UT RESEARCH FOUNDATION

Annual Report

FY 2012

The Annual Report of the University of Tennessee Research Foundation from July 2, 2011 to June 30, 2012

University of Tennessee Research Foundation

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Contents

"Taking innovation from the lab to the marketplace can be a long and difficult process. It is critical to the mission of the University of Tennessee to make the process smooth so that our inventions can have an effect on the lives of Tennesseans"

Dr. Dick R. Gourley, PharmD, Interim President

From the Interim President

FY 2012 was a big year of change!

The University of Tennessee Research Foundation (UTRF) has seen many changes in the last year, and we are extremely excited about the direction we are headed.

I am honored and privileged to have been asked to serve as Interim President of UTRF after serving as Dean of the School of Pharmacy for the past 22 years in Memphis. Having served UTRF on the Board of Directors and head of the UTRF Health Science Center executive committee, I know first-hand the importance of having a strong technology transfer organization, and I am confident we are taking the right steps in order to build such an organization.

We believe we have already had an impact. If you look at our results below, you will see that things are starting to pick up.

Statistical Highlights

Metric	2012	2011
Disclosures	144	87
Patents Filed	49	60
Patents Issued	23	19
Licenses & Options	22	16
Start Ups	9	4
Royalties Earned	$1,403,401	$1,547,935

In 2011-2012, we made several key hires to our management team. In Knoxville, we recruited David Washburn as Vice President. David joined us in November 2011 after 10 highly productive years in technology transfer at the University of Illinois at Urbana-Champaign. In

From the Interim President

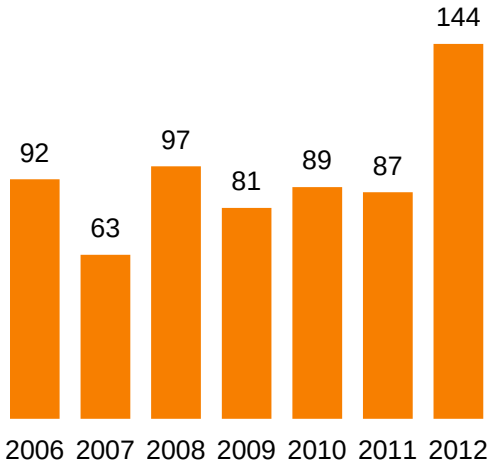
addition to David, we hired two new licensing associates in Knoxville bringing our total number of licensing professionals within the entire UTRF organization to 7.

From reaching out to our faculty inventors, to building on our relationships with key partners and stakeholders and our corporate licensing partners, we are positioning UTRF to be a catalyst of economic development over the next twenty years.

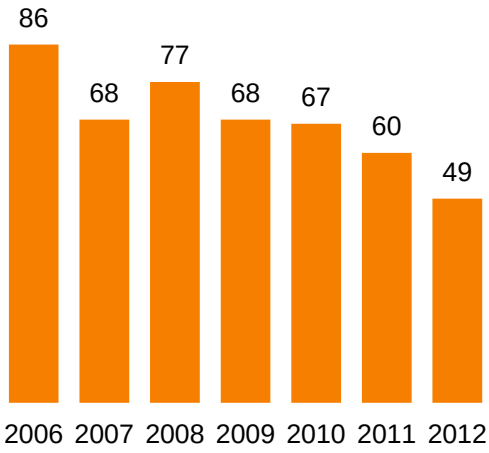
Dick R. Gourley
Interim President
November 1, 2012

