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UPDATE: The Connecticut Center for Science & Exploration

In the past few months, the Center has made great strides, including exhibit plans, a new website, raising funds, and beginning construction.

Clean Energy Exhibit
The Connecticut Center for Science & Exploration has partnered with the Connecticut Clean Energy Fund and the Connecticut Energy Efficiency Fund to highlight the use of energy efficient "green" technologies in the science center, including a major Clean & Efficient Energy Exhibit. The Center's building will be LEEDS (Leadership in Energy and Environmental Design) certified and employ such technologies as solar panels.

www.ctcse.org
The Center's exciting new website features animated floor plans that map out where particular exhibits will be located, display renderings and provide descriptions of components within each exhibit. The new AT&T Learning Connection is the educational portal on the Center's website that allows teachers, students and families to find science resources.

Federal Funding
United States Senator Christopher Dodd visited the Center's construction site to share some exciting news. On behalf of Connecticut's congressional delegation, he announced $4 million in federal funds committed to support construction of the Center, giving the Center broad support from federal, state, corporate, foundation and individual contributions.

Construction
Site excavation is underway. Every moment of construction will be captured by the Center's webcam and we will feature online videos showing the real science behind the making of the Center.

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Who's Keeping Track of Long Island Sound...?

The Long Island Sound Resource Center

View from Rocky Neck State Park in East Lyme, Connecticut south to North Brother Island. (Photo by Ralph Lewis)

According to the US Environmental Protection Agency (EPA), more than eight million people live in the Long Island Sound watershed and it provides "feeding, breeding, nesting and nursery areas for a diversity of plant and animal life, and contributes an estimated $5.5 billion per year to the regional economy from boating, commercial and sport fishing, swimming and sight-seeing." In recent years, several development projects have been proposed for the Sound, including controversial plans to site electrical cables beneath the sea bed and a recent proposal by TransCanada and Shell to build a 10-story liquefied natural gas storage facility in the middle of Long Island Sound. To fairly evaluate these and other pending proposals, it is critical that decisionmakers have easy access to all existing information about the Sound.

So, who's keeping track of what we know about this natural resource and what's going on below the surface?

For more than 15 years, the Long Island Sound Resource Center (LISRC) has been developing a comprehensive collection of existing data. Located on the

(See LISRC, page 2)

News from the National Academies

The following is excerpted from press releases of the National Academies and from *Infocus Magazine,* a news resource of the National Academies, which can be found online at www.infocusmagazine.org.

◆ Committee on Stem Cell Research Guidelines to Be Established

The National Academies' National Research Council and Institute of Medicine are convening a new committee to provide updated guidelines on the conduct of human embryonic stem cell research. The committee will periodically update the voluntary guidelines issued last year by the Academies to reflect advances in stem cell science. These guidelines are intended to enhance the integrity of human embryonic stem cell research by encouraging responsible practices. The new committee will be funded by private sources, including the Ellison Medical Foundation, the Greenwall Foundation, and the Howard Hughes Medical Institute. Like all National Academies committees, the new committee will serve voluntarily and must comply with the Academies' conflict-of-interest policy; any reports issued by the committee will be reviewed by outside experts before publication.

[See http://www4.nationalacademies.org/news.nsf/isbn/02162006?OpenDocument]

◆ Airports Need Better Defenses Against Chemical and Biological Threats

Defending against a chemical or biological attack in airport terminals, boarding areas, and aircraft should be enhanced by using improved video surveillance, reducing airflow between airport areas, and deploying "active purification units" that eliminate or reduce infectious agents, according to recommendations in

(See National Academies, page 7)

LISRC (continued from page one)

shores of Long Island Sound at the Avery Point campus of the University of Connecticut (UConn) in Groton, the LISRC is a partnership between UConn and the Connecticut Department of Environmental Protection (DEP). The LISRC has been collecting not only readily available relevant journal articles, but also "gray materials" (for example, scholarly studies and scientific reports that have limited distribution and that are in danger of disappearing).

DEP Commissioner Gina McCarthy said, "The DEP is proud to be a partner in this important project, which provides valuable information about Long Island Sound for everyone who cares about this important natural resource."

In an effort to provide easy access to this information, LISRC staffers have spent the past three years creating a searchable website: www.lisrc.uconn.edu. The Center's two staffers are Beth Doran, environmental analyst at the DEP and webmaster of the LISRC website, and volunteer Ralph Lewis, professor in residence of Marine Sciences at UConn and retired founder of the LISRC. The website development has been funded by the DEP Office of Long Island Sound Programs with money from the US Department of Commerce's National Oceanic and Atmospheric Administration (NOAA).

