UF Astraeus Space Institute

Dr. Amy Williams, Assistant Director

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ASTRAEUS
SPACE INSTITUTE

Rob Ferl,
Astraeus Senior Advisor

Rachael Seidler,
Director

Administrator Council

Anna-Lisa Paul, Chair
Warren Dixon
Elizabeth Lada
Siobhan Malany
Jasmeet Judge

Jordan Callaham,
Assistant Director of Administration

Assistant Directors

John Conklin
Jamie Foster
Terry Harpold
Amy Williams

Emily Hinds,
Communications Manager

Jane Santos,
Administrative Assistant

Astraeus Space Institute Priorities

- Serve as a space resource for academia, industry, government, and the public in the state of Florida (and nationally, globally)
- Build a network of partners across government, academia, and industry
- Enable space research excellence
- Develop the space workforce (majors, minors, certificates, internships, continuing education, workshops, etc.)

Astraeus Assistant Directors

John Conklin

Department of Mechanical & Aerospace Engineering

Jamie Foster

Department of Microbiology and Cell Science

Terry Harpold

Department of English

Amy Williams

Department of Geological Sciences

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UF Faculty Space Research Fields

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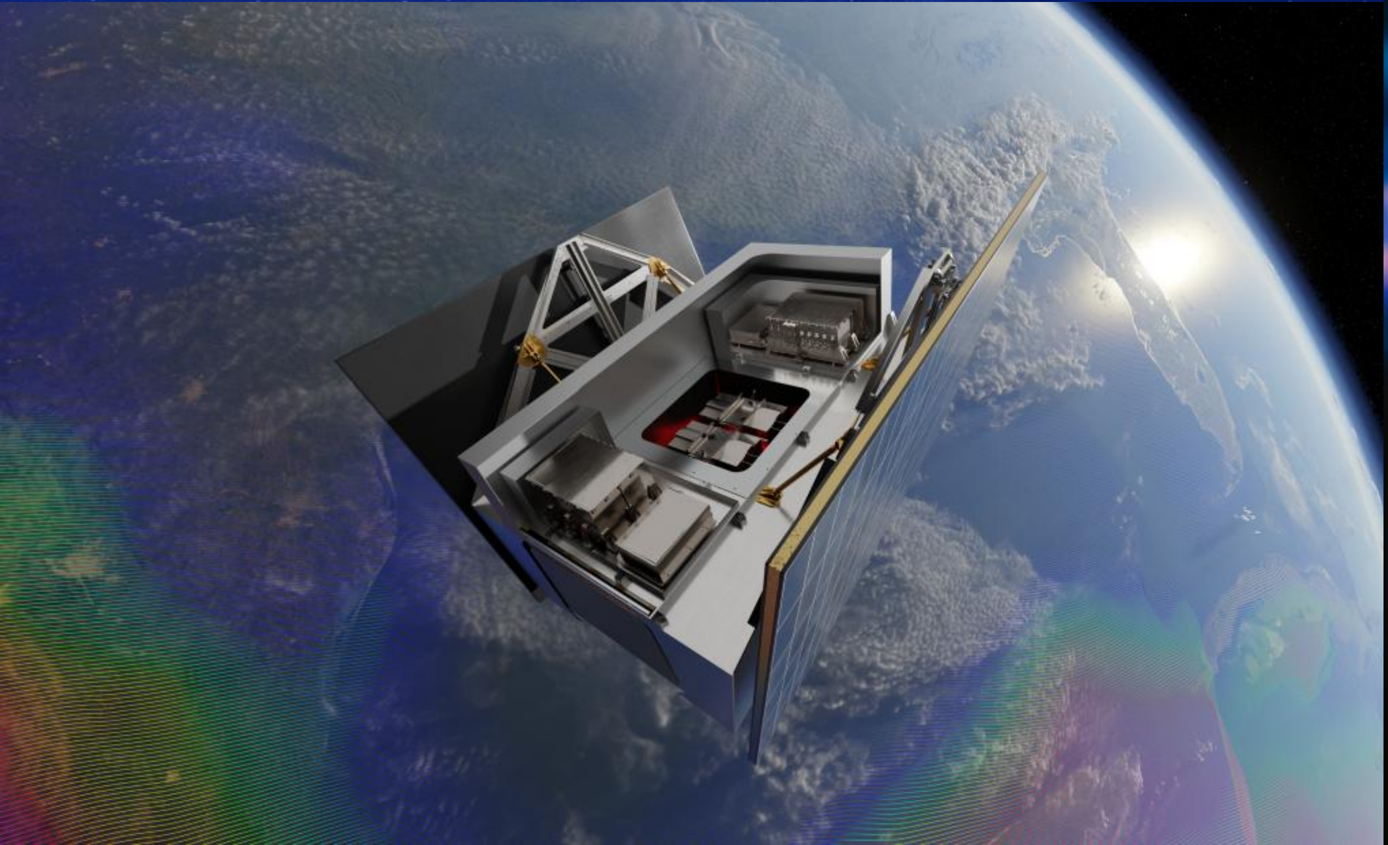
Gravitational Reference Advanced Technology Test in Space (GRATTIS)

