

THE UNIVERSITY OF TENNESSEE BOARD OF TRUSTEES

MINUTES OF THE  
RESEARCH, OUTREACH, AND ECONOMIC DEVELOPMENT COMMITTEE

February 25, 2015

Memphis, Tennessee

The Research, Outreach, and Economic Development Committee of the Board of Trustees of The University of Tennessee met at 3:15 p.m. CST, Wednesday, February 25, 2015 in the O.D. Larry Dining Hall, Student Alumni Center, on the campus of the UT Health Science Center in Memphis, Tennessee.

**I. CALL TO ORDER**

Chair George Cates called the meeting to order.

**II. ROLL CALL**

Mr. Cates asked Dr. David Millhorn, UT Executive Vice President, to call the roll. The following members of the Research, Outreach, and Economic Development Committee were present:

George E. Cates, Chair  
Tim L. Cross  
Russ Deaton  
Joseph A. DiPietro  
Jalen K. Blue  
William E. Evans  
J. Brian Ferguson  
David A. Golden  
Raja J. Jubran  
Rhedona Rose  
David M. Stern  
Thaddeus A. Wilson

Shannon A. Brown, Commissioner Julius T. Johnson, Bonnie E. Lynch, The Honorable Candice McQueen and Margaret A. Norris were not present at the meeting.

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

### **III. MINUTES OF LAST MEETING**

Chair George Cates asked for any corrections to the minutes of the October 2, 2014, meeting of the Committee. Hearing none, the Chair called for a motion to approve the minutes as written. The motion was made, seconded, and carried unanimously.

### **IV. INSTITUTE FOR ADVANCED COMPOSITES MANUFACTURING INNOVATION (IACMI)**

Dr. Millhorn noted it is quite infrequent to win an award and have it presented by the President of the United States as was done on January 9 when President Obama and Governor Haslam visited East Tennessee and made the award announcement of the Department of Energy (DOE)-sponsored Institute for Advanced Composites Manufacturing Innovation (IACMI) program. Such initiatives are vital for the U.S. to compete globally and to enhance its cutting-edge manufacturing capabilities, Dr. Millhorn stated. Dr. Millhorn introduced Dr. Taylor Eighmy, Vice Chancellor for Research and Engagement at UT Knoxville (UTK), to make the IACMI presentation. Dr. Millhorn noted Dr. Eighmy has spent a great deal of his time since coming to UTK in developing research partnerships and relationships and this effort is paying off in successful programs such as the IACMI award.

Dr. Eighmy stated he relished every moment in speaking about this exceptional \$259M award and noted IACMI had been previously mentioned as a sought-after award in recent ROED meetings by Dr. Martin Keller (ORNL Associate Lab Director, Energy and Environmental Sciences) and Dr. Thom Mason (ORNL Director).

Dr. Eighmy recognized the strong team effort in the IACMI initiative and introduced colleagues involved in the proposal process: Dr. Suresh Babu (UT-ORNL Gov. Chair, Advanced Manufacturing), Dr. Craig Blue (Director of Advanced Manufacturing Office at ORNL), Dr. Wayne Davis (UTK Dean of Engineering), Dr. Martin Keller (mentioned above, unable to attend the meeting), Dr. Dayakar Penumadu (Endowed Chair in the College of Civil Engineering), Dr. Jim Roberto (ORNL Associate Lab Director, Science and Technology Partnerships), Mr. Tom Rogers (Director, ORNL Industrial and Economic Development Partnerships), and Mr. Alex Roschli (UTK senior in Electrical & Computing Engineering).

An overview of the IACMI program and its research development and demonstration (RD&D) focus on advanced manufacturing was outlined by Dr. Eighmy in his power-

point presentation (Exhibit 1). Dr. Eighmy noted the strong RD&D foundation provided by UT and ORNL for IACMI and other such initiatives, especially strengthened and developed by shared resources and joint collaborations over the last ten years. Dr. Eighmy discussed the density of talent, infrastructure, available user facilities, corporate and sponsored-research agreements, educational institutions and other factors growing the RD&D ecosystem for the region. The national landscape for advanced manufacturing, Dr. Eighmy said, has been moving towards the areas the Obama Administration and federal science agencies want to invest in to promote jobs in and to bring jobs back to the U.S. The importance of automotive manufacturing in Tennessee was discussed, with Dr. Eighmy noting Tennessee is in the top five states for jobs in the automotive supply chain. The Southeast is also becoming increasingly important in the aerospace manufacturing industry he noted.