Key Statistics

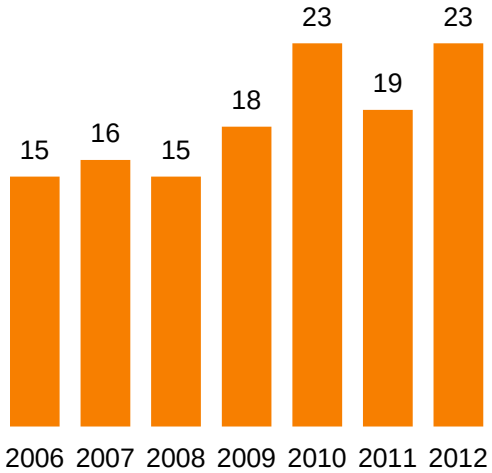
Invention Disclosures



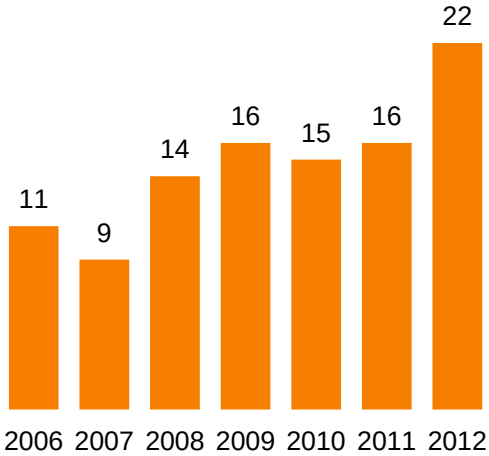
Patents Filed



Patents Issued

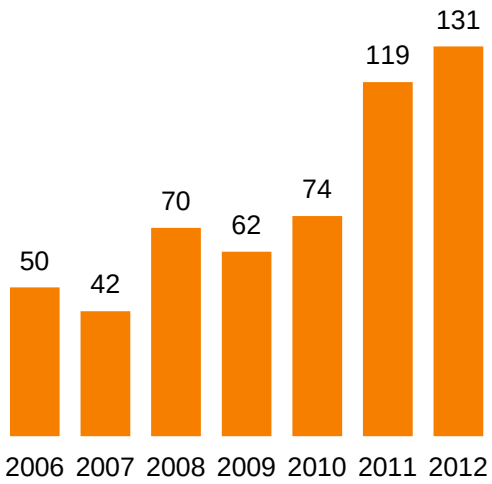


Licenses & Options

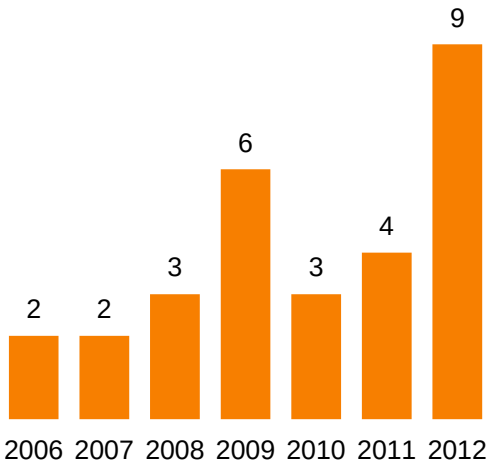


Key Statistics

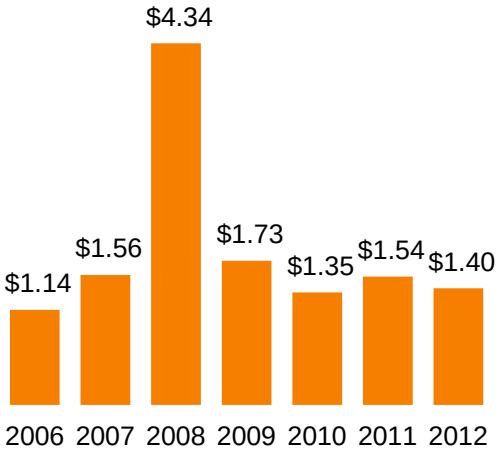
Agreements - Other



Startups

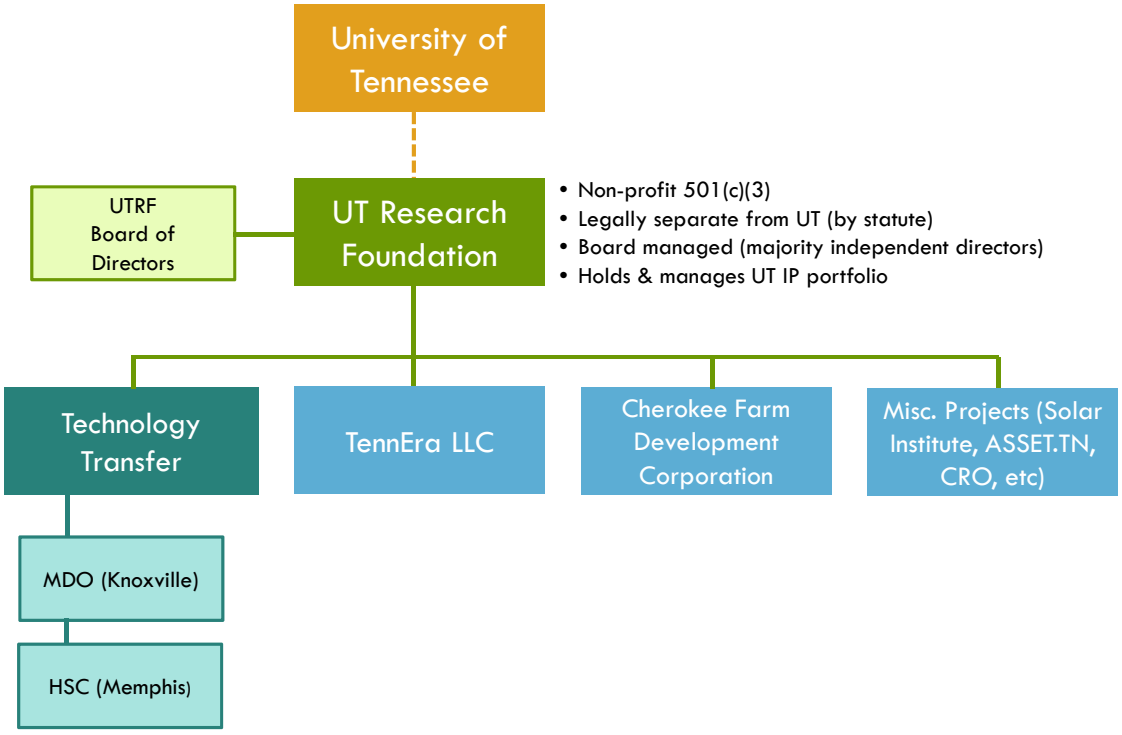


Revenue ($M)



