

In brief

Economic Development



UMASS INVESTS IN S&T PRIORITIES FOR THE COMMONWEALTH

To friends of UMass:

This is an exciting time to be President of UMass.

It is gratifying to see the growing level of support for the state's public research university. Increasingly, leaders in business, government, and academia understand UMass's unique mission as a statewide, high-quality learning and discovery institution that transforms the lives of students and communities in Massachusetts.

We are committed to promoting research and innovation throughout the Commonwealth. UMass is already a leading-edge center for research and development, with over \$320 million in sponsored R&D, ranking #3 in Massachusetts and #4 in New England.

We are also the leading center of R&D outside Boston/Cambridge, with UMass campuses performing over 90% of university R&D outside Route 128.

However, for Massachusetts' sake, we can and must do even better. The Battelle Research/MassInsight *Choosing to Lead* report has called for UMass to double its research to \$600 million.

In support of this goal, I've established a \$1 million Science & Technology Initiatives Fund to assist our campuses in developing strategic alliances to pursue new S&T opportunities in fields important to Massachusetts. Seven projects have been selected for initial funding.

MassNanotech — A project to develop a new center for nanotechnology at Amherst that would focus on nanoscale fabrication and development. It will include establishment of a university/industry consortium and a proposal to NSF for a national nanotech center.

Security, Emergency Preparedness and Response Institute (SEPRI) — A project to develop a new research institute at Amherst that will compete for a Department of Homeland Security Center of Excellence in emergency preparedness.

Baystate Medical/UMass Biomedical Research Institute — A partnership between Amherst and Baystate Medical Center in Springfield, designed to promote new R&D collaborations, industry links, and federal funding opportunities.

Biomedical Imaging Collaboration — A collaboration between UMass Worcester and Massachusetts medical device companies to help position our radiology department as a leader in biomedical imaging.

Ocean Technology Innovation Collaborative — A joint effort of the Boston and Dartmouth campuses to position UMass and its collaborators to develop major proposals for R&D funding in ocean monitoring, sensors, modeling, and imaging.

Maritime Information Technology Initiative — Another joint Boston/Dartmouth effort with the marine technology industry to position us to compete for new S&T opportunities in homeland defense and port/harbor security.

Massachusetts Bio-Pharmaceutical Center — A proposed center to serve the needs of bio-pharmaceutical companies moving into industrial production. This is the result of a consortium led by UMass Lowell, working with state government and the biotech industry.

I am proud to make these strategic investments in support of excellent UMass faculty working on behalf of the Commonwealth. I pledge that the University will continue to make such investments and take other appropriate steps to ensure that the path to social and economic progress in Massachusetts goes through UMass.

Sincerely,

Jack M. Wilson, President

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**President Wilson To Host
October 15 UMass/MassMEDIC
Innovation Event**

University President Jack Wilson will host the members of MassMEDIC (the Massachusetts Medical Device Industry Council) at a fall event to showcase University-wide strengths in the medical device arena. The program will highlight UMass strengths in device-related research as well as its role in technology transfer and clinical trials. Leading UMass faculty will showcase research in the medical device field, emphasizing topics such as advanced materials, nanotechnology, biocompatibility, and imaging. The breakfast program, to be held at the Newton Marriott on October 15th, will provide opportunities for medical device executives to meet with faculty and learn more about UMass's role in promoting this vital sector of the Commonwealth's economy.

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**Legislature and Governor Approve
\$20-Million UMass/Nantucket
Environmental Partnership**

The Massachusetts legislature and governor have authorized an innovative UMass/Nantucket Conservation Foundation collaboration that will preserve a sensitive natural habitat on Nantucket and invest \$20 million in UMass teaching and research. The legislation allows UMass to sell 110 acres of land on Nantucket Harbor to the Nantucket Conservation Foundation for \$20 million. The property is occupied by the UMass Field Station, which conducts a variety of

research and teaching activities. The foundation is interested in the property in order to protect its natural beauty and wildlife habitats from development while continuing to allow UMass scientists, students, and faculty to use the property for research and educational activities. UMass will invest \$12 million of the sale proceeds in endowed faculty positions at its Amherst, Boston, Dartmouth, Lowell, and Worcester campuses. The remaining \$8 million will endow a University Excellence Fund that will advance teaching and research across the five-campus system.

