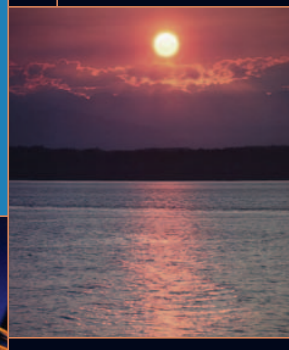
State and Local Guide to

Earth & Life Studies

at the National Academies



NATIONAL ACADEMY OF SCIENCES
NATIONAL ACADEMY OF ENGINEERING
NATIONAL RESEARCH COUNCIL

The National Academies ARE…

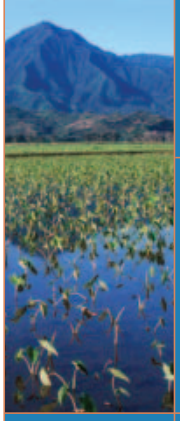
- Advisers to the nation on science, engineering, and medicine—the only institution chartered by the U.S. Congress to do so.
- Independent and objective.
- Non-profit.
- Able to draw upon the nation's top scientists at universities, in industry, and in the government.

The National Academies are NOT…

- Part of the government.
- An advocacy organization.
- Consultants to for-profit entities.
- Laboratories.
- Limited to working for federal agencies—state and local government agencies also sponsor activities.

"From the beginning, the [National Academies have] been a central part of the state of Washington's strategy to develop a new water resources management program for the Columbia River. The credibility and integrity of the [organization], its members, and staff placed it in a unique position to comment on the health and long-term management of this highly valuable resource.

Tom Fitzsimmons
Chief of Staff
Office of the Governor
state of Washington



Providing Science Advice to Help Protect Public Health, Public Safety, and the Environment

For advice on issues of science, technology, and medicine, the nation's leaders turn to the National Academies. Established by Congress and President Abraham Lincoln as an entity separate from government that honors top scientists with membership, the institution serves the nation whenever called upon.

Like no other organization, the National Academies can enlist the nation's foremost scientists, engineers, health professionals, and other experts to address the scientific and technical aspects of some of society's most pressing problems. Each year, about 6,000 of these experts are selected to serve on hundreds of study committees that are appointed to answer specific sets of questions. All serve without pay.

Earth & Life Studies at the National Academies covers a wide array of topics where public policy meets the geosciences, life sciences, chemical sciences, and the environment. In 2004 alone, the National Academies issued reports on the use of forensics in the courtroom, the safety of genetically modified foods, climate change, and the safe disposal of radioactive waste. Many Academies reports influence public policy decisions; some provide program reviews; yet others serve as widely used reference books.

Serving State, Local, and Regional Decision-Makers

As more and more responsibility and initiative shift from the federal government to states and localities on issues such as clean air and homeland security, local officials and resource managers increasingly face decisions that affect public safety, public health, and the environment. Those decision-makers can turn to the National Academies for nonpartisan, nonadvocacy advice on key scientific and technologic aspects of an issue, such as:

- What can be concluded from analyzing the body of scientific research and information to help answer the questions at hand?
- What scientific research still needs to be done?
- What constitutes success, and how will it be measured?

A Wide Range of Products and Services Help Answer Key Scientific Questions

Consensus Reports

About 250 authoritative reports are produced by expert committees each year. The process brings together scientists with diverse backgrounds and points of view who work together to review available scientific evidence, reach consensus, and issue a report with their findings and recommendations in an environment free of political, special-interest, and agency influence. A rigorous peer review and other checks and balances applied at every step of the study process ensure the integrity of the reports. Reports are in three general categories:

- **Regulatory analyses** are designed to help guide regulatory and policy decisions. For example, *Arsenic in Drinking Water: 2001 Update* (2001) provided the basis of the Environmental Protection Agency's decision to reduce the maximum allowable concentration of arsenic in drinking water from 50 to 10 parts per billion, making the nation's drinking water safer.
- **Program reviews** evaluate current or proposed government programs. For example, *The Science of Instream Flows: A Review of the Texas Instream Flow Program* (2005) reviews the state's program for ensuring adequate amounts of water in times of high demand and low supply will benefit.
- **General assistance** reports answer specific questions on diverse topics. The California Department of Food and Agriculture recently sought advice to combat an insect-borne disease that was afflicting grapes grown in California. The state is revising its research programs and strategies on the basis of recommendations in *California Agricultural Research Priorities: Pierce's Disease* (2004).

General Assistance

OYSTER OPTIONS IN THE CHESAPEAKE BAY

Decades of heavy fishing, environmental pressures, and deadly disease have nearly wiped out native oysters in the Chesapeake Bay and a once-thriving oyster industry. Because oysters feed on algae, their disappearance is thought to play a role in the general decline of water quality in the Chesapeake Bay.

