



2010 NASA FSGC Internship Program (SAIP)

Program:	<input checked="" type="checkbox"/> FSGC Internship at Kennedy Space Center <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Student's Name & email:	Krystal Kerney email: krystalkerney@gmail.com
Student's Country of citizenship :	United States of America
Student's University:	University of Florida
Industry Name (only for FHTC participants):	n/a
Mentor's Name & email:	Andrew Schuerger email: schuerg@ufl.edu
Project Title:	The Biototoxicity of Mars Soils
Project Description:	<p>Recent evidence from the Opportunity and Spirit rovers suggests that the soils on Mars might be very high in biotoxic materials including sulfate salts, chlorides, and acidifying agents. Yet, very little is known about how the chemistries of Mars soils might affect the survival and growth of terrestrial microorganisms. The primary objectives of the proposed research will be to: (1) prepare and characterize Mars analog soils amended with potential biotoxic levels of sulfates, chlorides, and acidifying minerals; (2) use the stimulants to conduct a series of toxicology assays to determine if terrestrial microorganisms from spacecraft or extreme environments can survive direct exposure to the biotoxic soils, and (3) mix soils from extreme environments on Earth into Mars analog soils to determine if terrestrial microorganisms can grow and replicate under Martian conditions. The Mars analog soils will be thoroughly characterized by a wide diversity of soil chemistry assays to determine the exact nature of the soluble biotoxic components following hydration. The microbial experiments will be designed to test the effects of Mars stimulants on microbial survival, growth and replication during direct challenge experiments. Toxicology experiments will be designed to mimic terrestrial microbes coming into contact with biotoxic soils with and without liquid water. Results are expected to help "...characterize the limits of life in...planetary environments..." and may help constrain the search for life on Mars.</p>