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**Mass Biologic Laboratories
Advance SARS Prevention Efforts
in China**

In response to a request last spring from a Chinese biotechnology company working closely with officials in China, Medarex, Inc. and the Massachusetts Biologic Laboratories (MBL) of the UMass Medical School (UMMS) shipped to Beijing a sample of the fully human antibody to SARS developed by Medarex and MBL/UMMS. Sinovac Biotech Ltd. plans to conduct pre-clinical tests to determine the antibody's effectiveness in neutralizing strains of the SARS virus. The antibody developed by scientists at MBL, Medarex, and UMMS, is the result of an accelerated research effort funded by the National Institute of Allergy and Infectious Diseases (part of the National Institutes of Health) that was launched in April of 2003 following the first global outbreak of SARS. Noted Donna Ambrosino, MD, director of the MBL and UMMS professor of pediatrics, "When faced with an outbreak of a deadly infectious disease like SARS, those with a public health mis-

sion need to move fast. When the request was made to us, we were able to ship the antibody within hours."

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**Amherst to Lead \$5-Million Study
on Bio-Materials**

UMass Amherst has been awarded a Multi-disciplinary University Research Initiative (MURI) grant from the Department of Defense for work integrating aspects of polymer science, biology, and nanotechnology. The \$5-million grant teams UMass with researchers from the University of Pittsburgh and the University of South Carolina in a five-year study that examines how self-assembly processes in both man-made materials and in proteins and viruses can interact, laying the foundation for new, genetically-engineered bio-materials. Such engineered bio-materials may be useful in sensors, biomedical devices, biomolecular electronics, drug delivery systems, and self-assembling, addressable storage media. According to principal investigator Thomas Russell, this project is an example of how the physical sciences and the life sciences are converging through nanotechnology approaches that promise to transform the way materials and products are designed and made in the future. The UMass project is one of 31 selected nationally by the Pentagon — out of 116 proposals — for funding under the MURI program.

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UMass Lowell and Triton Biosystems Target Cancer with Nanotechnology

Triton BioSystems of Chelmsford and UMass Lowell are working together to develop new nanotechnologies that fight cancer. The approach, known as targeted nanotherapeutics, attacks tumors with heat and nanospheres attached to antibodies instead of radiation or other chemicals. While still in the early stages of development, this technology has significant potential for two reasons: it targets malignant cells while leaving surrounding healthy tissue unharmed and is a flexible platform system that can be easily modified for use in several different cancers or applications in other human diseases. Triton Systems originally developed the technology used in this initiative while developing welding technologies for the US Army. After Triton recognized the technology's potential for use in other applications, it spun off life sciences company Triton BioSystems, which then teamed with Dr. Susan Braunhut. A UMass Lowell professor with 15 years of experience researching breast cancer treatments, Dr. Braunhut provided valuable expertise and facilities to promote further development of the technology. The US Army remains involved in this project and has granted \$1 million to Triton and UMass Lowell to further develop this research.

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UMMS Achieves Milestone in HIV Vaccine Research

After years of intense research and testing, scientists at UMass Medical School and Advanced BioScience Laboratories, Inc. of

Maryland have developed a new vaccine for human immunodeficiency virus (HIV). The vaccine has been designated as an investigational new drug by the US Food and Drug Administration, which has also given UMMS permission to begin a clinical trial to test the vaccine's safety and immunogenicity in people. To date, development of an HIV vaccine has been challenging because of the virus' extraordinary ability to mutate in the environment, making it an elusive target for traditional vaccine strategies. In order to increase its efficacy, UMMS' and ABL's vaccine is based on five different strains of the virus from locations around the globe. According to Shan Lu, MD, PhD, associate professor of medicine and head of the HIV vaccine effort at UMMS, "This is a landmark development and a major step forward in HIV vaccine research."

