

*Putting Science to Work*

SUMMER 2003

# Newsletter

## DOING BUSINESS WITH US

### ORNL Goes on the Road: 400 Chattanooga Business Reps Learn How to Do Business with the Lab

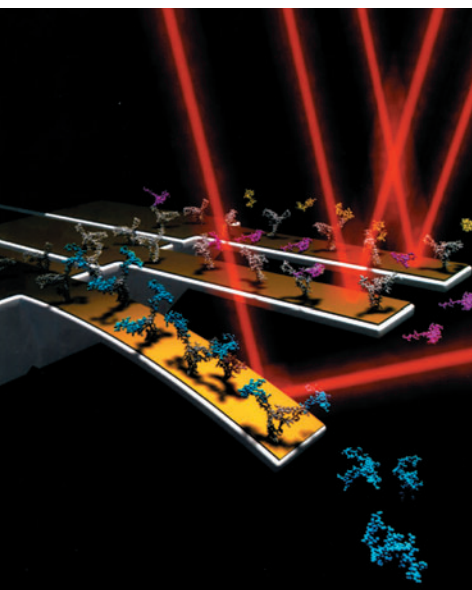
On January 30, ten of ORNL's leadership and support team members participated in Chattanooga mayor Bob Corker's annual Town Hall Forum, entitled *Working with Oak Ridge National Laboratory—Energy to Build Your Business*. Also speaking at the event was Tennessee's new Economic and Community Development Commissioner, Matt Kisber, who offered his first public remarks about the importance of technology to the future of Tennessee. (See story on page 6.) Congressman Zach Wamp also greeted the more than 400



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## OUR TECHNOLOGIES

### Available Technologies: Microcantilevers



ORNL research on microcantilevers—tiny cantilever beams composed of slivers of silicon—continues to provide the basis for developing real-time, portable, low-cost, disposable sensors for several biomedical applications.

Microcantilevers are simple mechanical devices, typically 0.2–1 μm thick, 20–100 μm wide, and 100–500 μm long, that behave like tiny leaf springs which are connected on one end to an appropriate support for convenient handling. Even smaller cantilevers, 2 μm long and 50 nm thick, have been fabricated recently.

Unlike many other types of transducers, cantilevers respond to changes in their environment in ways that can make

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*When a microcantilever is coated with a substance that adsorbs a particular molecule, it will bend more and its natural rate of vibration will change, altering the angle of deflection of incoming laser light.*

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#### Building Economic Development

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ORNL Technology Transfer & Economic Development (TTED) seeks to foster economic development and the growth of business and industry by making available the most innovative equipment, the latest technology, and the expertise of ORNL researchers to technology-based companies throughout the nation.

## MESSAGE FROM THE DIRECTOR



Alex Fischer

Welcome to Technology Transfer and Economic Development's (TTED's) redesigned newsletter. You will find our new theme, "Putting Science to Work," evident throughout this publication and as a guiding theme of our activities.

Our work builds on a strong foundation of technology transfer successes as we develop new relationships that can help us bring the national resources of Oak Ridge National Laboratory to bear on economic development activities throughout the region. Our staff continues to raise the bar with new and expanded metrics, portfolio profit and loss responsibilities, and new licensing

documents and techniques. Programmatically, we are building new market analysis capabilities and prioritizing our best opportunities for commercial successes.

Our staff created the new Sponsored Research Group in less than six weeks, and it is now fully integrated and operational. We continue to expand our economic development relationships and activities in support of our economic development partners throughout the region. And a new website, a trade show booth, and marketing materials are all in the works as tools to promote ORNL's resources.

The work of ORNL's researchers and commercialization efforts continue to receive national accolades among the Federal Lab Consortium, R&D 100 awards, and the newly created Battelle Distinguished Scientists. These awards not only speak to the quality of our staff, technology, and research, but also to the relevance of ORNL's work to the private sector.

This summer, we also bid farewell to Lab director Bill Madia, whose vision has overseen a complete transformation of the ORNL campus into a modern research campus of the 21st century. He brought to Oak Ridge a challenge of aggressive economic development and has raised the bar for laboratories nationwide in terms of facility modernization and the use of national laboratories to create economic development opportunities. Despite a busy schedule responding to requests from local officials, governors, congressional leaders, and the White House, not to mention the Department of Energy and nation's scientific community, Bill always found the time to promote and shape an economic development agenda that will serve our region and state for many years to come. We can all look forward to his many continued contributions from his new corporate role at Battelle.

