

IMPLEMENTING HUMANE ENDPOINTS IN MICE USED IN CANCER RESEARCH

OBJECTIVES



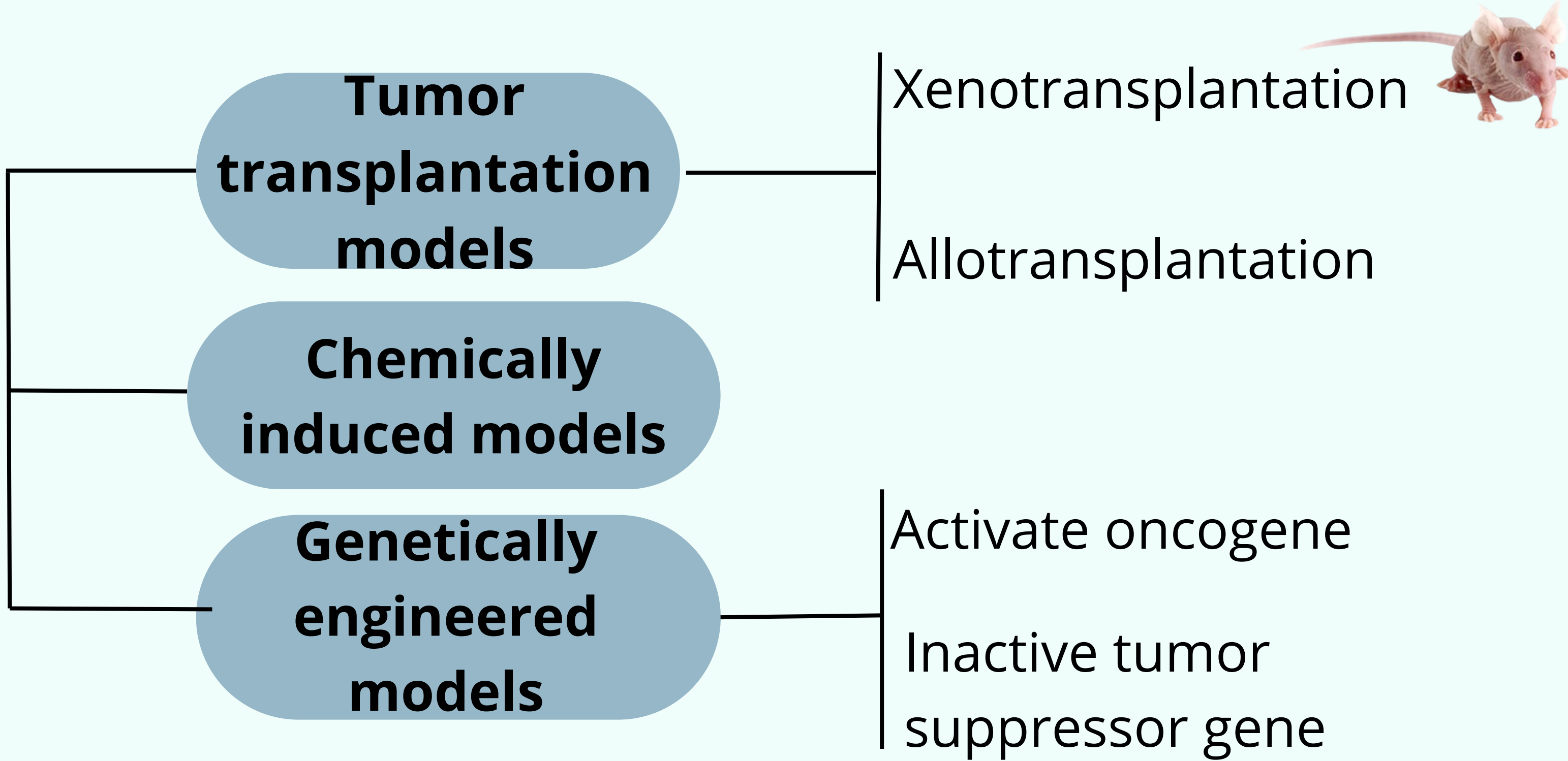
- Definition of the main **murine models** in **cancer research**.
- Development of the concept of **humane endpoints** and the **circumstances** they should be applied.
- Recognition of **clinical signs** using a **scoring sheet** to facilitate decision making based in real experiment.

