Thesis or Research Internship





Experiments on the International Space Station: Differentiation Protocols for Bone Progenitor Cells and Their Analysis

Microgravity has a profound effect on human physiology, especially the musculoskeletal and hematopoietic systems, resulting in conditions such as muscle atrophy, osteopenia, and osteoporosis. To explore the underlying phenomena and prepare for potential countermeasures, this thesis investigates the influence of mechanical forces on the differentiation of bone progenitor cells.

This involves the development and validation of differentiation protocols for human mesenchymal stem cells (MSCs) and hematopoietic stem cells (HSCs), along with the quantitative assessment of osteogenic marker gene expression.

The findings are crucial for upcoming experiments conducted in real microgravity aboard the International Space Station. Your work will be predominately experimental and laboratory-based, utilizing techniques such as mammalian cell culture and biological assays.

Qualifications: Proficiency in sterile cell culture techniques, cell biology and genetics **Beneficial:** Experience with bioanalytical methods, including qPCR and staining assays, space enthusiast



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Differentiation of MSCs and HSCs



Analysis of osteogenic differentiation



Experiments in Space

BioMedizinische Drucktechnologie (IDD)

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