

BDR SEMINAR via Zoom

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Monday, September 7, 2020

15:30-16:30

Meeting URL will be announced on the event day by e-mail.

※This seminar is open only to BDR members.

Dragons, Sleep, and the Claustrum

Summary

Most animal species sleep, from invertebrates to primates. We describe the electrophysiological hallmarks of sleep in reptiles. Recordings from the brains of Australian dragon *Pogona vitticeps* revealed the typical features of slow-wave sleep and rapid eye movement (REM) sleep, suggesting that dragons can be a useful model for studying these sleep stages. In this presentation, I will focus on the claustrum. The mammalian claustrum, owing to its widespread connectivity with other forebrain structures, has been hypothesized to mediate functions ranging from decision making to consciousness. We report that a homolog of the claustrum, identified by single-cell transcriptomics and viral tracing of connectivity, exists also in reptiles. There, it underlies the generation of sharp-waves during slow-wave sleep. The sharp-waves, together with superimposed high-frequency ripples, propagate to the entire forebrain. It is also characterized by converging input from mid- and hind-brain areas involved in wake/sleep control. Periodic modulation of serotonin concentration in claustrum, for example, imposes a matching modulation of sharp-wave production. The claustrum is therefore an ancient brain structure, with a potentially important role in the widespread control of brain states due to its divergent projections to the forebrain and its role in sharp-wave generation during slow-wave sleep.



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