



**Jet Propulsion Laboratory**  
California Institute of Technology

# Exoplanet Exploration Program Overview

**Dr. Gary H. Blackwood, Program Manager**  
**Jet Propulsion Laboratory**  
**California Institute of Technology**

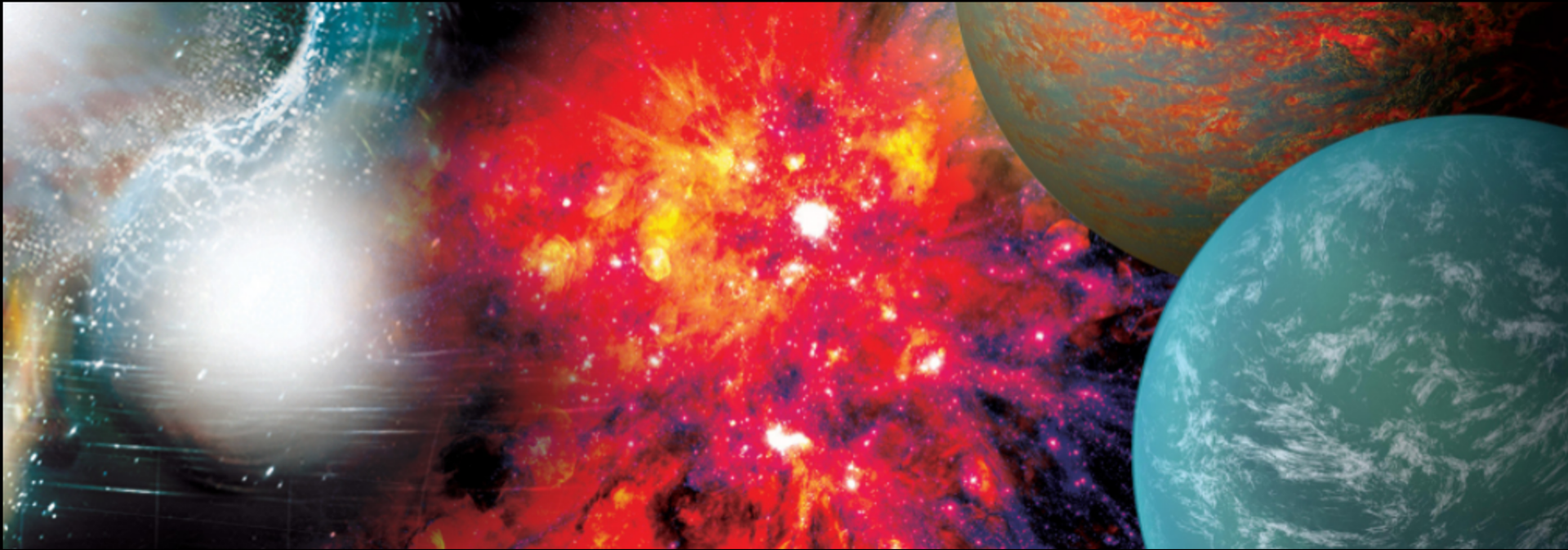
January 10, 2022  
ExoPAG XXV, Virtual

[Gary.Blackwood@jpl.nasa.gov](mailto:Gary.Blackwood@jpl.nasa.gov)

CL#22-0124 Artist concept of Kepler-16b.

# Let's Celebrate Astro2020!

Thank you ExoPAG!



