

## About NIH

# Providing the Platform for Discovery

### Science Education and Literacy

NIH takes an active role in pre-college (K-12) science education and in science literacy activities. These activities aim to improve the science knowledge and skills of students, attract young people to biomedical and behavioral science careers, lay the groundwork for advanced study, enhance public understanding of health science, and empower the public as consumers of science and health information.

[Curriculum supplements](#)—ready-to-use, interactive teaching units—are one of NIH's most popular and effective science education efforts. Crafted through a unique partnering of NIH scientists, teachers, and expert curriculum developers, the supplements are aligned with State education standards and are consistent with the National Science Education Standards. NIH has shipped nearly 350,000 curriculum supplements upon request to K-12 educators across the Nation. Topics covered include “The Science of Healthy Behaviors,” “Cell Biology and Cancer,” and “The Brain: Understanding Neurobiology through the Study of Addiction.” The newest addition is “Exploring Bioethics” for high school biology classes.

NIH provides other types of school resources as well. [Findings](#) is a semi-annual magazine targeted to high school and early college students to convey the excitement of cutting-edge research, the interesting people who pursue science careers, and the enjoyment they get from this work. A companion website offers videos, podcasts, and interactive games expanding on the printed material. NIH also offers [topical publications and school resources](#) such as slide kits, online quizzes, and science puzzles that are used by teachers across the country to augment textbooks and enrich the classroom experience. Subject areas include cell biology, genetics, structural biology, chemistry, pharmacology, and computational biology. Classroom posters linked to selected publications also promote interest in science and research careers, and continue to be tremendously popular.

NIH aims to engage students and the public in the wonders of biology and biomedical research through other programs as well. For those who are interested in a career in the life sciences, NIH provides resources such as [LifeWorks@](#), a career exploration website for middle and high school students, and their parents, teachers, and career guidance counselors. Users can search the site for in-depth information on more than 100 health and medical science-related careers, and generate a customized list of careers that match their skills and interests. [SciLife](#) is an annual health and biomedical career planning workshop for parents and high school students. NIH also sponsors a speakers' bureau that provides engaging science professionals to talk to school groups and local and national organizations.

NIH's Science Education Partnership Award (SEPA) program enables researchers, educators, and community groups to share their knowledge, expertise, and enthusiasm about health and science research with K-12 students and the general public. SEPA generates resources such as curricula, exhibits, films, and after-school and summer hands-on science programs. The [SEPA website](#) provides access to the educational materials and expertise produced through these efforts.

### Information and Information Technology

The goal of Information and Information Technology (I&IT) at NIH is to provide a platform for discovery through advanced tools, systems, and IT infrastructure, so that knowledge creation, discovery, and collaboration are commonplace through the NIH biomedical community. NIH has evolving research and business needs, which require effective and responsive design, management, and implementation of I&IT assets so that the most benefit is gained pursuant to the NIH mission.

In January 2008, in an effort to foster improved I&IT efficiencies, integration, and oversight, the [Office of the Chief Information Officer](#) (OCIO) was established in the NIH OD, and the functions of the Chief Information Officer (CIO) were transferred from the NIH [Center for Information Technology](#) (CIT). OCIO develops IT-related strategy, services, and policy to ensure that all NIH IT infrastructure is secure, cost-effective, responsive, and benchmarked against industry standards.

CIT functions as the operating arm of the CIO, and provides expertise and support for OCIO program activities. CIT supports NIH research and management programs with efficient, cost-effective, administrative and high-powered scientific computing, software development, networking, and telecommunications services. CIT directs Business Intelligence Services (known as nVision) to provide a central data reporting repository for data extracted from systems that manage the day-to-day operations of NIH. nVision provides reporting tools to meet NIH business needs, including ARRA reporting and monitoring capabilities.

