"HANDS ON, MINDS ON" STEM TEACHING: DEVELOPMENT OF A HIGH SCHOOL SUMMER ACADEMY R. E. Anderson[1] and members of the Blue Marble Space Institute of Science[1],
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Introduction: Students of all ages are fascinated by the fundamental questions underlying the field of astrobiology: How did life begin? How has it affected its host planet? Does life exist elsewhere in the universe? Astrobiology is therefore a powerful teaching tool that can be used as a means to draw students into science, technology, engineering, and math (STEM) disciplines. We are in the process of organizing an Astrobiology Summer Academy and Teacher Training Workshop, with the vision of using astrobiology as a focal point to introduce hands-on, inquiry-based STEM education to underserved high school students.

Vision: Our current vision is for the academy to take place in two parts, each one week long: the first week will focus on introducing high school students to the fundamentals of astrobiology through field trips, hands-on activities, lab experiments, and student projects. In moving away from lecture-based formats and focusing on intellectually stimulating hands-on experimentation, we aim to develop modules that engage students in the learning process itself. The second week will focus on training high school teachers: we will introduce the basics of astrobiology and share some of the activities we've developed, and we will work with the teachers to brainstorm lesson plans that use effective pedagogical techniques to teach topics in astrobiology. We aim to make these lesson plans widely available to other teachers to ensure as broad an impact as possible. The primary organizers and teachers of this academy will be early career scientists, who will be gaining invaluable experience in the development of pedagogical, communication, and mentoring skills. Our aim is to have positive impacts on the local scale for both students and teachers, and to disseminate the materials generated to the wider astrobiology community using virtual tools. The academy will be designed to not be constrained to a particular locality to maximize the prospects of hosting it at different sites and engage local communities.

Previous Academies: A parallel academy, the Astrobiology Summer Academy, has already been organized and conducted at the University of Edinburgh by Charles Cockell and colleagues. The success of this academy has inspired our own, and some of our members have participated directly in the UK Astrobiology Academy. We are hoping to continue this connection by working with the UK Astrobiology community in the planning process, and we hope to foster international connections between teachers and students through this collaboration.

Possible Synergies: We are looking for individuals who are interested in collaborating on this effort in any capacity. We welcome ideas for possible synergies with pre-existing efforts for education and public outreach, or interest from individuals who wish to help develop teaching modules for the students and/or for teachers. Our current work is focusing on securing funding for this idea, with the hope of conducting a pilot academy at a research center in Grand Teton National Park. Ideally, we will turn this academy into an annual event with a rotating location, focusing each year on a students and teachers within a particular region. In this way, we can "plant the seed" of astrobiology STEM education in K-12 classrooms across the country.