

# Technology Community

Events, resources, and news for technology-based growth in Colorado

Issue No. 51 Internet URL = <http://www.colorado.edu/cubac/tcom.html> March/April 2004

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### Times are Changing for Technology Community News Future Issues To Focus on Specific Colorado Technology Industries

Since its first issue in November of 1995, *Technology Community News* has provided a venue for Colorado’s technology-based organizations to share information and learn about new resources for technology-based economic development. Each issue has included articles submitted by a wide constituency including universities, industry associations, incubators, and companies. In addition, this Colorado-specific information was supplemented by information about national resources and studies that could be accessed to advance research, technology transfer and economic growth in our state.

The newsletter has been published by the CU Business Advancement Center bi-monthly for over eight years! Now, due to changes at CU-BAC, and changes in Colorado’s technology community, the current format and electronic distribution will end with this issue. Beginning with the May/June issue, the newsletter will again move to a print format by combining with the *Colorado Business Review*, published and distributed by CU Leeds School of Business. Each future issue will include a *Technology Community* section with information about a specific technology industry prominent in Colorado.

This newsletter could not have continued for over eight years without community support

and involvement. *Technology Community News* began as a truly cooperative venture initiated by the Colorado Advanced Technology Institute and the CU Business Advancement Center. The newsletter was designed to provide a regular publication serving many voluntary organizations allowing them to broaden their exposure and learn about the activities of others involved in the then new field of technology development, transfer and commercialization.

In addition to CATI and CU-BAC, those initial partners included the Colorado Chapter of the Technology Transfer Society, University of Colorado Office of Technology Transfer, Colorado R&D Consortium, Rocky Mountain Inventors Congress and SBIR Colorado. You may note that many of these early organizations are no longer active. Over the years, as each technology industry formed a specific association, these industry specific groups have joined with the University of Colorado, Rockies Venture Club and Small Business Development Centers to sponsor *Technology Community*. Thanks to all who have contributed over the years.

For history buffs and the simply nostalgic, page 2 includes more from the first issue of *Technology Community*.

*(Continued on page 2)*

### Karen Eye Says Farewell to Friends and Colleagues

I remember when we first started this *Technology Community* adventure.

The process of Technology Transfer was just beginning to be recognized as a process. Professionals in the field identified communication and networking as strong needs. The Technology Transfer Society was formed to bring together the elements needed to foster

technology economic development—researchers at universities, federal labs, and companies; product developers, intermediaries and others. Getting media attention for technology success was a challenge.

Now technology is the recognized leader of economic growth in the state. Every major newspaper reports on new technologies and companies.

We have come a long way and I am proud to have been along on the journey.

October 2003 marked my 20th year at CU. I am looking forward to “retirement” at the end of March . I’ll miss many friends & colleagues and hope to continue working with some of you as I move around the corner toward the next adventure. [More on CU-BAC in our column on page 11.]

## History of Technology Community

Excerpts from page 1 of Issue No. 1  
Published November 1995

### Joining Together in Colorado

Colorado is known as a national leader in high technology business development, research and innovation. So maybe it's only natural that we undertake a new kind of experiment—bringing together our diverse community of people with a common newsletter, where everyone contributes and everyone benefits.

*Technology Community* is a combination of several former newsletters published and distributed by various groups. Individuals who formerly received newsletters from Colorado Advanced Technology Institute (COTAC News), CU Business Advancement Center (BRAINwaves), Colorado R&D Consortium (CRDC News), the Rocky Mountain Inventors congress (Ideas to Reality), SBIR Colorado, or are members of the Colorado Chapter of the Technology Transfer Society, Front Range Institutional Technology Transfer, or CU's Office of Intellectual Resources and Technology Transfer, now receive one primary newsletter, *Technology Community*.

The name Technology Community was selected by the editorial board to reflect the blending of science and people needed to successfully commercialize new ideas, inventions and technologies.

This really is about community. The initiation of the cooperative newsletter is sponsored by staff and funds from CU-BAC, and funding from CATI, T2 Society, CU-OIRTT and others. Other organizations are encouraged to join in. Every reader is invited to contribute ideas, comments and news.

#### Our Goals

Foster cooperation, communication, and a sense of common purpose among Colorado industry, small technology-based companies, universities, federal labs, research institutions, economic development organizations, and innocent bystanders involved in technology development, transfer and commercialization activities

#1—Combine resources (effort, knowledge, and funding) to disseminate technology information to the widest possible Colorado audience.

#2—Provide technology organizations with a vehicle to inform a broader audience about their organization, its purpose, services, and events.

#3—Provide members of the Colorado technology community with access to a single source of timely information.

\*

CU Business Advancement Center and the Colorado Advanced Technology Institute were selected to give a presentation to the National Conference of the Technology Transfer Society about the unique partnership that formed and sustained the Technology Community News.

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Over the years, student interns from the University of Colorado, communications and business departments, have served as editorial assistants for the newsletter. We thank every one for their contributions to the evolution of format and content. While the newsletter has benefited from the energy and enthusiasm of these young people, they in turn learned a lot about technology business and the organizations that support its growth.

### Christine Shapard Named Director, Biosciences and Emerging Technologies Initiative for Colorado Office of Economic Development and International Trade

DENVER – Bob Lee, director of the Governor's Office of Economic Development & International Trade (OED&IT), announced the appointment of Christine (Chris) Shapard to the newly created position of director, biosciences and emerging technologies initiative. "We recognize the significance of the biosciences and the vitality of emerging technologies to Colorado and how their growth can help drive the state's economic engine," said Lee. "Chris brings a wealth of experience to this position and is already plugged into the organizations working on behalf of the biotech industry.

As the biosciences and emerging industries manager, Shapard will coordinate efforts among state and local economic developers, between industry, government and academia, and will promote Colorado's bioscience, photonics and nanotechnology industries outside of the state.

