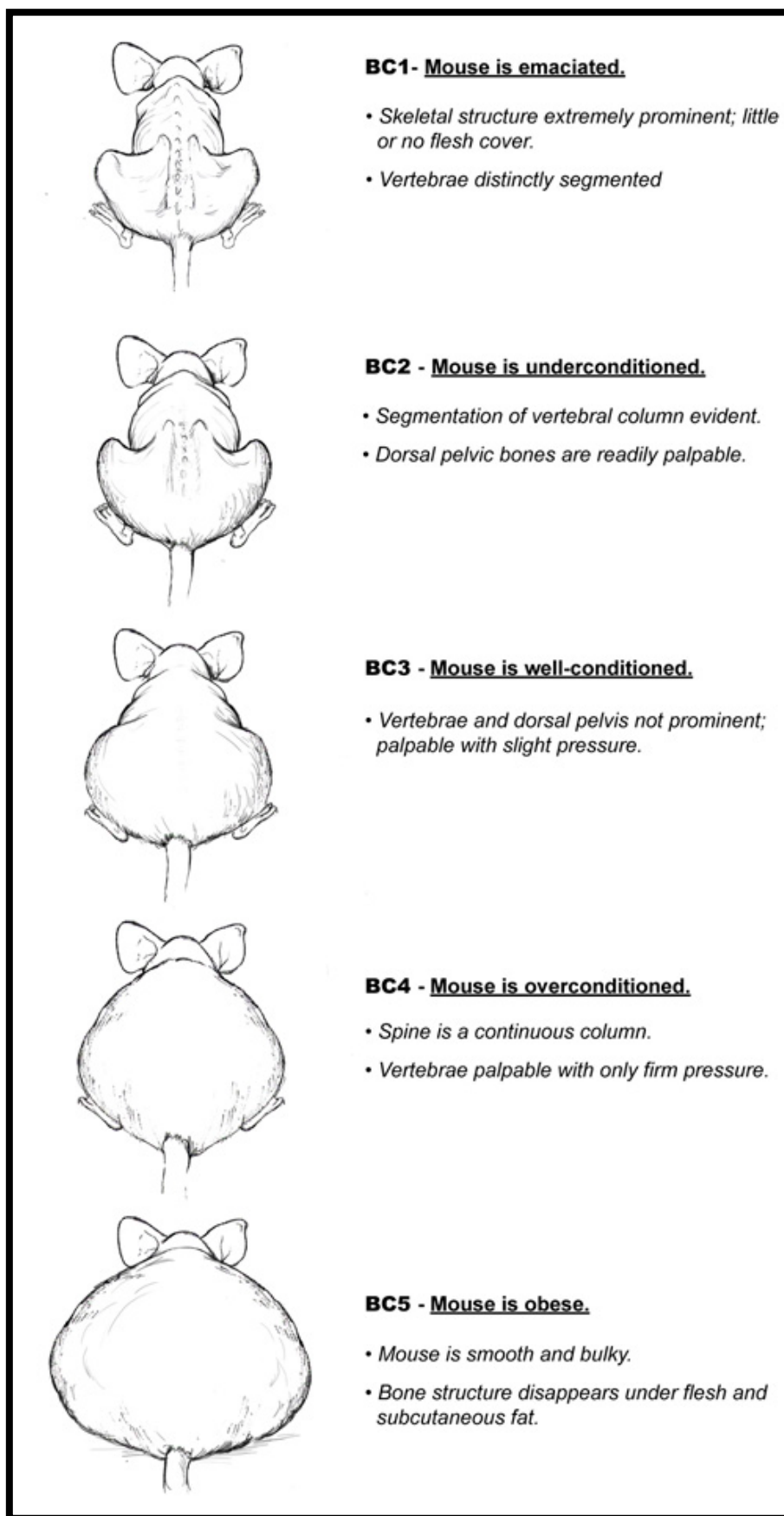
**Image 3. Hunching, scored from normal (score 0) to severe (score 3), modified from:** [Sevcik MA, Jonas BM, Lindsay TH, et al. Endogenous opioids inhibit early-stage pancreatic pain in a mouse model of pancreatic cancer. \*Gastroenterology\*. 2006;131\(3\):900–910.](#)

Please note: ear tag-identifiers (as displayed in this image) are generally not considered appropriate for use in mice, as there are other, more refined methods of individual identification.

| Degree of Hunching |                                                                                     | Hunching Profile |                                                                                      |                             |
|--------------------|-------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------|-----------------------------|
| <b>A</b>           |    | <b>B</b>         |    | Normal (score 0)            |
| <b>C</b>           |    | <b>D</b>         |    | Mild hunching (score 1)     |
| <b>E</b>           |   | <b>F</b>         |   | Moderate hunching (score 2) |
| <b>G</b>           |  | <b>H</b>         |  |                             |
| <b>I</b>           |  | <b>J</b>         |  | Severe hunching (score 3)   |