"This is a dynamic website created by devoted volunteers and a dedicated staff," Commissioner McCarthy said. "They are committed to providing information that helps educate the public about Long Island Sound and encourage thoughtful decisions when it comes to questions that affect the future of the Sound."

Doran said the organization's goal is for the website to be a clearinghouse of information about Long Island Sound. "The funding allowed us to start to develop the site, buy equipment and scan some existing materials," she said. "We expect to continue to add information and content to the website as well as to connect users of our site with the many other sites with information about the Sound."

According to Lewis, the key is to keep the website updated. "There have been many attempts to gather information about Long Island Sound in one place," he said. "The key is to keep the information source current; otherwise, it becomes outdated and just another point of reference rather than a living, accurate reflection of the most current information available.

"We have been working on our collection since the 1980s, when the Connecticut DEP and UConn joined forces to put together a collection of gray literature about Long Island Sound," Lewis said. "We developed a fairly good collection and made it available to people via the UConn library at Avery Point. That was in the days before the Internet, so people would either call us or come to Avery Point to access the information. That was the beginning of the organization now known as the LISRC."

The organization continues to develop and now is one of the leading sources of information about Long Island Sound. "The Internet gave us a fairly inexpensive way to make our collection available to people," Lewis said. "The website is a work in progress, but, in time, it could be the premier source of information about Long Island Sound, offering one-stop shopping and providing not only brief overviews, but also technical studies in original format. It will be a Web-based data- and information-server for Long Island Sound."

Future plans for the website include adding photos of marine life living in the Sound. "The Sound is a tremendous resource for our state and it is important to make people aware of what is in there and why we should value it," Doran said. "Adding these photos to our site will be an exciting and eye-opening way to help people learn more about this resource. I'm sure that I'm not the only person who has lived in Connecticut for most of my life and didn't know that sea horses live in the Sound."

In 2004, the Connecticut Academy of Science and Engineering (CASE) conducted a study of benthic habitats in Long Island Sound. The study, initiated at the request of the Connecticut Energy Advisory Board, found that there was a critical need for a central repository of information about the Sound. "The LISRC really proved its worth during this time," said Edward C.

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Business & Industry

FORMER PROTOMETRIX THRIVES UNDER INVITROGEN. Many worried when California-based Invitrogen acquired **Protometrix** of Branford, but the company has thrived as an R&D and operations center of the larger company. "With our current staff we're actually about 25% larger than we were at the time of acquisition," says **Barry Schweitzer,** director of the Protein Array Center of Invitrogen, as the Branford unit is now called. At the time it was acquired in April of 2004, Protometrix was a privately held biotechnology company that was developing and commercializing the world's first protein microarrays. The protein arrays are aimed at enhancing drug discovery and development by enabling researchers to rapidly reveal new disease pathways, identify novel drug targets, and discover how drugs exert their intended effects and side effects.

NEW ENGINE STATE OF THE ART. The first jet engine that will fly the Pentagon's new F-35 Joint Strike Fighter has been shipped by **Pratt & Whitney** for installation in a test plane. The new plane is designed to have unparalleled maneuverability, firepower and targeting accuracy for its bombs, missiles and 25mm cannon. It has a radar-evading "stealth" profile like the F-117 and B-2 bombers, and self-monitoring computers that read engine vibrations to detect wear and tear before they can cause problems. According to **Bill Gostic**, vice president in charge of the F135 engine, "This is the world's most powerful tactical fighter jet engine." It will also be the most flexible military propulsion system ever built.

PATENT RULING BOOSTS PFIZER. A recent patent victory for Lipitor, its biggest-selling drug, boosted the shares of **Pfizer Inc.** nearly 8%, eliminating major uncertainty at least for the time being. Most analysts had expected that Pfizer would defeat the challenge to its cholesterol-lowering drug from an Indian pharmaceutical company, Ranbaxy Laboratories Ltd. Still, some investors remained wary of the stock, opting not to risk a negative surprise, analysts said. The company employs about 6,000 in its Connecticut research facilities.

SCIENCE CENTER ALLIANCE. After discussions with **Theodore Sergi,** president of the **Connecticut Center for Science and Exploration, CURE** (CT United for Research Excellence, Inc.) and the Science Center have agreed to work together to expand the reach of CURE's highly successful BioBus educational programs. The agreement is contingent on CURE's raising $1.5 million in funding for the next five years, with the Science Center contributing like value. The partnership represents an opportunity not only to enrich science curriculum in Connecticut's schools, but also to expand the BioBus programs to reach adults and general audiences. Using hands-on experiences such as From Compound to CURE, the copyrighted demonstration drug development experiment launched by CURE this past summer, CURE hopes to help convey messages about the value of drug discovery.

