

In brief

Economic Development



UMASS SUPPORTS GROWTH OF NANOTECHNOLOGY IN THE COMMONWEALTH

To Friends of UMass:

I am proud to report on a significant achievement by a team of UMass Amherst faculty that directly supports our mission as the public research university of Massachusetts and our role as a vital contributor to the state's economic development.

UMass Amherst Wins NSF Competition for Nanotech Manufacturing Center

The campus recently announced the creation of the Center for Hierarchical Manufacturing, established through a \$16 million grant from the National Science Foundation's highly competitive Nanoscale Science and Engineering Center Program. It will be led by Professors Jim Watkins of Polymer Science and Engineering and Mark Tuominen of Physics, co-directors of the MassNanoTech Institute at Amherst.

The center's focus is the design and manufacturability of new nanoscale materials, devices, and systems. Its mission is to drive nanomanufacturing advances through to commercialization, which the center will do through test bed projects and partnerships with industry collaborators, led by Cambridge-based TIAX and Lucent Technologies' Bell Laboratories.

The development of nanotechnology has been a strategic initiative at Amherst, and the center proposal was supported by a \$200,000 seed grant from the President's Science and Technology Initiatives Fund. Of critical importance to the success of this proposal was \$2 million in state matching funds provided by the John Adams Innovation Institute.

The center adds to an impressive body of nanoscale research at Amherst, involving over 50 faculty investigators in eight academic departments. They have obtained over \$36 million in nanotechnology funding between 1997 and early 2006, placing Amherst among the top American universities in this field.

A Growing Cluster of Excellence in Nanotechnology at UMass and in Massachusetts

Nanotechnology holds great economic promise for Massachusetts, offering the potential for new and improved products in areas as diverse as electronics, computing, energy, life sciences, and instrumentation. Both established companies and new start-ups are capitalizing on this exciting technology.

The Amherst center complements the focus on high-volume nanomaterials production at UMass Lowell's Center for High-Rate Nanomanufacturing (a \$12.4 million partnership with Northeastern and the University of New Hampshire). Together, they help make Massachusetts a global leader in nanomanufacturing.

Moreover, both centers, when combined with the large body of nanotech R&D already underway at the Commonwealth's universities — across UMass and at MIT, Harvard, Northeastern, and the other private institutions — constitute an impressive cluster of R&D excellence for the Commonwealth.

This most recent success once again demonstrates the world-class caliber of UMass faculty and their ability to compete and win the most rigorous research competitions. This new center will provide outstanding learning opportunities and research experiences for our students. And, it will help UMass continue our mission of building a science and technology-based economy in all regions of the Commonwealth.

Sincerely,

Jack M. Wilson, President

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“The partnership between Dana-Farber and UMass Boston will enhance both cancer research and our efforts to address disparities in cancer morbidity and mortality. These efforts are critical for improving health outcomes for citizens in underserved communities.”

EDWARD J. BENZ JR., MD
President and CEO,
Dana-Farber Cancer Institute

**John Adams Innovation Institute
 \$2 Million Matching Grant Helps
 Amherst Win Nanotech Competition**

A \$2 million matching grant from the John Adams Innovation Institute (JAI) to Amherst was critical to the campus’s successful effort to win a highly competitive NSF competition for a new center in nanomanufacturing. The state grant directly helped leverage \$16 million in federal funds for a Center for Hierarchical Manufacturing under NSF’s Nanoscale Science and Engineering Center (NSEC) Program. The state funds will specifically support efforts to bring the center’s research benefits directly to Massachusetts companies. This is the second time that a JAI grant has helped Massachusetts win an NSEC award. Last year, it helped a university consortium consisting of UMass Lowell, Northeastern, and the University of New Hampshire to win a \$12.4 million grant from the NSF for the Center for High-Rate Nanomanufacturing.

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**UMass Boston and Dana-Farber/Harvard
 Cancer Center Partner for Collaborative
 Research, Workforce Development**

With a five-year, \$4.3 million grant from the National Institutes of Health, UMass Boston is embarking on a broad-ranging partnership with Dana-Farber/Harvard Cancer Center (DF/HCC) to reduce health disparities in Boston neighborhoods and diversify the region’s biomedical research community. Led by principal investigators Rick Jensen (UMass) and Karen Emmons (DF/HCC), the program has four components: efforts to stimulate new basic cancer and health disparities research, clinical experiences and training programs for students, develop-

ment of joint institutional mechanisms for minority faculty recruitment and career development, and new community outreach and cancer education efforts that emphasize the promotion of evidence-based medicine.