Occurrence Rates

ExoZodi

Technology

Concept

Studies

SAGs

Working Groups

Theory

Analysis

+++

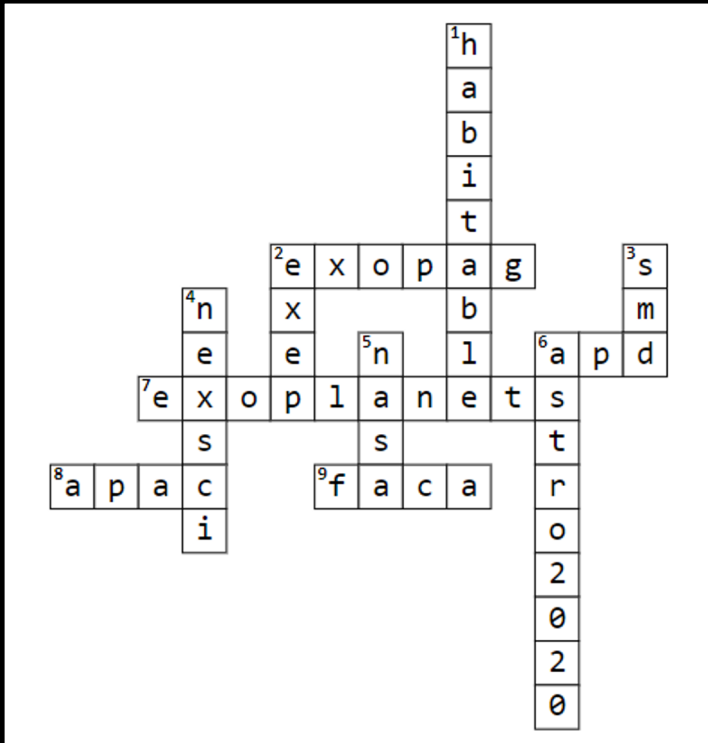
# ExoPAG Terms of Reference

Exoplanet Program Analysis Group  
Chartered by the Astrophysics Division



1. Articulate and prioritize the **key scientific drivers** for Exoplanet Exploration research ;
2. Evaluate the **expected capabilities of potential ExEP missions** for achieving the science goals of the Program ;
3. Evaluate ExEP goals, objectives , **investigations and required measurements** on the basis of the widest possible community outreach;
4. Articulate and prioritize focus areas for **needed mission technologies** ; and
5. Provide findings on related activities such as **ground-based observing, theory and modeling programs, laboratory astrophysics, suborbital investigations, data archiving and community engagement.**

# Acronym Glossary



**NASA** - National Aeronautics & Space Administration

**NASA HQ** - NASA Headquarters, Washington DC

**SMD** - Science Mission Directorate

**APD** - Astrophysics Division, a division within SMD



Paul Hertz, Division Director  
Sandra Cauffman, Deputy Director  
Jeanne Davis, Associate Director

**APAC** - Astrophysics Advisory Committee  
- a FACA committee to APD

**ExoPAG** - Exoplanet Program Analysis Group

**ExEP** - Exoplanet Exploration Program, within APD  
- At NASA HQs & JPL in Pasadena CA



E. Lucien Cox, Program Executive  
Douglas Hudgins, Program Scientist  
Hannah Jang-Condell, Dpy PS

**NExSci** - NASA Exoplanet Science Institute, within ExEP  
- at Caltech in Pasadena CA

# NASA Exoplanet Exploration Program

Astrophysics Division, NASA Science Mission Directorate

*NASA's search for habitable planets and life beyond our solar system*

## Program purpose per Charter From the Astrophysics Division

1. Discover planets around other stars
2. Characterize their properties
3. Identify candidates that could harbor life



ExEP serves the Science Community and NASA:

- As a Focal point for exoplanet science and technology
- By Integration of cohesive strategies for future discoveries

<https://exoplanets.nasa.gov/exep>

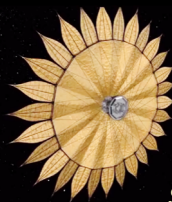
# NASA Exoplanet Exploration Program

## Mission Concepts

IR / O / UV Mission Concepts

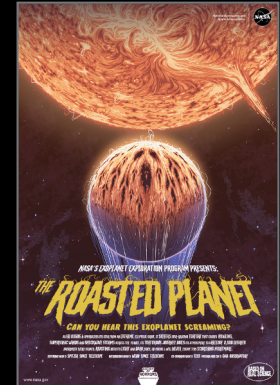
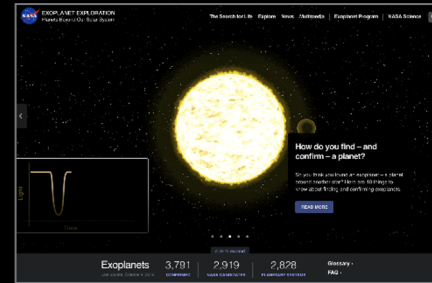


Coronagraph



Starshade

## Exoplanet Communications

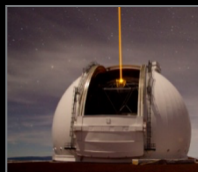


## Supporting Research & Technology

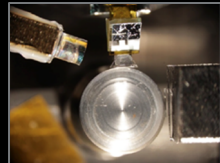
### Key Sustaining Research



NN-EXPLORE



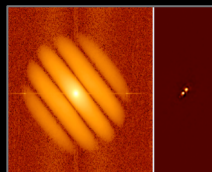
Keck Observatory



Extreme Precision Radial Velocity Technology Development



Large Binocular Telescope Interferometer



High Resolution Imaging

### Technology Development

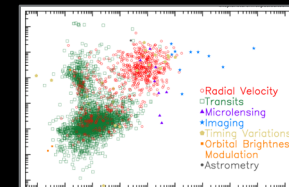


Coronagraph Technology Development



Starshade Technology Development (S5)

