

THE UNIVERSITY OF TENNESSEE
BOARD OF TRUSTEES

MINUTES OF THE RESEARCH, OUTREACH AND ECONOMIC DEVELOPMENT
COMMITTEE

November 8, 2012
Knoxville, Tennessee

The Research, Outreach and Economic Development Committee of the Board of Trustees of The University of Tennessee met at 1 p.m. EDT, Thursday, November 8, 2012, in Hollingsworth Auditorium on the campus of The University of Tennessee Institute of Agriculture in Knoxville, Tennessee.

I. CALL TO ORDER

George E. Cates, Chair, called the meeting to order.

II. ROLL CALL

Executive Vice President David Millhorn called the roll, and the following members of the Committee were present:

George E. Cates
Tim L. Cross
Joseph A. DiPietro
J. Brian Ferguson
Teresa K. Fowler
Vicky B. Gregg
Monice Moore Hagler
Raja J. Jubran
Richard G. Rhoda
Shalin N. Shah
Marty Spears
Don C. Stansberry, Jr.
Victoria s. Steinberg
David M. Stern
Janet M. Wilbert

Commissioners Kevin S. Huffman and Julius T. Johnson were not present at the meeting.

Dr. Millhorn announced the presence of a quorum of the Committee. Other Trustees, members of the administrative staff, the public, and representatives of the media were also present.

III. APPROVAL OF MINUTES OF PRIOR MEETING

Chair Cates asked for any corrections to the minutes of the June 20, 2012 meeting of the Committee. Hearing none, the Chair called for a motion. Trustee Hagler moved approval of the minutes as presented in the meeting materials. Trustee Jubran seconded the motion, and it carried unanimously.

IV. OPENING REMARKS BY COMMITTEE CHAIR

Chair Cates waived any opening remarks and asked Dr. Millhorn to commence the presentations.

V. RESEARCH/ECONOMIC DEVELOPMENT NEWS AND HIGHLIGHTS

Dr. Millhorn recognized UTK Chancellor Jimmy Cheek, who introduced Dr. Taylor Eighmy as the new Vice Chancellor for Research and Engagement on the Knoxville campus as of October 1, 2012. Dr. Cheek noted Dr. Eighmy's achievements at Texas Tech University where Dr. Eighmy served as Senior Vice President for Research before coming to UTK and noted Dr. Eighmy's impressive track record in research, his vision, and his ability to work well and closely with faculty. Dr. Eighmy was welcomed with a round of applause.

Dr. Millhorn's power-point presentation (Exhibit 1) on news and highlights of research, outreach and economic development activities included statistics reflecting progress within the University of Tennessee Research Foundation (UTRF) since the implementation of a plan introduced in June 2011 to hire professional "boots on the ground" staff and to focus on deal-flow to drive success. In FY12, disclosures increased by over 60 percent (144), US patents issued increased over 20 percent (23), licenses and option agreements increased by 38 percent (22), start-up companies increased by 125 percent (9), and royalties earned totaled \$1,403,301.

Dr. Millhorn recognized the leadership within UTRF of Dick Gourley (Interim President), Dave Washburn (Vice President, Multi-Disciplinary Office) and Richard Magid (Vice President, Health Science Center Office) and thanked them for their significant contributions to the organization.

Dr. Millhorn reported that the interactive Spectrum project within the West Tennessee Solar Farm initiative is currently on exhibit at Knoxville Center Mall. After TDOT completes construction of the interactive education and teaching facility on the West Tennessee Solar Farm in early 2014, Spectrum will become part of that renewable energy facility. Dr. Millhorn noted the Solar Farm's solar contracts with local utilities are bringing in substantial income.

A book (*Breaking the Mold: UT-Battelle and the Resurgence of Oak Ridge National Laboratory*) is being created that recounts, among other things, the UT-Battelle proposal/bid process to manage ORNL and the resurgence of the Lab under UT-Battelle management. UT-Battelle has now had a successful 12-year partnership, Dr. Millhorn noted, and by the February Board of Trustees meeting more information may be known about the next rebid timeline. Dr. Millhorn said a national search is now underway for a new Deputy for Science and Technology at ORNL to replace Dr. Thomas Zacharia, who took a position at Qatar Foundation. Dr. Jim Roberto is Interim Deputy for S&T, a position he formerly held.