John Conklin,

Mechanical & Aerospace Engineering



UF | Space Plants
UNIVERSITY of FLORIDA

Principal Investigators

Robert Ferl
Anna-Lisa Paul

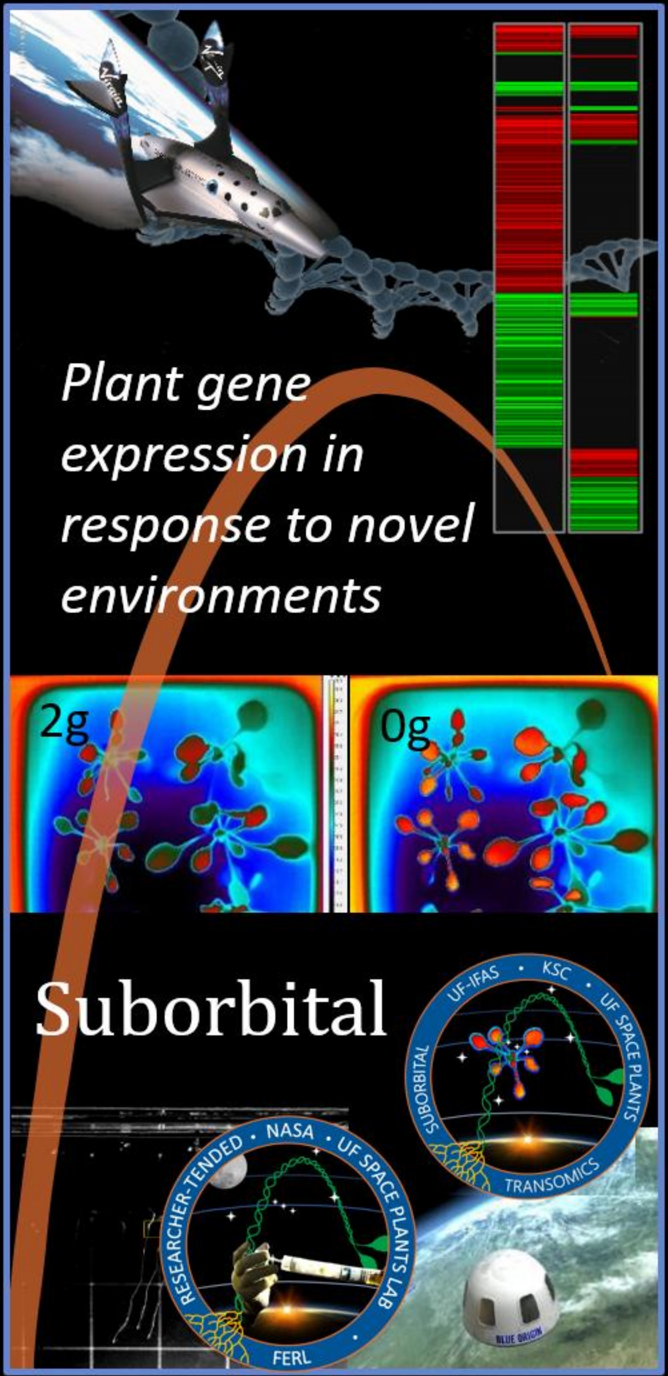
Lab Team

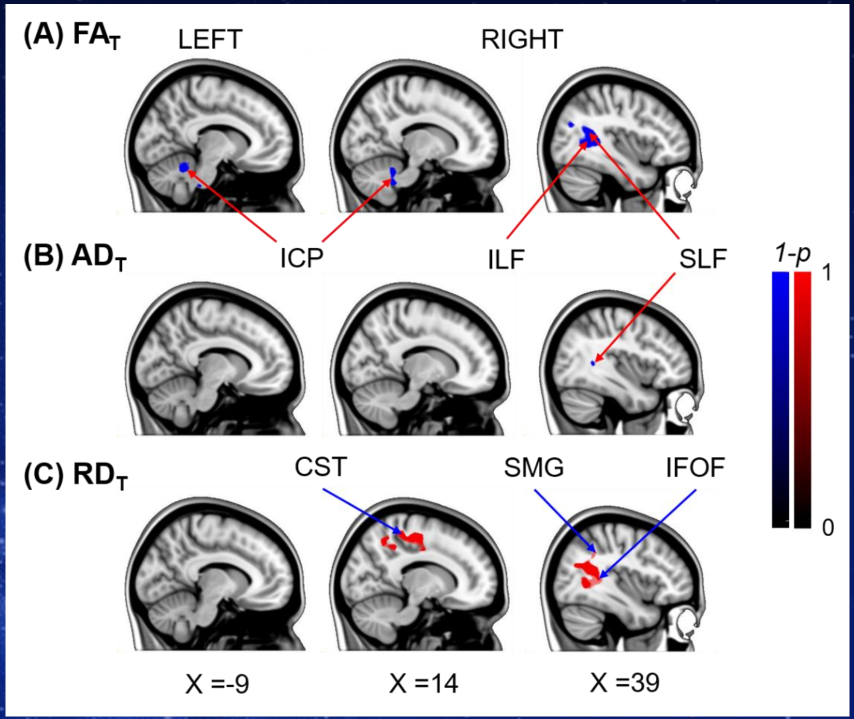
Jordan Callaham
Research Coordinator

Ciara Chiampou
Lab Manager

Hunter Strickland
Doctoral student

Vicken Aknadibossian
Postdoctoral assoc.





Brain and behavioral changes with human spaceflight & analog environments

Rachael Seidler, Applied Physiology & Kinesiology

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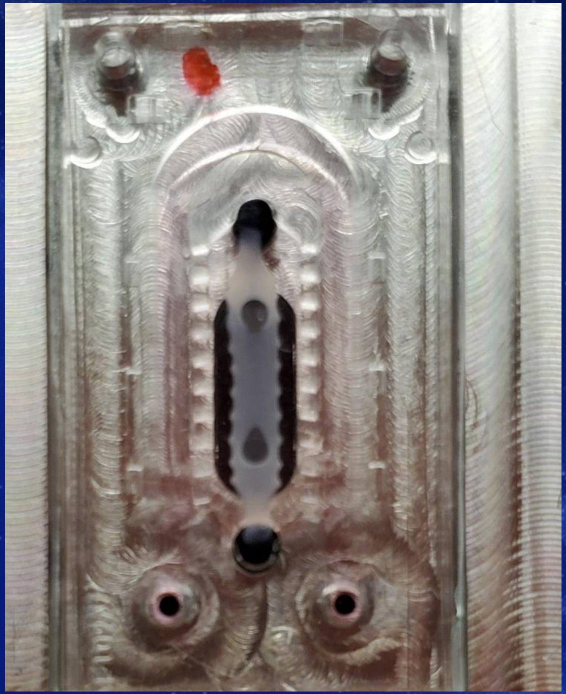
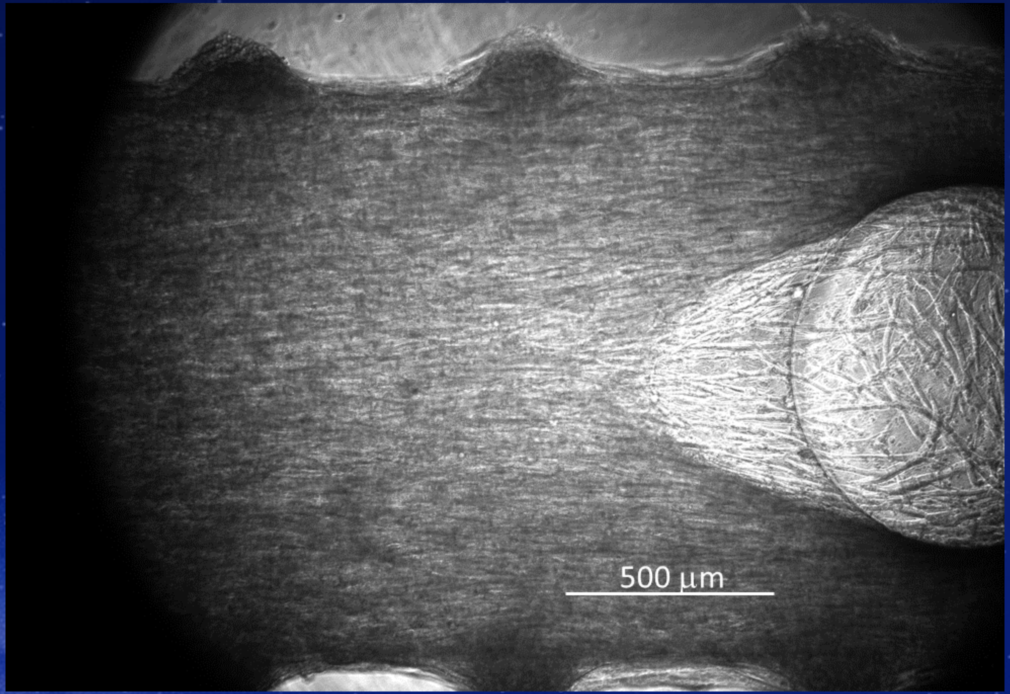
Muscle lab on a chip to study atrophy and treatments

Siobhan Malany, College of Pharmacy





Engineered skeletal muscle tissue (SMT) in a microfluidic chip pressed onto a fluid manifold prior to spaceflight (left) and a 10x image of the same tissue on orbit captured by a microscope built into the CubeLab (right). Credit: Generated by the Siobhan Malany Laboratory at University of Florida in collaboration with Space Tango.

