
1. PURPOSE

This Standard Operating Procedure (SOP) describes humane intervention points for aging mice and rats.

2. RESPONSIBILITY

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

3. CONSIDERATIONS

Mice and rats older than 18 months are considered as aging animals.

These species will develop age-associated clinical manifestations that, although they may make the animal appear ill and may cause some discomfort, are not life-threatening. These may include:

- Skin lesions, alopecia, excessive barbering, ulcerative dermatitis, scarring.
- Rectal prolapse of varying severity
- Ocular lesions such as conjunctivitis, blepharitis, keratitis, opacity, retrobulbar masses, etc.
- Palpable masses, subcutaneous or internal.
- Arthritis, neuropathy, pododermatitis.

Aging mice and rats may suffer from a combination of subclinical diseases that can vary in their clinical presentations and should be considered as part of the progressive decline in organ function that defines aging. These include, but are not limited to, neoplasia, heart disease, renal disease, systemic inflammation, and degenerative joint and dental disease.

This age-associated decline in physiologic reserve, i.e., the capacity to compensate and adapt to various stressors, and loss of function across multiple organ systems is clinically defined as frailty. Frailty leads to increased vulnerability, increased risk for poor health outcomes and a higher risk of mortality. The Frailty Index is a non-invasive method that uses clinical signs and observations to quantify frailty. A higher frailty index can be a significant predictor of adverse outcome.

4. PROCEDURES

4.1. Aging studies involving mice and rats can typically be divided into those with predetermined experimental endpoints (e.g., 22 months), and those where animals are maintained until near end of life (NEOL).

4.2. Monitoring:

- 4.2.1. Intensive monitoring in studies involving aging rodents is critical to prevent undue suffering and distress, in addition to loss of experimental data when animals are found dead.
- 4.2.2. Monitoring of aging animals is the responsibility of the PI and research staff.
- 4.2.3. Cages of aging rodents should be clearly labeled with the experimental endpoint as it appears in the approved Animal Use Protocol (AUP), e.g., 24 months or near end of life (NEOL).
- 4.2.4. Animals showing clinical signs are reported to the veterinary care staff who will determine follow-up actions such as frequency of monitoring and weighing, treatments and supportive therapy, or euthanasia.
- 4.2.5. Incorporate regular assessment of the Frailty Index as part of the monitoring.
- 4.2.6. Frequency of monitoring:
 - 4.2.6.1. Daily observation by animal care staff
 - 4.2.6.2. Weekly monitoring by research staff as described in the approved AUP
 - 4.2.6.3. Animals nearing end of life (NEOL), as determined by clinical signs and/or up to 20% weight loss are to be monitored twice per day, every day, including weekends and holidays.

4.3. Supportive Care:

- 4.3.1. Supportive care is an important factor in preventing a decline in functional health of aging rodents and should be provided when clinical signs are noted.
- 4.3.2. Supportive care may include:
 - 4.3.2.1. Moist food in the bottom of the cage
 - 4.3.2.2. Water bottles with long sipper tubes to ease drinking
 - 4.3.2.3. Administration of parenteral fluids.

5. FRAILITY INDEX

- 5.1. Frailty can be quantified by performing a non-invasive, clinical observation that evaluates 8 organ systems or parameters:
 - 5.1.1. The integument
 - 5.1.2. The musculoskeletal system
 - 5.1.3. The vestibulocochlear/auditory and neurological systems
 - 5.1.4. The ocular and nasal systems
 - 5.1.5. The digestive system
 - 5.1.6. The urogenital system
 - 5.1.7. The respiratory system
 - 5.1.8. Signs of pain or discomfort
 - 5.1.9. Body weight (g)
 - 5.1.10. Body surface temperature (°C).
- 5.2. Each component is rated using a simple scale:
 - 5.2.1. Score of 0: no sign of a deficit
 - 5.2.2. Score of 0.5: mild deficit
 - 5.2.3. Score of 1: severe deficit
- 5.3. The Frailty Index, a value between 0 and 1, is calculated by adding the scores for each component then dividing the total by the maximum possible score. When not all components are being assessed, the total is divided by the number of components evaluated.
- 5.4. The veterinarian must be notified when an animal reaches a Frailty Index of 0.30.

