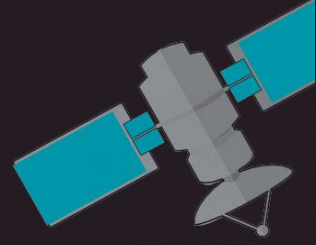


THE SOCIETAL IMPLICATIONS OF LIFE ON MARS

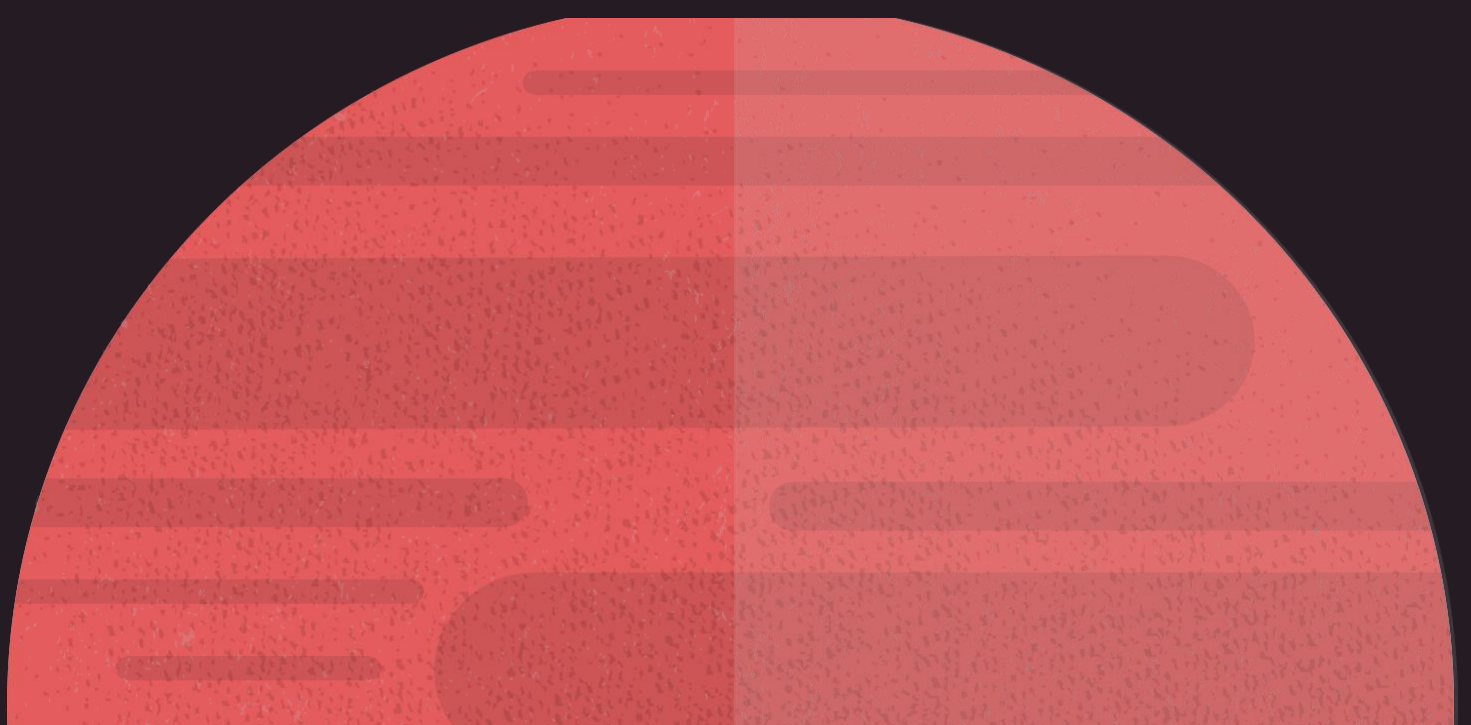


If life is found on our neighboring planet, Mars, the course of history will be changed for good. This discovery will deepen our interest in space exploration and expand many current goals beyond Mars exploration.

What Form will Life on Mars Take?