At the same time, we welcome Jeff Wadsworth, the new director of ORNL. Jeff comes to Oak Ridge after having served as the senior vice president of Battelle, and previously as the deputy director of Lawrence Livermore National Laboratory. While at Lawrence Livermore, Jeff established and headed the first office of technology transfer and has strong roots and interest in the commercialization of technology. Jeff's hands-on experience and background as well as his enthusiasm for commercialization efforts will obviously serve ORNL and our community well as we continue to seek new and innovative approaches to technology transfer.

In the midst of change—new programs and staff, new skylines and taglines—our challenge remains constant: the aggressive pursuit of economic opportunities from one of the world's greatest centers of science and technology. Let's get busy "Putting Science to Work!"

(OUR TECHNOLOGIES continued from page 1)

### Microcantilevers (cont.)

them useful as detectors for harmful chemicals, biological warfare agents, and many other physical and chemical stimuli, including DNA, proteins, cells, or trace amounts of various chemical contaminants. Larger arrays of tiled cantilevers can be used as artificial eyes, ears, noses, and tongues.

When microcantilevers are coated with a metal layer and then exposed to heat, they bend in a way similar to the bimetallic thermostat but with the unprecedented sensitivity of one-millionth of a degree. When molecules stick to them, their resonance frequency changes. In fact, the sensitivity of cantilevers to small mass changes can approach the mass of a single molecule.

These and many other properties make cantilevers on one hand interesting tools for basic studies of processes at the molecular level and on the other hand devices that can fill needs in everyday life.

### Licensed Technologies: OGENICS Raises \$1 Million to Develop the Molecular Comb

OGENICS Biosciences, Inc., an innovator in the rapidly emerging protein chip technology market, recently announced that it has raised \$1 million in its initial Series A financing from Memphis Biomed



Venture Partners I, L.P., a venture capital fund based in Memphis, Tennessee.

QGENICS holds the exclusive license to the Molecular Comb™, a chemical separation technology invented at ORNL. The Molecular Comb externally manipulates biomolecules inside a disposable microchip without the need for channels or patterned electrodes. The device basically shrinks an entire laboratory full of instrumentation and personnel to the size of a single disposable microchip.

Although the technology has a wide variety of applications in a number of large growth markets, the company's initial efforts will be to develop and commercialize chip-based tools for understanding the function of proteins in disease. Until recently, the study of protein function has been limited by tools that are highly labor-intensive, inefficient, and prone to error. QGENICS' programmable chip technology will improve the efficiency and effectiveness of protein research while providing scientists with unparalleled instrumentation flexibility and quality of data.

**ORNL inventors and QGENICS developers of the Molecular Comb: From left to right, Thomas Thundat (ORNL Life Sciences Division), Gilbert Brown (ORNL Chemical Sciences Division), Chuck Witkowski (QGENICS), Jay Harkins (QGENICS), and Robert Warmack (ORNL Life Sciences Division).**



(DOING BUSINESS continued from page 1)

### ORNL Goes on the Road (cont.)

business people, university attendees, entrepreneurs, and community leaders who packed the Chattanooga Hotel and Conference Center for the afternoon-long program. An annual event, the Mayor's Town Hall Forum showcases one of the Valley Corridor partners each year for the general business community.

Laboratory director Bill Madia gave an overview of the ORNL's areas of expertise and current research and the Lab's role in economic development with businesses in the region. Alex Fischer gave a review



**Chattanooga mayor Bob Corker addresses attendees at the Town hall Forum featuring ORNL technologies.**

of Tech Transfer opportunities, and Greg Turner reviewed contract opportunities. After the main session, breakout groups on procurement and tech transfer received more in-depth information.

The turnkey session for businesses, offered free to the public, was sponsored by the City of Chattanooga, UT-Battelle, the Chattanooga Chamber of Commerce, the Advanced Transportation Technology Institute, the Tennessee Technology Development Corporation (TTDC), the University of Tennessee—Chattanooga, Blue Cross Blue Shield of Tennessee, TVA, and Unum Provident. Among those present were business representatives from Atlanta and nearby communities in Alabama, North Georgia, and Middle Tennessee. In addition, several prospective Chattanooga industries attended the event to learn more about potential advantages available to them from ORNL.

PEOPLE IN  
TTED NEWS

**Federal Laboratory Consortium Elects ORNL's Dickens as Vice Chair**



Larry Dickens

The FLC elected Larry Dickens as vice chair at its national meeting in Tucson, Arizona, on May 8. Larry is a commercialization manager in TTED. As a technology transfer professional at ORNL, Larry has been involved in all aspects of commercialization, from coordinating technology assessments, to negotiating licenses and cooperative R&D agreements (CRADAs), and assisting entrepreneurs in forming new business ventures.