Dr. Eighmy stated UT has been investing in the area of advanced manufacturing with its Governor's Chair program, hiring Dr. Suresh Babu with his expertise in additive manufacturing and Dr. Art Ragauskas with his expertise in biopolymers and carbon fiber. A Governor's Chair in composites is also on the drawing board. Dr. Eighmy discussed some of UT's strategic corporate partnerships in strengthening and promoting advanced manufacturing, noting Eastman, in particular, as a strong corporate partner. Dr. Eighmy recognized prominent UT corporate alumni such as John Tickle with Strongwell. ORNL and UT have also been engaged in successfully recruiting advanced manufacturing companies Hankook, Beretta and Local Motors, among others, in bringing them to Tennessee. In addition, there are currently 11 recruiting projects under development to bring companies to Tennessee in the areas of automotive, carbon fiber composites, aeronautics, and additive manufacturing. Dr. Eighmy noted the importance of UT senior leadership in these and other recruitments.

Two video clips were shown: a video prepared by DOE entitled "Revolutionizing Clean Energy Technology with Advanced Composites" (which featured UT alum Chad Holloway) and a video prepared by The White House which highlighted the January 9, 2015 announcement by President Obama of a new manufacturing hub in Tennessee (IACMI). Dr. Eighmy noted the IACMI proposal had been in development since early 2014, with approximately 70-80 collaborators at its peak production. Significant national interest was associated with the proposal. The expected launch of IACMI is late spring 2015.

Dr. Eighmy noted the complex national network of manufacturing institutes (34 states are involved in IACMI) and the importance of UT's partnership with ORNL in securing such a competitive award in the dynamic advanced manufacturing industry. Dr. Eighmy outlined the required institute goals and standards, shared RD&D capacity for rapid innovation, the strategic selection of core partners, and the leveraging of world-renowned intellectual resources at top educational and research institutions involved in the IACMI program. The support of governors of the six key states (Colorado, Kentucky, Indiana, Michigan, Ohio and Tennessee) was critical in securing political momentum for the

IACMI project. Dr. Eighmy noted, in particular, support of the initiative given by UT's federal and state government offices and the entire Tennessee delegation in its letter to DOE Secretary Moniz. Dr. Eighmy discussed the financial disbursements of the IACMI award and noted federal investment will catalyze a composites ecosystem in the heartland of U.S. manufacturing. He also noted the critical role played by the UT Research Foundation (UTRF) in establishing IACMI as a UTRF subsidiary not-for-profit corporation; in addition, UTRF prior expertise activities (Volunteer State Solar Initiative, Tennessee Biofuels Project and the Cherokee Farm Innovation Campus, among others), Dr. Eighmy said, were key factors in demonstrating deliverables strength for such a complex initiative. The high levels of UT DOE-funded and National Science Foundation research grants and programs also were strong factors in winning the award, Dr. Eighmy said. IACMI will be located at the National Transportation Research Center (UTK) and occupy ORNL space as well. Dr. Eighmy illustrated the diagram of the IACMI business operations via a flow-chart diagram. More information about IACMI can be obtained online, Dr. Eighmy said, at [www.iacmi.org](http://www.iacmi.org).

Critical UTK undergraduate involvement in the IACMI proposal development and promotion of the project was noted by Dr. Eighmy. UTK electrical and computing engineering senior students Alex Roschli (previously mentioned) and Andrew Messing, along with other colleagues, Dr. Eighmy said, made important contributions to the IACMI initiative.

Dr. Eighmy concluded his presentation by quoting Volkswagen General Manager of Product Engineering and Senior General Manager of Electronics Development Dr. Burkhard Huhnke as saying, "What we have here in East Tennessee for advanced manufacturing reminds us of what is in place in Silicon Valley for electronics ... they have Stanford, U.C.-Berkeley, the National Labs ... it is the same kind of ecosystem here ... we have the University of Tennessee and Oak Ridge National Laboratory." Such an outlook, Dr. Eighmy stated, is a profound encouragement for the things UT is striving to accomplish in its goal as a Top 25 research university in the U.S. and for the relationships it is building with distinguished corporations and institutions.