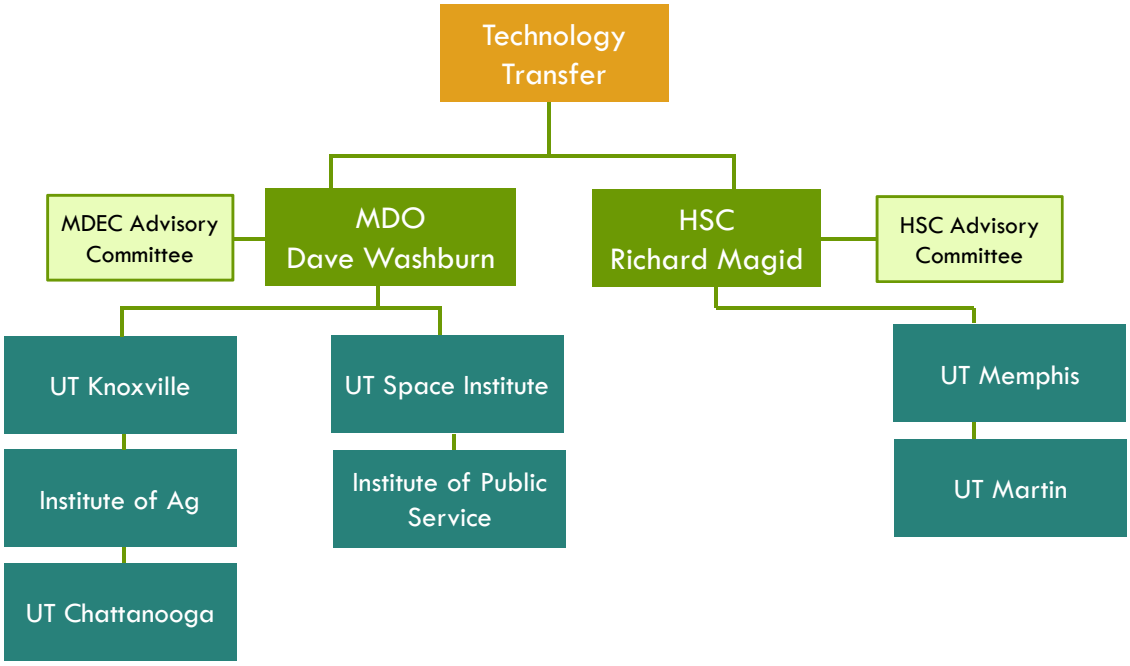
Organizational Structure

The University of Tennessee Research Foundation is a 501(c)(3) organization. The main business of UTRF is that of technology transfer and intellectual property licensing. UTRF also has several other entities that live under the UTRF umbrella, including Tennera, Cherokee Farms, the Solar Institute and Asset.TN.



Organizational Structure

UTRF consists of two main offices. UTRF in Memphis is headed by Richard Magid and responsible for licensing activity on technologies that are created on our Memphis and Martin campusus. UTRF in Knoxville is headed by David Washburn. This office is responsible for licensing activity eminating from our Knoxville campus, the Institute of Agriculture, Institute of Public Service and the Chattanooga and Tullahoma campusus.



University Wide Updates and Activities

Nghia Chiem, PhD Named Licensing Associate

Nghia Chiem, Ph.D., joined UTRF as a licensing associate in February 2012.

"Dr. Nghia Chiem has an outstanding track record as a scientist and business development professional," said David Washburn, vice president of UTRF. "His experience and knowledge of commercializing early-stage technology will further strengthen The University of Tennessee's ability to catalyze economic development in the state of Tennessee."

For the past five years, Chiem has served as a senior scientist for Protein Discovery, a Knoxville-based life sciences company with a focus on commercializing sample preparation technologies for the mass spectrometry market. In this role, Chiem was involved in many innovations of the company's proprietary methods for processing protein samples. He also was involved in numerous in-licensing transactions with university intellectual property, and subsequently led the development team that productized the technology.

Prior to Protein Discovery, Chiem was a senior application scientist at Coventor. There he helped spin out a company, Cytonome, which was based on Coventor's intellectual property.

At the University of Tennessee, Chiem will focus the majority of his efforts serving the Institute of Agriculture in Knoxville. He will work specifically with inventors from Animal Sciences, Food Science and Technology, Forestry, Wildlife and Fisheries, Biosystems Engineering and Soil Sciences, Veterinary Medicine, Chemistry and Biomolecular Engineering.

Chiem has a Ph.D. in analytical chemistry from the University of Alberta (Canada) and is an inventor on four U.S. patents.

Patrick Reynolds, PhD. Named Licensing Associate

Patrick Reynolds, Ph.D., joined UTRF as a licensing associate in May 2012.

"Dr. Patrick Reynolds has decided to pursue a career in technology transfer, and we are very excited he decided to launch his career with the University of Tennessee," said David Washburn, vice president of UTRF.

Before joining UTRF, Patrick was a postdoctoral fellow at Emory University. His research there focused on examining genetic and environmental factors contributing to neurodegeneration. He also served as an intern in Emory's Office of Technology Transfer for a year, focusing on commercializing medical devices and diagnostics. In addition, he helped faculty construct business plans and submit Small Business Innovation Research (SBIR) grant proposals.

While in Atlanta, Patrick also served as a life science consultant for Ripple Management. He drafted numerous patentability and market assessments for the firm on technologies ranging from microbial bioremediation to neuroinjury therapeutics.

UT BioFuels Initiative Continues Through Tennera LLC

In 2007, the State of Tennessee and the University of Tennessee made an unprecedented and unparalleled commitment to invest in a comprehensive and integrated switchgrass-to-ethanol initiative. This Tennessee Biofuels Initiative (TBI) grew from the University's Institute of Agriculture and their history of work in developing bioenergy crops and supply systems. When the State of Tennessee committed $70.5 million to demonstrate an integrated bioeconomy, the UT Research Foundation organized Genera Energy LLC as an innovative business model to attract private partners to the effort and to facilitate the business-like approach that was necessary for the execution of the ambitious program.

