

Bulletin of the

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING



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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.

What is NASA's Space Grant Program?

The National Space Grant College and Fellowship Program was authorized nearly 20 years ago (1989) by Congress to help strengthen and enhance US capabilities in aerospace science and technology. Today, the program includes consortia in each of the 50 states as well as in the District of Columbia and Puerto Rico.

The program's objectives are to establish a national network of universities with interests and capabilities in aeronautics, space and related fields; encourage

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Connecticut Science Center Update

Photo: Connecticut Science Center

This August, the new Connecticut Science Center reached another important 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.

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News from the National Academies

The following is excerpted from press releases of the National Academies and from Infocus Magazine (www.infocusmagazine.org), a news resource of the National Academies.

◆ Report Recommends Nutrition Standards For 'Competitive' Foods and Drinks Sold in Nation's 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.

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, the proposed standards would apply to a la carte cafeteria items, products sold in vending machines and at school stores, and other foods and drinks that are available outside of—and therefore compete with—federally reimbursable school meals, which already must conform to nutrition guidelines.

The committee proposed two tiers of competitive foods and beverages that could be available in schools based on grade level. The standards apply only to competitive items sold or available on campuses, not to federal school meals or to bagged lunches or snacks students might bring.

The committee did not support the sale of caffeinated products to school-age children because of the potential for negative effects, including headaches and moodiness that could disrupt students' abilities to concentrate, nor did it recommend for or against foods containing sugar substitutes.

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

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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; and promote a strong science, mathematics and technology education base from elementary through university levels.

How is Connecticut involved?

The University of Hartford's Laurie Granstrand is CTSGC program manager. "Connecticut's consortium was formed in 1991 with Trinity College, the University of Connecticut, the University of Hartford and the University of New Haven," she said. "In 2005, the program was expanded. Today, we have 21 member

institutions (including Bridgeport University, Connecticut's ten community colleges and the College of Technology, Eastern Connecticut State University, Fairfield University, the UConn Health Center and Wesleyan University) and our applicant pool has doubled since the early 1990s."

The CTSGC provides funding for research that focuses on fostering cooperation between private, academic and governmental entities; supporting NASA's mission while developing and enhancing the scientific and industrial base of our state; generating student excitement and enhancing creative problem solving skills; extending opportunities to non-traditional science, technology, engineering and math students; and increasing public awareness of the benefits of aerospace education and research to increase public support of NASA's mission.

"We are building a research infrastructure in Connecticut, which will support the aerospace, space science, engineering and technology initiatives of federal and state government as well as private industry," said Tom Filburn, program director of the CTSGC and associate professor mechanical engineering at the University of Hartford. "We are just beginning to capitalize on our state's large aerospace industrial base and our vision is to flourish as NASA's most comprehensive higher education investment in Connecticut."

How does it work?

Twice each year, the CTSGC requests proposals from students and faculty at its member institutions. Proposals must demonstrate a link to NASA's strategic enterprises: space science, earth science, human exploration and development of space or office of aerospace technology. Representatives from member institutions review each proposal.

Awards vary from hundreds to thousands of dollars. Monies 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.

CTSGC funds are primarily for students and proof of concept or startup money for faculty. "Typically, senior faculty members have other means to get funding," said Harry Blaise, associate professor in the department of engineering and neuroscience program at Trinity College and CTSGC campus director. "We try to give priority to first-time applicants as seed money for initial research, so they can then pursue larger funding awards from other organizations."

What kinds of programs have been funded?

Dan Civco, campus director of the CTSGC at the University of Connecticut and professor of geomatics, is a past recipient of CTSGC monies. "I received three awards in the 1990s," he said. "The first enabled me to redirect some of my research efforts into artificial intelligence and develop some new contacts at the Goddard Space Flight Center. The other two were curriculum development awards with which I developed a distance-based course on geographic information systems with the University of Hartford and a new geoprocessing curriculum."

According to Blaise, the CTSGC is multidisciplinary. "We are not just funding traditional aerospace areas like engineering, math and computer science," he said. "We also encourage relevant applications from life sciences experts including neuroscientists, physiologists and biologists."