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UMass Amherst Dedicates New \$25-Million Engineering Laboratory

A new \$25-million engineering building was dedicated at UMass Amherst recently. Engineering Laboratory II houses portions of the university's nationally recognized research programs in chemical engineering and civil and environmental engineering. At 57,000 square feet, the new facility makes it possible for UMass to expand research and educational opportunities for students and faculty. The state-supported building forms a quad with the Engineering Laboratory and the new Computer Science Building at the north end of campus. The structure's state-of-the-art laboratories and offices are complemented by a 190-seat

lecture hall and a 40-seat distance-learning classroom from which courses can be delivered to students throughout the country.

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UMass Dartmouth Secures a Cooperative Research and Development Agreement (CRADA) with the Navy

UMass Dartmouth has secured a maritime technology CRADA with the Naval Undersea Warfare Center (NUWC) in Rhode Island. It will be in effect for three years with options to continue. Under this CRADA, UMass will assist the Navy by enhancing current maritime technologies with emerging technologies. In addition, the university will help develop an information technology framework that supports large-scale system solutions to maritime security problems and environmental risk management. The UMass Dartmouth Advanced Technology and Manufacturing Center and NUWC are pursuing maritime technology research and development in such areas as command and control, contact tracking, underwater sensors and systems, underwater testing, array development, underwater communications, and various coating technologies. This collaborative effort will identify applicable technologies and classify their most promising opportunities to transition Navy technologies to the public and private sector.

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Technology Commercialization &

California Commercialization Expert to Lead Mass Tech Transfer Center

Dr. Abigail A. Barrow has been named as director of the UMass-based Massachusetts Technology Transfer Center (MTTC). The MTTC will facilitate the efforts of public and private colleges and universities in the Commonwealth as they move faculty inventions from the laboratory to the Massachusetts marketplace. The MTTC is a key component of a statewide science and technology legislation initiated by the legislature and supported by the governor to strengthen the Commonwealth's competitive position in the innovation economy. Dr. Barrow comes to UMass from the William J. von Liebig Center at the University of California at San Diego, which supports commercialization of research performed in the UCSD Jacobs School of Engineering. A former director of programs at the UCSD CONNECT initiative, Dr. Barrow developed and expanded many of its programs to support early stage company formation and technology commercialization, ultimately garnering international recognition for the program.

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NSF Partnership for Innovation Grant Promotes University/Business Partnerships at UMass Dartmouth

UMass Dartmouth has received a \$600,000 Partnership for Innovation (PFI) grant from the National Science Foundation to support

new partnerships between the university and businesses in the South Coast. The PFI project will be operated by the University's Advanced Technology and Manufacturing Center (ATMC) in Fall River in collaboration with the College of Engineering through a series of partnerships with state and federal agencies and private sector companies. The goal is to develop innovative new technologies that will be transferred to existing industries and new start-up businesses. Ten companies have already expressed interest in partnering with the university in this program, and have pledged an additional \$500,000 worth of innovative projects to be undertaken at the ATMC. As Chancellor Jean MacCormack noted, "This award is an exciting example of how UMass-based innovation powers the economy of this region."

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UMass Lowell Welcomes "Entrepreneur-in-Residence"

UMass Lowell has welcomed a new "entrepreneur-in-residence" to campus to help ensure that the university's intellectual resources are identified, promoted, and brought to the marketplace. Paul Wormser joins the university's Commercial Venture Development (CVD) office, an entity which provides university resources, including mentoring services, workspace, and talent for compelling, early stage companies. Located in a 7,500 square foot university facility in Lowell's Wannalancit Mill, CVD assists companies begun from university-generated intellectual property as well as those not affiliated with UMass. Since 1998, nearly \$80 million in venture capital

has been raised by the portfolio companies of the CVD. Wormser brings solid experience in starting and running new ventures, having previously served as CEO of Konarka Technologies, a UMass Lowell-based start-up which develops and manufactures new technologies in solar energy.