Shapard has been with OED&IT for five years, where she was the deputy director for International Trade. For the past one and a half years, she has been the informal liaison with the bioscience industry, making sure OED&IT's efforts dovetail with the industry. Her biotechnology involvement includes, among other activities, sitting on the five person Management team that drafted and is implementing the statewide biotechnology plan, leading the Colorado delegation at BIO, sitting on the Colorado Biotechnology Association board and making incoming foreign delegations aware of Colorado's biotechnology industry.

## Nanotechnology in the News

### NASA Ames Research Pursues Nanotechnology for Aerospace Use

Colorado is only one of many states and countries pursuing the economic future based in nanotechnology development. To discuss the trillion-dollar nanotechnology market that experts believe will be born from research at the molecular scale, almost 300 leaders from industry, academia and government, met last fall at NASA Ames Research Center in California's Silicon Valley.

Nanotechnology is the creation of materials, devices and systems through the control of matter on the nanometer scale. A nanometer is one-billionth of a meter. Scientists say nanotechnology could lead to changes in almost everything from computers and medicine to even automobiles and spacecraft.

NASA's interest in the technology was expressed by NASA Ames Center Director, G. Scott Hubbard, "As part of our pursuit of NASA aeronautics and space programs, NASA Ames is working to fuse information technology, biotechnology and nanotechnology R&D. This will facilitate NASA's ability to achieve the nation's goals in aeronautics and space. We can reduce the cost of space exploration, bring back better information and help determine whether there is life beyond our planet."

"NASA's interest in nanotechnology is that it will result in stronger materials, ultra-small electronic devices, perhaps even intelligent spacecraft. Miniaturization also may well enable new space missions with lower weight parts requiring less power and fuel," Hubbard said.

"Some nanotechnology advances that scientists expect will benefit NASA include integrated nanosensors that will collect, process and communicate massive amounts of data," said Meyya Meyyappan, the Director of the Center for Nanotechnology at Ames. Nanotechnology is expected to impact computing and data storage, materials and manufacturing, health and medicine, energy and environment, trans-

portation, national security and space exploration, according to Mayyappan.

[Source: NASA Innovation, Fall 2003]

For more information about NASA nanotechnology see: <http://www.ipt.arc.nasa.gov>.

### Nanotechnology Vision Chip NASA License Opportunity

NASA seeks to license or co-develop its Nanotechnology Vision Chip, a unique technology for stimulating retinal neural cells using an array of carbon nanotubes (CNTs). Developed at NASA Ames Research Center, in conjunction with Stanford University School of Medicine, the Vision Chip is designed to restore vision in patients suffering from age-related macular degeneration, the number-one cause of blindness in the elderly. Other potential applications include traumatic eye damage and ophthalmologic research.

The Vision Chip consists of an array of electrically conductive CNT towers grown directly on the surface of a silicon chip. Each CNT tower in the array is connected to its own electrical circuit, so that electrical signals generated by the pixels of a light detector (such as a charge-coupled device chip, worn by the patient) can be transmitted to the CNT towers. For the intended application, thousands of CNT towers are closely spaced in an array, to match the spacing of the neurons within the retina.

For more information contact Lisa Williams, NASA Ames at 650-604-2954 or [liwilliams@mail.arc.nasa.gov](mailto:liwilliams@mail.arc.nasa.gov).

[Source: NASA Innovations, Fall 2003]

### Colorado Nanotechnology Initiative

To get involved in Colorado's nanotechnology activities, visit the website:

[www.coloradonano.org](http://www.coloradonano.org) or contact:

Glenn Rhoades, 303-249-7065

[glenn.rhoades@coloradonano.org](mailto:glenn.rhoades@coloradonano.org)

Dr. Louis Hornyak, 720-530-3419

[lhornyak@du.edu](mailto:lhornyak@du.edu)

### Nanotechnology Researchers Build Curved Structures

The natural world is full of curves and three dimensions, but the ability to deliberately and rationally construct such complex structures using nanoscale building blocks has eluded nanotechnologists who are eager to add curved structures to their toolbox.

Now a team of chemists at Northwestern University report they have discovered ways to construct nanoscale building blocks that assemble into flat or curved structures with a high level of predictability, depending on the architecture and composition of the building blocks. The results are published in the January 16 issue of the journal *Science*.

Using hybrid nanorods consisting of segments of gold and conducting polymers as their building blocks, the researchers created a number of unusual structures, including bundles, sheets and tubes of varying diameters. The extraordinary control that they were able to demonstrate over the process holds promise for building new and powerful drug delivery systems, electronic circuits, catalysts and light-harvesting materials.

The research team, led by Chad A. Mirkin, director of Northwestern's Institute for Nanotechnology, made the different structures by varying the diameter of the gold-polymer rods or adjusting the ratio of polymer segment to gold segment in the rods. Both methods should enable researchers to design structures with interesting electronic and optical properties. Using an alumina template to build the rods was found to be essential to the self-assembly process to form bundles, sheets or tubes.

The work was supported by the National Science Foundation and the U.S. Air Force Office of Scientific Research.

Principal Investigator:

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[camirkin@chem.northwestern.edu](mailto:camirkin@chem.northwestern.edu)

## CU at Interlocken for Professional Education

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University of Colorado at Interlocken is a four-campus initiative designed to help working professional's access knowledge in a convenient location to advance their careers. CU at Interlocken offers world-class faculty, real-world expertise and a convenient classroom location to meet personal and business needs for education and professional development. The CU at Interlocken classrooms help working professionals make the most of limited time by offering a variety of educational options:

- Broadcast classes from University of Colorado at Boulder Center for Advanced Engineering and Technology Education
- Online courses, certificate and degree programs
- Traditional classroom offerings in computer lab and conference facilities
- Academic advising upon request

If employers are looking for specialized programs for their employees, the program draws on the resources from CU's four campuses. For questions and comments, please contact Kim Penoyer, Director, CU at Interlocken, at 720-888-2356 or

[kpenoyer@carbon.cudenver.edu](mailto:kpenoyer@carbon.cudenver.edu).

