

T² INSIDE



NASA, L-3
Collaborate
page 2



ARS
Biodiesel
page 3



Army Combats
Bioterrorism
page 6

T² EVENTS

2007 AUTM Annual Meeting
San Francisco, Calif.
March 8-10, 2007

•
FLC National Meeting
Making the Connection
Arlington, Texas
May 15-18, 2007

•
World's Best
Technologies Showcase
Arlington, Texas
May 15-16, 2007

•
IBF Venture Capital
Investing Conference
San Francisco, Calif.
June 6-8, 2007

•
National Manufacturing Week
Chicago, Ill.
September 25-27, 2007

T² FACT

In 2000, adventurer Doug Stoup became the first American to ski from the Antarctic coast to the South Pole. But there was something wrong with the trip: it was too darn slow. So, working with bike designer and aerospace engineer Dan Hanebrink, Stoup came up with an alternative to skis: a bike that he could ride in Antarctica. The ice bike has no plastic parts (which would freeze and shatter in the extreme conditions), and the superfat, low-pressure tires provide traction in situations that would make a mountain bike weep.

- Mary Bellis, About.com

FLC NEWS LINK

February 2007

DC ON T²

by Gary Jones, FLC Wash., DC Representative



Greetings from DC. Federal agencies often make use of the outstanding expertise available from outside government—from industry, academia, non-profits, others—to provide policy guidance on a variety of issues.

One mechanism for accessing this talent is to establish a federal advisory committee to provide input and recommendations for policy makers. Federal advisory committees are generally small groups of experts reflecting a depth and breadth of experience on a particular subject, brought together by an agency for a specific duration to focus their attention and output on a unique topic.

According to the government's federal advisory committee website, "an average of 1,000 advisory committees government-wide" are operating at any time.

The Department of Commerce recently (summer/fall 2006) established two new advisory committees to study topics of general interest to the science and technology (S&T) and technology transfer communities (the Deemed Exports Advisory Committee, DOC 29122; and the Measuring Innovation in the 21st Century Economy Advisory Committee,

See DC on T², page 5



A large proportion of the SIDS cases in the study by Drs. Paterson, Kinney and their coworkers were correlated with known SIDS risk factors: 48 percent were found sleeping on their stomachs, 29 percent were found face down, and 23 percent were sharing a bed, at the time of death.

SIDS INFANTS SHOW ABNORMALITIES IN BRAIN AREA CONTROLLING BREATHING, HEART RATE

Infants who die of Sudden Infant Death Syndrome (SIDS) have abnormalities in the brainstem, a part of the brain that helps control heart rate, breathing, blood pressure, temperature and arousal, report researchers funded by the National Institutes of Health. The finding is the strongest evidence to date suggesting that innate differences in a specific part of the brain may place some infants

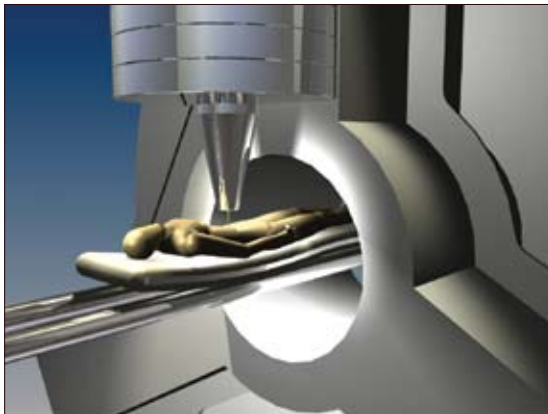
at increased risk for SIDS.

The abnormalities appeared to affect the brainstem's ability to use and recycle serotonin, a brain chemical that also is used in a number of other brain areas and plays a role in communications between brain cells. Serotonin is most well known for its role in regulating mood, but it also plays a role in regulating vital functions like breathing and blood pressure.

The study, which appears in the November 1 *Journal of the American Medical Association*, was conducted by researchers in the laboratory of Hannah Kinney, M.D., at Children's Hospital Boston and Harvard Medical School, as well as other institutions.

