

# 神経行動生物学 (大石 陽)

## Neurobehavioral Biology (OISHI Yo)



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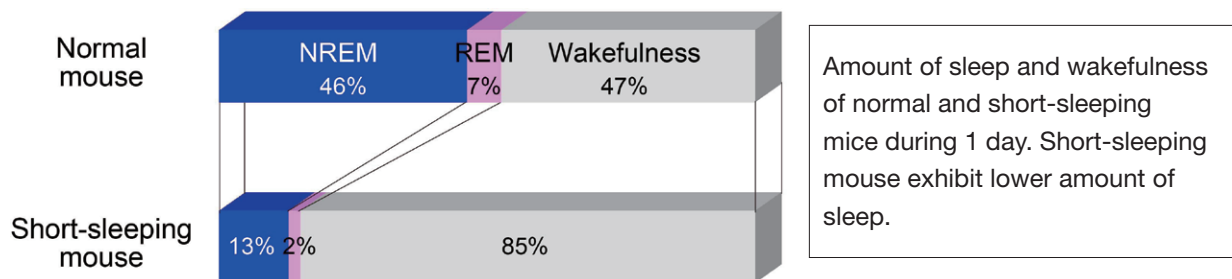
### 短眠マウスで探る睡眠のメカニズムと役割

私たちは一生の約3分の1を眠って過ごします。しかしなぜ睡眠が必要なのか、またなぜ眠らずにいられないのかは明らかではありません。これらの疑問に答えるだけでなく、良質な社会生活を目指すためにも、睡眠のメカニズムや役割の研究は重要です。我々は最近、睡眠量が極端に少ないマウスを見出しました。驚いたことに、このマウスでは眠気マーカーの増大が見られません。つまり、過度な眠気を呈さずに少ない睡眠量で活動可能な、いわゆるショートスリーパーのようなマウスと言えます。我々は、このような“短眠”モデルを用いて、短眠が作られる仕組みを研究し、睡眠制御メカニズム解明に挑みます。一方で、短眠が生体に与える影響を明らかにし、睡眠の役割の理解を目指します。当研究室はラザルス准教授との共同主宰となります。研究内容に興味のある学生の参加を歓迎します。

#### To elucidate the mechanism and role of sleep with short-sleeping mice

People spend approximately one-third of their life sleeping. Why sleep is compulsory for human life and cannot be avoided, however, remains unclear. It is important to understand why sleep is necessary and how sleep is controlled – not only to elucidate physiological behavior but also to enhance our quality of life.

Recently, we created mice that require an extremely low amount of sleep. Surprisingly, these mice do not show an increase in a sleepiness marker. Therefore, the behavior is very similar to that of so-called “short sleepers” – people that can function for long periods of time on little sleep without exhibiting excessive sleepiness. Using such “short sleep” models, including this novel mouse model, we study the neural mechanisms of short sleep to clarify the control mechanisms of sleep. We also study the effect of short sleep on other physiologic functions in the body to understand the role of sleep.



#### Recent publications

- Honda T, et al. (2020) Ablation of ventral midbrain/pons GABA neurons induces mania-like behaviors with altered Sleep homeostasis and dopamine D<sub>2</sub>R-mediated sleep reduction. *iScience* 23(6):101240.
- Takata, et al. (2018) Sleep and wakefulness are controlled by ventral medial midbrain/pons GABAergic neurons in mice. *J Neurosci* 38(47):10080-92.
- Oishi Y, et al. (2017) Slow-wave sleep is controlled by a subset of nucleus accumbens core neurons in mice. *Nat Commun* 8(1):734