5.5. Clinical assessment of Frailty Index in mice:

SYSTEM/PARAMETER	POTENTIAL DEFICITS	SCORING
INTEGUMENT		
Alopecia	Hair loss due to age-related balding and/or barbering	0 = normal fur density 0.5 = < 25% fur loss 1 = > 25% fur loss
Loss of fur color	Change in fur color from black to grey or brown	0 = normal fur color 0.5 = focal color changes 1 = grey/brown fur throughout body
Dermatitis	Inflammation, overgrooming, barbering or scratching causing skin erosion/ulceration	0 = absent 0.5 = focal lesions 1 = widespread or multifocal lesions
Loss of whiskers	Loss of vibrissae (whiskers) due to aging and/or whisker trimming	0 = no loss 0.5 = reduced number of whiskers 1 = absence of whiskers
Coat condition	Ruffled fur and/or matted fur. Ungroomed appearance. Coat does not look smooth, sleek, and shiny	0 = smooth, shiny coat 0.5 = coat slightly ruffled 1 = unkempt, ungroomed, matted coat
PHYSICAL/MUSCULOSKELETAL		
Tumors	Development of visible or palpable tumors or masses anywhere on the body	0 = absent 0.5 = < 1cc 1 = > 1cc
Distended Abdomen	Enlarged abdomen. May be due to tumor growth, organ enlargement, or intraperitoneal fluid accumulation	0 = absent 0.5 = slight bulge 1 = abdomen clearly distended
Kyphosis	Exaggerated outward curvature of the lower cervical/thoracic vertebral column. Hunched back or posture	0 = absent 0.5 = mild 1 = clear hunched posture
Tail stiffening	Tail appears stiff, even when animal is moving in the cage. Tail does not wrap freely when stroked	0 = no stiffening 0.5 = tail responsive but does not curl 1 = tail completely unresponsive
Gait disorders	Lack of coordination in movement including hopping, wobbling, or uncoordinated gait. Wide stance. Circling or weakness	0 = no abnormality 0.5 = abnormal gait but animal can walk 1 = impaired ability to move
Tremor	Involuntary shaking at rest or during movement	0 = no tremor 0.5 = slight tremor 1 = marked tremor; animal cannot climb
Forelimb grip strength	A decline in forelimb grip strength. Assessed allowing the animal to grip the bars of the cage and lifting the animal.	0 = sustained grip 0.5 = reduction in grip strength 1 = no grip strength, no resistance
Body Condition Score	Visual signs of muscle wasting or obesity based on the amount of flesh covering bony protuberances	0 = BCS of 3 or 4 0.5 = BCS of 2 or 5 1 = BCS of 1
VESTIBULOCOCHLEAR/AUDITORY/NEUROLOGICAL		
Vestibular disturbance	Disruption in the ability to perceive motion and gravity. Reflected in problems with balance, orientation, and acceleration. Seen as head tilt, spinning, circling, head tuck or trunk curling.	0 = absent 0.5 = mild head tilt, slight spin 1 = severe disequilibrium
Hearing loss	Failure to respond to sudden sound (eg, clicker) indicative of hearing loss or impairment	0 = always reacts, 3/3 times 0.5 = reacts 1/3 or 2/3 times 1 = unresponsive, 0/3 times