"This finding lends credence to the view that SIDS risk may greatly in-

See SIDS, page 4



Animation of an isocentric proton-beam cancer treatment system.

LLNL, UC DAVIS FIGHT CANCER

by Charlie Osolin

Next-generation radiation therapy at a cancer clinic near you. That's the goal of an ambitious partnership between Lawrence Livermore National Laboratory (LLNL) and the UC Davis Cancer Center – one of more than two dozen joint research projects involving the two institutions that promise breakthroughs in the detection, treatment and prevention of cancer.

LLNL and UC Davis have committed more than \$3 million to develop a com-

pact, relatively inexpensive proton-beam therapy system that can effectively zap tumors with powerful, focused radiation, while causing minimum collateral damage to nearby healthy tissue and organs.

An outgrowth of LLNL's weapons research, the technology is being developed by an LLNL team led by George Caporaso of LLNL's Physics and Advanced Technologies Directorate. LLNL is currently seeking commercial partners to

LLNL, UC Davis, page 4

FED LABS FLASH | TECHNOLOGY TRANSFER NOTES

Y-12 HONORS 22 INVENTION DISCLOSURES

BWXT Y-12 honored 22 inventors for their 2006 invention disclosures, patents and copyrights at the third annual BWXT Y-12 Technology Transfer Awards.

BWXT Y-12 operates the Y-12 National Security Complex for the National Nuclear Security Administration.

One invention allows panels that can be stacked or used as floor or wall panels to become a modular medical system containing a stretcher with hard floor, oxygen and vacuum piping, electrical connections, and LED lighting.

Another invention removes urethane adhesives or coatings in a matter of hours instead of the days it takes the current solvent.

Another is a new process to minimize metal oxidation during various metal-working operations.

Ceremony highlights included a post-humorous award to Larry Dickens, Y-12's

commercialization manager, to recognize his dedication, enthusiasm, vision and leadership in technology transfer. The award was accepted by his wife, Dianne.

The Acorn Award, given to recognize inventors for their first issued patent, was presented this year to Lee Bzorgi for the Rapid Prototype Shelter System, which has been licensed to Mega-Tech Services, a Virginia-based company that will manufacture and sell the shelters.

A new award this year was presented to recognize authors of registered copyrights.

A sterling silver scroll and quill pin was presented to Marty Beckerman, Frances Butler and Frank Hammitt for the Virus Propagation Analysis Tool, software that helps predict which viruses might attack a computer network and how the system can defend against them.

NASA AWARDS SOFIA DEVELOPMENT TO L-3



NASA's newly painted Stratospheric Observatory for Infrared Astronomy 747SP.

NASA's Dryden Flight Research Center has awarded a contract to L-3 Communications Integrated Systems, L.P., of Waco, Texas, for continued developmental and engineering work on the Stratospheric Observatory for Infrared Astronomy (SOFIA).

The cost-plus-award-fee contract could be worth up to \$26 million over a five-year period if all options are exercised. The contract takes effect Feb. 9, 2007, with a 23-month base period extending

through Dec. 31, 2008. Three one-year option periods could extend the agreement from Jan. 1, 2009 through Dec. 31, 2011.

The tasks that remain for completion of the SOFIA airborne observatory platform involve two major parts: the airborne system and the cavity door drive system. L-3 Communications will be responsible for completing development and testing of the airborne system, including modification, fabrication, installation, integration, and verification of various systems to meet SOFIA mission requirements. In addition, L-3 is also tasked with providing engineering support and technical representation to NASA, as necessary, to support the transition from development to operations.

U.S. FOREST SERVICE, NORTHERN RESEARCH STATION CREATED

In fiscal year 2006, the U.S. Forest Service launched its new Northern Research Station (NRS), consolidating the scientific and administrative work formerly conducted by the North Central and Northeastern Research Stations. The NRS, headquartered in Newtown Square, Pennsylvania, serves a 20-state region stretching from Maine to West Virginia to Missouri to Minnesota and offers an added emphasis on science and science delivery and a stronger network of cooperators to better leverage Forest Service scientific capacity. The NRS is now the largest organization in the Research and Development mission area.