To view a current list of courses and programs offered please go to the CU at Interlocken website at <http://www.cu.edu/Interlocken>.

For monthly updates via the CU at Interlocken E-News please contact [csanders@carbon.cudenver.edu](mailto:csanders@carbon.cudenver.edu) to be added to

### NREL News

**E-mail News**—National Renewable Energy Laboratory (NREL) in Golden, CO, has introduced a new monthly email newsletter designed to keep stakeholders up-to-date on the NREL research and development program, technology transfer and licensing and laboratory news and events. To subscribe go to:

[http://www.nrel.gov/stakeholder\\_partnerships/subscription.html](http://www.nrel.gov/stakeholder_partnerships/subscription.html)

**Management**—Midwest Research Institute (MRI) in Kansas City has received a four-year contract extension to manage and operate the U.S. Department of Energy's National Renewable Energy Laboratory (NREL). The contract was last competed in 1998 and this extends MRI's management for the full 10 years. MRI has managed the laboratory since its founding as the Solar Energy Research Institute in 1977. MRI is teamed with Battelle Memorial Institute of Columbus, Ohio, to manage and operate the laboratory. Since its inception, NREL has earned 35 R&D 100 awards, which R&D Magazine announces annually to recognize the year's 100 most significant technological innovations. NREL was also recognized in the Scientific American 50 for developing the world's most efficient land-based solar cell.

## SBA Releases Report on the Impact of Small Firms on High Tech

According to a report issued by the Office of Advocacy, U.S. Small Business Administration, small highly innovative firms have a big impact on many high tech industries.

The report "Small Firms and Technology: Acquisitions, Inventor Movement, and Technology Transfer" was written by CHI Research. The report examines small firms contribution to the innovation process through acquisition by larger firms and the hiring of elite inventors. The report found that small firm contributions to technological innovations are best measured industry by industry. Their importance is not immediately apparent when all industries are considered, because small firms tend to be excluded from such key capital-intensive industries as automotive, aerospace, and oil research.

For a full copy of the report, visit the Office of Advocacy website at [www.sba.gov/advo](http://www.sba.gov/advo).

### Manufacturing in America

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Over 20 manufacturing public roundtables were held last year by the Commerce Department to development recommendations to address challenges facing the American manufacturing sector. The report, Manufacturing in America, suggests several government actions including:

- \* Establish the President's Manufacturing Council to bring federal resources to implement the reports recommendations;
- \* Create the Office of Industry Analysis to gather data to help the government understand the impact of government decisions on the manufacturing sector's ability to compete;
- \* Call on the Treasury Department to lead a tax simplification study—addressing depreciation and the corporate alternative minimum tax—focused on lowering compliance costs;
- \* Improve coordination of over \$15 billion in economic development programs to help address the economic challenges facing distressed communities that are manufacturing-dependent.
- \* Inventory existing regulations, evaluate proposed reforms and implement the reforms on a priority basis;
- \* Make the Research and Experimentation Tax Credit permanent.

The full report is available on the Commerce website: [www.commerce.gov/DOC\\_MFG\\_Report\\_Complete.pdf](http://www.commerce.gov/DOC_MFG_Report_Complete.pdf)



## Leeds MBA's are Finalists in LES National Business Plan Competition

### "NetDog" Technology Prevents Worm and Virus Intrusion

Boulder, CO - A team of 2nd year MBA Students from the Leeds School of Business at the University of Colorado at Boulder will represent the western US as finalists in the Licensing Executives Society (LES) Business Plan Competition on February 11, 2004 in San Francisco. This competition is for business plans that include a significant intellectual property component. The MBA students collaborated with faculty in CU's computer science department to create a business plan for NetDog, based on the patentable technology created in the Department of Computer Science at CU Boulder. The NetDog team took home the 2nd place award at the Leeds Business School's graduate business plan competition, sponsored by the Robert H. and Beverly A. Deming Center for Entrepreneurship. The Leeds MBA candidates will receive an all-expense-paid trip to attend the LES Annual Meeting in San Francisco, CA on February 11-13.

NetDog, which includes Leeds MBA candidates Jay White, Chris Cahill, Chip Fuller and David Parkhurst, is a company with a superior Network Intrusion Prevention System (NIPS). Intrusion prevention systems examine network traffic through the use of detection processes. Any malicious activity, such as worms and viruses, are blocked by the detection processes before they are able to enter the network. Unlike competing NIPS, the NetDog product would provide the highest level of protection without sacrificing network speed. This represents a current market opportunity in the hundreds of \$\$ millions.

The speed of the processing is possible because of a "multiclassifier" invented by Dr. Antonio Carzaniga and Dr. Alexander Wolf in the Computer and Communications Security Research Center in the Department of Computer Science at CU Boulder. The multiclassifier technology allows the detection processes to be arranged in parallel, with packets instantly routed to the relevant process. Other NIPS require network traffic to be examined by each detection process, which bogs down the system and results in dropped packets.

"This is a wonderful example of what can result from combining CU's world class research with our leading Entrepreneurship program," said David Allen, Associate Vice President for Technology Transfer, "We are delighted that the CU MBA students have this opportunity to compete on a national level."

### Company Commercializing CU Technology Goes Public

A biopharmaceutical company whose platform technology and leading therapeutic product rely on a CU discovery offered 6.5 million shares priced at \$21/share in a January IPO. EyeTech Pharmaceuticals, Inc. is the first biotechnology IPO of 2004. For CU, it's the second IPO in three months to take University technology to public ownership. Myogen, a Westminster-based company developing cardiac diagnostics and treatments originated at the Health Sciences Center, went public in October 2003. On the first day of trading, EyeTech shares rose 54%, to \$32.40.