At the request of the region, the National Academies reviewed proposed plans to introduce the Suminoe oysters from Asia, which is resistant to the disease that plagues the native species. Opponents feared that the non-native could become an invasive species, displacing the native oyster and potentially harming the ecology of the Bay.

Non-Native Oysters in the Chesapeake Bay (2004) recommends the managed introduction of sterile (non-reproductive) oysters as the most prudent option until more research can be conducted. The report also proposes a new regulatory framework for better management of the process.

WATERSHED SOLUTIONS IN NEW YORK

The state of New York has always enjoyed high-quality water from the Catskills Mountain watershed, which provides about 90% of the drinking water for New York City. Unfortunately, increased housing developments and septic systems, and the impacts of agriculture caused water quality to deteriorate. By the late 1990s, New York City water managers had two choices: build a water-filtration system at an estimated cost of up to $6 billion or take steps to protect its major watershed.

To help weigh the scientific and technical aspects of its dilemma, the state turned to the National Academies. On the basis of recommendations in *Watershed Management for Potable Water Supply: Assessing the New York City Strategy*, stakeholders decided against building the filtration system and instead began taking recommended steps to protect the watershed at a total projected investment of about $1 to $1.5 billion.

Grant Reviews

The National Academies can simplify and enhance the state and local grant-review process by organizing independent peer interviews and reviewing the progress of grant recipients. Experts from across the country who can bring a fresh, broader perspective and credibility to regional programs are selected to serve on grant review committees.

Convening Activities

Convening activities bring together policy-makers, members of industry, scientists, and sometimes the general public to discuss timely issues. The events include workshops, symposia, and roundtables that can have anywhere from 25 to 250 participants. For example, the Disasters Roundtable convenes in Washington, DC several times a year to discuss urgent issues related to understanding and reducing the effects of natural, technologic, and other disasters. Proceedings or workshop summaries are usually produced to capture the information discussed.

Communications

A variety of derivative products based on reports—including report briefs, posters, web sites, and brochures—are produced to help communicate the content of reports to broader audiences and aid in the public understanding of science. Examples include a question-and-answer wheel on invasive plants that helps people understand the effects of invasive plants. Another example is a Diversity Toolbox brochure that feature best practices for building minority-group education and employment in the chemical sciences.

Grant Review

EVALUATING RESEARCH GRANTS IN OHIO

Since 2003, the National Academies has been providing oversight for research programs in Ohio that were established to foster partnerships between the state's universities and industrial sectors in order to promote the commercialization of research and economic development. The National Academies bring together panels of experts from across the country to review proposals submitted to these programs. Using a set of criteria, the panels identify which ones have the greatest merit for the state of Ohio to consider funding and then review the progress of the grants that are funded.

Convening Activity

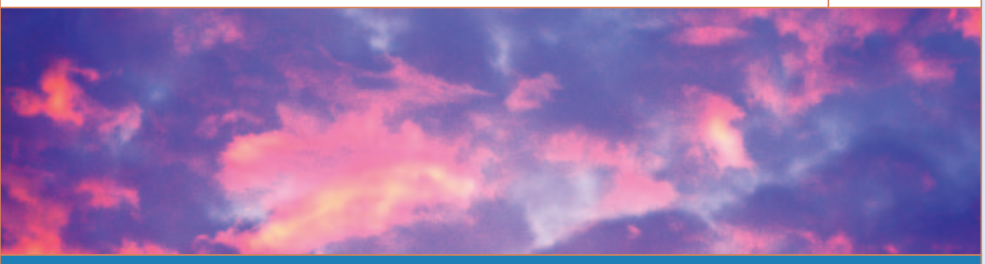
GUIDING STEM CELL RESEARCH IN CALIFORNIA

In 2004, the state of California faced a happy dilemma: how best to spend the $3 billion that voters approved for state-funded stem-cell research. To help guide the state in its research planning, the National Academies convened experts in the field for a 2-day workshop in California. Topics discussed at the workshop included grant-making processes, intellectual property, institutional review boards, facility development, and the development of standards and ethical guidelines.

Working with the National Academies

The National Academies are equipped with administrative tools to work with state and local governments to find answers to key scientific questions. Blanket authorization has been granted for federal sole-source contracts. Research-grant, co-operative-agreement, and contract proposals can be rapidly prepared. Costs vary with the type and scope of the activity. The National Academies have implemented mechanisms to keep costs low and are continuing to review policies and procedures to identify other changes to make the process as efficient as possible.

Sign up for the Earth & Life Studies Gateway at **http://dels.nas.edu** to be notified of reports, events, projects, and news in your fields of interest. National Academies reports are available online in a searchable format at **http://www.nap.edu**.



THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The nation turns to the National Academies—National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council—for independent, objective advice on issues that affect people's lives worldwide.
www.national-academies.org

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