Alongside scientists, ordinary people will feel the impact of astrobiological life. When we hear the words "Martian life", most people think of little green aliens - in fact, a recent poll found that 25% of Americans would actually panic (Kwon, 2017). It is more likely than not that the life discovered will be a type of microorganism rather than a humanoid, walking alien. Will this relieve or disappoint the public? There are many different cultural changes that this discovery could bring, and it would open a whole new way for people to view the stars.

- Below is a link to a podcast, "Solar System Smackdown: Mars Vs. Venus." The producers of the podcast host a debate over which planet is the best for finding life, with the help from genetics and astrobiology researcher Jaime Cordova, and planetary scientist Briony Horgan.
 - <https://www.sciencefriday.com/segments/mars-versus-venus/>
- Below is a link to an academic paper, "Fear, pandemonium, equanimity and delight: human responses to extra-terrestrial life," by Albert A. Harrison. The paper examines the possible reactions of humanity to the discovery of extra-terrestrial life by comparing data from historical prototypes, disaster studies, and survey research.
 - <https://royalsocietypublishing.org/doi/full/10.1098/rsta.2010.0229>



Ethical Decisions Regarding Astrobiological Life

Many decisions must be made in regards to the ethics of studying this new life. We currently have laws regarding animal testing, but we must decide if these microorganisms would fall under these protection laws. In 1966, the United States signed the Animal Welfare Act into law and it effectively regulates the treatment of animals in research, exhibition, and transportation (Gilbert, 2012). However, this law only applies to warm-blooded animals involved in research ventures (Gilbert, 2012). Similarly, the Outer Space Treaty signed in 1976 forbids anyone from owning property in space; under this treaty it is unclear whether the United States would be allowed to bring back and examine any life found on Mars. (Outer Space Treaty, 1967).

- Below is a link to a chapter of the book, “Advances in Space Research,” by Margaret S. Race and Richard O. Randolph. The chapter discusses the need for rules following the discovery of non-intelligent extraterrestrial life within the Solar System. There are protection policies already in effect, but they only delineate how exploration should be conducted – if life were to be found, there would not be clear guidelines that researchers could turn to. The chapter discusses a proposed set of interim guidelines for future handling and treatment of extraterrestrial life on Mars.
 - <https://www.sciencedirect.com/science/article/abs/pii/S0273117702004787>
- Below is a link to an academic paper, “The Moral Status of Extraterrestrial Life,” by Erik Persson. The academic paper examines questions regarding the possible moral obligations that humans may have to extraterrestrial life.
 - <https://www.liebertpub.com/doi/abs/10.1089/ast.2011.0787>



Should Scientists Aid Possible Life on Mars?

The United States would have to decide the degree to which it should aid or abandon this life. NASA has a committee charged with addressing issues of biological risk on Mars, which includes ensuring that returning Martian organisms could not potentially contaminate Earth's biosphere (National Research Council, 2001). If scientists decide to take on the responsibility of aiding life found on Mars, studies would have to ensure that the organisms are harmless to human life. Sending astronauts or rovers to help this life could bring back agents of infectious disease to Earth. However, is it worth noting that an NRC study found that the possibility of Martian organisms containing infectious diseases is extremely small (National Research Council, 1997).

- Below is a link to a review article written by Erik Persson over the book "The Ethics of Space Exploration," by James S. J. Schwartz and Toni Milligan, which argues that there is value in aiding and protecting microbial life found on Mars.
 - https://purdue-primo-prod.hosted.exlibrisgroup.com/permalink/f/1c3q7im/TN_cdi_crossref_primary_10_5840_enviroethics201941216
- Below is a link to an academic paper, "Does Extraterrestrial life have Intrinsic value? An Exploration in Responsibility Ethics," written by Ted Peter. The paper explores the possible intrinsic value of life on Mars and if humans have a moral obligation to intervene.
 - <https://www.cambridge.org/core/journals/international-journal-of-astrobiology/article/does-extraterrestrial-life-have-intrinsic-value-an-exploration-in-responsibility-ethics/5DCA161726CE8F4FC9E58EE8E6D04B81>

Conclusion

The discovery of life on Mars would raise many ethical, legal, and scientific questions. While we hope that we are not alone in this universe, this discovery would fundamentally reshape how we approach the intersecting forces of science, morality, and Earthen society.



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