CATEGORIES OF POTENTIAL PAIN OR POTENTIAL DISTRESS
(The Duke Animal Program Definition)

PERFORMANCE STANDARD: Animals will be accurately categorized based upon the highest level of pain or distress that they are expected to experience during the approved activity.

BACKGROUND: All animals used for research or teaching must be assigned to a USDA pain and distress category on the protocol under which they are used. Procedures that could cause pain or distress in humans should be assumed to cause pain or distress in other animals.

APPLICABILITY: This policy applies to all uses of animals at Duke University or under Duke IACUC approved animal activities.

POLICY:
1. The Duke animal care & use program defines Pain and Distress Categories B, C, D, & E for identifying the anticipated and actual pain / distress experienced by animals engaged in Duke animal care & use activities. Note: The purpose of these categories is to parallel the USDA categories and simplify recording and reporting for PIs.

2. The researchers should recommend the category for animal assignments. The IACUC will confirm and accept / modify the recommended category during the IACUC’s review of the protocol. The process researchers should use to develop a recommendation is:
   a. Consider the use of each group of animals within the proposal, and how that group will be used.
   b. Select a Pain and Distress Category (B, C, D or E) for each experimental group of animals. Note: Use Appendix I to assist with selecting the appropriate category.
   c. List the animals in that group under the highest pain and distress category that will apply to the animals at any time while the animals are being used, even if it is for a short duration of time. NOTE: Do not include non-research related veterinary care in determining the pain and distress category.
   d. If a procedure is done on an animal (e.g. tail snip or euthanasia), the animals must be listed in category C or greater. This includes animals used for breeding if they are then euthanized (euthanasia is the Category C activity). List breeding animals as category B only if no procedures are done, including euthanasia (e.g., transfer of breeders to another protocol would retain the animals in category B).
   e. At the end of the federal Fiscal Year (30 September), re-visit all animal categories to adjust animals per category, either up or down, according to the actual pain or distress associated with each procedure performed on the animals.
   a. Place animals in category C if the phenotype produced by the genetic alteration is unknown.
   b. Place animals in category D if the phenotype is expected to cause, pain or distress that will be alleviated by IACUC-approved methods.
   c. Place animals in category E if the phenotype is expected to cause, pain or distress that will not be alleviated.
   d. Describe any new information regarding the phenotype, including adverse events, and adjust the pain and distress category as necessary during the annual review.
   e. Amend the category once the investigator or veterinary staff recognizes phenotype-related pain or distress occurs during protocol performance (Annual Reports).

4. Examples of Clinical Signs of Animal Pain or Distress In Select Species:

   a. Rodents / Rabbit
      i. Avoidance, vocalization and aggressiveness (mainly if the animal cannot escape)
      ii. Spontaneous activities are reduced. The animal is isolated from the social group
      iii. Altered gait
      iv. Hunched posture
      v. Piloerection
      vi. Reduced grooming; dark-red stain around the eyes and at nostrils
      vii. Reduced appetite and subsequent weight loss
      viii. Increased respiration rate
      ix. Failure to explore cage when disturbed

   b. Cat / Dog
      i. Avoidance, vocalization, eyebrow movements, escape and aggressiveness
      ii. Spontaneous activities are reduced. The animal is isolated from the social group
      iii. Apathy, anxiety, plaintive
      iv. Altered gait
      v. Nibbling, licking, scratching, rubbing
      vi. Eyes are semi-closed
      vii. Head shaking (ear pain)
      viii. Reduced appetite and subsequent weight loss

   c. Swine / Livestock
      i. Tolerate manipulations
      ii. Lying down more frequently, immobile
      iii. Aggressive vocalization and behavior
      iv. Altered gait
v. Increased muscle tension around the eye  
vi. Piloerection  
vii. Reduced appetite (sometimes)  
viii. Reluctance to move  

References:  
- USDA Animal Welfare Act and Regulations  
- http://www.iacuc.cornell.edu/documents/IACUC009.01.pdf
APPENDIX A
Examples of USDA Categories

<table>
<thead>
<tr>
<th>Category B</th>
<th>Category C</th>
<th>Category D</th>
<th>Category E</th>
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<tbody>
<tr>
<td>**Animals being bred acclimatized, or held for use in teaching, testing, experiments, research, or surgery <strong>not yet <em>used</em> for such purposes. Non-invasive observation only of animals in the wild.</strong></td>
<td>Animals that undergo procedures that cause no pain or distress, or only momentary or slight pain or distress. These procedures <strong>DO NOT</strong> require the use of pain-relieving drugs.</td>
<td>Animals that undergo procedures that are potentially painful or distressful; <strong>AND</strong> for which they receive appropriate anesthetics, analgesics and/or tranquilizer drugs.</td>
<td>Animals that undergo procedures that are potentially painful or distressful; <strong>AND</strong> for which they <strong>DO NOT</strong> receive anesthetics, analgesics and/or tranquilizer drugs.</td>
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<td><strong>Examples</strong></td>
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<td>- Animals being bred or housed, without any research manipulation, prior to euthanasia or transfer to another protocol</td>
<td>- Holding or weighing animals in teaching, outreach or research activities</td>
<td>- Survival surgery</td>
<td>- Toxicological or microbiological testing, cancer research or infectious disease research that requires continuation after clinical symptoms are evident without medical relief or require death as an endpoint</td>
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<td>- Observation of animal behavior in the wild without manipulating the animal or its environment</td>
<td>- Observation of animal behavior in the lab</td>
<td>- Non-survival surgical procedures</td>
<td>- Ocular / skin irritancy testing</td>
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<td>- Ear punching of rodents</td>
<td>- Laparoscopy or needle biopsies</td>
<td>- Food or water deprivation beyond that necessary for ordinary pre-surgical preparation Application of noxious stimuli such as electrical shock that the animal cannot avoid/escape</td>
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<td>- Tail snips in mice ≤ 21 days old</td>
<td>- Retro-orbital blood collection</td>
<td>- Any procedures for which needed analgesics, tranquilizers, sedatives, or anesthetics must be withheld for justifiable study purposes</td>
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<td>- Peripheral Injections, blood collection or catheter implantation</td>
<td>- Exposure of blood vessels for catheter implantation</td>
<td>- Exposure to extreme environmental conditions</td>
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<td>- Feed studies, which do not result in clinical health problems</td>
<td>- Induced infections or antibody production</td>
<td>- Euthanasia by procedures not approved by the AVMA</td>
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<td>- Routine agricultural husbandry procedures approved by the IACUC in a protocol or SOP</td>
<td>- Tattooing</td>
<td>- Paralysis or immobilization of a conscious animal</td>
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<td>- Live trapping</td>
<td>- Exposure of skin to UV light to induce sunburn</td>
<td>- Genetically engineered phenotype that causes pain or distress (ex: anesthesia/analgesia studies) on client-owned animals that are undergoing Clinical procedures.</td>
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<td>- Positive rewardtraining or research</td>
<td>- Tail snips in mice &gt; 21 days old</td>
<td>- Genetically engineered phenotype that causes pain or distress that will not be alleviated</td>
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<td>- Chemical restraint</td>
<td>- Research procedures that could potentially increase pain or distress (ex: anesthesia/analgesia studies) on client-owned animals that are undergoing Clinical procedures.</td>
<td>- Induced or spontaneous seizure activity without anesthesia/analgesia prior to the seizure event.</td>
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<td>- Research procedures that involve no potential increase in pain or distress on client owned animals that are undergoing Clinical procedures (ex: drawing extra blood, choice of antibiotics).</td>
<td>- Genetically engineered phenotype that causes pain or distress that will be alleviated</td>
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