Contact: Paul Wormser, Entrepreneur-in-Residence, Commercial Venture Development, (978)937-2038, x132, paul_wormser@uml.edu.

New Bedford and UMass Dartmouth Working to Develop Business Incubator

The UMass Dartmouth Advanced Technology and Manufacturing Center (ATMC) in Fall River, currently a 60,000 square-foot, state-of-the-art technology facility, includes a technology incubator that recently added its 10th start-up company. The ATMC incubator is part of an evolving system of south coast business and technology incubators that includes the Business Incubator of New Bedford (BINB), the ATMC incubator and support labs, and the UMass Dartmouth School for Marine Science and Technology in New Bedford. The development of the BINB is an initiative led by New Bedford Mayor Frederick Kalisz Jr. in cooperation with the New Bedford Economic Development Council, and with support from UMass Dartmouth and its ATMC. This system will generate new technologies to promote growth of start-ups and existing businesses, particularly in the marine sector.

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ENTREPRENEURSHIP

UMass Medical School and Cytoc Partner to Develop Cancer Diagnostics

The University of Massachusetts Medical School (UMMS) and Cytoc Corporation of Boxboro have signed licensing and sponsored-research agreements related to cancer-detection technology developed at UMMS that may predict the onset and severity of certain cancers before a tumor actually forms. The technology, which focuses on centrosomes in cancerous and pre-cancerous cells, was developed by Stephen J. Doxsey, Ph.D., associate professor of molecular medicine, biochemistry and molecular pharmacology, and cell biology at UMMS. The agreement gives Cytoc a worldwide, exclusive license to use Doxsey's technology for developing products in the areas of cancer diagnostics and prognostics. Cytoc will also sponsor research in Doxsey's lab to further explore the science as it applies to breast and cervical cancers. Doxsey is a nationally recognized leader in the study of cell division. His lab is at the forefront of researching the molecular mechanisms that can cause normal cells to mutate into cancerous cells.

Contact: Heather Steinman, Licensing Associate, Office of Technology Management, (508)856-1696, heather.steinman@umassmed.edu

UMass Lowell Technology Leads to New Venture-backed Start-up

Proprietary technology developed at UMass Lowell by Professor Ashok Cholli and his research team is providing the foundation for Lowell-based start-up Polnox. The company aims to become a world leader in the development and production of industrial-based antioxidants. Professor Cholli and his team

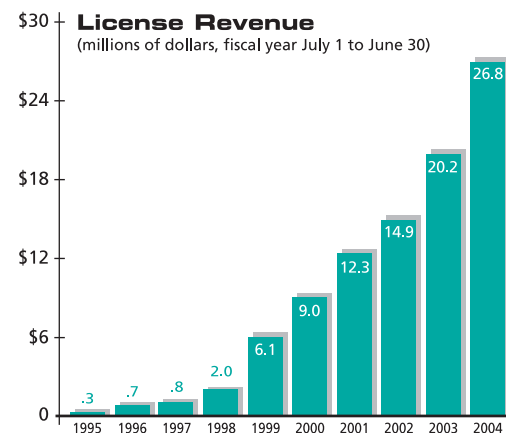
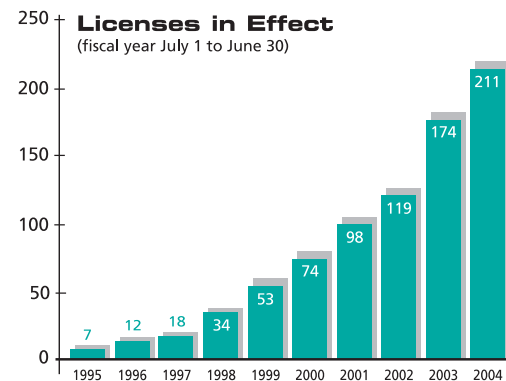
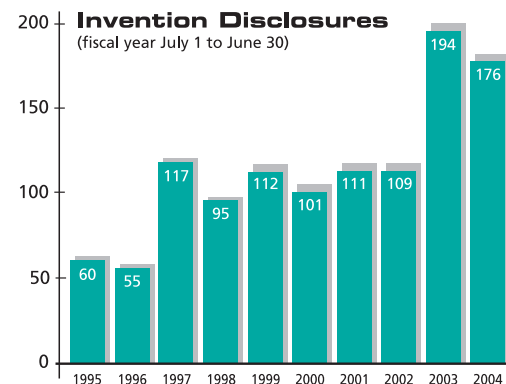
have established a method and initial compounds that result in novel, high-performance antioxidants. Antioxidants are widely used in industry to enhance shelf-life and thermal stability of a broad range of materials which include plastics, elastomers, food, petroleum, and other products. The company intends to replace currently used, commercially available antioxidants with its new, high-performance antioxidants. The current market is approximately \$1.3 billion. Earlier this year the company received initial venture-capital funding from Navigator Technology Ventures and put a management team in place. Product development is underway.