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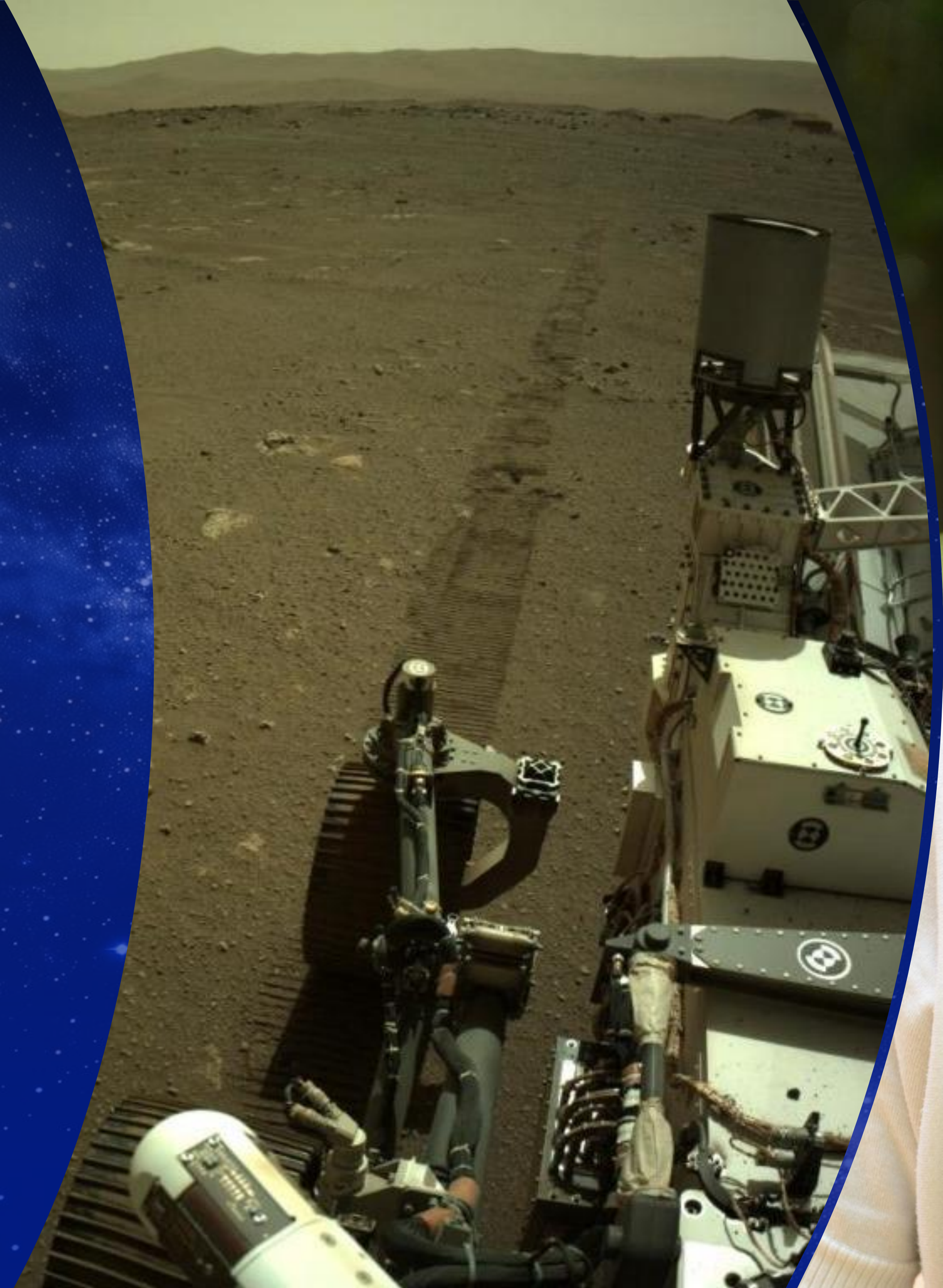
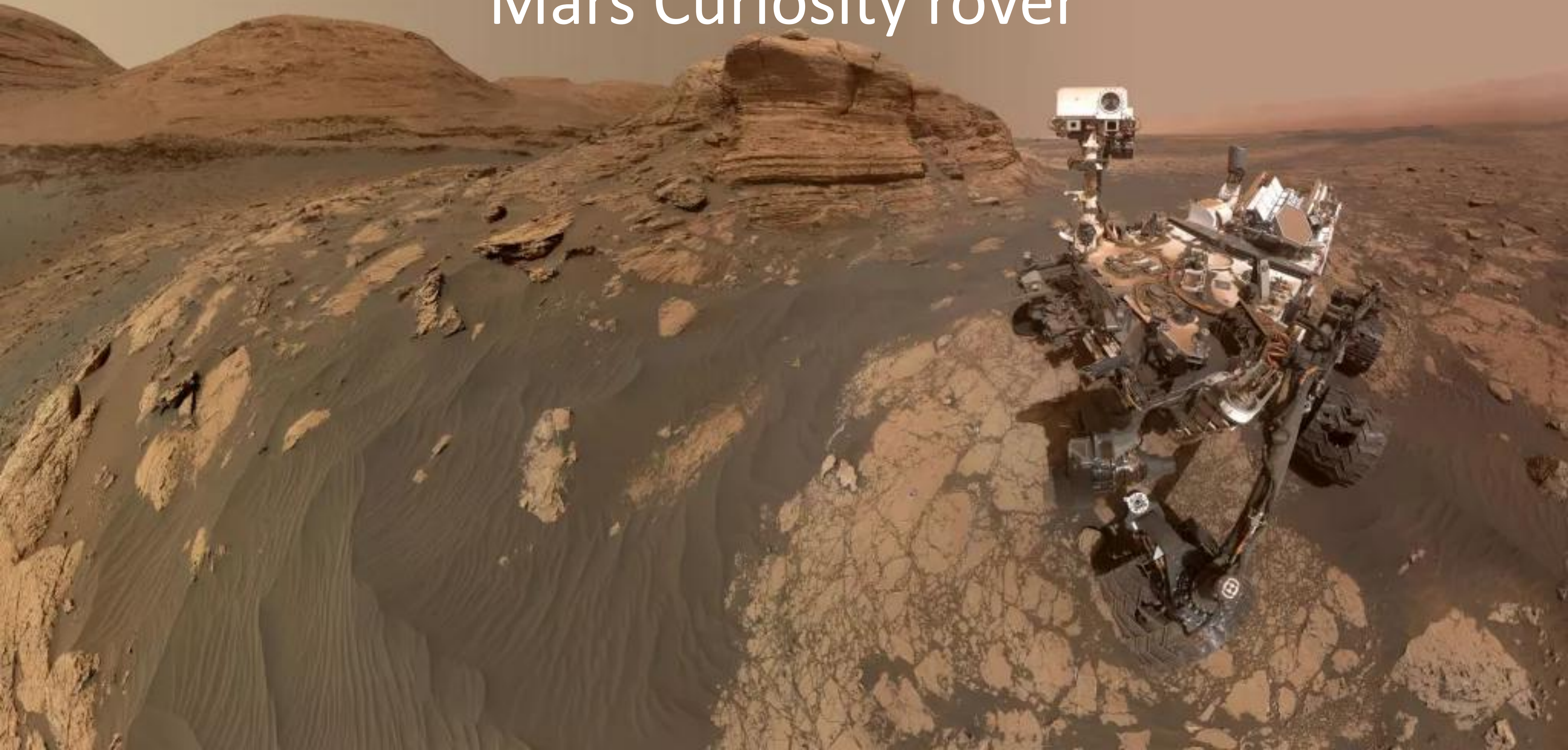
Amy Williams,
Geological Sciences

Characterizing Habitable Environments with the Mars Curiosity rover

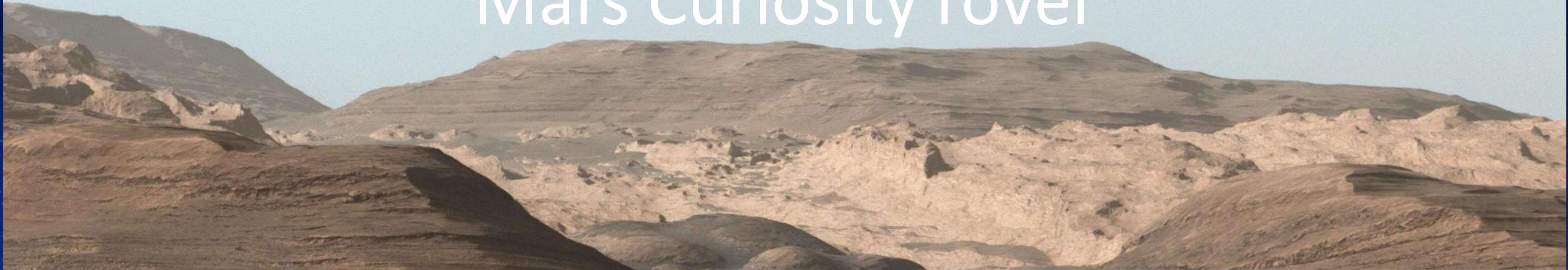
Searching for signs of life with the Mars Perseverance Rover

