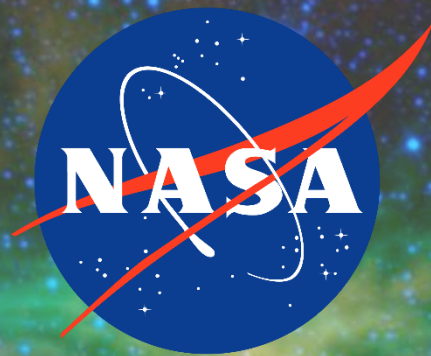


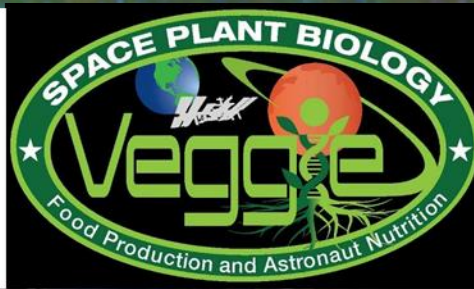


GROWING PLANTS IN SPACE

CHRISTINA M. JOHNSON

Fellow, NASA Postdoctoral Program

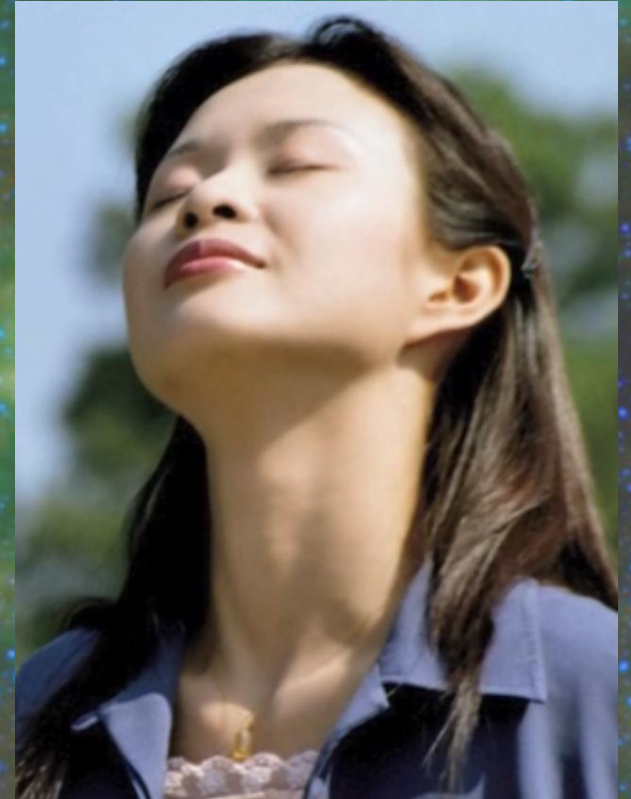
Outreach Presentation – July 2021



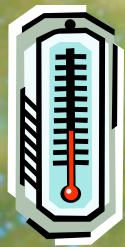
Why Grow Plants in Space?



- Food
- Air
- Psychological benefit



The Spaceflight Environment



No convection

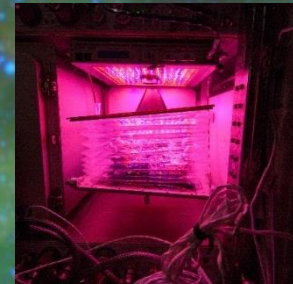


O₂

CO₂



Minimal
power
available.



Water and
air don't
mix.



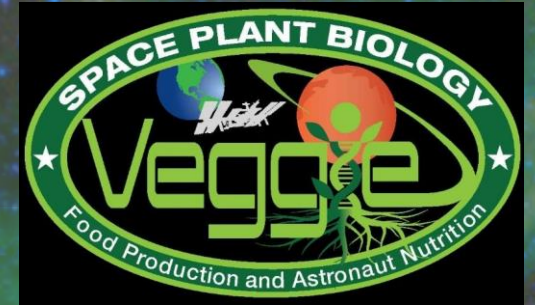
Fertilizer is
heavy.
Recycle.