Mr. Cates asked for and received a round of applause for the IACMI proposal developers attending the meeting. Trustee Ferguson noted this report reflects the astounding progress being made in UT-private sector partnerships and relationships on a broad scale, not just within the IACMI initiative. Trustee Evans noted the initiative aligned with Ford and VW and asked if other large automotive manufacturers would now be drawn to the successful project. Dr. Eighmy noted several automotive manufacturers had been approached at the beginning of the IACMI proposal development but had elected not to participate. The structure in place does not preclude other automotive manufacturers from now playing a role in the project; however, Dr. Eighmy stated, Ford and VW will remain the key automotive partners in the initiative. Trustee Jubran also commented on the exceptional quality and information provided in the report and asked if the newspaper presses would be putting out information about this award. Dr. Eighmy recognized integral support

received from Drs. Millhorn, Patterson and Cheek, noting the award represents a significant and culturally-challenging accomplishment. Awards such as the IAMCI boost momentum for other teaming partnerships and collaboration, Dr. Eighthmy stated. Dr. DiPietro noted the award can be seen as the culmination of UT's strong relationship with ORNL and the incredible growth and results now taking place within this management partnership; it speaks volumes to the team who got the work done, Dr. DiPietro said, and is an indication of future productive and important collaborations.

Mr. Cates again thanked Dr. Eighthmy and the IACMI team for their participation in the meeting and said they will be most welcome at future meetings for updates and reports.

## **V. UTHSC CLINICAL AND TRANSLATIONAL SCIENCE AWARD**

Mr. Cates recognized UTHSC Chancellor Steve Schwab to introduce the UTHSC Clinical and Translational Science Award (CTSA) presentation. Dr. Schwab noted two initiatives will be presented in the presentations to the Committee given, respectively, by Dr. David Stern, Executive Dean of the UTHSC College of Medicine, and Dr. Jon McCullers, UTHSC Dunavant Professor and Chair, Department of Pediatrics and Pediatrician-in-Chief at Le Bonheur Children's Hospital. Dr. Schwab noted the CTSA application is a direct extension of UTHSC's partnership with four teaching hospitals, in this case Le Bonheur Children's Hospital.

Dr. Stern presented a power-point presentation (Exhibit 2) on the UTHSC College of Medicine, noting key themes in its mission of creating Centers of Excellence spanning education, research and clinical care, caring for vulnerable populations and ameliorating health disparities in its region. Dr. Stern noted the CTSA is an example of the kind of team science initiatives in the College of Medicine (COM) which are making a significant impact on improved quality of life for citizens in the region and for producing national models for approaches to increase prevention of and recovery from devastating illnesses and health issues, such as strokes in minority populations. Dr. Stern highlighted many of the highly-skilled training and clinical and basic research programs in the COM which provide a comprehensive approach to health care treatment and rehabilitation.

After providing an impressive listing of focal initiatives within the COM, Dr. Stern recognized Dr. Jon McCullers--charter leader of the initiative and in efforts to secure National Institutes of Health (NIH) funding--to provide information (Exhibit 3) on the formation of the Clinical Translational Science Institute (CTSI) at UTHSC and efforts made to support it with a CTSA grant. The new CTSI at UTHSC is called iRISE (Institute for Research, Innovation, Synergy, and Health Equity), Dr. McCullers said, and the name, he believes, captures the spirit of the initiative with its work in applying

innovation and research to address health disparities to achieve health equity in the community.

Dr. McCullers gave the rationale for seeking a CTSI (a program begun by NIH in 2006, with 62 CTSIs funded in the U.S. since that time) and its role as a consortium of major research universities to jointly leverage research strengths to garner federal funding and to serve as a central organizing agency in providing infrastructure within a university to support clinical and translational research that can attract further extramural funding. Dr. McCullers noted securing a CTSA is critical to obtaining NIH funding, particularly for large-scale studies, networks and consortia memberships. Dr. McCullers described three major functions of the CTSA and outlined the history of the CTSI, noting UTHSC had previously founded a CTSI in the late 2000s, today providing a legacy of significant strengths, particularly in building translational research cores, but overall connectivity lapsed when the institute was unable to achieve NIH funding.

Dr. McCullers noted an abundance of chronic diseases (such as stroke, diabetes, asthma) and associated health disparities, in addition to poor socioeconomic conditions, make Memphis and the MidSouth natural foci for CTSA consortium research. Recent Institute of Medicine emphases on community engagement, child health and life transition research, Dr. McCullers said, coupled with recent administrative and reorganization changes of certain academic-clinical partnerships, suggest now is the time for UTHSC to capitalize on significant research and funding opportunities as a CTSA.

The formation of iRISE in the summer of 2014, Dr. McCullers stated, is the strategy for obtaining CTSA status. Dr. McCullers discussed critical barriers to success and solutions for those issues. He outlined the Institute's goals, structure, resource flow, and governance and described new programs and services integral to achieving a successful enterprise. Dr. McCullers noted the assistance of Dr. Stern, among others, as serving as an enthusiastic and helpful catalyst for iRISE.

