



RESEARCH, DISCOVERY & INNOVATION

Biosphere2

# Biosphere 2 Summer Science Academy

## Research, Leadership, & Collaboration

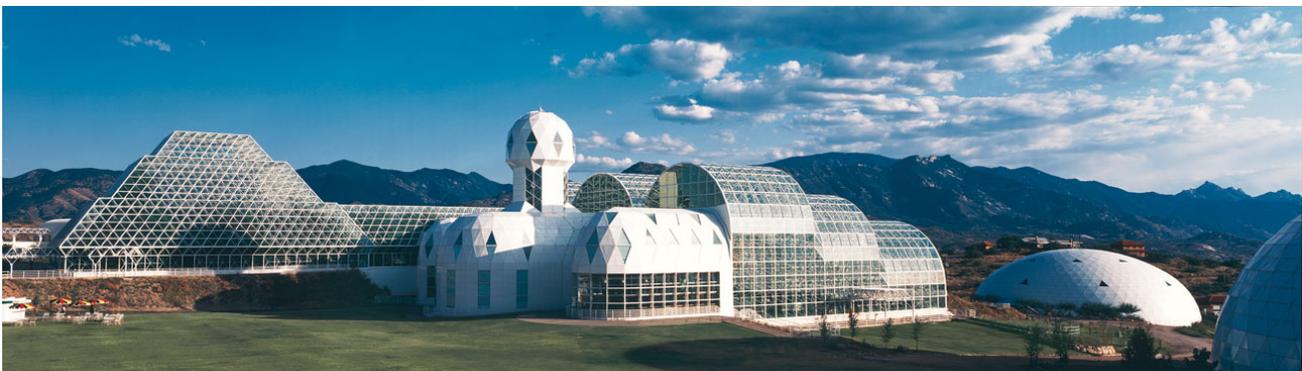
Residential Program for Middle & High School Students  
Earth and Environmental Science Emphasis



***“It was the best experience of my life.”***

*-Biosphere 2 Summer Science Academy Participant*

Each July, more than 80 students across **middle- and high-school** grades spend one of two weeks engaged in **meaningful, hands-on, and fun research** working side-by-side with Biosphere 2 research faculty and staff. The successful **residential Summer Science Academy** programs add to the University of Arizona’s impressive outreach portfolio dedicated to **improving public scientific understanding** at all levels, and increase awareness of the tremendous opportunities available at the UA. Biosphere 2, a department in the UA College of Science, has dual missions of science education and cutting-edge environmental research.



***“Our son...had the most AMAZING week!  
As parents we were extremely impressed  
by the leadership, staff, the program,  
activities....the proof was in his personal  
experience which was outstanding.”***

*-Biosphere 2 Science Academy Parent Feedback*



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## Summer Science Academy

At Biosphere 2, we pride ourselves on residential programs for both K-12 and college-age students that partner directly with active, professional researchers and scientists. The Summer Science Academy (SSA) follows this model with an eye toward **motivating students in STEM** (Science, Technology, Engineering, and Mathematics) fields to pursue related majors and careers. We incorporate **inquiry, creativity, leadership, and collaboration** that prepare all students for success no matter what career path they choose.

Over two separate one-week programs in July, SSA welcomes students from around **the United States (more than 20 different states!), as well as from Mexico, China, and Canada**, to participate in this unique, immersive research experience. Each group of approximately 40 students spends a week asking novel questions under the **mentorship and guidance of Biosphere 2 faculty** members. Earth and Environmental Science research areas inside Biosphere 2, and taking advantage of the beautiful Sonoran Desert setting, include:

1. **Ocean/Plankton/Mangroves**  
(Dr. Julia Cole)
2. **Soils/Microbial Diversity**  
(Dr. Katerina Dontsova)
3. **Landscape Evolution Observatory**  
(Drs. Peter Troch & Aditi Sengupta)
4. **Rainforest/Evapotranspiration**  
(Dr. Joost Van Haren)



During each week, students spend a substantial portion of each day **conducting research** as part of a small team, collecting and analyzing data, and, as the week progresses, preparing the **research poster** that will become part of their formal presentation at the conclusion of each week. Each day also includes leadership and team-building activities, and one day during each week is dedicated to an off-site visit to a leadership ropes course and the University of Arizona main campus. Each week concludes with a **formal science symposium, poster session**, and awarding of certificates of completion with family members and friends present.



Challenge ropes course engagement.



Poster symposium & certificate ceremony.

## Outcomes

Primary assessment comes from the production of posters and oral reports given by teams about their week-long research experiences. The general consensus of the Biosphere 2 research leaders is that the posters are often **comparable to posters produced by many university undergraduate students**, which is remarkable given the ages of the participants and the short nature of the projects. Participant posters are also displayed for several months in public spaces at Biosphere 2 to give our 100,000 annual visitors a better understanding of the program and its efficacy.

## Demographics & Program Feedback

The student participants represent **>20 US states and 4 nations** (U.S., Mexico, China, and Canada) during the two weeks of Biosphere 2 Summer Science Academy. The program has been nearly a **fifty-fifty split between male and female** participants. **Post-program survey results include:**

1. *Parent/Guardian satisfaction: **88% of respondents rated the program 9 or 10** on a 10-point scale with 1 being least satisfied, 10 being most satisfied.*
2. *Program recommendation: **97% of participants and their families would recommend the program** to others.*
3. *Fun and friend making: 97% of the student participants felt that **the program helped them make new friends**.*
4. *Comfortable learning about and doing science: 96% of the student participants reported feeling **more comfortable with learning about and doing science** at the end of the program.*
5. *Public speaking/communication skills: 93% of student participants reported feeling **more confident in group communication settings**.*
6. *Participants **were challenged – and liked it!** 93% of student participants reported that they **felt stretched to do things outside their comfort zones**.*
7. *A unique attribute of the program is student participants **working side-by-side with Biosphere 2 research staff**. 100% of the participants reported enjoying this opportunity.*
8. *Our program helped student self-esteem. 100% of student participants reported that **the program helped them feel good about themselves**.*

***“It seems to have been an illuminating experience for my daughter. She was able to see and be a part of real science at work with real scientists. It has really solidified her decision to pursue a STEM field at this point, and opened her mind up to all the possibilities the sciences offered that she didn't even know existed.”***

*-Biosphere 2 Science Academy Parent Feedback*

## **Future Programs**

Building on our prior success, we will include a more focused **scholarship element** so that **underserved populations**, especially from southern Arizona, can participate. By **partnering with local organizations** (e.g., Big Brothers Big Sisters, Boys and Girls Club, etc.) that already work with underserved groups, they can help us identify students to receive scholarships to attend the Biosphere 2 Summer Science Academy. Importantly, our partners will help us **measure the impact** of the program on scholarship recipients. Several **generous donors** make these scholarships possible.

The Galileo Circle, generous donors that support the College of Science at the University of Arizona provide some stipends for the UA students that will be selected as **2017 Biosphere 2 Outreach Scholars**, serving as mentors, role models, and counselors in July, following focused training and practice. The previous 45 outreach scholars were a fantastic mix of UA undergraduates and graduate students, men and women, and various majors and expertise.

We are also soliciting proposals for **adding other Science Academy components**, such as a *Science of SCUBA* week that would include dive certification and a science curriculum, as well as additional fall, winter, and spring programs.

***“Best time. Awesome time. (He) wishes it had been even longer. Life-changing experience for him.”*** *-B2 Science Academy Parent Feedback*



For more information, or to donate:

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*-Biosphere 2 Summer Science Academy Participant*