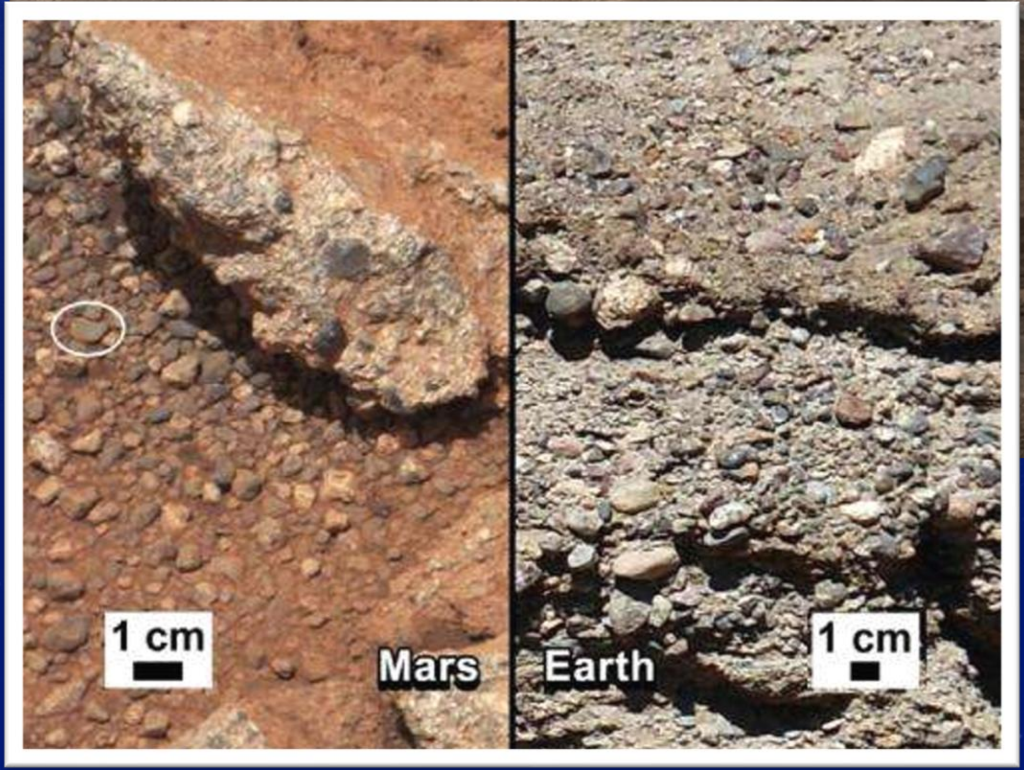


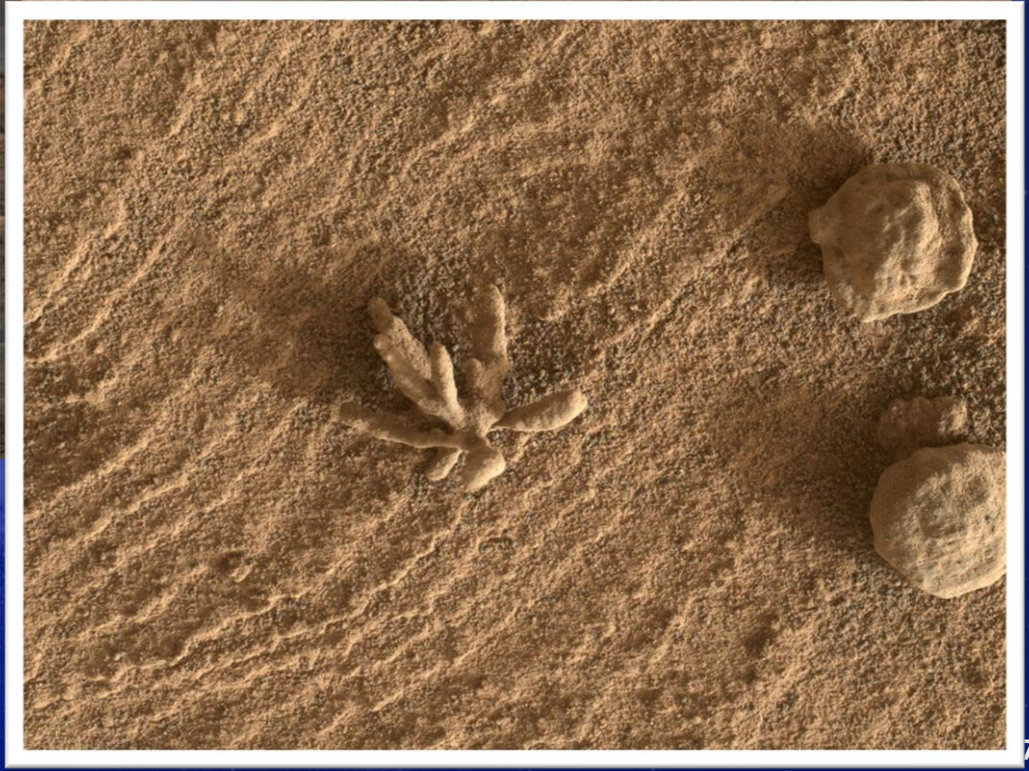
Characterizing Habitable Environments with the Mars Curiosity rover



Characterizing Habitable Environments with the Mars Curiosity rover







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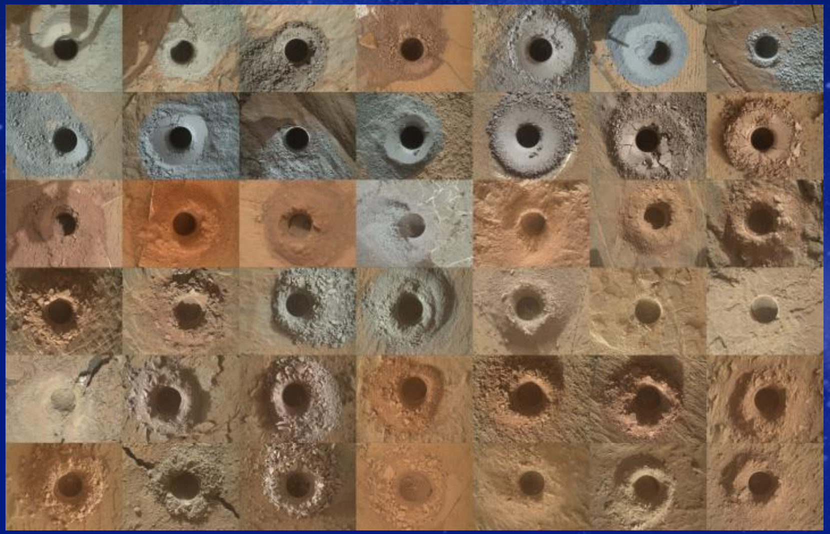
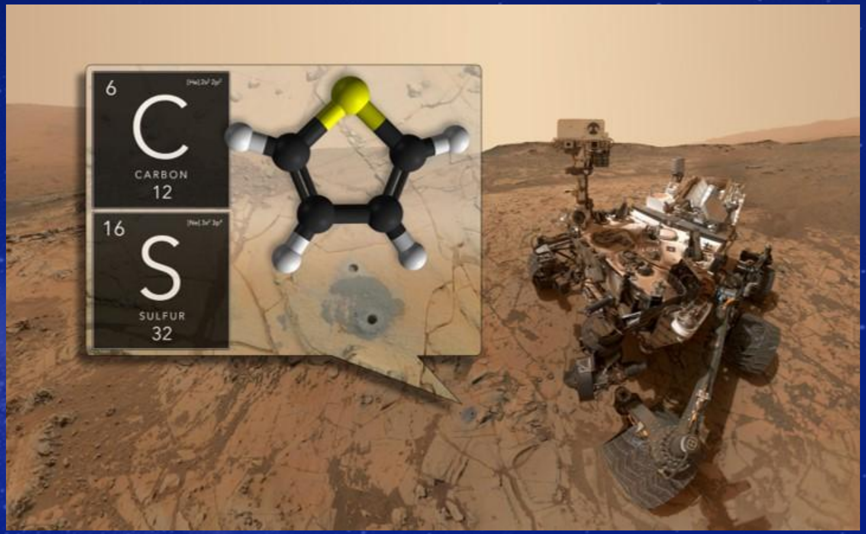
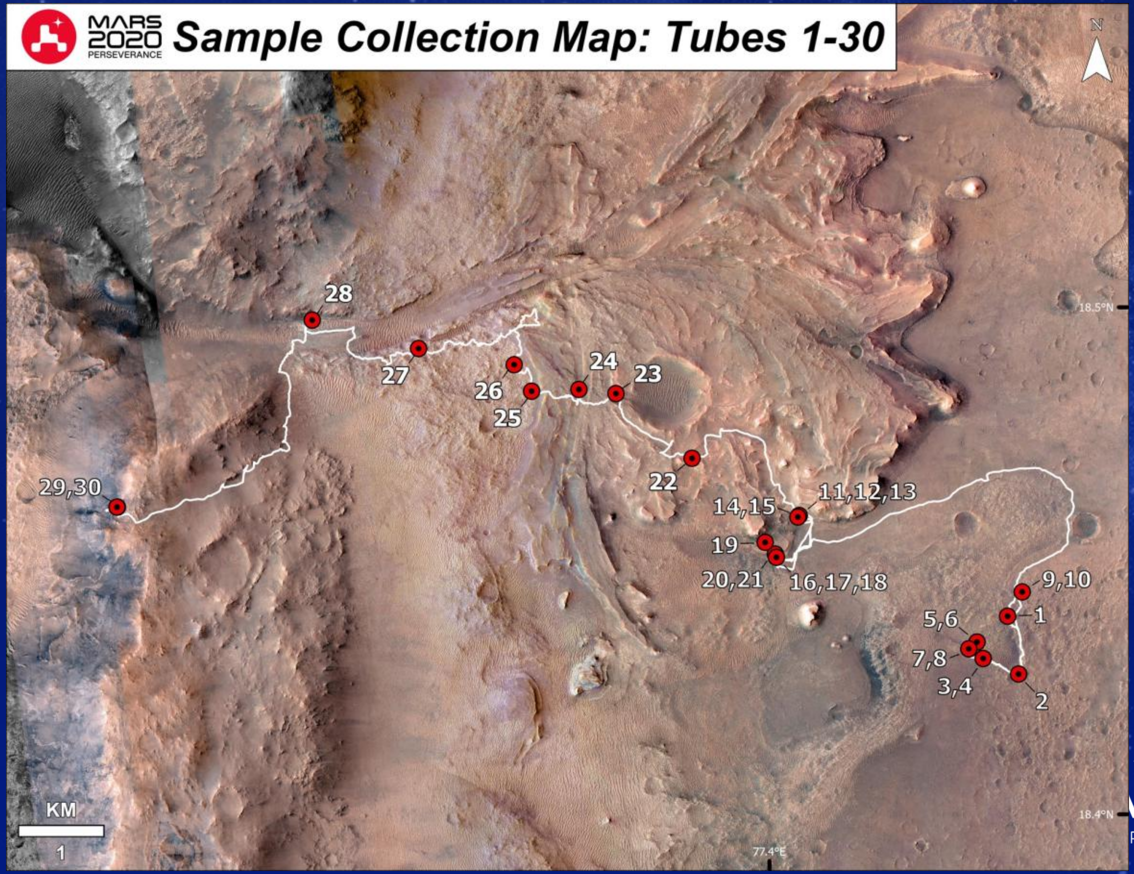
Curiosity at John Klein Outcrop
Sol 169
Credit: NASA/JPL-Caltech/Ken Kremer/Marco Di Lorenzo




6
C
CARBON
12
16
S
SULFUR
32

Searching for signs of life with the Mars Perseverance Rover

Searching for signs of life with the Mars Perseverance Rover



THE MARS 2020 SAMPLE IMAGE COMPENDIUM

J. N. Maki[1], K. Farley[2], K. Stack[1], J. F. III Bell[3], M. Wadhwa[3], F. Calef[1], C.D.K Herd[4], Olivier Gasnault[5], Roger C Wiens[6] and The Mars 2020 Science and Operations Teams, [1]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, [2]California Institute of Technology, Pasadena, CA, [3]Arizona State University, [4]Univ. of Alberta, Edmonton, [5]IRAP/CNRS/Univ. de Toulouse, [6]Purdue University.