#### Image 4: Mouse, Body Condition Score reference.

"Body Condition Scoring (BC) is a quick, easy and reliable method for assessing mouse health. It utilizes a scoring system of 1 to 5 with 3 being the optimal condition, 1 being emaciated and 5 being obese." Source: [Burkholder T, Foltz C, Karlsson E, Linton CG, Smith JM. Health Evaluation of Experimental Laboratory Mice. Curr Protoc Mouse Biol. 2012;2:145–165.](#) [Body condition scores should be used with this score sheet "Standard Score Sheet for the assessment of wellbeing in mice" to avoid excessive handling (through repeated weighing) when performing frequent monitoring. Body condition scores complement body weight measurements; however, their use does not contribute to the score sheet's "cumulative score"]



## Monitoring record for the assessment of wellbeing in mice: *solid tumour models*

(see “Standard Score Sheet...: *solid tumour models*” for a description of the scores relative to the criteria below)

**Project title:**

**Chief Investigator:**

**Name of contact person:**

**AEC approval #:**

**Contact number:**

**After hours:**

**Experimental/ Treatment Group:**

**Mouse ID:** \_\_\_\_\_

[illegible]**Criteria (scores 0 to 3):**[illegible]

\*Please note: body weight may not need to be measured at each monitoring point. Refer to “Standard Score Sheet...” (pg.1) for details.

**Cumulative score:**

**Action, relative to cumulative score:**

0 = no action (in addition to routine care and monitoring)

1 to 4 = symptoms observed, monitor at least daily (including all animals of similar treatment groups), consider seeking veterinary advice

5 to 11 = monitor at least twice daily, provide food/water supplementation (e.g. wet mash or gel pack on the cage floor), consider seeking veterinary advice

> 11 = euthanasia is required (unless otherwise advised by a facility veterinarian)

\*\*\* A score of 3 in any one category = euthanasia is required (unless otherwise advised by a facility veterinarian) \*\*\*

| Original mouse weight (g) |     | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   |
|---------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Weight loss (%)           | 5%  | 15.2 | 16.2 | 17.1 | 18.1 | 19.0 | 20.0 | 20.9 | 21.9 | 22.8 | 23.8 | 24.7 | 25.7 | 26.6 | 27.6 | 28.5 |
|                           | 10% | 14.4 | 15.3 | 16.2 | 17.1 | 18.0 | 18.9 | 19.8 | 20.7 | 21.6 | 22.5 | 23.4 | 24.3 | 25.2 | 26.1 | 27.0 |
|                           | 15% | 13.6 | 14.5 | 15.3 | 16.2 | 17.0 | 17.9 | 18.7 | 19.6 | 20.4 | 21.3 | 22.1 | 23.0 | 23.8 | 24.7 | 25.5 |

## Monitoring record for the assessment of wellbeing in mice: *solid tumour models*

(see “Standard Score Sheet...: *solid tumour models*” for a description of the scores relative to the criteria below)

**Project title:**

**Chief Investigator:**

**AEC approval #:**

**Day of study:** \_\_\_\_\_

Name of contact person:

**Contact number:**

**After hours:**

[illegible]

\*Note: body weight may not need to be measured at each monitoring point. Refer to “Standard Score Sheet...” (pg.1) for details.

| Cumulative score: | Action, relative to cumulative score:                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0                 | = no action (in addition to routine care and monitoring)                                                                                             |
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| 5 to 11           | = monitor at least twice daily, provide food/water supplementation (e.g. wet mash or gel pack on the cage floor), consider seeking veterinary advice |
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**A score of 3 in any one category = euthanasia is required (unless otherwise advised by a facility veterinarian)\*\*\***

| Original mouse weight (g) |     | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   |
|---------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Weight loss (%)           | 5%  | 15.2 | 16.2 | 17.1 | 18.1 | 19.0 | 20.0 | 20.9 | 21.9 | 22.8 | 23.8 | 24.7 | 25.7 | 26.6 | 27.6 | 28.5 |
|                           | 10% | 14.4 | 15.3 | 16.2 | 17.1 | 18.0 | 18.9 | 19.8 | 20.7 | 21.6 | 22.5 | 23.4 | 24.3 | 25.2 | 26.1 | 27.0 |
|                           | 15% | 13.6 | 14.5 | 15.3 | 16.2 | 17.0 | 17.9 | 18.7 | 19.6 | 20.4 | 21.3 | 22.1 | 23.0 | 23.8 | 24.7 | 25.5 |