

An Evaluation of BlockParty[®] Caging for Co-Housing Large Groups of Mice*

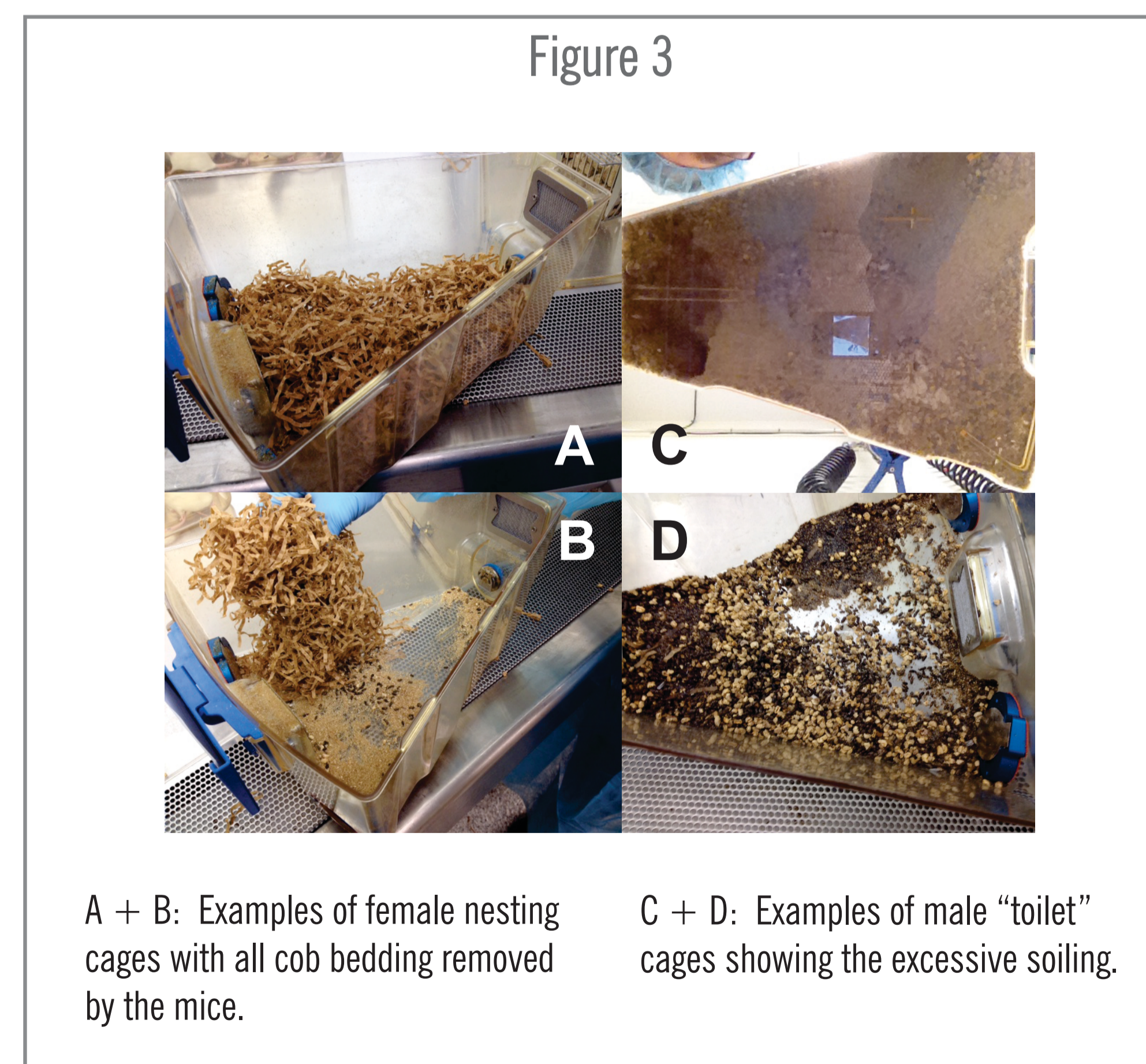