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Business & Industry

CONNECTICUT FIRM LANDS \$30 MILLION IN FUNDING.

RainDance Technologies, Inc., founded by CASE member **Jonathan Rothberg**, has received \$30 million in first round funding for its "lab on a chip" technology, which uses microfluidics to move cell samples. Company officials say their microfluidics platform can encapsulate cellular or biochemical samples in nanoscale droplets, much like data packets in a telecom network, and can then sequence and manipulate them across a tiny chip at high speeds. Applications for such a device include everything from enzyme development to stem cell research to DNA sequencing, according to Rothberg.

US SURGICAL NOW PART OF COVIDIEN. US Surgical

has become a part of Covidien Ltd. with the breakup of Tyco International, its parent company. The company has 2,226 employees in North Haven, including its research and development staff, which is expected to expand. Another 802 workers are based in Norwalk.

YALE TO PURCHASE BAYER CAMPUS. **Yale University** has announced plans to purchase the 136-acre campus of **Bayer HealthCare** in West Haven. In addition to the land, Yale will acquire 17 buildings with 550,000 square feet of laboratories, offices, and warehouse space. Specific plans for the site are now being developed. Bayer had turned down \$60 million in state tax incentives to stay in West Haven.

SIKORSKY TO LEAD BLACK HAWK VISIBILITY SAFETY

PROJECT. **Sikorsky Aircraft Corp.** will be the lead contractor among three developing a system for Black Hawk helicopters to help them perform safely in blinding sandstorms. Honeywell will design a screen for the cockpit that provides a clear day view regardless of weather and Sierra Nevada Corp. will provide see-through sensing technologies that will be integrated into the helicopters by Sikorsky.

CII BACKS MADISON FIRM. **Connecticut Innovations, Inc.** made its first investment of up to \$450,000 in **RemoTV** of Madison, which is developing technology that will allow streaming of multimedia to cell phones, allowing users to access their media from anywhere, and watch and listen to custom content created by other users.

ALEXION GETS EC APPROVAL FOR DRUG. **Alexion Pharmaceuticals, Inc.** of Cheshire has announced that the European Commission has approved its drug, Soliris, which is used for treatment of a rare blood disorder that causes chronic red blood cell destruction. The US Food and Drug Administration approved the drug in March, and shipments began in April.

NEUROGEN SLEEP AID PHASE II TRIAL RESULTS PROMISING.

Neurogen of Branford has announced positive results of two Phase II trials of its NG2-73 sleep aid. The time it took to fall asleep was reduced and the drug improved the ability to stay asleep. A second trial showed residual sedation the next day only at the highest dosages.

FUEL CELL FIRM GETS DEVELOPMENT FUNDING.

FuelCell Energy, Inc. of Danbury has signed a \$1.2 million contract to continue development of a hydrogen separation system. The extracted hydrogen could be used to power vehicles or for industrial uses. A prototype tested at the University of Connecticut has operated for more than 6,000 hours.

ENGINE MANUFACTURER WINS AIR FORCE CONTRACTS.

Pratt and Whitney has won two U.S. Air Force contracts valued at over \$2 billion. \$1.3 billion would be spent on F-119 engines and \$1 billion would be spent on F-117 engines. Both engines are assembled in Middletown.



Communication

DMV LAUNCHES 'AUTORENEW'. The **Department of Motor Vehicles** has started a pilot project to allow 30,000 vehicle owners every two weeks to have the option to renew their registrations via the internet. Vehicle owners with passenger registrations without delinquent property taxes or outstanding parking tickets, and who have adequate insurance and vehicles that have passed emission tests, will be given the online option in the registration renewal forms they receive in the mail. Receipts, registration certificates and windshield stickers will be mailed later to successful registrants. The DMV Autorenew program was designed by DMV and staff from the **Department of Information and Technology.**

STOCS SYSTEM FIRST IN NATION. The state is spending \$1 million on communications equipment to help emergency responders from different towns talk to each other on portable radios even if they use different radio frequencies and systems. A committee of the state **Department of Emergency Management and Homeland Security** developed the system, which is called the **Connecticut State Tactical On-Scene Channel System (STOCS)**. Connecticut is the first state in the nation to have the technology in place statewide. The devices will be issued on an as-needed basis.