STICKING BY A BRAND. Shabbir Attarwala's boss at Henkel, parent company of **Loctite**, remembers one day in late 2001: "[Shabbir] came running down the hall" with some waxy red glop." The solid-form substance would redefine the "Threadlocker" line that made Loctite a world-famous industrial adhesives business. Loctite, founded a half-century ago by a father-son team in Hartford, grew to an $800 million-a-year adhesives, sealants and surface treatments firm before it was acquired in 1997 by Henkel. The local operation will grow, Henkel officials say, perhaps significantly. The company is considering making **Rocky Hill** the home site of Henkel North America's technology group.

STUDY LINKS ADVERTISING, YOUTH DRINKING. The first national study of liquor advertising, conducted by researchers at the **University of Connecticut (UConn)** and Ohio State University, could offer evidence that limiting liquor advertising should be part of a national strategy to reduce underage drinking. Using random telephone sampling in 24 US media markets, the researchers found volunteers aged 15 to 26 within each market. Almost 2,000 were surveyed initially, and at least 500 were interviewed four times from April 1999 to February 2001. Interviewers asked about how much alcohol advertising the volunteers remembered seeing and how much alcohol they drank in the past month. "We found that if there was more advertising in a market there was more youth drinking," said Leslie B. Snyder, director of the **Center for Health Communication and Marketing** at UConn and the study's lead author.

Communication

DEMAND FOR CELL TOWERS GROWING. Cell phone carriers are working hard to spread phone service throughout **Litchfield County's** pervasive dead zones. Despite objections to cell towers based on aesthetic concerns and claims of health impacts, cellular service is increasing in the Northwest Corner. Carriers report that mobile usage minutes increased in the past year by an estimated 36%. "We are nearing the tipping point where resistance to towers is being outweighed by the reality of widespread cell phone use," said **State Senator Andrew Roraback** of Goshen. When he became a state legislator 12 years ago, most Litchfield County residents opposed towers on their rural hills, he said, adding "Now you hear more complaints about poor service."

STAYING 'HAND-FREE'. More than 2,400 drivers across the state have been issued a $100 ticket for breaking the new law prohibiting use of hand-held cell phones while driving. "I'm seeing more headsets and more people pulling over to talk on their cell phones," said **West Hartford Police Chief James Strillacci**, adding "I think people are still getting used to the new law, and there is a learning curve…But we've only issued 51 tickets in West Hartford since the law went into effect." Some police departments report that they are seeing fewer cell phones in the hands of drivers and a little less of the signature swerve indicative of someone driving while talking on a cell phone. Others, however, aren't happy with the results and plan to increase enforcement in their towns.

GETTING THE MESSAGE. Aquis Communications Group, Inc. a full service telecommunications company, has announced that the **University of Connecticut (UConn)** has chosen the company to supply communication solutions to its faculty and staff throughout the Storrs campus. Under the multi-year contract, Aquis will provide UConn with both alphanumeric and numeric wireless messaging devices. Personnel from faculty to facility management staff will be equipped with the devices. Aquis also installed a custom

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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coverage network to ensure wireless connectivity throughout the campus. The wireless network will be used to speed communications related to security and maintenance issues.

Education & Cognition

CCSU PLANNING ENGINEERING PROGRAM. In the fall of 2006, **Central Connecticut State University (CCSU)** will offer courses leading to a bachelor's of science degree in mechanical engineering, adding to the programs available at its **School of Technology.** "There is a dramatic shortage of engineers in Connecticut," said **Zdzislaw Kremens**, dean of the school. "We have twice as many jobs for engineers as the number of engineers we graduate from public and private institutions combined." The demand for well-educated workers is high and is only expected to get higher, as the state's economy shifts from manufacturing to high-tech industries. "The only way [to address this problem] is to educate people who can do the job," said Kremens. "These companies need people to hire, and if they don't find them, they will move somewhere else."

WESLEYAN STUDENTS DOWN IN THE DUMP. A group of **Wesleyan University** students from an environmental geochemistry class taught by assistant professor of earth and environmental sciences **Timothy Ku** have been traipsing through the Middletown's old dump, seeing how much methane gas is leaking out and whether that gas can be harnessed for productive use. Their study for the **Jonah Center for Earth and Art** helps explore the feasibility of a plan dreamed up by the Center: to turn the old dump into an ecological center and recreational retreat. Junior **Beck Straley** recommended the methane be used to heat on-site facilities: in one landfill in North Carolina, the gas is used to heat greenhouses and artists' kilns. Such a project would be in line with the Jonah Center's emphasis on merging environmental awareness with artistic endeavors, said Jonah Center Director **John Hall**.