Dr. Millhorn provided an update on the UT-ORNL Governor's Chair (GC) and Distinguished Scientist (DS) programs, noting 10 GC appointments are currently in place with 9 at Knoxville and 1 at UTHSC, and there are 6 DS appointments. These programs are making a significant difference for UT and ORNL. Two DS, 7 GCs and 2 associated hires accounted for 36 percent of the UTK College of Engineering research expenditures for tenured or tenure-track faculty in FY12; further, GCs are responsible for or heavily involved in 2 large center grants (~\$42M). A limiting factor for expanding these programs, however, is quality research space, Dr. Millhorn noted.

Dr. Millhorn stated the National Science Foundation National Institute for Computational Sciences (NICS) Cray XT5 Kraken computer is operating at over 1 petaflop and UT, NICS and Joint Institute for Computational Sciences (JICS) high-performance computers are the most heavily used and fastest computers in the world. Titan, a Cray XK7 system, has replaced the XT5 Jaguar computer at ORNL and it is the scientific research community's most powerful computational tool for exploring solutions to some of today's most challenging problems. It is capable of a peak speed of 27 petaflops. Plans are underway for re-competition of the \$65M NSF grant and this effort will be led by Dr. Anthony Mezzacappa. This rebid will be a fierce competition, Dr. Millhorn stated, and it is extremely important for UT to win the award. Results may be known next summer. Dr.

Millhorn noted he, JICS Director Jeff Nichols, Dr. Mezzacappa, and Dr. Jeremy Smith, UT's first Governor's Chair, met in October in Memphis with UT Health Science Center, LeBonheur and St. Jude officials to discuss and facilitate mutual collaboration and opportunities.

The Cherokee Farm project, Dr. Millhorn reported, had much activity in the last few months. Work continues with TDOT to facilitate exit locations and other issues. Construction of the Joint Institute for Advanced Materials (JIAM) building, a joint UT-ORNL facility, will soon commence. To help manage lease contracts and recruit tenants, the Cherokee Farm Development Corporation (CFDC) was created as a subsidiary of the UT Research Foundation. Dr. Millhorn introduced the newly-appointed President and CEO of CFDC, Mr. Cliff Hawks, who was previously general manager of the Nashville Superspeedway and director of the Metro Nashville Sports Authority. Mr. Hawks was welcomed with a round of applause.

Chair Cates thanked Dr. Millhorn for his report and for the innovative and energetic leadership he has brought to the University and for promoting interaction among ORNL and other organizations. Chair Cates also thanked the Board members for their work and investment in UTRF, which is now seeing positive results, he noted.

VI. UT OUTREACH/ENGAGEMENT EFFORTS

Dr. Larry Arrington, Chancellor of the Institute of Agriculture, introduced the joint Institute of Agriculture and Institute for Public Service presentation (Exhibit 2) entitled *Outreach--Beyond Campus: Improving Lives, Strengthening Communities*. He noted this year is the 150th year anniversary of the Morrill Act which established land-grant universities. A video was shown of Institute of Agriculture and IPS activities and testimonies of numerous people across the state served by the Institutes with education and assistance related to financial management. Drs. Tim Cross (Dean, UT Extension) and Mary Jinks (Vice President, IPS) described the vast variety of finance programs and outreach activities serving and helping Tennessee citizens. These hands-on programs included financial assistance, guidance and training to farmers, families, cities, businesses, youth, elected officials and community leaders. Last year via UT Extension, it was noted, 9,587 Family and Consumer Science program participants reduced debt, increased savings or increased their investments, resulting in \$5.5M in economic impact statewide. IPS provided financial solutions for Tennessee companies and achieved an annual economic impact reaching \$1.2B for customers from new contracts, improved productivity, greater

sales and capital investment leading to jobs. IPS was instrumental in helping implement the Tennessee Municipal Finance Officer Certification and Education Act of 2007, Dr. Jinks noted. Asked if there is financial help to UT units and where funding came from, Dr. Jinks noted about one-third of the funding is from the state, one-third comes from local appropriations and the remaining third comes from fees, grants and contracts. Dr. DiPietro noted these Institutes, both non-formula units, connect with Tennessee citizens across the state, and no tuition dollars are used for their budgets.

