National Aeronautics and Space Administration

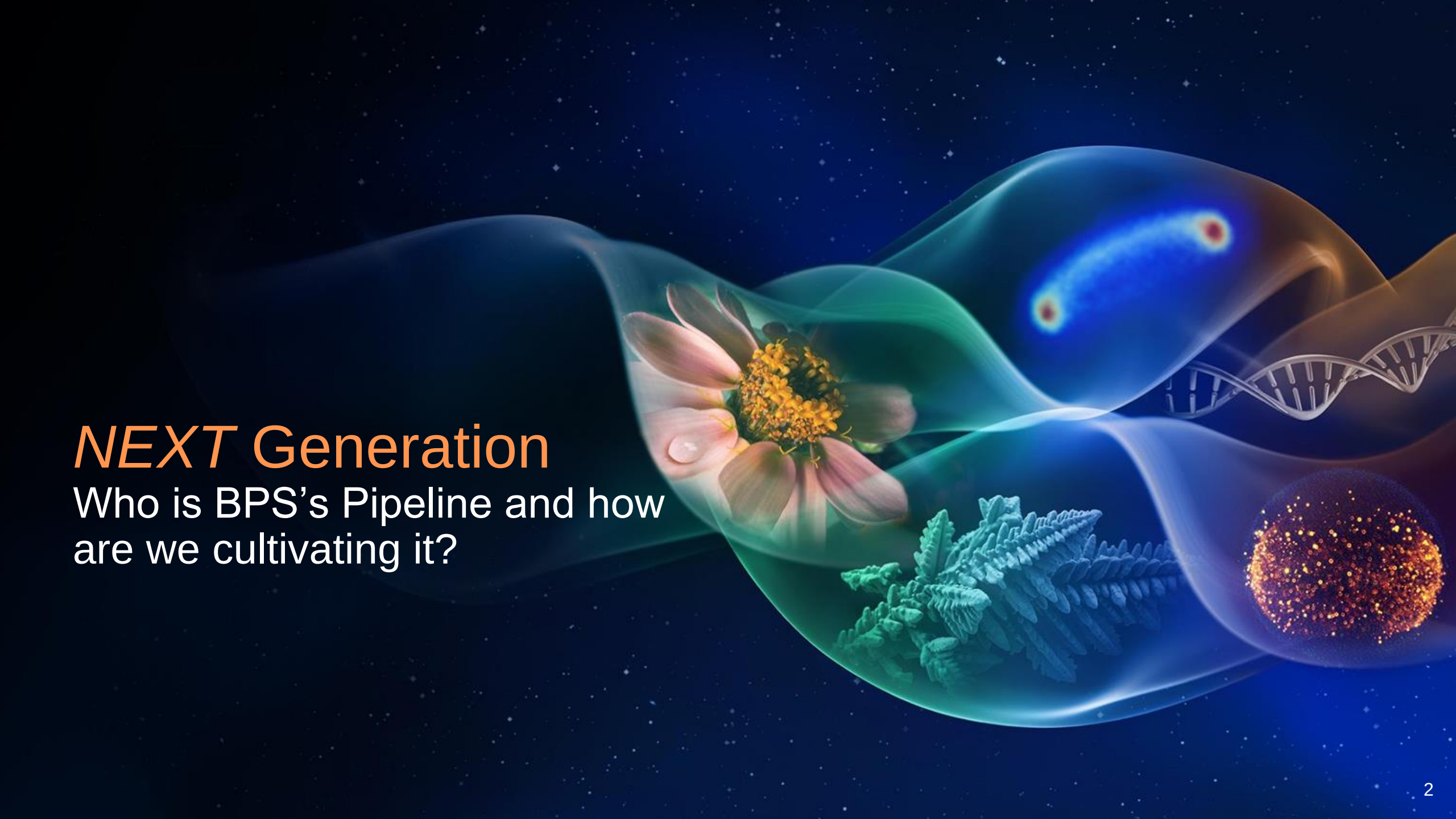
Committee on Biological & Physical Sciences in Space October 19, 2022

BPS: Next, Current & Future Generations

Lisa Carnell, PhD
Program Scientist for Translational Research

NEXT Generation

Who is BPS's Pipeline and how are we cultivating it?