SCIENCE CENTER WINS GRANT FOR KIDS' PROGRAM. The **Science Center of Connecticut** in **West Hartford** has received a $25,000 grant from the Dorr Foundation of Bedford, NY, for the development of the Big Step Boys and Girls Science and Technology Enrichment Program. The program, geared toward elementary and middle school students, is an after-school and summer science program for Boys and Girls Clubs in the state. The program will use staff from the science center and the Boys and Girls Clubs to offer science enrichment activities in each club's student program. Funding also will support workshops for staff to link the activities with computer technology programs at the clubs.

TEACHING WITH IPODS? OF COURSE! As students stroll across the **University of Connecticut** campus wearing earphones plugged into their iPods, some are tuning in to psychology professor **David B. Miller**. The veteran educator is recording group study sessions from his psychology classes and offering them as free podcasts, audio recordings that can be downloaded from the Internet. Podcasting is a tool that is emerging on campuses as a means of conveying information to a technologically savvy generation of young people. Chemistry professor and Academy member **Harry Frank** has also begun creating podcasts of prominent scientists who come to campus. "It's like an oral history. ... I have them sit down for five minutes and explain what they're doing," said Frank, who is also associate dean of the **College of Liberal Arts and Sciences.**

NEW ALLIANCE LAUNCHED. The **Connecticut Center for Advanced Technology, Inc. (CCAT)** and **NALI (National Aerospace Leadership Initiative)** have partnered with **UP Aerospace,** the world's only private company with a fleet of rockets, to offer students the opportunity to have their own science and technology investigations conducted on a rocket fired into space. Students from throughout Connecticut, including teams from **Project Lead the Way** sites, the **CT Pre-Engineering Program**, **University High School of Science and Engineering,** a magnet school on the **University of Hartford** campus, and the **Science Center of CT** will be participating, as well as **NASA Explorer Schools** and teams from schools in Ohio and Pennsylvania, **CCAT's NALI** partner states.

UNIVERSITY OF HARTFORD WINS ENGINEERING AWARD. The **Engineering Applications Center** at the **University of Hartford's College of Engineering, Technology, and Architecture** has received a 2005 Connecticut Quality Improvement Silver Award. A plaque was presented to Academy member **Devdas Shetty**, dean of research and director of the **Engineering Applications Center**, and Research Engineer **Claudio Campana** at the 18th Annual Conference on Quality and Innovation in Westbrook. The award was presented for the Ambulatory Suspension System for Rehabilitation developed by the center. The computerized system enables patients undergoing physical rehabilitation to walk, climb stairs and exercise without the risk of falling. It is designed to be adjustable, support the weight of the user, allow unimpaired walking and prevent sudden falls.

GIRLS AND TECH EXPO. **Saint Joseph College** recently hosted over 150 girls from middle and elementary schools in Hartford, East Hartford, Manchester, Bloomfield, Farmington and Simsbury at the Girls and Tech Expo, one of a series of similar events across the state sponsored by **The Connecticut Girls and Technology Network** and the **Connecticut Women's Education and Legal Fund**. The workshops, on topics ranging from solar power to web page design, are designed to encourage more girls to think about careers in mathematics and science. The girls spent the day on campus working with college students on selected projects involving mathematics, computer science and physical chemical/biological problems. Projects were designed to stimulate new thinking about the fun of exploring real life-related challenges.

Energy

NEW FUEL CELL COALITION. The **Connecticut Hydrogen-Fuel Cell Coalition,** made up of representatives from Connecticut's fuel cell and hydrogen industry, labor, the **Connecticut Clean Energy Fund**, and others, was established last fall to promote the development, manufacture, and deployment of fuel cell and hydrogen technologies and associated fueling systems in Connecticut. The coalition was organized and is administered by the **Connecticut Center for Advanced Technology**. Connecticut companies pioneered the development and application of fuel cells and hydrogen generation and continue to lead the world in these technologies. The state leads the nation in fuel cell and hydrogen activity, with a broad infrastructure of manufacturers, suppliers, academic support, state government support, and regional activity.

Environment

THINKING OUTSIDE THE BOX. When new computer equipment arrives at the workplaces of thousands of **United Technologies Corp. (UTC)** employees, something's missing: cor-

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rugated cardboard boxes, foam packing peanuts, sticky tape and plastic wrappings. That common-sense step eliminates 66 tons of waste for UTC. Computer manufacturer Dell ships computers packed in boxes to vendor Chasm, where the new systems are unpacked, have basic UTC software installed, and are loaded onto carts for delivery to UTC locations. All of the boxes the computers came in are reused, not just recycled, by Chasm. Keyboards and computer mice still come in some packaging because they're too delicate to be transported on the carts. "Smaller and less is better from everyone's perspective," UTC Vice President and Chief Information Officer **John Doucette** says.

