

BDR SEMINAR (Kobe & online hybrid)

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14:00-15:00

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.

An immune-adipocyte axis promotes hair growth through adipocyte-hair follicle stem cell metabolic communication after skin injury

Summary

For most mammals, hair serves as the first barrier that protects and insulates the body from external insults. When skin is injured or the hair coat is impaired, prompt regeneration of new hair enables timely recovery of this important protective barrier. Hair follicle regeneration is fueled by hair follicle stem cells (HFSCs) whose activity is subject to non-cell-autonomous regulation from their niche. In adaption to the ever-changing external environment, HFSC niche must be endowed with the ability to detect these changes and responds adaptively to modulate HFSC activity for organismal needs. It has long been observed in humans that skin injuries can induce excessive hair growth. Clinically, controlled skin injuries, including chemical injury and local immune stimulation, have long been applied to inducing hair regeneration for the treatment of alopecia. In this talk, I will use the HFSC niche as an example to discuss how an internal stem cell niche detects the external environmental cues and insults and relays the signals to stem cells. I will show how inflammation triggered by skin injury modulates HFSC activity to promote hair growth. Local adipocytes are not a bystander in the inflammatory response but a key signal relay to interpret the damage signals to hair follicle stem cells via metabolic communication. Targeting these pathways can be new strategies for treatment of alopecia.