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PROJECT MUSA: A SYSTEMS ENGINEERING APPROACH TO BIOLOGICAL
EXPERIMENTATION IN MICROGRAVITY

Abstract

Project MUSA is a biological experiment designed to study the fungus that causes Panama Disease and its antagonist in microgravity conditions. This paper documents the project lifecycle of Project MUSA, focusing on the systems engineering and project management aspects of the first phase of the project. The first phase of the project was conducted as an experimental payload on a suborbital flight carried out by the Swedish Space Corporation. The paper discusses the planning and execution of the suborbital flight, including the experimental setup, design, prototypes, and implementation. The results of the suborbital flight and the lessons learned during the first phase of the project are also presented. The paper highlights the importance of project management and systems engineering in conducting biological experiments in microgravity conditions. Suggestions for future phases of the project are also made, including improvements to the experimental design and sample monitoring. The lessons learned and conclusions from the first phase of Project MUSA can help to inform similar missions seeking to conduct research in microgravity conditions in the future. By documenting the project lifecycle of Project MUSA, this paper will serve as a reference for the design and execution of future biological experiments in space.