

NEWS in Science and Technology



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The following is an Executive Summary of the Academy's quarterly Bulletin (Vol. 18,2) that includes topics and issues in science and technology deemed by the Academy to be both timely and relevant to Connecticut's interests. Each item is briefly summarized from press releases and reports of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. Hyperlinks are included to the original online source, where more detailed information is available.

NOTE: Online versions of this newsletter and the Bulletin are available on the Academy website at www.ctcase.org.

FEATURE ARTICLE: GENOMICS

➤ New Yale Center for Genomics Research

Yale University's initiative to expand its science and engineering facilities and programs includes the creation of a new Center for Genomics and Proteomics.

- Investment in new facilities and new faculty to develop programs expected to exceed \$200 million.
- Yale Provost Susan Hockfield says, "This very new and very exciting area is the next frontier, the next direction for biological research."
- Research should lead to the ability to control what genes do, which should in turn generate new and powerful treatments for wide range of human ills.
- The Center's director, Michael Snyder, Chair of Molecular, Cellular, and Developmental Biology, explains "the traditional method was to study one gene, or a few genes, at a time." New techniques allow researchers to work on thousands of genes at once.
- A "Center Without Walls." Rather than being housed in a particular building, the Center will, in essence, be located everywhere that researchers are using these technologies.
- Concept provides flexibility to include those currently working on research in this area, as well as those whose research evolves to the point that they want to make use of the Center's technologies.
- The Center will be organized into four core areas: functional, chemical and medical genomics; and bioinformatics.
- Goals include doing cutting edge research and stimulating development of new technologies.
- Seven grants awarded in first round of pilot grants totaling \$300,000.

[See www.ctcase.org/bulletin/genomics.html for an expanded version of this article]

ENVIRONMENT

➤ Carbon Monoxide Success Story

National Research Council report indicates efforts to regulate carbon monoxide emissions throughout the United States have been enormously successful.

- Number of monitors indicating violations nationwide has dropped dramatically since 1971.
- Report finds no need to tighten current federal carbon monoxide emissions standards.
 - Drop in carbon monoxide levels mostly due to national emissions standards for new cars and pickup trucks.
- Additional recommendations for locations with continuing vulnerability to high carbon monoxide concentrations:
 - Establishment of local measures such as vehicle inspection and maintenance programs targeting high emitting cars and pickups.
 - Use of cold-weather engine-block heaters.
 - Use of low-sulfur gasoline to improve catalyst efficiency.
- Federal and state assistance recommended to implement report recommendations.

[See www.nap.edu/catalog/10689.html?onpi_topnews_042303]

➤ Dramatic Decline in Ocean's Largest Fish Species

A study published in May 15th issue of "Nature" reveals the biggest fish species are disappearing from the world's oceans.

- 90% decrease in halibut, tuna, cod, swordfish & marlin populations in last 50 years.
 - Longline fishing cited as a leading cause of rapid decline.
- Several potential solutions identified:
 - Improving fishing technology to reduce amount of fish caught unintentionally and killed as waste.
 - Declaring certain fishing areas as off-limits long enough to allow affected fish populations to rebound.
 - Calling for national system of protected marine areas as method to protect entire marine ecosystems instead of conventional practices designed to protect individual species.
- Authors cite recommendations of 1998 Oceans Studies Board report, "Sustaining Marine Fisheries," that:
 - Fishery managers should develop policies aimed at reducing fishing to restore fish populations and protect ecosystems.

[See <http://www.nationalacademies.org/headlines/#sh0516>]

HEALTH

➤ Food Safety Standards and Public Health

Institute of Medicine and the National Research Council issue a report recommending that federal and state food safety criteria should be clearly linked to specific public health goals, and should be established using the latest scientific tools and methodology.

- Current food safety criteria have been pieced together by different agencies over many decades, in response to problems and concerns as they arose.
- Report's recommendations include:
 - Periodic, systematic microbiological sampling for foods commonly associated with foodborne illness at points throughout farm-to-table continuum.
 - Allocation of funds by Congress to build and maintain centralized databases and to develop national plan to integrate information gathered with public health agencies' surveillance data.
- Congress should ensure agencies have flexibility to update criteria.
- Specific recommendations include:
 - Requiring labels warning consumers of potential harm from not properly cooking a product.
 - Urging all sales of raw milk – currently permitted to be sold only within states where it is produced – be banned.
 - Urging FDA to take steps to improve seafood safety in international commerce of fish and shellfish to ensure safety hazards are properly detected and addressed prior to shipment.
 - Requiring all imported produce follow same or equivalent safety practices required for growing and harvesting domestic produce.

[See <http://www.nap.edu/books/030908928X/html/>]

TRANSPORTATION

➤ Not Too Late for the “Big Dig”

The National Academy of Engineering and the National Research Council have released a new report that provides an independent

assessment of management and contract administration practices of Boston's Central Artery/Tunnel project, known as the “Big Dig.”

- The project, a 7.8 mile system of bridges, underground highways and ramps, exceeded original cost estimate of \$2.6 billion by \$12 billion — completion expected in 2005, 7 years behind schedule.
- The report concludes:
 - Efforts should be focused on future — what could be done to complete the project.
 - Management and organizational changes that will save money and shorten time to project completion are still possible.
 - Key to effort is expediting the processing of 3,500 disputed payments to contractors and approved changes to design and construction contracts.
 - Process must be developed to make transition from construction to operation and maintenance, including plan to retain only those staff consultants essential for finalizing and closing out all contracts and claims.

[See http://www.nap.edu/catalog/10629.html?onpi_topnews_022503]

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