

BDR SEMINAR (Kobe & Virtual)

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RIKEN Center for Biosystems Dynamics Research

Friday, June 10, 2022

15:30-16:30

1F Auditorium, DB Building C, Kobe & Broadcast online via Zoom

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

※This seminar is open only to BDR members.

Can we hibernate? – Research and development toward synthetic hibernation for humans

Summary

Some mammals actively suppress metabolism to save energy when food is scarce. This is called torpor, and a months-long torpor is called hibernation. Some hibernators reduce energy expenditure by up to 99%. This extreme hypometabolism would usually be life-threatening, but hibernators do not suffer damage. Many acute diseases in humans arise from the mismatch of energy demand and supply in the peripheral tissues. Hibernation could save lives by reducing the energy demand of peripheral tissues. Our long-term goal is to develop a safe method to induce hibernation in humans. For this, we must first understand natural hibernation in animals. We are approaching from two flanks—downstream and upstream of hibernation: 1) clarify how tissues withstand drastic decreases in metabolism, and 2) identify how the body initiates and controls hibernation in these tissues. So far, we have expanded on two mouse models of torpor: the fasting-induced torpor (FIT) and the Q neurons-induced hypometabolism (QIH) in mice. I will introduce what we have learned from these animal models and some *in vitro* derivative projects. Lastly, I would like to mention how synthetic hibernation would impact human society and how we could prepare.



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