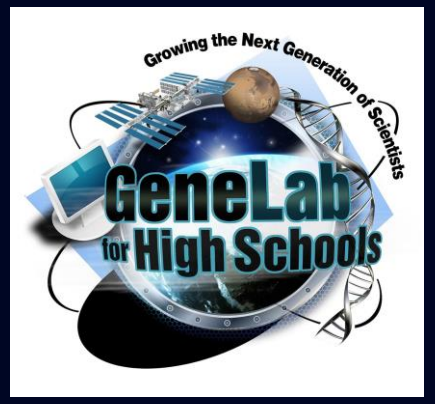
Undergraduate & Graduate Training Opportunities

Future Investigators in NASA Earth and Space Science and Technology

FINESST

Graduate students

NSPIRES: ROSES E.5



GeneLab for High Schools

High school students and teachers

https://www.nasa.gov/ames/genelab-for-high-schools

SLSTP Summer Internship

Undergraduates

https://www.nasa.gov/ames/research/space-life-sciences-training-program

NASA Internships
NASA International Internships

Undergraduates, graduate students

https://intern.nasa.gov/

EPSCoR

Undergraduates, graduate students

https://www.nasa.gov/stem/epscor/gateway/index.html

MUREP

Undergraduates, graduate students

https://www.nasa.gov/stem/murep/home/index.html

Diversity, Equity & Inclusion

SMD BRIDGE PROGRAM

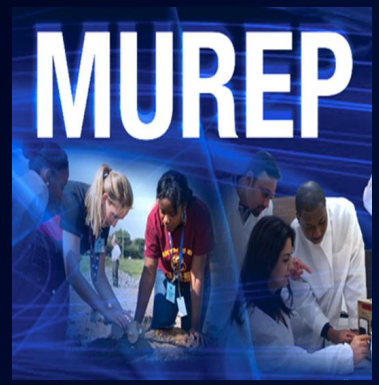
Undergraduates

The SMD Bridge Program is a new initiative designed to boost diversity, equity, inclusion and accessibility within the NASA workforce and within the US science and engineering community.

Focus:

Minority Serving Institutions (MSI)

- Historically Black Colleges & Universities (HBCU)
- Tribal Colleges & Universities (TCU)
- *Including primarily undergraduate institutions and PhD granting universities*



MUREP

Undergraduates, graduate students

https://www.nasa.gov/stem/murep/home/index.html

EPSCoR

Undergraduates, graduate students

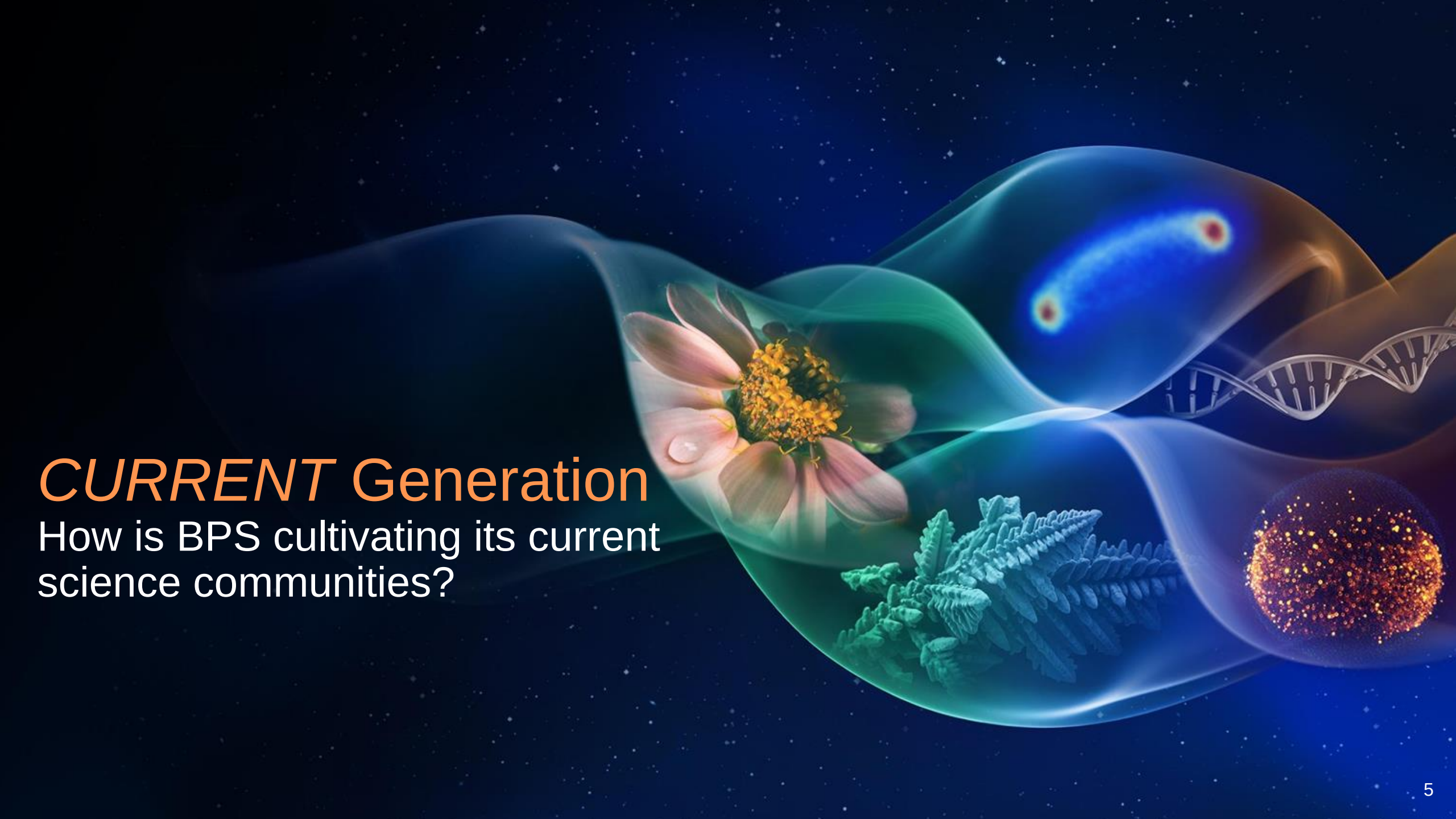
https://www.nasa.gov/stem/epscor/gateway/index.html

