

Original Work Proposal

Scientists have been studying martian meteorites for decades and have learned more about Mars than ever before. Although astrobiologists gained many perspectives on the red planet, there is still the problem of contamination. Since the meteorite entered the Earth's atmosphere, the outer layer of the meteorite became contaminated. In order to gain more accurate data, we need to go to Mars. NASA is currently planning to send astronauts to Mars by the late 2030s. While astronauts are on Mars, they will have to conduct many scientific experiments. With this said, I am planning on designing an experiment that investigates the effect of nitrate limitation on extremophiles. By developing this, I hope to showcase my understanding of the scientific method and elements that make an experiment efficient. In addition to this, I also want the experiment to be feasible. For example, I want to know what limits there may be in transporting all the lab equipment to Mars. Communication is crucial when developing an experiment that will be conducted in outer space. Scientists cannot be the only brain power. We also need to talk to engineers. By doing this project, I hope to understand how scientists and engineers work together to make a mission successful. Through a substantial amount of research, I believe that this experiment will allow astrobiologists to get a completely different perspective about Mars.

To successfully develop a viable experiment, I will need to focus on how extremophiles react to the martian environment. Next, I will formulate a basic outline of variables, materials, and a procedure. I will have to speak with many experts at NASA in order to understand how one should develop an experiments. I am planning to speak with scientists who study the martian climate, atmosphere, nutritional constraints for bacterias.

By undertaking this project, I want to learn how to develop my own lab experiments. This will allow me to appreciate the scientific reasoning more. I am also hoping to gain new knowledge, when it comes to engineering. At NASA, you can't only be focused on science or engineering. One has to be well versed in both subject matters or else the mission will fail. Through this project, I believe that I will learn to formulate a cohesive plan in order to push our understanding of Mars further.