

Right: Mark Edlund and a team of American and Mongolian scientists are collecting, cataloging, and preserving diatom specimens from a remote lake in north-central Mongolia. Diatoms are a large group of microscopic algae that grow as single cells or small colonies. The sample pictured was taken as part of a Mongolian-American international partnership to survey the diatom flora of Hovsgol National Park in north-central Mongolia.

Diatoms are an important part of the primary producer community in most aquatic habitats. They often live within narrow environmental conditions and can act as bioindicators for changes in pollution, water temperature, nutrient levels, and salinity. Diatoms are incredibly valuable as a tool for water quality monitoring, and they are one of the primary tools used in paleoecology, a discipline that uses fossil organisms to decipher environmental history.

Dr. Edlund received a three-year postdoctoral National Science Foundation International Research Fellow Award. He chose Lake Hovsgol and the surrounding region because it is one of the most pristine large lakes on Earth and therefore globally significant as a natural laboratory for the study of ecology and evolution. The lake is estimated to be more than 1.6 million years old.

Credit: Mark B. Edlund, Ph.D.



FROM THE DIRECTOR

For more information:

[www.nsf.gov/news/mmg/
mmg_disp.cfm?med_
id=51744&from=search_list](http://www.nsf.gov/news/mmg/mmg_disp.cfm?med_id=51744&from=search_list)

“America’s leadership depends more and more on the quality of our new ideas, the vitality of our science and engineering workforce, and the innovative use of new knowledge generated through research and education. With today’s intense global competition for ideas and talent to achieve comparative advantage and capture market opportunities worldwide, we must sustain our momentum of leadership.”

Arden L. Bement, Jr., Ph.D.



Arden L. Bement, Jr.
Director

In recognition of the important contributions made by science and technology in World War II, Congress created the National Science Foundation (NSF) in 1950 to promote and advance America's postwar science and engineering enterprise. Today, science and technology are the driving force for progress and prosperity in a global economy. Only by advancing the frontiers of science and engineering can the nation develop the knowledge and innovative technologies needed to address new challenges and ensure America's economic future and social well being.

In FY 2005, NSF received nearly 42,000 proposals and funded 9,800 awards to 1,700 colleges, universities, and other research collaborations throughout the country. The discoveries resulting from NSF investments are both exciting and transformative. As an example, as part of NSF's Cyber Trust Program, Bill Sanders at the University of Illinois and his colleagues at four universities are addressing the challenge of designing, building, and validating a secure cyberinfrastructure for the next-generation electric power grid. The project will create technologies that will convey critical information to grid operators despite cyber attacks and accidental failures. The investigators expect that the solutions created will be adaptable for use in other critical infrastructure systems. The research will also help meet a major homeland security challenge. At the San Diego Supercomputer Center, work by J. Andrew McCammon and his colleagues has led to a new understanding of the behavior of molecules inside cells and how they might react to the presence of prospective drugs. This work has revealed a path for the development of new treatments for diseases, including for one of today's most devastating epidemics. These are just two examples of recent basic research breakthroughs that contribute important societal benefits.

Underlying the Foundation's programmatic activities is a commitment to organizational excellence and sound financial management. In FY 2005, NSF received its eighth consecutive unqualified "clean" opinion from an independent audit of the financial statements, with no material weaknesses reported. NSF successfully achieved 18 of 21 performance goals, and again exceeded its principal customer service goal of informing at least 70 percent of applicants about funding decisions within 6 months. On the President's Management Agenda scorecard, NSF achieved "Green" status in four of the five primary initiatives. All NSF programs evaluated by OMB's Program Assessment Rating Tool (PART) in the summer of 2005—and in prior years—are among the 15 percent governmentwide that have received the highest "Effective" rating. Moreover, that NSF was rated second best federal workplace in the most recent survey of federal employees clearly reflects the level of dedication and innovation that defines both the staff and management at NSF who make organizational excellence a reality.

I invite you to read more about the Foundation's accomplishments in this report as well as in NSF's *Performance and Accountability Report* for FY 2005. To learn more about the discoveries that are emerging every day, many of which will enhance our future in profound and extraordinary ways, visit www.nsf.gov/discoveries.

A handwritten signature in black ink that reads "Arden L. Bement, Jr." The signature is written in a cursive, slightly stylized font.

Arden L. Bement, Jr.
March 2006