To friends of UMass:

I am proud to report on two significant achievements by UMass faculty that expand our mission to support economic and workforce development in the Commonwealth.

**UMass Boston Develops Science Partnership with Boston Public Schools**

A team of UMass Boston faculty — led by Professor Hannah Sevian — recently won a $12.5 million grant from the National Science Foundation for the Boston Science Partnership. The Partnership is a collaboration with Northeastern University and the Boston Public Schools on a five-year science education reform program.

This project continues UMass Boston’s long history of work with the Boston Public Schools. It is designed to build challenging science courses, increase the number of highly qualified Boston science teachers, increase accessibility of students to advanced science courses, and support University science faculty in working side-by-side with city science teachers.

The Partnership will enable thousands of Boston Public School students to receive the quality of education they need to participate in today’s knowledge-based economy. In turn, the state will have a more highly skilled workforce that meets the needs of its knowledge-based employers.

**UMass Lowell Partners with Northeastern and UNH on Nano-Manufacturing**

While UMass Boston faculty are building the science and engineering pipeline for the Commonwealth, UMass Lowell faculty — led by Professor Joey Mead — partnered with Northeastern University and the University of New Hampshire to win a $12.4 million grant for a Center for High Rate Manufacturing. A key factor in winning this grant was the provision of $5 million in matching funds from the John Adams Innovation Institute at the Mass Technology Collaborative.

The new center is focused on building a bridge between research and manufacturing. Its aim is to develop methods for scaling up the fabrication of nanoscale products from the minute amounts produced in university labs to the massive volumes of consistent product required for commercial use. Massachusetts firms working at the nanoscale — such as Nantero of Woburn and Triton Systems of Chelmsford — are among the industrial partners working with Lowell at this center.

These two recent successes complement other recent successes by UMass faculty at Amherst ($40 million NSF-funded Engineering Research Center), Dartmouth ($17 million NIH-funded Botulinum Research Center with Tufts) and Worcester ($16 million NIH-funded Immunology Research Center).

All these successes clearly demonstrate the world-class caliber of our faculty and their ability to compete and win the most rigorous research competitions. They will provide outstanding learning opportunities and research experiences for our students. These initiatives will enable UMass to help build the future economy in all regions of the Commonwealth.

Jack M. Wilson, President
John Adams Innovation Institute Awards Center of Excellence Grant to UMass Lowell

UMass Lowell was recently awarded $5 million by the Massachusetts Technology Collaborative (MTC) to create a new Center of Excellence in Nanomanufacturing. This is the first large award granted by the $20 million University Investment Fund. The fund was created by the Commonwealth’s economic stimulus package and is managed by MTC’s John Adams Innovation Institute. The center will provide a facility in which both industry and academic researchers can develop, analyze, and perfect nanomanufacturing processes. Funds will also be used for education and outreach with partners such as Boston’s Museum of Science in order to promote student interest in nanomanufacturing. This $5 million award served as critically important matching funds and helped enable UMass Lowell, Northeastern University and the University of New Hampshire to win a $12.4 million NSF grant to explore medical, technological, and energy applications of nanotechnology.

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Conference Highlights Amherst’s Leadership in Nanoscale Science

“Opportunity” was the theme of the UMass Amherst Nanotech 2004 Conference sponsored by MassNanoTech, the Amherst campus initiative in nanoscale science and engineering. The keynote speaker was Lucent Technologies vice president for nanotechnology research, Dave Bishop, who was recently appointed co-chair of a new national standards body on nanotechnology. Along with highlighting faculty research activities in such areas as nanoscale materials and processes, nanoelectronics, bionanotechnology, and theory and modeling, the conference announced the formation of MassNanoTech Partners, a new academics/industry consortium. The consortium is intended to facilitate industrial collaboration with researchers and the commercialization of new discoveries. UMass Amherst has more than 50 faculty members across eight departments pursuing research in nanotechnology, earning it a top-10 ranking for new nanotech and engineering grants from the National Science Foundation.