Dr. McCullers concluded his presentation by providing funding projections for the NIH \$4M year/five-year grant, noting with \$2.7M in direct costs to operate the program and \$1.3M in indirect costs to offset what is spent, if NIH-funded, the UTHSC outlay decreases over the award span to total approximately \$4M over four years. The CTSI vision is to generate investigators to compete for R01s and other research grants to bring in funding. Dr. McCullers noted with just eight new R01-equivalents per year, the entire UTHSC commitment is recovered in five years. Dr. McCullers anticipates the CTSI to generate dozens of R01s and similar awards and, in the end, to actually exceed the UTHSC investment.

Mr. Cates thanked Drs. Stern and McCullers for their excellent presentations and the exciting prospects for UTHSC and the region for these initiatives.

## **VI. UPDATE ON PROPOSED JOINT INSTITUTE FOR PERSONALIZED HEALTH**

Dr. Millhorn recognized Bob Davis, M.D., MPH and UT-ORNL Governor's Chair, as well as founding director of the UT Health Sciences Center for Biomedical Informatics, to give an update (Exhibit 4) on the Joint Institute for Personalized Health (JIPH) proposal. Dr. Davis noted President Obama's recent State of the Union address included the announcement of the Precision Medicine initiative which coincides with many of the ideas put forth in the JIPH proposal. Dr. Davis acknowledged his appreciation for the tremendous assistance received thus far in this effort from, in particular, the UT Research Foundation (UTRF), Chancellor Schwab, and Dean Stern; and, he also recognized recent promising collaborations established with the firm of Pershing-Yoakley Associates in Knoxville.

Dr. Davis reminded members the new Joint Institute initiative represents a collaboration with the University System, the UT Health Sciences Center (UTHSC), The University of Tennessee, Knoxville (UTK), and Oak Ridge National Laboratory (ORNL), and Dr. Davis reiterated earlier presentation remarks that there is a large amount of intellectual resources throughout the state and the JIPH collaboration is a means for capitalizing on them and leveraging each other for bigger and better results. The overall vision, Dr. Davis stated, is to create new tools to improve the effectiveness of healthcare, tailoring treatment at the individual level as well as tailoring systems at the delivery level to reduce costs, lead to fewer preventable admissions/readmissions and to improve the quality of life in general for Tennessee citizens.

Dr. Davis stated the JIPH efforts are focused through three Centers: Center for Healthcare and Health System Analytics (Dr. Teresa Waters, Chair, UTHSC Department of Preventive Medicine; Dr. Ken Gilbert, Professor Emeritus, Haslam College of Business, UTK), Center for Health Genomics (Dr. Igor Jouline, ORNL Computer Science and Mathematics Division and Joint Faculty Professor, UTK Department of Microbiology; Dr. Rob Williams, Governor's Chair and Chair, UTHSC Department of Genetics, Genomics and Informatics), and Center for Drug Development (Dr. Jeremy Smith, Governor's Chair, Director, Center for Molecular Biophysics; Dr. Darryl Quarles, Professor and Division Chief, Nephrology).

Dr. Davis discussed near-term projects that will accomplish the vision as stated above, help establish the worth of what is being done and identify challenges which may need to be addressed as the program develops. High on this list, Dr. Davis, noted, is the statistic that 18-20 percent of Medicare beneficiaries discharged from hospitals are readmitted

within 30 days, resulting in a \$26B cost to the country each year. JIPH wants to work with accountable care organizations (ACOs) with strong incentives to improve outcomes and reduce preventable utilization by providing predictive modeling for highly-accurate classification of patients with preventable use and tracking actionable results leading to design of tailored interventions for specific patient subgroups. JIPH is also planning to work with physician-scientists at Le Bonheur Children's Hospital on an Electronically Activated Pediatric Severe Sepsis Integrated Screening Tool within the Electronic Health Record and Management Project (eASSIST-M@LBH), an early-signal detection system to identify children who have developed sepsis, life-threatening bloodstream infections and organ failure, before they are clinically demonstrating this condition, thus beginning interventions sooner for improved outcomes. Dr. Davis said JIPH also is planning to work with the UT Medical Center in Knoxville to help develop a similar sepsis screening tool for the adult population there.

Dr. Davis discussed plans for an ambitious move into pharmacogenomics testing and noted this pathway, to some extent, had previously been led by Trustee Dr. Bill Evans at St. Jude Research Children's Hospital and others at hospitals around the country. JIPH wants to extend this concept to "regular" pediatric regional settings with a broad range of routine pediatric care issues. The idea is to genotype certain patients admitted to a hospital who carry genetic at-risk variations and build into the electronic medical system signals so that if a physician is about to prescribe medications that place the patient at increased risk for an adverse event or which will be non-responsive, a signal is produced and the provider is given an alternate therapeutic approach. This technology, Dr. Davis said, is similar to what is used when people get on Google on their computers or order on their computers from Amazon.