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 Biotechnology Center (617) 287-6032,
 roderick.jensen@umb.edu

**Dartmouth Receives \$6 Million in
 Federal Funds for Research in Marine
 Science and Advanced Materials**

Dartmouth continues to build its research enterprise with the announcement of awards of \$6 million for marine science and advanced textiles and materials. The School of Marine Science and Technology (SMAST) and the Massachusetts Marine Fisheries Institute (MFI), a partnership between UMass and the Commonwealth’s Division of Marine Fisheries, will receive \$4.8 million for Massachusetts-based sustainable fisheries research. Programs include research on populations and migration patterns of groundfish and lobster, ocean modeling of Georges Bank and the Gulf of Maine, and ongoing scallop survey activities. In textiles and advanced materials, Dartmouth will receive \$1.2 million through the National Textile Center (NTC), an academic consortium supporting U.S. industry. Nearly a dozen projects will be funded, including research on medical and electronic applications and formation and use of nanoscale fibers and composites.

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Construction of Boston's Venture Development Center Begun

The transformation of the Boston campus's Wheatley Hall cafeteria into a new collaborative research and entrepreneurship center has begun. Occupying 13,000 square feet of space, the Venture Development Center will offer business development and administrative support to entrepreneurial faculty who are pursuing large-scale partnerships with other institutions and industry. The center will house core facilities for research, an interdisciplinary collaboration facility, and temporary office and lab space for industry partners working with Boston faculty. Financial support for the development of the center has been provided by state and federal agencies.

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Research Agreements Signed with South African Universities; Mandela Honored

President Jack Wilson and Trustee Chairman James Karam led a delegation of UMass officials to South Africa to advance research partnerships with three of South Africa's leading universities and bestow an honorary degree on former President Nelson Mandela. Wilson also awarded an honorary degree to Mandela's wife, University of Cape Town Chancellor Graca Machel, and presented the President's Medal to anti-apartheid leader Ahmed Kathrada, who was convicted with Mandela in the 1963–64 Rivonia Trial. Agreements with the University of Cape Town, the University of the Western Cape, and the University of KwaZulu-Natal will expand joint research programs in a number of areas, including HIV/AIDS, nursing, and solar and renewable energy technologies.

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John Adams Innovation Institute Supports Three S&T Projects

The John Adams Innovation Institute (JAII) has recently awarded development grants to UMass in biopharmaceutical manufacturing, ocean sciences, and imaging for drug discovery. Each program was previously supported by the President's S&T Initiatives Fund. The three \$150,000 development grants enable continued planning, collaborative research, and technology development to spur economic growth in the Commonwealth.

Biomanufacturing Process Research and Workforce Development (Lowell) — The Massachusetts BioManufacturing Center, led by Professor Carl Lawton of the Department of Chemical Engineering, will implement new initiatives in process research and professional education to address the manufacturing needs of the biotechnology and pharmaceutical industries. The center's academic partners are the Dartmouth campus, Tufts, and Worcester Polytechnic Institute (WPI). Industry supporters include Antigenics, Cambrex, Genzyme, Invensys, Millennium, Nova Biomedical, and Wyeth.

Applied Ocean Observation Systems (Dartmouth) — Dean Brian Rothschild of the School for Marine Science and Technology leads a joint Dartmouth-Boston collaboration in the development of a new research center for applied ocean observation systems. The team is working closely with Woods Hole Oceanographic Institute and MIT to secure major federal funding. It is also working with companies from industry clusters such as sensors, information technology, and fisheries that represent suppliers and customers of such systems.

Consortium for Imaging Biomarker Development (Worcester) — Vice Chancellor for Research John Sullivan leads the medical school's participation in a consortium to investigate and exploit the use of imaging biomarkers in drug discovery and development. Imaging biomarkers can show at the molecular and cellular level both the presence and progress of disease and the effectiveness of proposed therapies. These markers have the potential of significantly reducing the cost of bringing new drugs to market. In addition to UMass, the collaboration involves Mass Insight, Massachusetts General Hospital, Merck, Biogen, and other academic, clinical, and industrial partners.

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Technology Commercialization &

FY 2004 UNIVERSITY TECHNOLOGY LICENSING

[dollars in millions]

Institution	Revenue
New York University	\$109.0
University of California System	\$74.3
University of Wisconsin Madison	\$47.7
Stanford University	\$47.3
University of Minnesota	\$45.6
University of Florida	\$37.4
Michigan State University	\$36.4
Wake Forest University	\$34.3
University of Colorado System	\$34.1
University of Rochester	\$33.7
University of Massachusetts System	\$26.3
MIT	\$25.8
University of Washington	\$22.8
Emory University	\$22.5
Harvard University	\$16.7

Source: Association of
University Technology Managers

UMass Leads Massachusetts, Among Nation's Best in University Technology Licensing Income

With \$26.3 million in revenues, UMass generated the highest licensing income of any university in Massachusetts in 2004, as reported in the Association of University Technology Managers' annual survey. Nationally, with greater than 200 U.S. institutions responding to the survey, UMass's revenues were among the 15 highest. The universities with income greater than \$15 million are shown in the sidebar (excluding anonymous respondents).