From supercomputing to management of an Image Processing Facility, CIT provides the NIH intramural community with invaluable tools and resources, such as bioinformatics support, and CIT's scientists, engineers, and mathematicians, as partners in the discovery of biomedical knowledge, contribute to advances in computational science. CIT also deployed and now manages the NIH Federated Authentication Identity Service (known as iTrust), which facilitates access to NIH research applications, databases, and scientific information, by authorized collaborators from government agencies, national laboratories, universities, hospitals, and pharmaceutical and biotechnology medical research centers, using the same sign-in as their home institution. (Also see the section on *Disease Registries, Databases, and Biomedical Information Systems* in Chapter 3).

## Infrastructure and Capacity-Building

Many research resource, infrastructure, and capacity-building activities are addressed in the chapters that follow. These include investments in informatics and research resources such as data repositories and disease registries; funding of shared instrumentation; funding of programs that support development and use of animal models; clinical research networks and centers for clinical and translational research; and efforts to increase and enhance capacity for research on minority health and health disparities (see respectively the sections on *Disease Registries, Databases, and Biomedical Information Systems; Technology Development; Molecular Biology and Basic Sciences; and Clinical and Translational Research* in Chapter 3 and the section on *Minority Health and Health Disparities* in Chapter 2). However, several important additional infrastructure and capacity-building activities are cross-cutting and do not fit neatly into these sections of the report so are noted here.

The [Institutional Development Award](#) (IDeA) program broadens the geographic distribution of NIH funding for biomedical and behavioral research. By supporting faculty development and research infrastructure enhancement, the program enhances the competitiveness of investigators at institutions located in States that historically have been less successful in competing for NIH funds. IDeA also serves unique populations, such as rural and medically underserved communities where it is active—currently 23 states and Puerto Rico.

NIH's interest in capacity-building extends beyond our Nation's borders. For example, there is a growing recognition of the scientific imperative and mutual health benefit of a stronger research environment in

Sub-Saharan Africa. To address the need to build stronger and more sustained partnerships with African institutions, in November 2008, NIH held a [summit on Sub-Saharan Africa](#). This seminal meeting provided a forum for discussing key opportunities for expanding research activities between NIH and Sub-Saharan Africa institutions, with the goal of identifying prospects for enhancing NIH research, while working to stimulate the scientific research enterprise in Sub-Saharan Africa, bolstering the growth of centers of excellence in Sub-Saharan Africa, and encouraging the development of a cadre of African investigators able to advance a research agenda for the region. As follow-up to this summit, and in an effort to expand its support of research and research training involving African institutions and scientists, NIH published a notice in the [NIH Guide for Grants and Contracts](#) encouraging African scientists and institutions to become involved in its various research and research training programs that offer the opportunity to contribute to science while building research capacity at African scientific institutions.

Core facilities are increasing in number, complexity, and cost. At the same time, there are academic institutions that are in need of the services of core facilities but cannot readily access them. To address these issues, NIH launched [efforts directed toward the efficient management and utilization of core facilities](#), including a 2-day meeting held in July 2009. NIH already is taking steps to implement the recommendations made by scientists and administrators who attended the meeting.

## **Public-Private Partnerships**

### *The NIH Program on Public-Private Partnerships*

The NIH Program on [Public-Private Partnerships](#) (PPP), within the NIH Office of Science Policy, was established in 2005 as an NIH Roadmap initiative to facilitate collaborations to improve public health through biomedical and behavioral research. As the central NIH resource on public-private partnerships, the program staff provide guidance and advice to ICs and OD offices and to potential partners on the formation of collaborations that leverage NIH and non-NIH resources to achieve synergy. Program staff work with ICs and OD offices to review existing partnership mechanisms and to recommend policies or legal authorities needed to achieve NIH objectives, manage intellectual property, achieve data access and sharing, and address human subject protections and other critical and complex concerns in the setting of PPPs. NIH PPPs are science-driven, aim to improve the public health, and are structured to uphold the principles of transparency, fairness, inclusiveness, scientific rigor, and compliance with Federal laws and NIH policies. The PPP Program is responsible for the [NIH Manual Chapter on Public-Private Partnerships](#)—a reference guide to using the various available mechanisms to create public-private partnerships.

