

# NEWSLINK

FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER

APRIL/MAY 2002 VOL. 18, NO. 4

## Now Hear This... Help for Those with Hearing Loss

There is good news for the more than 39 million individuals who are at risk or suffer from hearing loss caused by noise or chemical exposure. A new technology—a family of unique antioxidant compounds—proved promising in the prevention and restoration of hearing loss in animal models exposed to diverse noises and cancer therapies.

In March, the **American BioHealth Group, LLC** signed an exclusive license with the **U.S. Navy** for this novel technology. Developed by the **Naval Medical Center – San Diego** and researchers at the **State University of New York at Buffalo**, this pharmaceutical compound is anticipated to aid millions of Americans at risk for sensorineural hearing loss. The **Montana State University (MSU) TechLink Center** assisted with the technology transfer.

The **Department of Defense** is especially interested in the hearing restoration/treatment aspect since it annually spends \$300 million on hearing loss compensation treatment for personnel. The **Air Force Research Laboratory** reports that 22,000 new hearing loss claims are filed annually with the Navy, Marine Corps, and Air Force. In addition, the compound offers a very large civilian market application. According to **The Centers for Disease Control**, reduced hearing

capacity costs the nation billions of dollars every year.

The agreement will result in needed pharmaceutical products for millions of Americans who have no pharmaceutical treatment options for the prevention or restoration of sensorineural hearing loss.

The chairman and CEO of American BioHealth, David Karlman, said, “We are honored to be the organization chosen to work with the Naval Medical Research Center in San Diego and the **Office of Naval Research** to bring this exciting research to commercialization.”

Under the licensing agreement, American BioHealth will conduct clinical research and product development, and have an exclusive license to market products for the protection and restoration of hearing loss. The compounds that will be developed and commercialized by American BioHealth have been approved by the FDA and have acceptable and proven safety profiles.

**For more info:** David Karlman, American BioHealth Group, LLC, 858-675-3600, [Industrial\\_Relations@ABGPharma.com](mailto:Industrial_Relations@ABGPharma.com)

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[http://techlink.msu.montana.edu/no\\_flash.html](http://techlink.msu.montana.edu/no_flash.html) **NL**



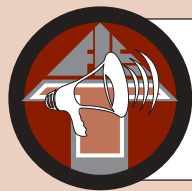
## MSU TechLink Advances Tech Transfer

Established in 1996 at Montana State University in Bozeman, the TechLink Center helps northwest companies access, develop and commercialize technology from federal laboratories. Funded by the **Department of Defense, NASA**, and other federal agencies, TechLink links companies with federal laboratories for joint research and technology transfer. Its main goal is “to contribute to the success of both technology-based companies and key resource-based industries in the state and region.”

TechLink provides specialized assistance in the industry areas of advanced materials, aerospace, agricultural technologies, biomedicine and biotechnology, electronics, environmental technologies and software, and photonics and sensors.

Through its understanding of the technology needs and strengths of industry and federal labs, the center develops productive partnerships for technology transfer, development, and commercialization. It helps companies transfer innovative technology from private industry to federal labs.

TechLink offers TechLaunch (client assistance in commercialization), TechAid (special grants to companies from DOD, NASA), and DOD SBIR/STTR Assistance programs (proposal development for clients in rural NW states). **NL**



## FED LABS FLASH

*Technology transfer news, notes, and events  
within the federal lab community*

### **New Bio Reports Available**

The *BioWorld Biotechnology State of the Industry Report 2002*, a comprehensive annual report on the business, science and government regulation of biotechnology, is now available. Tracking the industry's current progress and examining future trends, this top-selling document (approximately 400 pages) offers exclusive information on new product development, biotech stock performance, corporate deals, scientific breakthroughs and more.

The report is \$459 (plus \$9.95 shipping & handling). *The BioWorld Phase III Report* is also available. To order, call 1-800-688-2421 or 1-404-262-5476; or order online at <[www.ahcpub.com/56331.html](http://www.ahcpub.com/56331.html)>.