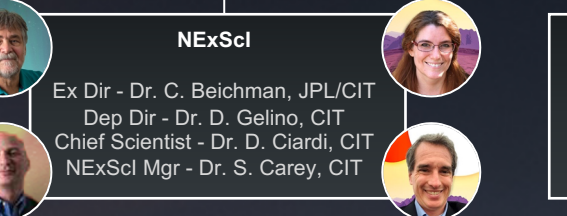
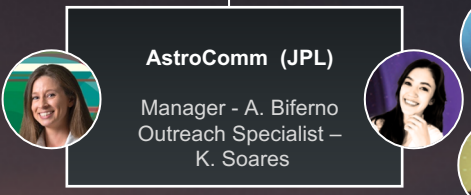
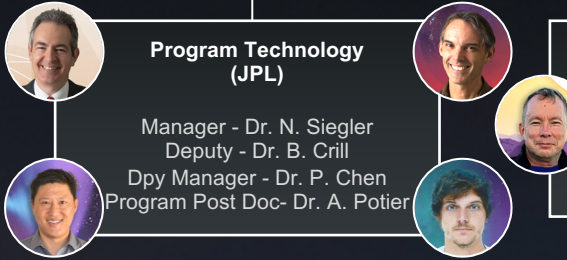
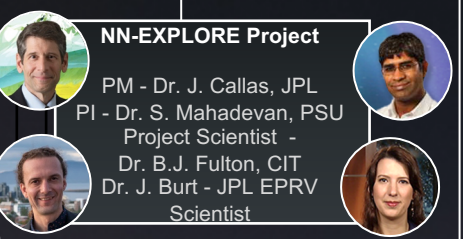
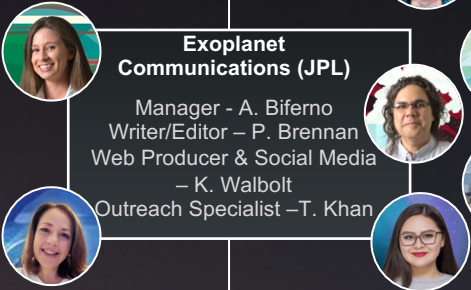
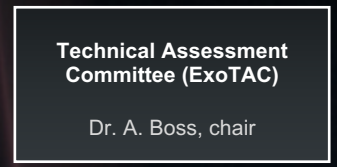
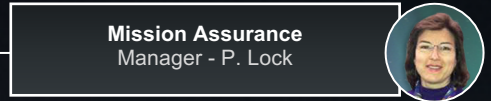
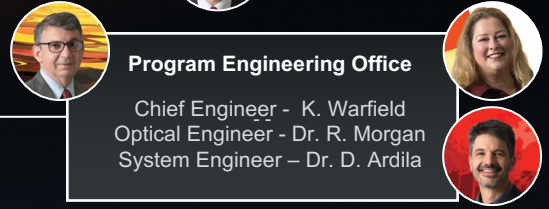
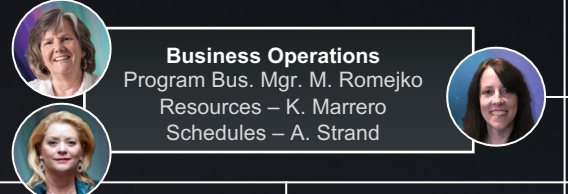
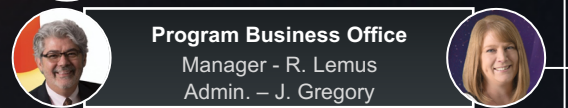
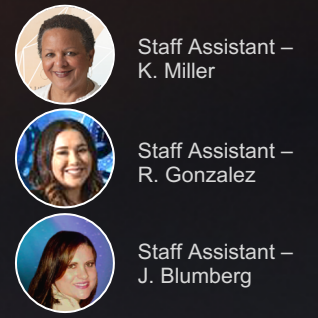
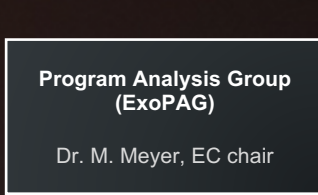
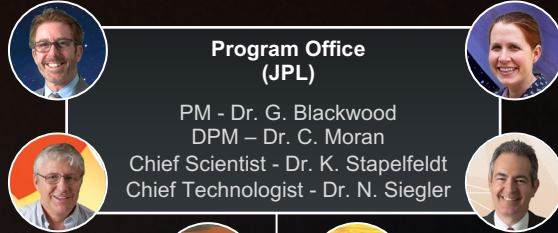
### NASA Exoplanet Science Institute (NExSci)