Water in Spaceflight



Flowers on the ISS



So many blooms!



Harvest on February 14, 2016



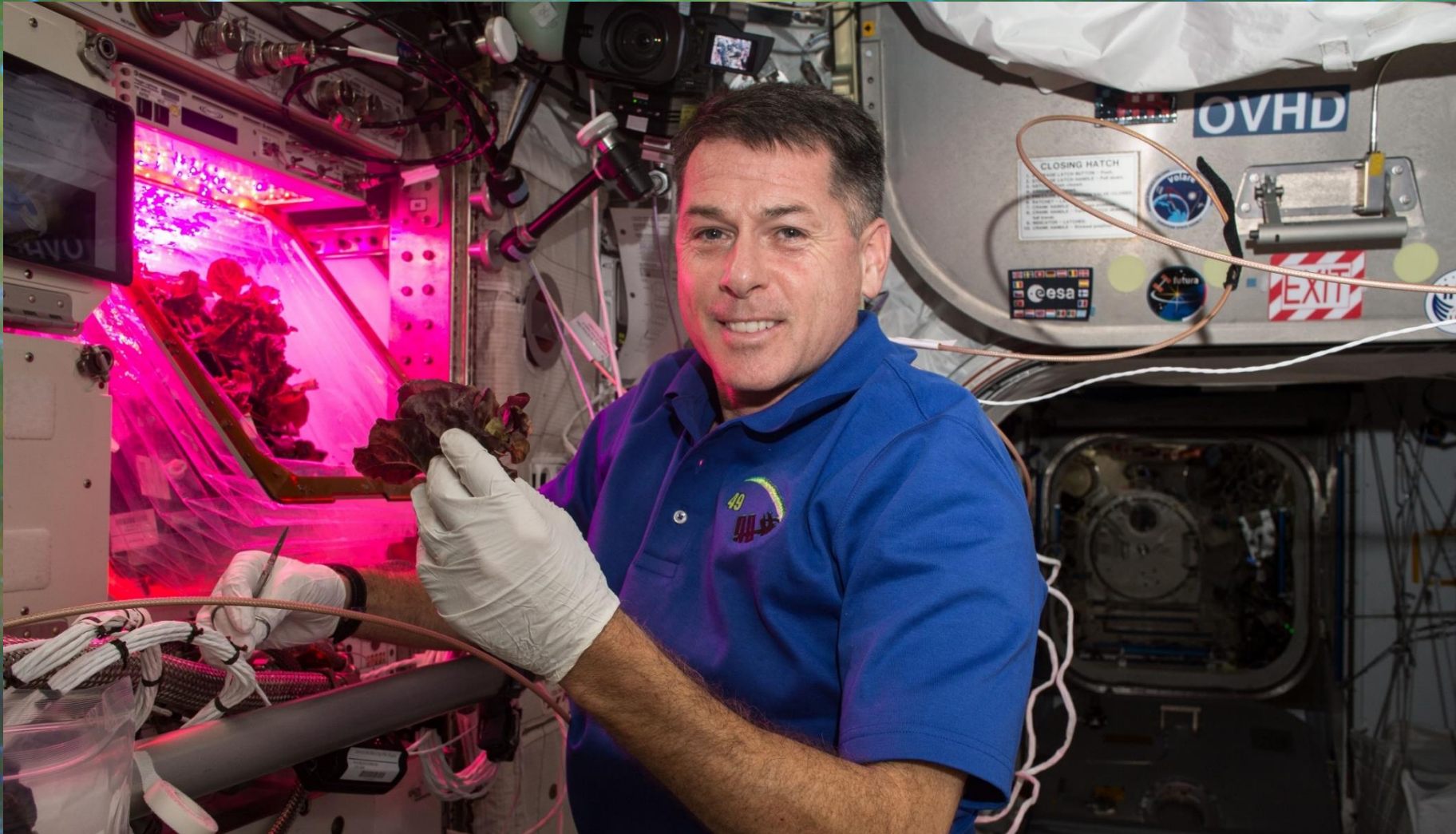
Space Crops in Your Classroom

<https://fairchildgarden.org/gbe/>



- NASA partnership with the Fairchild Garden
- Data directly impacts space crop selection
- Grades 6 – 12
- Started in Miami, Florida
- Now 200+ schools all over the USA
- Welcoming international participants
- Visit their website to learn more!

