

UNIVERSITY OF MASSACHUSETTS

AMHERST•BOSTON•DARTMOUTH•LOWELL•WORCESTER

**MINUTES OF THE MEETING OF THE
COMMITTEE ON SCIENCE, TECHNOLOGY AND RESEARCH**

Friday, November 14, 2008; 8:00 a.m.

Amherst Room

225 Franklin Street – 33rd Floor

Boston, Massachusetts

Committee Members Present: Chair Pearl; Vice Chair Johnston; Trustees Gerson, Lawton, Osterhaus-Houle and Thomas

Committee Member Absent: Trustees King-Shaw, and Tocco; Chairman Manning

University Administration: President Wilson; General Counsel Bench; Senior Vice President Williams, Vice Presidents Chmura and Lenhardt; Associate Vice President Brancato; Director of Institutional Research Neena Verma; Chancellors Holub, Motley, Meehan and Collins; Executive Deputy Chancellor Flotte; Provosts Langley, Garro and Abdelal; Interim Vice Chancellor for Research and Engagement Kostecki; Vice Provost for Research Antonak; Assistant Vice Chancellor for Research Development Petrovic; Vice Provosts for Research Chowdhury and Sullivan

Faculty Representatives: Professors O'Connor and May, UMass Amherst; Professors Tirrell, UMass Boston; Ms. Gibbs, UMass Dartmouth

Chair Pearl convened the meeting at 8:03 a.m. and asked for a motion to **Consider the Minutes of the Previous Meeting.**

It was moved, seconded and

VOTED: To approve the minutes of the September 3, 2008 meeting of the Committee.

Under the **Chair's Report**, Chair Pearl expressed her satisfaction that we will be reviewing comparative national data to help us understand the financial performance of the University's Research and Development Enterprise. Although this data has been shared with Trustees in the past, this is the first time that this data has been presented to a standing Committee of the Board. It is the kind of data that the committee will want to review annually. As this is the first presentation, the Chair asked for input and feedback from the Trustees on what is useful and what else might be needed.

The Chair then provided an overview of the meeting agenda.

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The next item was the **President's Report**. President Wilson began by thanking Chair Pearl, Vice Chair Johnston and the members of this Committee for their continued work in supporting the University's research mission and our efforts to enhance science and technology-based economic development in the Commonwealth. He noted that the University is continuing to make progress in growing the University's R&D enterprise and that each campus is pursuing strategies to improve its performance. The University will need the Trustee's continued assistance and support to take our R&D program to the next level.

Update on Key Initiatives

President Wilson then provided updates to the Committee on three key initiatives – the life sciences, clean energy and higher education capital legislation. He explained that because of the current national economic crisis, the world has changed significantly since the last Trustee meeting. Nevertheless, the good news is that the state is moving forward with these initiatives – albeit with reductions of \$10 million dollars in FY 2009 for both the life sciences and clean energy initiatives. Even with those reductions, there will be many opportunities for our campuses to compete for the remaining funds in these two areas.

In addition, the President noted that the University remains very hopeful about the higher education capital funds as well. The state is currently working on its capital plan and everyone is waiting for the capital markets to return to some degree of normalcy. However, there is every expectation that the state will begin funding some of the projects in the higher education capital bill in the coming year.

R&D Updates

While the Trustees will receive a statistical overview of UMass's growing R&D enterprise at this meeting, the President took time to highlight examples of research excellence and growth across the campuses -- Victor Ambrose at UMass Medical School was recently named as a co-winner of the Lasker Award, the most prestigious American prize in the life sciences ... Tom Russell at Amherst led a successful effort that brought a \$13 million dollar NSF grant to the campus's Materials Research Science and Engineering Center for new polymer studies ... Joey Mead at Lowell hosted a highly successful review and site visit by NSF that is expected to lead to the renewal of the \$12 million dollar nanotech manufacturing initiative with Northeastern and UNH ... on the capital front, the Boston campus is preparing to open its new \$5 million dollar Venture Development Center – an exciting new facility that will serve as a collaborative and cross-disciplinary research space at the campus ... and lastly, the Dartmouth campus is seeking state support for a campus run bio-processing center in the South Coast.

Continued Success in Technology Transfer

Lastly, the President highlighted continued progress in the University's technology transfer program, which is primarily driven by innovation at UMass Medical School. The University

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finished FY 2008 with 159 total faculty inventions, 112 US patent applications, 22 patents issued, 39 licenses completed and license revenue of over \$37 million dollars.