COURT REVERSES DPUC RULING IN AT&T CASE. A federal judge has ruled that AT&T must follow the same rules as cable companies in offering video service. **Judge Janet Bond Arterton** struck down a ruling by the state **Department of Public Utility Control** that AT&T did not have to abide by cable franchise regulations, including requirements that prevent it from offering its services only in selected markets.



Education & Cognition

STUDY FINDS OBESITY TAUNTS HAVE LASTING IMPACT. A study by researchers at **Yale University** and the University of Hawaii at Manoa found that obese children who are stigmatized sustain profound and lasting effects. The analysis of over 100 studies showed that adolescents teased about their weight were two-to-three times more likely to report suicidal intention; that children as young as preschool reject obese children as playmates; that parents are a frequent source of weight-based teasing; and that those who reported weight-based victimization are at risk for unhealthy weight control, binge eating behaviors, and

Items that appear in the In Brief section are compiled from previously published sources including newspaper accounts and press releases. For more information about any In Brief item, please call the Academy at (860) 527-2161, write the editors at CASE Bulletin, 179 Allyn St., Suite 512, Hartford, CT 06103-1422, or email us at acad@ctcase.org

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avoidance of physical activity. Lead author **Rebecca Puhl** of the **Rudd Center for Food Policy and Obesity** at Yale said the results indicate thousands of children “are at risk for serious emotional and physical health consequences that science shows are connected to weight stigma.”

NEW MAGNET SCHOOL TO FOCUS ON SCIENCE AND ENGINEERING. A new magnet school to focus on science and engineering is planned for **West Haven**. The school will open in 2008 at a temporary location. Eventually a new school will be built near the University of New Haven campus in West Haven. The **University of New Haven Science and Engineering and Magnet School** will accommodate 400 students from New Haven, 125 from West Haven, and 91 students from other towns in the New Haven area.

BAN ON PESTICIDE USE ON SCHOOL GROUNDS EXPANDED. **Governor M. Jodi Rell** has signed a law expanding a ban on the use of pesticides in school yards and playgrounds to cover grades 6, 7, and 8. The new legislation extends a previous bill passed in 2005 that banned the use of lawn care chemicals on preschool and elementary school grounds. The bill permits use of chemicals on playing fields to continue until July 2009, when a complete phase-out of lawn-care pesticides on school grounds must be completed. Connecticut is the only state with a comprehensive outdoor pesticide ban for schools.

OMEGA 3 BEFORE BIRTH IMPROVES INFANTS' PROBLEM-SOLVING ABILITIES. A study by the **University of Connecticut** showed that mothers who regularly ate foods enhanced with Omega 3 fatty acid during pregnancy gave birth to infants with better problem-solving abilities at the age of nine months. The study is the first to report increased problem-solving abilities as a result of dietary intake of docosahexaenoic acid (DHA). The fatty acid accumulates at a high rate during the third trimester when the majority of the brain cells are being formed according to **Michelle Judege**, a post-doctoral fellow, who was lead author of the study.



Energy

ENERGY BILL CREATES SUMMER SAVER REWARDS. An energy bill passed by the **General Assembly** and signed by **Governor M. Jodi Rell** established a Summer Saver Rewards Program to give incentives for reducing electric power consumption over the summer months. A credit of 10-20% is being offered for reductions in energy usage from the same months in 2006. The credit will be given on the November bill and will be 10, 15, or a maximum of 20% of the generation charge commensurate with reductions in usage over the three months. The program is being administered by the state **Department of Public Utility Control**.

CONSERVATION AD CAMPAIGN LAUNCHED. The state has begun a \$1.5 million advertising campaign to convince residents that conservation can have a major impact on the energy crisis. The “One Thing” campaign focuses on one change at a time. **Governor M. Jodi Rell** kicked off the campaign by ordering that all standard incandescent bulbs in the governor’s official residence be replaced with compact fluorescent bulbs that use 75% less energy. In addition to print, radio, television, and outdoor ads, a new website, www.onethingct.org, gives energy-saving tips and information on energy rebates and tax incentives.

