

THE UNIVERSITY OF TENNESSEE  
BOARD OF TRUSTEES

MINUTES OF THE RESEARCH, OUTREACH, AND ECONOMIC DEVELOPMENT  
COMMITTEE

June 19, 2013  
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, June 19, 2013, in the Hollingsworth Auditorium on the campus of the Institute of Agriculture in Knoxville.

**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 Research, Outreach, and Economic Development Committee were present:

George E. Cates, Chair  
Tim L. Cross  
Joseph A. DiPietro  
J. Brian Ferguson  
Vicky B. Gregg  
Monice Moore Hagler  
Julius T. Johnson  
Raja J. Jubran  
Bonnie E. Lynch  
W. Marty Spears  
Don C. Stansberry, Jr.  
David M. Stern  
Thaddeus A. Wilson

Kevin S. Huffman, Richard G. Rhoda, Shalin N. Shah, and Victoria S. Steinberg were not present at the meeting.

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

### III. MINUTES OF LAST MEETING

Chair Cates asked for any corrections to the minutes of the February 28, 2013, meeting of the Committee. Hearing none the Chair called for a motion. Trustee Ferguson moved approval of the minutes as presented in the meeting materials. The motion was seconded and it carried unanimously.

Chair Cates noted there had been much progress in the area of research and asked Dr. Millhorn to make the first presentation.

### IV. ROED HIGHLIGHTS AND UPDATES

Dr. Millhorn presented highlights of a variety of research and economic development initiatives and updates (Exhibit 1). Dr. Millhorn relayed several recent and upcoming personnel changes at UT, Oak Ridge National Laboratory (ORNL), and the UT Research Foundation (UTRF). Dr. Millhorn noted negotiations are currently taking place with three Governor's Chair candidates. He thanked Interim UTRF President Dr. Dick Gourley for his service over the last two years.

Dr. Millhorn highlighted numerous achievements and recognitions of UT faculty-researchers and noted these accomplishments demonstrate the breadth of research taking place within the University.

Regional media coverage, Dr. Millhorn stated, of *Breaking the Mold*, the book outlining the remarkable ORNL transformation since UT-Battelle management began in 2000, has been extensive and the UT Press publication has been very well received. The book is timely given the potential repeat bid of UT-Battelle for management for the Lab, Dr. Millhorn said.

Dr. Millhorn gave a TN-SCORE (Tennessee Solar Conversion and Storage Using Outreach, Research, and Education) update and noted the success of the program. He discussed the NSF Experimental Program to Stimulate Competitive Research (EPSCoR) formula used to make awards available to states falling under a certain level of federal funding. UT has now surpassed the level for eligibility and, in two years when the award concludes, UT will not continue as

an EPSCoR member; however, many aspects of the program will continue, as well as the institutional relationships and partnerships which have been established.

Dr. Millhorn said the Spectrum exhibit, the West Tennessee Solar Farm educational component temporarily housed at the Knoxville Center Mall, is having good community exposure, with over 5,600 visitors since December.

An update of Cherokee Farm Innovation Campus was given. Marketing and recruiting companies into the property is the primary focus now as the infrastructure-build phase is complete, Dr. Millhorn stated.

Dr. Millhorn provided data indicators concerning the health and productivity of the UT system-wide research program. In particular, Dr. Millhorn discussed sponsored programs and the importance of building this segment within the University, which currently accounts for 27 percent of the University's budget. Dr. Millhorn noted that 1,445 full-time faculty equivalents (or 36 percent of the total faculty population) are funded by sponsored program revenues. Dr. Millhorn stated the UT-ORNL leverage is a key factor in significant growth taking place despite a general national economic downturn. Dr. Millhorn discussed the small (9-10) percent nationwide of National Institutes of Health (NIH) proposal applications actually funded and the potential for faculty members to become discouraged in the proposal process. Dr. Millhorn noted the number of UT research proposals submitted has held steady during recent years, yet growth in funding is taking place, indicating it is the quality of UT applications driving the growth and not the number of submissions. Dr. Millhorn concluded his presentation with a discussion of the strategic directions UT needs to take to continue to grow its programs and partnerships.

Chair Cates asked if the 2011-2012 total sponsored research program expenditures for UTHSC included Graduate Medical Education (GME). Dr. Millhorn noted it did and said GME is an important component in the overall UTHSC funding model. Trustee Stansberry asked for an example of a sponsoring entity, and Dr. Millhorn stated the largest sponsor is the federal government through its granting agencies. A discussion took place concerning the importance and strategies of finding specific niches in the research enterprise in which to successfully invest in a highly-competitive research funding environment with shrinking financial budgets. Dr. DiPietro noted much effort is taking place with UT delegations in Nashville and D.C. to promote the value of funding the research enterprise. Dr. Millhorn stated the University cannot afford

to be one-dimensional in its focus on federal funding. Investment by the private sector is critical to future growth and success. Trustee Blackburn commended Dr. Millhorn for getting the UT-Battelle story at ORNL in the *Breaking the Mold* book out to a variety of stakeholders.