EyeTech is an ophthalmology company with plans to file this year for FDA approval to sell its leading product, Macugen. The compound, from a drug class called aptamers, was identified through a CU-patented process invented in Boulder's Molecular, Chemical and Developmental Biology labs

in the 1980s. The process generates a vast array of short strands of RNA from which aptamers can be designed and selected for enhanced binding to molecular sites, potentially enabling more specific therapeutic effects.

EyeTech's Woburn, MA facility has developed proprietary models for studying ophthalmologic disease models and for identifying and testing drug targets. The company says it will seek partners to research additional non-ophthalmic uses for Macugen.

Macugen targets age-related macular degeneration (AMD) and diabetic macular edema (DME), diseases characterized by recurrent intra-ocular bleeding that over time can destroy the retina. In the U.S., AMD is estimated to affect 1.2 million individuals in the over-50 age group. The population with diabetic retinopathy is more than 5.3 million, of whom about 500,000 have DME. Unlike palliative treatments currently available, Macugen interferes with

the disease process at its origin by inhibiting a protein that overstimulates the growth of new blood vessels. Untreated, these diseases can lead to irreversible blindness.

The two inventors are former CU employees - Larry Gold and Craig Tuerk. Dr. Tuerk is a professor at Morehead State University in Kentucky. Dr. Gold is Chairman and Chief Scientific Officer of SomaLogic, a private company headquartered in Boulder. SomaLogic, with rights to develop diagnostic uses of aptamers, announced in December that it has obtained \$11MM in investment from two Japanese companies for research and development employing Gold's process for Systematic Evolution of Ligands by Exponential Enrichment and Systematic Evolution (SELEX).

#### Contact for Information:

David Allen, Associate Vice President for Technology Transfer

303-735-1688 (phone)

David.Allen@cu.edu

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## Missile Defense Agency Highlights Two Colorado Technologies

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### Beam-Steering System Tracks Multiple Objects in Real Time Boulder Nonlinear Systems, Inc.

The age of tracking and designating multiple targets with slow, single-spot beam-steering devices could soon end. Boulder Nonlinear Systems, Inc. of Lafayette, CO, and the University of Louisville, KY, have teamed to create the first multispot laser beam-steering system (RAMS-LBS) that operates in real time and can adapt to unexpected changing conditions.

The RAMS-LBS features a 512x512 liquid-crystal spatial light modulator (SLM) and a fast diffractive optics design program (DODP) that automatically generates complex and rapidly changing laser illumination patterns.

In the early 1990s, BNS began investigating one-dimensional liquid-crystal beam-steering devices through SBIR Phase I and Phase II contracts from the Missile Defense Agency.

One of the advantages of multispot laser beam steering is that rather than firing a laser at multiple targets sequentially, it is possible to split the beam and track the targets simultaneously. This has the potential to increase the speed of data collection and eliminate target reacquisition problems.

In addition to target designation and tracking, the RAMS-LBS could be used as an enabling component in optical interconnects, line-of-sight optical links, holographic optical memories, laser visual dis-

plays, ranging systems, marking systems, and even laser micro-particle manipulators (i.e., laser tweezers).

BNL and the university seek inquiries from those interested in evaluating their beam-steering technology.

Contact: Teresa Ewing at BNL  
303-604-0077  
tewing@bnonlinear.com

For more information see:  
[www.bouldernonlinear.com](http://www.bouldernonlinear.com)

[Source: The MDA Update]

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### Energized Structures Save Space and Weight Boundless Corporation

Boundless Corporation of Boulder, Colorado, has developed technology that makes batteries more than just bulky sources of power. The company has incorporated batteries into the physical design of a vehicle or device, creating an energized structure that not only saves weight and space but also boosts battery performance. Missile Defense Agency's SBIR program funded Boundless' structural batteries for their potential in onboard power systems.

The structural batteries should prove useful in spacecraft, unmanned aerial vehicles, automobiles, and other large machines that require batteries. However, company officials do not expect their technology to be practical for smaller devices with less structure, such as laptops and cell phones.

The high-powered, high-capacity batteries should mean makers of satellites, spacecraft, and aircraft can power their instruments with smaller, lighter batteries, saving space and weight. And for space applications, lighter launches mean cheaper launches, since each pound of payload can cost thousands of dollars to put into orbit.

Boundless' structural batteries also promise longevity over conventional batteries. By distributing batteries throughout a struc-

ture, and closer to the devices that use them, this approach seeks to avoid heat build-up that can occur with larger centralized batteries. And less thermal fatigue means structural batteries should last longer. The distributed approach also avoids energy loss that can occur when long wires are used to deliver battery power.

Boundless continues to focus on product development and already has shipped functional batteries to the NASA Goddard Space Flight Center for use in a project to measure radiation in the Van Allen belt in Earth's magnetosphere. The project involves several dozen birthday-cake-size satellites. Boundless officials also continue to look for potential partners and users.

Contact:  
Tim Feaver, Boundless Corporation, Boulder, CO  
303-415-9029  
tfeaver@boundlesscorp.com

For more information on the company see:  
[www.boundlesscorp.com](http://www.boundlesscorp.com)

[Source: MDA Update]

# R&D FUNDING NEWS

## **COLORADO INSTITUTE OF TECHNOLOGY ISSUES CALL FOR PROPOSALS LETTERS OF INTENT DUE APRIL 1, 2004—PROPOSAL DUE DATE APRIL 23, 2004**

### **CIT and CCHE/TAG Combine Funds to Achieve Mutual Goals**

During the current solicitation, the Colorado Institute of Technology will match funds from the Colorado Commission on Higher Education's Technology Advancement Group (TAG) to achieve mutual goals.