MOLD PROBLEM GOING TO THE DOGS. Mardi, a dog rescued from New Orleans in the wake of Hurricane Katrina, may not appear to be en expert in detecting mold, but the little Beagle "nose" better. "Because of a dog's excellent sense of smell, they can pinpoint where mold is located in a building," said **Carl Massicott**, the co-owner of **Advanced Mold Detection** in Milford. "A trained mold professional is usually about 35% accurate, while a dog is more than 97% accurate." Seth Norman, director of the National Association of Mold Professionals, said dogs are becoming an increasingly popular tool in the industry. He added that there are about 100 dogs in the country that are trained to detect mold.

UCONN TO BUILD NEW WATER PIPELINE. A plan to spend $657,000 to replace a 2,000-foot section of pipe that supplies water from the **Willimantic River** has won the approval of the **University of Connecticut's (UConn)** board of trustees. The new transmission pipeline will replace deteriorating pipe and allow the university to draw more water from the Willimantic River and reduce reliance on its other water source, the **Fenton River,** a section of which ran dry in September. Meanwhile, the university expects to complete a three-year study of the Fenton River in early 2006. UConn was required to do the study to determine sustainable and safe diversion rates from the Fenton as part of its plan to develop the northern section of campus.

NEW SPECIES OF TORTOISE IDENTIFIED. A group of **Yale** scientists has identified a new species of tortoise. **Jeffrey R. Powell**, professor of ecology and evolutionary biology, said that finding a new species among one of the most closely studied populations suggests that the world has a far greater diversity of plants and animals than is generally assumed. "We need to recognize all species to ensure conservation. So this finding is important. There are probably a lot more species than are supposed," Powell said.

Food & Agriculture

PROTECTING FOOD FROM TERRORISTS. In 2004, Health and Human Services Secretary Tommy Thompson stated "For the life of me, I cannot understand why the terrorists have not attacked our food supply because it is so easy to do." For almost three years, USDA and FDA have been cooperating to deter such an attack. One result of these efforts has been FERN, the Food Emergency Response Network, a network of federal and state laboratories. Recently, eight state laboratories, including one headed by **MaryJane Incorvia Mattina** at the **Connecticut Agricultural Experiment Station,** were selected for three-year agreements. The Station laboratory acquired instruments that broaden the number of toxins that can be analyzed, and added two new staff members to expand the surveillance coordinated with FDA. Additional partners in the state are joining forces with the Station to protect Connecticut's food supply. This enhanced food surveillance will be highlighted at an open house at the Station, 123 Huntington Street, New Haven, at 1:00 pm on April 20, 2006.

WELL OILED MACHINE. A **Wesleyan University** student has answered a Middletown initiative with her own clean energy invention: a car that runs on vegetable oil. **Laura Goldhamer** has crafted an engine that turns used cooking oil into effective transportation. She gets the vegetable oil from **Typhoon Restaurant** on Main Street, where staff collects a supply for her after a week's worth of noodles and egg rolls pass through. She pours it into a 65-gallon tank in her 15-passenger short bus. Goldhamer says her work has only begun. "I'm trying to start a bio-diesel co-op for other people who have diesel cars," said Goldhamer. She already has a processor that turns used cooking oil into bio-diesel, a fuel source that can be used in any regular diesel engine.

Health

ADHD MEDICATION FOR HYPERACTIVITY SYMPTOMS IN AUTISM? Methylphenidate, a medication used to treat attention-deficit hyperactivity disorder (ADHD), may be effective in treating hyperactivity symptoms in children with autism and related disorders. A study was conducted by the Research Units on Pediatric Psychopharmacology (RUPP) Autism Network, a National Institute of Mental Health-funded consortium dedicated to the development and testing of treatments for children with pervasive developmental disorders. A team of **Yale** researchers headed by **Lawrence Scahill**, associate professor of nursing and child psychiatry, participated in the study. "This study shows that methylphenidate is an effective medication for children with pervasive developmental disorder (PDD) accompanied by increased hyperactivity," said Scahill. "However, the percentage of children showing a positive response and the magnitude of benefit is lower than what we have come to expect in ADHD uncomplicated by PDD."

PLASTIC SURGERY COMPLICATIONS UNRELATED TO ANESTHESIA DURATION. The length of time patients spend under anesthesia during facial plastic surgery procedures does not appear to be linked to their risk of complications or death, according to **Yale School of Medicine** researchers. Several high profile patient deaths in office-based plastic surgery facilities have led state regulatory agencies and medical boards to develop policies regarding the procedures performed at these locations. **Neil Gordon**, clinical instructor in the **Department of Surgery,** and his co-author, Mark Koch, State University of New York at Stony Brook, evaluated 1,200 patients who had undergone facial plastic surgery. Gordon said no deaths were reported the day after surgery and the rate of complications was similar regardless of the duration of anesthesia.