The new *BioWorld 2002 Genomics Review: Expanding the Science* offers lists of companies interested in capitalizing on the map of the genetic code to develop new drugs and enabling technologies. Published by *BioWorld Today*, this 300-page annual market report provides comprehensive profiles of more than 200 public/private companies, major international players, small startups, and more than 1,000 genomics collaborations. To order, go to <[www.ahcpub.com/55791.html](http://www.ahcpub.com/55791.html)>.

For more info: Jim Shrine, 404-262-5454, [jim.shrine@ahcpub.com](mailto:jim.shrine@ahcpub.com)

### **ATP 2002 Competition Announced**

The National Institute of Standards and Technology (NIST) Advanced Technology Program (ATP) announced a new competition for cost-sharing awards

to support high-risk R&D projects that accelerate the development of path-breaking new technologies important to the U.S. economy. The ATP has an FY 2002 appropriation of \$60.7 million for new awards.

Proposals will be accepted until 3 p.m. EDT, September 30, 2002, and can be submitted electronically through digitally signed documents.

For detailed competition rules and a current ATP proposal preparation kit, send an e-mail to <[atp@nist.gov](mailto:atp@nist.gov)>, call 800-ATP-FUND (800-287-3863), or fax a request to 301-926-9524 or 301-590-3053; [www.atp.nist.gov/www/press/2002comp.htm](http://www.atp.nist.gov/www/press/2002comp.htm)

### **Revised Handbook 133 Benefits Consumers and Businesses**

A new publication from NIST's Office of Weights and Measures, *NIST Handbook 133: Checking the Net Contents of Packaged Goods—Fourth Edition*, describes how to verify measurements for virtually every packaged product we eat, buy or sell. State regulatory bodies—as well as commercial and industrial establishments involved in the packaging, distribution and sale of packaged goods—can use the procedures to check the accuracy of net contents measurements (weight, volume, dimensions, or count). *Handbook 133* also is useful as an industry sourcebook on how to package a product, label it, and follow packaging standards.

The handbook (stock no. 003-003-03726-5) is available for \$15 from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; 866-512-1800; <http://bookstore.gpo.gov>

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## NEWSLINK

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## FLASH *from p. 2*

### Subscription Medical Online Picture Library Available

The world's largest medical online picture library, containing information and quality medical images for all areas of medicine, can now be accessed on a subscription basis. The specialized library of more than 50,000 medical photos and illustrations was designed for medical manufacturing executives, medical advertising/PR agencies, doctors, healthcare educators, nurses, medical students, and others who need access to an educational resource or marketing materials. Including a wide variety of choices and features, the images in this accessible industry resource can be searched and downloaded easily for use in Microsoft PowerPoint software, intranets, research papers and academic web sites.

For more info: Mike Fisher, 773-267-6071, [mfisher@helpmd.com](mailto:mfisher@helpmd.com); [www.helpmd.com](http://www.helpmd.com)

### Free Software Evaluates Long-Term Costs of Energy Savings

Long-term savings from an energy conservation project should be greater than the initial investment. To determine cost-effectiveness, NIST's Office of Applied Economics has updated its Building Life-Cycle Cost software program, BLCC5. With its ability to evaluate long-term costs and the benefits of energy and water conservation and renewable energy projects, the software program supports the DOE's Federal Energy Management Program (FEMP), which promotes such efforts in more than 500,000 federal buildings. A recent study indicated that FEMP saved the federal government about \$10 billion between 1985 and 1994.

BLCC5 enables managers to compare the life-cycle cost of two or

more alternative designs to determine the one that is least expensive and most economical in the long run. BLCC5 looks at comparative economic data for the alternative designs—including net savings, savings-to-investment ratio, adjusted internal rate of return, and years to payback—and can evaluate new and existing federal, state and local government projects, as well as nonprofit and for-profit projects in the private sector. The BLCCR can run on any personal computer (with 640K of RAM) and may be downloaded, free of charge, from [www.eren.doe.gov/femp](http://www.eren.doe.gov/femp).