ANSONIA PLANS MUNICIPAL MICROGRID. The city of **Ansonia** has begun to establish the state’s first municipal energy

microgrid. A five-member Energy Improvement District (EID) oversight improvement board would manage the energy-generating system. The system would allow electricity to be generated by natural gas-powered fuel cells and solar and wind power. The state **Department of Public Utility Control** and the **Connecticut Siting Council** must approve any of the EID’s infrastructure before the microgrid goes on line.



Environment

ENERGY FUND OKAYS LOAN FOR HYDRO TURBINE SYSTEM. The **Connecticut Clean Energy Fund** has approved a loan of \$557,134 to help finance a new 500-kilowatt hydro electric turbine system at **Kirby Mill** in **Mansfield Hollow State Park**. The system, which consists of five micro hydro turbine units, was developed by **Windham Automated Machines**. It can be operated in low flow conditions and is modular and scalable in design. It utilizes a fish-friendly propeller and dispenses with systems that might cause pollution.

MANDATORY RECYCLING FOR ELECTRONICS. **Governor M. Jodi Rell** has signed into law a mandatory recycling program for major electronic devices including computers and televisions. Electronics manufacturers will have to register their devices with the **Department of Environmental Protection** and pay annual fees that will be used to recycle the devices. Cities and towns will be required to provide recycling. Cell phones, calculators and pagers are exempted from the law, which takes effect October 1. Beginning in 2011, any unwanted device must be disposed of at an approved recycling facility.

YALE HOPES NEW BUILDING IS ‘GREENEST ON EARTH.’ By late next year, **Yale University** plans to complete **Kroon Hall**, which the university hopes will be the greenest building on earth. The building design combines environmentally friendly materials with high-tech energy savings. The landscaping will feature footpaths, two courtyards and a plaza off Prospect Street in New Haven. The east-west alignment of the building will assist with heating, cooling, and lighting, with maximum exposure on the south side. Stormwater will be captured in a pond and filtered for reuse with the help of aquatic plants. Timber harvested from managed forests, including the **Yale Myers Forest** in Connecticut—7,840 acres owned by the **Yale School of Forestry and Environmental Studies** located in the towns of **Ashford, Eastford, Union, and Woodstock**—will be featured in the interior of the building.

REDESIGNED RECYCLING FACILITY OPENS. The **Connecticut Resources Recovery Authority** has formally opened its redesigned recycling facility in Hartford’s **South Meadows**. It serves Hartford and 69 surrounding communities. The authority can now process shoe, pizza and cereal boxes, plastic containers up to 3-gallons, and aerosol cans. The authority expects to process 55,000 tons of plastic containers and 100,000 tons of paper and cardboard per year. Recycling will save the towns \$69 per ton because there is no charge for recyclables at the plant.

EPA DESIGNATES ‘NO DISCHARGE AREA’. All Connecticut’s waters in Long Island Sound are now part of a “no discharge area,” designated by the Environmental Protection Agency, making it illegal to discharge treated or untreated sewage from vessels anywhere in the state’s portion of the Sound. In its application for the Branford to Greenwich portion of the Sound, the state **Department of Environmental Protection** identified a

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total of 43 available pump-out facilities. These include 31 fixed shore-based facilities, five portable facilities, and seven pump-out boats.

FLEX FUEL VEHICLES RUNNING ON ETHANOL ONLY 3% OF TIME. A state study found that the 1,700 flex-fuel vehicles owned by the state are using ethanol fuel only 3% of the time. The state has been buying flex fuel vehicles to comply with a federal requirement that 75% of new vehicles purchased be capable of using an alternate fuel. Adding two 85% ethanol-15% gasoline pumps in Hartford and Norwich could increase the flex fuel to 25% of the fuel the vehicles use. In addition, the state could cut its gasoline consumption by 554,000 gallons by reducing the number of miles state employees drive by 5%, buying 150 hybrid vehicles, and continuing to use vehicles that run on natural gas.



