

**Tufts University**  
Medford, MA

**Civil and Environmental  
Engineering**  
Bachelor of Science, May  
2002

**NASA Astrobiology  
Academy Research Project:  
Charting the History of  
Earth's Earliest Microbial  
Ecosystems**



Principal Investigator: David Des Marais

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**Experience:**

I will graduate in May 2002 from Tufts University with a Bachelor of Science in Civil Engineering. For my undergraduate senior thesis project I am restoring a local pond, which experiences elevated levels of internal and external phosphorus loading. The goal of this project is to design the necessary end-of-pipe and nonpoint source controls in order to reduce phosphorus loading to the pond. I am working on the design of an aeration system to reduce stratification and remobilization of phosphorus from the sediments by oxygenating the hypolimnion of Spy Pond. In June of 2002, the project will be entered in the Environmental and Water Resource Student Design Competition in Roanoke, Virginia. My undergraduate education has provided me with the opportunity to take a variety of classes ranging from Environmental Toxicology to Genetics, Ethics, and the Law to Biomedical Engineering. I plan to enroll in a graduate program in the fall of 2003, working towards my Masters and eventually a Ph.D. in bioengineering.

I got my first taste of NASA during the summer of 2001 as part of the Undergraduate Student Research Program at Kennedy Space Center. I worked on the design and construction of a steam flood with co-air injection remediation system for trichloroethylene contamination at Launch Complex 34 on Cape Canaveral, Florida. Under the mentorship of Dr. Jacqueline Quinn, I researched site characterization techniques for Dense Non Aqueous Phase Liquid (DNAPL) contamination. As part of my research, I conducted a helium tracer test on a soil vapor vacuum extraction system to monitor the progress of DNAPL removal at the site. I presented my research at the 2001 TechSymposium Conference in Orlando, Florida and won first place in the Undergraduate Technical Paper contest. In April I will travel to Washington, D.C. to present my research to members of Congress as part of the Council on Undergraduate Research's 2002 Posters on the Hill Session. One of the greatest thrills of working at a NASA facility was the opportunity to encounter the space program first hand. From meeting Astronauts to sticking