Food Crops on the ISS



Lettuce Harvest



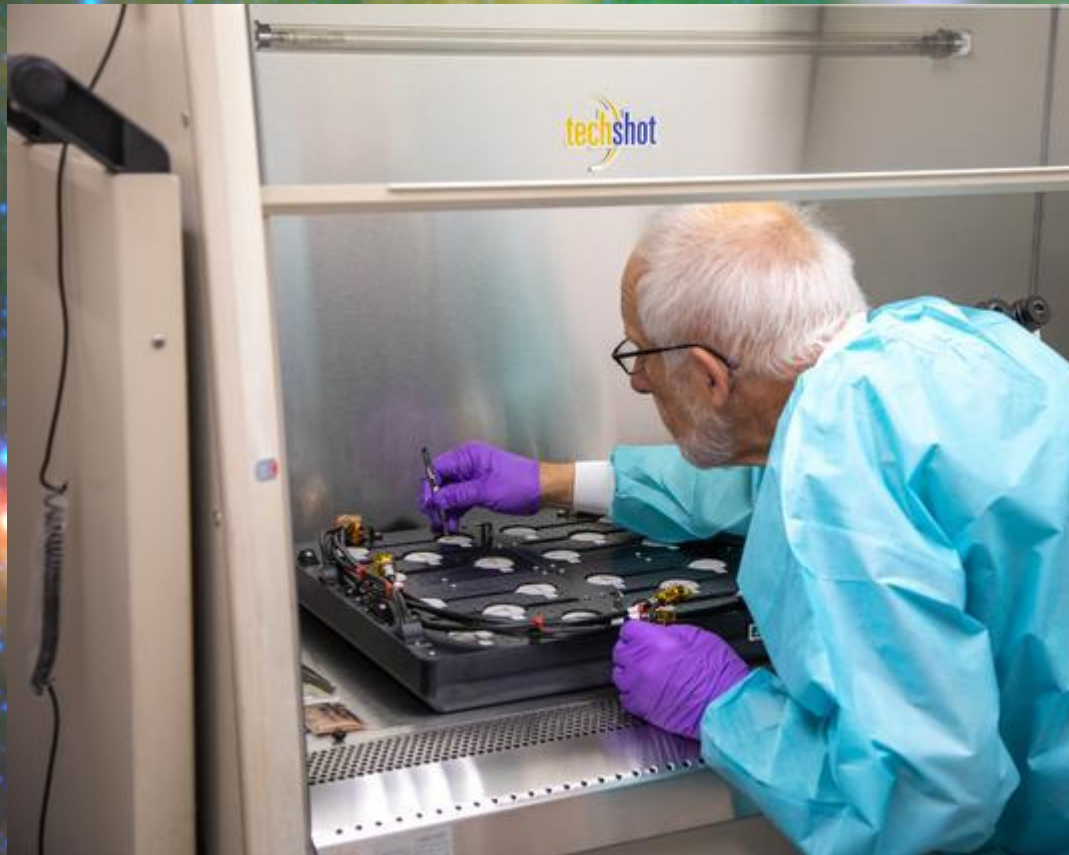
Food Crops on the ISS



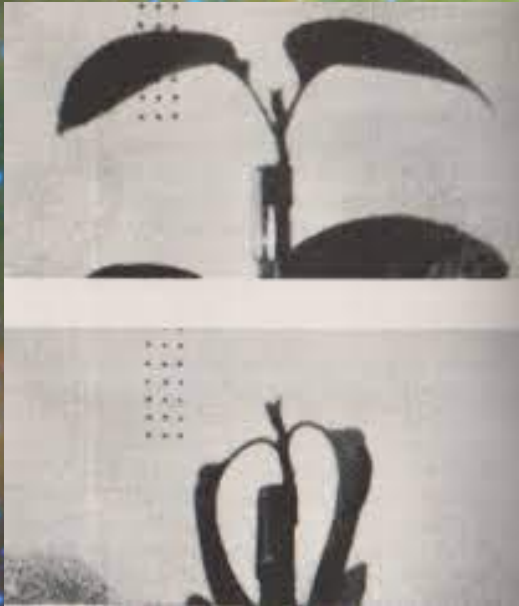
Radishes: Then and Now



Radishes on the ISS



Peppers: Then and Now



