

Press Release



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University of Cyprus Discovery Reveals how Calcium Orchestrates Tissue Growth and Repair

How calcium signals guide the integration of new cells into tissues

Published in *Nature Communications*, the study reveals that transient calcium signals are essential for integrating new cells into living tissues, opening new paths for regenerative medicine and treatment of chronic diseases.

A groundbreaking study by researchers at the Laboratory of Cell and Developmental Biology in the Department of Biological Sciences, University of Cyprus, reveals how brief bursts of calcium inside cells act as critical signals that allow new cells to integrate into tissues. This fundamental mechanism, published in the prestigious journal *Nature Communications*, helps explain how our bodies grow, maintain, and repair tissues throughout development and adult life.

Led by Dr. Neophytos Christodoulou and Professor Paris Skourides, the research uncovers that transient "calcium spikes" inside cells are required for the successful emergence of new cells at the surface of epithelial tissues, layers that line organs such as the skin, lungs, and intestines. Without these calcium signals, new cells fail to join the tissue properly, potentially compromising its structure and function.

The team also identified the internal machinery that activates these calcium bursts, showing that it stabilizes the cellular scaffolding needed for this complex insertion process. Their findings shed light on a core biological mechanism with far-reaching implications.

This discovery offers fresh insight into how tissues regenerate and maintain their integrity, a process essential not only during development, but also in adult life. Similar cell integration events occur daily in organs that constantly renew themselves, such as the respiratory tract, skin, and gut. Understanding how these processes are controlled opens new avenues for regenerative medicine and for addressing chronic diseases where tissue renewal is impaired.

This study represents yet another example of the high-caliber research conducted at the University of Cyprus, further solidifying the University of Cyprus' international standing in cutting-edge biomedical research.

[Information]

The research was funded by the Research and Innovation Foundation.

Detailed results of the study are available at the following link: <https://rdcu.be/ewTqQ>

Publication title: *Calcium transients regulate the apical emergence of basally located progenitors during *Xenopus* skin development.*

