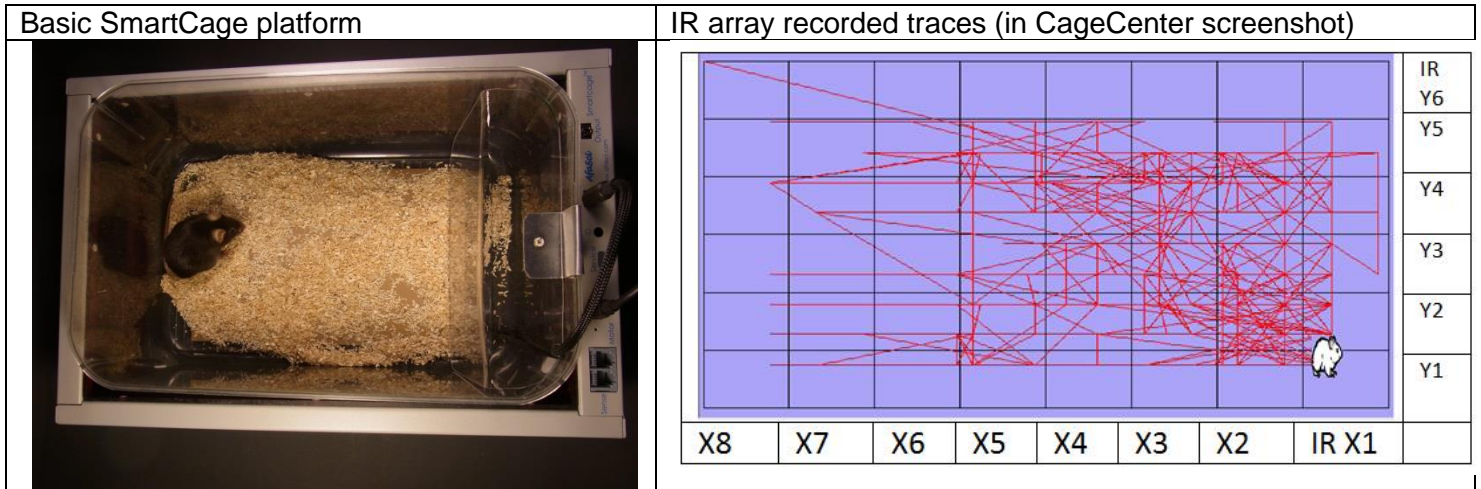


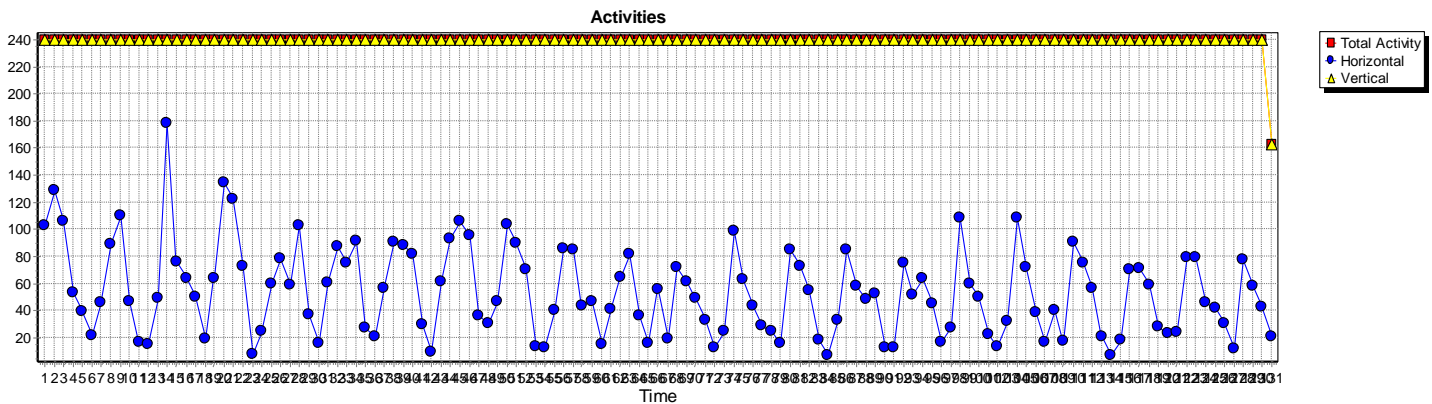
Homecage activity

Basic **SmartCage** platform (no any special module required) monitors and records the rodent elementary activity at homecage or in a new environment (e.g., a special chamber)

- Active/inactive state: Active and quiet wakefulness. Absolute and percent time spent in each arousal state are measured
- Locomotion and movement pattern: Total traveling distance and speed, rearing numbers, and x, y, z counts (IR photobeam break numbers, z is the upper row of IR sensors)



SmartCage recordings of a mouse homecage activity (21 days, CageScore screenshot)



Protocol

Homecage activity and locomotion. In humans a variety of neurological disease and mental disorders primarily causes motor function impairment, behavioral changes, and also induced sleep disturbances. We use SmartCage to detect animal active and inactive/sleep cycle, locomotion (traveling distance and speed) and rearing to measure spontaneous and exploring activity. The test subjects will be placed in single cages with bedding, food and water (in late stage of MS hydrogel will be placed in the floor for easy access). The cage will be then placed in the SmartCage™ platform. The test subjects will be continuously recorded under the 12:12 h light:dark cycle. Parameters include active/inactive (or sleep) cycle, locomotion, moving path (cycling or rotation) and rearing activity by IR array, and tremors (if any) with piezoelectric film placed on the cage floor under the bedding (Khroyan et al., 2012).