Breeding Troubleshooting Questionnaire

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- ❑ What have the room **environmental conditions** been in this room during the times of deaths or breeding problems? Think hi/lo temperature & humidity, large fluctuations, light timers.
- ❑ **Supplement enrichment**, e.g. igloos, Shepherd Shacks extra Nestlets, EnviroDri, chewing sticks, treats, etc.? Keep in mind that in some strains enrichment may lead to intra cage competition and fighting.
- ❑ **Vibration problems**? Consider anti vibration pads. Ideal pad material is able to match the vibration source frequency & wavelength.
- ❑ **Location of cage in reference to the rack blower, computers, computer/TV monitors, animal transfer station**, etc. The closer to those items, the greater the sound and vibration.
- ❑ **Volume of speaking, noisy keychains or loud equipment** where animals are present. The louder the volume (vs. whispering & quiet equipment) the greater the effect.
- ❑ Are you **moving animal cages from room to room using light or plastic carts**? The plastic/lighter carts vibrate more. Consider pneumatic wheels to absorb transportation vibration.
- ❑ **Lubrication**: Be sure all doors and cart wheels are lubricated to minimize noise.
- ❑ **Energy dense supplementation** may help improve pup yield:
  - ❑ Bacon Softies (www.bio-Serv.com).
  - ❑ DietGel Boost (http://clearh2o.com/research-products/dietgel/dietgel-boost-2.html): High calorie supplement to quickly move pups forward.
  - ❑ Mix 50:50 with powder rodent chow and moisten with water for weak pups or mothers in needs of extra energy.
- ❑ What is the **fat and protein % of the diet** they are on? e.g., BALB/c mice tend to need higher fat than other strains for breeding. Consider a higher fat diet. In some cases, may need to actually decrease fat content. This is frequently done in males with diminished breeding performance from being overweight.
- ❑ What **breeding scheme** are they using (timed? monogamous, trio, harem?). Some strains do better with a particular scheme or the other. Some do better if another adult is in the cage. Some don't. Know your strain.
- ❑ Are **males taken to the female cage or vice versa**? Usually the female should be taken to the male's cage.
- ❑ Are **cages being left undisturbed 2-3 days before parturition and at least 3-5 days post-partum**? This time may be longer for certain strains and may be crucial to prevent cannibalism and neglect by mother.
- ❑ **Cannibalism**?
  - ❑ If so, **who is doing the cannibalism**? Mom? Surrogate? Another cage mate?

- ❑ **First-time mothers or experienced mothers**? Often first-time mothers cannibalize but will not subsequent litters.
- ❑ If If cannibalism is occurring, **decreasing the dark cycle** (which is when the mice are most active) by 2 hours may decrease cannibalism, e.g. 14 hr light/10 hr dark may help.
- ❑ **Are males kept in the cage during peri-partum period**? They may be the guilty party, however with some strains males may actually help raise the young.
- ❑ **Is there another female in the cage** to help raise pups during this time? May help in some strains.
- ❑ **Are personnel coming into the room during the dark cycle**?
- ❑ **Any noise or excessive traffic in the room or hallway**?
- ❑ Anybody coming into the room that wears **perfume**?
- ❑ **Extra enrichment** may help minimize cannibalism.
- ❑ ***Love Mash™ Rodent Reproductive Diet****, Bio-Serv* given to pregnant rodents have been shown to prevent cannibalism of litters in some dams.

- ❑ **How old are the males**? **How old are the moms**? Older animals lose reproductive yield. Generally (although this is strain dependent), most strains productivity sharply decline after 9 months of age.
- ❑ Is this a **shared room** or is it assigned to one PI only?
- ❑ **Who all go into the room? Are practices consistent** (thus importance of good SOPs)**? Too many people going into the room? Are the same people going in the room?**
- ❑ What's the background of these mice? **Have you looked up breeding issues related to this background**?
- ❑ **Age/weight at weaning**. Using the 10-gram weight could help in deciding when to wean.
- ❑ Is there an **overcrowding** issue? e.g., **multiple litters or generations**? If so, older pups may be trampling on younger pups. Mom may not be able to sustain both litters.
- ❑ **Health issues** that may affect reproduction?
- ❑ Any **experimental manipulations during breeding, gestation or immediately postpartum** being done?
- ❑ **Location of breeding cages within the room:** If close to the door, consider moving to the back of the room. If on top rows of rack, consider moving them to the bottom rows.
- ❑ **Light too intense in the room**? Does light need to be attenuated or cages need to be placed on lower shelves of the rack?
- ❑ **Type of light**: Fluorescent lighting produces ultrasonic noise that should be shielded with a solid cover (not open mesh).
- ❑ **Electronic timers/temp/humidity sensors**: Should be kept at least 1 meter away from animals or shielded.
- ❑ If the room has **audiogenic motion sensors,** replace with **passive infrared motion detectors**.