Sagan Summer Workshop

20 July 2025

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Earthrise

Apollo 8: Bill Anders

12.24.1968

Earthrise
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12.24.1968

EYES ON EXOPLANETS

Try it out at EYES.NASA.GOV/APPS/EXO .

HOME BROWSE DESTINATIONS MISSIONS

You are
197,077 light-years
from Earth

Milky Way Galaxy

4,430 solar systems | 5,933 confirmed planets

FILTER

Planet Type | Missions | Observatory

Current filter: All Planet Types

VIEW FROM SPACE EARTH

What am I looking at ?

EYES ON EXOPLANETS

Try it out at EYES.NASA.GOV/APPS/EXO .

HOME BROWSE DESTINATIONS MISSIONS

You are
108 light-years
from Earth

Hypothetical visualization

VIEW

Planet System Star

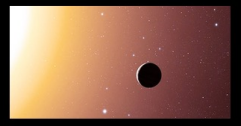
COMPARE

HD 197037 b

A giant planet composed mainly of gas

Telescopes & Observatories

discovering exoplanets – from space and around the world


Acton Sky Portal Observatory

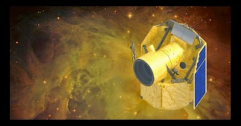

Anglo-Australian Telescope


Apache Point Observatory


Arecibo Observatory


Calar Alto Observatory


Bohyunsan Optical Astronomical Observatory


CHEOPS (CHaracterizing ExOPlanets Satellite)


Cerro Tololo Inter-American Observatory


CoRoT


Fred Lawrence Whipple Observatory


McDonald Observatory


OGLE


Oak Ridge Observatory


Okayama Astrophysical Observatory


Palomar Observatory


Gemini Observatory


HATNet


HATSouth


Haute-Provence Observatory

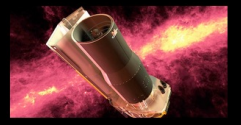

Hubble Space Telescope


Paranal Observatory


Parkes Observatory


Qatar


Roque de los Muchachos Observatory

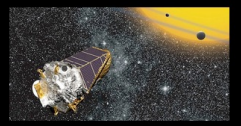

Spitzer Space Telescope


Infrared Survey Facility


KELT


KELT-North


KELT-South


Kepler and K2


Subaru Telescope


SuperWASP


SuperWASP-North


SuperWASP-South


TESS


Kitt Peak National Observatory


KMTNet


KOINet


La Silla Observatory


Las Campanas Observatory

Teide Observatory

The Large Binocular Telescope

Thueringer Landessternwarte Tautenburg

TrES

United Kingdom Infrared Telescope

Leoncito Astronomical Complex

Lick Observatory

Mauna Kea Observatory - UKIRT

MEarth Project

MOA

WASP-South

W. M. Keck Observatory

XO Project

Xinglong Station

Yunnan Astronomical Observatory

Explore the discoveries at EYES.NASA.GOV/APPS/EXO .

https://science.nasa.gov/resource/exoplanet-missions-2/

National Aeronautics and Space Administration

Exoplanet Missions

[1] NASA/ESA Partnership
[2] NASA/ESA/CSA Partnership
[3] CNES/ESA
[4] ESA/Swiss Space Office
[5] NSF Partnership (NN-EXPLORE)

www.nasa.gov

Sagan Summer Workshop

12:45pm
Landscape Panel

1:30pm
NASA Astrophysics & Opportunities

2pm – Break

2:15pm
NASA Proposal Writing Workshop

4:30pm
Welcome Gathering

LANDSCAPE PANEL

Chas Beichman

Executive Director, NASA Exoplanet Science Institute (NExScI)

JPL Senior Scientist & Fellow

Senior Faculty Associate, Caltech

Scientist, JPL

Research Fellow, Caltech

PhD+MS, Astronomy, U. Hawaii

MS, Physics, U. Hawaii

AB, Astronomy, Harvard

Heather Cegla

Associate Professor, University of Warwick

UKRI Future Leader Fellow

CHEOPS Research Fellow, Geneva Observatory

Leverhulme Trust Fellow, Queen's University Belfast

PhD, Astrophysics, Queen's University Belfast

B.S Physics, Emphasis in Astronomy, Minor in Math, Minnesota State University Moorhead

Stephen Kane

Professor of Planetary Astrophysics, UC Riverside

Associate Professor, San Francisco State University

Research Scientist, NExScI

Postdoctoral Associate, U. Florida

Postdoctoral Fellow, University of St. Andrews

Research Assistant, STScI

PhD, Physics, University of Tasmania

BS, Physics, Macquarie Univ.

