

NEWS in Science and Technology



from the

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING

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The following is an Executive Summary of the Academy's quarterly Bulletin (Vol. 22,3) 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

➤ NASA Space Grant Consortium Supports Research at State's Colleges, Universities

For more than 15 years, students at several Connecticut educational institutions have benefited directly from NASA research funds. Each year, NASA supplies approximately \$30 million nationwide through its 52 Space Grant Consortia and more than \$400,000 of that comes to Connecticut. That money, funded through the US Congress and administered by the Connecticut Space Grant Consortium (CTSGC) and NASA Headquarters, has made possible more than 50 aerospace-related research projects throughout the state. In recent years, the CTSGC has included more colleges and universities in its program, a move that they say has led to increased competitiveness for grants and that they hope will lead to additional NASA funding for Connecticut.

- NASA Space Grant Consortia
 - Created in 1989 by Congress to strengthen US aerospace science and technology capabilities.
 - Now includes consortia in all 50 states, District of Columbia, and Puerto Rico.
 - Objectives include:
 - Establish a national network of universities with interests and capabilities in aeronautics, space and related fields.
 - Encourage cooperative programs among universities, aerospace industry and federal, state and local governments.
 - Encourage interdisciplinary training, research and public-service programs related to aerospace.
 - Recruit and train professionals, especially women, underrepresented minorities and persons with disabilities, for careers in aerospace science and technology.
 - Promote a strong science, mathematics and technology education base from elementary through university levels.
- CT Space Grant Consortium (CTSGC)
 - Formed in 1991—initially included Trinity College, University of Connecticut, University of Hartford and University of New Haven.
 - Expanded in 2005; program now includes 21 members.
 - Applicant pool has doubled since 1990s.
 - Proposals must demonstrate link to NASA's strategic enterprises: space science, earth science, human exploration and development of space or office of aerospace technology.

- Funds are primarily for students and proof of concept or startup money for faculty; can be used for faculty and student seed funds for research, development or revision of curricula; travel to use NASA facilities; cultivating collaborative arrangements or proposal contacts (with NASA, other federal agencies and/or private industries); technical support and dissemination of research results.
- Expects to be eligible for increased funding within the next 3-4 years.

[http://www.ctcase.org/bulletin/22_3/22_3.pdf]

NEWS FROM THE NATIONAL ACADEMIES

➤ Report Recommends Nutrition Standards For 'Competitive' Foods and Drinks Sold in Schools

A new report by the Institute of Medicine proposes a set of nutritional standards for "competitive" foods and drinks available in schools. The standards promote consumption of fruits, vegetables, whole grains, and nonfat or low-fat dairy products and limit the amount of saturated fat, salt, added sugars, and total calories. The standards also restrict the sale of caffeinated items. The report

- Was developed at the request of Congress in response to the rising rate of obesity among American youth and the increasing availability of high-calorie, low-nutrient products on school grounds.
- Proposes standards that would apply only to competitive items sold or available on campuses, not to federal school meals or to bagged lunches or snacks students might bring.
- Proposes two tiers of competitive foods and beverages that could be available in schools based on grade level.
- Did not support the sale of caffeinated products to school-age children because of the potential for negative effects, including headaches and moodiness, nor did it recommend for or against foods containing sugar substitutes.

[www.nap.edu/catalog.php?record_id=11899]

➤ Foreign Languages, International Education Need More Support from US Education System

The United States faces unprecedented demands for expertise in languages and cultures, as well as globally aware citizens, according to a new National Research Council report that calls for more support from the nation's education system to develop an integrated approach to improving foreign language skills and knowledge of other cultures in US schools, beginning in the primary grades. The report

- Recommends US Department of Education take a leadership role in ensuring that its foreign language and international education programs respond to both current and future needs.
- Finds that the department does not have an overall view of, or master plan for, its range of language and international programs

CONNECTICUT SCIENCE CENTER UPDATE

In August, the new Connecticut Science Center reached another milestone, as construction crews hoisted the final steel beams to the building's signature Magic Carpet roof. In keeping with tradition, an evergreen tree and flag were secured to the ceremonial steel plate and raised to the highest point of the project. The tree symbolizes that construction has reached the sky without loss of life or serious injury and good fortune for the future inhabitants of the building.

"With its dramatic steel structure now in place, the Center is a major step closer to becoming reality," said Governor M. Jodi Rell at the topping off ceremony. "The Science Center represents so many things—impressing young minds in the marvels of science; economic vitality for our community; the hundreds of thousands of residents and tourists who will come to visit; and preparing Connecticut's workforce to lead in technology, engineering, mathematics, and other applied sciences."

"The building's design will be a signal that we have arrived as a destination for education and excitement," architect Cesar Pelli added.

The Center's "Magic Carpet," an elegantly curved roof, caps the architectural centerpiece of the building, known as Science Alley. The roof will appear suspended above the glass structure below, symbolizing the Center's goals of bringing transparency to science. The next step in the construction process will be to install the building's shell. The building is expected to be fully enclosed in early 2008, and open to the public that fall. To get a bird's eye view of construction and track the progress of the building, visit the Center's website at www.CTScienceCenter.org.

and recommends consolidating oversight of higher education programs known collectively as Title VI and Fulbright-Hays under a high-ranking official, preferably a presidential appointment.

- Urges universities to play key roles, partnering with federal officials to continuously improve these programs.

[http://books.nap.edu/catalog/11841.html?infocus_7.2]

➤ New Approach for Testing Chemicals for Toxicity

Recent advances in systems biology, testing in cells and tissues, and related scientific fields offer the potential to fundamentally change the way chemicals are tested for risks they may pose to humans, according to a report from the National Research Council. The report

- Outlines new approach that would

- Rely less heavily on animal studies and instead focus on in vitro methods that evaluate chemicals' effects on biological processes using cells, cell lines, or cellular components, preferably of human origin.
- Generate more relevant data to evaluate risks people face, expand the number of chemicals tested, and reduce time, money, and animals involved in testing
- Focus on toxicity pathways—cellular pathways that, when sufficiently perturbed, are expected to lead to adverse health effects.
- Use "high-throughput assays"—rapid, automated experiments that can test hundreds or thousands of chemicals over a wide range of concentrations—to evaluate chemicals' effects on these toxicity pathways.

- Calls for creation of an institution that fosters multidisciplinary research in effort to develop and validate all of the new approach's components.

[http://books.nap.edu/catalog.php?record_id=11970]

➤ Millions in US Take Medications Incorrectly

According to a new report by the nonprofit National Council on Patient Information and Education, medication errors and patients who skip taking their medications could cost the United States \$177 billion in medical bills and lost productivity. The report found

- Roughly half of patients with chronic illnesses such as heart disease or asthma skip their medications.
- Problem especially acute among elderly—as many as 40% of nursing home admissions result from poor medication adherence.
- Poor medication adherence can cost an extra \$2,000 a year per patient in extra doctor visits.
- 2006 report suggests standardizing drug nomenclature and abbreviations, using information technologies to reduce errors, improving labeling and packaging of medications, empowering patients to become partners to improve their own health and safety.

[http://www.nap.edu/catalog.php?record_id=11623]

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