

THE DANA FOUNDATION

2005 Annual Report



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The Dana Foundation is a private philanthropic organization with principal interests in science, health, and education. Charles A. Dana, a New York State legislator, industrialist, and philanthropist, was president of the Dana Foundation from 1950 to 1966 and actively shaped its programs and principles until his death in 1975.

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William Safire

Chairman's Letter about 2005

A legendary educator was asked by an earnest interviewer what he believed to be the most troubling problem students faced in American education today. “Is it Ignorance,” the reporter wanted to know, “or is it Apathy?” The great teacher thought about those awful alternatives for a moment and replied: “I don’t know—and I don’t care.”

In joking, he was making this pedagogical point: that it is the duty of teachers to bring grand academic concepts down to earth, and to express complex scientific findings in plain words readily grasped by inquiring minds.

That’s a major part of our mission at the Dana Foundation. In this report of our activities and grants in 2005, I want to focus on our teaching function because it pervades almost everything we do.

- ◆ When the scientists of our review committees make recommendations for grants in neuroscience, immunology, and molecular imaging, they consider how grantees intend to bring along talented young researchers in those fields. Dana seeks to support new investigators with promising ideas, turning to more experienced investigators when they are moving in new research directions.

- ◆ When Brain Awareness Week—started by Dana ten years ago and now coordinating the work of 1,800 partner organizations in 62 countries—features the appearances of neuroscientists in schoolrooms and on media to answer the public’s questions, its central purpose is to introduce students to the potential of exciting careers in science and health.
- ◆ When the Dana Web site reaches a circulation of a million and a half “hits” a month, not only do adults gain access to understandable and reliable information about keeping the brain healthy and educable throughout life, but youngsters get their interest in science piqued in a lively “Brainy Kids” section.
- ◆ When scientists and doctors, immersed in the exciting practice of their professions, stop to consider the ethical and moral questions raised by genetic enhancement and chemical stimulation of brain and body, they learn about the new field we call “neuroethics” through all the means of communication used by Dana to reach professionals as well as students at school and in their homes.
- ◆ When science and math teachers across the nation are concerned about the need for American students to compete globally in these subjects, many turn to the experience of the Dana Center for Educational Innovation at the University of Texas at Austin. Among its many replicable programs, this unique facility manages the statewide teacher quality program and provides free online math and science toolkits.
- ◆ When arts educators are limited by school budgets driven by the readier measurement and “accountability” of science and math, they have new reason to hope that cognitive studies begun by scientists in a Dana consortium of six universities may show that arts education at an early age benefits brain development and children’s ability to focus attention.

The purpose of the foregoing parallel-construction project is to show some of the ways that education goes to the core of our philanthropic work. We help scientists learn by providing peer-reviewed

grants supporting their experiments. We provide materials and expert lecturers to aid adults who want to continue their education about their health. We stimulate minds at the cutting edge of research to weigh any ethical fallout from sudden progress. We support educators eager to incorporate the performing arts into their school curriculums. We help the general public learn about the latest advances in medical science.

You may be reading this report in booklet form or downloading it from our Web site, www.dana.org. Such flexibility of access to information is symptomatic of what has been happening in education worldwide. We are taking advantage of the opportunities of information technology to reach more people with what so many hope to find on the Internet: reliable data from trustworthy sources, lucidly presented.

Those of us who used to think of ourselves as mere writers are now called “content providers.” That’s fine; the online onset of the Internet age means that our reports can be disseminated far more widely at less cost. In the same way, the work of Dana’s grantees and alliances of scientists and educators is providing the valuable content for the Foundation’s international communication and local community involvement. Examples:

- ◆ Forums and panels on scientific subjects that we present range from “Creativity and Aging” in the Dana Center in Washington, DC, to “DNA, the Genes and the Brain,” with Colin Blakemore interviewing Nobelist James Watson, co-discoverer of the structure of DNA, at the Dana Centre (spelled the British way) adjacent to the Science Museum in London. Events like these are no longer limited to small groups of opinion leaders; they are now Webcast, Podcast, and presented to much larger audiences in homes and schools in the U.S. and Europe. At 2005’s end, the Web site of the European Dana Alliance for the Brain came online, distributing translations of our informative events and publications in five languages.

- ◆ The Dana sourcebooks on the brain and on immunology—authoritative basic materials that we supply free to many primary and secondary schools throughout the U.S.—can now be downloaded from our Web site by any teacher or student anywhere.

The same expansion of free circulation of a useful teaching publication containing practical advice to educators applies to our handbooks on creating arts-centered schools. Their educational “content” is frequently amended and updated as teaching artists gain fresh insights and arts presenters are more closely involved.

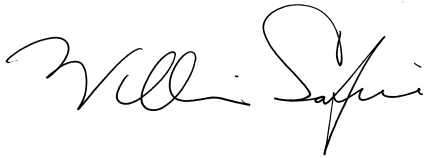
- ◆ *Cerebrum* is the Dana quarterly magazine providing leaders and other educators in the field of brain science a unique, thoughtful, and often provocative forum. As a print magazine, it has had a limited paid circulation and requires a six-month lead time for an article to be conceived, assigned, written, edited, printed and received in the mail. In 2006, by taking advantage of Internet distribution, we will be able to publish one *Cerebrum* article with the same high quality online every month in addition to timely features and reviews of scientific books, with an indexed archive of eight years of past issues. And all free.
- ◆ The same new availability and extended reach goes for our award-winning *Gray Matters* radio program, our quarterly “Speaking of Science” panel series produced with Syracuse University at the Dana Center, and lectures we help support—and Dana Alliance scientists participate in—at the Library of Congress as well as other educational sessions scheduled for the coming year.

Bedazzling new modes of communication are surely useful in scientific research and all levels of education. But our wonderment at technology’s outreach must not overwhelm our need for “inreach” by ingenious minds and original investigators in need of encouragement and funding. Even a tsunami of data generated by voracious search engines is not as valuable as a single truthful big idea or transformative equation that could once have been scratched out by a quill pen.

In the pages that follow in our 2005 annual report, we review many of the scientific and educational grants made and staff operations undertaken in the past year. For readers with a historical bent, we’ve included a retrospective of Dana’s half-century of aid to education. For those interested in our ability to support our philanthropy in the future, watch for this annual report’s financial pages, which will be posted in May. These will show we approved more than \$23 million

of our approximately \$300 million endowment for direct grants and related program activities, while the investment committee of an attentively involved Board of Directors has been able to maintain the Foundation's corpus. Though we fully intend to stay in philanthropy for a long time, this foundation is more interested in granting to help now than growing to help someday.

In sum, the Dana Foundation is doing all it can to combat the twin villains of Ignorance and Apathy. We know our key missions are to help scientists learn and educators teach—and we are certain that they and we care.

A handwritten signature in black ink, reading "William Safire". The signature is fluid and cursive, with a large initial "W" and a stylized "S".

William Safire
Chairman

The following retrospective was written by Walter Donway, editor of *Cerebrum*, who has been a member of the Dana staff since 1983.

A Retrospective: How Education Evolved at One Foundation

In the 1960s and 1970s, the Dana Foundation carried out its commitment to health and education largely by means of capital investments. Dana grants built dozens of classroom buildings and auditoriums at liberal arts colleges and wings and medical research facilities at hospitals. Toward the end of the two-decade period, the focus shifted somewhat, to professorships, scholarships, and programs, but still with a focus on capital gifts of endowment.

As the 1980s began, big ideas were stirring in the health field. After the triumphant scientific advances in understanding and treating infectious diseases such as polio and tuberculosis, concern was turning to the chronic diseases, especially those increasingly prevalent with advancing age. Cancer, heart disease, and stroke appeared to develop over decades, caused or exacerbated by long-term risk factors such as smoking, diet, and environmental exposure. The name of a new, frightening, and apparently chronic illness was just becoming familiar to the public: Alzheimer's disease.

The skills needed to diagnose, investigate, and treat chronic diseases (and to control the costs of managing them perhaps for decades) were in short supply. Dana identified four fields, all requiring the advanced training of physicians and biomedical scientists, that might make a difference in coping with chronic diseases of aging. The Foundation

made substantial, multi-year grants to more than two dozen academic medical centers for the training of physician-scientists in the relatively new areas of aging, environmental health, clinical epidemiology, and neuroscience. The goal was understanding, treating, and ultimately preventing the chronic illnesses becoming prevalent in America's aging baby boom generation. The high-priority means was education of new types of professionals.

It was becoming all too evident in the 1980s that America's needs in both health and education would require huge investments in coming years. The financial resources of private foundations are modest relative

to government and business expenditures.

Ideas, once discovered or defined, are unlimited resources, potentially available to millions—to be used but not necessarily used up.

Dana was concerned to spend its money in ways that would have a relatively great impact, a goal foundations liked to refer to as "leverage." Ideas, once discovered or defined, are unlimited resources, potentially available to millions—to be used but not necessarily

used up. It seemed to Dana that in both health and education there were powerful innovations not yet widely adopted. If better known, they could help to solve problems. The goal of the Dana Awards for Pioneering Achievements in Health and Education, launched in 1986, was to call attention to these new ideas.

Casting a nationwide net for nominations, which were then judged by a blue-ribbon jury, the Foundation began to make \$50,000 awards to pioneering thinkers in health and education. At gatherings of some 500 leading health professionals, educators, journalists, and other opinion leaders, the Foundation described the winning ideas and gave the innovators a platform. Accompanying the awards ceremony were special publications, press packets, film clips, symposia, and public interviews that gave new ideas the limelight. In the health field, a strategy for worldwide immunization campaigns, early scientifically based delineating of a healthy lifestyle, a way to prevent blindness in millions of children in third-world countries, and other ideas were profiled—often with sustained impact. In education, pioneering ideas for teaching chemistry, the biological basis of behavior, technology, and molecular genetics were actively disseminated.

In the second year of the program, an idea surfaced that shaped Dana's grant making in education for two decades. Philip Uri Treisman,

Ph.D., a young professor of mathematics at the University of California, Berkeley, was having striking success in teaching freshman calculus to African-American and Hispanic students, whose aspirations to careers in science and medicine all too frequently foundered in this “killer course” at universities around the country. Treisman had asked himself why his students of Asian background so often succeeded in calculus, while his African-American and Hispanic students too often failed. A key to the problem, it turned out, was the social outlook of the different groups of students. The Asian students formed study groups, did homework together, questioned each other, and supported each other. But many of the African-American and Hispanic students—coming from high-school backgrounds that had convinced them in pursuing academic success they were better off avoiding their peers—tended to be resolute loners. When Treisman fostered creation and use of peer groups among these students, they began to succeed in surprising numbers. The idea spread to other universities, and, in the wake of the Dana Awards information campaign, the innovation took off with dozens and then hundreds of adoptions of models at schools around the country and abroad.