Emily Rickman

European Space Agency Astronomer, Space Telescope Science Institute (STScI)

ESA Space Science Fellow, STScI

PhD, Astronomy and Astrophysics, University of Geneva

MPhys, Physics and Astrophysics, University of Sheffield

Jessica Spake

Staff Scientist, Carnegie Observatories

Heising-Simons 51 Pegasi b Fellow, Caltech

NHFP Sagan Fellow, Caltech

PhD, Astronomy, University of Exeter

MSc, Physics, University of Warwick

MSci, Physics, Imperial College London

Professional Tools & Opportunities

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PANELISTS

The National Academies of
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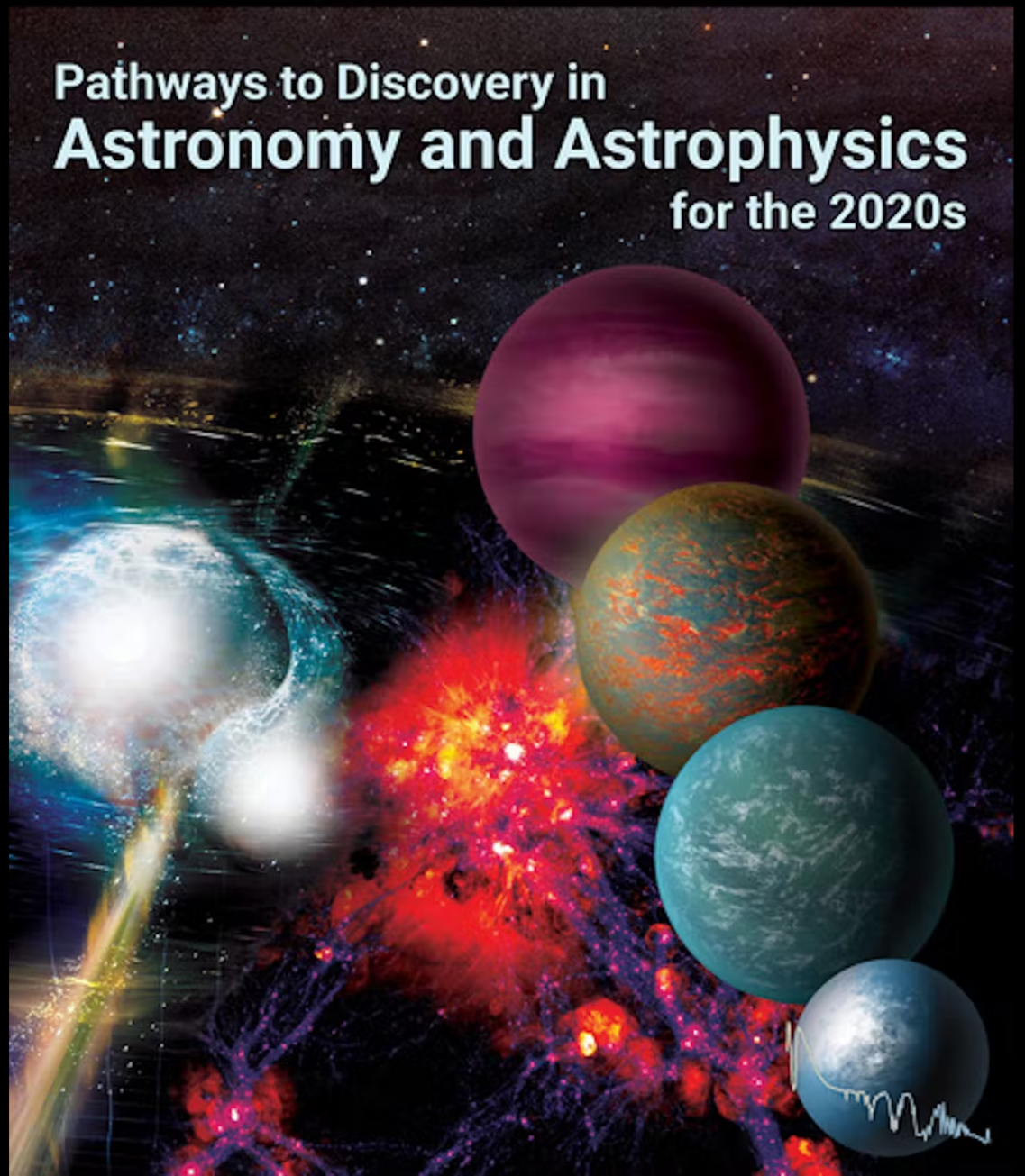
CONSENSUS STUDY REPORT