INTRODUCTION

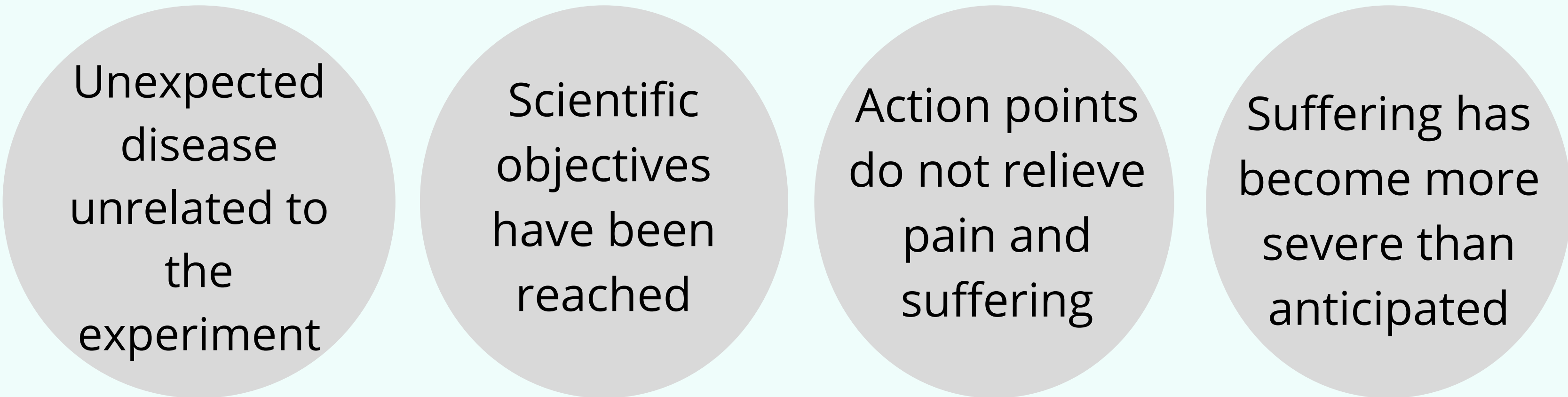


Humane endpoints are defined as “those clear, predictable and irreversible criteria that can be used as a substitute for a more severe experimental result” (Brønstad, 2021; Morton, 1999). *“Death as an endpoint to a procedure should be avoided as far as possible and replaced by earlier, humane endpoints”*. (Directive 2010/63/EU art 13.3.)