The consolidation saved \$1.275 million this fiscal year alone and has redirected those savings to on-the-ground science that promotes leading-edge discovery and improves the linkages of environmental health with community well-being. The rapid, virtually seamless establishment of

the NRS has been deemed "an unprecedented success." Benefits will include an integrated, cohesive landscape-scale research program and fewer work redundancies, resulting in a better utilized workforce.

Existing offices remain in operation, so movement of current employees will be minimal.

"We are thrilled," stated Deputy Chief for Research Ann Bartuska. "The creation of a Northern Research Station will strengthen the Forest Service's research and technology transfer program, improve the agency's overall organizational efficiency, and improve the Station's capacity as a partner in research collaboration and regional partnerships. As with other Forest Service research stations, the information and technology produced through basic and applied science programs at the NRS are available to the public for its benefit and use."

FY2008 BUDGET FOR TECH

President George W. Bush's fiscal year (FY) 2008 budget proposal for the Commerce Department's Technology Administration (TA) is \$642.3 million, of which \$640.7 million is earmarked for the Department's National Institute of Standards and Technology (NIST).

The budget request for NIST includes \$594.4 million for core research and facilities programs, an 11-percent increase over the President's FY 2007 request and a 21-percent increase over the proposed FY 2007 continuing resolution recently passed by the House and sent to the Senate.

The President's request will implement key components of the American Competitiveness Initiative (ACI), which is designed to enhance our nation's capacity to innovate.

A news release and budget table are available at: www.nist.gov/public_affairs/budget.htm.

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TECH WATCH | LABORATORY TECHS READY FOR TRANSFER

BIOMARKERS FOR CARDIOVASCULAR DISEASE

The National Heart, Lung, and Blood Institute (NHLBI) seeks partners in a biomarker consortium to promote research on novel serum/plasma/urine biomarkers of cardiovascular disease (CVD) and related risk factors, including atherosclerosis, obesity, insulin resistance, hypertension, and metabolic syndrome. An immediate consequence of this project will be the development of new diagnostic tests to identify individuals at high risk for CVD and its risk factors at a time when intervention is most feasible. A downstream result of the identification of novel biomarkers of CVD (and its risk factors) will be the discovery of disease-promoting pathways, which may serve as new therapeutic targets for treating and preventing the nation's leading cause of death.

Despite steady declines in CVD mortality, it remains the leading cause of death in the developed world. The NHLBI's Framingham Heart Study (FHS) has been instrumental in the identification and elucidation of key modifiable CVD risk factors, which in turn have facilitated modern approaches to its prevention and treatment.

Because of its prospective study design, the NHLBI's FHS is ideally positioned to enable identification of novel risk factors for CVD.

More info: Lili Portilla, PortillL@nhlbi.nih.gov

SECURE NETWORK TAP APPARATUS

Michael Bennett and Gregory Bell of Lawrence Berkeley National Laboratory (LBNL) have invented an inexpensive apparatus that enables secure and auditable tapping of a computer network. The self-contained LBNL secure network tap will enable corporations, universities, research institutes, and government agencies to maintain optimal security while meeting increasingly strict privacy requirements.

Network taps make it possible to monitor the data on a particular network medium, such as optical fiber or copper cable. In conventional network taps, the monitoring function is always activated. As a result, conventional taps may permit unauthorized parties to access sensitive data, including personal information or private phone conversations carried over the increasingly popular Voice-over-Internet Protocol (VoIP).

The LBNL invention also includes encrypted log files, optional means for encrypting and storing tapped traffic, and methods for protecting against local tampering.