Larry is also responsible for the execution of the largest patent license in ORNL's history, and last year negotiated a \$121 million CRADA with \$25 million funds in. He serves as the deputy regional coordinator for the Southeast Region FLC.

**TTED's Lou Dunlap elected to Oak Ridge City Council**



Lou Dunlap

Louise Dunlap, TTED's director of sponsored research, was elected to a four-year term on the Oak Ridge City Council on June 3. Lou has filled a vacant seat as an appointee since November 2002. Prior to that appointment, she served on the Oak Ridge Planning Commission for more than 10 years.

Lou has been active in many community organizations, including the United Way, the Methodist Medical Center Foundation Board, the Methodist Medical Center Advisory Board, the Anderson County Health and Educational Facilities Board, the League of Women Voters, the Pellissippi State Foundation Board, and the Rotary Club.

In TTED, Lou's work includes CRADAs, Work for Others, Material Transfer, and User Agreements.

**Geoff Robson Appointed Assistant Director for Center for Entrepreneurial Growth**



Geoff Robson

Geoff Robson was recently appointed assistant director and CFO for the Center for Entrepreneurial Growth (CEG) and is leading the effort for the new CEG incubator on the UT-Knoxville campus for Technology 2020. Geoff comes to CEG after serving three years as the CFO of a \$50 million division of Emerson Electric, a Fortune 500 company traded on the New York Stock Exchange.

AWARDS AND  
REWARDS

**FLC Awards—ORNL Grand Slam**

All four of ORNL's nominations for the 2003 Federal Laboratory Consortium (FLC) Excellence in Technology Transfer category received awards in Tucson in May. This is a significant accomplishment: only 22 nominations were recognized nationwide for the 700-plus laboratories in the FLC, and four is the maximum number of awards any one laboratory can receive.

The Excellence in Technology Transfer award winners from ORNL were

- "Automated Image Retrieval System for Semiconductor Yield Improvement," Regina Ferrell, Shaun Gleason, Bruce Jatko, Tom Karnowski, Ken Tobin, and Bobby Whitus
- "Carbon Composite Bipolar Plate," Ted Besmann, Tim Burchell, John Henry, Jr., and James Klett
- "Expression Data Clustering Analysis and Visualization Resource (EXCAVATOR)," Dong Xu, Ying Xu, and Victor Olman
- "ASAP: Any Source, Any Position Fluid-Handling Device," Mitch Doktycz and Steven Hicks.

ORNL has received 29 FLC awards since 1985, a recognition that good science that makes a tangible difference in the marketplace.



Posters describing two of the ORNL technologies that won 2003 FLC Excellence in Technology Transfer awards. Photo courtesy of Mitch Doktycz.

(PEOPLE IN TTED NEWS continued from page 4)

## TTED distributes \$100,000 to ORNL Inventors

At a reception hosted by the Office of Technology Transfer and Economic Development (TTED) at Technology 2020 in Oak Ridge, 107 ORNL research staff were awarded almost \$100,000 for their work in 2002. The May 12, 2003, event honored the ORNL inventors and authors



TTED Director Alex Fischer (far left) and ORNL Deputy Director of Science and Technology Lee Riedinger (far right) congratulate some of ORNL's inventors. From left to right: Mariappan Paranthaman, David Beach, Eliot Specht, and Amit Goyal.

for successful patent applications for inventions and for authored copyrights.

Alex Fischer, director of TTED, said: "Our research staff represents our greatest asset at Oak Ridge National Laboratory. These awards recognize those researchers who are planting the seeds for future commercial opportunities through new patent applications. It is important that we recognize and encourage their efforts."

Fischer was joined by ORNL's deputy director for science and technology, Lee Riedinger, in handing out the awards. Riedinger noted that "our researchers lead other labs in the number of new patent applications, building on the world-class technology and development available at ORNL."

## TTED Summer Interns

TTED is fortunate to have two interns, Justice Graham and Anne Stellern, assigned to the Economic Development Program this summer. In addition to undertaking one major project in support of the ORNL economic development activities, Justice and Anne have been assigned numerous miscellaneous tasks to become familiar with the overall mission of TTED.

Justice, originally from Crossville, is a 19-year-old sophomore from the University of Tennessee. Justice has not yet declared a major but is interested in several fields, including engineering, physical sciences, statistics, and business management. His major project at TTED is the creation of a regional map of technology businesses.

Anne, a Knoxville native, is a senior at Auburn University, where she will receive a degree in finance with a minor in business engineering and technology. Her minor emphasizes collaboration between engineering and business disciplines. After graduation, Anne plans to get an MBA from the University of Tennessee or begin a career. Her major project at TTED is development of a database for

tracking information on startup companies whose business is based on ORNL technologies.