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UMass Medical and WPI Expand Collaboration in Tech Transfer, Research

UMass Medical School and WPI's Bioengineering Institute (BEI) continue to develop synergistic partnerships that leverage each other's strengths in areas such as medical devices. In one example, four WPI students, as part of their senior thesis, developed a working prototype for a device that detects infant apnea (cessation of breathing). The device was the result of research of Dr. David Paydarfar at UMass and colleagues at both the Medical School and WPI. The technology has since attracted the interest of several potential licensees. In addition, UMass Medical and BEI have begun to organize collaborative meetings with potential industry research sponsors in hopes of attracting additional industrial R&D support to both institutions. These efforts have been spearheaded by Gary Sclar in Worcester's

Office of Technology Management and BEI Director Grant McGimpsey.

Contact: Gary Sclar, Licensing Officer, Office of Technology Management (508) 856-5494, gary.sclar@umassmed.edu

UMass Tech Transfer Staff to Provide State-wide Leadership

Bill Rosenberg, Executive Director of CVIP, and Abi Barrow, Director of the Massachusetts Technology Transfer Center, have recently been tapped for new statewide leadership roles. Rosenberg was elected by his peers in the tech transfer community to become chair of the Massachusetts Association of Technology Transfer Offices (MATTO), the professional association of technology licensing officers from 31 public and private universities, teaching hospitals, and research institutes across the Commonwealth. Barrow was elected chair of the board of the Massachusetts Office of International Trade and Investment (MOITI), the state agency responsible for assisting Massachusetts companies to grow internationally and attracting foreign companies to locate in Massachusetts.

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ENTREPRENEURSHIP

Lowell Licenses Environmental Management Software to Universities, MBTA

In 2005, UMass Lowell commercialized EMS WebWare™, a web-based software application designed to help companies and other institutions implement environmental management systems. The software was initially developed for in-house use by a team led by Richard Lemoine, the campus's Director of Environmental Health and Safety. Since its launch, EMS WebWare™ has released a major upgrade and has made inroads into the education and public sectors, including Yale University and Montclair University. Both universities purchased the software through a matching grant program, generously provided by Triumvirate Environmental. In 2006, the MBTA purchased the software and environmental consulting services for all of their locations.

Contact: Susu Wong, Licensing Associate, UMass Lowell Commercial Ventures and Intellectual Property (978) 934-4722, susu_wong@uml.edu

Commercialization Lab Launched at Lowell

Graduate students from Lowell's College of Management and College of Engineering are participating in an innovative yearlong program through the new UMass Commercialization Lab (UMCL). Beginning in the fall with classroom work in their relevant disciplines, the MBA and D.Eng. students are now collaborating to design a company based on a patent-pending medical imaging technology. Reporting to a virtual board of directors, student teams are concurrently working to advance both the business plan and the technology. They are also exploring various market opportunities, such as developing a lower-cost technology solution for a diagnostic tool to be used in health clinics in developing nations, or instrumentation for veterinary clinics. The students are being led by UMCL co-directors, Valerie Kijewski of the College of Management and Paul Wormser of CVIP, assisted by a team of faculty, staff, and industry experts. The imaging project received funding from the National Collegiate Inventors and Innovators Alliance.

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"UMass Lowell's EMS WebWare™ is a great investment for the T. It will enhance our environmental operations, allowing us to operate more efficiently, and, most importantly, continue meeting our environmental responsibilities."

DANIEL A. GRABAUSKAS, MBTA General Manager

MASSACHUSETTS TECHNOLOGY TRANSFER CENTER

CALENDAR OF EVENTS

May 1, 2006

Early Stage Life Sciences Technology Conference

Harvard Medical School

May 24, 2006

Marine and Ocean Sciences Conference

Woods Hole Oceanographic
Institute

June 2006

Advanced Invention to Venture

Location TBD

September 2006

Advanced Invention to Venture

Location TBD

Fall 2006

Clean Energy Conference II

Location TBD

Fall 2006

Nanotechnology Conference II

Location TBD

Fall 2006

Invention to Venture

UMass Dartmouth

Fall 2006

Invention to Venture

UMass Amherst



DEVELOPING THE

Future Workforce

Amherst Wins Designation as First Microsoft IT Showcase School

Microsoft Corporation CEO Steve Ballmer visited UMass Amherst in October to announce selection of the campus as the first Microsoft IT Showcase School. The designation recognizes higher education institutions for national leadership in IT education and teaching, and Ballmer indicated that only a handful of universities will be named IT Showcase Schools. Amherst was selected based on its programs to broaden access to IT education as well as its efforts to develop campus infrastructure to support innovative uses of technology in teaching and learning. Microsoft specifically cited a number of activities, including a minor degree program in IT (developed through the Commonwealth IT Initiative), Isenberg School of Management courses, UMass Center for Teaching programs that incorporate Microsoft technology, the new Learning Commons in the W.E.B. Dubois Library, and the campus's overall positive record of encouraging women to study mathematics, science, technology, and engineering. New collaborative activities have begun to unfold under the IT Showcase umbrella, including additional support for IT programs and an inaugural lecture series.