In the first quarter of FY 09, UMass earned a record-setting \$24 million dollars. The latest available national data (FY 2007) shows that we ranked 13th in licensing revenue among all U.S. research universities that publically reported data. And, in a recent survey by *Forbes* magazine we ranked 12th in Return on Investment (ROI), as measured by the ratio of our license income to the amount of research expenditures. The President emphasized that at a time when the University is experiencing state budget cuts, it is more important than ever that we continue to pursue entrepreneurial initiatives such as technology transfer to strengthen our overall revenue base.

In closing, President Wilson thanked the Trustees, the Chancellors, Vice Presidents and countless faculty, staff and alumni who have been working together to make this progress possible.

The first item for **Discussion** was the **2007 Research and Development Report**. Vice President Chmura and Associate Vice President Brancato provided an overview and interpretation of the key data elements, including comparisons with other institutions in Massachusetts, New England and nationally.

The 2007 Annual Research and Development Expenditures Report was developed by the Office of Institutional Research in the President's Office. The Report provides an overview of R&D expenditures over time at the five campuses and the University system. It is based on data that the five campuses provided to the National Science Foundation (NSF) through its annual survey of R&D expenditures and universities and colleges. The Report includes comparisons over time with other institutions and will help us understand how to be more competitive in the future.

Vice President Chmura thanked Neena Verma, and Barbara Velardi in the President's Office for compiling the report and the campus research officers for their help with the presentation.

He explained that the national context for R&D is that federal investment growth is slowing in academic R&D. In Massachusetts, new opportunities for state support exist (e.g., life sciences, clean energy), but increasing fiscal constraints may limit those opportunities. National trends indicate that support for universities from industry partnerships is not growing. Moreover, competition is fierce as many universities are seeking to break into the top twenty research universities (greater than \$535M in 2006).

Associate Vice President Brancato and Director Verma explained that the Report comes from the National Science Foundation's Annual Survey of Higher Education Institutions. R&D is defined as a systematic study of a subject to improve knowledge about it or use of that knowledge toward an application. The survey focuses on research that is separately budgeted. It

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does not include service or education/training programs and does not account for some of the scholarship in areas such as arts and humanities which generally receive less external support.

Brancato reported that the University's research enterprise is approaching \$400M. It ranks 40th in U.S. among all universities in annual expenditures and 21st among publics; 3rd in Massachusetts, and 4th in New England; first in New England among public research universities. It is significant that UMass performs 90% of university research in Massachusetts outside of Route 128. From 2004 to 2006 UMass research has grown at a faster rate than U.S. higher education institutions as a whole.

He reviewed system-wide and campus expenditures and growth rates over time and compared UMass to other institutions in New England and nation-wide. He also highlighted expenditures by field and by source of funds, and provided national rankings for the system and individual campuses. President Wilson noted the rich diversity of research activity across the five campuses. Brancato noted the stability in most of the NSF rankings over the past 10 years and the difficulty of moving up in the rankings.

In sum, UMass can be characterized as a medium to large academic research enterprise, which has been growing faster than its peers in the last few years. It is entering a challenging fiscal environment and needs to continue to evolve as a research university and develop additional metrics in the years ahead. At the same time, it was emphasized that the kind of data compiled in the NSF reports (i.e., research expenditures) provides only one indicator of the University's performance in R&D, and other measures may need to be considered as well.

The presentations generated a rich discussion and set of questions among the trustees and other University officials. Trustee Johnston raised a question regarding a potential economic stimulus bill and whether we are positioned to obtain some of those funds. Vice President Chmura indicated that President Wilson and other University presidents are working together to encourage our legislative delegation to push for additional NIH funding in the President-elect's economic stimulus bill.

Trustee Thomas then asked about the percentage of research that is sponsored by external funds. Associate Vice President Brancato indicated that this is about 80 % of the total.

A question was asked about how research in the arts and humanities is shown in the data being presented. Research in this area does not tend to attract the level of external support seen in the science and engineering fields. However, it may be part of institutional expense and is included in the category of "other" if it meets the NSF definition of research. Research may also be supported by the salary of a faculty member, but not reflected in this survey.

Trustee Thomas asked whether there are opportunities for sponsored research in social sciences. Vice President Chmura indicated that this is not an area where there is a lot of funding available. Funding available is smaller for the social sciences and the level of support needed for

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work in this area tends to be less than those in other science and engineering fields.