For more info: John Blair, 301-975-4261

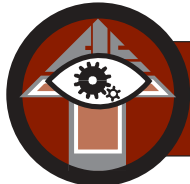
### AFOSR Celebrates 50<sup>th</sup> Anniversary

To commemorate its 50<sup>th</sup> anniversary, the Air Force Office of Scientific Research/Air Force Research Laboratory held a conference on April 25 at the Ronald Reagan Building and International Trade Center in Washington, D.C. "AFOSR at 50: Creating Revolutionary Scientific Breakthroughs for the Warfighter" included a day-long conference of presentations, exhibits, poster sessions, and highlights of Air Force science and technology research. Presentations focused on successful Air Force research programs and partnerships from past and present.

### Technology Conference Set for England

The sixth in the series of international Conferences on Technology Transfer and Innovation (tti 2002—Competing in the Knowledge Economy), which has been organized by Teaching Company Directorate, will be held July 10-12, 2002, in Birmingham, England.

For more info: Sarah Goodyer, [goodyer@tcd.co.uk](mailto:goodyer@tcd.co.uk); [www.tcd.co.uk/tti](http://www.tcd.co.uk/tti) NL



## TECHNOLOGY WATCH

*Federal laboratory technologies available for technology transfer*



### AGRICULTURE

#### **Poultry Litter Ash Becomes Fertilizer**

The Agricultural Research Service (ARS) Henry A. Wallace Beltsville (Maryland) Agricultural Research Center may have found a nest egg by changing poultry litter ash into fertilizer.

The ARS discovered that ash from power plants that burn poultry litter for electricity makes a good fertilizer. This alternative for handling poultry litter could help the environment, promote better plant growth, and reduce costs for farmers.

ARS researchers grew wheat in limed and non-limed soils fertilized with poultry ash and potassium phosphate. Plants in soils treated with ash fertilizer had higher amounts of phosphorous in their tissue, meaning that the nutrient was readily available for the roots to absorb.

This research was stimulated by the Maryland Water Quality Act of 1998, which limits the use of poultry litter on farmland. Excess phosphorous in soil can produce runoff that is dangerous to the Chesapeake Bay watershed. The law encourages alternative uses for poultry manure.

Litter ash has low solubility in water as well as a higher total concentration of phosphorous than poultry manure because the burning process removes organic matter and water. The ash will also reduce farmers' costs because it is lighter than chicken litter and easier to transport.

Further studies are needed to determine the optimal levels of litter ash and to establish its economic value to farmers.

For more info: Eton Codling, 301-504-5708, [odlinge@ba.ars.usda.gov](mailto:odlinge@ba.ars.usda.gov); [www.ars.usda.gov](http://www.ars.usda.gov)



### SENSORS

#### **ONR "Mimics" Lobsters' Sense of Smell**

Researchers at the Office of Naval Research (ONR) are studying lobsters' sense of smell to develop new sensitive chemical sensors. The Navy plans to use these sensors in its unmanned vehicles to locate and identify unexploded ordnance in shallow water.

Small hairs on a lobster's olfactory antennules capture odors at very high resolution. Using a mechanical lobster rigged with a real lobster antennule and fluorescent dye to simulate an odor plume, scientists illuminated the plume with a laser to focus on the area the lobster's antennule encountered. The laser revealed a diffuse cloud of fine swirling dye filaments flowing into the chemosensory hairs of the antennule. The odor of this plume stayed trapped in the hairs until the next flick of the antennule cleared it out and replaced it.

Neuroscientists will try to relate odor concentrations in the hairs to electrical signals in the lobster's brain. While the mechanism that allows the chemosensory hairs to catch odor traces is understood, scientists are studying how crustaceans use odor maps to locate the source of the odor.

For more info: Gail Cleere, [cleereg@onr.navy.mil](mailto:cleereg@onr.navy.mil); [www.onr.navy.mil/onr/media.htm](http://www.onr.navy.mil/onr/media.htm)



### COMPUTERS

#### **Sandia Simulator Calculates Future Water Resources**

Researchers at Sandia National Laboratories (SNL) have developed software models that might help regions and nations

with critical water shortages—and perhaps help avert a crisis. The computer simulations, called Dynamic Water Budget Models, allow decision makers to see how water policy options selected today would affect water resources decades into the future.