Since 2008, Genera has not only been successful in executing the objectives of the Tennessee Biofuels Initiative, but has laid a foundation to launch a commercial biomass-based industry, particularly one tailored to the Southeast. Genera has taken a highly focused and targeted approach to demonstrating, optimizing, and building up the infrastructure necessary to launch a self-sustaining, viable, commercial biofuels industry that includes:

- Working with more than 60 farmers within 50 miles of Vonore, Tennessee to produce more than 5,000 acres of switchgrass as an energy crop for ethanol production.
- Working with researchers and local Extension agents to improve energy crop varieties, management practices, establishment rates, and productivity.
- Developing integrated logistics systems to harvest, transport, stage, store, and manage more than 40,000 tons of switchgrass.
- Partnering with DuPont Dansico Cellulosic Ethanol LLC (DDCE) to design, construct, and operate a demonstration scale biorefinery that started operations January 2010, converting agricultural residues (corn cob and stover) and energy crops (switchgrass) to cellulosic ethanol.
- Partnering with DDCE to integrate the biomass production and supply chain with biorefinery processing to generate the data and learnings to commercialize large scale energy crop production and cellulosic biorefining technology.
- Designing and constructing the Biomass Innovation Park (BIP), a unique 22-acre research campus devoted to scaling up and optimizing biomass handling, storage, milling, densification and transportation.

The Genera Energy LLC model is exemplary of how innovative university research programs and public sector investments can be effectively leveraged with private partners to deliver long-term, sustainable benefits for all stakeholders.

By 2011, it was clear that the entire integrated energy crops to cellulosic biofuels value chain demonstrated in East Tennessee was demonstrating the technical, agronomic, and economic feasibility of a cellulosic ethanol industry. On track to meet all of its milestones and objectives by the fifth and final year of the state-funded program, Genera and its partners were building the foundation to support full commercial scale-up. Leveraging the public investment in the Biofuels Initiative, Genera focused its efforts primarily upstream of its biorefinery partner, gaining unparalleled experience and expertise in energy crop production and supply chains.

As the wind-down of the state-funded program neared, Genera, UTRF, and their state and university stakeholders recognized an unmet industry need for biomass supply. Genera’s five-member management team worked with the UT Research Foundation and the University of Tennessee to launch Genera Energy Inc. in March 2012 to pursue commercial biomass supply business opportunities. UTRF holds a majority equity interest in Genera Energy Inc.

UTRF's successful Genera Energy LLC model remains intact, renamed TennEra LLC. TennEra continues to own the demonstration scale biorefinery, operated exclusively by DuPont Cellulosic Ethanol, and the Biomass Innovation Park facilities, operated exclusively by Genera Energy Inc. Going forward, TennEra is evaluating opportunities to leverage the successful "Genera model" and identify new technologies and programs within the University that are ready for pre-commercial demonstration. TennEra provides a conduit to take those new ideas to the next level, focusing on specific business opportunities and attracting commercialization partners.

Maturation Awards Announced in November 2011

The University of Tennessee Research Foundation (UTRF) selected eight teams of inventors to receive annual Maturation Funding. Each team received $15,000 to assist in further developing the technology to improve positioning for licensing and commercialization.

"UTRF is pleased to provide maturation grants to accelerate the development of these eight inventions," UTRF Interim President Dick Gourley said. "The quality of the ideas submitted from across the state shows the vibrancy of the University of Tennessee research enterprise and the potential for UT innovations to improve the lives of Tennesseans."

Recipients awarded by UTRF to inventors from the Health Science Center office include:

- **Michio Kuroso, Ph.D. and Joy Debnath, Ph.D.**, , for novel pharmaceuticals to treat drug resistant Gram-positive bacteria, including Mycobacteria tuberculosis, Staphylococcus aureus, and Enterococcus faecalis;
- **Monica M. Jablonski, Ph.D., Mallika Palamoor, Ph.D., and Huiling Li, Ph.D.**, for nanoparticles to provide sustained-release drug delivery in the eye;
- **Hasaan Amoazen, Ph.D., Catherine Crill, PharmD, Gretchen Potts, Ph.D., and Richard Helms, PharmD**, for a transdermal patch to replace parenteral delivery of micronutrients;
- **Denis Diangelo, Ph.D.**, for a dynamic brace to treat lower-back pain without restricting movement.

Recipients awarded by UTRF to the Knoxville office include:

- **Jayne Wu, Ph.D., and Shigetoshi Eda, Ph.D.**, UT Knoxville and UT Institute for Agriculture, for a portable diagnostic that provides rapid on-site detection of infectious diseases and physiological conditions;
- **Ying-Ling Ann Chen, Ph.D., Lei Shi, M.S., and J.W.L. Lewis, Ph.D.**, UT Space Institute, for clinical trial of a low-cost, high-quality and user-friendly, vision assessment tool for children and young adults;

- **William Hofmeister, Ph.D., Lino Costa, Ph.D., and Alexander Terekhov, M.S.,** UT Space Institute, for novel electrodes for high-energy density super-capacitors;
- **Mingjun Zhang, Ph.D., Scott Lenaghan, Ph.D., and Neal Stewart, Ph.D.,** UT Knoxville and UT Institute of Agriculture, for automated high-throughput nanoparticle manufacturing using English Ivy; the nanoparticles can be used for a variety of applications, such as sunscreens and high-strength, weather-resistant adhesives.

Technology Transfer Accelerator in Memphis

Thanks to a grant from the Memphis Research Consortium, five UTHSC faculty inventors are receiving an in-depth commercial analysis of their research programs.

