UNIVERSITY OF MASSACHUSETTS

AMHERST•BOSTON•DARTMOUTH•LOWELL•WORCESTER

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

Wednesday, February 3, 2010; 8:00 a.m.
Amherst Room
225 Franklin Street – 33rd Floor
Boston, Massachusetts

Committee Members Present: Vice Chair Johnston, Trustees Lawton and Young

Committee Member Absent: Trustees Hoyt, King-Shaw, Osterhaus-Houle, Reville, Thomas and Tocco; Chairman Manning

University Administration: President Wilson; General Counsel Heatwole; Senior Vice President Williams; Vice President Chmura; Associate Vice President Brancato; Chancellors Holub, Motley, MacCormack, Meehan and Collins; Executive Deputy Chancellor/Provost Flotte; Provosts Langley and Garro; Vice Chancellor for Research and Engagement Malone, UMass Amherst; Vice Provost for Research Xia, UMass Boston; Vice Chancellor Petrovic, UMass Dartmouth; Interim Vice Provost Chen; Professor Kurose, UMass Amherst

Faculty Representatives: Professor Adrion, UMass Amherst; Professor Tirrell, UMass Boston; Ms. Gibbs, UMass Dartmouth

Vice Chair Johnston convened the meeting at 8:04 a.m. and asked for the approval of the **Minutes of the Previous Meeting**.

It was moved, seconded and

VOTED: To approve the minutes of the November 18, 2009 meeting of the Committee.

Vice Chair Johnston announced that the UMass Medical School sent a group of 15 people to Haiti to help victims of the earthquake. Executive Deputy Chancellor/Provost Flotte indicated that this was a unique opportunity for the Medical School.

Vice Chair Johnston then congratulated President Wilson and Chancellor MacCormack on the approval of the Law School. President Wilson acknowledged that after some 15 years of efforts it was a wonderful day for the University.

The next item was the **President's Report**. President Wilson highlighted activities in three major technology areas of interest to the state – life sciences, clean energy and information technology.

Life Sciences Initiative: the Massachusetts Life Sciences Center has $10 million in new program funding for FY10. The Center plans to continue it programs of academic matching grants and internship initiatives. The Governor's budget for FY11 proposes $10 million in program funds and elimination of $5 million in tax credits.

Clean Energy Initiative: the key aspect was a merger between the Renewable Energy Trust and the Clean Energy Center. This will create one central entity with $50 million of funding. The Mass Tech Transfer Center, which is housed at UMass, has been encouraged to submit a proposal to support commercialization of university technology and university-based start-ups around the Commonwealth.

Information Technology Initiative: this is another of the Governor's key science and technology initiatives. Northeastern, MIT, UMass and BU are collaborating with Green High Performance Computing Center. Discussions are also ongoing with Harvard. Universities are negotiating with the state to increase the level of support, and we have serious support from industry groups.

President Wilson then provided an overview of three investments funds – the CVIP Technology Development Fund, the Science and Technology Fund and the Creative Economy Fund.

CVIP Technology Development Fund: this is designed to award $25,000 grants to about 8 faculty to help them develop technology to support 'proof concept' studies that promote commercialization of UMass technology – either to external industry or venture capitalist. Results to date include 5 licenses, 3 three start-up companies, and over $3 million in R&D.

Science and Technology Fund: this initiative has been a great success over the years and the fund provides substantial seed grants to our very best faculty to pursue major new strategic R&D initiatives. The Mass Nanotech Center at UMass Amherst, the M2D2 (medical devices) at UMass Lowell and Worcester, GoKids Boston Youth Health Center research program at UMass Boston, and the Marine Renewable Energy Collaborative at Dartmouth are examples of programs that have been successful through the fund.

Creative Economy Fund: this is a competitive fund that awards grants that focus on the arts, humanities and social sciences. It supports 29 projects. The film/electronic game industry at UMass Boston, the Heritage Tourism plan for W.E.B. DuBois Boyhood home at UMass Amherst, UMass Dartmouth's Observatory/New Bedford Ocean Explorium partnership, and the Lowell Youth Orchestra collaboration are examples of programs funded.

Vice Chair Johnston introduced the item for **Discussion**, **Framework for Excellence Research and Engagement Strategy, UMass Amherst**. Chancellor Holub introduced Vice Chancellor for Research Engagement Michael Malone and Professor James Kurose a distinguished Professor of Computer Science. He then commented that UMass Amherst is one of two public research institutions in New England classified under the Carnegie Foundation. He quickly commented on the name of the position for the Vice Chancellor for Research Engagement.

Vice Chancellor Malone indicated that today's discussion will focus on the current status of the campus, growth strategy, centers and prospects, development of infrastructure and engagement.