Peppers in your Classroom: The Space Chile Grow a Pepper Plant Challenge



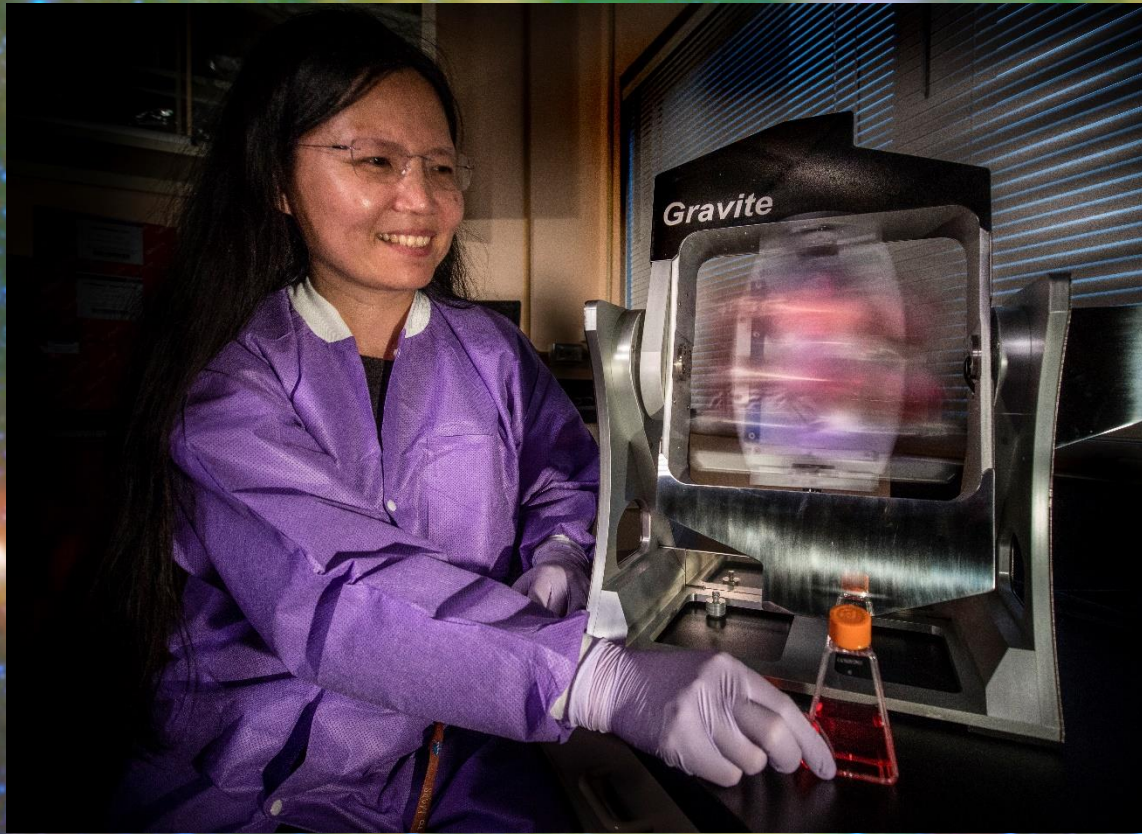
- Grassroots challenge
- For EVERYONE, all ages.
- Started by a chile farming NASA contracted scientist
- Visit the Facebook group to learn more



