

**Elevated Plus Maze**  
**IACUC Standard Procedure**  
**Effective Date: June 2024**

**Description of procedure:**

The Elevated Plus Maze (EPM) is used to assess anxiety, emotionality, and reactivity. The Plus Maze consists of two enclosed arms and two open arms equipped with a monitoring or recording device. The open arms are anxiogenic by design, however the animal (laboratory mouse or rat) can move freely into the closed arms. This model is based on the animals' aversion to open and elevated spaces.

**Procedure Steps:**

1. Habituation of the animal in the testing room for an hour prior to the test is encouraged.
2. Maintain consistent light intensity and other environmental parameters for every test subject.
3. The animal is placed in the center of the maze and allowed to explore for approximately 10 min. White noise may be played to eliminate distracting sounds. To start the test, an animal is placed into the intersection of the open and closed arms of each respective maze (a beam break in this area or movement out of the intersection triggers the start of the test). The animal may spend time either in a closed safe area (closed arms) or in an open area (open arms).
4. A computer tracking system is used to record the animal's movements around the arena. Alternatively, the animal's movements can be videorecorded using a camera placed overhead. The researcher can then use post-video processing software to assess movement from the recordings.
5. Variables of interest typically include latency to enter closed and open arms of the maze, time spent in the open and closed arms, and activity in the open and closed arms of the maze.
6. The maze should be cleaned between each animal.



**References:**

Kraeuter, AK., Guest, P.C., Sarnyai, Z. (2019). The Elevated Plus Maze Test for Measuring Anxiety-Like Behavior in Rodents. In: Guest, P. (eds) Pre-Clinical Models. Methods in Molecular

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Schrader AJ, Taylor RM, Lowery-Gionta EG, Moore NLT (2018) Repeated elevated plus maze trials as a measure for tracking within-subjects behavioral performance in rats (*Rattus norvegicus*). PLoS ONE 13(11): e0207804. <https://doi.org/10.1371/journal.pone.0207804>