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Licensing Office Enjoys Another Year of Strong Growth

The Office of Commercial Ventures and Intellectual Property (CVIP) recently closed a very successful year in technology commercialization. UMass posted the second largest totals of faculty invention disclosures (176) and license agreements (37) in the university's history. New records were also set, with the number of patent applications reaching 178 and licensing income growing to \$26.5 million. Much of the progress, particularly in patent applications and licensing income, are the result of many years of extraordinary effort and success at UMass Medical Center in Worcester.

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DEVELOPING THE Future Workforce

State and Fidelity Support Restart of CITI Project

The Commonwealth Information Technology Initiative (CITI) has received funding of \$1 million to continue its efforts to promote IT education statewide. Launched in December 2000 by the Board of Higher Education (BHE) and led by UMass Amherst, CITI is designed to improve and strengthen IT education across the Commonwealth's public higher-education system. CITI's strategy promotes collaboration among the state's high schools, community colleges, state colleges, the five-campus UMass system, and industry to enhance IT teaching and learning. Funding for CITI had been eliminated from the state budget in 2001 due to fiscal constraints, but was recently reinvigorated by a challenge grant of \$500,000 from Fidelity. A \$500,000 matching grant from the BHE's Pipeline Fund, established by the 2003 economic stimulus legislation, will provide the funding necessary to restart the CITI initiative and expand it to secondary schools.

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"The UMass-led CITI project, with its focus on IT across the curriculum, directly responds to the needs of the IT industry in Massachusetts."

DON HAILE, President, Fidelity Investment Systems Company

UMassOnline Growth Continues

UMassOnline announced recently that online education program revenues and enrollments grew 47% and 30% respectively in the 2004 academic year (AY). Revenues from online programs were \$14 million, up from \$9.7 million in AY 2003, while enrollments reached 15,741, up from 12,131 in the same period. More than 90% of the revenues generated are retained by the UMass campuses to support education and research programs. The conclusion of the past academic year saw 151 UMassOnline students graduate from 11 programs offered by four of the system's campuses. "At UMassOnline, we measure success by the extent to which we broaden access to a UMass education," said David Gray, UMassOnline CEO. UMassOnline offers 40 graduate and undergraduate programs online — including more than 300 courses each semester — through the continuing education departments at UMass Amherst, Boston, Dartmouth, and Lowell.

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IBM Invests \$5 Million in UMass Amherst Curriculum

As part of an innovative partnership developed between UMass Amherst and IBM, the company will provide technology and equipment worth more than \$5 million to give students hands-on experience in co-engineering hardware and software systems and help establish a UMass Amherst Linux Lab. The two endeavors, supported by IBM's Rational division and Linux on POWER business unit, respectively, are helping to prepare the qualified job candidates IBM and its customers will need to continue business growth and innovation. The engineering curriculum represents the synthesis of hardware and software coming together at the system level. The lab will promote a multidisciplinary curriculum based on open source software, producing students with strong skills in their disciplines and the Linux operating system. Anticipating thousands of key technology-related positions opening up in the coming years, IBM's assistance will help ensure that the supply of skilled professionals from major universities such as UMass Amherst is able to meet this demand.

