

Appendix 1:

DESCRIPTION OF NSF DIRECTORATES AND MANAGEMENT OFFICES

The **Directorate for Biological Sciences (BIO)** supports research programs ranging from the study of the structure and dynamics of biological molecules, such as proteins and nucleic acids, through cells, organs, and organisms, to studies of populations and ecosystems. It encompasses and processes that are internal to the organism as well as those that are external, and includes temporal frameworks ranging from measurements in real time through individual life spans, to the full scope of evolutionary times. Among the research programs BIO supports is fundamental academic research on biodiversity, environmental biology, and plant biology, including providing leadership for the Multi-national Coordinated Arabidopsis Genome Project.

The **Directorate for Computer and Information Science and Engineering (CISE)** supports research on the foundations of computing and communications devices and their usage, research on computing and networking technologies and software, and research to increase the capabilities of humans and machines to create, discover, and reason with knowledge by advancing the ability to represent, collect, store, organize, locate, visual-

ize, and communicate information. CISE also supports the planning and operation of facilities that provide national cyberinfrastructure supporting science and engineering research and education. CISE supports a range of education and workforce activities that complement these efforts.

The **Directorate for Education and Human Resources (EHR)** supports activities that promote excellence in U.S. science, technology, engineering, mathematics (STEM) education at all levels and in all settings (both formal and informal). The goal of these activities is to develop a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians, and educators, as well as a well-informed citizenry with access to the ideas and tools of science and engineering. Support is provided for individuals to pursue advanced study, for institutions to build their capacity to provide excellent STEM education, and for collaborations to strengthen STEM education at all levels by fostering alliances and partnerships among colleges, universities, school districts, and other institutions in the public and private sectors.

The **Directorate for Engineering (ENG)** supports research and education activities contributing to technological innovation that is vital to the nation's economic strength, security, and quality of life. ENG invests in

fundamental research on engineering systems, devices, and materials, and the underpinning processes and methodologies that support them. Emerging technologies—nanotechnology, information technology, and biotechnology—comprise a major focus of ENG research investments. ENG also makes critical investments in facilities, networks, and people to ensure diversity and quality in the nation's infrastructure for engineering education and research.

The **Directorate for Geosciences (GEO)** supports research in the atmospheric, earth, and ocean sciences. Basic research in the geosciences advances our scientific knowledge of the Earth and our ability to predict natural phenomena of economic and human significance, such as climate change, weather, earthquakes, fish-stock fluctuations, and disruptive events in the solar-terrestrial environment. GEO also supports the operation of national user facilities.

The **Directorate for Mathematical and Physical Sciences (MPS)** supports research and education in astronomical sciences, chemistry, materials research, mathematical sciences, and physics. Major equipment and instrumentation such as telescopes and particle accelerators are provided to support the needs of individual investigators. MPS also supports state-of-the-art facilities that



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enable research at the cutting edge of science and research opportunities in totally new directions.

The **Directorate for Social, Behavioral, and Economic Sciences (SBE)** supports research and education to build fundamental scientific knowledge about human cognition, language, social behavior, and culture, and on economic, legal, political, and social systems, organizations, and institutions. To improve understanding of the science and engineering enterprise, SBE also supports science resources studies that are the nation's primary source of data on the science and engineering enterprise.

The **Office of Polar Programs (OPP)**, which includes the U.S. Polar Research Programs and U.S. Antarctic Logistical Support Activities, supports multidisciplinary research in the Arctic and Antarctic regions. These geographic frontiers—premier natural laboratories—are the areas predicted to be the first affected by global change. They are vital to understanding past, present, and future responses of Earth systems to natural and anthropogenic changes. Polar Programs support provides unique research opportunities ranging from studies of Earth's ice and oceans to research in atmospheric sciences and astronomy.


The **Office of International Science and Engineering (OISE)** serves as the focal point, both inside and outside


NSF, for international science and engineering activities and manages international programs that are innovative, catalytic, and responsive to the broad range of NSF interests. OISE supports international collaborative research that provides U.S. scientists and engineers with access to the world's top researchers, institutions, and facilities. OISE also supports several programs that provide international research experiences to students and young investigators, preparing them for full participation in the global research enterprise.

