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INTEGRATED TRANSCRIPTOMIC ANALYSIS OF MOUSE TISSUE DURING SPACEFLIGHT
MISSION**Abstract**

Space travel introduces astronauts to space hazards that cause risk to the body altering their performance for the mission. Exposure to these hazards causes various physiological and biological responses affecting astronaut's health. Some are correlated with mechanical unloading-prolong exposure to weightlessness - resulting in muscle atrophy and bone density loss. However, there are other physiological changes occurred in other organs and/or tissue with unclear biological and/or molecular etiologies, marking as the knowledge gap in the field. To answer this question, we performed integrative transcriptomic analysis of space mouse tissues from the previously published JAXA Mouse Habitat Unit-1 (MHU-1). Space mouse mission helps understand the biological systems during space travel as these animals experience physiological responses that are comparable to those seen in humans. Though we originally hypothesis that exist common gravity response genes underlying spaceflight response, our result suggests that there were no such genes identified. Instead, we found some affected biological processes were related to evolutionally acquired functions linked to sea to land transition, such as processes contributing to locomotive, motor functions and mineral homeostasis. This result highlights a new insight on how life could evolve in space and necessitates study on health monitoring during space travel.