**V. ANNUAL REPORT OF UT RESEARCH FOUNDATION/FY 2014 UT RESEARCH FOUNDATION OPERATING BUDGET**

Mr. Dave Washburn, President of the UT Research Foundation, presented the UTRF annual report and operating budget (Exhibit 2). Mr. Washburn noted he has been at UTRF for 18 months, and he and UTRF staff are most appreciative for the support from UT administrators, deans, department heads and faculty to move UTRF forward since Dr. Millhorn had presented a blueprint to the ROED Committee in June 2011 for “rebooting” UTRF technology transfer operations. Mr. Washburn gave a summary of what has transpired at UTRF since that time, discussing the increase in licensing associates, the better business metrics used for managing performance, and the efforts in building and reestablishing economic partnerships across the state.

Mr. Washburn gave an overview of the 2014 UTRF budget (\$3,875,300), discussing sources of revenue and future opportunities to increase revenues. Mr. Washburn recognized Dr. Dick Gourley’s leadership for the last two years as Interim President of UTRF, noting particularly the implementation of a vital strategic plan built upon Dr. Gourley’s unique perspectives as former client, dean, and board member of UTRF. Mr. Washburn called upon Mr. Murray Deal, Chairman of the UTRF Board of Directors and a vice president at Eastman Chemical, to give remarks and to present Dr. Gourley a gift honoring his service to UTRF. Mr. Deal noted the stability, credibility and accountability Dr. Gourley’s leadership has brought to UTRF. Dr. Gourley expressed his appreciation to Dr. Millhorn for the opportunity to serve UTRF as Interim President and stated his optimism for the future of UTRF under the guidance of both Dave Washburn and Richard Magid.

The number of new licenses has increased by 45 over the last two years (UTRF currently has 168 active licenses) and this number, Mr. Washburn stated, must be driven up. The average number of active licenses at university tech transfer offices in the U.S. is 395. Mr. Washburn noted there are three licenses at UTRF which generated \$100K or more in 2012. He said Stanford University has approximately 85 licenses which generate over \$100K annually in revenue fees. Mr. Washburn gave examples of three active UTRF businesses, illustrating timelines for when their research began to generate revenue fees, showing the

lengthy process required in each example. Mr. Washburn said metrics used by tech transfer offices to gauge performance (disclosures, licenses and options, patents filed and issued) show improvement now taking place at UTRF. Of note, Mr. Washburn said, are 10 invention disclosures this year by UT Governor's Chair appointees. Mr. Washburn described the real-time retinal analysis business Hubble Telemedical, fostered by Richard Magid at UTRF in Memphis, and noted it is an exciting technology recently licensed, with good potential of generating \$100K and above revenue. The UTRF goal, Mr. Washburn said, is to drive the numbers of disclosures, licenses and options, to increase the number of patents filed, and to build the technology transfer enterprise. He showed a listing of businesses associated with UTRF and described several of the technologies associated with the companies.

Mr. Washburn noted the major forward thrust at UTRF is to continue outreach into faculty and researcher ranks, establishing and building credibility with them in promoting and marketing their inventions. Improvements are being made to leverage these opportunities, including building a seed-stage venture fund to ignite more technology developments by making interim funds available before entities are able to reach the stage to approach private equity markets for financing.

Mr. Washburn concluded the first phase of his annual report by thanking Drs. Millhorn and Stacey Patterson in the Executive Vice President's Office for their assistance in positioning UTRF well for the next several years and noted UTRF had been able to retire a debt to UT this year.

The Chair asked for questions, and Trustee Ferguson noted UTRF expects to bring in approximately \$1.5M in royalties for 2014 and asked about anticipated rate of growth of revenues from IP and the length of time for UTRF to reach a self-sufficiency level. Mr. Washburn noted most tech transfer operations across the country are not self-sufficient and, when one exists, it is because a "grand slam" was scored with a lucrative invention. Dr. Stern noted the success of the tech transfer enterprise is usually the case of finding one patent that really connects which funds the entire operation. Dr. DiPietro asked what areas might be considered grand slam potentials for UTRF, and Mr. Washburn responded these successes tend to happen with life sciences or pharmacy enterprises. Richard Magid noted there are two UTHSC companies on target with drug applications next year with this kind of potential, but it is an "all-or-nothing results" situation. Trustee Stansberry noted the UTRF metric of revenues with licensing and contractual income of \$1.5M or \$1.6M has stayed at this level for a