Food & Agriculture

LOCAL FLAVOR IN AD CAMPAIGN. Agriculture Commissioner **F. Philip Prelli** delivered the annual Samuel W. Johnson Lecture during the Plant Science Day at the Lockwood Farm in August. In addition to the sponsorship of many farm markets, he reported a multimedia campaign to promote agricultural products grown in the state that goes beyond "Connecticut Grown." The campaign by the **Connecticut Department of Agriculture** uses the tagline "The Local Flavor" for television, radio, billboards, and posters. The campaign seeks to show that locally-grown produce is a better, fresher alternative to products that are shipped here from other states or countries.

FURTHER 'CRUMB RUBBER' STUDIES SUGGESTED. The non-profit organization **Environment and Human Health** asked **The Connecticut Agricultural Experiment Station** in New Haven to analyze whether compounds are emitted or leached from "crumb rubber"—crumbs of rubber consisting of irregularly shaped flakes less than 3 mm in dimension made from recycled tires that are often used as an enhancement to cover artificial turf on athletic fields and play areas for children. The experiments were conducted in the laboratory under conditions that approximated conditions that would be encountered in the field. Compounds found that volatilized—or evaporated—into air were: benzthiazole, hexadecane, 4-(tert-Octyl)-phenol, and butylated hydroxyanisole or BHT alteration product. Elements found that leached into water were zinc, selenium, lead, and cadmium. The authors of the study, **MaryJane Incorvia Mattina**, **Mehmet Isleyen**, **William Berger**, and **Saim Ozdemir**, concluded: "Based on these data further studies of crumb rubber produced from tires are warranted under laboratory, but most especially field conditions. In particular, examination of compounds volatilizing from the crumbs under exterior conditions and collected at varying heights and seasonal conditions at installed fields should be compared with background levels. It is also logical to determine airborne particulate matter deriving from the product under the same conditions."

NUMBER OF LYME CASES REPORTED DECLINES. During 2006, the recent trend of increases in Lyme Disease cases reported to the **Connecticut Department of Public Health** was reversed. Statewide, the number of new cases was 1,788 in 2006, compared with 1,810 in 2005; the 2005 figure was a 34% increase over 2004. **Kirby B. Stafford III**, chief entomologist at **The Connecticut Agricultural Experiment Station** in New Haven, said that the lower number of cases may reflect a

reduction in infected ticks collected at designated sites throughout the state during 2006.

TOUGHER ANIMAL ABUSE LAW PASSED. A law to protect abused animals will take effect October 1. The law will allow animal control officers to immediately confiscate an animal found in poor condition. The owner of the animal would be allowed to have a hearing within two weeks. Current law requires animal control officers to seek a warrant within four days before confiscation. The new law also allows courts to order protection for animals owned or kept by victims of family violence, stalking or harassment.



Health

'PLAN B' MEASURE SIGNED. Governor **M. Jodi Rell** has signed a measure that requires hospitals to offer emergency contraception to rape victims. The law requires all 30 hospitals in Connecticut to make the drug known as Plan B available. Because of objections from the Catholic Church, the law allows an independent third-party health care provider to distribute the drug. The law also allows hospitals to administer a pregnancy test before providing emergency contraception, but does not cover the current practice of Catholic hospitals requiring an ovulation test.

NEW WEBSITE OFFERS LONG-TERM CARE INFORMATION. A new website, www.ct.gov/longtermcare has been launched to help Connecticut residents find information on long-term care. The website provides access to comprehensive information on private and public long-term care services, including: home care, community care, housing, and institutional/nursing home care. Information is also available for those who provide care and for people interested in planning for their own future needs.

POST-CLAIM UNDERWRITING BANNED UNDER NEW LAW. A new law that takes effect October 1 will prohibit insurers from post-claim underwriting, a practice in which insurers only review a policyholder's medical records in detail after a claim is submitted and then refuse to cover policyholders when they submit a large claim. The legislation was spearheaded by the **Office of the Healthcare Advocate**, the **Connecticut Insurance Department**, and **Attorney General Richard Blumenthal**.

