

# NEWS in Science and Technology

from the



## CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING

Vol. 3, No. 4 / Winter 2004

The following is an Executive Summary of the Academy's quarterly Bulletin (Vol. 19,4) 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](http://www.ctcase.org).

### FEATURE: CT MEDAL OF TECHNOLOGY

#### ➤ Connecticut Medal of Technology Awarded to Photonics Pioneer DeMaria

*Anthony J. DeMaria, considered a pioneer in the fields of photonic and laser research and development, was presented with the state's highest technology honor — the Connecticut Medal of Technology — during ceremonies at the Alliance for Connecticut Technology's Innovation Day and Award Dinner on November 10, 2004.*

*Dr. DeMaria was chosen for the prestigious award in recognition of his seminal work in the fields of lasers and photonics, notably picosecond laser pulse physics, and his extraordinary contributions in the areas of technology, education and business to the state's technological and economic competitiveness.*

*In a video address to the more than 700 guests gathered for the award dinner at the Mohegan Sun Convention Center in Uncasville, Governor M. Jodi Rell announced the award. The medal, which is given by the State of Connecticut through the Board of Governors for Higher Education of the Connecticut Department of Higher Education, was then presented to Dr. DeMaria by Harry H. Penner, Jr., chairman of the Board of Governors.*

*The Connecticut Medal of Technology was awarded for the first time in 1995, to the late H. Joseph Gerber, founder of Gerber Scientific, Inc. It was awarded again in 1996, to Charles Kaman, founder of the Kaman Corporation. Beginning this year, the medal will be awarded on alternate years with the Connecticut Medal of Science. Both are modeled after national medals, which are presented by the president each year. All three recipients of the state medal have been members of the Connecticut Academy of Science and Engineering.*

[See [http://www.ctcase.org/bulletin/19\\_4.pdf](http://www.ctcase.org/bulletin/19_4.pdf)]

### ENERGY

#### ➤ Power Sources Needed for Soldier of the Future

*A new report from the National Academies' National Research Council recommends that the US Army investigate alternative power sources, such as fuel cells and small engines, to create longer-lasting, lighter, cheaper, and more reliable sources of energy for the equipment soldiers will use in the future. The report:*

- Urges the Army to increase efforts to develop and acquire technologies that are more energy-efficient.
- Evaluates and prioritizes options for supplying energy to various low- and high-power applications on the battlefield, including

fuel cells, small engines, and hybrid energy systems such as those combining a battery with a fuel cell, or a small engine with a battery.

- Finds that hybrid systems provide the most versatile solutions for meeting diverse future needs.

[See <http://www.nap.edu/catalog/11065.html>]

### HEALTH

#### ➤ Childhood Obesity Requires Comprehensive and Ambitious National Effort

*Calling for a program as "comprehensive and ambitious as national anti-smoking efforts," a new report from the Institute of Medicine of the National Academies recommends a multi-pronged approach by schools, families, communities, industry, and government to reverse the rapid rise in obesity among American children and youth. The report recommends that:*

- Schools implement nutritional standards for all foods and beverages served on school grounds, including those sold from vending machines.
- Schools expand opportunities for all students to engage in at least 30 minutes of moderate to vigorous physical activity each day.
- The food, beverage, and entertainment industries voluntarily develop and implement guidelines for advertising and marketing directed at children and youth. In addition, the report urges that:
  - The Federal Trade Commission be authorized to monitor compliance with the guidelines and establish external review boards to ban ads that fail to comply.
  - Restaurants continue to expand their offerings of nutritious foods and beverages, and provide calorie content and other nutrition information.
- Parents provide healthy foods in the home and encourage physical activity by, among other things, limiting their children's recreational TV, videogame, and computer time to less than two hours a day.
- Community organizations and state and local governments implement programs that promote nutrition and regular physical activity.
- Health insurers and health plans make childhood obesity prevention a priority health issue and include screening and obesity prevention services in routine clinical practice.
- Federal programs such as the Food Stamp Program and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) support pilot programs to increase participants' access to nutritious foods.

[See <http://books.nap.edu/catalog/11015.html>]

## HEALTH (continued)

### ➤ Evaluating the Safety of Dietary Supplements

*A new report from the Institute of Medicine and the National Research Council of the National Academies outlines a science-based process for assessing dietary supplement ingredients, even when data about a substance's safety in humans is scarce. The report:*

- Urges supplement makers, the public, and others to increase their reporting of health problems related to supplement use in order to further improve the Federal Drug Administration's (FDA) ability to protect consumers.
- Categorizes different kinds of data that FDA can use to assess safety and offers guidelines for determining the significance of the evidence available on a particular substance.
- Recommends that manufacturers and distributors be required to report adverse events to FDA in a timely fashion to facilitate safety evaluations.
- Recommends that labels on supplements include a toll-free number for consumers and health professionals to call in health problems or concerns related to the product.
- Recommends that during a pre-marketing review period, supplement makers and distributors be required to provide the FDA with all available safety data, both favorable and unfavorable, on their new products.
- Urges Congress to provide FDA with sufficient funding to collect and analyze data and carry out the consumer protection and education responsibilities mandated by Dietary Supplement Health and Education Act.

[See <http://books.nap.edu/catalog/10882.html>]

## HIGH TECHNOLOGY

### ➤ Public Access to Pathogen Genome Data Advised

*A new report from the National Academies' National Research Council recommends that current policies allowing scientists and the public unrestricted access to genome data on microbial pathogens not be changed, and concludes that security against bioterrorism is better served by policies that facilitate the free flow of such information. The report found that:*

- Restrictions tight enough to impede access by individuals or nations trying to develop bioweapons would probably also hinder valuable scientific research, including efforts to develop vaccines and other countermeasures to bioterrorism.

- An advisory board should be created to regularly review future developments in genome research in order to assess the security implications of such developments.
- Complete genome sequences of more than 100 microbial pathogens, including those for smallpox, anthrax, and Ebola hemorrhagic fever, are already publicly available.
- The US government requires that all genome data produced by federally funded research be made public, with rare exceptions.
- There is no clear way to predict which scientists need access to which genome data.
- Requiring users to register [to access a database] would not stop a determined malefactor, and would raise troubling questions about who could use registration data, and for what purposes.
- Implementing effective curbs on access would be impractical.
  - without a uniform international agreement, users who are denied access because of US policy could simply turn elsewhere.
- Policy-makers and researchers should focus on exploiting genome information fully to improve defenses against infectious diseases of all types.

[See <http://www.nap.edu/catalog/11087.html>]

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Special recognition and thanks for continuing support of the Academy's programs to the Connecticut Department of Economic and Community Development.

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