



# Research Week 2020

## Quantifying Nest Building Behavior in Mice (*Mus musculus*) and Prairie Voles (*Microtus ochrogaster*) to Measure Functional Outcomes

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### Keywords

Nest building, behavior, rodents, disease models, health

### Abstract

Nest building is observed in a wide variety of rodents to provide shelter and as a means to thermoregulate in changing environmental conditions. Motivation and ability to build a functioning nest are therefore critical to health and survival and monitoring nesting can illuminate problems in normal functioning. Tests to quantify nesting are quick, easy, and capture behaviors inherent to an animal's day-to-day routine. Although many rodents build nests, the mouse strain-C57BL/6 is most commonly used in nest building research for its distinct nest building behaviors. However, there is limited research describing the nest building behavior of other rodent species. The socially monogamous prairie vole (*Microtus ochrogaster*) displays social behaviors that are more similar to humans than mice, such as opposite sex pair bonding and co-parenting, and thus can be used to study models of disease focused on social functioning such as autism, schizophrenia, or PTSD. Despite the prairie vole's natural motivation to build nests, there is currently no standardized test to measure nesting in this rodent species. We examined differences in nesting behaviors of mice and prairie voles in our lab, including time to begin nesting, shape of the nest created, and the amount of nesting material integrated into a nest. Given species differences in nest building, we propose a new system of scoring nests specific to prairie voles. This new method combines approaches designed for mice but also includes variables such as texture, volume, and spread that showcase the individual variation amongst prairie voles, and may improve assessing the functional outcomes in this species. Better understanding the specific nest building behaviors of prairie voles may provide an early or more subtle indication of impaired functional outcomes, for example in routine post-operative procedures, and that interventions may be needed to prevent the progression of disease.