

## Undergraduate Research Projects

### *Effects of Husbandry Techniques on Long-Term Memory in the Laboratory Rat*



Social memory is the ability of an animal to retain and refer to information regarding an individual conspecific; it is essential to social structure in many species (Burman and Mendl, 2000). Individual recognition is a normal characteristic of social interactions in rats (Thor and Holloway, 1982). The social memory of rats may be disrupted by changes in the environment. Routine housing and husbandry procedures maintained by laboratories may cause such disruptions. For example, the mixing of familiar conspecifics in a new environment may lead to a lack of social recognition and subsequent aggression (Burman and Mendl, 1999). Handling of animals for laboratory procedures may increase stress and cause an increase in aggression towards cage mates. Studies have shown that early social isolation in rats causes abnormal patterns of social, sexual, and aggressive behaviors (Varlinskaya et al., 1998).

Disruption of cognitive function by changes in housing and husbandry systems could have serious implications for the welfare of the animals (Burman and Mendl, 2000). These disruptions may also affect the accuracy of experiments. Most experiments require that animals be housed singly, which may produce different effects on social behavior in rats depending on age of isolation, time of testing, and housing conditions (Van Den Berg et al., 1999). Housing singly might cause a decrease in activity and an increase in food intake, resulting in obesity. If isolated animals are returned to group housing they may develop unusual behaviors not observed in grouped animals (Hurst et al, 1997).

In this study, the effects of routine husbandry procedures on long-term social memory in laboratory rats, *Rattus norvegicus*, will be investigated. Routine husbandry procedures, or treatments, are classified in this experiment as handling the rats or placing them in a novel environment. I predict that routine husbandry procedures will affect the long-term social memory of the rats by decreasing social recognition. If this is true, the investigation of the juvenile rats by the adult rats should increase when the adult rats are treated in the inter-exposure interval (IEI). If this hypothesis is correct there would be direct implications on the welfare of laboratory animals and other social animals.