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Tiangong researchers to experiment on flatworms

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After zebrafish and fruit flies, China's Tiangong space station is set to host a new life form — planarians, according to Chinese scientists.

Zhang Wei, director of the Technology and Engineering Center for Space Utilization under the Chinese Academy of Sciences, told China Youth Daily in a recent interview that an upcoming Chinese manned spaceflight will carry dozens of planarian fragments into orbit.

Planarians are flatworms renowned for their extraordinary regenerative ability. When their bodies are severed, they can regrow complete heads or tails, making them ideal models for studying tissue regeneration mechanisms, Zhang said.

The experiment will include the use of the small universal biological

culture module in the space station's life and ecology experimental cabinet. Different planarian segments will be studied as they initiate regeneration in orbit, with samples collected at critical intervals for fixation and imaging analysis.

"Using planarians as model organisms, we aim to investigate how space environments affect their regenerative patterns and physiological behaviors," Zhang was quoted as saying by China Youth Daily.

"The study will explore the molecular mechanisms behind space-induced changes in regeneration processes and examine gravity's impact on cell proliferation, migration and differentiation, ultimately enhancing our understanding of fundamental regeneration principles."

Experts have explained that, with a 520-million-year evolutionary history, planarians are widely used in

biological research due to their astonishing tissue repair abilities. Even when bisected, both segments can regenerate new muscles, skin, intestines and even complete brains, a process that can theoretically repeat indefinitely. Studying planarians holds significant implications for combating cellular aging and age-related degenerative diseases in humans.

Meanwhile, Wang Yifeng, a senior mission planner at the center, said that upgraded experiments involving zebrafish, which were brought to Tiangong during previous manned missions, will continue.

"Zebrafish share 87 percent genetic similarity with humans. This research not only addresses microgravity-related health issues but may also unlock new osteoporosis treatment methods on Earth," he told China Youth Daily in the same report.

In April last year, four zebrafish measuring about 3 centimeters were brought aboard the Tiangong space station by the Shenzhou XVIII crew. They lived 43 days in orbit, setting a record for being the longest surviving fish in space.

Chinese astronauts have also performed fruit fly experiments to help researchers better understand the creature's growth, development, locomotor characteristics and biological rhythms under space microgravity and hypomagnetic conditions.

According to Zhang, Chinese scientists plan to conduct experiments on mice aboard Tiangong in the near future, focusing on neural, skeletal, muscular and immune systems studies. They will be parts of long-term orbital survival experiments with mammals that will help scientists better prepare China's future crewed lunar and Mars missions.

Space-tracking satellite



A Long March 3B rocket blasts off from the Xichang Satellite Launch Center in Southwest China's Sichuan province late Wednesday night, deploying the Tianlian II-04 satellite into orbit. The launch strengthened the nation's space-based tracking and communication capabilities for manned and unmanned missions. ZHANG LEI / FOR CHINA DAILY