More info: 510-486-6467, TTD@lbl.gov

ARS DEVELOPS NEW METHOD TO AID IN PRODUCING BIODIESEL FUEL

Agricultural Research Service (ARS) researchers have developed a time-saving method that could be used to produce biodiesel fuel. This method eliminates oil seed extraction, which is typically required to produce biodiesel. Companies often produce biodiesel through a process requiring hexane to extract oil from oil seeds. This method requires an extra step to produce fuel—adding to production costs. The Environmental Protection Agency regulates and monitors hexane emissions and, as a consequence, there is industry interest in reducing hexane use and loss. ARS's invention uses alcohol and alkali catalysts added directly to flaked oil seeds such as soy, coconut, corn, cotton, flax, rapeseed (canola), palm, safflower, or animal fats and oils to produce biodiesel. No prior oil purification or isolation is involved in ARS's method, potentially reducing production costs.

Another advantage of using ARS's biodiesel production method is that batch processing can be used, but continuous processing can also be readily envisioned. Biodiesel fuel is currently priced higher than petroleum-derived diesel fuel (about \$2.20/gallon vs. \$1.60/gallon). Reducing biodiesel



production costs would give consumers a cheaper fuel alternative at the pump and add value to U.S. crops. U.S. sales of biodiesel jumped from 0.5 to 20 million gallons from 2000 to 2001—with a market value of at least \$30 million.

Companies that conduct oil extraction for biodiesel production, or that conduct biodiesel production themselves will find this invention useful. Manufacturing and processing equipment companies could also use this invention.

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Frank Koos, at 856-667-7727*

SIDS, from page 1

crease when an underlying predisposition combines with an environmental risk—such as sleeping face down—at a developmentally sensitive time in early life,” said Duane Alexander, M.D., Director of the NIH’s National Institute of Child Health and Human Development (NICHD).

SIDS is the sudden and unexpected death of an infant under 1 year of age, which cannot be explained after a complete autopsy, an investigation of the scene and circumstances of the death, and a review of the medical history of the infant and his or her family. Typically, the infant is found dead after having been put to sleep and shows no signs of having suffered.

In previous studies, researchers have hypothesized that abnormalities in the brainstem may make an infant susceptible to situations in which they rebreathe their own exhaled breath, depriving them of oxygen. This hypothesis holds that certain infants may not be able to detect high carbon dioxide or low oxygen levels during sleep and do not wake up.

To conduct the current study, researchers examined tissue from the brainstems of 31 infants who died of SIDS and 10 who died of other causes.

The lower brainstem helps control such basic functions as breathing, heart rate, blood pressure, body temperature, and arousal. The researchers found that brainstems from SIDS infants contained more neurons (brain or nerve cells) that manufacture and use serotonin than did the brainstems of the control infants, explained the study’s first author, David Paterson, Ph.D., a researcher at Children’s Hospital in Boston.

Although the brainstem tissue from the SIDS infants contained more serotonin-using neurons, these appeared to contain fewer receptors for serotonin than the brainstems of control infants. In their study, the researchers tested the infants’ brainstem tissue for a serotonin receptor known as subtype 1A.

Tissue from both the SIDS and the control infants contained roughly equal amounts of a key brain protein, serotonin transporter protein.

This protein recycles serotonin, collecting the neurotransmitter from the sur-

rounding spaces outside the neuron and transporting it back into the neuron so it can be used again.

Dr. Paterson explained, however, that because the SIDS infants had proportionately more serotonin-using neurons than the control infants, they would also be expected to have more serotonin transporter protein. So even though they had equal amounts of serotonin transporter protein, the levels were nevertheless reduced—relative to the increased number of serotonin-using neurons—and, for this reason, unlikely to meet the needs of these cells.


“Our hypothesis right now is that we’re seeing a compensation mechanism,” Dr. Paterson said. “If you have more serotonin neurons, it may be because you have less serotonin and more neurons are recruited to produce and use serotonin to correct this deficiency.”

“These findings provide evidence that SIDS is not a mystery but a disorder that we can investigate with scientific methods and, some day may be able to identify and treat,” said Dr. Hannah Kinney, the senior author of the paper.

A large body of research has shown that placing an infant to sleep on his or her stomach greatly increases the risk of SIDS. The NICHD-sponsored “Back to Sleep” campaign urges parents and caregivers to place infants to sleep on their backs to reduce SIDS risk. The campaign has reduced the number of SIDS deaths by about half since it began in 1994.