Contact: Justin.N.Maki@jpl.nasa.gov

NASA's Perseverance rover continues to make progress on the task of collecting and documenting a set of Martian samples for possible return to Earth by the Mars Sample Return program [1]. The rover has acquired and sealed a total of 24 rock cores (8 igneous + 16 sedimentary), 2 regolith samples, 1 ambient atmosphere sample, and 3 witness tubes. Of these 30 sealed sample tubes, 10 were deposited in the Three Forks Sample Depot located on the floor of Jezero crater as part of a paired sampling campaign [2]. During the sample collection process, the sample core tips are imaged [3] by the Mastcam-Z [4] and Cachecam [5] cameras prior to tube sealing and subsequent storage [6]. Additionally, the sampling workspace is imaged by the Navcam [5], Front Hazcam [5], Mastcam-Z, WATSON [7] and RMI [8] cameras.

Mars 2020 Sample Inventory

Tube	Sample Designation	Tube SN	Seal SN	Ferrule SN	Lithology [9]
01	M2020-109-1 WB1	61	147	090	witness tube (pre-launch exposure)
02	M2020-164-2 Roubion	233	025	062	atmospheric
03	M2020-190-3 Montdenier	266	178	099	mafic, igneous
04	M2020-196-4 Montagnac	267	170	074	
05	M2020-262-5 Salette	246	194	107	olivine cumulate
06	M2020-271-6 Coulettes	284	219	189	
07	M2020-298-7 Robine	206	184	064	olivine cumulate
08	M2020-337-8 Malay	261	053	062	
09	M2020-371-9 Hahonih	262	172	129	basaltic andesite
10	M2020-377-10 Atsah	202	168	074	
11	M2020-490-11 Swift Run	186	188	101	fine to medium-grained sandstone
12	M2020-495-12 Skyland	272	192	068	
13	M2020-499-18 WB2	205	119	070	witness tube 2
14	M2020-509-14 Hazeltop	172	157	099	fine-grained sedimentary
15	M2020-516-15 Bearwallow	259	177	110	
16	M2020-575-16 Shuyak	264	068	085	fine-grained sedimentary
17	M2020-579-17 Mageik	184	587	030	
18	M2020-584-18 WB3	188	153	073	witness Tube 3
19	M2020-623-19 Kukaklek	242	151	113	fine-grained sedimentary
20	M2020-634-20 Atmo Mountain	059	098	063	regolith
21	M2020-639-21 Crosswind Lake	173	191	106	
22	M2020-749-22 Melyn	274	150	066	sandstone
23	M2020-822-23 Otis Peak	254	056	064	conglomerate
24	M2020-882-24 Pilot Mountain	258	451	196	sandstone
25	M2020-923-25 Pelican Point	178	024	113	sandstone
26	M2020-949-26 Lefroy Bay	263	018	089	sandstone
27	M2020-1088-27 Comet Geyser	174	214	026	sandstone
28	M2020-1215-28 Sapphire Canyon	244	227	226	analysis in progress
29	M2020-1401-29 Silver Mountain			82	analysis in progress
30	M2020-1420-30 Green Gardens		140	71	analysis in progress