Partnerships can be established directly between NIH (as a whole or through one or more ICs) and any of a wide range of other organizations, including patient advocacy groups, foundations, pharmaceutical or biotechnology companies, academic institutions, and the Foundation for the NIH (FNIH) (see below for more information on FNIH). One example of a PPP is the [Genetic Association Information Network](#) (GAIN)—a combined private sector, FNIH, and NIH effort to provide genome-wide association data for common diseases. GAIN completed its work in 2008 and posted genotypes and phenotypes from the 18,000 samples it mapped to the NLM database of Genotypes and Phenotypes (dbGaP). Another PPP example is the [Biomarkers Consortium](#)—a complex partnership involving NIH, the U.S. Food and Drug Administration (FDA), the Centers for Medicare and Medicaid Services, FNIH, the Pharmaceutical Research and Manufacturers of America, and the Biotechnology Industry Organization. The Biomarkers Consortium is dedicated to discovery, development, and regulatory qualification of biomarkers<sup>20</sup> in any area of biomedicine.

The PPP Program also is involved in the development of international partnerships in several ways: international memberships and participation in the Biomarkers Consortium; membership and active participation in the National Academies Government-University-Industry Roundtable International

Agreements group; providing advice and best practices in consultation with other governments seeking to establish PPP policies and programs (Canada and others); and ongoing conversations with leadership in the European Union's Directorates-General of Research as well as Enterprise and Industry. The expected outcome of these activities is to increase the involvement and harmonization of global activities in biomedical research consortia and collaborations.

<sup>20</sup> Biomarkers are any characteristic that can be objectively measured to indicate (that is serve as a surrogate of) normal biological processes, disease processes, or responses to therapeutic intervention. Biomarkers are the foundation of evidence-based medicine, promising to revolutionize the development and use of therapeutics, and to make the practice of medicine more personalized, predictive, and preemptive.

### *The Foundation for the NIH (FNIH)*

[FNIH](#) is an independent, private, charitable foundation established by Congress to support the NIH mission. A non-profit, 501(c)(3) corporation, the foundation works to engage the private sector, public and patient advocacy organizations, and researchers in cross-sector and multidisciplinary activities for a broad portfolio of unique programs that complement and enhance NIH priorities and activities. As a non-governmental entity, FNIH is not subject to a variety of policies and regulations that NIH as an agency of the U.S. Government is bound by, thus allowing FNIH to have a unique role in PPPs including raising funds for NIH initiatives and activities.<sup>21</sup> This enables NIH to leverage private sector partners' energy, ideas, and other resources in many promising research collaborations that might not otherwise be undertaken by any of the partners alone due to cost, risk, or other reasons. Although some FNIH partnership initiatives involve one specific IC, many involve two or more with a trans-NIH focus, including efforts on cancer, neuroscience, proteomics, informatics, and imaging.

FNIH manages large-scale programs, such as the Grand Challenges in Global Health Initiative, as well as highly focused programs such as special fellowships, lectures, and conferences. Much of the foundation's focus is on identifying partners (including organizations and individuals) and matching donors' interests to specific NIH needs. However, corporations, individuals, or foundations can bring an idea to FNIH, which then works with donors to assess which of the extraordinary array of existing and prospective programs within NIH's priorities would be most relevant to their interest.

All FNIH activities support the NIH mission, and include activities that, for example, help in developing new trial methodologies or tools, or new datasets. NIH's OSP serves as the official NIH liaison to FNIH, and maintains a record of each Memorandum of Understanding between NIH ICs and FNIH.

<sup>21</sup> In 2008, for the third consecutive year, Charity Navigator gave a coveted four-star rating to the Foundation for NIH and recognized it as the #1 health charity.