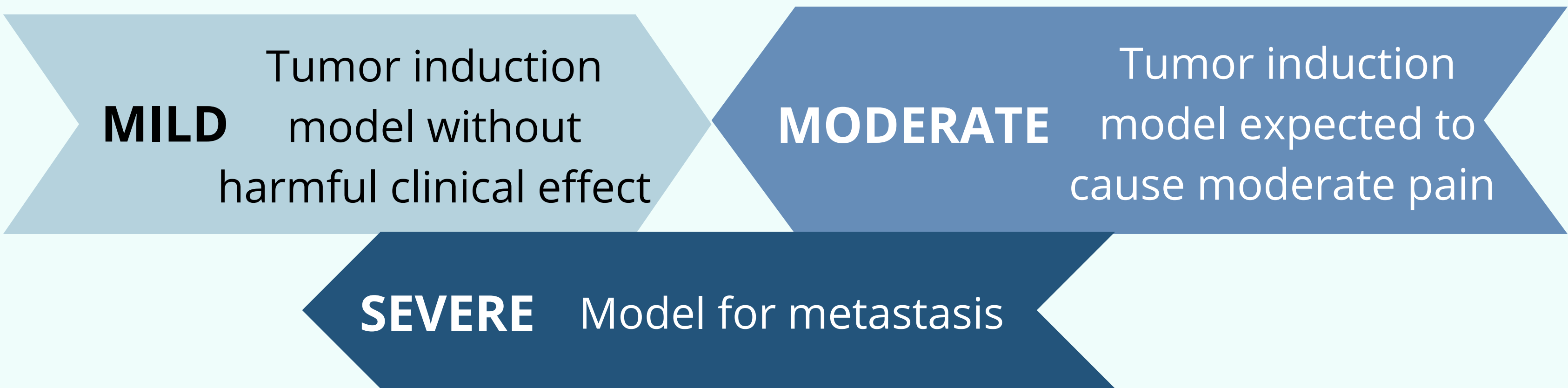
1.MURINE MODEL FOR CANCER



2. WHEN TO APPLY THEM



3.CLASSIFICATION OF SEVERITY



4. SCORING SHEET AND ENDPOINT CRITERIA

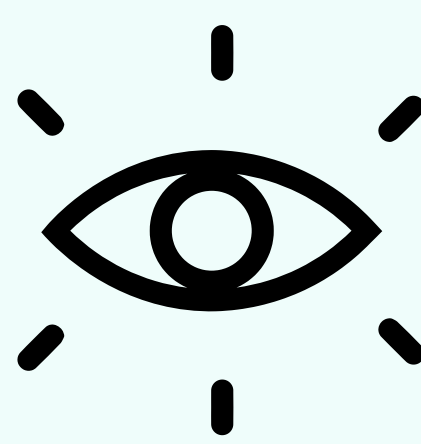
ANIMAL: Number						OBSERVER									
BASELINE WEIGHT (DAY 0)															
Day of experiment	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
GENERAL CLINICAL SIGNS															
Body weight															
General aspect															
Temperature															
Breathing rate															
Gait															
BEHAVIORAL SIGNS															
Provoked behavior															
Non-provoked behavior															
SPECIFIC CLINICAL SIGNS															
Tumor size															
Ulceration															
Bleeding															
Ascites															

Table 1. Numerical scoring sheet with scores of 0-3.

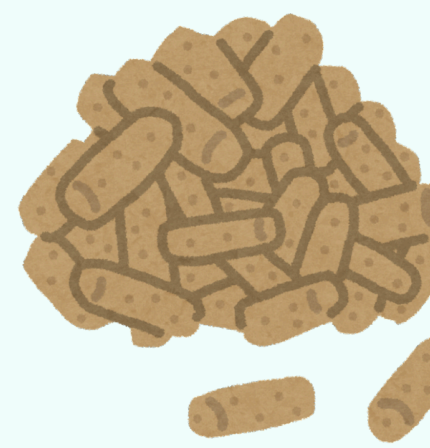
Body condition	Loss > 20%
General aspect	Diarrhea
Temperature	Change of >2-3°C
Breathing rate	Tachypnea/bradypnea 40% with cyanosis
Gait	Ataxia Immobile during >4h
Mental status	Comatose
Specific clinical signs	Tumor diameter >2.0 cm Ascites Ulceration Hemorrhage

Table 2. Endpoint criteria with a score of 3 in the experimental study of Lim *et al.* (2020). This criteria and the sum of scores of 15-21 will be considered euthanasia. Scores between 1-14 intervention points will be implemented.

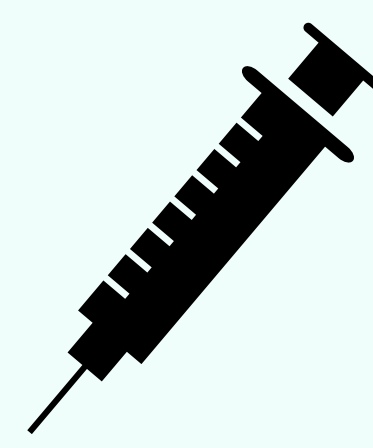
INTERVENTION POINTS



Increase
monitory
frequency



Stimulate
food intake



Analgesia

CONCLUSIONS

- Endpoint criteria must be applied once the data necessary for the research has been obtained, anticipating animal suffering as much as possible.
- Refinement methods must be applied (analgesia).
- Combine clinical evaluation with translacional imaging methods to get greater objectivity.