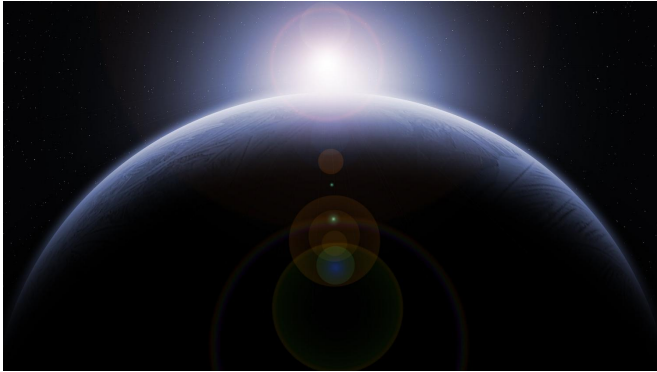


Report: NASA should develop US strategy for international space station beyond 2024

15 December 2017



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Although NASA has made progress toward the overall space exploration science priorities recommended in a 2011 decadal survey by the National Academies of Sciences, Engineering, and Medicine, the space agency should raise the priority of scientific research that addresses the risks and unknowns of human space exploration. This heightened priority is particularly important given the limited remaining lifetime of the International Space Station (ISS) - the most significant destination for microgravity research - and because the U.S. currently does not have a strategy for the station beyond 2024, says a new midterm assessment report by the National Academies.

The 2011 decadal survey, [Recapturing a Future for Space Exploration: Life and Physical Sciences Research for a New Era](#), highlighted the critical need for space life and physical sciences research both for enabling and expanding the exploration capabilities of NASA as well as for contributing unique science in many fields that can be enabled by [microgravity](#). The new report assesses the progress made by NASA so far, and also lays out exploration-related [science](#) areas of highest

importance that should be addressed in the remaining half of the decade.

"The 2011 survey outlined a solid microgravity research agenda for the current decade in the human exploration of space, and NASA has already shown significant results, including creating a division for space life and physical sciences and increasing its budget for these topics under tight financial constraints," said Daniel Dumbacher, professor of engineering practice at Purdue University and co-chair of the committee that conducted the study and wrote the report. "Given the high value of microgravity research for [space exploration](#) and the approaching need for an ISS strategy beyond 2024, NASA faces important prioritization decisions."

Since the survey, NASA's strategy for space exploration has evolved with the focus on Mars as a "horizon" destination. The agency has also begun planning for the next human exploration element - Deep Space Gateway - that will be built in orbit around the moon. In light of these goals, the committee said longer term, extended duration space life and physical sciences research in microgravity is essential to best support deep space exploration. Also, while the international partners have all committed to funding their ISS partnerships through 2024, the strategy for ISS in the post-2024 timeframe is undefined. The report recommends that NASA should develop this strategy for the ISS or other orbital platforms for research as soon as possible in order to provide a basis for planning and prioritization.

ISS influences NASA's overall exploration strategy, [space](#) life and physical sciences research priorities, and resource allocation in terms of crew time, cargo delivery, and funding. Also, in the last several years, ISS capabilities have advanced and it is currently capable of providing the broader research community with a wide range of instrumentation and facilities in the microgravity of Low Earth Orbit

(LEO).

"The future of ISS is an important consideration for [microgravity research](#)," said Robert Ferl, distinguished professor and director of the Interdisciplinary Center for Biotechnology Research at University of Florida and co-chair of the committee. "The necessary research to best and most safely extend human presence beyond LEO will continue after the 2024 timeline, so a future plan for long-term microgravity capabilities is critical to the overall research for [deep space exploration](#)."

The report urges NASA to fully utilize the station's matured research facilities as well as other available research platforms to maximize the implementation of 2011 decadal priorities given constrained resources. These platforms include aircraft, drop towers, balloons, suborbital vehicles, and ground-based laboratories, in addition to potential new orbital platforms.

Provided by National Academies of Sciences,
Engineering, and Medicine

APA citation: Report: NASA should develop US strategy for international space station beyond 2024 (2017, December 15) retrieved 18 October 2019 from <https://phys.org/news/2017-12-nasa-strategy-international-space-station.html>

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