Contact: Mike Wright, Managing Director, MassNanoTech (413) 577-0570, wright@research.umass.edu

MIT, WHOI, UMass Boston and Dartmouth Help Lead Ocean S&T Initiative

Building on a core strength identified by Mass Insight’s Science and Technology Roadmap for the state, UMass Boston, UMass Dartmouth, MIT, and the Woods Hole Oceanographic Institute have teamed with industry to form an Ocean Work Group. This group will develop a concept for a large-scale northeast-region coastal and ocean observation system aimed at several major national NSF competitions. The collaboration will also seek support from the John Adams Innovation Fund to develop a mobile observation pilot program and a product development and demonstration center located in New Bedford. Regional competitiveness councils in the Cape and Islands and South Coast regions have identified the marine sector as their highest priority for expansion. Marine science and technology is a particular strength of the UMass system, reflected in the University’s Intercampus Graduate School of Marine Science and Technology. The sector is thriving, with more than 450 marine-tech firms from Portsmouth, NH, to Newport, RI, most of which are in Massachusetts.

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Mass Biotech Council and UMass Explore Biomanufacturing Concept

UMass Lowell is exploring ways to support the Commonwealth’s efforts to develop and retain more of the manufacturing activity of our biotechnology companies. While Lowell has long provided training and technical assistance to the biotech industry, Professor Carl Lawton is working closely with the Massachusetts Biotechnology Council (representing more than 300 firms) in developing a concept for a Massachusetts biomanufacturing center. The new center could provide a comprehensive array of services to assist firms in making the transition to manufacturing in Massachusetts. These might include process development services, GLP manufacturing capability to produce material for preclinical testing, education and training, applied research, and networking to disseminate best practices.

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UMass Amherst Wins NSF Funding to Study IT Improvements in Healthcare
UMass Amherst has secured funds from the National Science Foundation’s Information Technology Research (ITR) program to develop technologies for analyzing healthcare processes that will reduce inefficiencies and medical errors. The $1.7 million project, “Improving the Safety and Efficiency of Medical Processes,” is led by Professor Lori Clarke of the Computer Science Department, in collaboration with the School of Nursing and Baystate Medical Center in Springfield. This project aims to develop healthcare processes — including innovative uses of technology — to reduce costs, improve medical outcomes, and support the training of medical personnel. Results from the project are expected to be applicable to other industries, reducing errors and improving efficiency in a wide variety of human/computer applications.

Contact: Lori Clarke, Professor, Computer Science (413) 545-1328, clarke@cs.umass.edu

Intercampus Initiative Launched on Environmental Science and Technology
At the request of President Wilson, environmental leaders from each of the five UMass campuses are joining forces to develop and inform a system-wide resource development strategy for environmental science and technology. Intended outcomes for this group include positioning UMass as an important resource for major state, national, and global environmental issues; creating key opportunities for research faculty to bring knowledge, insight and discovery to bear on important environmental challenges; and providing top-notch learning opportunities for students by engaging them in complex and compelling environmental analysis and inquiry. The group will deliver a set of recommendations to President Wilson this spring regarding how best to position UMass for new, expanded, and distinguished programs and resources related to environmental science and technology.

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UMass Dartmouth Receives $5 Million in Federal Funds for Marine Sciences
As part of a spending bill recently passed by Congress, almost $5 million in federal funds has been targeted for marine sciences research in southeastern Massachusetts. These funds include a $4.8 million grant from the National Oceanographic and Atmospheric Administration to UMass Dartmouth’s School of Marine Science and Technology (SMAST) to enhance research in critical areas of fisheries science and oceanography. UMass has received $2.95 million for ground fish research and $1.87 million for research on scallops to be conducted by the Massachusetts Marine Fisheries Institute, a collaboration between SMAST and the Massachusetts Division of Marine Fisheries. A video-surveying program that studies the spatial and size-specific abundance of scallops along the continental shelf will continue, and further research in the Georges Bank and Buzzards Bay areas is being planned.

