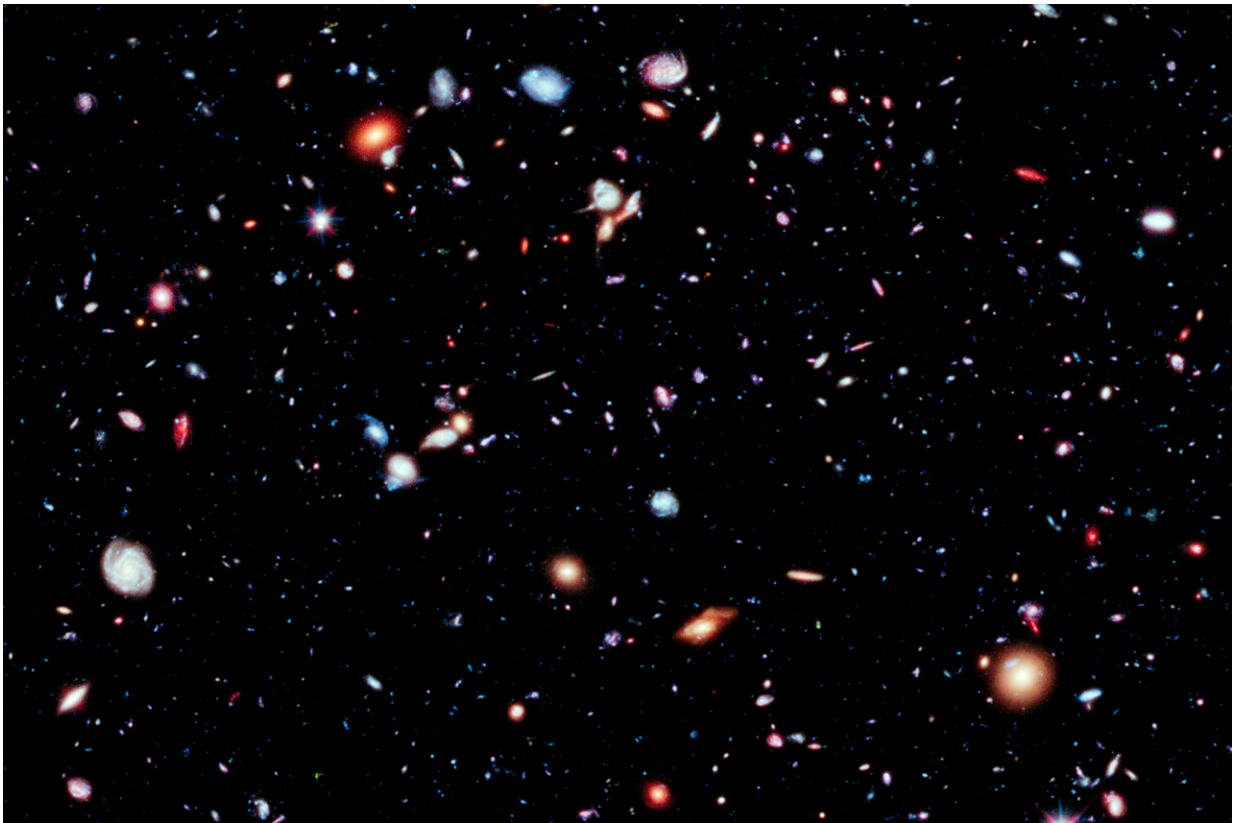


Search for life on other worlds tops astronomy to-do list

November 4 2021, by Marcia Dunn



This image made available by the European Space Agency shows thousands of galaxies captured by the Hubble Space Telescope in observations from 2002-2009. In a report issued Thursday, Nov. 4, 2021 by the National Academy of Sciences, Engineering and Medicine, a U.S. survey of astronomers puts the search for extraterrestrial life at the top of their to-do list for the next 10 years. (NASA, ESA, G. Illingworth, D. Magee, and P. Oesch (University of California, Santa Cruz), R. Bouwens (Leiden University), and the HUDF09 Team via AP)

A U.S. survey of astronomers puts the search for extraterrestrial life at the top of their to-do list for the next 10 years.

In a [report](#) issued Thursday by the National Academy of Sciences, Engineering and Medicine, astronomers stressed the need to continue the hunt for potentially habitable planets circling other stars, building on the "extraordinary progress" already made. The ultimate goal, they noted, is to capture pictures of any Earth-like worlds that might be out there.

"Life on Earth may be the result of a common process, or it may require such an unusual set of circumstances that we are the only living beings within our part of the galaxy, or even in the universe. Either answer is profound," the report stated.

"The coming decades will set humanity down a path to determine whether we are alone."

Also ranked high: exploring the origins and evolution of black holes, neutron stars, galaxies and the entire universe.

At the same time, the 614-page report stressed the need for greater diversity among astronomy's ranks—still predominantly male—and suggested that NASA consider a [science](#) team's diversity when doling out money for research or projects.

The survey is done every 10 years and draws input from scores of mostly U.S.-based scientists.

The latest report recommends that NASA create a new office to oversee space observatories and overlapping missions in the coming decades. First up should be a telescope that's significantly bigger than the Hubble Space Telescope that would be capable of spotting planets that are 10 billion times fainter than their stars, the report stated. Once the necessary

technologies are ready, this telescope could be ready to launch in the 2040s for around \$11 billion, followed by other mega observatories in the billions of dollars.

But the report emphasized the need for smaller, more modest missions as well. Launching one spacecraft per decade with a cost cap of \$1.5 billion, it stated, balances science with timeliness.

The report noted the threat in years past of cost overruns and delays in major projects. Due to finally blast off next month, the NASA-led James Webb Space Telescope—designed to scan the early universe and explore the atmospheres of other worlds—is a prime example of that. Yet its launch promises to be "a momentous occasion that will shape the course of astronomy and astrophysics in the coming decades," the report noted.

The report—sponsored by NASA, National Science Foundation, Energy Department and Air Force—noted that the survey was conducted during a health crisis. While the pandemic has underscored the importance of science, "the ultimate economic and [social impacts](#) of the pandemic remain unclear, adding to the uncertainty of the future landscape."

The report urged NASA, the National Science Foundation and Energy Department to treat harassment and discrimination "as forms of scientific misconduct," add more diversity to its upper levels, and consider diversity when funding a project.

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