The **Office of Budget, Finance, and Award Management (BFA)** is headed by the Chief Financial Officer, who is responsible for budget, financial management, grants administration, and procurement operations and related policy. Budget responsibilities include the development of the Foundation's annual budget, long-range planning, and budget operations and control. BFA's financial, grants, and other administrative management systems ensure that the Foundation's resources are well managed and that efficient, streamlined business and management practices are in place. NSF has been acknowledged as a leader in the federal research administration community, especially in its pursuit of a paperless environment that provides more timely, efficient awards administration.

The **Office of Information and Resource Management (OIRM)** provides human capital management, information technology solutions, continuous learning opportunities, and general administrative services to the NSF community of scientists, engineers, and educators. OIRM also provides logistical support functions for NSF staff as well as the general public. It is responsible for recruiting, staffing, and other human resource service requirements for all NSF staff and visiting personnel. OIRM is also responsible for the management of NSF's physical infrastructure and conference facilities, the administration of its sophisticated technology infrastructure, and the dissemination of information about NSF programs to the external community through the agency's website. In addition, it is responsible for delivery of the hardware, software, and support systems necessary to manage the Foundation's grant-making process and to maintain advanced financial and accounting systems.

For more information:

 *Office of the Director:*
www.nsf.gov/od/

 *National Science Board:*
www.nsf.gov/nsb/

Appendix 2:**NSF EXECUTIVE STAFF AND
NSF OFFICERS****NSF Executive Staff****Office of the Director**

Arden L. Bement, Jr., Director
Joseph Bordogna, Deputy Director

National Science Board

Warren M. Washington, Chair
Michael P. Crosby, Executive Officer

**Office of Equal Opportunity
Programs**

John F. Wilkinson, Acting Director*

Office of the General Counsel

Lawrence Rudolph, General Counsel

Office of Inspector General

Christine C. Boesz, Inspector General

Office of Integrative Activities

Nathaniel G. Pitts, Director

**Office of Legislative and
Public Affairs**

Curtis Suplee, Director

Office of Polar Programs

Karl A. Erb, Director

Directorate for Biological Sciences

Mary E. Clutter, Assistant Director

**Directorate for Computer
and Information Science and
Engineering**

Peter A. Freeman, Assistant Director

**Directorate for Education and
Human Resources**

Judith A. Ramaley, Assistant Director

Directorate for Engineering

John A. Brighton, Assistant Director

Directorate for Geosciences

Margaret S. Leinen, Assistant Director

**Directorate for Mathematical and
Physical Sciences**

Michael S. Turner, Assistant Director

**Directorate for Social, Behavioral,
and Economic Sciences**

Wanda E. Ward, Acting Assistant
Director

**Office of Budget, Finance, and
Award Management**

Thomas N. Cooley, Director

**Office of Information and Resource
Management**

Anthony A. Amolie, Director

NSF Officers**Chief Financial Officer**

Thomas N. Cooley (Office of Budget,
Finance, and Award Management)

Chief Information Officer

George Strawn (Office of Information
and Resource Management)

Appendix 3:**NATIONAL SCIENCE BOARD
MEMBERS DURING FY 2004****Warren M. Washington (Chair)**

Senior Scientist and Head,
Climate Change Research Section
National Center for Atmospheric
Research

Anita K. Jones¹

Quarles Professor of Engineering and
Applied Science
Department of Computer Science
University of Virginia

Diana S. Natalicio (Vice Chair)

President
The University of Texas at El Paso

Barry C. Barish

Linde Professor of Physics
California Institute of Technology

Steven Beering

President Emeritus
Purdue University

Ray Bowen

Former President
Texas A&M University

Delores M. Etter

Professor, Electrical Engineering
United States Naval Academy

Nina V. Fedoroff

Willaman Professor of Life Sciences
Director, Life Sciences Consortium
Director, Biotechnology Institute
The Pennsylvania State University

*Appointed June 2004, following
the retirement of Ana A. Ortiz.