However, instead of simply having outside experts come in and write reports, this group of faculty is instead participating on nights and weekends in a cohort-based tech transfer accelerator called C3 through a partnership between UTRF, Seed Hatchery and the Memphis Bioworks Foundation.

Five faculty researchers from UT Health Science Center were selected for participation in the C3 program, and during an eight week period in summer 2012 were introduced to entrepreneurial principles typically associated with startup accelerators. All sessions were hosted and led by Seed Hatchery, and closely mirrored their Discovery-Delivery-Dollars methodology that includes customer discovery, competitive analysis, go-to-market strategy and investor pitches. Participant inventors were also mentored by local business leaders, and are working on their commercialization reports. At this conclusion of the educational experience, the participants will each pitching for a $20,000 grant to fund proof-of-concept development work based on their commercialization findings.

"One of the key trends we initially identified was that a patent is rarely enough to push an invention to market without the active participation of the inventor in the process," explained **Richard Magid**, vice president of the UT Research Foundation.

Added **Eric Mathews**, CEO of LaunchYourCity, Inc. and founder of Seed Hatchery, "Once we settled on the goal of empowering researchers to grow the commercialization, culture and capacity of their work and institutions, Richard and I immediately recognized the opportunity to leverage accelerator best practices and build something groundbreaking."

Once proof of concept funding is approved and work completed, C3 faculty researchers will pitch their newly-validated technologies and business models to entrepreneurs, investors and potential corporate partners during a showcase event in early 2013.

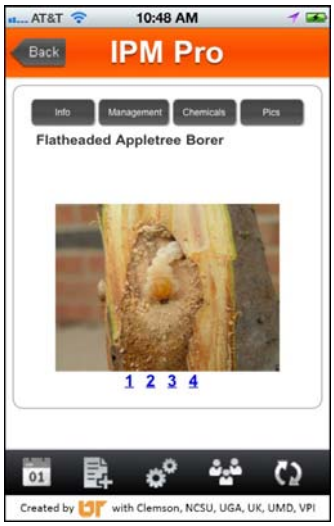
"I had never appreciated the size of the chasm between university-based inventors producing ideas with commercial potential, and those who can take those ideas to market," stated **Charles Handorf**, MD, PhD, Professor and Chair of Pathology and Laboratory Medicine and C3 participant. "Yet it is essential that we understand the external commercial world, including when and how to hand off our work, if we want our research to benefit society in any meaningful way."

Mobile App Released

Green industry professionals often find themselves in the field needing immediate access to pest and plant disease information and plant care recommendations. Or, they need to be alerted when destructive pests emerge in their area. Thanks to a collaborative effort of horticulturists, entomologists and plant pathologists at seven land-grant universities, now there's an app for that.

"This is just the kind of thing industry needs. Now we have the best opportunity to head off pest issues that can wreak havoc for nursery and landscape professionals and for homeowners."

John Watson, Common Grounds Landscape Management, Knoxville



The UT Institute of Agriculture together with Clemson, North Carolina State University, University of Georgia, University of Kentucky, University of Maryland and Virginia Polytechnic Institute have developed the first Integrated Pest Management mobile app for nursery growers, landscapers, arborists, Extension agents and students that includes the major horticultural practices and disease and insect recommendations.

IPMPro will streamline pest management decision-making, employee training, and will make complying with state pesticide recordkeeping regulations easy. The mobile app is available for iPhone, iPad, and Android.

"Nursery and landscape professionals conduct business on the go; they truly have a mobile office – often their truck," explained **Dr. Amy Fulcher**, lead developer and UT Institute of Agriculture plant scientist. "IPMPro dramatically simplifies day-to-day plant care and pest control decision-making in the field. It provides a library of information in the convenience of an

app, and features real-time alerts to help professionals stay on top of emerging pests and timely plant care."

John Watson, with Common Grounds Landscape Management in Knoxville got an early introduction to the IPM app. "My first thought was, 'Where have you been?' Most of the time we get so busy putting out fires we forget that the best thing we could do is prevent fires," he explained. "This is just the kind of thing the industry needs. Now we have the best opportunity to head off pest issues that can wreak havoc for nursery and landscape professionals and for homeowners."

This is the first application of its kind developed in the United States, and it was made possible through funding by the UT Institute of Agriculture through its Extension and AgResearch units and the Department of Plant Sciences, and in cooperation with the University of Tennessee Research Foundation.

UTRF – Anderson Center Partnership

Developing an entrepreneurial culture on campus is important for us to get our technologies to the market. One of our natural partners in this activity is the Anderson Center for Entrepreneurship and Innovation (ACEI) in the College of Business Administration at UT Knoxville.

ACEI develops entrepreneurial talent and helps that talent start new businesses, which creates positive economic impact in the state. Here are some of the areas where we have worked together this year to develop an entrepreneurial culture and help spur innovation on campus:

- IP Seminar Series
- IP Market Analysis
- National Science Foundation's Partners for Innovation
- Innovation Best Practices Benchmarking Project
- Vol Court
- East Tennessee Regional Accelerator Coalition (ETRAC)

Tennessee’s Largest Solar Array Opens

Tennessee has cut the ribbon on the state’s largest solar power array. DOE Deputy Secretary **Daniel Poneman**, Deputy Gov. **Claude Ramsey,** UT Executive Vice President **David Millhorn** and UT System President **Joe DiPietro** joined a crowd of almost 200 to celebrate the opening of the West Tennessee Solar Farm. The solar farm is now generating power.