The campaign also cautions against other practices that increase the risk of SIDS, such as soft bedding, smoking during pregnancy, and smoking around a baby after birth.

Information and free materials on ways parents and caregivers can reduce the risk of SIDS are available on the Back to Sleep Campaign website at www.nichd.nih.gov.



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LLNL, UC Davis, from page 1

help construct a compact proton-beam therapy system that could be clinically tested at the UC Davis Cancer Center.

Proton-beam therapy, available in hospitals only since 1990, is expected to become the “next big thing” in radiation treatment for many localized cancers, including those of the head and neck, eye and orbit, prostate, abdomen and lung.

Traditional x-ray and gamma ray therapy can damage the tissue the radiation passes through on the way to a target, limiting the amount that can be delivered to a deep-seated tumor. Protons, however, because of their positive charge and high mass, retain most of their energy until they reach the cancer site. Using sophisticated software algorithms, radiation oncologists can control the penetration depth and shape of the protons in three dimensions, fitting the radiation dose precisely to the shape of the tumor. This allows them to focus more potent doses on the cancer cells without endangering surrounding healthy cells.

Conventional proton therapy systems, however, are large – occupying as much space as a basketball court – and cost as much as \$150 to \$200 million to build, Caporaso said. “They have to be surrounded by concrete walls to protect against the radiation they generate,” he added.

Because of their size and cost, there are only a few proton therapy centers in the

United States and only about 20 in the world. Several more are under construction or being planned, but availability of the treatment will remain limited for some time.

On the other hand, if the huge accelerators could be made compact enough to fit in a single room – a significant technical challenge – and built for less than one-tenth the cost, the therapy could be offered in radiation oncology clinics across the country.

That’s where the LLNL-UC Davis Cancer Center partnership comes in.

One of the first projects the two institutions launched after they agreed to collaborate in 2000, the compact proton accelerator would use an LLNL-developed technology called the dielectric wall accelerator (DWA), which enables protons to be accelerated to the required energies – as much as 100 million electron volts per meter – without using bending magnets or other techniques that take up space and generate unwanted radiation.

The dielectric wall uses a high-voltage-gradient insulator to handle high electric-field stresses, enabling a proton therapy accelerator to successfully operate without being short-circuited.

Today’s hospital proton radiotherapy machines generate from 70 million volts for eye tumors to 250 million volts for

See LLNL, UC Davis, page 8



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DC on T², from page 1

DOC 29147). Both committees have now been staffed and are just beginning their activities. Although there is no output to date, given their topics and potential importance to the FLC community, I thought it instructive to highlight their charter and path forward.

The Deemed Exports Advisory Committee (DEAC) was established to “develop recommendations for possible improvements to policies on the transfer of technology or source code subject to the Export Administration Regulations to persons within the United States.” The Department of Commerce’s Bureau of Industry and Security defines a deemed export as follows: “An export of technology or source code (except encryption source code) is ‘deemed’ to take place when it is released to a foreign national within the United States...[T]echnology is ‘released’ for export when it is available to foreign nationals for visual inspection (such as reading technical specifications, plans, blueprints, etc.); when technology is exchanged orally; or when technology is made available by practice or application under the guidance of persons with knowledge of the technology.”

The announcement to convene the panel came on the heels of the Department of Commerce’s decision to withdraw a proposed rulemaking on deemed exports in May 2006. That decision was based in part on public comments suggesting the then-proposed rule may have been too restrictive for foreign persons working on S&T issues in the U.S.—potentially sending the signal that the U.S. is not a welcoming destination for foreign nationals working in high technology areas. Given the recognized importance of foreign nationals to U.S.

technological innovation and the concerns for national security associated with high tech initiatives, Commerce Secretary Gutierrez established this committee to “address evolving export policies to strike a balance between protecting national security and ensuring that the United States continues to build upon its position as a leading innovator of technology.”

