

Skin Stem Cells and Organoid Technology

*Sekyu Choi**

Department of Life Sciences, Pohang University of Science and Technology
(POSTECH), Pohang, Gyeongbuk-do, South Korea

sekyuchoi@postech.ac.kr

Throughout adult life, mammalian hair follicles, which are linked to sebaceous glands, go through periodic phases of rest, regeneration, and degeneration. Regulating these hair cycles is a fundamental role of hair follicle stem cells. The activity of melanocyte stem cells, which develop into melanin-secreting melanocytes and contribute to the color of both skin and hair, is another significant aspect. By replacing mature sebocytes, sebaceous gland stem cells also play a key role in sustaining the epidermal barrier. These stem cells' dynamic activities in maintaining homeostasis and regenerating hair follicles are influenced by both internal and external cues, and they have been maintained in niches. The niches surrounding the hair follicles release a variety of factors that regulate the activity of these skin stem cells. Several environmental factors including chronic stress, the process of aging, and underlying metabolic conditions can affect the skin stem cell activity. Here I will discuss the regulatory mechanisms of skin stem cells and the chronic stress-associated signaling of hair follicle growth. Furthermore, I will present organoid technologies using skin stem cells. These viewpoints would provide new insights into the modeling of diseases and the treatment of skin and hair disorders.