*GL4U: RNAseq Educator Bootcamp

Undergraduates, graduate students, professors

https://genelab.nasa.gov/GL4U2022

**GeneLab 4 University is a BPS led training program in partnership with JPL*



CURRENT Generation

How is BPS cultivating its current science communities?

Post-Graduate Training Opportunities

Blue Marble Young Scientist Program & Visiting Scholars

Post-baccalaureate

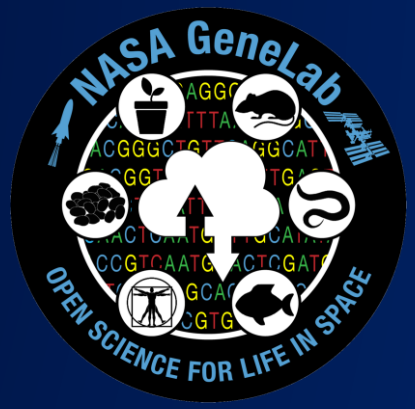
https://www.bmsis.org/ysp/

NASA Postdoctoral Program (NPP)

https://npp.orau.org/#main-content

NASA Citizen Science

ROSES F.9 Citizen Science Seed Funding Program



NASA GeneLab Analysis Working Groups

https://genelab.nasa.gov/

Spaceflight Technology, Applications, and Research (STAR)

Principal investigators, researchers, postdoctoral scholars

https://science.nasa.gov/biological-physical/programs/star

GL4U: RNAseq Educator Bootcamp

https://genelab.nasa.gov/GL4U2022

Physical Sciences Informatics Database

https://www.nasa.gov/PSI

Current Development Opportunities for BPS Scientists

★ Pilot Rotational Program for Scientists

- Allow scientists to temporarily rotate to another organization to broaden knowledge, skills, and perspectives
- Full- or part-time, virtual, on-site or a hybrid approach
- Rotation lasts six months to one year, based on the needs of the host organization and the nature of the
- opportunity
- Benefits individuals who participate, their host organization, and their home
- Pilot limited to Civil Servant Scientists with the longer-term goal to explore options to possibly open the program to non-Civil Servant Scientists

Conferences

- Scientists participate in conferences to share research activities and network outside of the agency
- Organize conferences to learn and share priority research topics with the science community

Leadership Development

★ • Virtual agency-led orientation for newly hired scientists

★ • Virtual series of “career opportunities” workshops for mid-career scientists

★ • Establish entry-level, part-time supervisory roles that are time-limited

- Seminars and formal training courses on leadership, management, technical writing etc. offered through APPEL

