The MASSE Project: Applications of biotechnology for Planetary Exploration

Automated life-detection experiments for solar system exploration have been previously proposed and used onboard the Viking Mars Landers, although with ambiguous results. The recent advances in biotechnology such as biosensors, protein microarrays, and microfluidics alongside increased knowledge in biomarker science have led to vastly improved sophistication and sensitivity for a new approach in life detection. The MASSE project has taken the challenge of integrating all of this knowledge into a new generation of interplanetary flight instrumentation for the main purpose of combining several mutually confirming tests for life, organic/microbial contamination, prebiotic and abiotic chemicals into a small, low powered instrument. Though the primary goal is interplanetary exploration, several terrestrial applications have become apparent specifically in point-of-care medical technology, bio-warfare, environmental sensing and microbial monitoring of manned space-flight vehicles.

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