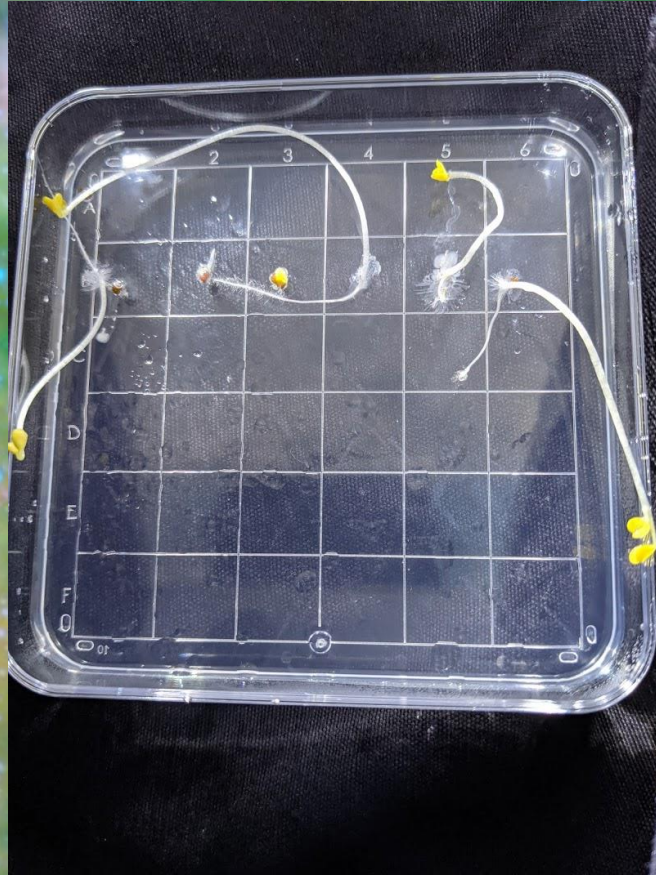
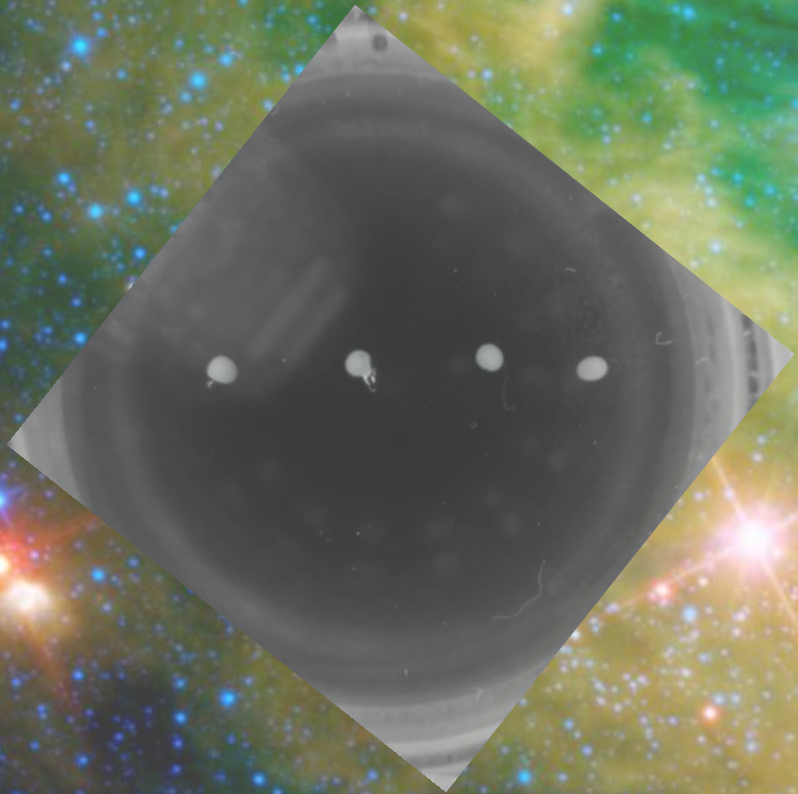
Microgreens



