

## **16S rRNA beacons for bacterial monitoring during human space missions.**

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Microorganisms are unavoidable in space environments and their presence has, at times, been a source of problems. Concerns about disease during human space missions are particularly important considering the significant changes the immune system incurs during spaceflight and the history of microbial contamination aboard the Mir space station. Additionally, these contaminants may have adverse effects on instrumentation and life-support systems. A sensitive, highly specific system to detect, characterize, and monitor these microbial populations is essential. Herein we describe a monitoring approach that uses 16S rRNA targeted molecular beacons to successfully detect several specific bacterial groupings. This methodology will greatly simplify in-flight monitoring by minimizing sample handling and processing. We also address and provide solutions to target accessibility problems encountered in hybridizations that target 16S rRNA.

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