

Interaction between epigenetic and metabolism in aging stem cells.

Journal: Curr Opin Cell Biol

Publication Year: 2017

Authors: Anne Brunet, Thomas A Rando

PubMed link: 28129586

Funding Grants: Molecular regulation of stem cell potency

Public Summary:

Aging is accompanied by a decline in tissue function, regeneration, and repair. A large part of this decline is caused by the deterioration of tissue stem cell function. Understanding the mechanisms that drive stem cell aging and how to counteract them is a critical step for enhancing tissue repair and maintenance during aging. Emerging evidence indicates that epigenetic modifiers and metabolism regulators interact to impact lifespan, suggesting that this mechanism may also affect stem cell function with age. This review focuses on the interaction between chromatin and metabolism in the regulation of tissue stem cells during aging. We also discuss how these mechanisms integrate environmental stimuli such as nutrient stress to regulate stem cell function. Finally, this review examines new perspectives for regeneration, rejuvenation, and treatment of age-related decline of stem cell function.

Scientific Abstract:

Aging is accompanied by a decline in tissue function, regeneration, and repair. A large part of this decline is caused by the deterioration of tissue stem cell function. Understanding the mechanisms that drive stem cell aging and how to counteract them is a critical step for enhancing tissue repair and maintenance during aging. Emerging evidence indicates that epigenetic modifiers and metabolism regulators interact to impact lifespan, suggesting that this mechanism may also affect stem cell function with age. This review focuses on the interaction between chromatin and metabolism in the regulation of tissue stem cells during aging. We also discuss how these mechanisms integrate environmental stimuli such as nutrient stress to regulate stem cell function. Finally, this review examines new perspectives for regeneration, rejuvenation, and treatment of age-related decline of stem cell function.

Source URL: <https://www.cirm.ca.gov/about-cirm/publications/interaction-between-epigenetic-and-metabolism-aging-stem-cells>