

## Sleep/Wake Monitoring

The vibration-sensor module integrated with SmartCage provides non-invasive and indirect monitoring of rodent sleep/wake (or inactive/active) in homecage.

The vibration-sensor is placed on the cage floor of an animal home cage under normal bedding materials. Food and water are supplied *ad libitum*. The vibration-sensor is connected to the Input port of the SmartCage. Total activity and sleep/wake pattern under a 12/12 h light/dark cycle can be monitored: Day 0: Adaptation to single housing homecage (placed in the SmartCage (1 – 2 days, recording is optional); Day 1: Baseline recording for 24 h to monitor sleep/wake activity, including time in sleep/wake, mean duration of each sleep and the number of transition from wake to sleep; Day 2: Administration of test compound or vehicle and Day 3: Recovery from drug actions (if any) after which the animal can be returned to group housing cage.

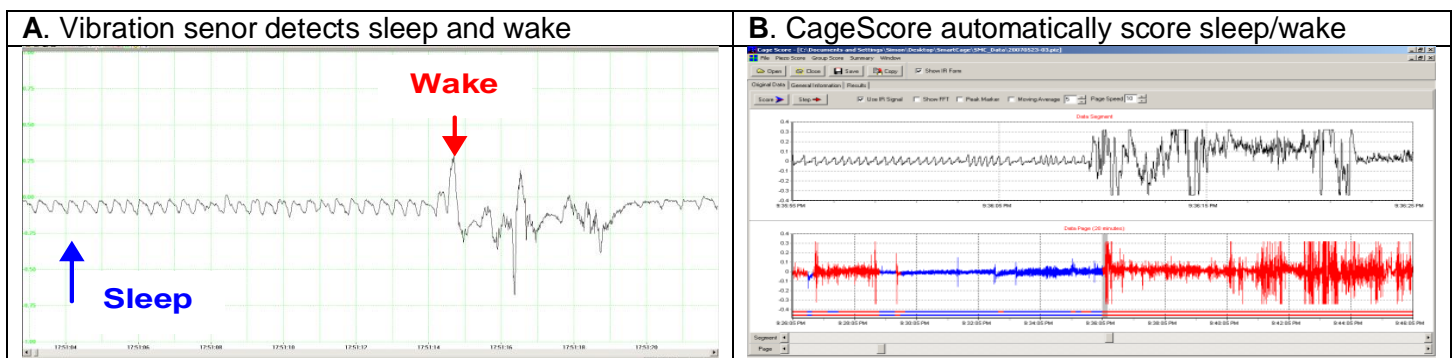


Figure 1. **A.** CageCenter screenshot shows sleep and wake. Regular respirations (2.5–3 Hz) during slow wave sleep act as a sleep biomarker. Wake is manifested as irregular and larger waveforms. The indirect measure sleep can be automatically scored using CageScore. **B.** Screenshot of the automatic scoring of vibration signals. Upper traces displays 30 s record. Lower panel the segments classified as ‘sleep’ and ‘wake’ are shown in blue and red, respectively.

### Applications

1. **Noninvasive sleep monitoring:** Total sleep/inactive state can be continuously recorded up to several weeks (data is automatically analyzed).
2. Tremors and generalized seizure (if any) can be recorded (currently manually scored).

### Parameters Measured

- Total sleep time
- Active/inactive cycle
- Tremor and seizure event numbers and each event duration

**For more information and a quotation, contact:**

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