The Invisible Ecosystem: The Microenvironment

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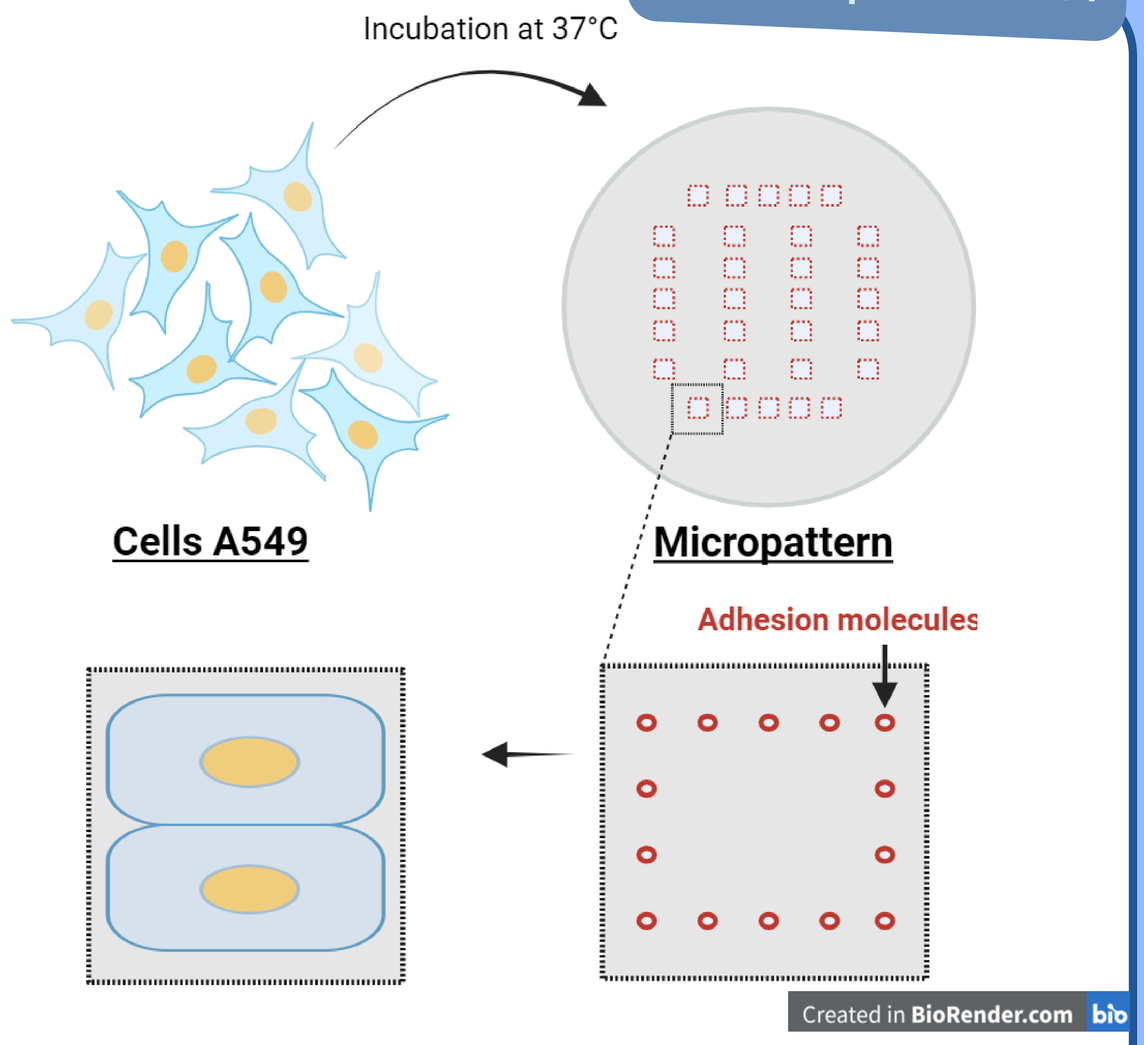
Indeed, did you know?