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UMass Donahue Institute and Lowell Faculty Lead Regional Benchmarking Initiative

The UMass Donahue Institute has recently been awarded a one-year grant from the US Economic Development Administration (EDA) to develop and implement a statewide regional benchmarking initiative providing timely and relevant economic information to key stakeholders in Massachusetts. Data on regional economic conditions will be developed for easy comprehension and broad dissemination. Regional competitiveness councils and regional economic development organizations will be consulted to develop measurable indicators of progress. As part of this project, comprehensive regional economic profiles will be developed by the UMass faculty members who serve as regional analysts for *Massachusetts Benchmarks*. Additionally, technology audits of the seven regions of the Commonwealth will be prepared by faculty members affiliated with UMass Lowell's Center for Industrial Competitiveness.

Contact: Michael Goodman, Director of Economic and Public Policy Research, UMass Donahue Institute, (617)287-7040, mgoodman@donahue.umassp.edu

UMass Supports Efforts to Maintain Hanscom and Natick Facilities

At the request of the Massachusetts High Technology Council and MassDevelopment, UMass provided research and analytical support for the Commonwealth's efforts to make the case for continuing Department of Defense operations at Hanscom AFB and Natick Laboratories during the upcoming Base Realignment and Closure process. Led by the UMass Donahue Institute's Economic and Public Policy Research Unit and sup-

ported by UMass Dartmouth Professor Clyde Barrow and his associates at the Center for Policy Analysis, this project has involved a comprehensive analysis of the importance of the Hanscom and Natick installations, both to the state and regional economy and to the nation's national security interests. Copies of the report are available at www.umassd.edu/cfpa/docs/hanscom.pdf.

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UMass and Citizens Bank Team for Small Business Survey

A groundbreaking survey sponsored by Citizens Bank and conducted by the UMass Donahue Institute revealed that New England small businesses are more optimistic about their future than their national counterparts. At the same time, they are concerned about the lack of qualified applicants to fill new job openings and are expecting to rely on temporary and contract workers in the near future. Addressing the Citizens Bank/UMass Small Business Survey for New England released last May, UMass President Jack Wilson noted, "There is no better barometer of the New England economy's health than the observations of the small business owner. The issues raised by these findings require the attention of business leaders, educators, and policy makers across the region." Detailed report findings and

state-by-state breakdowns can be found at www.Massachusetts.edu. Survey results can be viewed at: http://www.donahue.umassp.edu/Citizens_Survey/.

Contact: Professor Robert Nakosteen, Isenberg School of Management, UMass Amherst, (413)545-5687, nakosteen@som.umass.edu

Marine Science Industry Study Underway at UMass Boston and Dartmouth

A comprehensive study of the marine science and technology industry in Massachusetts and southern New England is underway. This project is a collaboration between the UMass Donahue Institute, UMass Boston, UMass Dartmouth, and the Marine and Oceanographic Technology Network (MOTN). The study will seek to quantify and analyze the value that marine technology and science adds to the Commonwealth's economy. Two leading UMass economists, UMass Boston Professor David Terkla and UMass Dartmouth Professor Clyde Barrow, are contributing to this study. The final report will provide the industry membership, the Commonwealth, and others with a comprehensive overview of the industry that will enable effective planning and new business development.

Contact: William Brah, Director, Environmental Business and Technology Center, (617)287-7723, William.Brah@umb.edu

"Citizens Bank was pleased to partner with the outstanding research team at the University of Massachusetts to bring about this important project for New England."

**HEATHER P. CAMPION, Citizens Financial Group
Executive Vice President of Corporate Affairs**

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