Better water management tools such as SNL's Dynamic Water Budget Models might avert crises in many parts of the world, says model co-developer Dick Thomas, seen here in a dry Albuquerque crop field.

The models are based on commercially available simulation software SNL has used to study everything from summer blackouts in California to global nuclear material inventories. Each model is a complex representation of the subtle interrelationships among ground and surface water sources, recharge rates, groundwater pumping, irrigation, climate, evapotranspiration, and demographics.

SNL's first water model was built in the mid-1990s to examine water trends for China's ten major water basins.

The research team used the Middle Rio Grande Basin, the primary water supply for the Albuquerque, N.M., metropolitan area to develop the tool further. They are now exploring the possibility of modeling water issues for basins shared by countries of the former Soviet Union, for nine countries that border the Nile River, and for the U.S. and Mexico in the El Paso/Ciudad Juarez border area.

For more info: John German, 505-844-5199, [jdgerma@sandia.gov](mailto:jdgerma@sandia.gov); [www.sandia.gov](http://www.sandia.gov)



## BIOTECHNOLOGY

### Saliva Serves as Effective Diagnostic Tool

Researchers at the Naval Dental Research Institute (NDRI), Great Lakes, Ill., are testing two experimental assays—one to detect exposure to tuberculosis (TB) and another to verify the immunization status of military personnel who received the anthrax vaccine series. These fast, noninvasive tests use two proven technologies to determine the presence of antibodies in saliva. The faster the disease is discovered after exposure, the faster treatment can begin. Early diagnosis prevents the disease from spreading.

The prototype saliva screening assays can be administered onsite in any location with results in ten minutes, and require minimal training to administer. With the prototype anthrax assay, medical personnel will be able to evaluate an individual's response to the anthrax vaccine within minutes as well.

One technology, the lateral flow device, is similar to an over-the-counter pregnancy test, but uses saliva rather than urine. The prototype device is small and rugged enough to be carried in a uniform pocket. The Navy team hopes to use this technology to develop assays to test for a variety of infectious diseases of concern to the military.

A second technology called fluorescence polarization provides more sensitive results. The team plans to develop a Palm Pilot-sized hand-held monitor that is rugged for use in any environment, yet sensitive enough for more quantitative tests.

Additional tests and structured clinical trials based on government guidelines are required before the assays are available to the public. Possibly ready for use in the fleet by next year, they will greatly enhance operational readiness.

For more info: Doris Ryan, 202-762-0472, [dmryan@us.med.navy.mil](mailto:dmryan@us.med.navy.mil); <http://navymedicine.med.navy.mil/ndri/>



## MANUFACTURING

### Sensor Streamlines Papermaking Process

Hoping to save the paper manufacturing industry millions of dollars in energy costs, Lawrence Berkeley National Laboratory engineers have developed a laser ultrasonic sensor that measures paper's flexibility as it courses through a production web. The laser sensor measures the elastic properties of paper at manufacturing speeds up to 65 miles per hour.

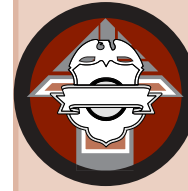
Tested at a Mead Paper Company mill in Ohio, the sensor was installed on a pilot paper coating machine, and six paper grades—from copy paper to heavy linerboard—were run through the web press. The sensor's signals remained excellent even at paper speeds up to 5,000 feet per minute, and the laser did not damage the paper.

The sensor was developed to improve the paper industry's energy and resource efficiency. Generally, after paper is manufactured, a small sample of a three-ton paper roll is manually analyzed for its mechanical properties. If the sample does not meet specifications, the entire roll is scrapped or sold as an inferior grade. To avoid this costly mistake, manufacturers often use more pulp than necessary to ensure the final product is not substandard. This process consumes a great deal of raw materials and energy.

To reduce post-production evaluation, the sensor measures in real time and without touching the paper, thereby preventing marred copies.