Anne Stellern and Justice Graham

## TTED Announces MBA Internship Program

TTED has recently begun an MBA internship program, in partnership with the full-time MBA program in the College of Business at the University of Tennessee—Knoxville. The purpose of the program is twofold: (1) to provide UT-Battelle with the ability of tapping into the considerable market analysis and business intelligence expertise of students in the UT MBA program; and (2) to provide the students with a rewarding internship experience that will help to prepare them for future career endeavors.

Our current MBA interns, Alexander (Alex) DeTrana (shown left) and Maziar (Mazi) Arzanpouli (right), began their internship in May and will be with us through December. We will recruit a new group of interns for 2004. The efforts of the MBA interns will do much to help us better position our technologies in the marketplace.



TENNESSEE FOCUS ON TTED

**Tennessee Claims the First Annual Award for State Development Office Success**



*Site Selection Magazine*—whose mission is to publish information for expansion planning decision-makers such as CEOs and corporate consultants—has named the Tennessee Department of Economic and Community Development (ECD) as the first recipient of its new Competitiveness Award. The award, open only to state-level economic development agencies, is based on ten quantifiable criteria for measuring business-expansion activities during the previous year. The most important of these factors is an agency’s ability to attract capital investment and expand economic activity in the state. Projects qualifying for inclusion in the measurement database meet one or more of these criteria: a minimum capital investment of \$1 million, generation of 50 or more new jobs, and new floor space of at least 20,000 square feet.

Tennessee’s top score, which was more than 40 points above the score for the second-ranked state, is a result of aggressive and innovative economic development initiatives throughout Tennessee, including the highly touted Tennessee Means Technology Campaign of 2002. That focus continues with the present governor, Phil Bredesen (see next story). DECD Commissioner Matt Kisber says, “There is probably no area the governor is more passionate about than building the state’s economy.”

Bredesen Economic Team Has Strong Technology Focus



**Bredesen Economic Team Has Strong Technology Focus**

The economic team of Tennessee Governor Phil Bredesen (himself a Harvard-educated physicist and a former successful entrepreneur) is well positioned with the knowledge and experience to help Tennessee capitalize on its technology resources. Bredesen has put an emphasis on technology-based economic development. Bredesen’s Economic and Community Development (ECD) commissioner, Matthew Kisber, has long been an advocate for technology-based economic development. While in the General Assembly, Kisber championed the creation of the Tennessee Technology Development Corporation (TTDC) as well as the Tennessee Jobs Skills fund, which was aimed at technology-intensive job training. Bredesen’s chief policy advisor, Drew Kim, has also been active in technology-based economic development, including posts with ECD and TTDC.

**Knoxville Wins Top Mid-Market, National Honors**

*Southern Business and Development* magazine has named Knoxville the Mid-Market of the Year in economic development. “Knoxville has the momentum at this point; the key is to keep that

BUILDING ECONOMIC DEVELOPMENT

**Transportation Solutions the Topic of Recent Economic Summit**

“Creating Next-Generation Transportation Solutions” was the theme for this year’s Tennessee Valley Corridor Economic Summit, held May 27–29 in Huntsville, Alabama. Hosted by Alabama Congressman Bud Cramer, the event attracted more than 400 regional leaders, who attended discussions of America’s future space transportation and energy needs, as well as transportation technologies and challenges for the future. Speakers from Oak Ridge National Laboratory included Dick Ziegler, head of ORNL’s Transportation Technologies Program; Gil Gilliland, associate lab director for the Energy and Engineering Sciences Directorate; and Robin White, director of the UT-ORNL Center for Homeland Security.

“During the Summit we’ve been lucky to have government, business, educational and community leaders together in both formal and informal sessions that helped us to build on our current initiatives,” remarked Cramer at the closing dinner.

The annual economic summits are sponsored by the Tennessee Valley Corridor, which strategically links the science and technology assets from southwest Virginia through East Tennessee and into northern Alabama.



Tennessee Congressman Zach Wamp (left) and Kyle McSlarrow, Deputy Secretary, U.S. Department of Energy, at the May Tennessee Valley Corridor Economic Summit.

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(TENNESSEE FOCUS ON TTED continued from page 6)

**Jobs Now!  
Regional  
Development  
Effort  
Focuses on  
Technology  
Companies**



*Jobs Now!* is a collaborative regional economic development effort of the East Tennessee Economic Development Agency (ETEDA), the Oak Ridge Economic Partnership, the Blount Partnership, and the Knoxville Area Chamber Partnership. The program is working to boost East Tennessee's technology industries by building a "critical mass" of high-tech firms. *Jobs Now!* hopes to create 35,000 new technology-industry jobs over the next five years.

