

1. PURPOSE

This Standard Operating Procedure (SOP) provides guidelines on humane intervention points for rodent research models that involve a progressive ascending paralysis.

2. RESPONSIBILITY

Principal investigator (PI) and their research staff, veterinary care staff, Facility Animal Care Committee (FACC).

3. CONSIDERATIONS

- 3.1. Rodent models that involve progressive ascending paralysis include experimental autoimmune encephalomyelitis (EAE) and other models of neurodegeneration such as models of amyotrophic lateral sclerosis (ALS).
- 3.2. Paralysis typically progresses from the tail to the hind limbs, then to the fore limbs and is occasionally followed by urinary incontinence.
- 3.3. Scoring mechanisms for disease progression are not only part of the experimental data gathering but are useful tools for determining humane intervention points and monitoring frequency.
- 3.4. Body weight and body condition scoring should be evaluated in conjunction to the paralysis scoring.

4. PROCEDURES

- 4.1. Paralysis scoring:

SCORE	CLINICAL SIGNS
0	No disease, no obvious changes in motor function.
1	Lack of tail tone (flaccid tail) but normal gait and ability to climb.
2	Limp tail and mild hind limb weakness. May have difficulty grasping or climbing up from underside of a cage cover grid, may misstep on the top of a cage cover. Animals may appear ataxic or clumsy, balance is poor. Animals exhibit poor righting reflex.
3	Severe hind limb weakness/partial hind limb paralysis. May drag hind limbs. The animal is not able to hang on underside of a cage cover, but still moves spontaneously.
4	Paralysis of one or both hind limb and little or no spontaneous movement. Animal is unable to right itself.
5	Quadriplegia or moribund stage

- 4.2. Recommended intervention points:
 - 4.2.1. Weight loss exceeding 20% of baseline bodyweight.
 - 4.2.2. Body condition score (BCS) less than 2.
 - 4.2.3. Score of 0, 1 or 2: No treatment required.
 - 4.2.4. Score of 3 or 4: Provide wet food at the bottom of the cage and ready-to-use nesting material. Consider using a soft bedding, e.g., Envigo Teklad Diamond Soft cellulose bedding.
 - 4.2.5. Score of 4: Euthanasia if no improvement is observed within 2-3 days.
 - 4.2.6. Score of 5: Euthanasia.
- 4.3. Frequency of monitoring:
 - 4.3.1. Animals should be observed daily.
 - 4.3.2. Score of 0, 1 or 2: scoring and bodyweights weekly.
 - 4.3.3. Score of 3: scoring and bodyweights twice weekly.
 - 4.3.4. Score of 4: scoring and bodyweights daily.
- 4.4. Recordkeeping:
 - 4.4.1. Monitoring is the responsibility of the PI and research staff.
 - 4.4.2. A Humane Intervention Monitoring Log may be requested by the Facility Animal Care Committee.
 - 4.4.3. Log all monitoring activities, observations and paralysis scores.

5. REFERENCES

- 5.1. Takeuchi C., Yamagata K., Takemiya T. Variation in experimental autoimmune encephalomyelitis scores in a mouse model of multiple sclerosis. *World J Neurol.* Sep 28, 2013; 3(3): 56-61.
- 5.2. Bradl M., Lington C. Animal Models of Demyelination. *Brain Pathology*, Volume 6, Issue 3 July 1996, Pages 303-311.