KILLING A BENIGN TUMOR WITH AN ICE BALL. Manchester surgeon **Laureen Forgione Rubino** plans to start using extreme cold to remove benign breast tumors without surgery. The new procedure uses cryoablation, which engulfs the tumor in an ice ball that freezes and destroys the lump, says Rubino. The body eventually dissolves the ice ball over a period of several months. "I think it's wonderful technology. It's state of the art at this time," says Rubino, a general surgeon who specializes in minimally invasive procedures. Her office recently received the new tool, called the Visica treatment system.

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LANGERHANS CELLS REGULATE IMMUNE REACTIONS IN THE SKIN. Researchers at **Yale School of Medicine** have demonstrated that Langerhans cells in the skin, which had been thought to alert the immune system to pathogens, instead dampen the skin's reaction to infection and inflammation. This has the potential to significantly alter understanding of the mechanisms underlying many skin disorders such as psoriasis, lupus and skin cancer. Authors **Daniel H. Kaplan,** assistant professor of dermatology and **Mark J. Shlomchik**, professor of laboratory medicine and immunobiology, used a technology called Bacterial Artificial Chromosome transgenics to develop a mouse model that lacks Langerhans cells in the skin from birth. They stimulated the skin of these mice to create hypersensitivity similar to a poison ivy reaction. They expected that mice without Langerhans cells would have less immune response in the skin. "Unexpectedly, instead of a decreased immune response to contact hypersensitivity, we found a reproducible and significant increase," said Kaplan.

NEW EVIDENCE FOR AN OLD THEORY. A recent study challenges mainstream oncology researchers to consider tumor cell hybridization with white blood cells as a major reason that cancer metastasizes or spreads to other parts of the body. "Cancer cells exhibit a remarkable number of traits normally attributed to white blood cells known as macrophages, including the ability to migrate to lymph nodes and distant organs and to form a new blood supply. Our data indicate that they do this by hybridizing with macrophages," said lead author **John Pawelek**, research affiliate in the **Department of Dermatology** at **Yale School of Medicine** and a member of **Yale Cancer Center**. **"**By co-opting the macrophage's ability to move, the hybrid is very different from the original cancer cell. It is able to migrate away from the primary site of tumor formation and take up residence in other areas of the body while it continues to divide."

PROMISING ADVANCES IN MS. Scientists at the **University of Connecticut Health Center (UCHC)** and the **Yale School of Medicine** have collaborated on new research that may eventually improve the diagnosis and treatment of multiple sclerosis (MS), a crippling disease that targets the brain and spinal cord and impacts up to 350,000 Americans. Identifying how seriously MS will damage the body is one of the major goals of researchers. UCUC assistant professor of neuroscience **Cecilia Marta** and neuroscience professor **Steven Pfeiffer** are studying the mechanisms by which antibodies that react with a specific molecule on the surface of myelin-producing cells contribute to the disease. They teamed up with **Nancy Ruddle**, professor of epidemiology and public health at Yale University and an expert in the application of mouse models, to learn more about how these antibodies may cause multiple sclerosis.

PARENTS IN THE OPERATING ROOM. Knowing whether the presence of a parent diminishes or increases a child's anxiety prior to surgery may soon be answered with a new psychometric instrument developed in part at the **Yale School of Medicine.** PCAMPIS (Perioperative Child-Adult Medical Procedure Interaction Scale) is a scale that creates a complex coding of parent-child communications during the period before surgery. The instrument was developed by **Alison Caldwell-Andrews**, associate research scientist in the **Department of Anesthesiology** at Yale School of Medicine. The senior author of the study, **Zeev Kain**, professor of pediatrics, anesthesiology and a member of the **Yale Child Study Center**, said bringing parents into the operating room is not always beneficial to the child or to the parents and may even increase the child's anxiety.

High Technology

NOISE-REDUCING HEADSETS. NASA has awarded $2.5 million to the **Biodynamics Laboratory** at the **University of Connecticut Health Center** to develop technology to dampen extraneous cockpit noise and improve communication between air traffic controllers and aircraft pilots. "Runway incursions" and other surface incidents are a growing threat, said **Donald R. Peterson**, director of the Biodynamics Laboratory. While the number of near mid-air collisions remained constant during the last five years, the number of aircraft taxiing through busy runways and tarmacs based on mistaken information is increasing.