(Current Status and Growth Strategy/Vice Chancellor Malone)

Current Status: Chancellor Holub mentioned the Carnegie Foundation which is a basic classification where research universities have a very high level of activity. There are 96 institutions in the U.S. that are classified, 63 are public and 36 are Land Grant. There are two public institutions in New England, UConn and UMass and the rest are private—UMass is the only public research institution in the Commonwealth. The campus is also classified as a Community Engaged institution.

Another group according to the Carnegie Foundation is the AAU (Association of American Universities) Public Institutions which consists largely of the top tier research universities in the country with very high levels of research activity. Research awards at Amherst are an accomplishment that enables a measure of activity for the campus. Awards grow at a rate of 6.5% per year, this does not include any Federal ARRA funding for 2009. With regards to Tenure System Faculty (AAU Comparison Group), UMass compares well in research productivity per capita with the national peer group, though there is room for improvement.

Growth Strategy: It is essential to accelerate research growth to gain in rankings. Amherst receives 45% of the Federal research awards funded by the NSF and ranks 34th in the U.S. at the NSF. Federal ARRA R&D Funds were at 23% of base FY09 Budgets. UMass Amherst ARRA Awards to date are 44% of the FY09 non-ARRA Federal Awards. Peer analysis will be done after the ARRA program is final.

Growth Strategy Accelerators include the need to broaden support for faculty by providing facilities, staff support, and seed and matching funds; diversifying funding sources; hiring new faculty to maintain current areas of strength and hire in emerging areas; collaborate in centers and institutes.

Accelerators to Broaden Internal Support include a Senior Faculty Advisor for Research and Engagement to link academic initiatives with faculty interests and capabilities; a new officer of Research Development to focus solely on initiatives, workshops, training and symposia, funding opportunity intelligence and advocacy; strengthening seed grants; new facilities are needed.

Accelerators to Broaden External Support include Integrating Government Relations into Research Development Office; Increasing Federal agency intelligence; Engaging Partners; Emphasizing Research and Creative Activity in Branding Initiative.

We are in the early stages and plan to work on a business plan for an Innovations Institute. Most major research university systems have a separate legal entity that facilitates certain kinds of activity related to innovations or commercialization of research. The institute is complementary to campus programs and facilitates new grants and contracts. Relevance is the major reason for the need of an Innovations Institute, which also requires inter-disciplinary and inter-institutional collaborations.

(Centers and Prospects/Professor Kurose, Vice Chancellor Malone)

CASA (Collaborative Adaptive Sensing of the Atmosphere) is one of the firsts NSF Engineering Research Centers, NSF provides $40 million of funding and it is sustainable for 10 years. The center requires collaboration and partnerships from multiple disciplines (radar, computing, networking, atmospheric science, meteorology, or, sociology), academic institutions (UMass, Colorado State, Oklahoma, etc.), industry (Raytheon is key founding partner) and the state. Steps for CASA engagement include a Science and Engineering Advisory Board and an Industry Advisory Board.

The Center for Public Policy and Administration is headed by J. Fountain in the Political Science department. It is interdisciplinary and consists of 19 faculty from 9 departments, it is the Center of centers, all of the centers have an educational component, there is a new Masters of Public Policy, and there is outreach to the community.

The NSF Nanoscale Science and Engineering Center – Center for Hierarchical Manufacturing is headed by James J. Watkins, PSE and Mark Tuominen, Physics, has $16 million in funding from NSF, is in its 5th year, is for research in nanoscale materials, nano-electronics, bio-directed assemblies, its characteristic is interdisciplinary, has strong educational programs, and involves lots of industry.

The DOE (Department of Energy) Energy Frontiers Research Center – $16 million in funding announced last year, is for polymer-based photovoltaic structures, converting sunlight into electricity, is interdisciplinary and is headed by Tom Russell (PSE) and Paul Lahti (Chemistry).

The Center for Hierarchical Manufacturing (CHM) Engagement is an example of all four of the centers previously highlighted. It collaborates with other academic, government and industrial programs devoted to new technology of nanomanufacturing. An effort was established among the Centers that were funded to build the National Nanomanufacturing Network (NNN).

Vice Chancellor Malone reported on prospects for the futures Growing Large-Scale Research Centers: faculty leadership, track record, coordinated cluster hiring, small group grants, competition for seed funds, facilities, medium size group grants particularly those that engage stakeholders, and major extramural support, or growth in enrollments, and accelerate with a systematic approach.

He then highlighted faculty leadership at Amherst:

George Huber, Armstrong Assistant Professor of Chemical Engineering, a catalytic fast pyrolysis discovery, $7.2 million in funding (since 2006) biofuels research, including CVIP Development Grant, Anellotech negotiating for major VC funding, "Grassloine" cover article, *Scientific American*.

Professor Sue Leschine, Department of Microbiology, discovered "Q microbe", headquartered in Marlboro, a pilot plant is located in Chicopee, named to Top-25 Women in Technology and to Top-10 Women in Clean Technology.