A full-scale pilot test is scheduled for summer 2003. In the future, the sensor could provide quality-control safeguards and real-time process information for feedback process control in any manufacturing process involving thin, moving sheets such as sheet metals, sheet plastics, polymeric materials, and glass.

For more info: Dan Krotz, 510-486-4019, [DAKrotz@lbl.gov](mailto:DAKrotz@lbl.gov); [www.lbl.gov](http://www.lbl.gov)



## LAW ENFORCEMENT

### Audio Technology Detects Foul Play in Prisons

Researchers at the Air Force Research Laboratory (AFRL) Information Directorate have successfully demonstrated advanced voice processing technology designed to reduce criminal telephone activity by inmates at state and federal prisons. Funded by the National Institute of Justice (NIJ), scientists and engineers with the Directorate and Research Associates for Defense Conversion of Marcy, N.Y., jointly developed and demonstrated an experimental model that automatically extracts information from conversational speech—the Telephone Abuse Detection Demonstration (TADD).

Addressing prisoners' use of telephones to continue dangerous and expensive illegal activity, TADD can detect a variety of criminal activities conducted over prison phones—credit card fraud, drug solicitation, harassment, and threats to witnesses and victims.

Using several audio technologies to detect and recognize certain criminal activities, TADD's test results on a controlled database of conversations collected over the type of phones used in prisons were 76 to 100 percent successful in detecting the targeted criminal activities.

This technology could save hundreds of millions of dollars in telephone monitoring costs over current methods used on the more than 100,000 calls made daily by inmates at federal prisons alone. Developed for the NIJ and the Federal Bureau of Prisons, TADD also has applications for the Air Force intelligence, surveillance and reconnaissance (ISR) monitoring mission and to military communication security.

For more info: Francis L. Crumb, 315-330-3053, [crumbf@rl.af.mil](mailto:crumbf@rl.af.mil)



## ENVIRONMENT

### Promising Alternative to Waste Incineration Identified

A national program at the **Department of Energy's (DOE) Idaho National Engineering and Environmental Laboratory (INEEL)** has identified what may be one of the best technologies for treating certain wastestreams without incinerating.

The Transuranic and Mixed Waste Focus Area (TMFA) sponsored by the DOE's Office of Science and Technology, has chosen Virginia-based **AEA Technology Engineering Service's Silver II** method for further testing.

Silver II chemically oxidizes molecules. The process operates at low temperature, is easy to control, treats most organic wastes, reduces waste volume, produces no dioxins or low-emission volumes containing polyaromatic hydrocarbons, and does not require pretreatment of small solids, slurries or liquid wastes. Pretreatment of larger solid organic waste may still be required.

The **U.S. Army** was already testing Silver II at the **Aberdeen Proving Ground** to destroy chemical weapons agents, and recently tested surrogate waste types for the DOE to assist in its effort to find effective and affordable alternatives to incineration.

If Silver II successfully treats surrogate mixed waste, the process may be tested and used for several difficult wastestreams containing organics and other combustible materials from active handling operations at the DOE's **Savannah River Site** and **Los Alamos National Laboratory**.

Finding alternatives to incineration through INEEL's TMFA continues to be at the forefront of DOE's research efforts. More than a half dozen technologies are in various stages of development at other DOE labs and universities. This multimillion-dollar effort also involves private companies. Research alternatives range from biodegradation, thermal desorption and super critical water oxidation to low-temperature stabilization.

**For more info:** John Walsh, 208-526-8646, [jhw@inel.gov](mailto:jhw@inel.gov); technical contact: Vince Maio, 208-526-3696, [vmaio@inel.gov](mailto:vmaio@inel.gov); [www.inel.gov](http://www.inel.gov)



## MATERIAL

### Nanofluids Promise Efficient Heat Transfer

Engineers have worked for decades to develop more efficient heat transfer fluids for use in car motors and industrial equipment. Improved oils and coolants would help make possible more efficient engines. These engines would be smaller and cheaper, and their lower fuel demands and emissions would cause less damage to the environment.