Three Forks Depot

Onboard Cache

Onboard Cache

Atmospheric Sample

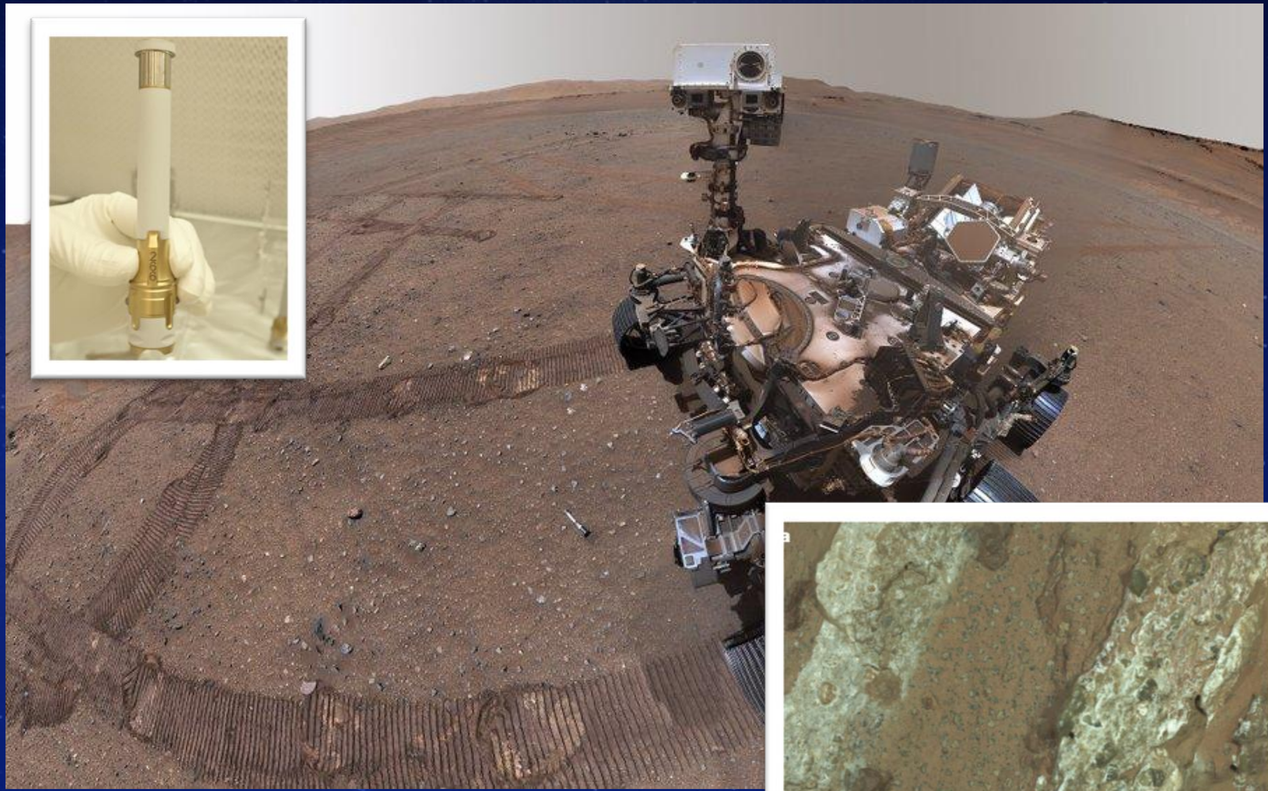
Witness Tube

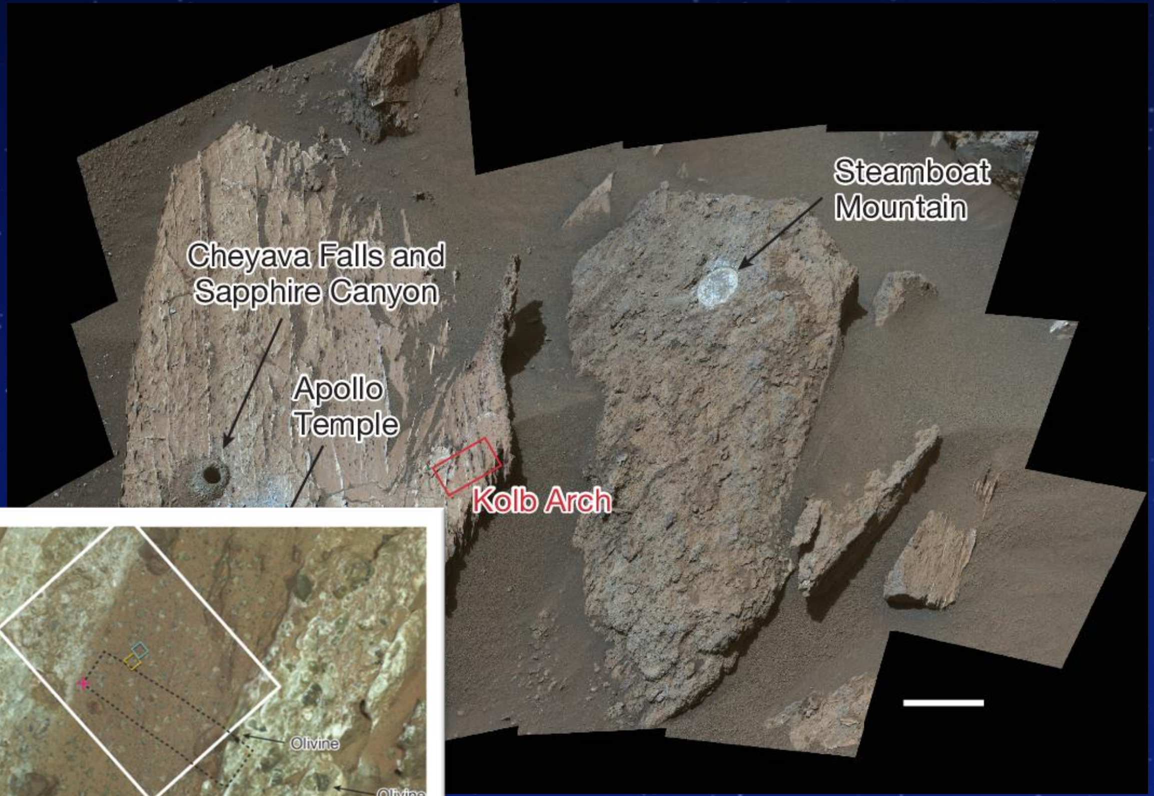
Witness Tubes

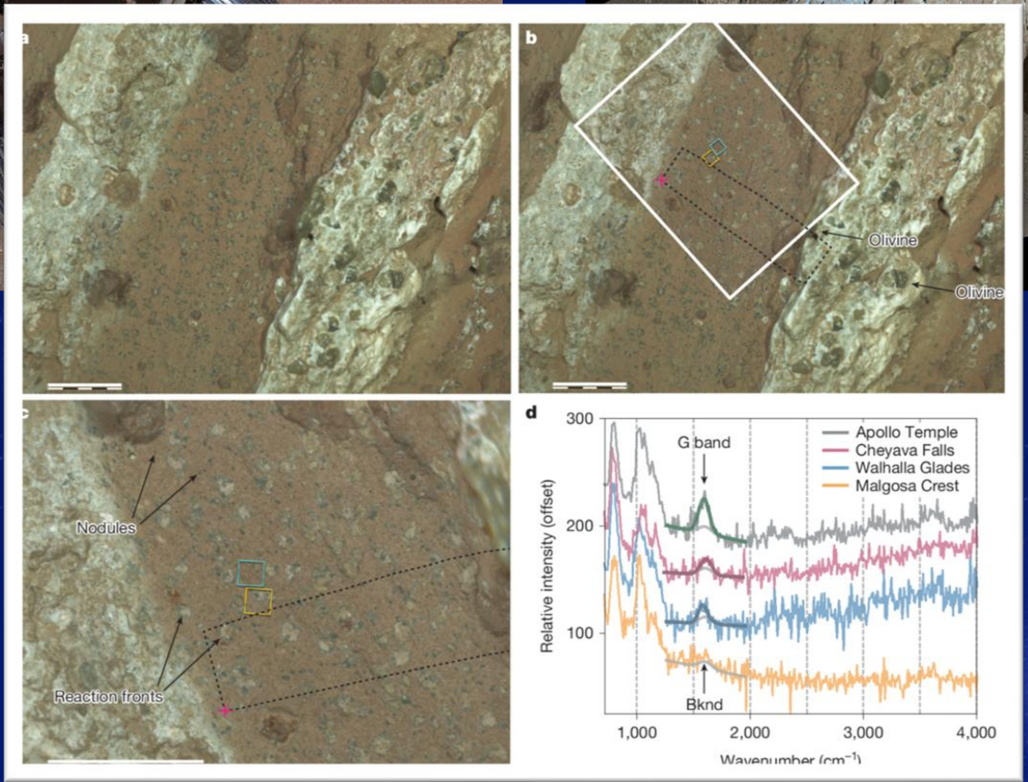
Sample Collection Map: Tubes 1-30

Collection locations for the Mars 2020 samples

Searching for signs of life with the Mars Perseverance Rover







Want to learn more / connect with us?

Astraeus.ufl.edu

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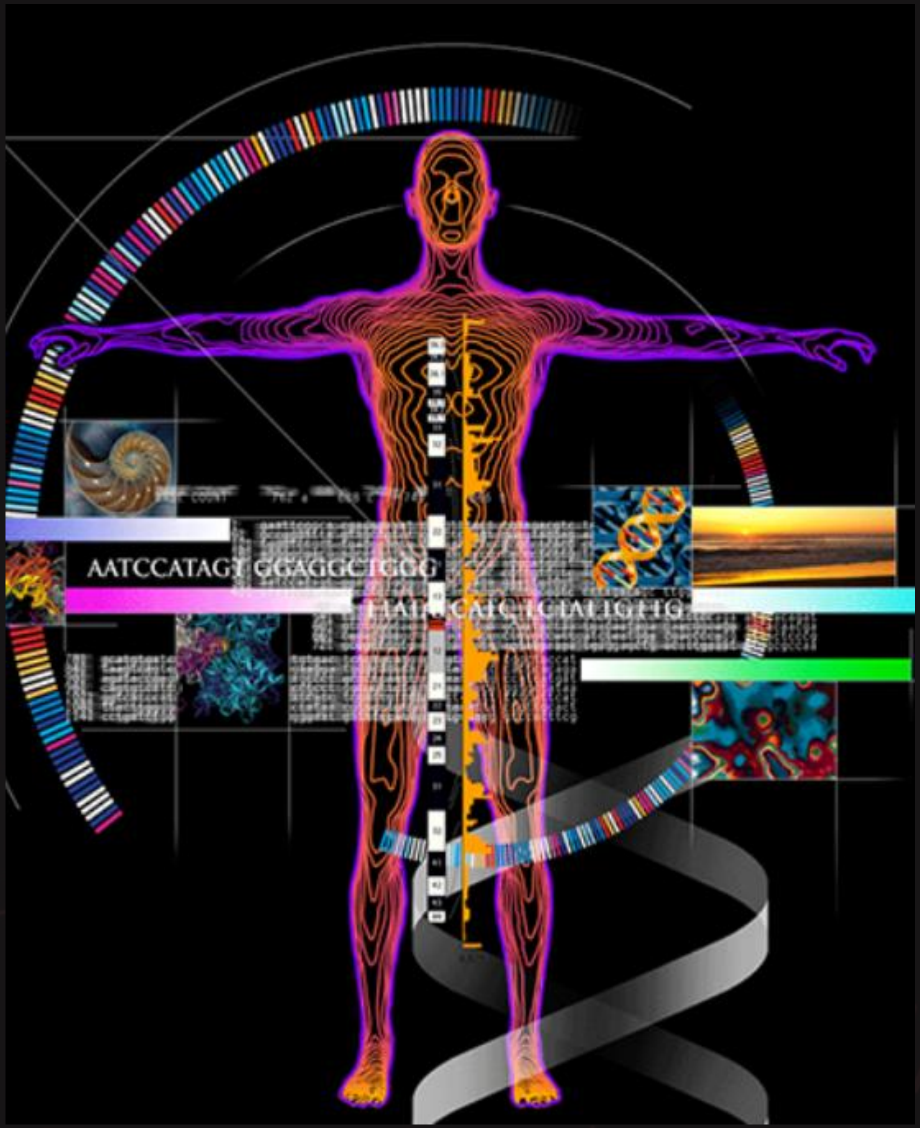
Leading Innovation in In-Space Biomanufacturing

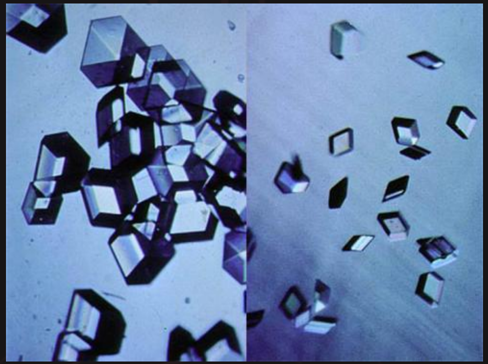
For Earth, Moon and Beyond

Siobhan Malany, Ph.D.
Director of In-Space Biomanufacturing Innovation Hub
Leader of C-STARS Strategic Plan
Associate Professor, College of Pharmacy
University of Florida

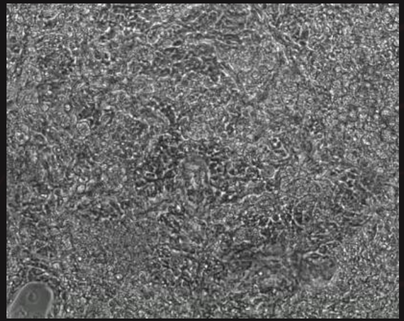
The Future Space Economy
Harnessing the Power of Microgravity



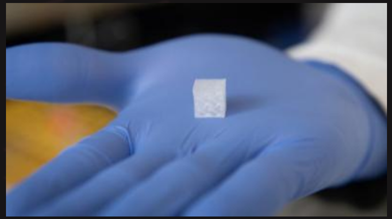
The Healthcare Frontier:
Why Biomanufacturing in Space?



