# C - General Adult Motor Behavior

## Objectives:

- To describe posture and righting behaviors
- To describe ground locomotion
- To describe swimming behavior
- To describe grooming behaviors
- To describe exploratory behaviors

## Introduction:

It is the role of the brain to produce behavior. While "behavior" can be broadly defined as "anything that the organism does", the most obvious behaviors include a motor component. When trying to understand the neural basis of behavior, examining simple motor behaviors is a good place to start. The neural circuits underlying these behaviors are well described and highly conserved in vertebrates. Today you will examine a number of innate behaviors. Pay attention to the sequence of simple movements that make up the overall behaviors. The variety of behaviors examined in this lab is a good survey of the types of behaviors that rats would engage in on a daily basis. Observing the adult behavior today will help you evaluate the development of such behaviors in the later pup-development lab.

## Procedure:

*Preparation:* Read chapters 11, 13, 14 and 16 in the Behavior of the Laboratory Rat book before this week's lab.

## Tests:

**Posture and righting:**

- Trigeminal righting – righting of the head, triggered by the trigeminal nerve
  - Place the rat on the table either on its back or its side making sure the head is touching the ground. Hold the animal there for a moment, then observe trigeminal righting when the head is released.
- Body Tactile righting – body-on-head righting
  - Righting/rotation that begins at the shoulders
  - Place the rat on its side, without touching it's head and without its head touching the table (head should be hanging off edge of the table), observe body-on-head righting.
- Body Tactile righting – body-on-body righting –
  - Righting/rotation that begins with the pelvis
  - Place the rat on its side, hold one hand over the rat's shoulders, the other hand over its pelvis, release the pelvis hand first, observe body-on-body righting.
- Tactile/Proprioceptive Dynamic righting
  - Rotation to face the direction of falling (falling while in contact with the ground)
  - Hold the rat in the bipedal position, pull the rat backwards onto the ground, observe tactile/proprioceptive righting

**Grooming**

- Place your rat in an empty cage and watch it for 5 minutes. Recorded the frequency of grooming behaviours. Note the sequence of body parts groomed.

**Locomotion**

- Place your rat at one end of the walkway, and let it run to the other end. Video-taping this behaviour may simplify the analysis
- Note the sequence of limb movements. Identify the stance and swing phase of movement for each limb.

**Swimming**

- If you have a water maze available, prepare it with warm water and a visible platform. Place the rat in the water facing the platform
- Observe the movements of its limbs and tail during the swim to the platform.
- Removed the rat from the pool and dry it off with a towel.

**Exploratory Behaviour**

- Place the rat in an open field for 5 minutes
- Note the variety of behaviours exhibited, their sequence and durations. These include thigmotaxis (running along the wall), head movements, rearing, and different patterns of limb movements. Measure the amount of time spent in different regions of the open field. Attempt to determine if the animal has established a home-base.

## Homework Assignment:

Choose one of the motor behaviours that were observed in lab. Using information from lab and the textbook, describe the behavior and its components as it is expected to be seen in a normal healthy rat, as well as the observations you made in lab of that behavior. Include a brief description of the neural systems that regulate this behavior, and how this behavior may be altered specific brain damage or a specific drug treatment. Page limit: 2 pages.

## References:

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