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Sloan Consortium Honors UMass Lowell for Online Programs

The Sloan Consortium, an association of more than 1,000 institutions and organizations of higher education engaged in online learning, recently presented its 2005 national awards for excellence in online teaching and learning. Of the five national awards, UMass Lowell won three — for excellence in faculty development for online teaching, for excellence in institution-wide online teaching and learning programming, and an individual award for online teaching to Psychology Professor Joan Cannon.

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BATEC Leader at Boston Wins Workforce Leadership Award

The Mass Network Communications Council recently bestowed its annual "Workforce Development Leader" award on Deborah Boisvert, Director of the BATEC Center for IT at UMass Boston. BATEC — the Boston Area Advanced Technological Education Connections — was launched in 2003 to strengthen the IT educational opportunities for students in the Boston area. Through Boisvert's leadership, BATEC has received a \$2.4 million NSF grant and forged effective partnerships with community colleges and K–12 systems in the region. This is the third time in recent years that UMass has been honored with this award by the NetComms Council. Previous winners include President Jack Wilson and Amherst faculty Joseph Goldstein and James Kurose.

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"By recognizing UMass Amherst as a Microsoft IT Showcase School, we see the university as a true pacesetter in higher education, committed to providing an array of additional learning resources tailored to students' specific needs. It is a privilege to help the university share its knowledge more broadly."

STEVE BALLMER, CEO, Microsoft Corporation

ECONOMIC ANALYSIS

for the COMMONWEALTH

Medical Device Industry Profiled by UMass Lowell Faculty

UMass Lowell recently completed a landmark study of the medical devices industry in Massachusetts, the results of which are highlighted in an article by Michael Best in the winter edition of *Massachusetts Benchmarks*. The study used a new database and methodology that enabled a deep analysis of this growing industry. It identified not only 177 companies traditionally classified as medical device firms, but another 105 companies classified in other industrial categories that also make medical device products. It also provided a unique analysis linking the state's historic strengths in precision engineering and instrument-making to the development of this industry.

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UMass Donahue Institute/CHAPA Housing Poll Documents Housing Challenges

The UMass Donahue Institute recently released the results of its second annual housing poll conducted in collaboration with the Citizens Housing and Planning Association (CHAPA). The purpose of the poll is to explore the housing needs of Massachusetts residents, as well as their views on housing policies and programs at the state and local level. The poll surveyed 512 residents statewide and an additional 454 residents in Essex County. The poll found that nearly 87% of Massachusetts residents cite housing costs as a concern and 29.5% indicated that their monthly housing payment makes it "hard to

make ends meet." Approximately 24% reported that they or members of their immediate family "have seriously considered moving out of Massachusetts because of the cost of housing." More than 75% agreed that the cost of housing is preventing young families from living and working in the towns where they grew up. Residents feel that the high cost of housing is forcing older residents to leave their towns with more than six in 10 respondents agreeing that the cost of housing is preventing elderly residents from continuing to live in their towns. The poll's respondents showed positive attitudes toward the production of new housing. Nearly seven in 10 of those polled said that they would support building more affordable housing in their neighborhoods.

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Boston and Dartmouth Lead Study of Marine and Coastal Economy

Researchers from UMass Boston, UMass Dartmouth, and the UMass Donahue Institute recently began work on a detailed study of the Commonwealth's marine and coastal economies. A true cross-campus collaboration, the research team will be led by UMass Boston Professor David Terkla, UMass Dartmouth Professor Daniel Georgianna, Jack Wiggin of UMass Boston's Urban Harbors Institute, and Rebecca Loveland from the UMass Donahue Institute. Commissioned by the Massachusetts Office of Coastal Zone Management, this comprehensive study will carefully define, quantify,

and assess the economic contributions of this important industry sector.

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UMass Donahue Research Director Selected to Head New England Economic Partnership

Dr. Michael Goodman, UMass Donahue Institute's Director of Economic and Public Policy Research, was recently elected President of the New England Economic Partnership (NEEP). A member-supported, non-profit organization dedicated to providing objective economic analyses and forecasts, for more than 25 years NEEP has identified and investigated economic issues relevant to New England. NEEP provides reliable and accessible economic data to business and government decision-makers, facilitates research on regional economic issues, and serves as a forum for examination of developments in the New England economy. Twice a year NEEP publishes macroeconomic forecasts of the region and its six individual states, including data on employment, income, labor force, net interstate migration, and population estimates. For more information please visit <http://www.neepecon.org>.

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