Chair Pearl was pleased to note that industry R&D sponsorship has increased more than other areas, as this had been an explicit objective of the Committee in recent years. Vice President Chmura acknowledged that this has been the result of a conscious effort by the campuses to connect more closely with industry.

Following the overview, there was then a panel discussion highlighting five different strategies for making the University's R&D enterprise more competitive. including: faculty recruitment and retention ... building a 21st century infrastructure ... developing new organizational models and collaborative strategies ... providing strategic seed investments and matching grants ... and benchmarking performance vs. other universities.

Provost Garro from the Dartmouth campus reported on Recruit/Retain Excellent Faculty. He discussed the establishment of centers of excellence and the recruitment of faculty for those centers. SMAST and the Center for Botulinum Research serve as examples. They have also focused on biomedical engineering and biotechnology research and innovation in mathematics education.

Worcester Vice Provost Sullivan reported on Building a 21st Century Infrastructure to support research. Worcester has a goal of being among the top 25% of research schools in the county. The Lazare Research Building was built to support 100 new faculty and 3 new departments. Eighty-five percent of research currently conducted is in basic science, and in the future the campus seeks to raise the amount of research done in clinical research. Vice Provost Sullivan also discussed a new building called ACCES (Advanced Center for Clinical Education and Science), which will bring together patient care and clinical investigation.

Provost Abdelal from the Lowell campus reported on the Development of New Organizational Models and Collaborative Strategies. The campus is investing in interdisciplinary research centers that are collaborative within the campus and sister campuses. UMass Lowell is also focusing on strengthening partnerships with industry.

Interim Vice Chancellor for Research and Engagement Kostecki from Amherst reported on Providing Strategic Seed Investments and Matching Grants. He discussed providing seed and matching funds for leveraging. The Amherst campus uses a matching program requiring departments and deans to match funds whether the award is internal or external. He reviewed funds which come from the campus, the system and the state.

Vice Provost Antonak from the Boston campus reported on Benchmarking Performance against Other Universities. He indicated that benchmarking activities included a powerful research vision statement, a statement of goals and a process for selecting research performance metrics. The campus has selected 12 operational peers and 9 aspirational peers. This process will continually challenge the campus to achieve ever greater levels of research success in the

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future.

At the end of the presentations and discussion, Chair Pearl indicated that she was pleased and impressed by the creative work going on across the University system to strengthen our R&D enterprise. She also acknowledged the need to continue to develop our metrics and data sources to further our understanding of the enterprise.

The next item was an **Update on Life Sciences Initiatives**. Chancellor Collins provided an update on the University's life sciences initiatives. He described a variety of activities that have been taken as follow-up to the work of the Life Sciences Task Force that was presented to the Committee in September. This included the establishment of the Center for Clinical and Translational Science ... submission of a major collaborative proposal to the NIH ... establishment of a \$1 million Life Sciences Moment Fund ... creation of a Life Sciences Talent Initiative Working Group ... and convening of the University-wide Nursing Working Group.

In addition, Chancellor Collins highlighted recent awards from the Massachusetts Life Sciences Center and other state agencies to UMass campuses.

The next item was an **Update on Clean Energy Initiatives**. Interim Vice Chancellor Kostecki provided an overview of new clean energy legislation, a brief update on the work of the system-wide Clean Energy Working Group, and an outline of plans for a major partnership event between UMass and the Executive Office of Energy and Environmental Affairs, likely in early 2009.

The next item was an **Update on Nuclear Energy and Technology Task Force**. Trustee Lawton reported that Trustee Resolution T08-060 in May 2008 established a Task Force to analyze the impact of nuclear science and technology on the Commonwealth's economy and environment. The same resolution additionally recommended that Chancellor Meehan establish a Lowell Campus committee to develop a research and education strategy taking advantage of that campus' infrastructure and core capabilities.

The Task Force had met on September 25 and October 23. Those meetings have refined the scope and nature of the Task Force's explorations, which will result in a report on the Commonwealth and region energy picture, the economics of nuclear technology (including but not limited to nuclear power), and the role of higher education in supporting nuclear technology with an educated workforce.

The Lowell Campus Committee, chaired by Provost Abdelal, met for the first time on October 28. Task Force members Lawton, Brown, and Petrovic also attended, as did an interdisciplinary group of faculty and representatives of industries involved in nuclear technology. That meeting resulted in the establishment of committees that will examine the current status and aspirations for nuclear science and technology in the following areas: academic; research; and partnerships.

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The meeting adjourned at 9:55 a.m.

Zunilka Barrett
Assistant Secretary to the Board