### **Educational Proposals**

One primary objective of the solicitation is the development of new curriculum opportunities in various technology areas for students in colleges and universities. Curricula proposals may include development of technology intensive new courses as part of an existing program or major, or as part of a wholly new program developed to meet the ever changing workforce needs. Of particular interest are areas related to global telecommunications, enterprise systems, digital media, bioinformatics, and homeland security.

### **Research Proposals**

This program seeks to support individuals and/or consortium of individuals developing research projects, and subsequent technology transfer of the research. Areas of particular interest in research are global telecommunications, enterprise systems,

digital media, biotechnology, homeland security, environmental technology, waste diversion and recycling, other advanced technologies, and their subsequent technology transfer.

For complete information about eligibility and the criteria for selection see: [www.coloradoit.org/edu/proposals/](http://www.coloradoit.org/edu/proposals/)

### **CIT Equipment Program Solicitation DUE DATE APRIL 30, 2004**

This program supports technology curriculum and new certificate programs or to seed equipment and software for start-up research projects in global telecommunications, enterprise systems, digital media, bioinformatics and homeland security. Equipment and software through this program is not intended to establish large-scale laboratories, or to replace existing equipment, but to provide a jump start for a researcher, ultimately to stimulate federal and/or university investments. In this program, "equipment" may include hardware, software, systems, and services such as consulting, training on the equipment, and maintenance of the equipment for a defined period of time. CIT with its industry sponsors, will put packages together to meet the project's needs. See: <http://www.coloradoit.org>  
Contact: [John@Coloradoit.org](mailto:John@Coloradoit.org)

### **Small Business Innovation Research (SBIR) R&D Funding Open Solicitations**

Dept of Defense	Open March 4 Close May 4
Special Education	Open April 2 Close May 26
Health & Human	Open Jan 15 Close April 1
Transportation	Open Feb 17 Close May 3
Environment **	Open March 25 Close May 25
NSF—IT	Open March 1 Close June 9
NSF Special Topic	Open March 1 Close June 23

### **\*\*SIBR Workshop:**

EPA National SBIR Coordinator  
James Gallup Speaks in Denver  
March 3, 2004 See Calendar

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**Advanced Technology Program**  
Funding High Risk R&D  
2004 Solicitation Open February 13  
Close April 14, 2004  
Proposal conferences in March  
See: [www.atp.nist.gov](http://www.atp.nist.gov)

## **OVERVIEW OF THE NATIONAL SCIENCE FOUNDATION 2005 BUDGET PRIORITIES**

The National Science Foundation (NSF) has submitted a \$5.745 billion budget request for FY 2005. Foundation Director Rita Colwell says the funds will "address frontiers of knowledge and innovation that will strengthen economic growth and prosperity nationally." The 3 percent overall increase above the fiscal 2004 amount increases funding for research by 4.7 percent over the current year level.

Five focused priority areas are slated to receive more than \$537 million in 2005. Support for Nanoscale Science and Engineering will increase by 20 percent, while support for Biocomplexity in the Environment, Mathematical Sciences, and Human and Social Dynamics will continue at 2004 levels. The new budget requests \$20 million to start NSF's workforce for the 21st Century priority area, focusing on U.S. citizens and broadening participation. The FY 2005 budget also seeks funding for six major research facilities.

**Nanoscale Science and Engineering (S&E)** program in 2005 will focus on developing and strengthening critical fields including nanobiotechnology, manufacturing, instrumentation and catalysis at the nanoscale. The request for \$305 million will fund continued and emergent fundamental research and education, expand research infrastructure, and develop the nanotechnology workforce. NSF will support at least two new nanotechnology research and education centers in 2005. The NSF centers focus on electronics, biology, optoelectronics, modeling and simulation and advanced materials and engineering.

**Biocomplexity in the Environment (BE).** This priority seeks a more complete understanding of the dynamic interactions of living things and physical processes in the environment. An important new emphasis for fiscal year 2005 will be research on the complex interactions between freshwater and the rest of the environment. The biocomplexity of these systems will be considered at small scales—at the level of aquatic organisms and their effect on water flow and safety, for example—and at larger scales, such as the influence of climate variability on aquatic ecosystem function.

See News at <http://www.nsf.gov/>

## **“The Value of Investment in Health Care” - Report Released**

A broad coalition today released a new study finding that each additional dollar invested in health care over the last 20 years has produced health gains valued at between \$2.40 and \$3. The value of Investment in Health Care was authored by MEDTAP international and released by a coalition of health care organizations. The MEDTAP report cites peer-reviewed evidence demonstrating the high return on investment from medical advances for treating these conditions. Examples:

Every dollar spent on medicines that lower diabetics' cholesterol produces \$3.00 in health gains;

Each additional dollar spent on new hormonal therapies to treat breast cancer results in at least \$27 of health gains;

Every dollar invested in beta-blockers to treat patients who have had heart attacks returns \$38 in health gains; and

Every dollar spent on antiplatelet therapy for preventing stroke in high-risk patients has provided health gains valued at \$2.00 to \$6.00.

Full text may be found at [WWW.MEDTAP.COM](http://WWW.MEDTAP.COM).

## **Telecom Industry Report**

The Brookings Institute has released a new report on the U.S. telecommunications

industry and the policy issues that are thought to reduce efficiency, harm customers or contribute to the industry's financial problems including:

- Government subsidies to help struggling firms survive.
- Mergers and possible resulting antitrust issues and lack of competition.
- Pricing rules for “unbundled network elements” (UNEs) and interconnection of competing networks
- The final policy discussed is that of “universal service fees”.