number of years, and he believes review of the UTRF inventory would result in finding aging licenses or patents to sell to a new buyer. Mr. Washburn noted UTRF has about 70-75 issued patents which are unlicensed, representing \$1.2-\$1.4M in capital costs, and more aggressive review will occur. Trustee Driver asked about the gap between filing a patent and the time the patent is issued. Mr. Washburn noted the typical sponsored research funding from agencies such as NIH or NSF does not cover activities occurring from the end of the research cycle to the beginning of the product development process. These unfunded activities, such as prototype studies and drug-ability studies, could be handled by venture seed funds and thus shorten the maturation process and that this is something UTRF is interested in developing. Trustee Wharton asked how UTRF keeps up with IP and patents in its inventory, whether UTRF plans to add any additional development officers in its quest for additional resources, and how the outreach for additional funds is handled by other research foundations. Mr. Washburn discussed the challenge of keeping up with its inventory and tapping into all possible faculty resources. No plans are underway, Mr. Washburn said, to hire additional development officers to reach out for additional funds. Mr. Washburn and Mr. Magid will, in addition to their regular duties, give oversight to the venture seed-fund. Some foundations handle outreach with in-house staff, others are set up as a foundation and rely on funding and contributions from the various institutions they serve, as is the case with UTRF. A greater need for UTRF would be hiring additional licensing associates, Mr. Washburn stated, keeping the focus on licensing and selling technologies. Chair Cates asked Dr. Thom Mason, ORNL Lab Director, to address the nature of how ORNL approaches directed and/or pure research modes of operation, and Dr. Mason responded that both aspects, fundamental-directed research and applied R&D, are used. He noted ORNL uses a portion of its resources to fill the maturation gap previously discussed to drive its technologies. The primary focus is on product deployment into the marketplace and creating jobs in the areas of greater energy efficiency rather than generation of revenues. Trustee Jubran noted the approach UTC had taken in seeking out areas of need in pursuing its business directives prior to determining the focused area of research (smart-grid technologies).

Chair Cates noted the time allotted necessitated abbreviating the financial segment of the presentation, and Mr. Washburn noted pertinent information was available to members in the meeting materials and had also been addressed in earlier discussion.

The Chair thanked Mr. Washburn for an informative presentation.

## VI. ANNUAL REVIEW OF ORNL

Chair Cates recognized Dr. Thom Mason, Director of Oak Ridge National Laboratory (ORNL), for an update on Lab operations. In his presentation (Exhibit 3), Dr. Mason noted part of the story had already been told in Dr. Millhorn's presentation, which confirmed the ongoing strong and productive relationship with UT and ORNL. Many of UT and ORNL's successes, Dr. Mason said, are joint successes. Dr. Mason noted the mix of fundamental science and directed mission-oriented research taking place at ORNL to move technology into the marketplace and to foster economic development and to invigorate science through graduate and postgraduate research and education.

Dr. Mason stated recruitment of new ORNL Deputy for Science and Technology Dr. Ramamoorthy Ramesh, coming from UC-Berkeley, was successful in large part because of the UT-ORNL joint appointment as a Governor's Chair Professor.

Dr. Mason highlighted activities within the UT-ORNL Joint Institutes, particularly noting the Joint Institute for Computational Sciences (JICS) NSF high-performance supercomputer re-bid proposal, submitted in April, and the benefits of this key asset for both UT and ORNL. Dr. Mason gave highlights of the bioenergy value chain and research taking place at the new Carbon Fiber Technology Facility in Oak Ridge and noted other areas of opportunities with environmental intelligence, health data science, and nuclear science and technology programs.

The Bredesen Center for Interdisciplinary Research and Graduate Education (CIRE) model is being used to develop a graduate education network with a number of graduate education institutions (Duke, FSU, Georgia Tech and NC State), Dr. Mason noted. CIRE is attracting growing numbers of outstanding students (now 29 graduate students from 26 universities) to the five-year program, Dr. Mason said, and he outlined benefits to both UT and ORNL through this initiative. In April former Tennessee Governor Bredesen and former DOE Secretary Richardson met with CIRE students at the Baker Center on the UTK campus.

Dr. Mason addressed the status of DOE funding and said continuing funding constraints are expected. Dr. Mason stated there was a drop of approximately \$100M in volume due to sequestration for the current fiscal year, ending in

September. Steps to reduce costs by about 7 percent were taken to help absorb the current sequestration; however, looking forward, anticipated continued sequestration constraints will take a toll on programs. The Lab is basically a 100 percent soft-money organization, with income coming through competitive research programs, Dr. Mason noted. Dr. Mason said the Lab is well-positioned to deal with future economic uncertainty and its facilities and infrastructure are currently in good shape.