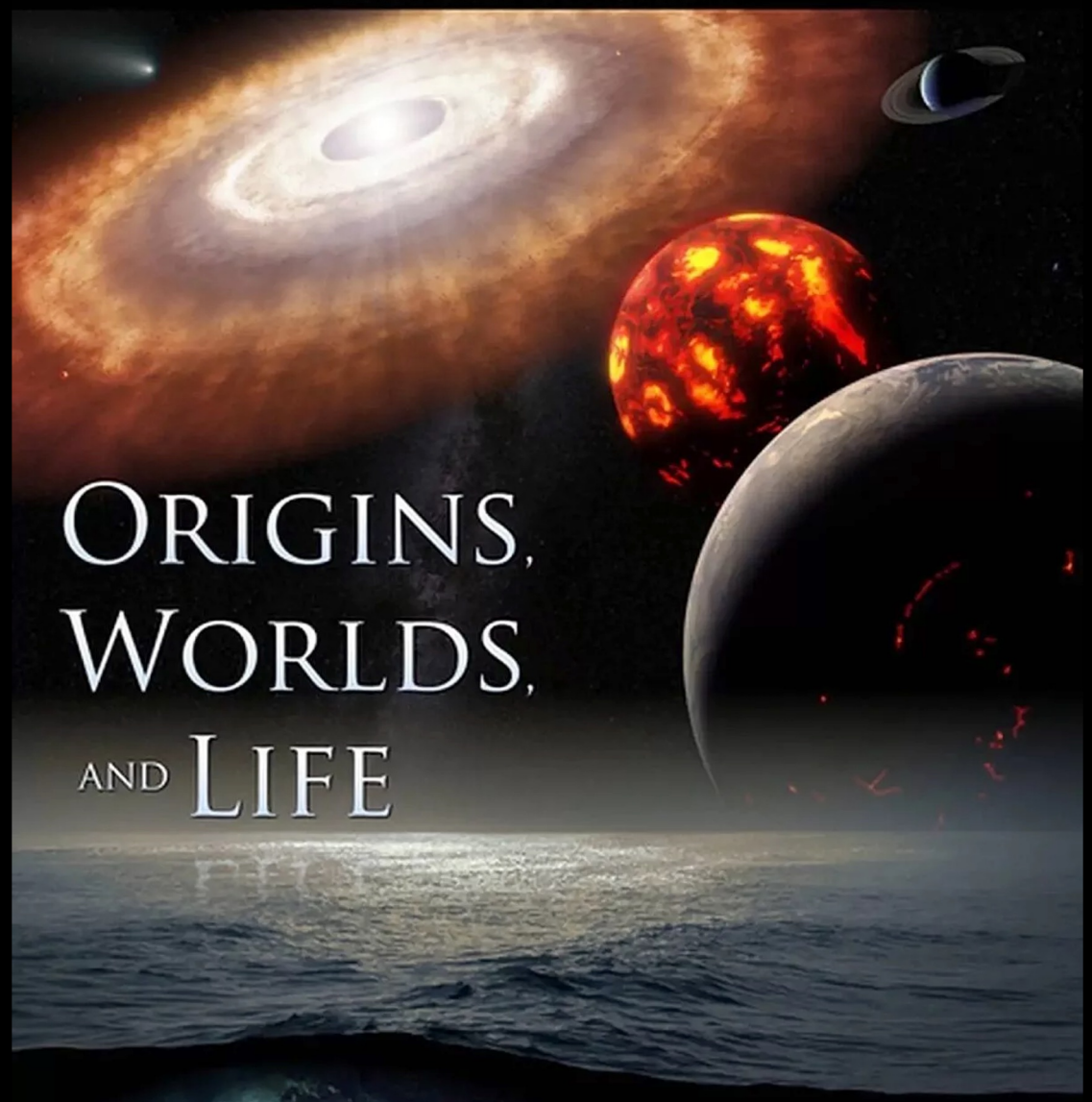
Pathways to Discovery in Astronomy and Astrophysics for the 2020s



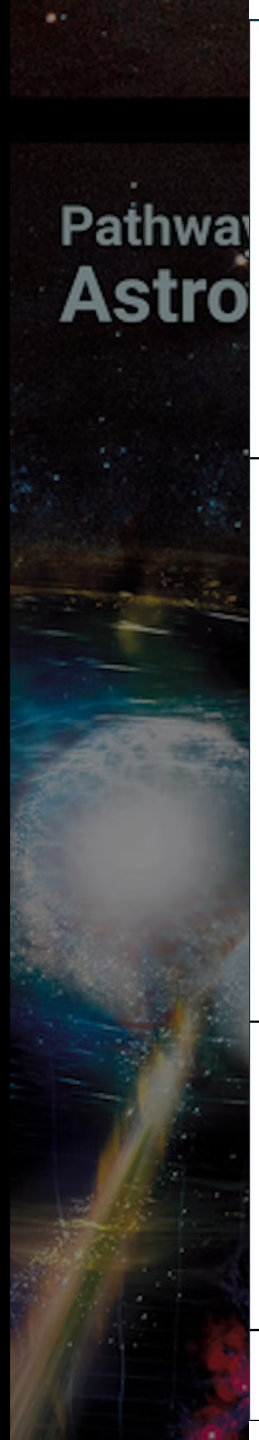
The National Academies of
SCIENCES · ENGINEERING · MEDICINE