OCULAR/NASAL		
Cataracts	Clouding of the lens of the eye. An opaque spot in the center of the eye	0 = no cataract 0.5 = small opaque spot 1 = opaque lens
Corneal opacity	Development of white spots on the cornea. Cloudy cornea	0 = normal 0.5 = minimal changes in cornea 1 = marked clouding/spotting of cornea
Eye discharge/swelling	Eyes are swollen or bulging (exophthalmia). They may exhibit abnormal secretions and/or crusting	0 = normal 0.5 = slight swelling and/or secretions 1 = marked swelling and/or secretions
Microphthalmia	Eyes are small and/or sunken. May involve one or both eyes	0 = normal size 0.5 = one or both eyes slightly small or sunken 1 = one or both eyes very small or sunken
Vision loss	Vision loss, indicated by failure to reach toward the ground when lowered by the tail	0 = reaches >8cm above surface 0.5 = reaches 2-8cm above surface 1 = reaches <2cm above surface
Menace reflex	Rapid eye blink and closure of the palpebral fissure in response to a non-tactile visual threat to the eye. Measures the integrity of the entire visual pathway including cortical components	0 = always responds 0.5 = no response to 1-2 approaches 1 = no response to 3 approaches
Nasal discharge	Signs of abnormal discharge from the nares	0 = no discharge 0.5 = small amount of discharge 1 = obvious discharge, both nares
DIGESTIVE/UROGENITAL		
Malocclusions	Incisor teeth are uneven or overgrown. Top teeth grow back into the roof of the mouth or bottom teeth are long and easily seen	0 = mandibular longer than maxillary incisors 0.5 = teeth slightly uneven 1 = teeth very uneven and overgrown
Rectal/vaginal/uterine/penile prolapse	Protrusion of the rectum just below the tail. Vagina or uterus protrudes through the vagina and vulva. Penis cannot reenter the penile sheath	0 = no prolapse 0.5 = mild prolapse 1 = marked prolapse
Diarrhea	Feces on the walls of the home cage. Bedding adheres to feces in cage. Feces, blood, or bedding around the rectum	0 = normal stools 0.5 = some feces or bedding near rectum 1 = marked soft stools or bloody stools
RESPIRATORY		
Breathing rate/depth	Difficulty breathing (dyspnea), open mouth breathing, pulmonary congestion (rales), and/or rapid breathing (tachypnea)	0 = normal 0.5 = slight change in breathing rate/depth 1 = marked changes in breathing rate/depth
PAIN/DISCOMFORT		
Mouse Grimace Scale	Measure of pain/discomfort based on facial expression. Assessment of five facial features: orbital tightening, nose bulge, cheek bulge, ear position (drawn back), or whisker change (either backward or forward)	0 = no signs present 0.5 = 1-2 signs present 1 = 3 or more signs present
Piloerection	Involuntary bristling of the fur due to sympathetic nervous system activation, particularly on the back of the neck	0 = no piloerection 0.5 = piloerection at base of neck only 1 = generalized piloerection

OTHER		
Body Temperature	Increase or decrease in body temperature as measured with an infrared thermometer directed at the abdomen (3 measures). Compare with reference values from sex-matched adults.	0 = <1 SD from reference values 0.25 = differs by 1 SD 0.5 = differs by 2 SD 0.75 = differs by 3 SD 1 = differs by >3 SD
Body Weight	Increase or decrease in body weight. Compare with reference values from sex-matched adult animals of the same background strain.	0 = <1 SD from reference values 0.25 = differs by 1 SD 0.5 = differs by 2 SD 0.75 = differs by 3 SD 1 = differs by >3 SD

5.1. Clinical assessment of Frailty Index in rats:

SYSTEM/PARAMETER	POTENTIAL DEFICITS	SCORING
INTEGUMENT		
Alopecia	Acquired hair loss due to inflammation, endocrine disorder, or idiopathic disease	0 = normal fur density 0.5 = < 25% fur loss 1 = > 25% fur loss
Dermatitis	Excessive scratching, self-mutilation, or skin conditions leading to open sores on the body	0 = absent 0.5 = focal lesions 1 = widespread or multifocal lesions
Coat condition	Ungroomed appearance: fur appears ruffled and matted	0 = smooth, shiny coat 0.5 = coat slightly ruffled 1 = unkempt, ungroomed, matted appearance
PHYSICAL/MUSCULOSKELETAL		
Tumors	Development of visible or palpable tumors or masses anywhere on the body	0 = absent 0.5 = < 3cc 1 = > 3cc
Distended Abdomen	Enlarged abdomen. May be due to tumor growth, organ enlargement, or intraperitoneal fluid accumulation	0 = absent 0.5 = slight bulge 1 = abdomen clearly distended
Kyphosis	Exaggerated outward curvature of the lower cervical/thoracic vertebral column. Hunched back or posture	0 = absent 0.5 = mild 1 = clear hunched posture
Gait and strength disorders	Abnormal locomotion: slow movement, lack of coordination, stumbling, falling, or limping Muscle atony, decline in forelimb grip strength. Arthritis, pododermatitis.	0 = no abnormality 0.5 = abnormal gait but animal can walk 1 = impaired ability to move
Tremor	Involuntary shaking at rest or during movement	0 = no tremor 0.5 = slight tremor 1 = marked tremor; animal cannot climb
Body Condition Score	Visual signs of emaciation or obesity. Based on the amount of flesh covering the vertebral column and dorsal pelvis.	0 = BCS of 3 or 4 0.5 = BCS of 2 or 5 1 = BCS of 1
VESTIBULOCOCHLEAR/AUDITORY/NEUROLOGICAL		
Vestibular disturbance	Abnormal/asymmetric head position associated with a central nervous system disturbance	0 = absent 0.5 = mild head tilt, slight spin 1 = severe disequilibrium
Hearing loss	Impaired acoustic startle reflex; associated with loss of hearing sensitivity	0 = always reacts, 3/3 times 0.5 = reacts 1/3 or 2/3 times 1 = unresponsive, 0/3 times