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In 1993, when Treisman moved to the University of Texas, Austin, the Foundation made a grant to the University to launch a Dana Center for Innovation in Science and Mathematics Teaching. Headed by Treisman, the Dana Center set out to disseminate ideas, best practices, and models for better instruction in science and mathematics. With funds from the Dana Foundation and from government and other foundations, the Center has influenced education in hundreds of Texas schools and virtually every Texas county. Creating and sustaining a dozen major programs, for groups from Advanced Placement Mathematics Teachers to homeless youth, the Center has seen many of its innovations become “best practices.”

MARKETING THE BRAIN

In the field of health, the Foundation by 1990 had started neuroscience programs that had 85 Dana Fellows in training as physician-scientists at five leading university medical centers. With matching funds from the institutions, the total investment exceeded \$12 million.

Dana's continuing commitment to this training, but also its growing reputation for unabashedly marketing good ideas, attracted the attention of Nobel laureate James Watson, Ph.D., co-discoverer with Francis Crick, Ph.D., of the structure of DNA—the birth of modern molecular biology.

Watson came to then-Dana Foundation Chairman David Mahoney with a problem. The federal government had designated the final decade of the century the “Decade of the Brain” to emphasize the pivotal role of neuroscience research. But few were paying any attention. Watson had called a meeting of top brain scientists at Cold Spring Harbor Laboratory, Long Island, to consider the problem. Perhaps Dana could help?

Mahoney's rise from mailroom clerk in an advertising agency to chief executive officer of major companies had made him a legend in the field of marketing. As the Cold Spring Harbor deliberations moved

into their second day, he rose and spoke with characteristic bluntness. The brain scientists were going to have to make their own case to the public. No one could do it for them. They alone could define the promise of their research—what it could mean, when it might bear fruit, and why it was worth supporting.

The Dana Alliance has amplified the voices and extended the reach of brain scientists committed to educating people about brain research.

They must be realistic, but also specific. They must get out of the ivory tower and explain their work to the public. They must “put their hands in the fire.” If they were willing to do that, perhaps Dana could help.

That challenge was the origin of the Dana Alliance for Brain Initiatives, organized and supported by the Dana Foundation to catalyze the efforts of member scientists. Today the Alliance comprises more than 250 top brain scientists across America, including 10 Nobel laureates. Its counterpart across the Atlantic is the European Dana Alliance for the Brain, with 156 member scientists from 27 countries, including 5 Nobel laureates. With publications, an award-winning radio program called *Gray Matters*, a series of public forums nationwide, sustained partnerships with education organizations, and many other activities, the Dana Alliance has amplified the voices and extended the reach of brain scientists committed to educating people about brain research. To take one example: Brain Awareness Week, initiated by the Dana Alliance, celebrated its tenth anniversary in 2005 with a global campaign involving more than 1,800 partner organizations in 62 countries. Centered on one week in the March, the campaign gave rise to hundreds

of lectures, school programs, and laboratory tours across the United States and events in 39 European, Middle Eastern, and Australasian countries. This was education and communication on a grand scale.

Approaching its own commitment to help educate the public about brain research, Dana saw, in the early 1990s, relatively few readily accessible sources of public information about the brain and brain research. The Foundation responded with a series of publications, beginning with *Brain Work*, a full-color monthly report on brain research, now in its 16th year of publication. It launched *Brain in the News* to keep journalists aware of what newspapers, magazines, and television were reporting about the brain.

As the Foundation once built college auditoriums for public discussion and debate, its Web site today invites people worldwide to seek information in multiple languages.

The annual *Progress Report on Brain Research* is a concise summary for scientists, journalists, laymen, government leaders, and others of the year's key advances in brain research and treatments for brain diseases and disorders.

Cerebrum: The Dana Forum on Brain Science presents articles by scientists, scholars, and

top science writers explaining, interpreting, and debating brain research discoveries and their significance for a host of fields. The Foundation created the Dana Press to produce and manage these and other publications and publish books in the field of brain science. Since 1998, Dana Press has published some of the outstanding new books relating to neuroscience, ranging from the monumental *Dana Guide to the Brain* to this year's highly relevant *The Ethical Brain* by Michael Gazzaniga, Ph.D.

As the Foundation once built college auditoriums for public discussion and debate, its Web site today invites people worldwide to seek information in multiple languages, download materials for education and discussion, listen to broadcasts, browse books and publications, check the latest news on brain research, challenge themselves with puzzles and quizzes, and read research reports. This vast auditorium without walls—and with few constraints of distance or language—accommodates not one speaker or event but dozens and hundreds. Its capacity and resources grow weekly. For example, early in 2006 a searchable archive of the Dana quarterly journal *Cerebrum: The Dana Forum on Brain Science* became available with all articles, debates, and book features from eight years of publication.

A defining feature of Dana's approach to education has been partnerships. The Brain Awareness Week network and the Dana Press distribution partnership with the University of Chicago Press are two examples. To reach the public with information about the brain, Dana established its news office to link the scientists of the Dana Alliance with journalists seeking information and expert opinion on the brain. The News and Internet Office provides a complete listing of Dana Alliance scientists, with their areas of expertise, location, and contact information so that newspaper, magazine, radio, and television reporters and editors can be put in touch with authoritative sources of information with an efficiency that helps to meet deadlines. The News and Internet Office also provides a steady stream of well-researched articles on current brain research topics as background information for diverse publications.

Dana has taken advantage of avenues, formats, and technologies evolved over several decades to rapidly extend the reach of its performing arts education initiative.

In the 1990s, Dana began to shift its grant making in education from colleges and universities to the nation's public schools. In 2001, the Foundation identified an area where public funds were being reduced, leaving unmet needs and an opportunity for limited private funds to make an impact. It began to make grants for innovative programs to improve teaching in the performing arts in public schools. Concentrating at first on New York City, Washington, DC, Los Angeles, and their environs, the Foundation has fostered effective models of education in the performing arts, helping the professional development of teaching artists.

Dana has taken advantage of avenues, formats, and technologies evolved over several decades to rapidly extend of the reach of its performing arts education initiative. The Foundation launched *Arts Education in the News*, along the lines of *Brain in the News*, to keep the media aware of research and innovations in the arts. Dana Press published and widely distributed free books such as *Partnering Arts Education: A Working Model from Arts Connection* with examples of effective school residencies to train practicing artists to work in the classroom. It has supported conferences and symposia convening professionals in arts education as it convenes brain scientists. Just as the Foundation exploited the potential of the Web to carry its message

about brain research, the performing arts initiative rapidly mounted a major Web presence. At www.dana.org, visitors will find summaries of the programs in performing arts education at dozens of organizations working with Dana support.

PUTTING IT TOGETHER

One hurdle in any attempt to convey the full significance of the brain is its role in virtually every human activity. The Foundation realized that two of its principal areas of grant making—arts education and brain

The Dana Alliance goes beyond the dissemination of information about the brain, working to engage the public in dialogue with brain scientists about controversial issues of public concern raised by brain research.

research—had connections obvious on the surface but little understood on the scientific level. Does training in the arts change how the brain processes information? Do these changes in processing affect how an individual functions in domains outside the arts—that is, is there a transfer effect? These and other questions pose research problems for a host of neuroscience fields such as learning, memory, imaging, and behavior. In 2004,

the Foundation brought together six universities with brain research capabilities to form a Dana Arts and Cognition Consortium.

This brief history scarcely exhausts the strategies and tactics that Dana has deployed on the front line of its education campaigns. Dana centers in Washington, DC, and London have facilities and technology for the spectrum of teaching and learning activities. At the London Dana Centre, the public has opportunities almost daily to meet and interact with brain scientists and use technology and materials to learn about the brain. Recently, audiences at both centers watched a transatlantic discussion about ethics and brain science. Increasingly, the Dana Alliance goes beyond the dissemination of information about the brain, working to engage the public in dialogue with brain scientists about controversial questions of public concern raised by brain research. The new field of neuroethics was fostered by the Foundation, with the first major publications in the field available from Dana Press.

The Foundation has also worked with outstanding scientists to identify new areas for research. In the cross-disciplinary field of human immunology, Dana encourages and supports opportunities for medical students, post-doctoral degree students, and beginning scientists who

want to train for research careers. Indeed, whenever the Foundation supports major research, it encourages the senior investigator to find within the project training opportunities for junior scientists and medical students. This training may be an adjunct to the central research goal, but Dana realizes that every field lives or dies by the quality of its training of the next generation, and that education is part of every productive activity. ■

The Dana Centers

While the newest human-gathering place—cyberspace—is lionized, a special kind of learning takes place when people assemble in the physical world to exchange new ideas. Not only face to face but presence to presence, they take away specific content as well as an intuitive sense of the ideas’ meaning to those who imparted them as well as to others who digested them. Thus, one of the Foundation’s most important long-term initiatives has been the establishment of Dana Centers where the most original minds can be experienced and probed by members of the public. Currently four Dana Centers are in operation, in London, Washington, DC, Austin, Texas, and, most recently, Israel. Programming in Dana Centers consists of public talks and events, meetings, conferences, symposia, and educational projects, but to a different extent at each. In 2005, for the first time, a transatlantic program was held live involving two Dana Centers—combining the intimacy of a small gathering with the reach of cyberspace.

THE DANA CENTRE, LONDON

The Dana Centre in London, in its second year of operation in 2005, specializes in capturing the public imagination for science with public events. Built with support from the Foundation, the Wellcome Trust, the Wolfson Foundation, and the Garfield Weston Foundation, the Centre is run by the London Science Museum and houses the small staff of the European Dana Alliance for the Brain. In 2005, the European Dana

Alliance for the Brain presented more than 20 public programs with partners ranging from the British government's Medical Research Council to the Wellcome Trust. These programs are typically in panel format, with



experts discussing a subject and responding to questions from the audience. During the year, talks took place on topics such as DNA, Genes, and the Brain; Art of the Brain; Memory and Aging; Neuroethics and the Brain; and Touch Me: Challenging the Senses. British news reportage has quickly boosted attendance to capacity levels.



Among many activities, the Dana Centre in London presented a transatlantic video conference on "The Ethical Brain" (top), while the Dana Center in Washington, DC, hosted a meeting of area recipients of Dana grants in arts education (bottom).