Now, by manipulating atoms on the smallest of scales, **Argonne National Laboratory (ANL)** scientists have created a next-generation fluid that may revolutionize heat transfer. By adding tiny spherical particles—only a few nanometers (billionths of a meter)—to a conventional fluid, researchers can improve its ability to transfer heat by up to 40 percent. The particles are made by suspending materials such as copper or copper oxide in liquids such as water or ethylene glycol (radiator fluid).

Preliminary tests show that nanofluids may solve a number of problems that plague the heating, ventilation and air conditioning industry. Their use could go beyond heat transfer in autos and manufacturing equipment. With continued research, nanofluids may improve the efficiency of high-heat flux devices like supercomputers and provide new cancer treatment techniques.

Because much is yet unknown about nanoparticles, ANL will build the Center for Nanoscale Materials to fabricate nanostructures and measure their structural, physical and chemical properties. ANL scientists are working with other institutions to broaden their knowledge base and develop a database of nanofluid properties to create accurate models of their behavior.

**For more info:** Evelyn Brown, 630-252-5510, [eabrown@anl.gov](mailto:eabrown@anl.gov); [www.anl.gov](http://www.anl.gov)



## ASSISTIVE TECHNOLOGY

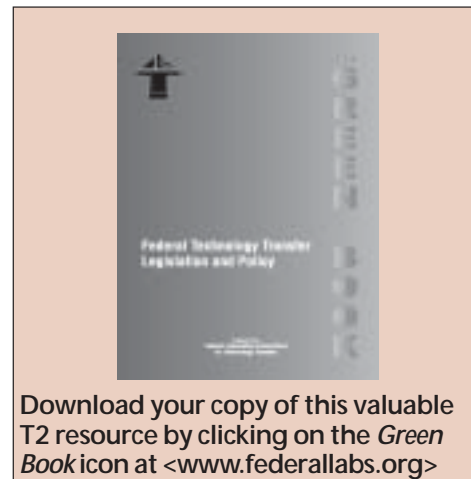
### Microchip Gives Blind Chance of Sight

A computer chip implanted near the retina is well on its way to offering some restored vision to people blinded by eye diseases such as retinitis pigmentosa and age-related degeneration of the eye. The implant works for eye diseases where healthy retinal neurons remain intact after they lose use of the eye's photoreceptors, which convert images into electric impulses.

Funded by the **Office of Naval Research**, researchers recently reported that tests show faces can be recognized and words in large type can be read. Human tests started recently. **Dr. Mark Humayun**, formerly of the **Wilmer Ophthalmological Institute at Johns Hopkins University** in Baltimore, is leading the research at the **University of Southern California** in Los Angeles.

To capture images, first an external camera mounted in an eyeglass frame captures the image and converts it into an electrical signal that is electronically transmitted to the flexible silicon biochip surgically attached near the retina. The chip electronically stimulates the healthy cells of the retina, which sends the signals conveying the image to the brain.

**For more info:** Audrey Haar, 703-696-2869, [haara@onr.navy.mil](mailto:haara@onr.navy.mil), [www.onr.navy.mil/onr/media.htm](http://www.onr.navy.mil/onr/media.htm) **NL**



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## SPOTLIGHT ON SUCCESS

*Success stories from the federal lab community*

# NASA Helps Fetal Hearts Beat Loud and Clear

By keeping track of some very small American hearts with a new, portable fetal heart monitor, NASA technology is relieving some of the worry of high-risk pregnancies.

Researchers from NASA's Langley Research Center, Hampton, Va., worked with **Baby Beats Inc.** and **Washington State University's Small Business Development Center** to transfer and develop aerospace technology originally created to better understand airflow over airplane wings into a portable, noninvasive, easy-to-use fetal heart monitor.

Current fetal heart-monitoring devices generally work well but cost thousands of dollars, and most can only be used in a clinic or doctor's office. NASA developed the portable technology at the request of **Dr. Donald Baker**, a physician whose practice includes remote areas where appropriate health care is difficult to obtain. When expectant mothers do not receive necessary prenatal care, fetal mortality rates increase.

