CELL CULTURE SYSTEM WITH ALTERED CELLULAR MICROGRAVITY AND SHEAR STRESS

Tech ID: 32802 / UC Case 2022-118-0

PATENT STATUS

Country	Type	Number	Dated	Case
Rep Of Korea	Published Application	2026-3115	01/06/2026	2022-118
Canada	Published Application	WO 2024/226725	10/31/2024	2022-118
China	Published Application	WO 2024/226725	10/31/2024	2022-118
European Patent Office	Published Application	WO 2024/226725	10/31/2024	2022-118
Japan	Published Application	WO 2024/226725	10/31/2024	2022-118

Additional Patent Pending

BRIEF DESCRIPTION

The invention is a 3D-printed, low-cost, open-source multi-axis rotary cell culture system (RCCS). The RCCS may be used to study Regulatory T cell (Treg) activation within a simulated microgravity (μG) environment.

SUGGESTED USES

Long term space exploration and commercialized space travel are becoming increasingly popular ideas as advancements in space technology make the journey safer for all, regardless of their occupation and training. However, recent observations show that over half of returning astronauts experience infections, colds, or the reactivation of dormant viruses within a week of returning to Earth

ADVANTAGES

Space exploration and commercialized space travel are both increasing in frequency and mission duration. However, cellular behavior is altered during space travel and there are limited tools to study cellular changes in space microenvironments on earth, and then develop technologies to protect astronauts from harm during space travel. For instance, one technology currently available to study the effect of microgravity on cell behavior is a single-axis rotational cell culture system (RCCS). This system does not allow cells to move in multiple axis, is limited in the cell culture flasks that can be studied, and does not allow for simultaneous control or study of other important features such as fluid flow rates, shear stress etc. The present embodiments advantageously provide several novel advancements and new features when compared to the single-axis RCCS system currently commercially available, and may be useful for other applications.

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Nanostructures For Gene Delivery
- Cell Expansion Platform

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INVENTORS

» Delcassian, Derfogail

OTHER INFORMATION

CATEGORIZED AS

» **Medical**

» Disease: Infectious Diseases

RELATED CASES

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