THE DANA CENTER, WASHINGTON, DC

In Washington, DC, the Dana Center sponsors a range of activities, from briefings by leading scientists to invitational workshops, media briefings, and lectures for the public. For example, one public series, Speaking Science, with Syracuse

University, featured the bestselling author Oliver Sacks (*The Man Who Mistook His Wife for a Hat* and *An Anthropologist on Mars*) in a conversation on the topic Neurology and the Soul. The panel for another discussion, Creativity and Aging, featured playwright, cartoonist, and author Jules Feiffer, *60 Minutes* creator Don Hewitt, and the psychiatrist and National Medal of Science winner Nancy Andreasen, M.D., Ph.D. Other events at the Dana Center in 2005 were a media briefing on advances in depression by brain researchers and a transatlantic discussion on "The Ethical Brain" with panelists and audience members at the London Dana Centre able to talk with those at the Dana Center in Washington. Many of the events were taped for Webcasting and Podcasting and are available at www.dana.org.

THE DANA CENTER, AUSTIN, TX

At the University of Texas, Austin, the mission of the Dana Center for Innovation in Science and Mathematics Teaching is to influence the education of young people by disseminating to educators the best practices and models for improving instruction in science and mathematics. Starting with a long record of success in Texas, the Center (Dana's first, now 15 years in operation) has become recognized as a national and global leader in math education.

In October, 2005, the National Center for Education Statistics released the Nation's Report Card in mathematics, reporting each state's overall performance and the performance of specific groups of students, including African-American and Hispanic students and all low-income students. In Texas, the performance of every one of these subpopulations was significantly above the national average.

At the time the Center was created, most university mathematics departments aimed their public education efforts at small numbers of local teachers and students. The Dana Center proposed working "at scale"—improving mathematics teaching and learning across the state, with more than 250,000 teachers and 4.4 million elementary and secondary school students. The Center managed development of the state's mathematics standards, which became the legal basis of Texas's accountability system and also a model for the federal No Child Left Behind legislation. In



AmeriCorps members are trained in early literacy tutoring at the Dana Center in Texas, headed by Dana Award winner Philip Uri Treisman, Ph.D.

1996, the state asked the Dana Center to create a Texas Center for Educator Development in mathematics. Since then, the Center has worked with almost all of Texas's approximately 1,000 school districts and 156 colleges and universities.

While its core mission is improving Texas mathematics education, the Dana Center is beginning to work across the nation through two key initiatives: the Urban Mathematics Leadership Network, which supports improvement of mathematics education in large urban districts, and a collaborative effort with Achieve Inc., an initiative of the nation's governors and business leaders to raise academic standards and achievement in schools.

THE DANA CENTER FOR SCIENCE LITERACY, REHOVOT AND TEL AVIV, ISRAEL

The newest Dana Center concept took shape in Israel in 2005, with a grant to the Weizmann Institute in Rehovot and the HEMDA Centre for Science Education in Tel Aviv to establish the Dana Center for



This panel discussion at the Davidson Institute of Science Education in Israel was moderated by Professor Haim Harari of the Weizmann Institute, who is coordinating the Dana Center for Science Literacy initiative.

Science Literacy. Inspired by the Dana Centre in London, but taking a different approach to fostering interchange between scientists and the public, this new two-location Center (admittedly an oxymoron) provides a forum for the public to learn about issues at the interface of science and society. To assure both quality science and public relevance,

a steering committee of scientists, science educators, and journalists decide on public lectures, panel discussions, eight-week courses, and meet-the-author premieres.

Among the initially selected topics are futuristic technologies, genetics, and bioethics. During 2005, for example, eight weekly 2-hour courses included, From the Computer Mouse to the Laboratory Mouse: The Genomic Revolution and Our Life and Breakthroughs in the Life Sciences and their Implications. Special lectures were on subjects such as Pre-implantation Genetic Diagnosis and Man or Machine? How Should Future Exploration of the Solar System Proceed—With Astronauts or Robots? Subjects for the coming year include the science and ethics of potential new treatments for neurological and immune diseases involving stem cell therapies, transplantation and gene therapies; and questions about language, memory, creativity, and consciousness. ■

Grants for Research and Training, Consortia and Collaborations, Neuroscience, Immunology, and Arts Education

Within its two longstanding areas of interest, education and the contributions of scientific research to health, Dana continued to experiment with ways that its grant support could gain added value through collaborative research, new cross-disciplinary endeavors, training, and concerted efforts at disseminating results. Themes such as research ethics, teaching by working professionals, and clinical research shaped grant-making programs. Communication of information and ideas, in the grants program as in other divisions of Dana's work, received close attention.

RESEARCH IN SERVICE OF HUMAN HEALTH

Dana grants support clinical research on the brain, the immune system, and interactions between them in health and disease. New clinicians devoted to developing careers in patient-oriented research need specialized training that will enable them to address the formidable challenges, and reap the rewards, inherent in helping to improve patients' health. Dana's grants emphasize support for these young men and women to undertake pilot studies that can lead to larger-scale efforts supported by

others. Through Dana grants, these investigators learn how to develop rigorous studies that “control” for most potentially confounding factors, even though some factors are beyond such control. They learn efficient methods for identifying patients who exactly fit the research criteria. Since clinical studies usually take longer than more easily controlled basic laboratory research, early training enables clinical researchers to maximize their opportunities to conduct and conclude publishable studies that advance the field, and their clinical research careers.

Brain and Immuno-imaging

New clinical investigators, guided by senior researchers, are competitively selected through a “Request for Proposals” application process to receive funding for Brain and Immuno-imaging studies. With Dana funding, they initiate tests of novel hypotheses concerning the brain, the immune system, or their interactions, with advice from senior researchers. In 2005, Dana awarded a total of \$4 million for these pilot studies designed to learn how the brain functions normally, how this functioning is altered by disease, and how brain and immune cells interact protectively, or sometimes harmfully. With guidance from senior researchers, funded investigators are often able to develop enough pilot data to apply successfully to other sources to enlarge or build upon their initial research. Others learn from their failed efforts. The insights often lead to new solutions that help to move the field along. For instance, one of the first imaging grantee investigators, John Detre, M.D., at the University of Pennsylvania, reported that the failure of his initial approach led to an entirely new one that subsequently grew into a federally funded multi-site study.

Imaging technologies are improving all the time, and Dana grantees have been on the cutting edge of some exciting advances. To take a few examples:

- ◆ Initial functional magnetic resonance imaging (fMRI) results indicate that stroke patients who imitate animated movements they see on a computer screen generate feedback in their brains. This feedback enables them to re-learn real world functions, such as turning a key or reaching for a glass of water. (Emilio Bizzi, M.D., Massachusetts Institute of Technology)

- ◆ Diffusion-Perfusion-Weighted MRI in stroke patients can identify damaged brain areas in need of new blood circulation. This is accomplished by medically raising blood pressure. The newly circulating blood helps to minimize cognitive impairments of speech and other language functions, such as retrieving specific words. (Argye Hillis, M.D., Johns Hopkins University.)



Argye Hillis, M.D.

- ◆ Adults activate different regions of their brains compared with children when they generate words, according to fMRI studies. (Bradley Schlaggar, M.D., Ph.D., Washington University)
- ◆ PET imaging that is performed prior to epilepsy surgery can identify the locations of seizures that occur outside the brain's temporal lobes. This provides a roadmap for surgeons. (Jeffrey Ojemann, M.D., University of Washington)
- ◆ Patients with schizophrenia who have difficulty retaining short-term memory respond to the drug resperidone, according to MRI studies. (Joel Steinberg, M.D., University of Texas, Houston)
- ◆ Substances called “cytokines” that initiate an inflammatory response also may play a role in depression, according to cellular and conventional imaging studies that combine the use of PET and MRI. (Lucile Capuron, Ph.D., Emory University)
- ◆ A new PET imaging tracer (called FMAU) that is incorporated into brain tumor cells can show whether various treatments are slowing the growth of deadly brain tumors. (Thomas Chen, M.D. Ph.D., University of Southern California)
- ◆ Cellular confocal and fluorescence microscopy in an animal model of autoimmune multiple sclerosis is showing how certain immune

cells damage nerve cell axons to disrupt brain cell communication. (Martin Kerschensteiner, M.D., and Thomas Misgeld, M.D., Harvard University)

- ◆ Immune sentries, called “dendritic” cells, teach adaptive immune T cell attackers how to recognize invaders using a three-step process, as revealed by studies using two-photon microscopy. (Ulrich von Andrian, M.D. Ph.D., Institute for Biological Research)

Clinical Neuroscience Research

Clinical Neuroscience Research grants support translation of treatments that show promise in animal models of devastating brain diseases into initial studies in patients, development of ethical guidelines for such research, and assessment of outcomes of various treatments for complex brain conditions such as stroke. Many of these studies involve training and career development for young clinical researchers who

work with established investigators.

This was the case, for instance, in a 2005 funded study by Cornell University researchers Nicholas Schiff, M.D., and Joseph Finns, M.D. They are building on prior Cornell studies of severely brain-injured adults. Schiff’s clinical research skills were guided by Fred Plum, M.D., who investigated characteristics of patients who were in a “persistent vegetative state,” the term coined by Plum. Schiff and Finns now are studying adult patients who function at a “minimally conscious” level. The investigators initially received Dana support to

develop ethical guidelines for clinical studies to determine whether deep brain stimulation could improve patients’ brain functioning. The guidelines were designed to balance clinical research considerations with the needs of patients’ families for guidance in determining whether or not the patients should participate in this exploratory treatment approach. Now, the two investigators will use this earlier work to guide studies that will characterize patients’ levels of consciousness and use imaging to assess the effects of deep brain stimulation in possibly raising these levels.



Nicholas Schiff,
M.D.

Another grant is enabling Steven Mayer, M.D., of the Neurological Institute of New York at Columbia University, to mentor young investigators in creating and testing a critical care computer information system for managing stroke patients in the acute care stage. The investigators will determine whether the system effectively integrates diverse physiological indicators of the stroke patient's condition, to guide measures for reducing further brain damage during this critical period.

Working with Autism Foundations

One of the most troubling barriers to learning and social-skills development in children is autism, which is actually a spectrum of conditions. The number of children diagnosed with Autism Spectrum Disorders has increased substantially during the past decade. The severity of this illness, coupled with the increased diagnosis, has intensified public determination and scientific commitment to identify means to prevent and treat Autism Spectrum Disorders.