VII. TN-SCORE REPORT

Dr. John Hopkins, of the Executive Vice President's Office and Director of TN-SCORE, via a power-point presentation (Exhibit 3), shared progress, early successes and plans for a statewide National Science Foundation (NSF) RII Track I Experimental Program to Stimulate Competitive Research (EPSCoR) award UT received two years ago. The objective is to build research infrastructure that contributes to the collective competitiveness of the state's research institutions. The Track I awards are the centerpiece of the NSF EPSCoR program and are five-year \$20M awards. Dr. Millhorn is Principal Investigator (PI), and Dr. Hopkins is Co-PI and Project Director for TN-SCORE. UT is the managing organization for the Cooperative Agreement, and the UTK campus is manager of the award financials. Dr. Hopkins recognized Josh Francois and Samantha Brown of his office team, not present because of a National Science Foundation Communications workshop TN-SCORE was hosting, and Dr. Stacey Patterson, UT Assistant Vice President and Director of UT Partnerships. Dr. Patterson, he noted, pulled the UT group together and began writing the winning EPSCoR proposal almost immediately upon joining the Executive Vice President's office. Dr. Hopkins also thanked the UTK Office of Research head, Dr. Greg Reed, and his staff, particularly David Smelser, as instrumental in managing a complex and challenging program.

Dr. Hopkins described the breadth of the TN-SCORE program, including 31 participating organizations (within which are 11 primary research partners, 16 collaborating partners and 4 industry partners). Significant research organizations participate, including Oak Ridge National Laboratory and Vanderbilt University. All UT campuses, all four-year Tennessee Board of Regents and many private schools participate in the program. Overall, Dr. Hopkins said, there were 201 participants in Year 2, which ended July 31, 2012. Science is the fundamental base of TN-SCORE, but there are other impact areas important to NSF and the state, and work is taking place to strengthen research

activities in themes strategic for Tennessee and leveraging them for greater benefit in workforce development and advocacy for STEM education and research. Pipelines have been created for moving research into innovation into jobs, and in using student engagement and research experiences to produce a trained workforce. Links are being created for bridging research strengths into state economic development opportunities and for creating high-paying jobs here in Tennessee, Dr. Hopkins said. It is not a quick process to build collaborative infrastructure, Dr. Hopkins noted, but results are being seen in terms of publications, inventions and new research activities. TN-SCORE is also driving more multi-institutional and team-based proposals which are keys to the big research programs so important in today's research funding landscape. An additional \$1.2M of new direct funding has been awarded and \$5.6M of co-funding has been awarded indirectly to other projects out of the EPSCoR office, Dr. Hopkins said.

Dr. Hopkins noted the heads of the three major "thrust" groups within TN-SCORE: Dr. Barry Bruce of UTK, Professor of Biochemistry, Cellular and Molecular Biology; Dr. Tom Zadwodzinski, UT-ORNL Governor's Chair in Electrical Energy Storage and Professor of Chemical and Biomolecular Engineering at UTK; and Dr. Sandy Rosenthal, Professor of Chemistry and Director of the Vanderbilt Institute of Nanoscale Science and Engineering. Dr. Hopkins also discussed TN-SCORE partners, including Oak Ridge Associated Universities (ORAU), and the teaching opportunities for junior faculty at primary teaching institutions to work with mentor faculty at primary research schools. Internship and co-op opportunities at TN-SCORE industry partners provide practical experience to the students and create relations for guiding and pursuing problem-driven research. The students, their institutions and industry all benefit from the experience. One of the "double-down" investments made with TN-SCORE is an agreement by EVP Millhorn and UTK Chancellor Cheek to invest in doctoral fellowships at UTK in an amount correlated to the TN-SCORE F&A recovery. The UTK Energy Scholars program has been created and it is integrating into the Bredesen Center for Interdisciplinary Research (CIRE). Dr. Hopkins noted this pipeline is helping to keep the best and brightest students and researchers in Tennessee.