Microgravity Simulation Support Facility



Microgreens in Simulated Microgravity

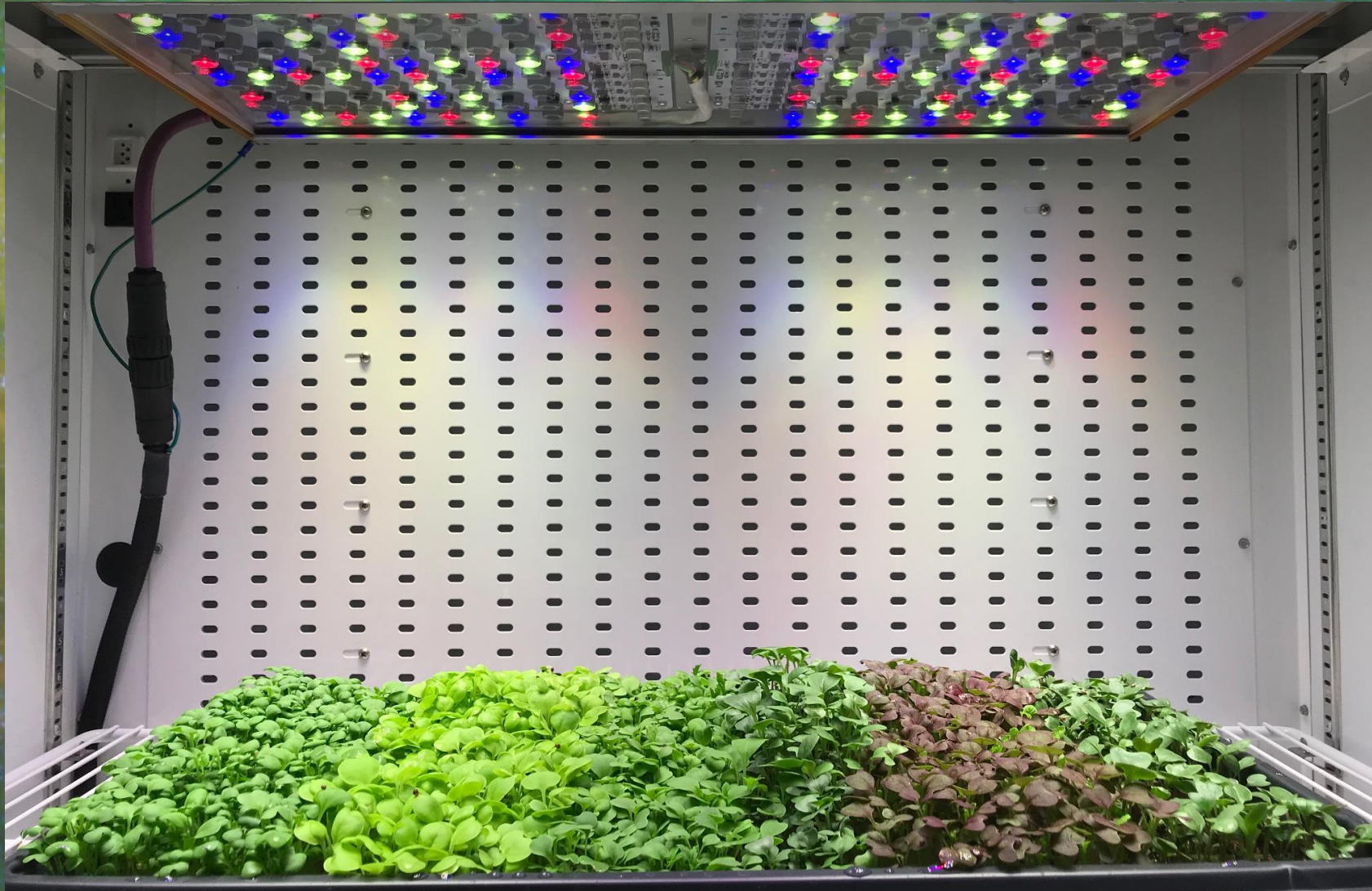


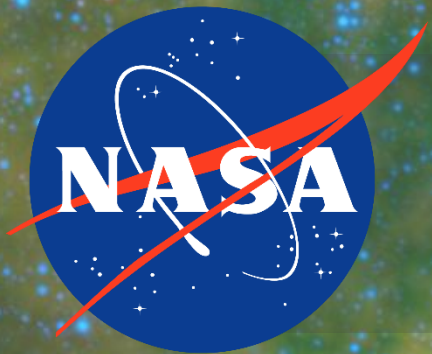
Microgreens in Your Classroom