Dana's scientific consultants and staff have gained a reputation over the years for making informed decisions in a timely fashion to stimulate innovative medical research. For this reason, a newly formed philanthropic organization, [Autism Speaks](#), approached Dana this year for assistance in developing new approaches to autism research. As Thomas R. Insel, M.D., director of the National Institute of Mental Health, notes in his introduction to Dana's *2006 Progress Report on Brain Research*, "the prevalence of autism spectrum disorders has now been estimated at 1 in 166 births, roughly a tenfold increase in the past decade." Because the need was urgent and Dana had the know-how, we were glad to collaborate with the coalescing autism groups. Dana this year developed and initiated a strategy to help non-profit funders support new approaches to autism research, by administering a competitive grants process for them.

Dana sent a collaboratively developed request for proposals to the nation's schools of medicine and public health and to selected independent research organizations. Among new approaches sought are means to objectively diagnose autism, evaluate potential new therapies, identify the basis for familial susceptibility, and investigate exposures that might

The severity of this illness, coupled with the increased diagnosis, has intensified public determination and scientific commitment to identify means to prevent and treat Autism Spectrum Disorders.

trigger autism in susceptible populations. Innovations in these areas are likely to require collaboration by scientists from fields as diverse as education, communication, population dynamics, genetics, neuroscience, and immunology.

Neuroimmunology

Nowhere is the example of the importance of lifelong continuing learning more evident than in the emerging field of neuroimmunology, the study of nervous and immune system interactions. The field's development has required neuroscience and immunology researchers to learn one another's terminology, tools, and theories well enough not only to be able to collaborate, but also to create new synergies. Neuroimmunology also has required that clinical and basic researchers from both fields learn to become "translational" researchers. These researchers translate basic research findings into clinical studies and test clinical observations in the laboratory. Experienced investigators

By learning new ways of conceptualizing questions and seeking answers, participating collaborators are unearthing some surprising results.

branching out into this new field and promising new investigators are invited to apply for collaborative research funding to explore how the nervous and immune systems influence each another. Joining Dana in supporting this new research area is the Horace W. Goldsmith Foundation,

which also co-funds several human immunology studies described in the next section.

By learning new ways of conceptualizing questions and seeking answers, participating collaborators are unearthing some surprising results. For instance, several researchers have unearthed indications that certain molecules play a role in the actions of both the nervous and immune systems. Scripps Institute researchers discovered that a receptor located on brain cells that helps the cells survive also appears to control how many immune cells that reside in the brain are summoned to fight brain inflammation and infections. Harvard University researchers found that the same class of molecules that enables immune cells to recognize invaders also helps direct brain wiring during development.

How might immune and brain cells act together to protect the brain? A New York University scientist suggests that immune cells in

the brain seem to rush to the site of injury and prevent further damage to brain tissue by walling off the injury site. Conversely, how might immune cells harm the brain? Yale University researchers found that immune cells that mistakenly identify the brain's cells as foreign and attack them do not slip past the blood-brain barrier to enter the brain; instead, they enter the brain in spinal cord fluid.

In addition to fostering collaboration through research grant funding, Dana supports interdisciplinary seminars, organized by the New York Academy of Sciences, which also are summarized on the Academy's ["Web channel."](#)

Human Immunology

As pioneering scientists demonstrate the excitement of research in human immunology, they must attract new investigators to this emergent field. Thus training is a major feature of these Dana grants. All grant recipients are encouraged to bring medical students into their projects to experience the exhilaration of pursuing careers in human immunology. Additionally, Dana and the Irvington Institute for Immunological Research each year select several junior-level investigators who apply to become Dana-Irvington Fellows and learn from senior mentors. To date, there are 10 fellows.

Human Immunology researchers explore how the human immune system protects against viral and bacterial infections, parasites, and fungi. Many Dana grants support research to strengthen "innate" immunity. Innate immune cells, the body's first line of defense, mount rapid, short-acting generalized defenses against harmful intruders. Innate immune cells also stimulate long-acting, highly targeted attacks by "adaptive" immune cells, called "T" and "B" cells. Adaptive immune cells are also galvanized into action by vaccines. Both innate immunity and adaptive immunity, including vaccines, help protect against deadly viruses and bacteria. While the Federal government is spending about \$7 billion on a bird flu vaccine, very little federal support is being directed at strengthening innate immune responses to this flu. Dana, in contrast, focuses on both innate and adaptive immunity against such viruses.

Dana also supports research to determine how the immune system in some people produces autoimmune diseases or allergies. While most immunology research has been undertaken in animals,

providing results that may apply to humans, the focus of Dana and the co-funding Horace W. Goldsmith Foundation is on supporting direct investigation of how the human immune system functions. In addition to supporting individual investigators and their trainees, funding increasingly supports collaborating immunologists with complementary areas of expertise who join in consortia to carry out complex clinical studies. One study supported this year is to develop a malaria vaccine that can be delivered directly to certain immune cells instead of being injected into the bloodstream. Another asks if autoimmune lupus involves a specific gene alteration that disproportionately affects African-Americans. Grant-supported human immunology investigators met as a group this year for the first time to report and discuss their discoveries. Among these:

- ◆ Antibodies (produced by immune cells) may have even greater potential to attack cancers and other diseases if they can also stimulate full maturation of “dendritic cells,” the immune system’s sentries. Antibodies are one of the leading types of new cancer drugs and one of the most effective forms of cancer therapy. Human antibodies in the test tube, grantee investigators have demonstrated, can accelerate maturation of dendritic cells so that these cells can more effectively stimulate the body’s immune defenses. (Kavita Dhodapkar, M.D., Rockefeller University)

- ◆ The most common type of leukemia in adults, chronic lymphocytic leukemia (CLL), actually has two forms. The forms differ in the responses that “receptors” on the leukemic cells make to harmful agents. In the form of CLL that has a good prognosis, the receptors respond, as expected, to foreign materials. In the form with a poor prognosis, however, the receptors appear to respond not only to foreign materials but also to the body’s own cells. With this new understanding, researchers now can work to develop therapies appropriate to each form of the disease. (Nicholas Chiorizzi, M.D., North Shore Long Island Jewish Hospital)

- ◆ Dendritic cells (the immune sentries) have been found to stimulate an immune response to deadly multiple myeloma cells both

before and after these cells become malignant. This finding indicates that the immune system is not necessarily inactivated in cancer, as once thought. In fact, strengthening dendritic cell responses might prevent the myeloma cells' progression to cancer,



Mahdavi
Dhodapkar, M.D.

or might effectively treat the cancer, once developed. (Mahdavi Dhodapkar, M.D. Rockefeller University)

- ◆ Not only are pre-malignant forms of many tumors recognized by immune cells, but patients' natural immune responses are stronger against pre-malignancy than

they are once the tumor becomes malignant. For this reason, most pre-malignancies do not develop into malignancies. When they do, according to the investigators' findings, not only does the tumor change, but the patient's response to the tumor diminishes. Future development of preventive therapies, therefore, might target the patient's diminished response to the malignancy. (Olivera Finn, Ph.D., University of Pittsburgh)

- ◆ It is well known that autoimmune diseases, such as rheumatoid arthritis and systemic lupus erythematosus, occur when disease-fighting antibodies mistake the body's own cells as foreign invaders and attack them. Dana-supported researchers have discovered that large numbers of these errant antibodies are developed, but they are usually killed off during development by "regulatory" immune cells. When this weeding-out of errant antibodies does not occur during development, for some reason, autoimmune diseases ensue. This understanding may lead to new approaches to preventing autoimmune diseases from developing. (Eric Meffre, Ph.D., Hospital for Special Surgery, New York; and Hedda Wardemann, Ph.D., currently at the Robert Koch Institute, Berlin)
- ◆ The nervous system is able to communicate with certain immune cells, called "macrophages." Grantee investigators have found

that the vagus nerve can dampen macrophage production of a molecule (called TNF) that induces inflammation. (Kevin Tracey, M.D., North Shore Long Island Jewish Hospital)

SCIENCE EDUCATION

Several grants help the public to understand the brain, complementing efforts by the Dana Alliance. One of the most creative public education efforts is development of an interactive Web site, called Genes to Cognition Online, by the Cold Spring Harbor Laboratory on Long Island. The Laboratory is headed by James Watson, M.D., the co-discoverer of the structure of DNA. Through a four-year Dana

Genes to Cognition Online will illustrate how genes produce proteins that carry out particular brain functions involved in cognitive abilities such as thinking, remembering, and learning. The site also will demonstrate how, when proteins malfunction due to genetic mutations or other factors, cognitive disabilities can result.

grant, the site will help people learn about the genetic bases of cognitive abilities and disabilities. It will be modeled on the Genes to Cognition (G2C) program at the Wellcome Trust's Sanger Institute in Cambridge, England. G2C links basic genetic molecular research with human clinical studies of cognition.

Building on this concept, Genes to Cognition Online (G2C Online) will illustrate how genes produce proteins that carry out particular brain functions involved in cognitive abilities such as thinking, remembering, and learning. The site also

will demonstrate how, when proteins malfunction due to genetic mutations or other factors, cognitive disabilities can result. Additionally, users will be able to learn how malfunctions of specific genes or their proteins can lead to development of therapies targeted at these malfunctions. The site will include three-dimensional cellular and molecular animations, video narration, and experiment simulations. Directing the site's development and content is a panel of 12 scientists and educators. This panel also will be responsible for testing and evaluating how well the programs target specific audiences. High school and college teachers will be able to design their own courses, while all users will be able to create their own scientific information networks, based on their specific interests and knowledge levels.

ARTS EDUCATION AND THE RELATED DANA ARTS COGNITION CONSORTIUM

To improve the teaching of the performing arts in public schools, Dana continued to expand its support of innovative professional development. Within this field, the Foundation is interested primarily in training for in-school arts specialists and professional artists in residencies in the public schools.

The Foundation's rising level of grants in arts education since 2001 has raised awareness of the need to advance the teaching capabilities

of artists-in-residence. While grants have been concentrated initially on projects that originate within a 50-mile radius of New York City, Los Angeles, or the District of Columbia, the "best practices" have been disseminated widely through our free publications. In this way, organizations of varying size elsewhere have been able to adapt or replicate many of these successful arts

education practices. In 2005, 22 grants furthered our growing role in arts education. Some examples:

- ◆ The Wolf Trap Institute for Early Learning Through the Arts supports, with Dana funding, the recruitment and training of new teaching artists, advancing the skills of master teaching artists, and providing what the organization calls, with typographical creativity, "stART smART Network" training.
- ◆ The Shakespeare Theatre in Washington, DC, is developing a Teaching Artist Training Program in collaboration with The Denver Center for the Performing Arts and The Seattle Repertory Theatre. That idea was developed at an arts educators' conference where theater professionals in attendance felt that the existing training standards did not meet the needs of their teaching artists. The project's goal is to create a comprehensive training program that specifically addresses the needs



Participants in the Wolf Trap master teaching artist training learn new skills to enhance their work in the classroom.

of theater professionals who wish to teach their art in the public schools.