HARTFORD HOSPITAL TAPPED FOR NATIONAL PROGRAM. **Hartford Hospital** is among 14 hospitals across the country chosen by the National Cancer Institute to participate in a three-year trial program aimed at ensuring that cancer patients being treated at community hospitals have access to the latest therapies. The \$1.5 million grant will pay for expanded programs for tests that can detect cancer at its earliest and most treatable stages. Participating hospitals will also have access to information to help doctors find studies that might offer promising treatments for patients as well as information on unpublished results of ongoing research.

STATE'S NEW 'QUITLINE' TO HELP SMOKERS QUIT. The state has begun a program to help residents quit smoking. The **Connecticut QuitLine** offers up to two months of free nicotine replacement therapy supplies, including patches and gum, to those who register for cessation services. The QuitLine (1-866-END-HABIT), which is available from 8 a.m. to midnight seven days a week, also offers information about tobacco use cessation, telephone coaching, and referrals to local programs

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and follow-up support. The program is funded by the Tobacco Trust Fund created as part of the settlement of tobacco litigations and the Centers for Disease Control and Prevention.

STUDY SHOWS CONDITIONING AIDS DRIVING IN ELDERLY.

A physical conditioning program developed by researchers at the **Yale School of Medicine** helped older people to maintain or improve their driving performance. The study of 178 greater New Haven drivers 70 and older was led by **Richard Marotti**, associate professor of internal medicine, and colleagues at the **VA Connecticut Healthcare System** and the **Department of Rehabilitative Services** at **Yale New-Haven Hospital**. Intervention participants received 12 weekly visits by physical therapists who guided them through a graduated exercise program directed at physical abilities relevant to driving. They exercised seven days a week for 15 minutes, focusing on the hips, ankles, knees, shoulders, and feet. Both the control group and the intervention group received monthly in-home education that reviewed home safety, fall prevention, and vehicle care. The participants completed an on-road driving evaluation and were rated on a 36-item scale. Those who received the intervention increased their road test scores after three months. They also committed 37 fewer critical driving errors.

STUDY FINDS SLEEP APNEA, HEART ATTACK RISK LINKED.

The nighttime breathing disorder known as sleep apnea has been found to increase the risk of heart attack or death over a period of four to five years by 30%. **Neomi Shah**, clinical fellow in the **Department of Internal Medicine** at the **Yale School of Medicine**, followed 1,123 patients referred for sleep apnea evaluation to see how many had a heart attack, coronary angioplasty, bypass surgery, or died. Another study by **Nader Botros**, also a fellow in the Department of Internal Medicine at Yale, found that patients diagnosed with sleep apnea had a more than two-and-one-half-fold risk of developing diabetes. The study involved 593 patients referred for sleep-disordered breathing at the **VA Connecticut Health Care System**.



High Technology

FORENSIC TECHNOLOGY HELPS EXPERTS ID OLDEST GUNSHOT VICTIM. Experts at the **Henry C. Lee Institute for Forensic Science at the University of New Haven** used a scanning electronic microscope to detect traces of iron in a skull found in a grave near Lima, Peru, where Incas fought a last stand against the Spaniards in 1536. The skull had holes in the front and back and from their position and the traces of iron, the researchers—**Albert B. Harper** and **Timothy M. Palmbach**—concluded that the holes were caused by a musket ball fired from perhaps 100 feet away. The finding points to the remains being those of the earliest known gunshot victim in the New World.

GENOME SEQUENCES FINDS HIGHER LEVELS OF HIV-INFECTION. Using **454 Life Science's Genome Sequencer System** on blood samples from 258 HIV-infected patients, **Michael Zozal**, associate professor of medicine at the **Yale School of Medicine**, found that twice as many patients as previously thought harbor drug-resistant strains of HIV. The standard test found 13% of the patients harbored resistant strains while the Genome Sequencer found 28% of the patients harbored resistant strains.