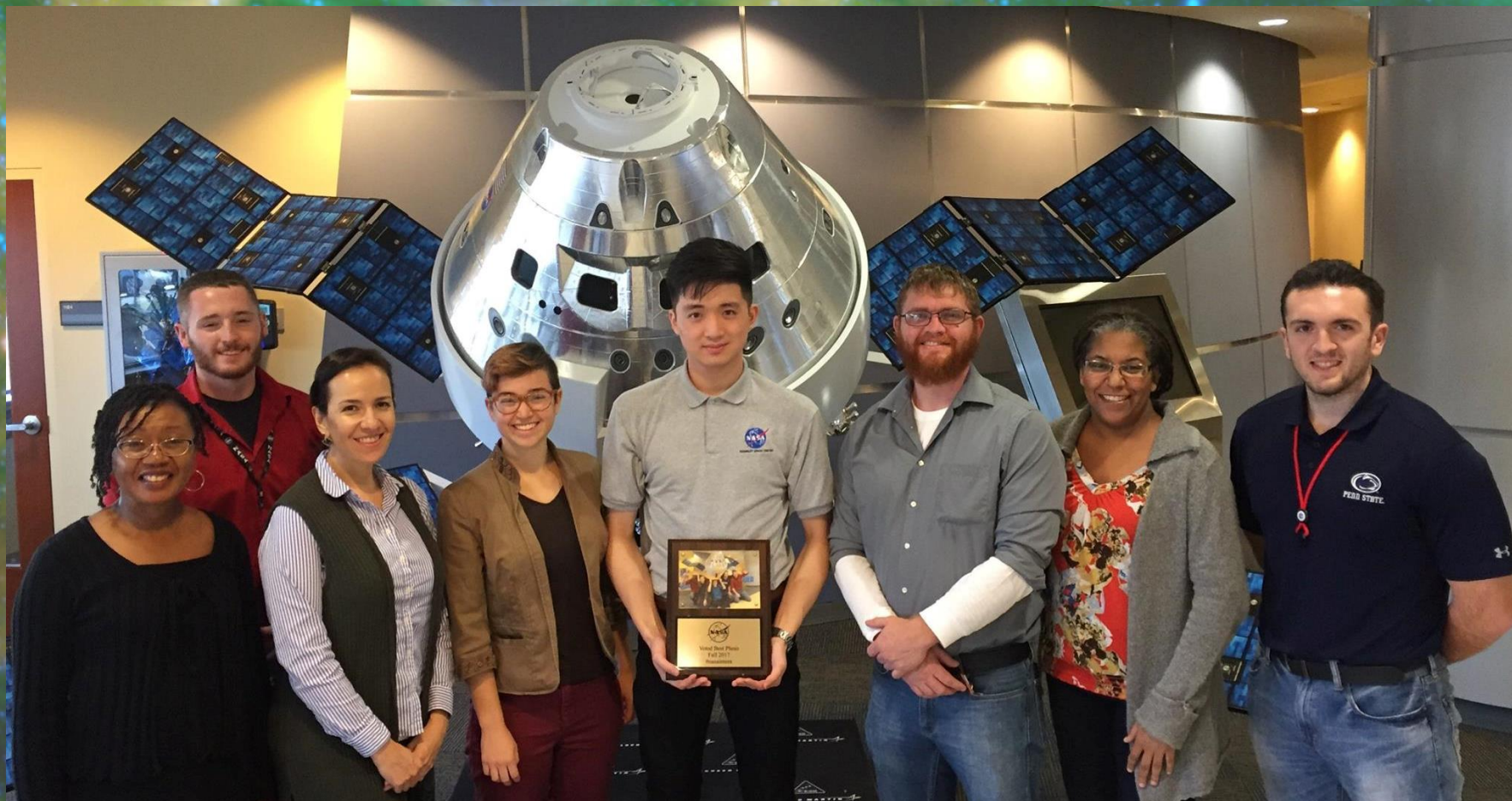
- Pre-K – university classrooms and clubs
- Curriculum developed with teachers and professors in USA, UK, and Japan
- www.astrobotany.com/AIRI