OCULAR/NASAL		
Cataracts	Clouding of the lens of the eye. An opaque spot in the center of the eye	0 = no cataract 0.5 = small opaque spot 1 = opaque lens
Chromodacryorrhea	Porphyry staining around the eyes/nose	0 = no staining 0.5 = minimal staining around eyes/nose 1 = marked staining around eyes/nose
Exophthalmos	Abnormal protrusion of the eye	0 = normal 0.5 = slight bulging 1 = marked bulging
Corneal opacity	Cornea appears white or clouded	0 = normal 0.5 = minimal changes in cornea 1 = marked clouding/spotting of cornea
Microphthalmos	Abnormally small eye. Sunken in appearance.	0 = normal size 0.5 = one/both eyes slightly small or sunken 1 = one or both eyes very small or sunken
DIGESTIVE/UROGENITAL		
Malocclusions	Abnormal occlusion due to uneven or overgrown incisors	0 = mandibular longer than maxillary incisors 0.5 = teeth slightly uneven 1 = teeth very uneven and overgrown
Rectal/vaginal/uterine/penile prolapse	Protrusion of the rectum just below the tail. Vagina or uterus protrudes through the vagina and vulva. Penis cannot reenter the penile sheath	0 = no prolapse 0.5 = mild prolapse 1 = marked prolapse
Diarrhea	Increased frequency and decreased consistency of bowel movements. Fecal smearing in cage	0 = normal stools 0.5 = some feces or bedding near rectum 1 = marked soft stools or bloody stools
Jaundice	Yellowing of the feet, nose, ears and tail associated with accumulation of bilirubin	0 = normal 0.5 = mild yellowing 1 = marked yellowing
RESPIRATORY		
Breathing rate/depth	Difficulty breathing (dyspnea), pulmonary congestion (rales), and/or rapid breathing (tachypnea)	0 = normal 0.5 = slight change in breathing rate/depth 1 = marked changes in breathing rate/depth
PAIN/DISCOMFORT		
Rat Grimace Scale	Measure of pain/discomfort based on facial expression. Assessment of five facial features: orbital tightening, nose/cheek flattening, ear position, or whisker change	0 = no signs present 0.5 = 1-2 signs present 1 = 3 or more signs present
Piloerection	Involuntary bristling of the fur due to sympathetic nervous system activation, particularly on the back of the neck	0 = no piloerection 0.5 = piloerection at base of neck only 1 = generalized piloerection
Vocalizations	Acute vocalization in response to touch	0 = no vocalizations 0.5 = mild vocalizations 1 = marked vocalizations
OTHER		
Body Temperature	Increase/decrease in body temperature as measured with an infrared thermometer directed at the abdomen (3 measures). Compare with reference values from sex-matched adults.	0 = <1 SD from reference values 0.25 = differs by 1 SD 0.5 = differs by 2 SD 0.75 = differs by 3 SD 1 = differs by >3 SD
Body Weight	Increase or decrease in body weight. Compare with reference values from sex-matched adult animals of the same background strain.	0 = <1 SD from reference values 0.25 = differs by 1 SD 0.5 = differs by 2 SD 0.75 = differs by 3 SD 1 = differs by >3 SD

6. REFERENCES

- 6.1. Pettan-Brewer, C., Treuting, P.. Practical pathology of aging mice. *Pathobiology of Aging & Age-related Diseases, North America*, 1, May. 2011. <https://www.tandfonline.com/doi/full/10.3402/pba.v1i0.7202>
- 6.2. Whitehead, J.C., Hildebrand, B.A., Sun, M., Rockwood, M.R., Rose, R.A., Rockwood, K., Howlett, S.E. A clinical frailty index in aging mice: comparisons with frailty index data in humans. *J Gerontol A Biol Sci Med Sci*. 2014 Jun;69(6):621-32.
- 6.3. Yorke, A., Kane, A.E., Hancock Friesen, C.L., Howlett, S.E., O'Blenes, S. Development of a Rat Clinical Frailty Index. *J Gerontol A Biol Sci Med Sci*. 2017 Jul 1;72(7):897-903.
- 6.4. Langford DJ, Bailey AL, Chanda ML, Clarke SE, Drummond TE, Echols S, Glick S, Ingrao J, Klassen-Ross T, Lacroix-Fralish ML, Matsumiya L, Sorge RE, Sotocinal SG, Tabaka JM, Wong D, van den Maagdenberg AM, Ferrari MD, Craig KD, Mogil JS. (2010). Coding of facial expressions of pain in the laboratory mouse. *Nat Methods* 7:447-9.
- 6.5. Sotocinal SG, Sorge RE, Zaloum A, Tuttle AH, Martin LJ, Wieskopf JS, Mapplebeck JC, Wei P, Zhan S, Zhang S, McDougall JJ, King OD, Mogil JS. (2011). The Rat Grimace Scale: a partially automated method for quantifying pain in the laboratory rat via facial expressions. *Mol Pain*. 29;7:55.