HELPING HAND. **Brian Doyne**, a veteran and casualty of the Iraqi conflict, has an artificial hand that is indistinguishable from his uninjured hand. The hand—an artificial sleeve that fits over a prosthetic—was created by a team from **Alternative Prosthetic Services** in Fairfield. Founded 16 years ago by **Michael Curtin**, the firm is one of about five worldwide that do similar work. Although Doyne has other lower-arm prostheses with greater capacity to grasp or manipulate objects, this hand offers a possibility that for some moments, at least, he will not stand out in a crowd.

DRUG COUNTERFEITERS. In its latest initiative to promote patient safety by combating pharmaceutical counterfeiting, **Pfizer Inc.** has begun to ship its first product containing radio frequency identification (RFID) tags to its customers in the United States. RFID technology is being added to all Viagra® sold in the United States to enable pharmacies and wholesalers to verify the unique electronic product code, or EPC, on Viagra packaging. Pfizer is the first pharmaceutical company to put in place a comprehensive program of this type focused on EPC authentication as a means of deterring counterfeiting.

Transportation

A NEW SUPER STALLION. **Sikorsky Aircraft** is poised to design a next-generation heavy-lift helicopter for the US Marine Corps to replace helicopters now seeing heavy action in Iraq and Afghanistan. The federal defense budget approved by Congress includes $272 million for development of the CH-53X, or "Super Stallion." The design and development phase for the CH-53X, which is scheduled to continue through 2015, could be worth as much as $3 billion to Stratford-based Sikorsky. But the really big money would arrive in the actual production of the new Super Stallions. The Marines expect to buy 156 of the CH-53X helicopters, each with an estimated "fly away" price of $56 million. The defense budget also includes $2 billion for Sikorsky to build 83 Black Hawk-class helicopters. Sikorsky is a unit of Hartford-based **United Technologies Corp**.

NEW COMMUTER CARS ON TRACK. The **Connecticut Department of Transportation (ConnDOT)** and **Metro-North Railroad** plan to buy 342 new railcars remains on track and a contract could be awarded this summer. Connecticut will pay 65%, or an estimated $667 million, of the purchase price, while New York will have to cover the remaining 35% of the $1.02 billion cost. At least three companies have asked for the design specifications, and bids are expected by late spring, according to ConnDOT. Connecticut is finally buying new cars after a record number of the old ones broke down during the winter in 2004.

—Compiled and edited by Robert Vieth

a new report from the National Research Council. Responsibility for developing such technologies should be assigned to the Transportation Security Administration (TSA), which was urged by the report's authors to "keep abreast of ongoing research on chemical/biological detector technologies without starting an in-house research and development program." Instead, the TSA was urged to draw upon the research programs of other agencies. However, in light of the limitations of sensor- and assay-based chemical/biological agent detection technologies, the report urged the TSA to pursue a baseline defensive strategy that does not depend solely on the technological detection of threat agents. Such a strategy would be based on (1) protective and preventative steps and enhanced security; (2) improved visual surveillance of air transportation spaces; (3) establishment of a separate air supply for spaces that have a critical function (e.g., cockpits, flight-control towers, emergency-response centers); and (4) continuous air treatment to neutralize and/or remove agents or contaminants. The report finds that preventing or mitigating the overall impact of chemical/biological attacks may depend less on the development of technologies for the detection of threat agents than on prudent protective measures that can be implemented before such an attack takes place. The committee urged the TSA to explore the feasibility of these options and to help local authorities and facilities develop contingency plans for responding to chemical/biological attacks on the US air transportation system.

[See http://www.nap.edu/catalog/11556.html]

◆ Findings May Help Forecast Earthquake Severity

A new computer simulation indicates that a deep layer of sediment within ocean basins—specifically within subduction zones, which occur when one tectonic plate pushes under another to form a basin—may intensify the severity of earthquakes occurring in those regions. Severe earthquakes often occur at fault lines within such zones. Researchers from the University of Washington and Yale University developed a computer simulation to understand the cause of these high-magnitude earthquakes. The results of the simulation, published in the journal *Geology,* may contribute to the ability to forecast future earthquakes by helping to predict tectonic plate movements within the basins.

The simulation models suggest that sedimentation is the key to predicting earthquake severity. When a tectonic plate plows beneath another, the upper plate typically deforms and allows uninterrupted movement. However, the researchers hypothesize that in basins where sediment is greater than half a mile deep, the sediment reinforces the upper plate, disrupts movement, and leads to a buildup in pressure. When the pressure eventually is released, rapid plate movement can occur, leading to a severe quake.

[See http://www.nationalacademies.org/headlines/20060215.html]

◆ Agent of Chronic Wasting Disease Found in Deer Meat

Scientists have found disease-causing proteins known as prions in the muscle tissue of deer in 11 states and two Canadian provinces. This is the first time prions have been found outside the brain and spinal cord of deer, and the discovery has raised concerns about human consumption of deer meat.

