



BMSIS Young Scientist Program

last updated: 02/07/2020

About BMSIS

Blue Marble Space Institute of Science is a non-profit research institute with an interdisciplinary approach to studying the relationship between Earth system science, space exploration, and the future of humanity. Our participants constitute a distributed network of scientists across the world that integrate research across disciplinary boundaries and facilitate scientific conversations with the public in traditional and innovative ways.

Specific areas of research include: *planetary habitability · origin of life · climate change · sustainable development · human spaceflight · space biology · solar system exploration · remote space exploration · global catastrophic risk.*

Our scientists engage in interdisciplinary research using virtual communication tools to collaborate and share ideas. We publish our research in academic journals, and we engage the public in thinking about science by sharing our research through our seminar and publications/podcast series as well as through the SAGANet social network and the Sciworthy.com news platform. We pursue scientific, historical, philosophical, and transdisciplinary perspectives of questions such as:

- How did life on Earth originate, and how long will Earth remain habitable for humans?
- What environmental analogues on Earth can help us understand the environments of other planets?
- How do human civilization and the Earth system co-evolve?
- What technologies allow the human civilization to co-exist with a dynamic planet?
- What human spaceflight models will be effective in short-term transportation of humans into low-Earth orbit as well as long-term travel to the Moon, Mars, and beyond?
- How do humans adapt to the spaceflight environment?
- Has life ever developed on another planet in the Solar System?
- How unique is Earth among other planets in the galaxy?

Website: <http://www.bmsis.org/about/>

BMSIS Young Scientist Program

BMSIS provides opportunities for young scientists to reach new potential with our institute. The BMSIS Young Scientist Program (YSP) provides opportunities to participate in basic research, learn about effective science communication, and develop critical ethical thinking. BMSIS conducts two such programs. The “**NASA/BMSIS Young Scientist Program in Space Biology**” is a collaboration between NASA

Ames Research Center Space Biosciences Division and BMSIS in developing the next generation of Space Biology professionals, which focuses on post-bachelors and pre-doctoral students. The “**BMSIS Young Scientist Program**,” which focuses on undergraduate students (or equivalent) is a typically unpaid online-only program with the same requirements as the NASA program, except that science mentors are BMSIS scientists instead of NASA Space Biology scientists. YS’s may work on-site or remotely, depending on the needs of the project, mentor, and YS. Funding is available for some projects but not all. Unpaid YS projects will last nominally a maximum of three months. Funded YS may last longer. NASA/BMSIS YS’s not pursuing a doctoral degree may remain YS’s for a period of 5 years. NASA/BMSIS YS Doctoral students will remain YS’s up to their defense date.

Goals of the BMSIS Young Scientist Program:

- To welcome Young Scientists as members of our science institute during the duration of their internship;
- To train Young Scientists in professional activities that enhance their oral, verbal and auditory communication capabilities;
- To help Young Scientists begin to build a network of professionals in astrobiology and space-related fields;
- To provide Young Scientists with an understanding of the role of science in society;
- To engage Young Scientists in intellectual pursuits leading to increased technical understanding and practice.

Young Scientists will conduct scientific research with a NASA or BMSIS research scientist and trained by communication experts to help develop skills in science communication. YS’s will also complete training modules in ethics & society with guidance from an ethics mentor.

Upon successful completion of the Young Scientist Program and its science, communication, and ethics requirements, Young Scientists shall receive a certificate of completion. Alumni from the internship program may also receive requests for follow-up program evaluation.

Website: <http://www.bmsis.org/ysp/>

Program Modules

Scientific Research

Young Scientists will conduct research under direct supervision of a NASA or BMSIS mentor. Young Scientists may work on-site or remotely, depending on the needs of the project, mentor, and YS.

Young Scientists will write a report of their research. This report may be used in a variety of applications, including (but not limited to): undergraduate or masters project/thesis, conference proceedings, peer-reviewed journal, magazine/newspaper article, writing samples for job applications.



BMSIS YS's will be expected to present the results of their internship either internally (to a larger audience of BMSIS scientists using virtual communication tools) or externally (to a larger audience of scientists at an academic conference).

Communication Module

Young Scientists will complete a Science Communication module by satisfying ALL the following requirements:

- Complete one local communication-related event in your local community (e.g. visiting an elementary school, giving a seminar at a local university, community center, home for the elderly, church, etc.).
- Attend two scientific seminars in person or online.

And ONE of the following options:

- Write a non-technical summary of a BMSIS publication for publication on Sciworthy, under the guidance of a Sciworthy editor and a BMSIS author.
- Create a short edited video (2-3 minutes) suitable for publication on the Sciworthy YouTube channel that teaches a basic scientific principle or concept to a general public audience.

Ethics & Society Module

Young Scientists shall complete an Ethics & Society module by satisfying ONE of the following options:

- Write a 1-1.5 page ethics case study that identifies an ethical quandary that relates to the YS's research project and explores the consequences of possible options. Case studies should draw from concepts discussed during the ethics & society seminar and on the BMSIS ethics wiki (wiki.bmsis.org). Summaries may be posted on the BMSIS ethics wiki.
- Write a 1 page letter addressed to the YS's congressional representatives that discusses a contemporary societal issue broadly related to the YS's field of study. The letter should draw upon nonpartisan analysis to inform elected officials about the implications of science for policymakers. Final drafts of the letters may optionally be mailed by the YS to their representatives.

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