Scientists of the Russian Federation have found the general principle of the structure of corals and skin

Russian and French scientists have found that coral colonies and epithelial fabrics – the upper layer of the skin and organs – are arranged according to the same mathematical laws. This means that living systems, from cells to entire populations, can follow the universal principle of organization.

Researchers created a simple model that describes the location of cells in epithelia and polyps in corals with high accuracy. It helps to understand how coral reefs respond to climate changes, and also reveals the mechanisms of growth and healing of tissues in biomedicine.

Epithelial cells and polyps of corals have the shape of polygons and fit tightly to each other. Each element has a certain number of neighbors: most have six, part – five, the rest – four, seven or eight. This distribution is explained by the fact that the elements are repelled from each other at a small distance and cease to interact on a large one, which creates the most energy -efficient structure.

Despite huge differences – cells are divided every 20 hours, polyps – 1-2 times a year. Polyps millions of times more cells – their location is subject to the same principle.

This knowledge will help predict how reefs will respond to climatic changes, as well as understand the restoration of tissues for medicine, said Sergey Roshal, project manager.