Secretary Gutierrez appointed 12 industry and academic leaders to the DEAC in September 2006, and they held their first meeting in October 2006—with over 130 members of the public and press in attendance. The challenge to the committee was summed up nicely at the kickoff meeting by an attendee from the Office of Science and Technology Policy, who highlighted that foreign nationals make “profound” contributions to U.S. national security, particularly in the S&T environment. Despite this, she added, the threats are real and the difficult issue is determining who the bad actors are while not “stifling research by choking off the influx of the best and the brightest from around the world.”

The DEAC is scheduled to convene its second meeting on January 22, 2007 (just after this column went to press) and is set to discuss current export control policy, tech transfer issues, competitiveness issues, concerns from the academic and government research communities, and other comments that arise.

The Measuring Innovation in the 21st Century Econ-

omy Advisory Committee (MIAC) was established to assist the Department of Commerce by “advising the Secretary on new or improved measures of innovation in the economy that will help explain how innovation occurs in different sectors of the economy, how it is diffused across the economy (emphasis added), and how it impacts economic growth and productivity.”

While possibly not affecting the FLC community as directly as the DEAC, the MIAC will address an issue of great importance to the U.S. S&T establishment—focusing on the metrics for measuring innovation and its economic impacts—and by extension potentially informing the topic of technology transfer impacts (in the form of technology diffusion). This remains to be seen. Fifteen panel members were selected in early December 2006, and the committee holds its first meeting February 22, 2007.

Both advisory committees are in the early, primarily information gathering, stages—soliciting input from a variety of sources. Eventually, however, output from these advisory committees may influence public policy in several areas of concern to the tech transfer community (i.e., deemed export controls and technology diffusion metrics). We’ll keep an eye on both efforts and report back as appropriate.

You can access advisory committee profiles at the federal FACA database website (<http://fido.gov/facadata-base/default.asp>).

Also, see the DEAC charter (<http://tac.bis.doc.gov/deacchart.htm>), DEAC press release (http://bxa.doc.gov/news/2006/AdvisorCommittee09_12_06.htm), and first DEAC meeting minutes (<http://tac.bis.doc.gov/2006/101206deacmin.htm>).

Gary can be reached at gkjones@fldc.cnchost.com.



USAMRIID SCIENTISTS DEVELOP COMMERCIAL SYSTEM TO COMBAT BIOTERRORISM



Dr. Justin Hartings, above, and Dr. Chad Roy created the Automated Inhalation Toxicology Exposure System, which greatly benefits the civilian and military community by letting them prepare against bioterrorist threats.

by Sara Baragona

Drs. Justin Hartings and Chad Roy, formerly of the U.S. Army Institute of Infectious Diseases (USAMRIID) at Fort Detrick, recognized the need for a comprehensive aerosol control platform suitable for a variety of agents, animal species, and aerosol forms. Together they created the Automated Inhalation Toxicology Exposure System, which greatly benefits the civilian and military communities by allowing us to better prepare against bioterrorist threats.

The patented technology, which was later named the AeroMP upon commercialization, allows scientists to challenge animals by the aerosol method. The most likely route of exposure in a bioterror event is through an aerosol. Therefore, inducing experimental infection by inhalation is a critical component of developing medical countermeasures for biological threats. During testing, animals are often injected with an agent to induce disease.

This method of infection produces an illness that may or may not progress like an aerosol acquired infection. This aerosol technology creates a well-controlled aerosol in a small chamber so that animals inhale particles in a fashion similar to a real bioterror event. Creating this environment means there is a greater chance for accuracy in replicating what may happen in a real-world scenario when humans are exposed to harmful pathogens.

The product itself is a single hardware and software platform that controls and monitors all aspects of an inhalation exposure, including aerosol generation, characterization, sampling, airflow, system balancing, environmental parameters, animal respiration, and dose calculation.

There are several benefits to transferring this technology. Easy to use, AeroMP is the only automated inhalation toxicology exposure system featuring full computer control over all pertinent aspects of

aerosol exposures.

AeroMP also offers standardization—all aerosol-related parameters are under the control of a single software platform, enabling all data to be in the same format and located in the same file, and allowing for fast and efficient electronic data submission to the Food and Drug Administration.