The Haywood County facility is capable of generating 5 megawatts of electricity, enough to power 500 homes and offset 250 tons of coal each month. That makes it the largest solar-energy array connected to the Tennessee Valley Authority’s grid.

The farm features 21,000 photovoltaic solar panels spread across more than 25 acres. The generated electricity is being distributed through purchase agreements with Chickasaw Electric Cooperative and Tennessee Valley Authority. Signal Energy designed and built the solar farm.

In addition to producing power, the farm is designed to educate the public about solar power. The farm will be home to a future public information center, accessible to some 10 million motorists who drive by the Interstate40 site every year. Scheduled for completion in late 2013, entrance and exit ramps from the interstate will be included, as well as an interactive

renewable-energy exhibit that will be housed in the center. Information about the energy generated by the solar array will be available at the solar farm’s website.

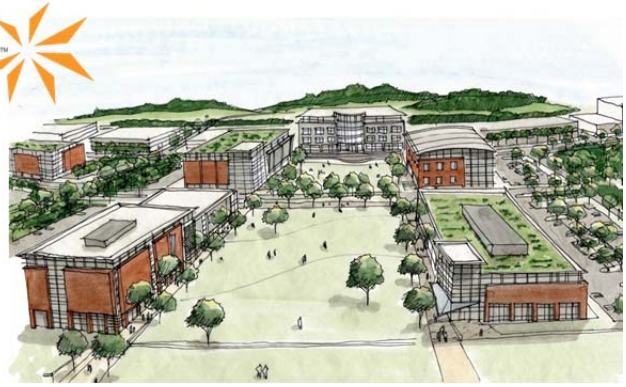
The solar-energy industry is a rapidly growing sector of the state’s economy. Tennessee has 180 for-profit companies in its solar value chain, employs more than 6,400 people in solar-related industries, and has installed approximately 27 megawatts of solar power. Recent reports by Bloomberg New Energy Finance show solar represents a $137 billion global market that grew by more than a third last year alone.

More than 100,000 job hours were worked during design, build, installation and connection of the West Tennessee Solar Farm. In excess of 20 vendors supplied American-made parts and skilled labor.

Cherokee Farm Update

The University of Tennessee e has retained UTRF to facilitate the development of the Cherokee Farm property located in Knoxville. UTRF has formed a wholly owned not for profit subsidiary called Cherokee Farm Development Corporation, LLC. (CFDC) to launch, build up and operate the Innovation Campus of Cherokee Farm.

Cherokee Farm is a 200 acre site directly across the Tennessee River from the University of Tennessee, Knoxville and Institute of Agriculture campuses that will be developed and operated as a research campus that will bring together public and private partners in areas such as materials science, supercomputing and biomedical research. Plans call for developing only 77 acres of the site and 46 acres of the remaining property are designated part of an archaeological zone and will be preserved.



The infrastructure development and site prep work is over 98% complete, including site grading, water, sewer, natural gas, primary electrical supply systems, data and telecommunications distribution, lighting and landscaping.

The first building, the Joint Institute for Advanced Materials (JIAM) will get underway before the close of 2012. JIAM is to be a 144,000 square-foot research, laboratory and office building dedicated to the development and characterization of advanced materials.

CFDC expects to appoint leadership to drive the project in late 2012

Startup Company Highlights

UTRF generated a record 9 new startup companies in the FY2012:

Raphael Biotech is a start-up company that is developing novel anti-cancer drugs invented by Dr. Bob Moore of the Department of Pharmaceutical Sciences at the UT Health Science Center. The technology targets cell surface receptors that initiate a cascade of effects resulting in down-regulate survival pathways and initiation of tumor cell death in glioblastoma multiforma brain (GBM) tumor models. Unlike most anti-cancer drugs that are not permeable to the blood brain barrier following systemic administration, Raphael's compound RBI-101 readily penetrates the blood brain barrier when administered systemically.

This unique drug property results in exposure of the entire central nervous system thus allowing treatment of not only the primary tumor, but also distant foci that ultimately result in the high mortality of the disease. Another unique anti-GBM property of RBI-101 is that it does not target DNA as does radiotherapy and Temozolomide. This is significant in that aforementioned DNA targeting cause hundreds of gene mutations in GBM tumors resulting in super-tumors that are difficult if not impossible to treat. RBI-101 is currently in pre-clinical development for the treatment of GBM and is being evaluated for efficacy against pancreatic, prostate, breast, and colon cancer cell lines.

In addition to RBI-101, Raphael Biotech has also initiated early pre-clinical testing on second generation compounds to treat pancreatic cancer. Raphael's novel approach to treating cancers with high mortality rates, such as GBM and pancreatic cancer, opens a new front in the in the battle to improve the lives of patients afflicted with these diseases.

Infusense Inc., a new Memphis-based startup company, has recently obtained an exclusive license from the University of Memphis and the UT Research Foundation to commercialize a new platform for real-time measurement of blood levels of the surgical anesthesia agent propofol.

The technology was invented in a collaborative research project by Dr. Erno Lindner and colleagues at the U of M's Department of Biomedical Engineering and Dr. Edward Chaum and colleagues in UTHSC's Department of Ophthalmology, with collaboration and funding from the U.S. Army Telemedicine & Advanced Technology Research Center.

Startup Company Highlights

There are approximately 40 million surgical procedures performed annually in the United States using propofol, but unlike in Europe, automated infusion systems are not allowed. Infusense believes that its platform will be able to demonstrate the necessary levels of robust and safe performance to obtain the first FDA approval for automated propofol infusion. This is the third startup for Dr. Chaum, who has also founded Hubble Telemedical and Nanophthalmics.