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UMass Amherst Receives $6 Million in Federal Funds for S&T Projects
UMass Amherst will receive $2.9 million for several research projects in fiscal year 2005, included in an omnibus bill approved by Congress in November. The Climate System Research Center will be given $750,000 to support its work on global climate change issues and the sensitivity of ecosystems. The Pioneer Valley Life Sciences Initiative, a partnership between UMass Amherst, Baystate Medical Center, and the City of Springfield, will receive $700,000 for a new science building on the Amherst campus. A $500,000 grant is earmarked for the New England Green Chemistry Consortium, a partnership between UMass and the five other land-grant universities, to promote research and education. A new Center for the Environment will be created with a $500,000 grant to expand the existing Environmental Institute, which focuses on water quality, soil contamination and other ecological issues. The Safe Seafood Project — a multidisciplinary project that uses microbiology, chemistry, and computer models to investigate food safety — will receive $439,000. UMass Amherst also received $3 million from the defense appropriation passed last summer to support the Center for Advanced Sensor and Communication Antennas.

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Mass Tech Transfer Center Announces Initial Programming

Under the leadership of Abi Barrow, the UMass-based Mass Tech Transfer Center (MTTC) has begun to carry out its mission of helping facilitate technology transfer from the Commonwealth’s research universities to its companies. The Center is now being guided by an advisory board that includes Rana Gupta of Navigator Technology Ventures (chair), Mitchell Adams of the Mass Tech Collaborative, Robert Crowley of the Mass Technology Development Corp., Rock Gnatovich of Spotfire, Inc., David Lederman of ABIOMED, Lita Nelsen of MIT, Deborah Shufrin of the Mass Department of Business and Technology, and Professor Jim Theroux of UMass Amherst. (See sidebar for calendar of events.) The life sciences conference will link researchers and early-stage companies with venture capitalists, and the other forums will educate faculty and students on entrepreneurship.

Contact: Abi Barrow, Director, Mass Tech Transfer Center (617)287-7071, abarrow@umassp.edu

UMass Tech Commercialization & Entrepreneurship

UMass Boston Generates First Technology License

UMass Boston, in partnership with Yale University, has executed a license with Harcourt Publishers for a technology developed by Alice Carter of UMass Boston’s Psychology Department. Dr. Carter co-authored the work “Infant/Toddler Social and Emotional Assessment” with colleague Margaret Briggs-Cowan of Yale. Using this assessment tool, healthcare providers are able to diagnose children at risk for a variety of psychological conditions at much younger ages than earlier techniques allowed. In the coming years, Harcourt subsidiary PsychCorp plans to distribute this tool to clinicians nationally. The first generation is currently available; Drs. Carter and Briggs-Cowan are working with Harcourt on second- and third-generation products, expected next year.

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UMASS CVIP Continues Strong Growth in 2004; Moves Up in National Rankings

The UMass Office of Commercial Ventures and Intellectual Property (CVIP) enjoyed great success in the past fiscal year, generating significant income from a variety of patent and license activities, including such highlights as RNAi technology (gene silencing) and Clarinex, an antihistamine product developed with technology from UMass Worcester. The past year also generated the first license ever issued at UMass Boston for a psychological assessment tool. (See following story.) UMass Lowell technology launched a start-up company (Polnox) that aims to become a world leader in the development and production of industrial-based antioxidants. During 2004, the University filed 178 US patents and had 18 patents issued. UMass executed 37 licenses and options stemming from research initiatives, and it generated more than $26.5 million in license income last year. Income from licensing is used for research and educational programs throughout the UMass system. Success in generating license income has grown steadily, advancing UMass from a ranking of #17 to #14 nationally among research universities, as reported by the Chronicle of Higher Education.