View the complete article: <http://www.brookings.edu/comm/policybriefs/pb129.htm>

## **Collaborative R&D with Johnson Space Center**

NASA's Johnson Space Center (JSC) is interested in increasing its participation in collaborative R&D projects with industry. Some of the fields include biotechnology, radio frequency, nanotechnology and micro-robotics, among others. JSC also continues to offer various technologies available for licensing. Contact Joe Breddan, NASA Mid-Continent Technology Transfer Center (MCTTC) field representative. Phone 303-543-9068 or via email: [joe11756@msn.com](mailto:joe11756@msn.com) Visit the MCTTC website: <http://mcttc.com/>

## **Today: An Excellent Time to Look at Export Markets**

With the dollar down over 20% against the Euro in the past year, today is a terrific time for companies to take a look at export markets--or, if they are already exporting, to expand their export sales. In recent months we already have seen a boost in U.S. exports, as our products become more competitive in global markets.

Since some banks remain tentative about supporting their clients' international sales, the U.S. Small Business Administration (SBA) and Export-Import Bank (Eximbank) will provide a bank with a 90% guaranty on loans extended to finance exports transactions. These export working capital loans can be set up to finance a single transaction--one that might be larger than the firm's normal order size--or, established on a 12-month revolving line of credit basis to finance multiple transactions. For SBA loans of 12 months or less, the guaranty fee is only 1/4 of 1%; lines can be renewed annually for three years. Collateral is primarily what is in the transaction: inventory, accounts receivable, work in process, and an assignment of proceeds for letters of credit or credit insurance policies. SBA loans normally can go as high as \$1.1 million, while the Eximbank does not have a lending limit for its loans and also can guaran-

tee loans made to larger businesses.

For companies that would like to expand their business because of growing export sales, the SBA's international trade loan guaranty program could help, by providing a 75% guaranty on a commercial bank loans of up to \$1.6 million. Terms can go out as long as 25 years, while loan proceeds can be used both for fixed assets and working capital. Or, if a company's financing needs are \$250,000 or less, the relatively new SBA Export Express Program might meet those needs. Loans are available under this lender-expedited program, with SBA guaranteeing 85% on loan amounts up to \$150,000, or 75% on loan amounts up to \$250,000. Proceeds can be used for equipment, other fixed assets, transaction costs, foreign trade show participation, translation services or other working capital needs. However, the applicant must have been in business for a least one year and must demonstrate that the loan will help the firm enter a new export market or expand in an existing export market. If you think any of these programs might work for you, call Dennis Chrisbaum, SBA's representative at the U.S. Export Assistance Center in Denver, at 303.844.6623 x 18, or by email [dennis.chrisbaum@sba.gov](mailto:dennis.chrisbaum@sba.gov).

## **Milken Institute's Center for Accelerating Medical Solutions (CAMS) Offers Free e-Newsletter**

The CAMS “SmartBrief” is an email newsletter issued every Tuesday and Thursday and directed to those in pursuit of faster cures for deadly diseases. It provides information on breaking news related to accelerating medical solutions, developments from law, regulation, finance, economics and ethics; access to articles culled from industry and media sources around the globe

that relate to development of medical technologies.

The Center for Accelerating Medical Solutions is a new non-profit organization established under the auspices of the Milken Institute with the goal of developing and implementing solutions to accelerate the process of discovering and developing new therapies for the treatment of disease.

To subscribe, go to: <http://smartbrief.com/cams/>



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## Using SBIR Grants to fund the biotech “gap”

Getting funding for early startup biotech ventures can be an intimidating challenge for even the most seasoned bio-entrepreneur. While industry and government grants fund most of the early discovery of new ideas and technologies, few funding sources are available to finance the “gap” between the new idea and the development of proof of principle or a prototype. Bioentrepreneurs turn to credit cards, the three “F’s” (friends, family and fools) and sometimes angels willing to invest in raw, undeveloped ideas with substantial investment risk.

One resource that is sometimes overlooked is the SBIR (Small Business Innovation Research) and the STTR (Small Business Technology Transfer) programs sponsored by US government agencies.

The SBIR programs are coordinated through the US small Business Administrations’s Office of Technology and funded by contributions from various federal agencies. The lion’s share of the money comes from the Department of Defense (\$800 million) and the National Institutes of Health (\$450 million).

Each participating agency statutorily earmarks 2.5% of its annual extramural research budget for the program.

Businesses can apply for phase I, and given a successful phase I project, may be invited to apply for phase II. Phase I SBIR grant winners receive up to \$100,000. Past phase I winners can win phase II awards of up to \$750,000 for proof of principle studies or development of a prototype.

The SBIR/STTR program is just one of several federal programs designed to support technology advancement. For more information about SBIR grants in the life sciences, check [www.nih.gov](http://www.nih.gov).

Arlen Meyers, Executive Director  
Colorado Alliance for Bioengineering

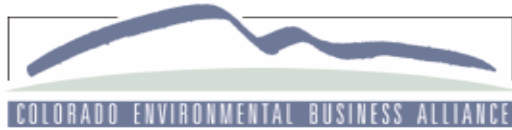
As the new CPIA president for 2004, I’d like to introduce the new **CPIA officers**: Vice-president, Kendall Read (Kapteyn-Murnane Laboratories, Inc.); Treasurer, Kevin Keilbach (Meadowlark Optics); Secretary, Gary Horvath (CU Business Advancement Center). Our board consists of 21 members. Check the website for the complete list, and an update on 2003 accomplishments.

In 2004, we’ve already participated in a very successful **Photonics West**. The show this year had about 14,000 attendees and 800 exhibitors. We had 11 companies in the Colorado Pavilion. CPIA, together with the Denver Metro Network had a double booth. We displayed literature from about a dozen other member companies.

Since photonics is both an industry in its own right, but also a technology that plays an important role in many other industries, our programs this year will explore the synergies between photonics and other industries in Colorado – biosciences (February), defense (April), and nanotech (May).

