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IRMA PROJECT: DEVELOPING SYSTEMS FOR DISEASE-CAUSING BACTERIA DETERMINATION ON SPACE STATIONS

Abstract

In 2019, the United Nations Office for Outer Space Affairs (UNOOSA) and the China Manned Space Agency (CMSA) accepted a project called IRMA (Intrument for Recording Microbial Activity, by its acronym) as part of the UNOOSA-CSMA cooperation program on the utilization of Chinese Space Station. The IRMA project is an international initiative of Peruvian and Colombian institutions that seeks to study the development of disease-causing bacteria in space by evaluating their antibiotic resistance and growth in microgravity. This project will generate a system capable of determining the type of bacteria and the minimum inhibitory concentration to eradicate them, which is very useful in a space station where the crew is at risk of contracting a disease and does not have the equipment and amenities of a hospital laboratory. The systems involving IRMA are two: Bacterial Culture System (BCS) and Minimal Inhibitory Concentration Determination System (MICDS) which are equipped with culture media, monitoring chambers and algorithms. All this allows the correct development of bacteria and their analysis in real time. The objective of this presentation is to present the BCS and MICDS systems developed in the IRMA project for the determination of pathogenic bacteria in the Chinese space station. These kind of technologies bring new insights into the field of space medicine and its implications for the limits of long-term manned missions.