**Pamela A. Ferguson²**

Professor of Mathematics
Former President
Grinnell College

Kenneth M. Ford

Director
Institute for Human and Machine
Cognition
University of West Florida

Daniel E. Hastings

Associate Director
Engineering Systems Division
Massachusetts Institute of Technology

Elizabeth Hoffman

President
University of Colorado System

George M. Langford¹

Professor
Department of Biological Science
Dartmouth College

Jane Lubchenco

Wayne and Gladys Valley Professor of
Marine Biology
Distinguished Professor of Zoology
Oregon State University

Joseph A. Miller, Jr.¹

Executive Vice President
Chief Technology Officer
Corning, Inc.

Douglas D. Randall

Professor of Biochemistry
Director, Interdisciplinary Program on
Plant Biochemistry-Physiology
University of Missouri

Robert C. Richardson¹

Vice Provost for Research
Professor of Physics
Department of Physics
Cornell University

Michael G. Rossmann

Hanley Distinguished Professor of
Biological Sciences
Department of Biological Sciences
Purdue University

Maxine Savitz¹

General Manager
Technology Partnerships
Honeywell Corporation (Retired)

Luis Sequeira¹

J.C. Walker Professor Emeritus
Departments of Bacteriology and Plant
Pathology
University of Wisconsin–Madison

Daniel Simberloff

Nancy Gore Hunger Professor of
Environmental Science
Department of Ecology and
Evolutionary Biology
University of Tennessee

JoAnne Vasquez

Past President, National Science
Teachers' Association
Consultant, McGraw-Hill Companies

John A. White, Jr.

Chancellor
University of Arkansas–Fayetteville

Mark S. Wrighton

Chancellor
Washington University

Rita R. Colwell (Member Ex Officio)³

Director
National Science Foundation

**Arden L. Bement, Jr.
(Member Ex Officio)⁴**

Director
National Science Foundation

Michael P. Crosby

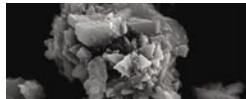
Executive Officer
National Science Board

¹ Term expired May 2004.

² Deceased May 2004.

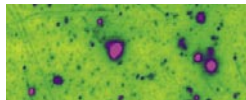
³ Resigned February 2004.

⁴ Appointed February 2004.



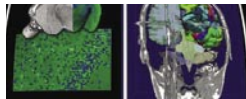
Scanning electron micrograph of NanoActive Magnesium Oxide Plus. The material's large surface area gives it the ability to capture and destroy toxic chemicals. Just 25 grams (a little less than an ounce) has the surface area of almost three football fields.

Credit: NanoScale Materials, Inc.



Atomic force microscopy image of the carbon nanotube network device coated with polyethylene imine and starch polymer layer for detection of carbon dioxide gas.

Credit: Vikram Joshi, Nanomix, Inc.



The Biomedical Informatics Research Network promotes advances in biomedical and health care research through the development and support of a cyberinfrastructure that facilitates data sharing and multi-institutional collaboration.

Credit: Biomedical Informatics Research Network



A group of tents pitched in the shadow of the Transantarctic Mountains.

Credit: NSF



The bacteriophage T₄ is preparing to infect its host cell. The structure is derived from three-dimensional cryo-electron microscopy reconstructions of the baseplate, tail sheath, and head capsid, as well as from crystallographic analyses of various phage components. The baseplate and tail proteins are shown in distinct colors.

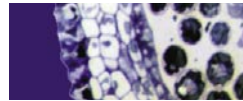
Credit: Purdue University and Seyer LLC. The animation is based on both recent discoveries and extensive earlier work by a large number of investigators.

PHOTO CAPTIONS AND CREDITS



The pelvis of what researchers believe is a previously unknown plant-eating dinosaur exposed on the rock where it was preserved.

Credit: William Hammer/NSF



NSF-funded researcher Karen Renzagkia of Southern Illinois University is leading a team that is investigating the evolution of green plants such as the moss *Takakia ceratophylla*. Humans rely on green plants for food, shelter, and clothing and for providing the oxygen that is essential to life. From a biological perspective and as one of the oldest and most diverse branches of the tree of life, green plants provide an unparalleled system in which to explore interrelationships of living organisms and to approach some of the most significant and intriguing questions concerning the diversification of life on earth. Many of these questions relate to fundamental evolutionary events, such as the transition of organisms from single-celled to multicellular body plans, the colonization of land, and the derivation of different life-cycle modes.

Credit: Karen Renzagkia, Southern Illinois University



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