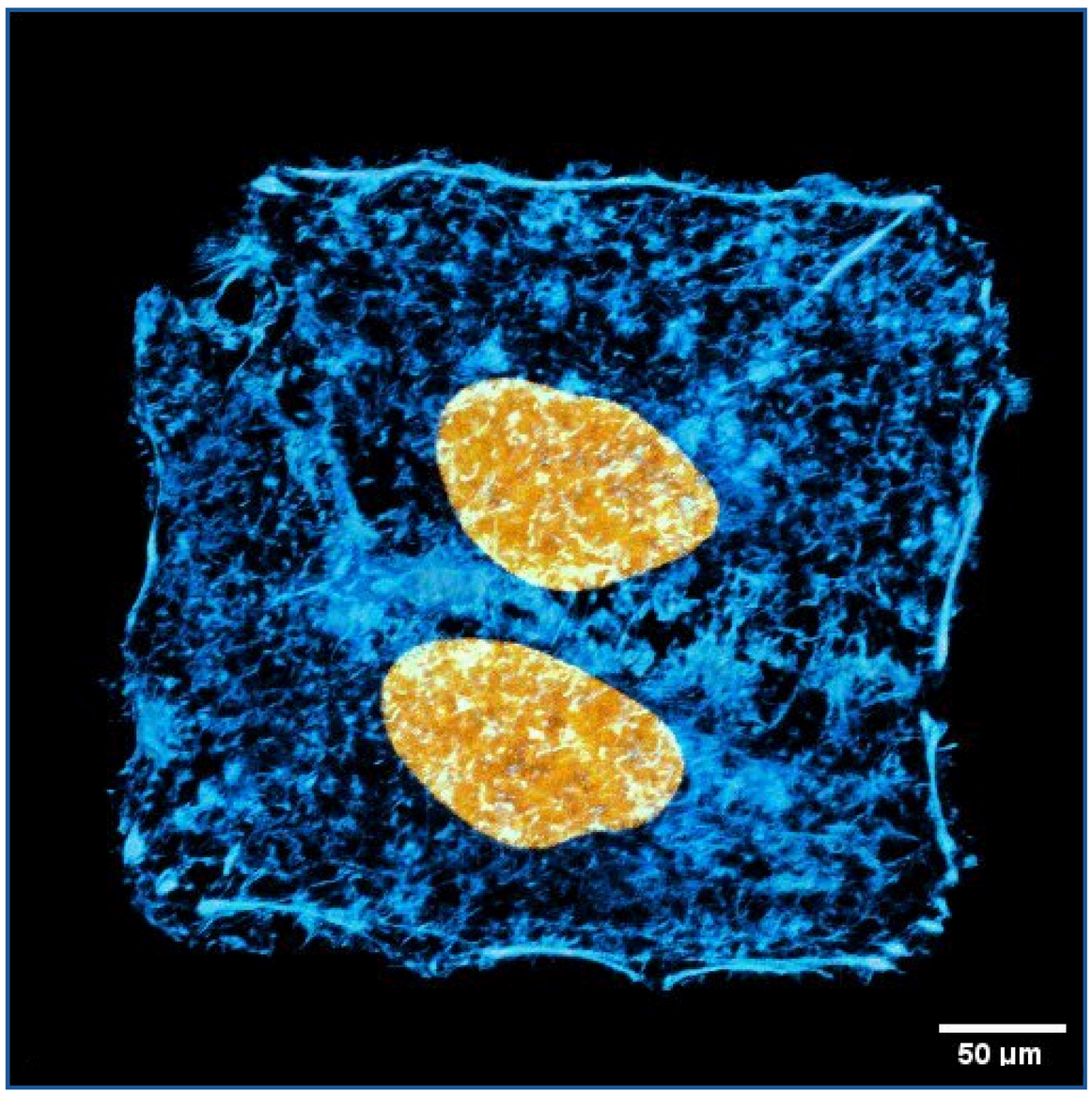
In everyday life, each of us has our **comfort zone** where we feel good and have everything we need at hand. For a cell, it's somewhat similar. The microenvironment includes **everything surrounding a cell and with which it interacts**. This encompasses the nutrients it needs to consume, signals from neighboring cells informing it of what's happening in the rest of the body, and even the "matrix" on which it sits, aiding in maintaining its shape and movement. It's akin to the **cell's apartment**, with its furnishings and objects of various sizes essential for its well-being, except for them, the objects are molecules and proteins. This microenvironment comprises **the local conditions enabling the cell to live harmoniously**, perform its function in the body, and respond appropriately in case of trouble.

Micropattern



Imagine a **miniature square**, meticulously designed in both dimensions and layout to influence the behavior of the cells that adhere to it. This micropattern operates as follows: the **adhesive molecules** to which the cells have affinity a**re positioned to form a geometric shape**, in this case, a square. The cells are incubated on these structures and **adopt the drawn geometric shapes**, guided by the adhesive molecules.

In reality, what does it look like?



A549 cells adhered to a square-shaped micropattern, image processing using Fiji.
Nuclei are visible in yellow, and actin in blue.

Inspiration: Cosmic Nebulae
Create using Copilot.

To see a 3D representation

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