- ◆ Dana funding to ArtsBridge America provides support to five universities—University of California, San Diego; University of California, Berkeley; University of Utah; State University of New York, Purchase; and Lawrence University of Wisconsin—to collaborate in developing a curriculum for training teaching artists. Undergraduate and graduate students are placed in public school classrooms where they are supervised and evaluated by host teachers. The universities are working together to create a national model prototype that can be used by all the schools in the ArtsBridge network.



- ◆ The Association of Institutes of Aesthetic Education will expand its Teaching Artist Mentoring Project. This is a national initiative to enhance the skills of the teaching artists and to use technology to help form a national teaching artist community. AIAE will gain experience in this 2005 project to carry forward under Dana's 2006 Rural Initiative.

Dana ArtsBridge Scholar Jasmine Yep works with a fourth grade class from Santa Ana on designing a Chinese Lion Dance costume.

- ◆ The New York State Alliance for Arts Education will develop a toolkit of resources for arts education that can be disseminated to teaching artists throughout New York State. This instructional toolkit will assist teaching artist trainees and arts specialists plan, carry out, and evaluate their work with students. It will also provide the curriculum for a series of seminars to be offered to teaching artist trainees to assist them in developing residencies. Results of the entire training program will be presented at several regional and state conferences during the coming school year.

These wide-reaching projects have laid the groundwork for our new category of arts education grants: the Dana Rural Initiative, launched

in 2005. Six proposals for curriculum models addressing arts education needs specific to rural areas of the country were selected for support from the Foundation starting in 2006. These projects will target our long-established area of interest: the training of teaching artists as well as the in-school arts specialists who work with them.

As noted above, we have bolstered and extended the reach of our grants with coordinating events and helpful free publications. In 2005, the Dana-supported ArtsConnection symposium, *Beyond Arts Integration: Defining Learning in Arts Education Partnerships*,

examined current conditions in arts education and the practices and outcomes of a model for building partnerships. To follow up, Dana also edited and published a book, *Partnering Arts Education: A Working Model from Arts Connection*, which presents practical illustrations of



With Dana support, the ArtsConnection symposium, “Beyond Arts Integration,” explored models for partnerships between performing artists and classroom teachers.

the ways visiting artists and classroom teachers learn to form partnerships that make all the difference in the success of school residencies.

The Foundation supported and participated in several education conferences during the past year. These included the Arts Education Partnership Conference and the Grantmakers in the Arts Conference in California and the Teaching Artist Forum in New York.

Work is ongoing to increase the use of the “Arts Education Resources” section on the Dana Web site. The section provides annotated links to information about curriculum instruction, program planning, funding, and general arts education sites

Three regional gatherings of Dana grantees were held in New York City, Washington, DC, and Los Angeles. These stimulating sessions enabled arts educators to learn from each other. They developed their own agenda, allowing them to confer on local issues with more efficacy and timeliness. Though topics varied from city to city, collaboration and communication were common themes. The discussions also took on such subjects as: assessing the elements of quality; process versus product; finding a common language; shared marketing as an advocacy tool; and controversies about intellectual property

rights. Subsequently, some grantees have made use of a Web e-mail list server we provide as a clearinghouse for materials they want to share.

In all areas of its support for arts education, we give priority to proposals, publications and events with potential for disseminating and sharing resources. In our grantee seminars, we encourage grantees to connect, communicate, and leverage their shared expertise, which in many cases they have done. The lessons we learned from our granting in three urban areas have informed an expansion into projects with wider reach and—new this year—into rural areas.

These efforts on the front lines of enabling children to get arts training in schools generated our interest in funding research by some of the nation's foremost cognitive scientists. Our arts grantees' work in providing children with opportunities to dance, act, and play music in school has spurred our support of a major neuroscience study to determine whether the skills learned through education in the arts may be transferred to other domains in the brain.

DANA ARTS AND COGNITION CONSORTIUM

In June of 2004, the Foundation established the Dana Arts and Cognition Consortium to address questions such as: Does some cognitive improvement take place within the brain as the result of arts training in early youth? Can we establish a causal—as opposed to a correlational—link between arts training and other cognitive skills? Is there some underlying advantage to early arts training beyond specific transfer of skills, such as the general ability to focus attention?

To apply scientific rigor to getting answers to these questions, Dana engaged eight leading neuroscience laboratories at six educational institutions around the U.S. to examine this subject from different disciplines. The scientists are from Dartmouth College, the University of Michigan, University of California at Berkeley, University of Oregon, Harvard University, and Stanford University. The arts chosen for study in the \$1.8 million Dana grant were performing arts: music, drama, and dance. At the end of 2005—the halfway point of the 3-year studies—it is too soon to draw conclusions, but here is a brief, preliminary summary of progress.

The hypothesis is that arts training strengthens specific neural networks used for specific skills, and these stronger neural networks also benefit other cognitive functions.

To test this hypothesis, some of the Consortium’s laboratories have been developing ways to measure these networks in the brain. One lab is developing methods to determine the functional relation between brain areas (e.g., how the cingulum brain area connects to pre-frontal areas). Another group is developing ways to measure the physical connections between brain areas (the white matter pathways themselves). Another is working on developing Near Infrared Spectroscopy, a possible way to measure blood flow changes in the brain during specific tasks, which would be suitable for use with young children.

With these valuable new methods to measure these aspects of neural networks, members of the Consortium can analyze what networks are used for specific arts and how training alters these networks. These are important new measurement tools; not only can they be used among our groups investigating the potential transfer of skills developed by arts training to other brain functions, but they can be shared with the wider neuroscience research community.

At a gathering of Dana Consortium members convened in San Francisco in October 2005 by Michael Gazzaniga, Ph.D., the project

leader, members of the group took notice of the promising work of Helen Neville, Ph.D., and her associates at the University of Oregon. Neville’s group has begun to study the way that training in music and other arts education affects cognition in 3 to 5 year olds. By randomly assigning children from Head Start schools to either music or arts training or to a control group that received no music or arts training, they avoided the confounding problem of self-selection. (For example, children who are better at music and arts tend to choose training in music and arts, and there-



Helen Neville,
Ph.D.

fore may have these innate skills already). While the numbers are small, the Oregon study is a controlled, prospective experiment—documented from start to finish—well-designed to get at the causality issue.

Early results show that following the music/arts training the children showed robust and significant increases in several tests of language (and thus speech segmentation) pre-literacy skills, spatial reasoning (such as perspective in drawing), and numeracy (skill with numbers and math).

Children in the group taking arts/music training improved in language scores. Yet children in the regular Head Start classes and not exposed to the arts training did not show any significant gains in any areas. This finding indicates that arts training is having a specific causal effect on cognition. To further study this indication in a prospective experiment with a larger group, additional funding has been provided.

The effect of arts study on the brain is a subject that has generated much skepticism on one hand and wishful thinking on the other. By coordinating a variety of approaches by eminent cognitive scientists, and making available to them technology never before used in this field, we hope to provide a basis for informed decision-making by educators, students and parents. ■

Summary of Program Grant Appropriations in 2005

Arts and Cognition Consortium
University of Oregon—Eugene, OR

Arts Education

ArtsBridge America—La Jolla, CA
Association of Institutes for Aesthetic Education—New York, NY
Association of Performing Arts Presenters—Washington, DC
Cal Poly State Foundation—San Luis Obispo, CA
Center for Arts Education—New York, NY
Center for Modern Dance Education—Hackensack, NJ
Arts and Humanities Education Collaborative—Washington, DC
Education Through Music—New York, NY
Epic Theatre Center—New York, NY
Fairfield University—Fairfield, CT
Institute of Continuing Conductor Education—Astoria, NY
Jacob’s Pillow Dance Festival—Becket, MA
Los Angeles County Arts Commission—Los Angeles, CA
Los Angeles Master Chorale—Los Angeles, CA
Music Center Founders—Los Angeles, CA
National Dance Institute—New York, NY

Arts Education (continued)

New Mexico Arts—Santa Fe, NM
New York State Alliance for Arts Education—Albany, NY
Pasadena Conservatory of Music—Pasadena, CA
Shakespeare Theatre Company—Washington, DC
STREB/Ringside—Brooklyn, NY
Theatre for a New Audience—New York, NY
Van Wezel Performing Arts—Sarasota, FL
Washington Performing Arts Society—Washington, DC
William Inge Festival—Independence, KS
Wolf Trap Foundation for the Performing Arts—Vienna, VA

Brain and Immuno-imaging

Albert Einstein College of Medicine—New York, NY
American Association for the Advancement of Science—New York, NY
Barrow Neurological Institute—Phoenix, AZ
Baylor College of Medicine—Houston, TX
Boston College—Chestnut Hill, MA
California Institute of Technology—Pasadena, CA
Children’s Hospital Medical Center—Boston, MA
Children’s Research Institute—Washington, DC
Columbia University College of Physicians & Surgeons—New York, NY
Duke University School of Medicine—Durham, NC
Harvard Medical School—Boston, MA
Johns Hopkins University—Baltimore, MD
Kennedy Krieger Institute—Baltimore, MD
Manic Depressive Illness Foundation—Washington, DC
Massachusetts General Hospital—Boston, MA
New York Hall of Science—New York, NY
Northwestern University Feinberg School of Medicine—Chicago, IL
Pennsylvania State University—Hershey, PA
Stanford University—Palo Alto, CA
University of California, Los Angeles—Los Angeles, CA
University of California, San Francisco—San Francisco, CA
University of Illinois Medical Center—Chicago, IL
University of Massachusetts Medical School—Worcester, MA
University of Michigan Medical Center—Ann Arbor, MI
University of Minnesota—Duluth, MN

Brain and Immuno-imaging (continued)

University of Rochester—Rochester, NY

University of Utah—Salt Lake City, UT

Yale University School of Medicine—New Haven, CT

Clinical Neuroscience Research

Neurological Institute of New York—New York, NY

Weill Medical College of Cornell University—New York, NY

Human Immunology

Consortium (Lupus Prevalence in Certain Population Groups)

Columbia University—New York, NY

The Rockefeller University—New York, NY

Consortium (Immune System Gene Variations and TB)