Following the 2001 anthrax mail attacks, the need for this technology to become commercially available was apparent. Hartings and Roy formed Biaera Technologies, LLC in Frederick, Md., and licensed the technology from the U.S. Army Medical

Research and Materiel Command. In addition to receiving grants, they also applied for and received tenancy at the Frederick Innovative Technology Center Inc. (FITCI), Frederick County's first business incubator. In 2005 they began distribution to nonfederal entities, placing four AeroMPs in non-DOD laboratories. Currently, the companies that have purchased AeroMPs are working

with influenza, poxvirus, tularemia, and anthrax. The systems purchased are performing testing on rodents, rabbits, ferrets, and primates. The original systems at USAMRIID are being used for every agent at the institute.

In the summer of 2006, the company was reorganized. Now under the sole ownership of Dr. Hartings, Biaera continues to market aggressively to biodefense- and nonbiodefense-related laboratories. Recently, the Center for Disease Control ordered two more systems (in addition to the one currently in use) to be used for research on avian influenza. George Mason University has also ordered an AeroMP for its biocontainment laboratory, funded by a program in conjunction with the National Institutes of Health and the National Institute of Allergy and Infectious Disease.



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CLINICAL MANUFACTURING

Available for licensing from the National Institutes of Health is a method for large-scale production, recovery, and purification for plasmid DNA manufacturing meeting human clinical trial requirements. The overall recovery of this process is greater than 400 mg of formulated final product per kilogram (wet weight) of *E. coli* cell paste. This technology has potential uses in drug manufacturing and clinical studies. In the United States alone, more than 40,000 clinical trials were conducted.

More info: Dr. John Hewes, 301-496-0477

IDENTIFYING VIRUSES, LIFE FORMS

The Naval Health Research Center (NHRC) San Diego is one of the first diagnostic labs to utilize the TIGER (triangulation identification for genetic evaluation of risks) system.

TIGER (recently renamed the T-5000), developed by IBIS Biosciences, is designed as a universal diagnostic device, theoretically capable of identifying all life forms and viruses using DNA/RNA sequence information.

NHRC is using this device to identify pathogenic bacteria and viruses found in throat swab samples from military personnel with symptoms of upper respiratory disease.

NHRC has a collaborative research agreement with IBIS to study the uses of TIGER relevant to avian influenza identification and coronavirus detection, using the TIGER machine currently in service in the NHRC Respiratory Disease Advanced Diagnostics facility.

More info: Dr. Van Orden, 619-553-9289

NASA FIBER OPTICS

NASA Goddard Space Flight Center (GSFC) invites companies to license new technologies that can improve the quality and reliability of fiber-optic assemblies. These technologies cover three areas:

- Chemical stripping of optical fibers: The stripping fixture holds a cable end for immersion in a chemical bath, allowing a precise length of fiber to be stripped, preparing it for assembly.
- Reduced bubbles in adhesives: The bubble remover holds and seals a liquid-adhesive-filled connector for use in a centrifuge. Spinning forces drive out problem-causing bubbles.

- Optical fiber connector polishing: This device controls connector polish geometry to promote consistent mechanical interfaces, performance and reliability.

NASA invites companies to consider licensing these manufacturing device technologies for fiber-optic assemblies.

More info: fiber-optic-assemblies@gsfc.nasa.gov.

GEOSPATIAL DATA

The ike™ 304, a ruggedized, hand-held device for collecting geospatial data with digital instrumentation, is a product of a CRADA between the Construction Engineering Research Laboratory and Surveylab, Ltd. The product seamlessly integrates and synchronizes a global positioning system (GPS), laser distance meter, digital camera, compass, inclinometer, geographical information system (GIS), and personal digital assistant (PDA) computer. These developments allow users to capture an array of geospatial data, images, and text.