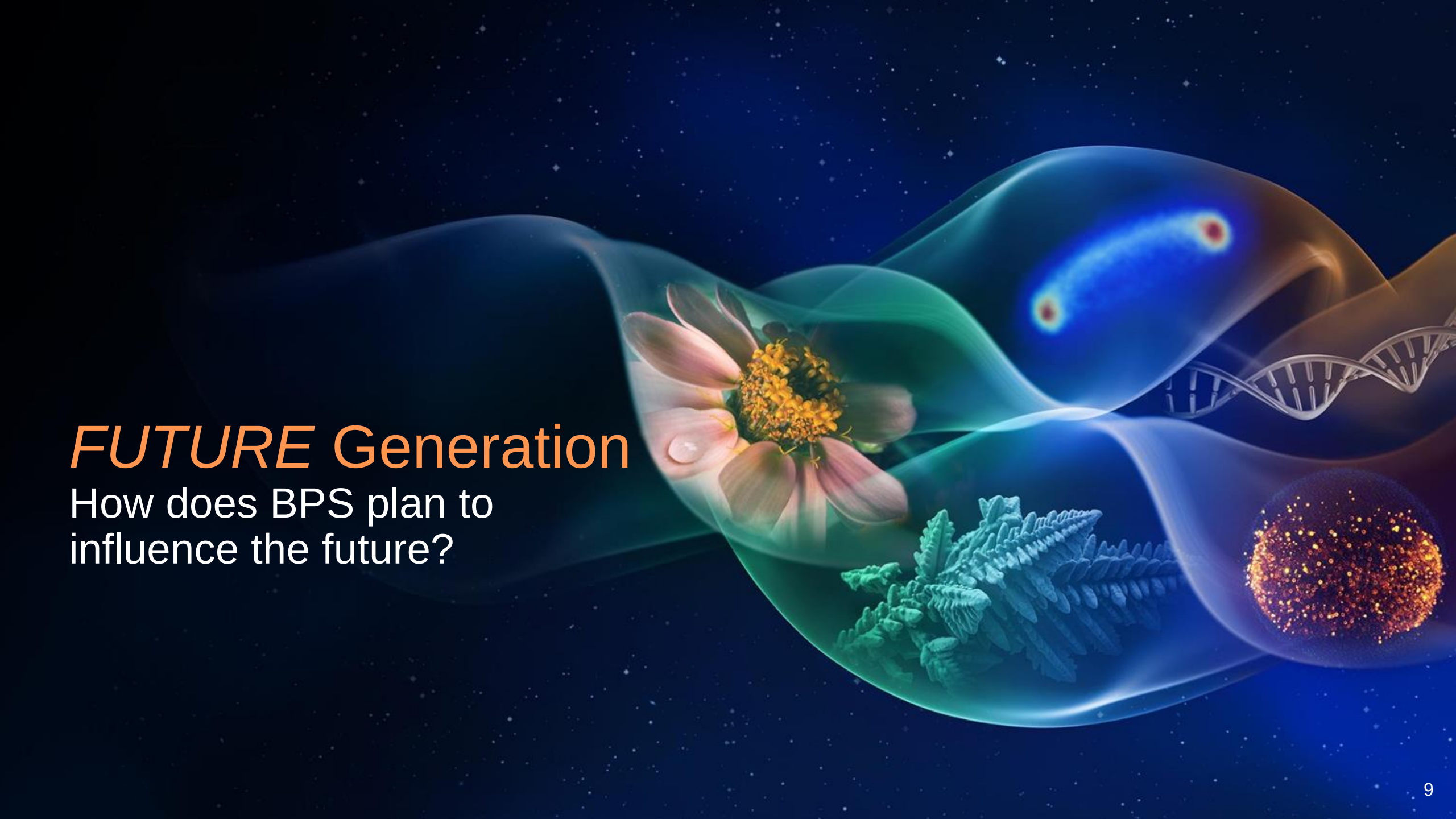
NASA's Career Path Tool

Click on any of the bars below to learn more about the science career tracks and their associated roles.

https://sciencecareers.apps.nasa.gov/#/

FUTURE Generation

How does BPS plan to influence the future?



Future Training Concepts for NASA Scientists

- Advances in computing, data analytics, machine learning, artificial intelligence (AI), and biological engineering/techniques are accelerating the ability to understand biology
- BPS is exploring new training models to ensure NASA scientists are knowledgeable on the latest state-of-the-art methods and techniques being developed
  - BPS scientists receive training at leading academic & industry facilities
  - Critical for supporting CERISS and Artemis missions

Future Scientist Astronaut Missions

- Suborbital
  - Future crewed suborbital opportunities to do preliminary testing on hardware and experiment capabilities prior to LEO or beyond LEO flights
- SubC (Suborbital NASA Crewed)
  - Future *NASA* crewed suborbital opportunities
- PAM (Private Astronaut Missions)
  - Potential to partner with commercial entities to have private astronauts support BPS science in LEO
- SAM (Scientist Astronaut Missions)
  - Potential for specialized scientists to conduct BPS science in LEO

Conclusion

BPS: Next, Current & Future Generations

- Influenced by results from the 2023 Decadal Survey
- Promote the inclusion of members of historically underrepresented groups in science
- Foster open science by facilitating non-specialist access to databases
- Expand existing pipeline and create new education & outreach opportunities
- Develop virtual content for broader reach across communities

Thank you!