TN-SCORE is also providing internships through its industry partners, Dr. Hopkins said. An example is a UTK Chemical Engineering graduate who interned at Eastman before landing a full-time position in their Strategic Process Innovation and Evaluation Research Lab. These links to industry are critical in providing direction to the program and relating outcomes to real-world needs.

Dr. Hopkins concluded his presentation by inviting members to support the 2013 National NSF EPSCoR Conference November 3-6, 2013 to be held in Nashville and hosted by TN-SCORE.

VIII. PARTNERSHIPS FOR INNOVATION AWARD, NATIONAL SCIENCE FOUNDATION, DISTINGUISHED SCIENTIST DR. JIMMY MAYS, CHEMISTRY, UT KNOXVILLE

Dr. Millhorn noted the next four presentations demonstrate the growing support chain for innovation capacity being developed to support research opportunities from concept to product and to use research and Intellectual Property (IP) to solve problems impacting people, build strong local and regional economies and improve the national well-being. They all sought counsel to help them grow and be where they are today.

Dr. Millhorn introduced Dr. Jimmy Mays, Distinguished Scientist and Professor of Chemistry at UT Knoxville, who led a team to recently win a prestigious Partnership for Innovation (PFI) award from the NSF and outlined these activities in a power-point presentation (Exhibit 4). This is the state's first PFI grant and the Anderson Center's first NSF award. Dr. Mays noted the PFI award is a \$600,000 grant over two years and he gave recognition to colleagues Joy Fisher and Alex Miller (UT College of Business Administration's Anderson Center for Entrepreneurship and Innovation) and Dr. Greg Reed and staff (UTK Office of Research) for their assistance in this enterprise. The goal of the PFI is to accelerate transfer of university innovations into the marketplace. Dr. Mays discussed "Superelastomers: New thermoplastic elastomers based on multigraft copolymers" and noted the PFI was in the early stage of IP and business development. The PFI technology platform is improved thermoplastic elastomers (TPEs) and the patent-pending innovation is enhancement of mechanical properties through control of polymer architecture. Dr. Mays noted the NSF PFI team members and their specific functions in the different areas of product development. The business entity BBB Elastomers LLC was created with directors Dr. Mays, Dr. Roland Weidisch (Fraunhofer Institute in Germany) and Dr. Samuel Gido (University of Massachusetts). Dr. Mays discussed the focus of the science behind BBB Elastomers and the licensing of superelastomer technology from the UT Research Foundation, as well as the development of industrial partnerships and the potential applications of the technology.

IX. UT RESEARCH FOUNDATION START-UP COMPANIES

The Committee next was given power-point presentations (Exhibit 5, 6, 7) by three start-up company founders, whose companies are in various stages of development. All the technologies have been developed at UT or in partnership with ORNL. Presenters were Dr. Jon Wall, Professor of Medicine in the Graduate School of Medicine and founder of Solex, a Knoxville-based company in its early stage whose technology is based on an imaging technology developed in his laboratory and licensed from the UT Research Foundation; Dr. Ed Chaum, Professor of Ophthalmology at the UT Health Science Center and founder and chief medical officer of Hubble Telemedical, a Memphis company whose technology has been jointly developed by UT and ORNL; and Dr. Michael Zemel, Professor Emeritus in the UT Knoxville College of Nutrition, founder of NuSirt Sciences (originally Nutraceutical Discoveries, Inc.), who licensed IP from UTRF developed in his UT laboratory.

Each presenter discussed the journey of its products' development, the vision and applications of its technologies, and the assistance and mentoring obtained through the development and concept-to-venture processes. UT, UTRF, ORNL and Technology 2020, among other organizations, were recognized for their invaluable assistance in these processes.

X. OTHER BUSINESS

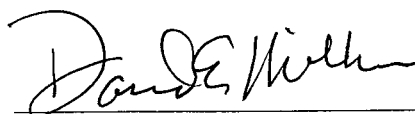
The Chair called for any other business to come before the Committee, and there was none.

In response to a question from Trustee Wharton about an update on biofuels, Trustee Ferguson noted Genera Energy is courting companies for plant construction, and information should be known by the first of the year.

XI. ADJOURNMENT

There being no further business to come before the Research, Outreach and Economic Development Committee, the meeting was adjourned.

Respectfully Submitted,



David E. Millhorn, Ph.D.