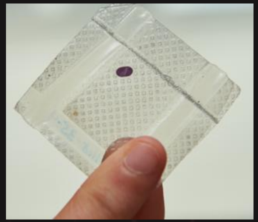
Higher Purity



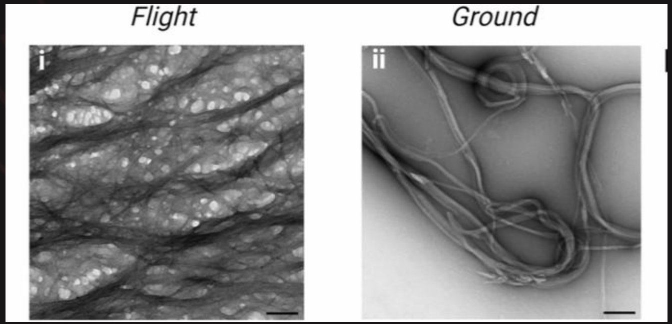
Enhanced Proliferation



Improved Uniformity



Increased spatial homogeneity



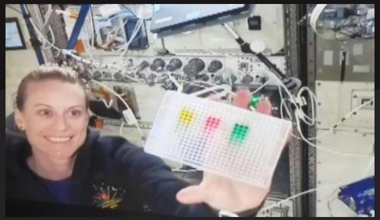
Unique Biomolecular Structures

Changes in Mechanobiology

Novel applications for Earth

Mission critical for enabling sustainable deep space missions

Science on Rockets: Advancing Muscle Tissue Chips in Space

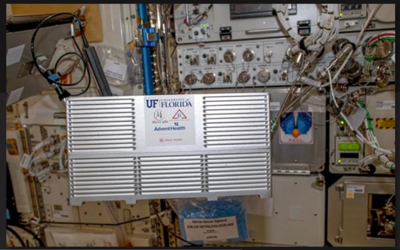


SpaceX CRS-4
NanoRacks
Competition

2014

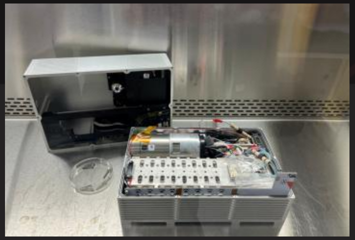
Cygnus NG-10
Florida – Isreal
Innovation Program

2018



SpaceX CRS-21
Tissue Chips in Space

2020

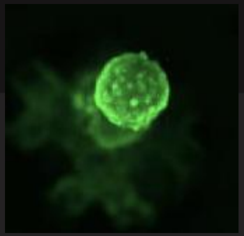


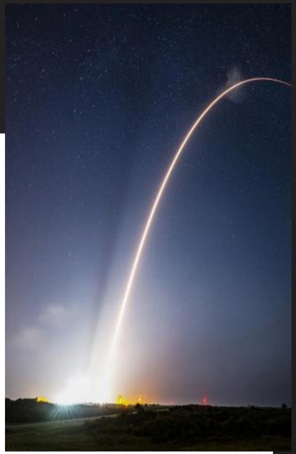
SpaceX CRS-25
Tissue Chips in Space

2022

SpaceX CRS-26
Tissue Chips in Space

2022





Future Flight
NSF Mechanobiology

2026

In-Space Bio Hub
University of Florida

UF In-Space Biomanufacturing Innovation Hub

Leading Innovation in Biomanufacturing For Earth, Moon and Beyond

The UF In-Space Biomanufacturing Innovation Hub unites researchers across disciplines to accelerate in-space biomanufacturing readiness through seed funding, collaborative events, and partnerships that connect campus innovation to flight opportunities.

- Provide seed funding to cross-collaborative teams (> 600k)
- Host monthly online seminar series
- Organize Annual Biomanufacturing Symposium
- Promote flight opportunities – LEAP, Dream Chaser, VAST
- Established Memorandum of Understandings
- [illegible]llaborations

Signing of MOU with Space Agency of Switzerland and Liechtenstein

Upcoming flight Dec-Jan

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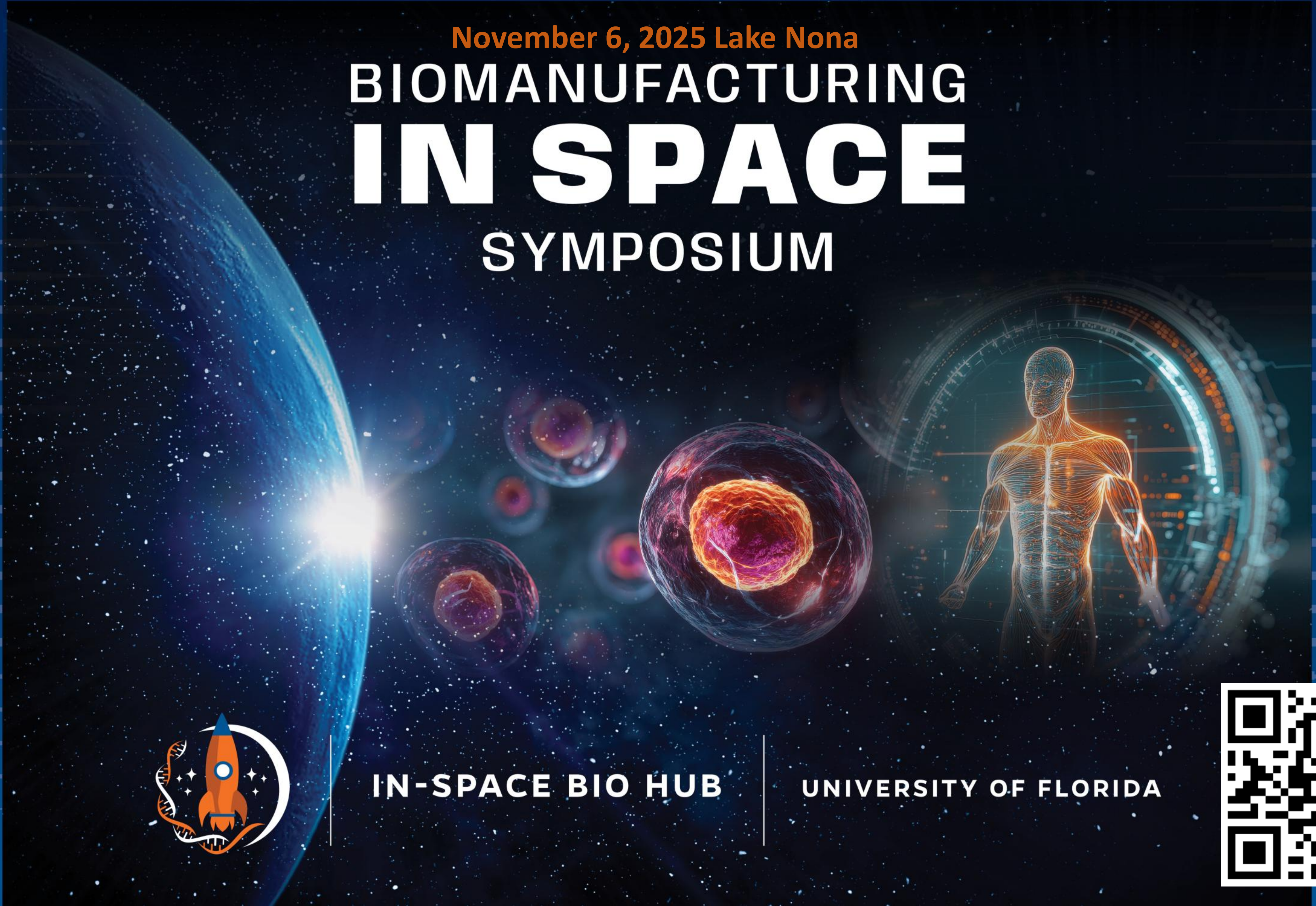
CSA
Center for Space and Aviation
Switzerland and Liechtenstein


November 6, 2025 Lake Nona
BIOMANUFACTURING
IN SPACE
SYMPOSIUM
IN-SPACE BIO HUB
UNIVERSITY OF FLORIDA

Introducing C-STARS

Center for Science, Technology, and Advanced Research in Space

Strategic Partnership

UF UNIVERSITY of FLORIDA | EMBRY-RIDDLE Aeronautical University | FLORIDA TECH | FAMU FLORIDA AGRICULTURAL AND MECHANICAL UNIVERSITY

Mission

To advance in-space manufacturing by developing sustainable solutions for space exploration and translating benefits to life on Earth—while training the next generation of space workers sciences.