University of Cape Town—Cape Town, South Africa

University of Oxford—Oxford, England

University of Washington—Seattle, WA

Consortium (Graft-versus-Host Disease in Transplantation Patients)

Sunnybrook & Women's College Health Sciences Centre—Toronto, Canada

University of Montreal—Montreal, Canada

Johns Hopkins University—Baltimore, MD

New York Academy of Sciences—New York, NY

New York University School of Medicine—New York, NY

The Irvington Institute for Immunological Research

Dana-Irvington Fellows Program—New York, NY

The Mayo Clinic—Rochester, MN

University of Miami School of Medicine—Miami, FL

Neuroimmunology

Columbia University—New York, NY

Tel Aviv University—Tel Aviv, Israel

University of California, San Francisco—San Francisco, CA

Weill Medical College of Cornell University—New York, NY

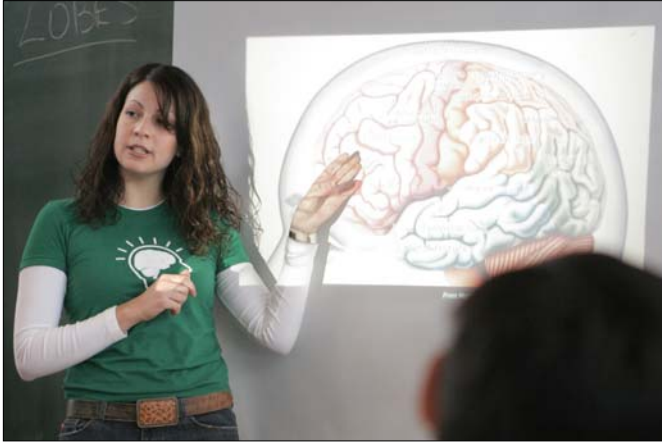
Dana Alliance for Brain Initiatives: New Avenues for Education and Dialogue about Brain Research

In 2005, the Dana Alliance for Brain Initiatives continued to open avenues for education and discussion between scientists and a wide public. Essential to this mission is the commitment of more than 250 member scientists, including 10 Nobel laureates, who have made the Dana Alliance a force for advancing public awareness of the progress and benefits of brain research. The 156 members of the European Dana Alliance for the Brain, including five Nobelists, carry the mission throughout Europe, and beyond. The increasing popularity and ease of technology allowed scientists and audiences on both sides of the Atlantic to come together throughout the year to discuss how brain research is shaping education, posing novel questions in ethics, and influencing how the public perceives science.

BRAIN AWARENESS WEEK 2005

In 2005, the [Brain Awareness Week](#) campaign celebrated its tenth anniversary in North America. Beginning in 1996 with 160 participating organizations in the United States, Brain Awareness Week has become a global campaign with more than 1,800 partners in 62 countries. Centered on one week in March, Brain Awareness Week events are limited only by the imagination of partner organizations, from medical

schools to patient advocacy groups. Whether the event is an open house at a neuroscience laboratory, a lecture on depression or memory loss, a display at a library or mall, or a brain exposition with interactive exhibits, one element underlies every Brain Awareness Week activity:



This Brain Awareness Week classroom presentation by a Canadian graduate student was part of a series that reached more than 5,000 elementary and secondary school students in Montreal.

the desire to advance public awareness about research that is revealing the brain's deepest mysteries and helping to conquer its worst diseases. As coordinator of the campaign, the Dana Alliance both mounts its own programs and provides its partners with an array of educational resources and services to use in planning events. In 2005, the

Dana Alliance fulfilled requests from these partners for more than 150,000 copies of Dana Alliance and Dana Press publications.

While events reach audiences of all ages, the Brain Awareness Week campaign has emerged as a unique and effective vehicle for educating young people. For six years, K-12 schools have been the fastest growing category of Brain Awareness Week partners, increasing from just two schools in 1998 to more than 190 schools in 2005. This growth demonstrates that children and young adults are excited about learning about the brain and that teachers welcome the topic in their classrooms. In 2005, K-12 schools celebrated Brain Awareness Week with activities such as articles in student newspapers, bulletin board displays, special daily announcements, sheep brain dissection laboratories, classroom visits by neuroscientists, student research projects and presentations on the brain, and art and essay competitions on brain-related topics.

Other campaign partners, from universities and hospitals to government agencies and service organizations, also have dedicated their Brain Awareness Week programs to educating this important audience. In 2005, universities and professional societies partnered with local science museums, inviting students and teachers to participate in demonstrations, hands-on experiments, and exercises about brain structure and function and the diseases and disorders of the brain. Other organizations sponsored teacher workshops to provide local educators with techniques, activities, and demonstrations that

they can use in their classrooms to make the brain and brain research more accessible to their students. Dozens of local chapters of Pilot International, an international service organization, visited elementary schools during Brain Awareness Week



schools during Brain Awareness Week to present a puppet show that educates young children about the importance of protecting their brains from injury. The Dana Alliance also supports an increasingly popular Brain Awareness Week program, the Brain Bee. Partners across the United States and Canada organized Brain Bee competitions to test the neuroscience knowledge of local high school students, sending their winners to compete in the championship at the University of Maryland during Brain Awareness Week 2005. The goal of these and hundreds of other activities is to engage and educate young people about the progress and benefits of brain research, and



Many Brain Awareness Week activities are designed to engage and inform young children.

perhaps even inspire some of them to become the next generation of neuroscientists. Because Brain Awareness Week programs have been so successful, many partners have developed their outreach initiatives into year-round school programs focused on enhancing the neuroscience curricula currently being taught in schools.

Brain Awareness Week's second decade begins in March of 2006, and will continue to emphasize education through a new campaign slogan: Brain Awareness Week: Get Connected.

THE AGING BRAIN: LEARNING NEVER ENDS

Staying Sharp: Current Advances in Brain Research is a joint program of the Dana Alliance and the National Retired Teachers Association (NRTA), AARP's educator community. Staying Sharp focuses on

understanding how the brain works and how people can use that knowledge to improve brain function and brain health, particularly in life's second half. AARP provides access to interested audiences among its 35 million members (no longer just "seniors": membership now appeals to those as young as 40 years old). Along with their fellow members—some of whom are active centenarians—younger members are well-versed in issues associated with aging and are enthusiastic about programs like Staying Sharp because the information is in-depth and up-to-date.

- ◆ The first Staying Sharp session in Miami, FL, in 1994 marked the beginning of the partnership, initiated by AARP. In the years since, 21 sessions have taken place in 16 cities, attracting a total of almost 20,000 attendees. Plans are underway for another eight sessions in 2006. In response to the demand for this program from NRTA/AARP state offices around the country, the partnership began work on a Staying Sharp-In-a-Box program. Among other materials, it will include video segments from a live session taped at the Dana Center in 2005, which featured Dana Alliance members Guy McKhann, M.D., and Marilyn Albert, Ph.D. In 2005 the Alliance developed a curriculum to be used at all Staying Sharp sessions. It is used to brief both first-time and repeat panelists and moderators for live sessions, and the Dana Alliance also provided it to NRTA/AARP state offices that have begun to develop their own live sessions.

- ◆ More than one million copies of the first five booklets in the Staying Sharp companion series have been distributed or downloaded since they were developed in 2001. The sixth booklet in the series, on successful aging, will be Web-based. In 2005, NRTA/AARP began plans for a [Staying Sharp](#) portion of their Web site that will include material from all of the booklets, as well as links to www.dana.org and Dana publications.

- ◆ The Staying Sharp partnership was named the recipient of the 2006 MindAlert award in the category of Normal Mental Fitness by the Lifetime Education and Renewal Network (LEARN) of the American Society on Aging, in collaboration with the MetLife Foundation. This award recognized the innovation of

the partnership's curriculum, its effectiveness, and its potential for replication and growth. Members of the Staying Sharp partnership will present their award-winning program at the 2006 Joint Conference of the National Council on the Aging and the American Society on Aging.

GRAY MATTERS

The *Gray Matters* public radio series entered its second decade in 2005 with two new programs that aired on Public Radio International.

“Learning Throughout Life” explored new research on the brain across our life span. “Crossroads and Frontiers” looked at three clinical cases that inspired research on frontal lobe damage, memory, and Parkinson’s disease. Audio and transcripts are available at www.dana.org, where four of the most recent *Gray Matters* shows are now available as Podcasts.

NEUROEDUCATION

In addition to its programming for the public, the Dana Alliance supports and enhances the school science curriculum by providing learning tools for teachers and students studying the brain and brain research. In 2005, the Dana Alliance further extended its reach and support by collaborating with organizations with similar goals.

The Dana Alliance collaborates with the Association of Science-Technology Centers (ASTC) through its [Youth Alive program](#), which works to interest minority and low-income high school students in science. Youth Alive chose the brain as its target topic for 2003–2006. On request, the Dana Alliance provided speakers for programs that in 2005 took place at six science centers with more than 160 participating students. ASTC and Dana are also creating a model for ASTC member organizations to work with universities in their communities in presenting educational neuroscience programs for the public, especially middle and high school students.

Teacher workshops on the neuroscience curriculum are promoted by a partnership between the National Institutes of Health Office of Science Education and the Dana Alliance. The Office designs and distributes curricula for use in middle and high school classrooms.

The Dana Alliance supports and enhances the school science curriculum by providing learning tools for teachers and students studying the brain and brain research.

With the Dana Alliance, it holds free teacher workshops across the country for which the Alliance identifies local neuroscientists to meet with teachers and distributes Alliance materials. Eleven programs took place in 2005, and more than 260 teachers participated.

To increase outreach to local schools, the Dana Alliance is collaborating with the University of Minnesota, the University of Wisconsin at Madison, Vanderbilt University, and The Center for Behavioral Neuroscience (a metropolitan Atlanta consortium of Georgia State, Emory University, and Clark Atlanta Universities; Morehouse and Spelman Colleges; the Georgia Institute of Technology; and Morehouse School of Medicine). Members of the neuroscience departments of these institutions work in local middle and high school classrooms during the school year, and hold summer camps for both students and teachers. Another initiative, the Lending Library, started in 2004, provides brain models, posters, and other learning aids that neuroscience faculty can use when teaching in local schools. Local teachers may also borrow the materials for their own curriculum units on the brain.