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MASS TECH TRANSFER CENTER CALENDAR OF EVENTS

April 1, 2005
Invention to Venture
UMass Amherst

April 28, 2005
Life Sciences Forum
Harvard Medical School

April 29, 2005
Invention to Venture
UMass Lowell

June 2, 2005
Life Sciences Conference
Harvard Medical School

September 17, 2005
Invention to Venture
WPI
UMass Boston Wins $12.5 Million Grant to Reform Science Education

UMass Boston has won a $12.5 million grant from the National Science Foundation for the Boston Science Partnership, a collaboration with Northeastern University and the Boston Public Schools. The funds will support a five-year science education reform program that will provide teacher training and innovative course development. The Boston Science Partnership was designed to improve science teaching and learning for nearly 33,000 middle- and high-school students in the Boston Public Schools through teacher training, “inquiry-based” science instruction, and ground-breaking engineering curriculum. The grant is designed to build challenging science courses, increase the number of highly qualified science teachers, increase student accessibility to advanced science courses, and assist university faculty working side-by-side with school teachers. In addition to UMass Boston, Northeastern University, and the Boston schools, the program includes supporting partners at Harvard Medical School, the College Board, and the Education Development Center. The grant is the largest ever awarded to UMass Boston researchers.

Contact: Hannah Sevian, Principal Investigator, Boston Science Partnership (617) 287-7724, Hannah.sevian@umb.edu

United States Distance Learning Association Names President Wilson “Distance Education Pioneer”

The United States Distance Learning Association (USDLA) recently inducted UMass President Jack Wilson into its Hall of Fame, recognizing him as an outstanding pioneer in the field of distance education. Each year the nonprofit association honors individuals whose vision, leadership, and excellence have contributed significantly to the field. Dr. Wilson was honored in part for his service as founding CEO of UMassOnline, where he worked with all five campuses to create one of the largest externally directed online programs in the country. Founded in 2001 to serve community education needs and provide access to a UMass education, UMassOnline supported 16,405 enrollments and generated $15 million in revenue in 2004.

Contact: Leslie Granese, Director of Marketing, UMass Online (617) 287-7111, lgranese@umassonline.net

UMass Amherst and Lowell Help Organize STEM Summit

Some 300 representatives of K–12, higher education, government, and business gathered October 25 in Newton for the first Science, Technology, Engineering and Mathematics (STEM) Summit. The goal was reshaping policy in K–12, which currently prepares far too few students for careers in science and engineering. “If we don’t take opportunity by the horns in this changing economy… we won’t get the jobs. We need to get our kids ready,” said Senator Jack Hart of Boston. The program offered a keynote address by William Wulf, president of the National Academy of Engineering, and included numerous educator workshops designed to assist teachers in implementing STEM activities in the classroom. This event was the first follow-up from any state to the Department of Education’s national Summit on Science. It was supported by the NSF, the Engineering in Massachusetts Collaborative (organized by UMass Lowell), the UMass Amherst College of Engineering, and industrial sponsors including Raytheon, Analog Devices, and Millipore.

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All Five UMass Campuses Contribute to STEM Pipeline Initiative

The Massachusetts Board of Higher Education has awarded seven Pre K–16 Networking Grants — totaling more than $1.25 million — to educational consortia across the Commonwealth. The purpose of these grants is to encourage regional collaboration for the improvement of science, technology, engineering, and mathematics (STEM) education in Massachusetts. All five UMass campuses received grants. UMass Amherst, Lowell, and Worcester are the lead institutions in their respective regions, while UMass Boston is supporting efforts in Greater Boston and UMass Dartmouth is assisting in Southeast/Cape Cod. These efforts have been encouraged by the Engineering in Mass Collaborative, a statewide initiative from UMass Lowell to improve the engineering pipeline in Massachusetts.

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New Issue of Massachusetts Benchmarks Released

The latest issue of Massachusetts Benchmarks discusses the state's current economic status, as well as the economic impact of same-sex marriages in Massachusetts. UMass Boston Professor Alan Clayton-Matthews reports that the Massachusetts economy, though recovering more slowly than the nation’s, is following a steady growth trend. In an economic and demographic analysis of gay and lesbian marriages on the state, authors Randy Albelda, Michael Ash, and M. V. Lee Badgett suggest that we will see short-term economic gain, and that long-term economic impact will be small but positive. UMass Lowell Professor Robert Forrant provides an analysis of the state’s plastics industry for the journal’s regional focus. Forrant finds that plastics firms in central Massachusetts and elsewhere comprise an important manufacturing cluster in the face of national and international competition in high-tech manufacturing and services.

