UNIVERSITY OF MASSACHUSETTS

AMHERST•BOSTON•DARTMOUTH•LOWELL•WORCESTER

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

Wednesday, February 9, 2011; 8:00 a.m.
Amherst Room
225 Franklin Street – 33rd Floor
Boston, Massachusetts

Committee Members Present: Vice Chair Osterhaus-Houle; Trustees Dinan, Fox, Lawton, Santos, Reid and Thomas; Ms. Lee representing Trustee Reville

Committee Member Absent: Chair Johnston; Trustees King-Shaw, Reville and Tocco

University Administration: President Wilson; General Counsel Heatwole; Senior Vice President Williams; Vice President Chmura; Associate Vice President Brancato; Chancellors Motley, MacCormack, Meehan and Collins; Deputy Chancellor Diacon; Executive Deputy Chancellor/Provost Flotte; Provost Langley; Vice Chancellors for Research and Engagement Malone and Petrovic; Vice Provosts for Research Xia and Chen; Professors Tuominen and Whitten

Faculty Representatives: Professors Adrion and May, UMass Amherst; Ms. Gibbs, UMass Dartmouth

Vice Chair Osterhaus-Houle convened the meeting at 8:04 a.m. and indicated that President Wilson will provide highlights of progress that the University has made in the areas of science, technology and research, including some historic accomplishments in the areas of technology commercialization and R&D. A panel of leading research administrators and researcher scientists from Amherst and Lowell will then highlight the University's unprecedented success in winning two national research centers in the field of nanotechnology, and suggest the "lessons" learned from this success.

The first order of business was a motion to approve the **Minutes of the Previous Meeting**.

It was moved, seconded and

VOTED: To approve the minutes of the November 17, 2010 meeting of the Committee.

Vice Chair Osterhaus-Houle then acknowledged that President Wilson has received an important recognition since the last Committee meeting. In December, he was named by U.S. Secretary Arne Duncan as Chair of a National Board that advises the Secretary on higher education matters and oversees a special National Fund for the Improvement of Postsecondary Education (FIPSE). Once again, we appreciate how the University's continued growth and

progress is receiving national attention. She congratulated President Wilson on this historic appointment.

President Wilson's Report highlighted a number of encouraging developments in science, technology and research that have occurred at UMass since the last Committee meeting.

Update on Science & Technology Initiatives

Life Sciences:
- Re-start of $23M bio-processing facility by UMass Dartmouth as anchor for regional biopark in Fall River; $15M state support, $8M of university funds;
- $2M Mass Life Sciences Center grant to UMass Boston/Dana Farber center for personalized cancer therapy;
- Ongoing discussions with Mass Life Sciences Center about timing of support for $10M equipment investment in ETIC at Lowell … and release of initial planning funds for $95M life sciences facility at Amherst.

Clean Energy:
- Qteros (Amherst biofuels spin-off) announced successful series C round of $22M financing and the establishment of an international strategic partnership with a leading engineering firm in India;
- Anellotech (another Amherst biofuels spin-off) is seeking venture financing; its technology for producing high-value chemicals has been featured in Wall St. Journal and BusinessWeek;
- Joint planning underway for state proposal involving Dartmouth, Amherst and Lowell campuses to establish federally-funded Offshore Wind Demonstration Center;
- The Clean Energy Center (thru MTTC) has awarded 9 "proof of concept" grants to universities across the state for tech commercialization – 3 to UMass (Amherst, Dartmouth and Lowell).

Information technology:
- Hired permanent Executive Director, for the Massachusetts Green High Performance Computing Center, John Goodhue, former Vice President at Cisco Systems;
- Finalizing Purchase & Sale agreement with HG&E for Mastex site in downtown Holyoke;
- Submitted first multi-university equipment proposal to NSF for $2.1M (led by UMass);
- Contract for demolition and remediation of site in bid process at HG&E;
- Building design in final stages;
- Construction projected to start summer 2011.

Commercial Ventures and Intellectual Property:
- Over $41M in licensing revenue in FY10;
- About $22M of revenue estimated in first two quarters of FY11;
- Over 90% of revenue generated by Med School, particularly Mass Biologics;

- The recent national survey by Association of University Technology Managers shows UMass ranking #8 among U.S. universities.

Preliminary FY 10 R&D Expenditures Data

- For the first time in University of Massachusetts history, preliminary data from the campuses show that R&D expenditures exceeded the $500M mark, with an annual growth of 9.5%.

Key Factors Affecting UMass R&D Growth:

- Continue strategic faculty hiring and capital facilities investments;
- Continue seed investments;
- Position UMass for new Federal S&T Initiatives (per President's State of the Union);
- Continue to advocate with State for matching grants for federal projects, investments in capital facilities;
- Continue to grow collaborations with state, private universities and industry (e.g. CTSA, MGHPCC);
- Develop "Innovation Institute" as vehicle for applied R&D, increased industry work.