HandMinder - Currently, there are 7 million stroke survivors in the US and more than 795,000 new stroke survivors in the US every year. The cost of their rehabilitation exceeds $2.1 billion annually. Approximately 60 percent of stroke survivors endure the effects of hand dysfunction.

Current treatments and devices for hand dysfunction in stroke patients are expensive and inconvenient. Further, they focus primarily on muscle rehabilitation instead of actively re-engaging patients' brains. Recent studies demonstrate that active engagement of the brain during hand rehabilitation improves the quality of movement and amount of movement by two and three times, respectively. Current treatments are insufficient.

The HandMinder portable hand rehabilitation device solves these problems. HandMinder employs patent-pending vibration-guided brain engagement technology. This is active brain engagement that strengthens neural connections between the hand and brain, thus improving patients' hand function. Further, HandMinder is affordable, convenient, and used in clinical settings and at home. The core technology was developed at UTHSC by Drs. Randy Nelson and Yu Liu.

Nanophthalmics has developed and licensed a patent-pending platform technology for microfabricated instruments that engage tissue in entirely new ways. The focus is on employing novel surgical devices, techniques, and materials to improve current treatment outcomes for ophthalmic and other microsurgical diseases. The first commercial device is a disposable, 510(k) exempt, corneal micro-punch that enhances healing of abrasions, recurrent erosions, and other corneal diseases by modifying tissue attachments at a cellular level. The core technology was the result of a collaboration between Dr. Ed Chaum at UTHSC and Dr. Chuck Britton at the Oak Ridge National Lab.

Entac Medical LLC is a development stage biomedical company founded to commercialize PrevisEA, a device invented at UTHSC by surgeon Dr. John Cromwell, using a novel technology (patent pending) to predict and monitor post-operative ileus (POI). POI is a serious condition in which the bowel shuts down two to six days after surgery. It is associated with significant morbidity and dramatically increased length of hospital stay if treated improperly.

There is currently no instrument to predict whether a patient will develop ileus. Even the most experienced surgeons cannot predict which patients will develop POI.

Skimtek - In December 2011, the patent-pending “Solid-State Skimmer” technology developed by biosystems engineering faculty members Dr. John Tyner and Dr. Daniel Yoder, along with former graduate student Brent Pilon, was licensed to skimtek, LLC, a Tennessee-based start-up company that includes Dr. Tyner, the lead inventor, as a principal. Since receiving the exclusive license, skimtek has been working to further develop the technology and to refine and automate the design procedure so as to allow rapid specification of a custom solution appropriate for each unique and site-specific field application. The skimtek skimmer is an environmentally-friendly sediment basin dewatering structure that pulls most of the outflow water from the surface of the pool where the sediment concentration is typically lowest.

Solex has created technology that provides non-invasive detection of amyloidosis, a disease known to occur in Type 2 diabetes, myeloma, rheumatoid arthritis, Alzheimer's and other fatal or debilitating diseases. Currently there is no detection for amyloidosis available in the U.S., and the median survival rate is four years.

The technology uses Positron Emission Tomography/Computed Tomography (PET/CT) imaging to provide whole-body visualization of amyloidosis.

Solex developers from the UT Graduate School of Medicine include Jonathan Wall, Ph.D., Stephen Kennel, Ph.D., Emily Martin, B.S., Tina Richey, M.S., and Alan Stuckey, B.A., CNMT.

SimCenter Enterprises, Inc. has licensed the Tenasi software platform which uses state-of-the-art computational modeling to solve complex problems in the fields of aerodynamics, hydrodynamics, propulsion, and electromagnetics. The software was created by UT Chattanooga’s SimCenter: National Center for Computational Engineering.

The license enables SimCenter Enterprises Inc. to focus on two ways to monetize the intellectual capital and technologies of the Tenasi system. First, the technology can be licensed to other companies, and second, identifying technologies that can be commercialized on a large scale, ultimately setting up companies to operate out of Chattanooga.

Genera Energy, Inc. - As the state's five-year, $70.5 million investment in the Tennessee Biofuels Initiative comes to an end in June, Genera Energy will take on a more focused role as a biomass supply company for biofuels producers. The company will shift away from its work

with the Tennessee Biofuels Initiative to become a self-sustaining commercial venture as a biomass supply company.

"As (biofuels initiative) funds wind down, we've been looking in the last year or so at what the follow-on opportunities are, how we can leverage this and continue to create significant commercial value in Tennessee," Genera president and CEO Kelly Tiller says. One key market opportunity is to supply biomass to the growing biofuels industry, she adds.

"Genera has been successful in developing a reputation and experience as a biomass feedstock supplier," Tiller says. Genera has been recognized as one of the top 100 bioenergy companies (No. 86 in the 2011-2012 Biofuels Digest list of 100 top vote-getters) and of those, Genera is the only one supplying biomass.

As a for-profit company formed in 2008 by the UT Research Foundation, Genera was created to implement the Tennessee Biofuels Initiative, aimed at developing a cellulosic biofuels industry with Tennessee-grown switchgrass. Funds from the biofuels initiative were used to pay farmers to produce switchgrass for use in the biofuels demonstration plant, intended as a model for future switchgrass-to-ethanol biorefineries across the state.

