

BDR SEMINAR in Kobe

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Friday, March 22, 2019

16:00-17:30, 7F Seminar Room, DB Building A

Vascular niche and reprogramming for skeletal muscle stem cell

Summary

Muscle satellite cells are a stem cell population responsible for skeletal muscle growth, repair and regeneration. Maintenance of the balance between satellite cell differentiation and self-renewal is required for muscle homeostasis. By utilizing fluorescent reporter mice and muscle tissue clearing to investigate the specific niche for muscle satellite cells in 3 dimensions, we recently reported that the juxtavascular niche of satellite cells for stem cell maintenance via VEGF and Notch pathways (Verma, et al. Cell Stem Cell, 2018). Increased vascular density could induce increased number of satellite cells, which leads to a beneficial effect on muscular dystrophy model mice as a novel therapeutic method of Duchenne muscular dystrophy (DMD). We also identified that ASCL4, a basic-Helix-Loop-Helix transcription factor, possesses an ability to induce myogenic program in pluripotent stem cells, indicating that ASCL4 acts as a myogenic transcription factor during muscle development, and that ASCL4-mediated myogenic conversion of pluripotent stem cells will be a new therapy for DMD.



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