SOP REVISION HISTORY

DATE	NEW VERSION
2019.03.26	3. Considerations This age-associated decline in physiologic reserve, i.e., the capacity to compensate and adapt to various stressors, and loss of function across multiple organ systems is clinically defined as frailty. Frailty leads to increased vulnerability, increased risk for poor health outcomes and a higher risk of mortality. The Frailty Index is a non-invasive method that uses clinical signs and observations to quantify frailty. A higher frailty index can be a significant predictor of mortality.
2019.03.26	4.1.5. Incorporate regular assessment of the Frailty Index as part of the monitoring.
2019.03.26	5. Frailty Index, Annex 1 Mouse Frailty Assessment Form, Annex 2 Rat Frailty Assessment Form
2023.05.15	1. PURPOSE This Standard Operating Procedure (SOP) describes humane intervention points for aging rodents mice and rats .
2023.05.15	2. RESPONSIBILITY Principal investigator (PI) and their research staff, veterinarian , veterinary care staff, Facility Animal Care Committee (FACC).
2023.05.15	3 CONSIDERATIONS Rodents Mice and rats older than 18 months are considered as aging animals. Arthritis, neuropathy, pododermatitis. Aging rodents mice and rats may suffer from a combination of subclinical diseases that can vary in their clinical presentations and should be considered as part of the progressive decline in organ function that defines aging. These include, but are not limited to, neoplasia, heart disease, renal disease, systemic inflammation, and degenerative joint and dental lesions disease . This age-associated decline in physiologic reserve, i.e., the capacity to compensate and adapt to various stressors, and loss of function across multiple organ systems is clinically defined as frailty. Frailty leads to increased vulnerability, increased risk for poor health outcomes and a higher risk of mortality. The Frailty Index is a non-invasive method that uses clinical signs and observations to quantify frailty. A higher frailty index can be a significant predictor of mortality adverse outcome .
2023.05.15	4.1. Aging studies involving mice and rats can typically be divided into those with predetermined experimental endpoints (e.g., 22 months), and those where animals are maintained until near end of life (NEOL).
2023.05.15	4.2.2. Monitoring of aging animals is the responsibility of the PI and research staff. 4.2.3. Cages of aging rodents should be clearly labeled with the experimental endpoint as it appears in the approved Animal Use Protocol (AUP), e.g., 24 months or near end of life (NEOL).
2023.05.15	4.2.6.2. Weekly monitoring by research staff as described in the approved AUP. 4.2.6.3. Animals nearing end of life, as determined by clinical signs and/or up to 20% weight loss are to be monitored twice per day, every day, including weekends and holidays.
2023.05.15	4.4 Recommended intervention points for aging rodents in near end of life (NEOL) studies: 4.4.1. To prevent unnecessary early euthanasia of animals with non-terminal diseases associated with old age, descriptive criteria for end of life and humane euthanasia have been determined. In order to be considered at end of life, rodents are to appear moribund and demonstrate clinical signs that suggest imminent death within 24 hours. These clinical signs may include: 4.4.1.1. No response to external stimuli 4.4.1.2. Cold body temperature to the touch 4.4.1.3. Slow or labored breathing 4.4.1.4. Hunched posture with matted coat 4.4.1.5. Failure to eat and drink, marked dehydration 4.4.1.6. Incoordination, paralysis 4.4.1.7. Body condition score less than 2 4.4.1.8. Rapid weight loss exceeding 20% of recent bodyweight 4.4.1.9. Pale eyes and/or extremities (rodents) or mucous membranes 4.4.1.10. Mass that is ulcerated, necrotic or impairing normal function (e.g., eating, drinking) or exceeding acceptable size endpoints: 4.4.1.10.1. Mice: 2cm ³ or 10% of the baseline bodyweight Rats: 5cm ³ or 5% of the baseline bodyweight
2023.05.15	5.4. The veterinarian must be notified when an animal reaches a Frailty Index of 0-75 0.30 .