GENOMAS GETS NIH GRANT TO DEVELOP PRODUCT TO AID IN MENTAL HEALTH TREATMENT. **Genomas, Inc.**, a

Hartford-based genetic, biomedical device company, has been awarded a \$1.4 million grant from the National Institutes of Health to develop a product that will enable doctors to more effectively treat schizophrenia, bipolar disorder, obsessive-compulsive disorder and other mental health disorders. The product aims to help patients to avoid an antipsychotic medication's side effects, like cardiovascular disease symptoms and obesity, by guiding drug selection for each patient according to each individual's DNA for risk and protective factors. CASE member **Gualberto Ruaño** is president and CEO of Genomas.



Transportation

TWO STATE AIRPORTS SEE CARRIER CHANGES. At **Bradley International Airport**, Northwest Airlines started direct flights to Amsterdam, the first-ever daily transatlantic flights, at the beginning of July, while at the end of July, **Tweed New Haven** airport went back to a single commercial carrier—US Airways flying to Philadelphia—with the departure of Pan Am Clipper Connection.

STAMFORD MULLS FERRY DOCKING SITES. The city of **Stamford** is considering seven potential ferry docking sites to connect Stamford and Manhattan and possibly LaGuardia Airport. More than \$6 million in federal grants are allocated to the project. The pros and cons of the sites and other background information are at www.stamfordferry.org.

INCREASE IN MASS TRANSIT SPENDING DRAWS PRAISE. Increased spending on mass transit by the **State of Connecticut** has drawn praise from the Tri-State Transportation Campaign, a group that monitors transportation issues in the tri-state area. The group found that more than 35% of a \$4.1 billion 2007-2010 transportation budget was earmarked for trains and buses. The state's 2000 transportation program devoted 20% to trains and buses.

STATE DOT DIRECTED TO STUDY NEW RAIL SERVICE OPTIONS. **Governor M. Jodi Rell** has directed the **Connecticut Department of Transportation (CONNDOT)** to study ways to open train service to Penn Station in New York. Metro-North has estimated that 4.5 million riders would take the New Haven Line into Penn Station each year. CONNDOT had previously announced that it is developing a special service to Giants Stadium for Jets and Giants football games using New Jersey Transit trains on the New Haven Line from Connecticut into Penn Station and then on to the train terminal at Secaucus, NJ.

SMALLER JETS MEAN FEWER PASSENGERS. According to officials at **Bradley International Airport**, a shift to smaller regional airplanes in the fiscal year ending June 30, 2007 has reduced the number of passengers by about 9%. About 6.6 million passengers used Bradley during the same period the previous year. Bradley has been trying without success to persuade airlines to bring back larger jets.

WHAT'S IN A NAME? The **Connecticut Department of Transportation** is developing plans to auction the right to name bus and railroad stations. The department has until the last week in January 2008 to develop the criteria and terms for approval by the **General Assembly**. Enabling legislation was passed this year.

— *Compiled and edited by Paul Gough*

◆ Foreign Languages & International Education Need More Support from Nation's 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 US Department of Education should take a leadership role in ensuring that its foreign language and international education programs respond to both current and future needs, the report's authors suggest. The report also finds that the department does not have an overall view of, or master plan for, its range of language and international programs, including the higher education programs known collectively as Title VI and Fulbright-Hays. Consolidating oversight of the programs under a high-ranking official, preferably a presidential appointment, would be an important first step. Furthermore, Congress should require the US secretary of education to lead development of an interagency biennial public report outlining national needs in this area, plans to tackle them, and progress toward goals.

Universities should play key roles, partnering with federal officials to continuously improve the programs. The Title VI and Fulbright-Hays programs were created nearly 50 years ago following the Soviet Union's launch of the Sputnik 1 satellite—an event that shocked the United States and led to large increases in federal spending on education and scientific research to meet national security needs. Over the years, the programs' scope has grown to encompass undergraduate and graduate education in foreign languages, international studies, and area studies, which focus on particular regions of the world.

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

◆ Scientific Advances Offer New Directions and Approaches 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 a 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. This approach would generate more relevant data to evaluate risks people face, expand the number of chemicals that could be tested, and reduce the time, money, and animals involved in testing, the report says.