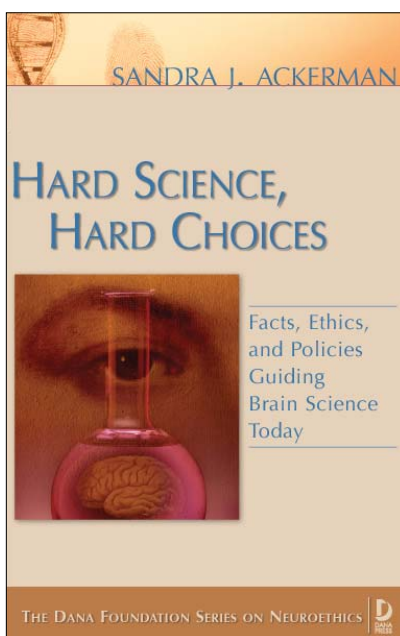
Coming from Dana Press this spring, *Hard Science, Hard Choices* is based on the 2005 Library of Congress symposium.

NEUROETHICS

The Dana Alliance promotes an exchange of ideas between neuroscientists and the public on ethical questions posed by advances in brain research. A symposium at the Library of Congress on “Hard Science, Hard Choices—Facts, Ethics and Policies Guiding Brain Science

Today” was sponsored by the Dana Foundation, the National Institute of Mental Health, Columbia University College of Physicians and Surgeons, and the Library of Congress’s Office of Scholarly Programs. Ruth Fischbach, Ph.D., and Alliance member Gerald Fischbach, M.D., both of Columbia, organized the discussions on neuroimaging, neurotechnology, and psychopharmaceuticals. More than 40 scientists participated.

The symposium’s keynote event, open to the public, featured a discussion on neuroethics between Alliance member Michael Gazzaniga, Ph.D., author of *The Ethical Brain* (Dana Press, 2005) and Stanford law professor and bioethicist, Hank Greely, J.D. The conversation was moderated by Dana Foundation



Chairman William Safire. The symposium was recorded and has been posted on the Library of Congress Web site, in addition to becoming a Dana Press book.

At the Dana Centre in London, a panel discussion on neuroethics considered the ethics of brain imaging, ethical considerations when treating patients, and the social, cultural, and economic implications of neuroethics. The panelists included Professor Nikolas Rose, London School of Economics, and European Alliance members Professors Paul Matthews, University of Oxford, and Chris Kennard, Imperial College.

The Dana Center in Washington, DC, and the Dana Centre in London held a transatlantic discussion on neuroethics. Moderated by Christine McGourty (British Broadcasting Corporation) in London and William Safire in Washington, the discussions took place before live audiences and included real-time interaction between the panels, as well as Q&A sessions with both audiences. The symposium was Dana's first live transatlantic event, and the events were Webcast.

EDAB member Norbert Herschkowitz spoke at one of the thousands of International Brain Awareness Week events in 2005.

EUROPEAN DANA ALLIANCE FOR THE BRAIN

The 35,000-member Society for Neuroscience, America's largest organization of brain scientists, honored European Dana Alliance Vice Chairman Colin Blakemore, Ph.D., with its 2005 Educator Award for

outstanding contributions to public understanding of neuroscience. The award highlighted in part the strong commitment of European Dana Alliance members, including five Nobel laureates, to work in 28 countries to advance public awareness of the progress and promise of brain research.

The European Dana Alliance this year presented public programs at the London Dana Centre and elsewhere, produced publications in five languages, provided multilingual content for www.edab.net, and participated in the ninth annual Brain Awareness Week campaign outside the Americas. Hundreds of campaign events were held in European, Middle Eastern, and Australasian countries, with an emphasis on multi-

media arts such as films and discussions, concerts, scientific cafés, essay and art competitions, and exhibits. Among common themes



this year were sleep—with a focus on adolescents—and music. This year’s campaign partners made much greater use of the Internet to communicate information and promote events.

In Switzerland, the European Alliance participated in Brain Awareness Week Festival Science et Cité, a national science festival with more than 500 events in 19 cities. An estimated 140,000 people attended events, and the Festival Web site received 22,000 visitors during the week-long festival on consciousness and conscience.

During 2005, neuroscientists, including European Dana Alliance members, and citizens of nine European countries participated in a



Citizens from nine European Union countries have now submitted their final report on brain research to senior European officials.

series of national meetings and two European conventions as part of the [Meeting of Minds](#), originally called the European Citizens’ Deliberation on Brain Science. In this push to foster a dialogue between scientists and the public, the participants debated issues bearing on research, as well as the ethical and social implications of brain

research. The resulting recommendations will be presented to the European Commissioner for Science Research at the end of January 2006. The European Citizens’ Deliberation was formed in 2003 and is coordinated by the King Baudouin Foundation in Belgium, in partnership with nonprofit organizations from nine European Union countries. A grant from the Dana Foundation supported the participation of the London Science Museum as the United Kingdom representative. ■

Dana Press: Brain Science, Education, and the Arts—More Publications Reaching More People

Publishing is vital to Dana’s mission to encourage the public to discover new ideas and trends in neuroscience, immunology, and arts education. Dana periodicals and books, the publications of the Dana Alliance for Brain Initiatives, and other products offer readers clear, accessible accounts and interpretations of the latest work and some of the most original thinking in the fields of Dana’s interest. Many publications provide educators with materials that can excite students about learning. The books for general readers are distributed worldwide by the University of Chicago Press for sale through bookstores and online retailers. Readers can also read, download, or order free publications on the Dana Web site.

By the end of 2005, more than 55,000 readers were signed up to receive one or more Dana publications, an increase of 18 percent over 2004. A significant percentage of visitors to the Dana Web site, which attracts some 1.4 million hits a month, also viewed the publications online. With the rapid growth of Web readership and advent of exciting new formats such as Podcasting, in late 2005 Dana Press began planning Web enhancements for the publications.

PERIODICALS

Cerebrum: The Dana Forum on Brain Science

In 2005, *Cerebrum* completed its eighth year as a quarterly paid-subscription journal of opinion for general readers, scientists, and educators. *Cerebrum* is often requested for professional conferences, cited in the press, and reprinted in anthologies. *Cerebrum*'s articles, debates, book reviews, and book excerpts explore challenging questions raised by brain research and the implications for fields from ethics to education, philosophy to the arts. Articles in 2005 typical of this range were "Bird Brain? It May Be a Compliment," "Taste, Our Body's Gustatory Gatekeeper," "Fearful Symmetry: Probing the Limits of Brain Modeling," and "No Child Left Without a Brain Scan? Toward a Pediatric Neuroethics."

Beginning in January 2006, *Cerebrum* became a free Web publication, with monthly articles, regular book features, letters to the editor, and a complete archive of all 27 print issues from 1998–2005. This move to the Web will enable a wider audience to enjoy *Cerebrum*'s commentary on brain science. The new online letters section will make it easier for readers to join *Cerebrum*'s conversation about research discoveries.

The online archive of 242 articles, reviews, and book excerpts includes many of the photographs and illustrations from the print edition and is searchable by key word. Selected articles will be translated into French, German, Spanish, and Italian for the Web site of the European Dana Alliance.

Brain Work

In its sixteenth year, *Brain Work* is the Foundation's oldest neuroscience publication. This free, eight-page, full-color bimonthly newsletter for general readers offers news and feature articles on basic and clinical research in neuroscience and neuroimmunology and its implications for human health. *Brain Work* is often the first non-specialist publication to report a research trend or discovery starting to make an impact. Articles providing such early reporting in 2005 included "New Clues Emerge in Hunt for Autism Gene" (March/April), "Brain Tumor Researchers Let Slip the Immune Cells of War" (May/June), "Deep Brain Stimulation: A Technique for Mood, Too?" (September/October) and "Rethinking the Synapse: Emerging Science Challenges Old Assumptions" (November/December).

The Brain in the News

Developed in 1994, *The Brain in the News* continues increasing readership, nearing 27,000 by the end of 2005. Also in 2005, the newspaper became the first of Dana's three "in the news" publications to provide commentary from our scientific advisor, Guy M. McKhann, M.D., adding further insights on selected reports in each issue. Eight pages, tabloid-sized, and published monthly, *The Brain in the News* reprints articles from current newspapers and magazines in the United States and abroad.

Arts Education in the News

In 2005, *Arts Education in the News* overtook *The Brain in the News* as the most-requested free Dana periodical. Its readership of educators, teaching artists, and lay readers nearly doubled in 2005, passing the 15,000 mark. Launched in March 2003, the eight-page, tabloid-format, quarterly publication will become bimonthly in 2006. Now printed in full color, it will continue to include the arts education stories from newspapers around the world, together with in-depth articles from arts and education journals and commentary from advisor Janet Eilber.

Immunology in the News

Launched in 2001, this free, eight-page, quarterly publication includes articles from newspapers around the world on the emerging field of immunology. Each issue also includes a featured article from a research journal and a commentary from advisor Ralph M. Steinman, M.D. One issue of 2005, published early, was devoted to a timely focus on avian flu.

PUBLICATIONS FOR SCHOOLS AND PROFESSIONALS

The Dana Sourcebook of Immunology: Resources for Secondary and Post-Secondary Teachers and Students

The Foundation's newest free resource for educators, published in November 2005, includes examinations of how the immune system protects us (and what happens when it fails to do so), therapies that help it do its job, and the relationship between the immune system and the brain. Readers meet scientists who are prominent in the field and learn about the significance of emerging and re-emerging diseases. Modeled after *The Dana Sourcebook of Brain Science*, the immunology sourcebook

includes two glossaries and a list of books that serves as a resource for students who would like to learn more. An accompanying workbook will be available in 2006.

The Dana Sourcebook of Brain Science: Resources for Secondary and Post-Secondary Teachers and Students (Third Edition)

71,000 copies of the 164-page, soft-cover guide on brain science, first published in 1999, have gone to more than 7,600 schools in all 50 states and 31 foreign countries. Free to educators, the concisely written Sourcebook features neuroscience topics, illustrations of how the brain works, presentation of issues relevant to today's students, and a glossary of brain science terms. In personal profiles, it introduces students to the lives of two neuroscience professionals. The teacher's edition includes a DVD, created in 2005, for easier preparation and enhanced classroom audiovisual presentations.

Acts of Achievement: The Role of Performing Arts Centers in Education

Professionals continue to request *Acts of Achievement*, the first study of K-12 education programs offered by performing arts centers nationwide. The book showcases 74 centers, large and small, that partner with their local schools. It outlines the development of school residencies and offers checklists for arts organization coordinators, artists, teachers, and school coordinators planning to develop residencies.

Planning an Arts-Centered School: A Handbook

Requests continue for this resource, published in 2002, for elementary and secondary educators and performing arts professionals in education. The handbook presents the best practices in curriculum development, governance, funding, assessment, and community participation from a dozen arts-centered schools.