Dr. Davis described other projects and noted within the JIPH Center for Drug Development, since the last JIPH presentation, two new unique targets have been identified for Type 2 diabetes which researchers believe will have great benefit for the near term. The timing for the proposed JIPH, Dr. Davis said, could not be better, particularly in light of the \$215M Precision-Medicine Genetic Plan laid out in January by President Obama as an ambitious effort to amass genetic data on one million or more Americans aimed at discovering genetic causes of disease and finding new drugs that will target dangerous mutations. The competition will be fierce, Dr. Davis stated, for funding awards within this program.

Dr. Davis concluded his remarks by recognizing the team collaboration involved in the initiative and noted all involved in the JIPH proposal are working hard for its success. Trustee Jubran inquired how the JIPH might be financially beneficial to the UT System, speculating, for example, if the process for identifying septic adults at the UTMC in Knoxville became a patentable tool, who would own the patent. Dr. Stacey Patterson responded that ownership goes with inventorship; if a UT faculty or staff member invented a technology, it is owned by UT and managed by the UT Research Foundation.



Trustee Jubran asked about ownership if the technology had been invented during a UTHSC or UTK collaboration with UT-Battelle. Dr. Patterson replied such technologies are jointly owned; UT and UT-Battelle have an agreement in place governing how jointly-invented intellectual properties are managed. Further discussion with Trustee Evans, Dr. Davis and others took place regarding discoveries of genetic-testing technologies with consenting patients and issues such as biobank specimens used in future research and health care. Such details are being given careful study within the JIPH initiative, Dr. Davis noted.

Mr. Cates thanked Dr. Davis for his informative presentation.

## **VII. UPDATE ON SEARCHES FOR VICE CHANCELLOR FOR RESEARCH AT UTHSC AND UTC**

Mr. Cates recognized Dr. Millhorn to provide an update on searches at the UT Health Science Center and at UT Chattanooga. Dr. Millhorn asked Chancellor Schwab if he would like to comment on the search for the Vice Chancellor for Research position at the UTHSC. Dr. Schwab stated that, as members heard today, successful research must be collaborative and leaders must think out of the box. UTHSC is looking for a VC for Research with the proven ability to successfully coordinate its research enterprise over a broad spectrum of initiatives, such as Drs. Davis, Stern and Eighmy have illustrated, and that is the kind of candidates being put forth by the search committee, Dr. Schwab said. Dr. Millhorn noted he is co-chairing this search committee along with Dr. Gabor Tigyi, Chair of the Department of Physiology at the UTHSC. Dr. Millhorn said the committee began with a pool of 40 candidates, later narrowed to ten candidates, and now, through a review process, three candidates will be interviewed at UTHSC, UT Knoxville and at the Oak Ridge National Laboratory.

UT Chattanooga Chancellor Steve Angle noted UTC is approximately at the same stage in the search for its Vice Chancellor for Research. Cognizant of the UTC mission within the System, looking at applied and selective basic research areas and recognizing research and education are intimately tied together for the greatest impact for its students, Dr. Angle said, UTC is looking for a Vice Chancellor who will coordinate research efforts and successfully involve its students in cutting-edge processes like those discussed today, aligning its graduate programs with research initiatives, and increasing its extramural funding.

Dr. Millhorn noted the importance of filling these positions to allow each of the research units to interact within the UT System and to collaborate with other institutions to grow its research interests. Trustee Evans spoke to the critical role strong leadership and high standards play in the search process to recruit the kind of talent essential to promote a successful research program and he provided the background and rationale regarding the search within the UTHSC College of Medicine resulting in the appointment of Dr.

McCullers as Chair of the UTHSC Department of Pediatrics (and Pediatrician-in-Chief at Le Bonheur Children's Hospital). Dr. Millhorn noted no search should be undertaken without the willingness to abandon a search if the quality of candidates is not what is needed for the position.

**VIII. Cherokee Farm Update**

A one-page written report by Cliff Hawks, President and CEO of Cherokee Farm Development Corporation (CFDC), provided an update on the Cherokee Farm Innovation Campus.

**IX. Other Business**

None.

**X. ADJOURNMENT**

There being no other business, Mr. Cates adjourned the meeting at 5 p.m.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David E. Millhorn", written over a horizontal line.

David E. Millhorn, Ph.D.