Prions are the abnormal form of particular proteins that naturally occur in mammals. When these proteins transform into prions, they cause rare, fatal brain diseases such as chronic wasting disease in deer and elk, mad cow disease in cattle, scrapie in sheep, and Creutzfeldt-Jakob disease in humans. Deer and elk appear to transmit chronic wasting disease through excretions like saliva, although the details remain unclear. There is no evidence to date on whether prions in deer cause disease in humans or other mammals.

The Institute of Medicine report, *Advancing Prion Science: Guidance for the National Prion Research Program,* recommends that the National Prion Research Program fund the development of a national surveillance system for chronic wasting disease and expand research into the natural history, prevalence, distribution, exposure and transmission characteristics, host susceptibly, and host range of animal prion diseases, especially chronic wasting disease.

[See http://www.nationalacademies.org/headlines/20060206.html]

◆ Ocean Microbes Sequenced

Scientists have sequenced the genomes of planktonic microbes living in a particular area of the Pacific Ocean. Such microbes play a critical role in the carbon, nitrogen, oxygen, and sulfur cycles that support life on Earth. By examining their genetic makeup, researchers can better understand the processes that occur at different depths of the ocean.

The team of researchers sequenced 64 million base pairs of organisms they collected from depths between 40 feet and more than 13,000 feet deep. Scientists determined the chemical changes these microbes cause at varying ocean depths by studying their genetic information, which has been unavailable until now. They found that the organisms formed distinct microbial ecosystems serving very different functions depending on where they were collected, how much light was there, and the presence of different chemicals at each depth. The report*, Exploration of the Seas: Voyage into the Unknown,* recommends an international and interdisciplinary initiative to further explore the ocean, including genomic research of ocean microbes.

[See http://www.nap.edu/catalog/10844.html]

CTCSE (from page 1)

Exhibit Prototypes
For the first time, the Science Center will be offering a sneak preview of our exhibit prototypes at several science events throughout the state. Stop by the CTCSE booth at:

FIRST Robotics Regional Competition
March 9–11 at the Connecticut Convention Center
Connecticut Science Fair
March 15–17 at Quinnipiac University
CPTV Science Expo
April 27–30 at the Expo Center
Connecticut Invention Convention
April 29 at UConn's Gampel Pavilion in Storrs

LISRC (continued from page 2)

Monahan, a member of the CASE study committee. Monahan is the recently retired director of the Connecticut Sea Grant College Program and professor emeritus of Marine Sciences at UConn. "It is a great resource for all involved in research in Long Island Sound. It offers reports as well as a panoply of charts and other objective information that takes a while to accumulate.

"The LISRC does a Herculean job with the resources it has to work with," he said. "They do a tremendous job of hanging onto reports and other information that would disappear into the ether. When there is a critical need for quick information, like with cable sitings, for example, there isn't time to bring someone on board to begin to collect the appropriate information. It is particularly in times like these that the LISRC is more than worth the investment."

Commissioner McCarthy agrees. "The LISRC continues to grow as new data is collected and will benefit all of us who want to learn more about Long Island Sound and the aquatic and wildlife that are part of what makes the Sound so special," she said.

On a shoestring budget**,** the resource center continues the big job of developing its website. "We are constructing modules and we have a variety of search options to make the site easy to use," Lewis said. "The Geology module is fairly complete and we have another module in place that lists all of the Long Island Sound studies funded by the DEP."

Each module has a top-level overview, but also provides different levels of information all the way down to the original technical data from studies. "This same website can be used by journalists, nonprofit agencies, lawyers, legislators, teachers, students, boaters and anyone else interested in the Sound," Lewis said.

Lewis notes that the website is a long-term project. It will take many years to input the existing materials and, ideally, will be continuously monitored and updated forever. "We are trying to leverage our resources by finding other people and organizations to help develop additional modules. There are many grants out there that require outreach and we are hoping to work with researchers to make modules for the website to fulfill their outreach obligation. It's a win for the researcher and for LISRC. And, the researcher actually gets the additional benefit that their results will be available to people in an easy-to-use format, making it more likely that their work will be referenced."

Commissioner McCarthy supports this idea. "Through continued partnerships, the LISRC will continue to grow and serve as a link to other valuable resources for current information about Long Island Sound," she said.

Future modules could focus on invasive species and benthic habitats (organisms living on and in the sea bottom). "Really the possibilities are as deep as the ocean," Lewis said.—***Karen Cohen (Karen Cohen is a freelance writer and owns The Write Stuff, LLC.)***

An expanded version of this article can be found on the Academy's website at http://www.ctcase.org/bulletin/21_1/lisrc.html

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