Our first quarterly meeting, **Synergies Between Colorado Photonics and Biosciences**, took place at Datex-Ohmeda – Now part of GE Medical Systems in Louisville, a medical device company. In spite of the inclement weather, about 70 people from various photonics and biotech companies attended. CPIA presented a plaque to Kevin Keilbach, the outgoing president, recognizing his three years of leadership and dedication to the organization. Following a brief overview of CPIA history and organization, our three guest speakers presented. Arlen Myers, executive Director of the Colorado Alliance of Bioengineering (CAB) talked about the academic research arm. Tom Miller, former president of the Colorado Medical Device Association (CMDA), gave an overview of CMDA and talked about the dynamics of the medical device industry. CMDA has recently joined Colorado Biotech Association to form the Colorado BioSciences Association. Denise Brown, its executive director, talked about the rationale for the merger and gave a brief overview of the new organization.

CPIA gave the ‘**Photonics Company of the Year**’ award, which this year recognized innovative use of photonics technologies in the biomedical field. The winner was The Spectranetics Corporation of Colorado Springs, for its use of an excimer laser to clear obstructed arteries. Christopher Reiser, vice president for technology and clinical research, gave a presentation on their product. (continued on page 12)



Showing Colorado's Expertise to the World  
CEBA, <http://www.ceba.org>  
Bud McGrath, Director, Phone: 303-432-7091



190 E. Ave., Suite 440 Denver, CO 80203  
[www.rockiesventureclub.org](http://www.rockiesventureclub.org)

The Colorado Environmental Business Alliance (CEBA) is pleased to announce that we are expanding our extensive member benefit program, advocacy, and market expertise to support the broader spectrum of sustainable business practices. The sustainability of our Colorado lifestyle dictates that companies incorporate responsible business policies and practices as part of their mission, values, and operations. CEBA will support these organizations through member benefits that:

- Improve financial and operating performance and access to capital with our financing forums, business plan review program, consulting services and seminars;
- Increase markets regionally, nationally and, internationally through our member to member referrals, web site profiles, trade leads, networking events and international program.

Current CEBA events include an invitation only wine and cheese networking event on Feb. 27; CEBA's monthly networking Breakfast on March 3 Topic: "EPA Small Business Innovative Research Grant Program" featuring Jim Gallup from EPA Washington; CEBA Investment Forum on April 7.

For information about future CEBA events and a more detailed list of member and sponsor benefits check out the CEBA web site at [www.ceba.org](http://www.ceba.org), e-mail us at [ceba@ceba.org](mailto:ceba@ceba.org), or call 303/432-7091.

#### CEBA Networking Breakfast

When: March 3<sup>rd</sup> 7:30am – 10:00am  
Where: Red Lion Hotel at Invesco Field  
Topic: EPA's Small Business Innovative Research Grant Program  
Speaker: Jim Gallup, EPA Washington DC  
Cost: \$25 non-members - \$15 members  
Registration: e-mail [ceba@ceba.org](mailto:ceba@ceba.org) mention event

#### March Dinner Program

##### **Hyperfast Growth: How to Create It, How to Handle It** An Interactive Q&A with INC 500 Entrepreneurs

Tuesday March 9, 2004—5 PM to 8 PM  
Denver Marriott City Center, 1701 California St.

Fast growth can be both a dream and a danger. This star-power program will show not only how hyper growth is created, but also how to handle it and not get burned by it. This is a W&A format in which participants can ask questions of and learn from entrepreneurs whose corporate success put them on the Inc. 500 list. Issues will range from financing, to management, growth strategies, hiring frenzies, franchising, and marketing. Register at [www.rockiesventureclub.org](http://www.rockiesventureclub.org)

#### March Workshop

##### **Learning a Sales Framework**

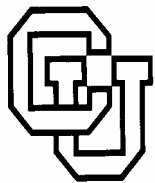
March 9, 2004 from 3 PM to 5 PM  
(Prior to dinner meeting)  
Denver Marriott City Center, 1701 California

If you're looking for a proven framework to shorten your sales cycles, create larger deals, increase your close rates, focus your resource, and increase profitable revenue growth, then you don't want to miss this workshop. Speaker: George Schildge, Matrix Marketing Group

Register at [www.rockiesventureclub.org](http://www.rockiesventureclub.org)

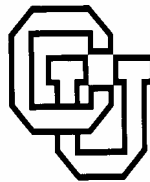
##### **And...Coming Up** **Colorado Capital Conference**

May 20, 2004—8:00 AM to 4:30 PM  
Denver Marriott City Center



**University of Colorado Business  
Advancement Center**

CU-BAC is a business research, information & technology commercialization center of the University of Colorado at Boulder. Contact: Gary Horvath  
303-492-8395 e-mail: [gary.horvath@colorado.edu](mailto:gary.horvath@colorado.edu)  
Internet <http://www.colorado.edu/cubac/>



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4001 Discovery Dr., Suite 390c  
Boulder, CO 80309  
(303) 735-3711  
[www.cu.edu/techtransfer](http://www.cu.edu/techtransfer)

**Horvath Appointed Director as  
CU-BAC Moves to Campus**

We've packed the boxes and sorted out the furniture and computers for the move from our office space on Manhattan Circle to the CU-Boulder Campus where CU-BAC will be located with the Business Research Division, in the Leeds School of Business. The new mailing address is:

CU Business Advancement Center  
University of Colorado at Boulder  
034 UCB  
Boulder, Colorado 80309-034

As of mid-March, CU-BAC telephone number will change to 303-492-8395 which is the contact number for Gary Horvath, who will assume the duties of CU-BAC director. Mr. Horvath has been associated with CU-BAC as a market researcher since 1993. For the past several years, Horvath has shared his expertise between CU-BAC and the Business Research Division. His primary responsibilities include completion of the annual Business Economic Outlook Forum, production of the Colorado Photonics Industry Directory, and team leader for several large industry research projects.