Cost & Time Reduction

Accelerate Innovation

C-STARS Value

Access to Space

Develop Workforce

C-STARS Strategic Planning Meeting - Lake Nona

Held April 24-25, 2025 at University of Florida

Innovative Alliances : Universities, Industry & Government

Strategic Partners

Aerospace companies, government agencies, and industry leaders actively engaged in advancing space biomanufacturing

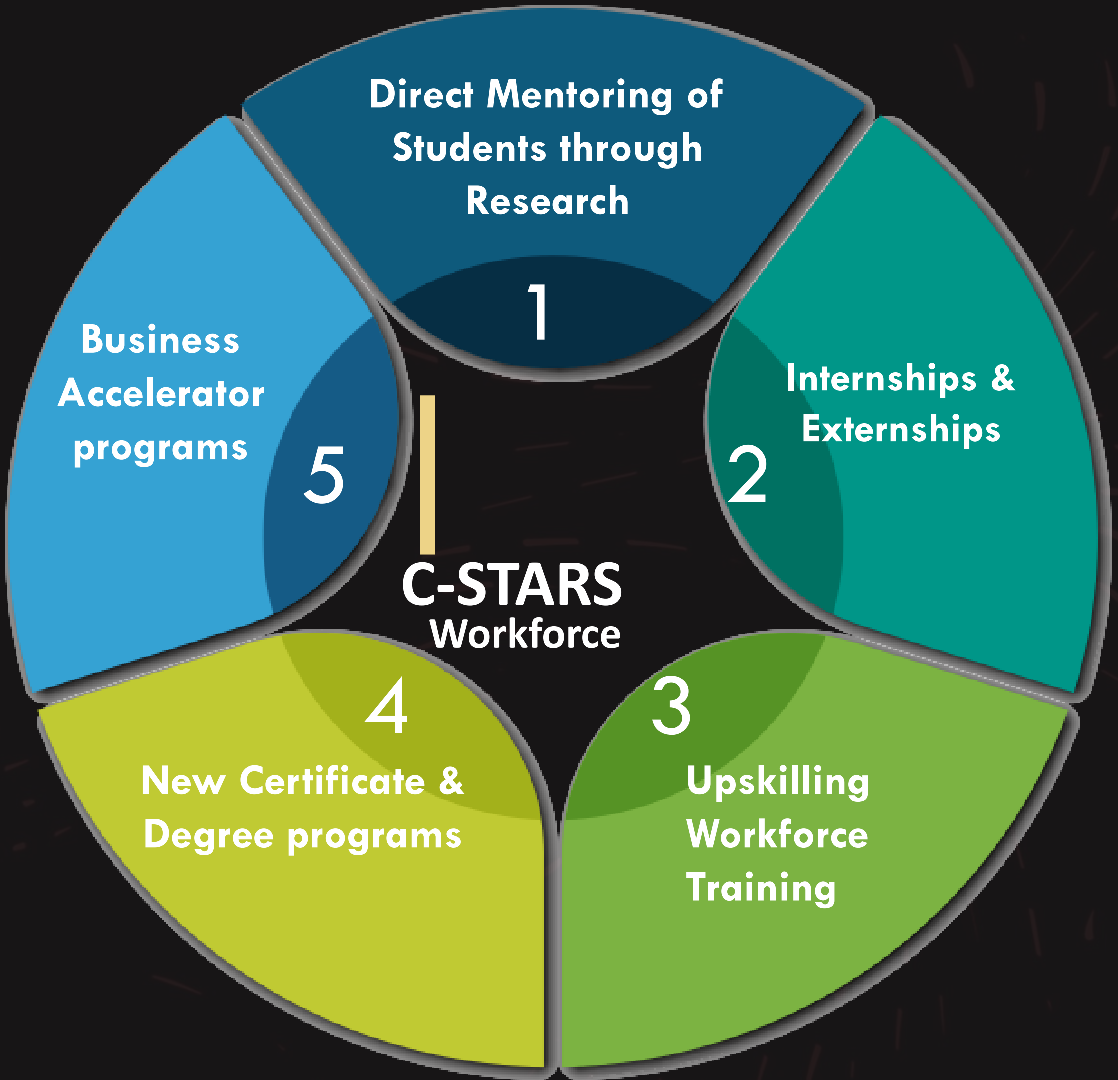
IUCRC Model

National Science Foundation-backed Industry-University Cooperative Research Center framework driving innovation

Shared Resources

Collaborative infrastructure accelerates research from laboratory concepts to orbital deployment

Training the Next Generation of Space Biomanufacturers



ASTRAEUS

STUDENT ORGANIZATION

A *space* for all students interested in *space* at the University of Florida

ASO Mission

01

Connecting students directly to active areas of space opportunities and space-related research at the University of Florida and beyond

02

To encourage personal and professional connections with other students, researchers, and professionals interested in space and related technologies/fields

03

Advance student knowledge in space history and ongoing work through providing access to leadership, community engagement, social, and educational events.

Student Engagement & Involvement

Leadership Opportunities – Executive Board

Hannah Roberts
President
Genetics
Graduate Student

Hunter Strickland
Past President
Horticulture
Graduate Student

Grace Smith
Secretary
Plant Science
Undergrad Student

Sarah Burrows
Dept Liaison
MAE
Graduate Student

Deep Thakkar
Campus Liaison
Cell Systems
Graduate Student

Jessica Xhumari
Vice President
Microbiology
Graduate Student

Katelyn Palmer
Treasurer
Microbiology
Graduate Student

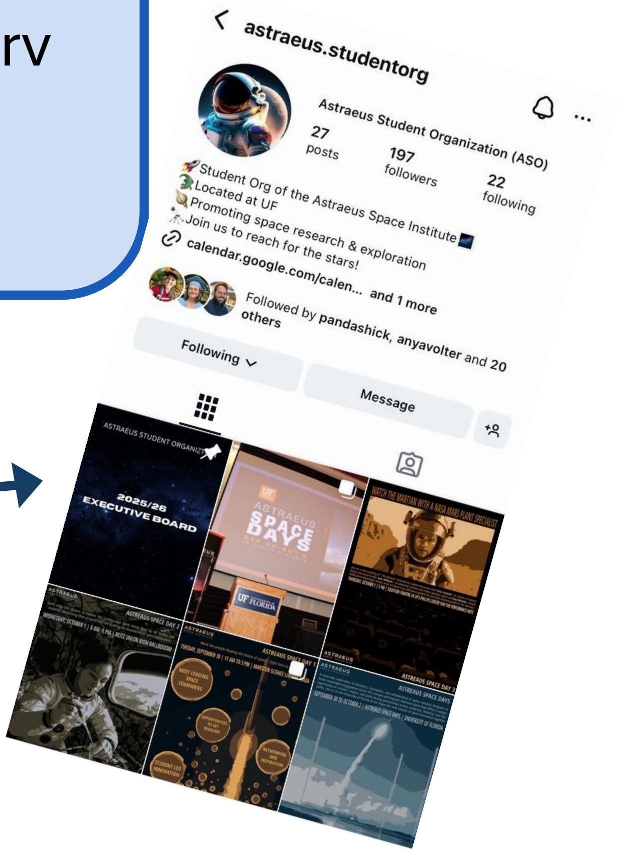
Eden Rose
Social Media
Media Production
Undergrad Student

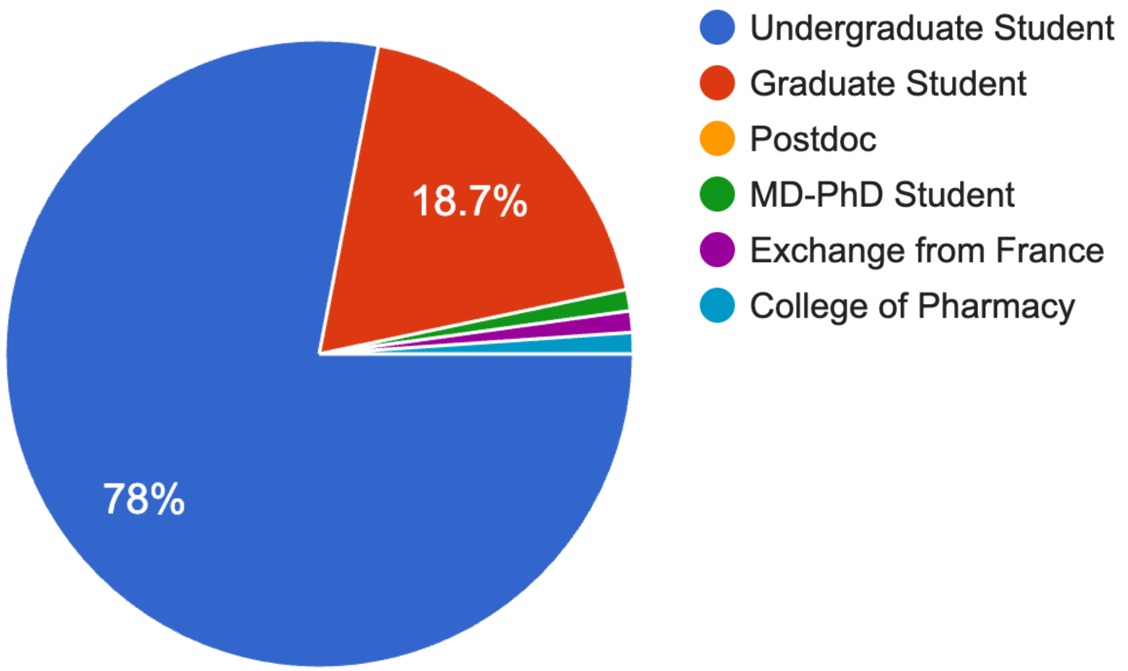
Cole Mackay
Org Liaison
Biochemistry
Undergrad Student

Student Engagement & Involvement

Methods of communication:

- Slack and Listserv (250+ students)
- Instagram





Demographic of students involved at events this semester

Meetings & Events

ASO Hosted Events
- General Body Meetings
- Student invited seminar series
- Lab tours

Participation/teaming in Tech Challenges

Involvement/Attendance at Astraeus Events

Support/Co-host Events with other Space+ Student Organizations

Lab Tours/ Student Invited Seminars

ASO representation at Astraeus/beyond