"One of the big challenges to attracting technology companies is the fact that similar companies tend to locate near each other," says ETEDA President Allen Neel. "This is especially true if you need specific infrastructure or worker skills. Locating near similar companies means you can draw on common resources."

The best way to attract high-tech companies, according to Neel, is to target companies that are a good fit for East Tennessee. "Specific technologies at Oak Ridge National Laboratory and the University of Tennessee have strong private-sector applications, but those firms might not be what some consider your standard technology company."

*Jobs Now!* also has an important local component that focuses on entrepreneurship and home-grown companies. Growing new companies that leverage East Tennessee's unique technologies will help create the critical mass of high-tech companies. Conversely, the local component will ultimately help the regional efforts to attract businesses.

**Knoxville Wins Mid-Market (cont.)**

momentum and to stay on the top of that list for the next years," the magazine reported.



"We are extremely proud of this award because it demonstrates the incredible progress that has been made through working together, sharing resources and leveraging what is best of our community," said Rhonda Rice, the Knoxville Partnership's executive vice president. "As the Partnership, the East Tennessee Economic Development Agency, Oak Ridge Economic Partnership and Blount Partnership become an even more cohesive force through the Jobs Now! effort, the sky's the limit for what we can do together."

**Tennessee Touts Its Capabilities at 2003 Biotechnology Industry Organization Annual Convention**

Tennessee made its presence known at the 2003 annual convention of the Biotechnology Industry Organization (BIO) with a 50-member delegation. The Tennessee Biotechnology Association (TBA) partnered with the state's Department of Economic and Community Development (ECD), the Tennessee Economic Partnership, and the life science community to tout Tennessee's business advantages at the world's largest biotech event, which took place June 22–25 in Washington, D.C.



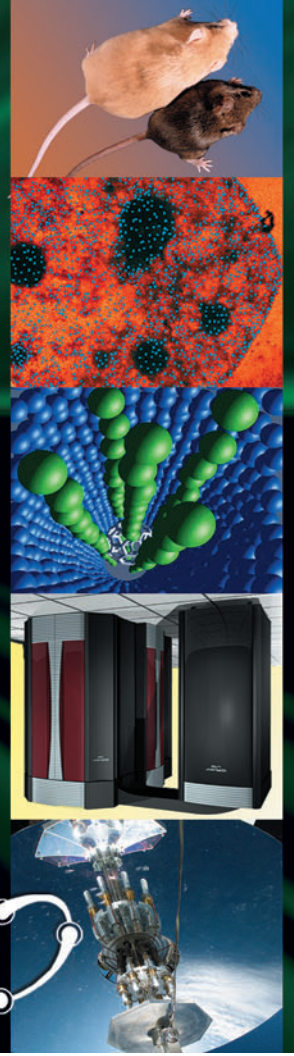
*Senator Lamar Alexander addresses guests at Tennessee's BIO 2003 reception.*

The conference included sessions on business development, science and regulatory affairs, global health, bioethics, and patient advocacy; as well as numerous exhibits. Like last year's convention, this year's was global in scope, with more countries than U.S. states represented (55 countries and 47 states). "With a keynote speech from President George W. Bush and more than 16,000 attendees, BIO 2003 attracted a new level of recognition of the contributions biotech has made to human health and the U.S. economy, and Tennessee was part of the action," said TBA Chairman Dennis Grimaud.

Tennessee's ambassadors not only networked from the state's trade show booth and worked the conference floor, but also took part in a special VIP Biotech Industry Reception on Capitol Hill, hosted by Senators Bill Frist and Lamar Alexander. Nearly 175 guests mixed and mingled while learning about the many life science resources available in Tennessee.

BIO 2004 will take place on June 6–9, 2004, at the San Francisco Convention Center.

# TECHNOLOGY TRANSFER AND ECONOMIC DEVELOPMENT



## UPCOMING EVENTS

- September 2-4 Tennessee Governor's Conference, Nashville, Tennessee
- September 17-19 FLC Southeast Regional Meeting, Charleston, South Carolina
- September 21-25 Licensing Executives Society (LES) Conference, San Diego, California
- October 5-7 Tennessee Valley Corridor Summit, Chattanooga, Tennessee. For more information: <http://www.tennvalleycorridor.org/>
- October 16-17 Regional SBIR Conferences, Memphis and Chattanooga, Tennessee
- November 17-18 Tennessee Venture Forum, Chattanooga, Tennessee



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