CU-BAC will continue to focus on technology-based business and economic development. Services will include industry studies, strategic planning, needs assessments, program evaluation and feasibility studies for organizations and companies. The center specializes in market research for new technologies and new products.

Bud McGrath will continue to lead a sustainable business development effort focused on environmental and renewable energy companies. In addition, CU-BAC will continue to offer a free business plan critique to any Colorado-based technology company. This service is provided by the center's advisory board of private sector professionals with expertise in finance, marketing, business structure and business planning.

The move to campus will strengthen the center's ability to link technology-based business and economic development efforts with faculty and student expertise.

For more information contact:  
Gary Horvath, Director, CU Business Advancement Center  
Phone: 303-492-8395

**CU Enters Licensing Agreement  
with Biopharmaceutical Company**

BOULDER, CO-The University of Colorado has entered an exclusive, worldwide licensing agreement with Los Angeles-based Newellink USA, Inc., a start-up biopharmaceutical company, which also has facilities in Colorado Springs, Colorado. The agreement covers rights to intellectual property created by CU Colorado Springs inventor M. Karen Newell, Ph.D., and her research collaborators. Richard Duke, Ph.D. from CU's Health Sciences Center also will assist the company with raising initial capital and formulating business and clinical development plans.

"This is a prime example of a 'university without walls,'" said CU President Elizabeth Hoffman. "Faculty from different institutions are collaborating to enrich the lives of Colorado's citizens by commercializing the university's intellectual property portfolio."

Newell's research focuses on identifying metabolic interactions occurring at the cellular and molecular levels that regulate cell growth, proliferation and death. Her research has revealed a novel connection between energy metabolism and the immune response. Applications include new approaches to cancer therapy, treatments for autoimmune diseases and wound healing by controlling cellular mechanisms responsible for cell growth and death.

Newell is an associate professor of biology and scientific director of the CU Institute of Bioenergetics at CU's Colorado Springs campus. One of CU's most prolific inventors, Newell has spearheaded 40 invention disclosures at CU over the last five years.

Duke is an associate professor of medicine and immunology at the University of Colorado Health Sciences Center and has considerable experience in biotechnology company development. He is a founding scientist, director and former CEO of Globelimmune, Inc., which also licenses intellectual property from CU. Duke will work with Newellink on a part-time basis.

"I look forward to helping Newellink move Dr. Newell's exciting discoveries from the lab to the clinic," Duke said. "Her results to date support a rapid clinical development program that is rarely seen in an early stage company."

"We are pleased to have executed this agreement with CU," said Dennis Geselowitz, president of Newellink. "We believe this is an enormous opportunity, and we are committed to working with the University of Colorado to build the company's Colorado operations."

For further information, please contact Bob Nero or Michele McKinney in the CU System Office of Institutional Relations at (303) 492-6206.

Additional contact information: M. Karen Newell, (719) 262-3256, [mnewell@uccs.edu](mailto:mnewell@uccs.edu); Richard Duke, (303) 887-1172; or David Allen, Associate Vice President for Technology Transfer at CU, (303) 735-1688 or [david.allen@cu.edu](mailto:david.allen@cu.edu).

**CU, OED AND EDCC RELEASE  
REPORT ON COLORADO ECONOMIC FUTURE**

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The Business Research Division and CU Business Advancement Center have completed a report on the Colorado Economy for the Colorado Office of Economic Development and International Trade and the Economic Developers Council of Colorado.

The report provides industry summaries on technology sectors including Biotechnology, Nanotechnology, Software, Aerospace, Energy and Environment, Photonics, as well as base industries such as Agriculture and Transportation.

In addition the report provides data on economic attributes and potential opportunities for each of Colorado's counties.

Download the full report, or sections of the report, at:

<http://leeds.colorado.edu/brd>

(CPIA 2004 —continued from page 9)

We also heard about the host company. Rick Brandl, the site's general manager, talked about the use of photonics in pulse oximetry.

Besides our quarterly meetings, we have two monthly events: a CPIA social at Walnut Brewery every first Thursday of the month, and a Small Business Breakfast each second Thursday of the month.

What makes this year special is the **SPIE annual meeting** in Denver, August 2-6, 2004. This event is expected to bring about 5,500 attendees and 230 exhibitors to Colorado. CPIA is a co-sponsor, and is working together with SPIE and local economic development organizations to make this event a success. CPIA will present a series of free seminars on Tuesday, August 3<sup>rd</sup>, and we invite you to attend. Two seminars are related to IP and one to being a technical expert witness. The August CPIA quarterly meeting will also take place the same day, and will be structured as a panel discussion about various domestic and international clusters.

Check our website for details on the above-mentioned activities. We hope to see you at all of the events that will transpire in 2004.

If you would like to become involved with any of these or other projects please contact me. We encourage you to become an active member of CPIA, and have fun contributing to the health and success of the Colorado photonics cluster!

Best wishes, Silvia Mioc, President

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

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**Technology Community** has been published bi-monthly as a cooperative venture of Colorado organizations involved in development, transfer and commercialization of new inventions, products and technologies. This cooperative format began November 1995 and ended with this issue in March 2004.

**CONTINUING YOUR SUBSCRIPTION**

In recent years, readers of *Technology Community* have received the newsletter electronically. In the future technology news will be included as an insert in the *Colorado Business Review*, which will be published by the Leeds School of Business, Business Research Division and CU Business Advancement Center.

*Colorado Business Review* is a print publication distributed by U.S. Mail. Since we do not have mailing addresses for all current subscribers, readers may receive an email asking for a current mailing address. You are encouraged to reply promptly in order to continue your subscription.

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**Thanks to Our Sponsor Organizations**

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Karen Eye, Chief Editor

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Arlen Meyers

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**Colorado Photonics Industry Association**

Silvia Mioc

**CU Technology Transfer Office**

David Allen

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