Contact: Robert Nakosteen, Associate Professor, UMass Amherst, Executive Editor of Massachusetts Benchmarks (413) 545-5687, nakosteen@som.umass.edu

MassInc/UMass Commuting Study Documents Commuting Problems

Bay State workers are spending more time on the road, with Massachusetts ranking ninth in the nation in terms of average commuting time. On an annual basis, this costs the average commuter the equivalent of 25 work days lost in transit, according to a report prepared by the UMass Donahue Institute in collaboration with UMass Amherst Professor Robert Nakosteen and the Massachusetts Institute for a New Commonwealth (MassINC). The report, titled Mass.Commuting, finds that 551,000 people — almost one in five Massachusetts commuters — spend at least an hour and a half traveling to and from work every day. The situation worsened between 1980 and 2000, when extensive commutes rose from 11 percent to 18 percent of all commutes. The report provides a comprehensive demographic profile of these commuters and finds that they are typically higher-income households with higher levels of education, and they are more likely to own homes. The study suggests that many Massachusetts workers are choosing a longer commute in order to afford homes in communities they find desirable.

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CHAPA/UMass Housing Poll Highlights Cost Concerns

A poll examining the attitudes of Massachusetts residents about housing issues was recently conducted by the UMass Donahue Institute for the Citizen’s Housing and Planning Association (CHAPA). The survey addressed affordable housing, the availability of housing for workers and the elderly, and the pressure of housing costs on household finances. It found that 56 percent of Massachusetts residents and 51 percent of Metro West residents (a focus of the study) were very concerned about the cost of housing in Massachusetts, and that more than 50 percent felt that their housing costs were negatively impacting their household finances. Additionally, 45 percent of residents had seriously considered moving out of Massachusetts because of high housing costs. Seventy-five percent of respondents support doubling the amount of money that the Commonwealth spends on programs designed to expand affordable housing.

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Massachusetts State Data Center Now Housed at UMass Donahue Institute

As of March 1, 2004, the UMass Donahue Institute is the Commonwealth’s official source of demographic, economic, and social statistics. Under a cooperative agreement with the U.S. Census Bureau, the institute is home to the Massachusetts State Data Center, previously housed at the Massachusetts Institute for Social and Economic Research (MISER). The center maintains an extensive collection of census data on population, housing, education, business, manufacturing, trade, services, government, and agriculture in Massachusetts, New England, and the United States. Its 46 affiliates across the Commonwealth are important links between the center and a majority of individual data users. Affiliates include regional planning agencies, libraries, state agencies, and business and economic development agencies.

Contact: John Gaviglio, Data Manager, Massachusetts State Data Center, UMass Donahue Institute (413) 545-0176, jgaviglio@donahue.umassp.edu

“MassINC has been pleased to partner on a variety of economic research projects with the UMass Donahue Institute and the faculty of UMass campuses.”

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UMass Honored as Statewide Strategic Asset by MAED

The University of Massachusetts was honored with the “Statewide Strategic Asset” award by the Massachusetts Alliance for Economic Development (MAED) in November. MAED is a private-public partnership dedicated to fostering business growth within the Commonwealth. MAED honored the University for its role in the growth of the state’s economy in each region, including:

- **UMASS MEDICAL SCHOOL** — as the anchor for the biotechnology industry in Worcester and Central Massachusetts

- **UMASS DARTMOUTH** — for its support of the South Coast economy through its marine technology initiative in New Bedford and the Advanced Technology and Manufacturing Center in Fall River

- **UMASS AMHERST** — for its partnership with the Baystate Medical Center in Springfield to promote the life sciences cluster in Western Massachusetts

- **UMASS LOWELL** — for its work to promote manufacturing clusters in nanotechnology and biotechnology

- **UMASS BOSTON** — for workforce development through its science education efforts in collaboration with the Boston public schools

- **UMASS SYSTEM** — including the Donahue Institute, for its work to address key economic challenges facing the state, such as the retention of Hanscom and Natick military bases