Kevin Fu, Assistant Professor in Computer Science, was named 2009 Innovator of the Year by the *MIT Technology Review*, worked on security, privacy—computational RFIDs, implantable medical devices*;* collaborates in ECE, Civil Engineering, UMass Transportation Center, industry (EMC/RSA, Intel).

Robert Pollin, Professor, Economics Department had a role in President Obama's Policies for Green Jobs, served as an Advisor to Presidential Transition Team, recently briefed Congress, DOE, U.S. Treasury, National Academies, and addressed U.N. General assembly.

This kind of leadership allows for the forming of new clusters and the creation of new centers like the Institute for Massachusetts Biofuels Research lead by G. Huber, S. Leschine, and has 23 faculty from 8 departments, and is a recipient of the 2009 UMass President's S&T Initiative Fund. Other activity include an Institute for Cellular Engineering, Institute for Healthcare Informatics (UMMS, BHS), Interdisciplinary Center in Drug Resistance (UMMS), Computational Social Science, Heritage Studies, Renaissance Center, Language, Experimentation, and Computation.

Science and Technology Initiatives include: $40 million NSF Center for Hierarchical Manufacturing; $13 million DOE Energy Frontiers Center; $1.5 million NSF Center for Chemical Innovations, to be renewed to $40 million in March; RFID, Security, Privacy work with civil engineers in the Mass. Executive Office of Transportation and the U.S. Department of Transportation; full proposal to NSF Engineering Research Center with University of Houston; Green Computing Initiative in Holyoke. Creative Economy Initiatives are also underway.

(Infrastructure/Vice Chancellor Malone, Professor Kurose)

UMass Press, Awards and Honors advances the campuses reputation. *The Lowell Experiment* was a recipient of the Book Award of the National Council on Public History, and *Legend of a Suicide* was a winner of the Grace Paley Award, New York Times Editor's Choice and Notable Book of the Year. Since 1963, the Press has sold over 2,000,000 individual volumes, 40 new books are published annually. The Press offices are located in the East Experiment Station at UMass Amherst with a satellite office at UMass Boston.

New Laboratory Science Building: this infrastructure is essential to grow NIH Life Sciences research funding. This is a $144 million project, $109 million for construction, $354 of gross square foot, will provide core facilities, labs, platform space, offices, support space, a new Vivarium and shell space. Design has been underway since May 2009; the first phase will be completed in July, and is scheduled to be finished in 2012. DCAM and UMass Building Authority Partnerships have been positive.

Activity includes the New England Clean Energy Innovation Consortia; Mass Life Sciences Center; Mass Clean Energy Center; Governor's IT collaborative: industry, academia; and MITRE-led cyber security initiative.

Holyoke Green High Performance Computing Center: a $70-80 million facility, in initial planning stages, looking forward to capital financing to achieve $80 million plus goal, narrowing site selection, innovation district planning in the downtown area, collaborative research, education activities—Another example of great collaboration.

Holyoke Green High Performance Computing project will be a world-class "green" HPC center providing computation as 3rd leg of science, required 21st century research infrastructure, and green: power, facility and operations, research; provide historic 3-way collaboration strengthening Mass. leadership in computing, application in life sciences, clean energy, climate; and serve as a catalyst to the Holyoke energy innovation district - economic, educational, workforce development benefits to Holyoke, western Mass., and the state.

Precision Manufacturing Partnerships include the John Adams Innovation Institute; "Precision Manufacturing Regional Alliance Project"; and Programs Working Together for Western Mass.; 2009 NSF Partnerships for Innovation Award—$600,000 Nation Science Foundation award to UMass Amherst.

(Campus Engagement/Vice Chancellor Malone)

Numerous undergraduate research and summer research programs provide unique opportunities for students. Summer '10 undergraduate research opportunities abound.

Commonwealth Honors College Research: more than 80% of alumni attend graduate or professional school; 453 students from 20 public institutions attended the State-wide Undergraduate Research Conference; Office of National Scholarship Advancement (3 Fulbright, 1 Gates Cambridge, 1 Goldwater, 1 Marshall, 3 National Science Foundation).

Nationally Recognized Scholars: Biochemistry major Cornelius Taabazuing ’09 of Boston, spent the summer in Colorado working with Nobel Laureate Tom Cech, thanks to the HHMI Exceptional Research Opportunities Program; History major Joseph Sklut ’10, is the only Truman Scholarship recipient from a Massachusetts college this year.

Trustee Lawton asked that the Science and Technology Task Force provide an update at the next meeting of the Committee.

Vice Chair Johnston and President Wilson thanked Chancellor Holub, Vice Chancellor Malone, and Professor Kurose for an exciting presentation.

The meeting adjourned at 9:44 a.m.

Zunilka Barrett
Assistant Secretary to the Board