More info: John T. Britt, 217-373-7288, john.t.britt@erdc.usace.army.mil

CRUSH AND SPRAY

Adam Wiese and co-workers from the U.S. Forest Service's Northern Research Station in Rhinelander, Wisc., have created a simple device that first crushes weeds to the ground and then sprays them with herbicide through high-pressure nozzles. This machine increases weed control by 15% compared to traditional weed control methods, even in overgrown fields. The "crush-and-spray" device promises to increase the efficiency of field preparation for controlling weeds when tree and shrub seedlings are planted. By crushing weeds with an adjustable, heavy roller and placing the spray nozzle close to the ground, the new applicator achieves precise weed control, thus improving growth.

The "crush-and-spray" machine can also be used for weed control in powerline rights-of-way, wildlife food plots, vineyards, crop rows, tree farms, seed orchards, and invasive plant removal projects.

More info: Deb Dietzman, 651-649-5031

INL TORCH

Idaho National Laboratory (INL) has designed a GTAW torch that is solely air-cooled and capable of welding at 300 amps continuous duty.

The torch features a tungsten stick that can be remotely adjusted from the gas cup while maintaining the tip of the tungsten stationary with respect to the torch body. It also is possible to remotely change out the tungsten. The fixed tungsten allows the torch to be operated with a camera system for any remote welding without the requirement of continually changing the view of the cameras, thereby allowing for continuous welding cycles.

More info: Ida Shum, 208-526-0744

HOME HEATING

James Lutz of Lawrence Berkeley National Laboratory (LBNL) has invented a gas water heater that is up to 30 percent more efficient than conventional gas water heaters.

The design replaces traditional central tube heating with a side-arm heat exchanger, thereby eliminating standby energy losses that occur when heat is transferred from the hot water to the cooler central dip tube when not actively being heated.

Applications include residential gas water heating.

More info: 510-486-6467, TTD@lbl.gov

LLNL'S IMAGER TECHNOLOGY

Lawrence Livermore National Laboratory (LLNL) is offering a partnership opportunity to further develop and deploy its large area imager (LAI) technology.

This technology addresses applications associated with the Department of Homeland Security (DHS), Department of Defense, and Department of Energy.

One of the major challenges faced by DHS is the remote detection of radioactive materials that could be used in a nuclear or radiological weapon of mass destruction.

LLNL is seeking industrial partners with a demonstrated ability to bring such inventions to the market.

All licensing activities are conducted under policies relating to the strict nondisclosure of company-proprietary information.

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LLNL, UC Davis, from page 4

tumors deep in the body. A dielectric wall only 2.5 meters long could withstand the 250 million volts required to treat deep-seated tumors. The LLNL researchers have successfully tested a small (3-millimeter-long) dielectric wall sample that withstood an electric field of 100 million volts per meter.

Caporaso said the idea of using the DWA technology for cancer treatment “really started moving when Dennis Matthews (director of LLNL’s Center for Biotechnology, Biophysical Sciences, and Bioengineering) approached me with the vision that if you could make (a proton accelerator) really, really small, it might be able to go into existing x-ray therapy clinics in place of conventional x-ray machines.

“We had been developing the accelerator for a long time for radiography and other defense applications, but Dennis helped us put together an LDRD (Laboratory-Directed Research and Development) proposal that was approved for funding,” Ca-

poraso said. He noted that Ralph DeVere White, director of the UC Davis Cancer Center, “has been a rock-solid, enthusiastic supporter” of the project. “His support has been key to our progress so far.”

The project’s initial funding, which ended last September, enabled the team to push the system’s components to 50 percent of their performance targets. Additional funds from LLNL and UC Davis will “allow us to work toward a subscale (20-centimeter-long) prototype – a kind of a proof of principle device,” Caporaso said. “We think we can build enough of the accelerator to demonstrate the operating principles and characteristics within the next 18 months.

“There are a lot of technical challenges remaining,” he said. “We’ll see if we can push the components to 100 percent over the next year, but we can’t test the remaining issues until we build the prototype.

“So it remains to be seen if we can pull it off,” Caporaso said. “There are no guarantees, but progress has been good so far and we’re optimistic.”



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FLC		January 2007						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Notes	
	1	2	3	4	5	6		
7	8	9	10	11	12	13		
14	15	16	17	18	19	20		
21	22	23	24	25	26	27		
28	29	30	31					

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