Annex 1 – Mouse Frailty Assessment Form

DATE:	MOUSE ID:
DATE OF BIRTH:	SEX: M F
BW (g)	BODY TEMP (°C):

RATING:	0 = absent	0.5 = mild	1 = severe	NOTES:
INTEGUMENT				
Alopecia	0	0.5	1	_____
Loss of fur color	0	0.5	1	_____
Dermatitis	0	0.5	1	_____
Loss of whiskers	0	0.5	1	_____
Coat condition	0	0.5	1	_____
PHYSICAL/MUSCULOSKELETAL				
Tumors	0	0.5	1	_____
Distended abdomen	0	0.5	1	_____
Kyphosis	0	0.5	1	_____
Tail stiffening	0	0.5	1	_____
Gait disorders	0	0.5	1	_____
Tremor	0	0.5	1	_____
Forelimb grip strength	0	0.5	1	_____
Body Condition Score	0	0.5	1	_____
VESTIBULOCOCHLEAR/AUDITORY/NEUROLOGICAL				
Vestibular disturbance	0	0.5	1	_____
Hearing loss	0	0.5	1	_____
OCULAR/NASAL				
Cataracts	0	0.5	1	_____
Corneal opacity	0	0.5	1	_____
Eye discharge/swelling	0	0.5	1	_____
Microphthalmia	0	0.5	1	_____
Vision loss	0	0.5	1	_____
Menace reflex	0	0.5	1	_____
Nasal discharge	0	0.5	1	_____
DIGESTIVE/UROGENITAL				
Malocclusion	0	0.5	1	_____
Rectal/vaginal/uterine/penile prolapse	0	0.5	1	_____
Diarrhea	0	0.5	1	_____
RESPIRATORY				
Breathing rate/depth	0	0.5	1	_____
PAIN/DISCOMFORT				
Mouse Grimace Scale	0	0.5	1	_____
Piloerection	0	0.5	1	_____
OTHER				
Body temperature	0	0.5	1	_____
Body weight	0	0.5	1	_____

TOTAL SCORE: _____ /MAXIMUM SCORE (30)

FRAILITY INDEX: _____

* Notify veterinarian if Frailty Index is equal to or higher than 0.30

Annex 2 – Rat Frailty Assessment Form

DATE:	RAT ID:		
DATE OF BIRTH:	SEX:	M	F
BW (g)	BODY TEMP (°C):		

RATING:	0 = absent	0.5 = mild	1 = severe	NOTES:
INTEGUMENT				
Alopecia	0	0.5	1	_____
Dermatitis	0	0.5	1	_____
Coat condition	0	0.5	1	_____
PHYSICAL/MUSCULOSKELETAL				
Tumors	0	0.5	1	_____
Distended abdomen	0	0.5	1	_____
Kyphosis	0	0.5	1	_____
Gait and strength disorders	0	0.5	1	_____
Tremor	0	0.5	1	_____
Body Condition Score	0	0.5	1	_____
VESTIBULOCOCHLEAR/AUDITORY/NEUROLOGICAL				
Vestibular disturbance	0	0.5	1	_____
Hearing loss	0	0.5	1	_____
OCULAR/NASAL				
Cataracts	0	0.5	1	_____
Chromodacryorrhea	0	0.5	1	_____
Exophthalmos	0	0.5	1	_____
Corneal opacity	0	0.5	1	_____
Microphthalmos	0	0.5	1	_____
DIGESTIVE/UROGENITAL				
Malocclusion	0	0.5	1	_____
Rectal/vaginal/uterine/penile prolapse	0	0.5	1	_____
Diarrhea	0	0.5	1	_____
Jaundice	0	0.5	1	_____
RESPIRATORY				
Breathing rate/depth	0	0.5	1	_____
PAIN/DISCOMFORT				
Rat Grimace Scale	0	0.5	1	_____
Piloerection	0	0.5	1	_____
Vocalizations	0	0.5	1	_____
OTHER				
Body temperature	0	0.5	1	_____
Body weight	0	0.5	1	_____

TOTAL SCORE: _____ /MAXIMUM SCORE (26)

FRAILTY INDEX: _____

* Notify veterinarian if Frailty Index is equal to or higher than 0.30