Researchers today typically test the safety of commercial chemicals, pesticides, and other substances by administering large doses to groups of animals and then observing them for symptoms of disease; results of these tests inform decisions about whether and how to regulate the chemicals' use. But how relevant the animal tests are for humans, who are usually exposed at much lower doses, has often been questioned. The current approach is also time-consuming and costly, resulting in an overburdened system that leaves many chemicals untested, the report finds. Recognizing these limitations, the US Environmental Protection Agency, which oversees the testing of many agricultural, commercial, and industrial chemicals, asked the Research Council to develop a new strategy for toxicity testing.

The report recommends an approach that would take advantage of rapidly evolving scientific understanding of how genes, proteins, and small molecules interact to maintain normal cell function and how some of these interactions can be perturbed in ways that could lead to health problems. Specifically, the new testing approach

would focus on toxicity pathways—cellular pathways that, when sufficiently perturbed, are expected to lead to adverse health effects.

The committee recommends the use of “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. On the basis of data from these and other experiments, researchers could develop models to describe responses in toxicity pathways, and other models to estimate the human exposure necessary to produce responses in these pathways.

Implementing the strategy envisioned by the committee will require a substantial research effort to develop and validate all of the new approach's components, the report says, adding that a critical factor for success is the creation of an institution that fosters multidisciplinary research.

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

◆ Millions of Americans 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.

Millions of people don't take their prescriptions properly, with roughly half of patients with chronic illnesses such as heart disease or asthma skipping their medications. Their doctors' track records are no better. Doctors only stick to their own prescription medications 79% of the time. Poor medication adherence can cost an extra \$2,000 a year per patient in extra doctor visits. The problem is especially acute among the elderly, where as many as 40% of nursing home admissions result from poor medication adherence.

A 2006 report, *Preventing Medication Errors*, from the Institute of Medicine looked at ways to remove some of the confusion for patients with medication labeling by offering suggestions on how to standardize drug nomenclature and abbreviations, effectively use information technologies to reduce errors, improve the labeling and packaging of medications, and empower patients to become partners to improve their own health and safety.

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

Science Center (continued from page 1)

“With its dramatic steel structure now in place, the Center is a major step closer to becoming reality,” said Governor M. Jodi Roll 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. “Much more, the Science Center will be a place of community, exploration and discovery.”

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.

Space Grant (continued from page 1)

For example, Susan Masino, professor of psychology and neurosciences at Trinity, used a CTSGC award to gather pilot data (electro-physiological recordings and behavioral research) for a research program on sleep deprivation. "The space grant provided initial funding and support for my ideas very early in the process," she said. "I have now submitted a major grant application based on this work."

Karen Wosczyzna-Birch is state director of Connecticut's Community Colleges' College of Technology, a virtual college created in 1995 to provide a seamless pathway for engineering and technical students from a two-year college to a four-year institution. "Last year, CTSGC funded a pilot program that brought our two-year students together with four-year students from the University of Hartford (with support from Central Connecticut State University) to work in teams on life support and sustainable living projects," Wosczyzna-Birch said. "Since two-year institutions don't typically conduct research, our students had a unique opportunity. Each group brought strengths and weaknesses, mirroring the workplace—the four-year students had more theoretical knowledge, but they valued the hands-on experience of the two-year students in areas like computer-aided design. The program was a tremendous success and we are working to expand it."

Who benefits?

"This program isn't just good for researchers," Filburn said. "We all stand to gain. By becoming known as a leader in certain technical areas and building an educational infrastructure that enables us to fully participate in NASA's national mission, we will achieve the most significant outcomes for this state: job creation and economic growth."

What's next?

The consortium expects to be eligible for increased funding within the next 3-4 years. Connecticut will have the opportunity to receive a 25-30% increase in NASA funding if selected for the higher level of funding.

— **Karen Cohen is a freelance science writer and owner of The Write Stuff, LLC, in Hebron, CT.**

If any institution is interested in joining the CTSGC, they should contact the director, Dr. Tom Filburn, at Filburn@hartford.edu or 860-768-4843. Visit the consortium at <http://uhaweb.hartford.edu/ctsprgrant/>

Visit our web site at www.ctcase.org

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