Astrobiology at the Edge of Space: Undergraduate Research and Public Outreach as Key Components for Student Engagement. B. S. Maher[1], L. Hoerner[1], and R. Archer[1], [1]Red Rocks Community College, 13300 W. Sixth Ave., Lakewood, CO 80228, Barbra.maher@rrcc.edu, Lynnette.hoerner@rrcc.edu, Richard@perastra.net.

Red Rocks Community College recently became a part of the Colorado Space Grant Consortium (COSGC). The NASA sponsored Space Grant program provides opportunities for undergraduate research projects that involve a high altitude balloon launch through the DemoSat program. DemoSat provides a low-cost access to the edge of space to encourage student innovation, creativity and persistence in science and engineering. The program encourages recruitment of underserved populations in STEM. The science department at Red Rocks was excited to become a part of this project for this academic year and quickly identified interested students to form a DemoSat team.

Our student DemoSat team has designed an astrobiology themed project for their edge of space research. Our student team has 21 members, 15 of whom are first generation college students. The team is highly diverse in age, gender, and ethnicity. Several team members became interested in the project through their enrollment in our introductory Astrobiology course, AST 150. These students were instrumental in guiding the student team towards a focused, sophisticated research question investigating an extremophile response to edge of space conditions as analog of possible Martian biosignatures in similar exposure conditions. The team has designed a unique DemoSat flight package, obtained permission from the National Park service for collection of the microbial mats from Bad Water, CA, and devised a unique approach for studying the microbial community response to edge of space conditions focusing on viability studies and DNA probe analysis.

In addition to the undergraduate research program, the students are doing public outreach by participating in Aerospace Day at the State Capital, STEM Week at Red Rocks Community College, and are presenting their work at numerous professional venues. They are also producing a video about their experiences and research process. The students have organized themselves into discipline teams which allow their individual interests and talents to shine including, astrobiology/Mars, business/communications, engineering, biology, and marketing. They have made connections with numerous professionals beyond Red Rocks and are actively involved in recruitment of additional students for future projects. The students are motivated and driven to be a part of such an exciting interdisciplinary field of research as astrobiology. In the words of one of our students, “this opportunity is something not expected at a community college”. Astrobiology has provided a key opportunity for student engagement and success.