CONSENSUS STUDY REPORT

Origins, Worlds, and Life

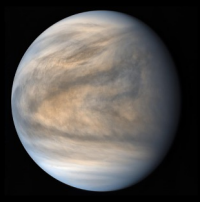


A Decadal Strategy
for Planetary Science & Astrobiology
2023–2032



Themes	Priority Science Question Topic and Scope
A) Origins	**Q1. Evolution of the protoplanetary disk** What were the initial conditions in the Solar System? What processes led to the production of planetary building blocks, and what was the nature and evolution of these materials?
	Q2. Accretion in the outer solar system How and when did the giant planets and their satellite systems originate, and did their orbits migrate early in their history? How and when did dwarf planets and cometary bodies orbiting beyond the giant planets form, and how were they affected by the early evolution of the solar system?
	Q3. Origin of Earth and inner solar system bodies How and when did the terrestrial planets, their moons, and the asteroids accrete, and what processes determined their initial properties? To what extent were outer Solar System materials incorporated?
B) Worlds & Processes	**Q4. Impacts and dynamics** How has the population of Solar System bodies changed through time, and how has bombardment varied across the Solar System? How have collisions affected the evolution of planetary bodies?
	Q5. Solid body interiors and surfaces How do the interiors of solid bodies evolve, and how is this evolution recorded in a body's physical and chemical properties? How are solid surfaces shaped by subsurface, surface, and external processes?
	Q6. Solid body atmospheres, exospheres, magnetospheres, and climate evolution What establishes the properties and dynamics of solid body atmospheres and exospheres, and what governs material loss to space and exchange between the atmosphere and the surface and interior? Why did planetary climates evolve to their current varied states?
	Q7. Giant planet structure and evolution What processes influence the structure, evolution, and dynamics of giant planet interiors, atmospheres, and magnetospheres?
	Q8. Circumplanetary systems What processes and interactions establish the diverse properties of satellite and ring systems, and how do these systems interact with the host planet and the external environment?
C) Life & Habitability	**Q9. Insights from Terrestrial Life** What conditions and processes led to the emergence and evolution of life on Earth, what is the range of possible metabolisms in the surface, subsurface and/or atmosphere, and how can this inform our understanding of the likelihood of life elsewhere?
	Q10. Dynamic Habitability Where in the solar system do potentially habitable environments exist, what processes led to their formation, and how do planetary environments and habitable conditions co-evolve over time?
	Q11. Search for life elsewhere Is there evidence of past or present life in the solar system beyond Earth and how do we detect it?
All Themes	**Q12. Exoplanets** What does our planetary system and its circumplanetary systems of satellites and rings reveal about exoplanetary systems, and what can circumstellar disks and exoplanetary systems teach us about the solar system?

Planetary Mission Timeline



- Juno (Launch 2011)
- MAVEN (Launch 2013)
- JUICE (Launch 2023, Orbit insertion 2031)
- Europa Clipper (Launch October 2024, Orbit insertion 2030)
- Asteroids (DART, OSIRIS-Rex, Psyche, Lucy)

- Mars Sample Return (Launch 2027, Lander 2028→2025,
- Return 2033→2040) ???
- Dragonfly (Launch 2028, Land 2034)

- DAVINCI (Launch 2031)
- VERITAS (Launch 2031)
- EnVision (Launch 2031)

- Uranus Orbiter and Probe (Launch 2030s; Orbit insertion 2040) ???

Present day

- Gaia (Launch 2013)
- TESS (Launch 2018)
- JWST (Launch 2021, could last 20+ years)

- Pandora (Launch 2025)
- PLATO (Launch 2026)
- Roman (Launch 2027)

- Ariel (Launch 2029)

- Halfway through JWST mission lifetime

- LIFE (Launch 2040s)
- Habitable Worlds Observatory (Launch 2040s)

Astrophysics Mission Timeline

NASA ASTROPHYSICS & OPPORTUNITIES INTRODUCTION

Back soon

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20 July 2025

NASA PROPOSAL WRITING WORKSHOP

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Professional Tools & Opportunities







Anjali Tripathi

Science Ambassador,
NASA Exoplanet Exploration Program,
NASA/JPL-Caltech

Professional Tools & Opportunities

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ExEP NASA EXOPLANET EXPLORATION PROGRAM

Jet Propulsion Laboratory
California Institute of Technology

Government sponsorship acknowledged.