Genera partnered with DuPont Cellulosic Ethanol to develop a small demonstration cellulosic ethanol biorefinery in Vonore, Tenn., using switchgrass produced on about more than 5,000 acres in East Tennessee, as well as corn cobs and corn stover. Plans for a full-scale production plant in Tennessee have been delayed by DuPont's 2011 acquisition of Danisco, its former joint venture partner in cellulosic ethanol development. DuPont has announced plans and named a builder for a commercial scale biorefinery in Iowa using corn stover to produce ethanol.

Patents Issued

Patent	Title	Inventors	Department	Campus
US 7,973,213	Antibiotic Resistance Conferred By A Plant Abc Transporter Gene When Expressed In Transgenic Plants	C. Neal Stewart, Jr. Mentewab Ayalew	Plant Sciences	Institute of Ag
US 7,977,386	Solid Forms Of Selective Androgen Receptor Modulators	James T. Dalton David A. Dickason David Hong Thomas G. Bird Tal Ahn	Pharmaceutical Sciences	HSC
US 7,977,321	Small Interfering Rnas Targeting Feline Herpes Virus	Stephen A. Kania Rebecca P. Wilkes	Biomedical & Diagnostic Sciences	Institute of Ag
US 7,985,786	Rubber-Modified Cementitious Substance And Method Of Making The Same	Baoshan Huang Jingyao Cao Xiang Shu	Civil & Environmental Engineering	Knoxville
US 7,994,295	Recombinant Viruses Comprising The Membrane-Proximal Domain Of Vsv G Protein	Michael A. Whitt Clinton S. Robison	Molecular Science	HSC
US 8,008,348	Treating Muscle Wasting With Selective Androgen Receptor Modulators	Mitchell S. Steiner Karen A. Veverka James T. Dalton Duane D. Miller	Urology	HSC
US 8,013,745	Passive Microwave Assessment Of Human Body Core To Surface Temperature Gradients And Basal Metabolic Rate	David J. Icove Michael B. Zemel Carl T. Lyster Neil Feld	Electrical Engineering & Computer Science	Knoxville
US 8,022,078	Pyrimidine Classical Cannabinoid Compounds And Related Methods Of Use	Bob M. Moore, II Steven Gurley Suni Mustafa Patrick Allison	Pharmaceutical Sciences	HSC

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US 8,029,657	Parallel Plate Electrodes For Particle Concentration Or Removal	Jie Wu	Electrical & Computer Engineering	Knoxville
US 8,060,522	Parallel Data Processing System	John D. Birdwell Tse-Wei Wang Roger D. Horn Puneet Yadav David J. Icove	Electrical & Computer Engineering	Knoxville
US 8,061,533	Materials Comprising Polydienes And Hydrophilic Polymers And Related Methods	Jimmy W. Mays Suxiang Deng Kenneth A. Mauritz Mohammad K. Hassan Samuel P. Gido	Chemistry	Knoxville
US 8,074,585	Systems And Methods For Fluid Dispensing	John B. Wilkerson John H. Hancock Fred H. Moody Melvin A. Newman	Agriculture and Biosystems Engineering	Institute of Ag
US 8,080,682	Substituted Acylanilides And Methods Of Use Thereof	James T. Dalton Duane D. Miller	Pharmaceutical Sciences	HSC
US 8,088,828	Treating Benign Prostate Hyperplasia With Sarms	James T. Dalton Duane D. Miller Mitchell S. Steiner Karen A. Veverka Wenqing Gao	Pharmaceutical Sciences	HSC
US 8,092,825	Glycan-Binding Proteins As Therapeutic Targets For Retinal Disorders And Treatment Methods Based Thereon	Monica M. Jablonski	Ophthalmology	HSC
US 8,099,733	Parallel Data Processing Architecture	John D. Birdwell Tse-Wei Wang Roger D. Horn Puneet Yadav David J. Icove	Electrical and Computer Engineering	Knoxville

Patents Issued

US 8,105,594	Methods For Amyloid Removal Using Anti-Amyloid Antibodies	Alan Solomon Rudi Hrncic Jonathan S. Wall	Department of Medicine	MDO-Memphis
US 8,110,562	Selective Androgen Receptor Modulators, Analogs And Derivatives Thereof And Uses Thereof	James T. Dalton Duane D. Miller Igor Rakov Casey Bohl Michael L. Mohler	Pharmaceutical Sciences	HSC
US 8,115,031	Anti-Inflammatory Quinic Acid Derivatives For Oral Administration	Charles R. Yates Duane D. Miller Kui Zeng Karin E. Thompson	Pharmaceutical Sciences	HSC
US 8,124,771	Pyridine Classical Cannabinoid Compounds And Related Methods Of Use	Bob M. Moore Steven Gurley Suni Mustafa	Pharmaceutical Sciences	HSC
US 8,140,271	Least-Square Deconvolution (Lsd): A Method To Resolve Dna Mixtures	Tse-Wei Wang John Douglas Birdwell Ning Xue Mark S. Rader John Flaherty	Chemical Biomolecular Engineering	Knoxville
US 8,158,654	Pyridine Non-Classical Cannabinoid Compounds And Related Methods Of Use	Bob M. Moore Steven Gurley Suni Mustafa	Pharmaceutical Sciences	HSC
US 8,206,640	Process For Collection Of Continuous Fibers As A Uniform Batt	Ahmad D. Vakili Daniel F. Rossillon	Mechanical Aerospace and Biomedical Engineering	UTSI

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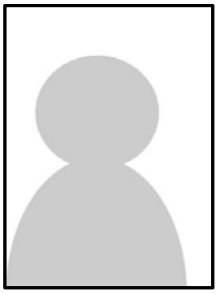

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