Vice Chair Osterhaus-Houle then introduced the next item, a **Panel Discussion on UMass Nanotechnology Manufacturing Centers at Lowell and Amherst**. The panel of senior administrators and leading faculty from the Lowell and Amherst campuses will have a two-fold purpose. First, to highlight the ground-breaking work that UMass is doing in the increasingly important field of nanotechnology. Second, to help us understand how UMass has been successful in achieving national recognition in this area and the lessons learned for UMass to be competitive in future national competitions.

Vice Chair Osterhaus-Houle introduced Dr. Julie Chen, Vice Provost for Research at UMass Lowell to kick-off the panel and introduce her colleagues. She is well suited for this task, as one of the region's leading experts on nanotechnology. From 2002-2004, Dr. Chen served as the Program Director for Nanomanufacturing at the NSF. Then, she served as one of the founding co-directors of the UMass Lowell Nanomanufacturing Center. She has also testified before the U.S. House of Representatives Committee on Science and Technology on the commercial and public benefits of nanotechnology.

Dr. Chen began the panel presentation with a quick overview to the field of nanotechnology. Nanotechnology is an increasingly important field of research that offers the promise for exciting innovations in fields ranging from the life sciences (e.g., new ways of detecting and treating cancer) to clean energy (e.g., new kinds of fuel cells and energy-efficient materials).

The federal government has made nanotechnology a strategic priority and held national competitions that created 16 R&D centers across the nation. Two of these centers are housed at UMass campuses – Lowell (in partnership with Northeastern and the University of New Hampshire) and Amherst.

Dr. Chen then introduced the panel: Mark Tuominen, co-Director of UMass Amherst CHM (Center for Hierarchical Manufacturing), Director of the NNN (Nano, Nanomanufacturing Network), and Professor of Physics; Jim Whitten, CHN Thrust Leader (UMass Lowell Center for High-rate Nanomanufacturing), Army Program Bio/Chem Sensor Leader, Professor and Chair of Chemistry; Michael Malone, UMass Amherst Vice Chancellor for Research and Engagement.

Professor Tuominen noted that Nanotechnology has been a strong area of innovation over the last 10 years and is a strength of the UMass system. The Center for Hierarchical Manufacturing (CHM) is an NSF Nanoscale Science and Engineering Center. CHM's vision is to develop and realize the cost effective manufacturing of nanoscale devices and materials for a variety of applications. The research focuses on bottom-up methodologies including self-assembly and other processes for large-scale production. The Center is very broad in its participation and has 39 Faculty from six institutions, as well as international collaborations.

Any academic venture's primary measure of success is research output (i.e., publications and papers); the CHM has had numerous publications in a variety of areas related to nanomanufacturing. Many patents have been filed and some awarded, and there is industry interaction. The National Nanomanufacturing Network (NNN) is an open access network for the advancement of nanomanufacturing R&D and education. It also provides a web-based clearinghouse on nanomanufacturing information. UMass Administration and Commonwealth support was crucial in assisting with federally funded centers.

Professor Whitten provided a brief history of the Center for High-rate Nanomanufacturing (CHN). CHN at UMass Lowell is one of 4 centers in the U.S., is a presence at scientific conferences, attracts high quality students and new faculty, leverages opportunities for CHN faculty and research for industrial funding and collaboration, and government funding. CHN's mission is to bridge the gap between nanoscale scientific research and the creation of nanotechnology-based commercial products.

Innovative research and education, strong team, facilities and infrastructure, state support, support by administration and industry support are key components needed to succeed. At UMass Lowell there are a total of 60 researchers actively engaged in nanoscience nanomanufacturing research through the CHN, and there are over 30 companies through the Industrial Advisory Board. Strong outreach and education components include: K-12 outreach programs, and undergraduate and graduate programs. Partnership with industry is key to sustainability.

Vice Chancellor Malone commented on increasing the success of UMass in future research centers. The presence of these centers leads to leveraging that makes it possible to get additional funding. Campus research leaders reiterated the key factors outlined by President Wilson as critical to their success, especially seed funding and state matching grants. In addition, they noted the need for new vehicles, such as a proposed Innovation Institute, to focus on applied R&D and industry-sponsored work to supplement federal funding.

The Committee was very impressed by the quality of research being done at UMass, the leadership position the University has achieved and the enormous potential impacts it can have on innovation and economic development in the Commonwealth.

Vice Chair Osterhaus-Houle thanked the Panel for their presentation.

The meeting adjourned at 9:59 a.m.

Zunilka Barrett
Assistant Secretary to the Board