Dr. Mason stated the UT-Battelle management story at ORNL is well told within the *Breaking the Mold* book. The story is also being told to new DOE Secretary Ernest Moniz, whose first visit as Secretary to a national laboratory site was to ORNL in June. The upcoming DOE decision to renew or re-compete the UT-Battelle management contract at ORNL is another reason, Dr. Mason said, for telling the story. The current contract, in place since April 2000, runs through March 2015. DOE has recently notified Brookhaven National Laboratory it must re-compete its management contract. Dr. Mason noted there is much merit for extending the ORNL contract based upon excellent performance evaluations; however, many factors go into the contract decision. If a decision to re-compete is made, Dr. Mason stated he believes UT-Battelle is in a good position for the competition. UT and Battelle have been strong partners and the Lab has greatly benefited from its management, Dr. Mason said. A re-competition will mean an output of substantial resources at a time of economic downturn. Dr. Mason said Secretary Moniz, during his recent ORNL visit, was quoted as saying, “. . . evaluating the performance of the incumbent contractor is critical . . . over time, even with a good performance, probably the balance tips slightly toward competition.” Certainly, UT-Battelle will compete aggressively, Dr. Mason stated, if a decision to re-compete is announced, and will draw upon all possible goodwill and resources of the state and region.

Chair Cates thanked Dr. Mason for his excellent presentation and the encouraging update he delivered.

## **VII. FERTILITY FOCUS: A TALE OF DISCOVERY, INNOVATION, AND APPLICATION (UTIA)**

Chair Cates called on UT Institute of Agriculture Chancellor Dr. Larry Arrington to introduce the final presentation on the agenda. Dr. Arrington noted his pride in the productivity of AgResearch faculty and the leadership team led by Dean Bill Brown and listed some of the unit's accomplishments in 2012: 60 invention disclosures, 9 patents, \$33M in research funding and \$45M in sponsored programs. One of the UTIA goals is moving science into the marketplace, Dr.



Arrington said, and today's program is an example of moving science from the bench to forming a private company. Dr. Arrington noted Commissioner of Agriculture Johnson will confirm Governor Haslam's challenge to the UTIA, Department of Agriculture, and the Tennessee Farm Bureau to double agricultural income in the state over the next decade. Accomplishing this goal, Dr. Arrington stated, includes conducting research on real problems, and an integral piece of this research is in animal agriculture. Dr. Arrington introduced Dr. Lannett Edwards, a professor and graduate director in the Department of Animal Science, to make the presentation (Exhibit 4).

Dr. Edwards noted entrepreneurship is a vital component of the academic mission, and she outlined steps in the discovery-innovation-application process of developing a product and getting it into the marketplace by pursuing a start-up based company approach. Dr. Edwards highlighted the Fertility Focus, Inc. startup company, which developed a receptor blocker product at the UTIA to provide a shield around the early embryo in an animal's uterus to protect it from harmful hormones that prevent pregnancy. Dr. Edwards discussed factors which reduce reproductive efficiency and cause embryonic loss, including the risk involved in the multi-million dollar embryo transfer industry involving the collection of embryos from donor animals for transfer into surrogates. The receptor blocker product has improved pregnancy rates and improved retention rates of established pregnancies, and this enterprise, Dr. Edwards stated, is a perfect fit with the AgResearch mission to use resources to effectively deliver service for the public good by providing solutions to problems facing animal agricultural products.

Dr. Edwards outlined the application-commercialization process through the UT Research Foundation for Fertility Focus, Inc. (co-founded by two UT AgResearchers and Tech 2020 in June 2013) and noted there is potential for an annual \$3.5M for the cow fertility product. Dr. Edwards noted the benefits of Tech 2020 oversight for the business venture development and the important support from UTRF and AgResearch.

Trustee Lynch asked about the increase in cow reproductive rates using the blocker shield product, and Dr. Edwards noted this rate would be approximately 10 percent. Dr. Stern concluded the discussion with a highly-scientific explanation for the PGF factor in the process, to the perplexed merriment of the group.

Chair Cates thanked Dr. Edwards for an excellent presentation.

**VIII. OTHER BUSINESS**

None.

**IX. ADJOURNMENT**

There being no other business, Mr. Cates adjourned the meeting.

Respectfully Submitted,

A handwritten signature in cursive script, appearing to read "David E. Millhorn". The signature is written in black ink and is positioned above a horizontal line.

David E. Millhorn, Ph.D.