Microgreens in Space?

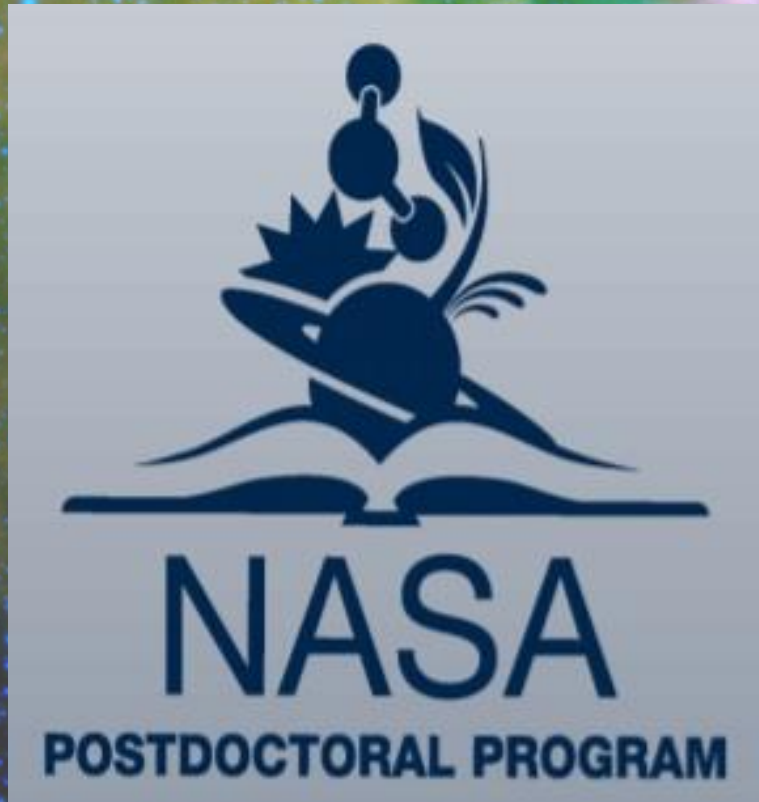




NASA internships



NASA Postdoctoral Program



- International applicants
- Must have completed a doctorate degree