Because the material used to measure wing surfaces is flexible, it is ideally suited to fit an expectant mother's abdomen. In its present form, an at-home patient would place the saucer-shaped monitor on her belly and tune a computerized control device to hear the fetal heartbeat. After adjusting the device to receive the strongest signal, she could then transmit it directly to the doctor's office over a phone line.



Allan Zuckerwar of NASA Langley Research Center holds the portable, noninvasive fetal heart monitor that could relieve some of the worry of high-risk pregnancies.

Baker's concern for tiny hearts began more than 25 years ago on obstetrics rounds in medical school. He watched as an unborn baby's heart rate, monitored by a fetal heart monitor strapped to the mother's belly, suddenly became dangerously irregular because the baby was inadvertently sitting on its own umbilical cord, choking itself.

Today, Baker envisions mothers with high-risk pregnancies and those with difficulty traveling to a doctor's office as the primary monitor users. His commitment to the need heightened after working as a family doctor on the Flathead Indian Reservation in Montana early in his career. Baker, a member of the Minnesota Chippewa, said pregnant mothers living in remote areas might be hours from a doctor's office and may not have the financial resources to get there. But inner city mothers who have difficulty making it to a clinic could use it too.

Baby Beats Inc., Dr. Baker's new company, will begin manufacturing and marketing the monitor soon. Patients of Glendale Adventist Hospital in Los Angeles will use the monitor first. Baker secured a license from NASA to develop an affordable, practical way to manufacture the monitor.

For more info: Michael Braukus, NASA Headquarters, 202-358-1979; Chris Rink, Langley Research Center, 757-864-6786; Sue Hinz, Washington State University, 509-335-3583 **NL**

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## COMING ATTRACTIONS

June 19, 2002

### ***Life Sciences Financing Conference*** Spring Lake, NJ

The Biotechnology Council of New Jersey (BCNJ) is sponsoring this conference, which will address the challenges biotech companies face bringing their discoveries to market.

Elizabeth Rosko, (609) 750-7660,  
elizabeth.rosko@haledorr.com

August 4-9, 2002

### ***IBC's Drug Discovery Technology World Congress*** Boston, MA

In addition to a scientific conference with over 125 speakers, this event features the world's largest drug discovery exhibit hall, showcasing the newest technologies, instrumentation, and products that are driving the drug discovery field.

[www.drugdisc.com/section.asp](http://www.drugdisc.com/section.asp)

September 24-26, 2002

### ***World's Best Technology 2002 (WBT02)*** Pittsburgh, PA

The WBT02 is a showcase for technologies developed at the nation's most advanced research facilities and top universities. A panel of experts chose the 50 participating exhibitors on the basis of having the greatest potential for high-growth commercial enterprises.

Paul Huleatt, (609) 795-8825,  
phuleatt@edgecapital.com

October 9-11, 2002

### ***Plant and Facilities Conference & Exposition*** Atlanta, GA

This expo is a comprehensive marketplace to research and shop for the products and services needed to complete projects involving operational improvements, plant upgrades, regulatory compliance, maintenance, safety issues, and construction of new facilities.

[www.aeecenter.org/pfe](http://www.aeecenter.org/pfe)

October 15-18, 2002

### ***Americas Nuclear Energy Symposium (ANES) 2002*** Miami, FL

ANES 2002 will provide a forum for a hemispheric discussion and exchange on issues relating to the future of nuclear energy in the Americas. The program will deliver interactive discussions, workshops, case studies, industry updates, and an exposition by leaders in the nuclear industry.

Anes2002@hcet.fiu.edu,  
[www.anes2002.org](http://www.anes2002.org), (305) 348-5016

October 21-24, 2002

### ***Instrumentation, Systems, & Automation Conference and Exhibition*** Chicago, IL

Put your career on the fast track at North America's largest and most comprehensive conference and exhibition dedicated to instrumentation, systems and automation technologies. Be among the thousands of manufacturing professionals making ISA 2002 their one-stop strategy for success.

[www.isa.org](http://www.isa.org)