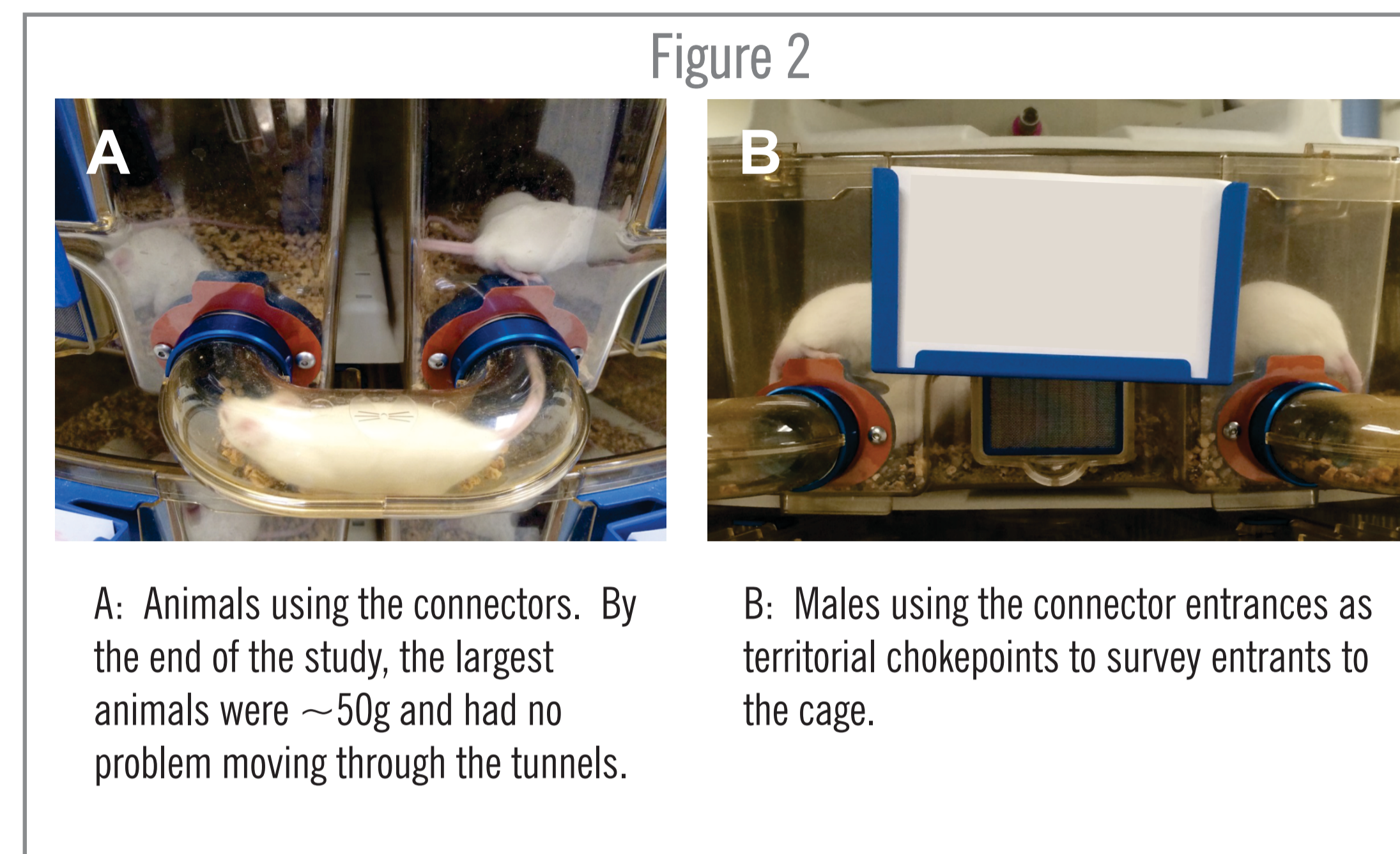
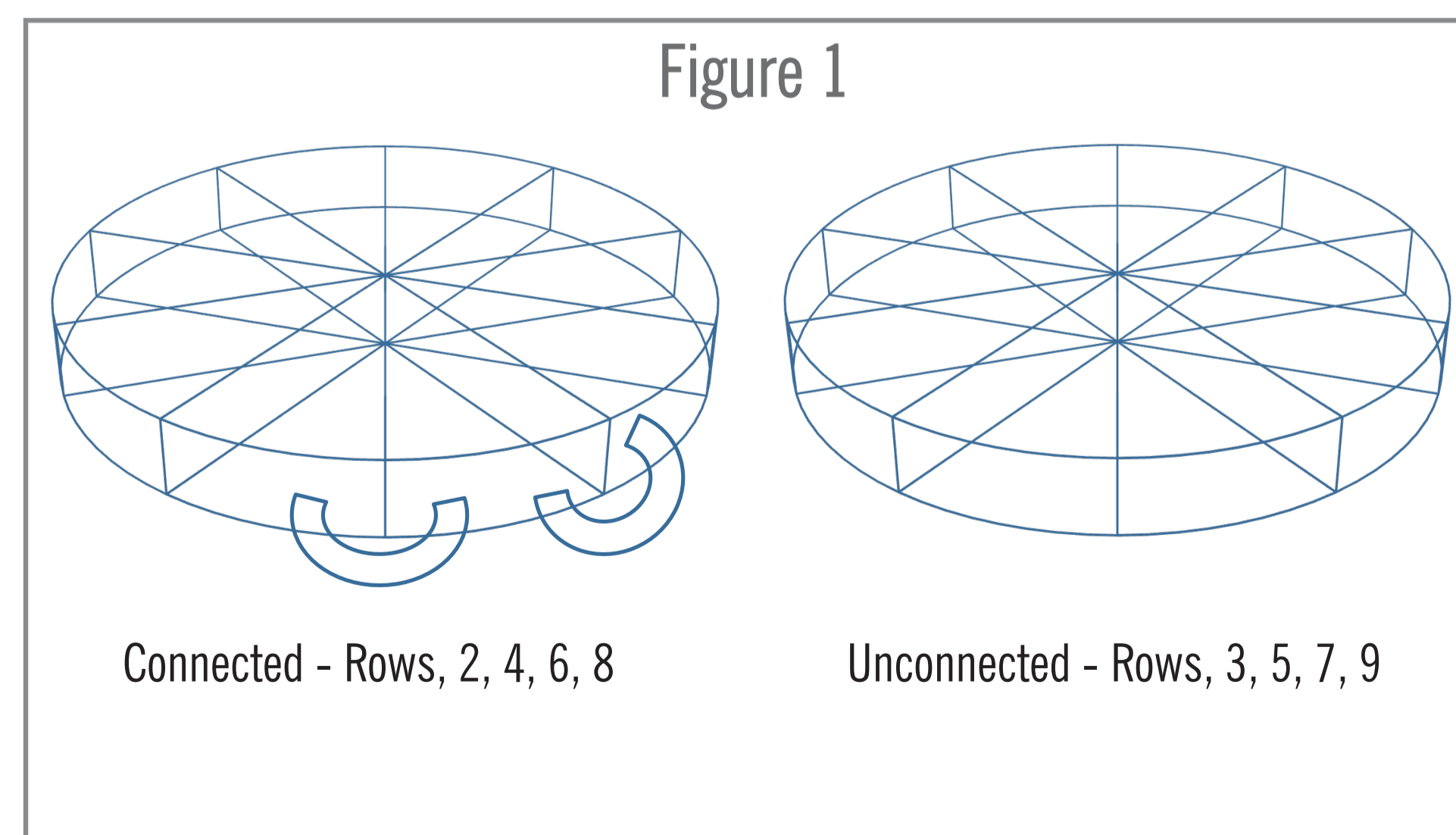
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INTRODUCTION

