Anti-Aging Therapy Mediated by Circulating Factors Induced by *In Vivo* Partial Reprogramming

Primary Researcher: Kensaku SHOJIMA
Assistant Professor, Department of General Internal Medicine,
School of Medicine, Hyogo Medical University

Aging is a process in which the organs and cells that make up the body gradually lose their function and become unable to regenerate over time. Restoring this lost regenerative ability could provide a means to intervene in aging. Previous studies have applied the induction method of induced pluripotent stem cells (iPS cells) using reprogramming factors Oct4, Sox2, Klf4, and c-Myc. By administering partial reprogramming stimuli in genetically modified mice (*in vivo* partial reprogramming), lifespan extension was achieved in progeria model mice, and muscle regeneration was enhanced while avoiding tumorigenesis. However, *in vivo* partial reprogramming carries a risk of tumorigenesis. While limiting the expression duration of reprogramming factors can help mitigate this risk, clinical application remains challenging. To address this, our study focuses on identifying circulating factors induced by *in vivo* partial reprogramming to develop clinically applicable anti-aging therapies with minimal tumorigenesis risk. Additionally, by advancing gene delivery techniques using adeno-associated virus (AAV), we aim to pave the way for clinical applications.