Archives, Tools, Sagan Program, Professional Engagement

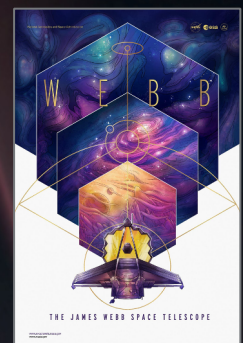
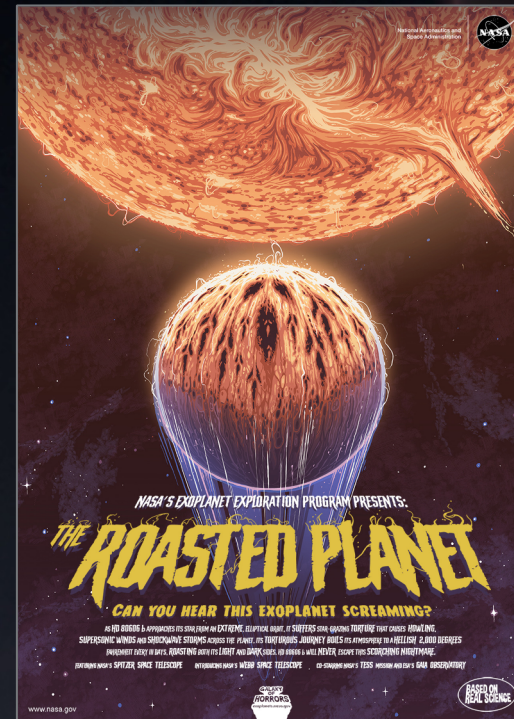
# NASA Exoplanet Exploration Program

Astrophysics Division, Science Mission Directorate



# Exo / Astro Comm –Outreach Highlights

- Produced [bilingual exoplanet-finding mission posters](#)
- Published the “[Are We Alone](#)” series, a compilation of exoplanet feature stories about NASA’s search for life
- Created a [Halloween horror poster](#) featuring HD 80606b
- Collaborated on an [Exoplanet Travel Bureau video](#) and [behind-the-scenes story](#) with GSFC that received 300K+ views in one week: <https://go.nasa.gov/30OJVGJ>
- Presented on [The Role of Art in Science Communication](#) at the 2021 TESS Conference
- Won a [WEBBY award](#) for Best Web & Mobile Science website: [exoplanets.nasa.gov](https://exoplanets.nasa.gov)

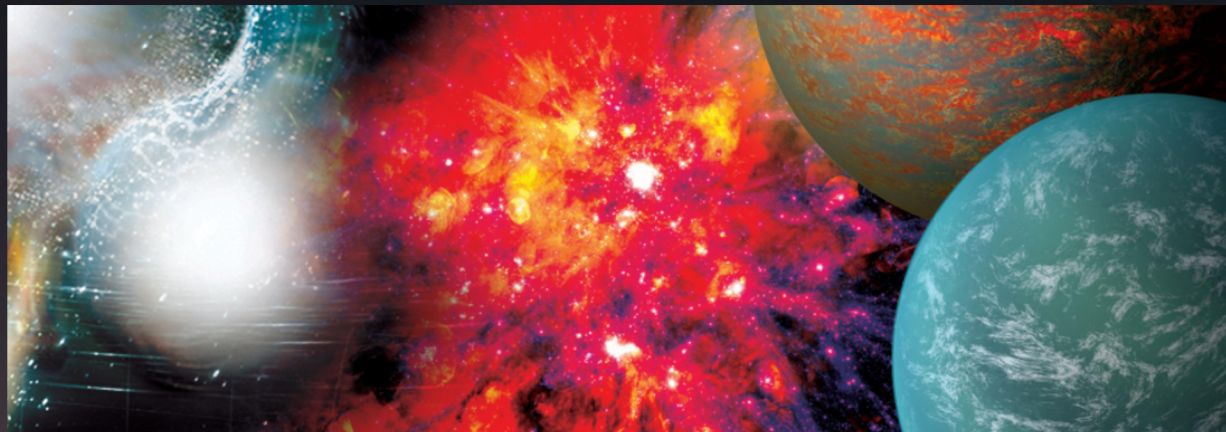




# But There is Work to be Done!

To fulfill the Ambitions of Astro2020 for IR/O/UV Mission

- In particular, the *Great Observatory Mission and Technology Maturation Program* leading to an *Independent Review* prior to a new mission start
- The Astrophysics Division is responding to Astro2020 and the Exoplanet Exploration Program will support APD and the community
- To learn more: please attend Paul Hertz' *NASA Town Hall* on Tuesday Jan 11



# ExEP talks at ExoPAG

- John Callas: NN-EXPLORE
- David Ciardi: NExSci
- Brendan Crill: Technology
- Karl Stapelfeldt: Program Science
- Tiffany Kataria: ExoExplorers



*Exoplanets, and the Search for Life, are **Aspirational:**  
They Draw us, and Impel us  
To **Explore** other Worlds and to **Inspire** our Own*



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[exoplanets.nasa.gov](https://exoplanets.nasa.gov)

# Acknowledgements

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