DANA ALLIANCE FOR BRAIN INITIATIVES PUBLICATIONS

Progress Report on Brain Research

Published annually in March in conjunction with Brain Awareness Week, the *Progress Report* is the signature publication of the Dana Alliance for Brain Initiatives. Each edition reviews the most significant findings reported during the prior year and includes a feature essay on research of special interest. The *Report's* 10 chapters cover research in neurological, psychiatric, and neuroimmunological disorders and

studies in neurogenesis, stem cells, and neuroethics. For *Update 2005*, the introduction was written by Story Landis, Ph.D., Director of the National Institute of Neurological Disorders and Stroke. The featured essay, by Michael Gazzaniga, Ph.D., provided an overview of the Foundation's study focusing on arts and cognition.

Brain Connections: Your Source Guide to Information on Brain Diseases and Disorders (Sixth Edition, 2003–2006)

A convenient 50-page booklet, *Brain Connections* lists 278 organizations that provide information and services for patients and families affected by brain-related disorders and problems. Since the first edition was released in 1996, more than 600,000 copies of *Brain Connections* have been distributed.

Dana Alliance Member News

The bimonthly *Dana Alliance Member News* keeps Dana Alliance members informed of the organization's activities and outreach by individual members. Members' Views, a regular feature, acquaints members with their colleagues' opinions, research, and efforts in support of the Alliance's mission.

DANA PRESS BOOKS PUBLISHED IN 2005

Fatal Sequence: The Killer Within

Kevin J. Tracey, M.D., shows how severe sepsis, a major fatal illness (third behind heart disease and stroke in the U.S.), caused the death of a child in his care early in his career. That loss led to his pioneering research on interaction of the nervous and immune systems. Tracey is Professor and Head of the Herman and Susan Merinoff Center for Patient Oriented Research, Chief Executive Officer of the Feinstein Institute for Medical Research, and Vice President of Research, North Shore-LIJ Health System.

The Ethical Brain

Michael S. Gazzaniga, Ph.D., widely considered the father of cognitive neuroscience, analyzes the personal and ethical dilemmas raised by new discoveries in neuroscience. In June, Gazzaniga and the novelist Tom Wolfe came together at the New York Academy of Science for a lively discussion of these ideas. C-SPAN Book TV broadcast their conversation.

The Creating Brain: The Neuroscience of Genius

Nancy Andreasen, M.D., Ph.D., professor of psychiatry at the University of Iowa and recipient of the National Medal of Science, explores how

the brain achieves creative breakthroughs in art, literature, music, and science, focusing on the contribution of mentors, the role of free association, the value of not having a “standard education,” and the question of “genius and insanity.” ■



Nancy C. Andreasen, M. D., Ph.D., autographed copies of *The Creating Brain* at the Dana Press booth at the 2005 Society for Neuroscience annual meeting.

News and Internet: New Ways to Inform and Engage Audiences

In 2005, the News and Internet Office reached abroad with information, news, and opportunities for public discussion by launching a multi-language international Web site and a site dedicated to international Brain Awareness week. For new ways to serve audiences at home and abroad, the Office added Webcasts and Podcasts on its sites and brought new publications into print and online. The goals that unified these initiatives were public education about neuroscience research and engagement of people with the implications of that research in fields from neuroethics to arts education.

THE WEB AND THE WORLD

To support Dana's educational outreach, a new Web site in five languages will enhance work of the European Dana Alliance for the Brain with news, a listing of brain-related events in various countries, publications, links to the London Dana Centre, and links to sites with additional information about the brain. In the [Brain Events around the World](#) section, the general public and scientists will find a current listing of professional society meetings and public events related to the brain. Visitors to www.edab.net can elect to read this information in English, French, German, Italian, or Spanish.

For the first time since its inception a decade ago, as 2005 ended [international Brain Awareness Week](#) has its own Web site—a single place



Access to brain information in five languages can be found at www.edab.net.

to go for the information needed by all organizations and individuals involved in the campaign. For example, an international calendar displays all events and a world map lights up to give a comprehensive picture of worldwide participation. Information on this site also can be accessed in any of five languages and links are provided to other Dana sites. The calendar provides the public with opportunities to find open forums, lectures, and exhibits about the brain and the advances being made in neuroscience. Almost all of the events are designed with children or the general public in mind.

NEW MEDIA FOR NEW AUDIENCES

Webcasts let visitors watch and listen to public events at the Dana Center in Washington, DC, the Dana Centre in London, and other locales. A first transatlantic Webcast in September featured *The Ethical Brain: A Transatlantic Discussion on Neuroethics*, taking place between the Dana Centre in London and the Dana Center in Washington, DC. Speakers were Michael Gazzaniga, Ph.D., Dartmouth College; Colin Blakemore, Ph.D., Sc.D., Medical Research Council, UK; and Paul McHugh, M.D., Johns Hopkins University School of Medicine. Moderators were Christine McGourty, Science Correspondent for BBC News;

Claire Fox, Institute of Ideas, UK, and William Safire, chairman of the Dana Foundation. Other Webcasts feature a two-day event on neuroethics at the Library of Congress, and a panel of experts at the Dana Center speaking about Nancy Andreasen's book *The Creating Brain*.

Visitors to the [Podcast section](#) can download audio of Dana-sponsored events and the latest *Gray Matters* radio programs onto their MP3 players. An MP3 player, such as iPod, is a hand-held digital audio device that stores, organizes, and plays digital music or other audio files. Dana's Podcasts are now listed in the iTunes directory, a downloading center for millions of MP3 users. Visitors to the Podcast section can also download transcripts and audio streams of *Gray Matters*. This year, two new programs were posted: "The Body Clock," about circadian rhythms, and "Crossroads and Frontiers," about three breakthroughs that were instrumental in understanding memory, Parkinson's disease, and emotion.

At a new neuroethics section of www.dana.org, visitors will find, in one location, Webcasts, Podcasts, books, other Dana publications, and grants information germane to the new field that probes the ethical choices posed by brain research and new treatments for brain diseases and disorders.

OTHER NEW HIGHLIGHTS

New sections of www.dana.org this year feature three Dana Press books: *The Ethical Brain* by Dana Alliance member Michael Gazzaniga, Ph.D., *The Creating Brain* by Dana Alliance member, Nancy C. Andreasen, M.D., Ph.D.; and *Fatal Sequence: The Killer Within* by Kevin J. Tracey, M.D. For each book, visitors will find the table of contents, an overview, comments of prominent scientists and writers, and a link to Amazon.com for those wishing to purchase the books.

To help readers gain a better understanding of how the brain and immune systems function, and how normal functions may be altered by diseases, Dana consultant Carolyn Asbury, Ph.D., with the advice of James P. Basilion, Ph.D., Case Western Reserve University, prepared an [Imaging Primer](#) for the Web site. The Primer explains how imaging is helping scientists understand the biochemical actions of individual cells and their molecules.

A new arts education book, *Partnering Arts Education: A Working Model from ArtsConnection*, was edited, produced, and distributed

by the News Office, under the Dana Press imprint. *Partnering Arts Education* grew out of a national symposium, Beyond Arts Integration, held in the spring of 2005 by ArtsConnection and supported by the Dana Foundation. ArtsConnection is a New York City organization that works with public schools, providing teaching artists in school residencies, working with classroom teachers, and holding afterschool programs in the arts. *Partnering Arts Education* is a description of the ArtsConnection model of building successful residencies. The book is the third in a series of arts education books published by the Foundation and is available free, including as a PDF on the Dana Web site.

NEW PRINT AND INTERACTIVE PUBLICATIONS

Continuing its outreach to science writers and editors, the News Office annually publishes [*Advances in Brain Research*](#), with interviews of some of the country's foremost neuroscientists on timely brain topics. In 2005, this publication focused on brain tumor strategies; sex differences in the brain; systems neuroscience; and neurodegeneration. Among the experts were Dana Alliance members Peter McLaren Black, M.D., Ph.D., Harvard Medical School, Children's Hospital, and Brigham and Women's Hospital; Bruce McEwen Ph.D., The Rockefeller University; Joshua R. Sanes, Ph.D, Harvard Medical School; and M. Flint Beal, M.D., Weill Medical College of Cornell University.

For Brain Awareness Week in 2005, the News Office distributed two new briefing papers. The first, "Food for Thought: Sorting Out Hype from Hope in the Quest for a Brain-Healthy Diet," examined what research tells us about "brain-healthy diets" and their relationship to cognitive function. The paper detailed work of Dana Alliance members Carl Cotman, Ph.D., and Claudia Kawas, Ph.D., both of University of California, Irvine.

The second briefing paper, "Mysteries of Epilepsy Begin to Yield to Science," looked at how new imaging technologies have increased understanding of epilepsy, with the expectation that treatments will be advanced. Dana Alliance members Harry Chugani, M.D., Wayne State University and Children's Hospital of Michigan; Marc Dichter, M.D., Ph.D, University of Pennsylvania; and Robert J. Gumnit, M.D., University of Minnesota and president of MINCEP Epilepsy Care, contributed to this paper.

The Office designed and created the European Dana Alliance for the Brain *Resource Directory* on an interactive CD. The *Directory*, which is for European Alliance members only, provides contact information, fields of specialization, publications, and awards for European Alliance members, all of which is searchable. Updates are provided for download semi-annually.

The Dana Alliance members' *Resource Directory* was completed at the end of the year. A new interactive CD was issued that included new members with updated lists of their publications and contact information. Similar to the European Alliance *Directory*, this CD, sent to journalists, is searchable and can be updated electronically.

A LOOK AT TWO MAINSTAYS OF THE SITE

[Brainy Kids Online](#) was expanded this year and a major mailing about the section was sent to libraries, teachers, and principals in the United States and Canada. Education and Web reporters were also part of the outreach. Brainy Kids provides a portal for teachers, parents, and children, looking for information, laboratory experiments, teaching aids, and resources on the brain and brain-related research. It provides children with entertaining links to science information in learning sequences that are specific for age and ability.

[BrainWeb](#), which provides validated information (Dana Alliance members serve as science advisors) about more than 25 diseases and disorders of the brain remains one of the most visited sections of the site year-round. Here are links to organizations and materials, as well as articles from Dana publications. The comprehensive site offers opportunities for users to find what they need to know in a concise manner. ■

For current information on the following:

Directors and Staff

Grant Guidelines

Books, Publications, and Broadcasts

Auditors' Opinion and Financial Statements

Members of the Dana Alliance for Brain Initiatives

Members of the European Dana Alliance

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