Mice are social animals, living in kin groups in the wild and routinely seeking out social interaction. Laboratory mice are typically housed in shoebox cages with ≤ 5 adult mice per cage. An alternative housing arrangement was recently developed (BlockParty[®] for Optimice[®], Animal Care Systems, Centennial, CO) that connects ≤ 10 cages on the same row of a ventilated rack, permitting up to 50 adult mice to be housed together while meeting the cage space recommendations in the Guide. This housing system was evaluated to compare how adult male and female CD-1[®] mice fared when housed for 4 weeks as either single sex groups of 5 or connected groups of 50.

MATERIALS + METHODS

200 male and 200 female CD-1[®] (Charles River Laboratories, Wilmington, MA) 4-week old mice were housed in the Optimice[®] rack in groups of 2 rows, excluding rows 1 and 10 (Figure 1). Each group of 2 rows housed either males or females, and 1 of the 2 rows was connected via BlockParty[®] tunnels. Mice were originally identified with indelible marker ink on the tail and tattooed one week into the study (SOMARK Labstamp[®]). Animals were housed on sterilized $\frac{1}{4}$ " corncob bedding. Food (Prolab[®] IsoPro[®] RMH 3000, LabDiet, St. Louis, MO) and drinking water were provided ad libitum. Nesting material (Enviro-dri[®], Shepherd Specialty Papers, Watertown, TN) was provided to all cages. Animals and food were weighed weekly, and wounding scores, hair loss, nesting behavior, and accumulation and location of urine and feces were scored weekly.



RESULTS

Mice were observed moving freely through the connected cages (Figure 2A). At cage change, numbers ranging from 0-20 mice were found in each connected cage. Male mice did show some wounding in both connected and unconnected cages. The only cage in which mice had to be euthanized for fighting was an unconnected cage. In connected cages, wounds were generally mild, and any moderate wounds were healing at the next observation. Males were observed using connecting tunnels as perches to evaluate other males entering the cage (Figure 2B). Females appeared more likely to create group-nesting areas. These areas (~ 3 cages per row) had a thick layer of nesting material collected from other cages, and much of the corncob bedding was often removed (Figures 3A, 3B). Most males occupied and heavily soiled only a few connected cages in a row while other cages on the same row appeared untouched (Figures 3C, 3D). Food consumption in connected male cages appeared to follow a pattern where several cages with empty food hoppers were adjacent to each other, and cages with full hoppers were adjacent to each other.

DISCUSSION AND CONCLUSIONS

- Males will fight in both connected cages as well as regular cages. Although wounding was observed in the connected cages, the only animals that required euthanasia were in the unconnected cages. This may indicate that the males in connected cages were able to escape escalated aggressive encounters and avoid serious injury.
- No fighting was seen in female cages of either type. Females in connected cages produced very neatly organized nesting cages.
- "Toilet" cages may enable fewer cage changes (TBD).
- For CD-1[®] mice, the food hopper did not hold enough food to last a week, but this was not a concern in the connected cages.
- Barring inadvertent duplication (operator error on previously identified mice), the tattoo system worked very well for identification. By contrast, the indelible ink marker was illegible within 2 days of application. There were no infections associated with the tattooing, and even mild tail damage, likely from fighting, seen in some males did not render the tattoos illegible.