

Gabor Tigyi Named Associate Vice Chancellor for Research and Industry Relations

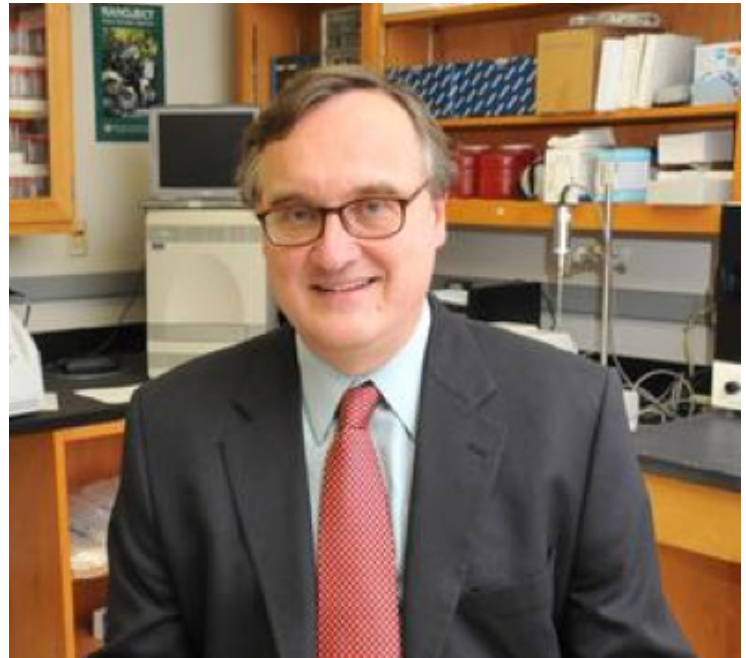
In the newly approved Operational Strategic Plan for Research, there is an entire section devoted to Stimulating Partnerships and Collaborations. Outlined carefully in this section are subsections that describe specific ways UTHSC can spur partnerships and collaborations with our different partners, both established and yet to be established. Corporate Partners in Research, one of the several listed, notes that “business-industry partnerships need to be beneficial in very significant ways to both UTHSC and the industry, as well as support the overall mission of each participant.” To lead the charge on behalf of UTHSC, Vice Chancellor for Research Steven R. Goodman, PhD, has appointed Gabor Tigyi, MD, PhD, as associate vice chancellor for Research and Industry Relations effective October 1, 2016.

“Gabor Tigyi has years of experience taking discoveries from the bench through the regulatory process,” said Dr. Goodman. “I know he will help us identify our strengths and capabilities in the entrepreneurship environment and pinpoint ideal partners.”

Dr. Tigyi is one of the founders of RxBio, Inc., a biotechnology company formed around novel and proprietary small-molecule technology developed at UTHSC. He also serves as the corporation’s Chief Scientific Officer. Dr. Tigyi has acquired several patents throughout his career, some of which have been licensed to RxBio and moved into the FDA approval line. His research mainly focuses on antidotes for radiation injury and therapeutic resistance of cancer. He spent the last 10 years serving as chair of UTHSC’s Department of Physiology and was recently appointed Distinguished Visiting Chair Professor at Taiwan National University Center for Biotechnology.

“Due to a fortunate discovery of lipid growth factor early on in my career, I have been able to start a field of research that is now performed by over 100 labs worldwide,” said Tigyi. “In this next phase of my career, I want to focus on taking drugs through the regulatory process. In my new role, I will be working on finding industry partners for our university, and will help foster those relationships. I know I have a lot to learn but I am eager to start.”

Beginning with an internal assessment of the university’s colleges, then examining the city and region’s needs, one of Dr. Tigyi’s main goals is the application of UTH-



SC’s key strengths as support or complements to companies in Memphis and around the region. He will look at strengthening current relationships and building new ones with major players in the Mid-South area.

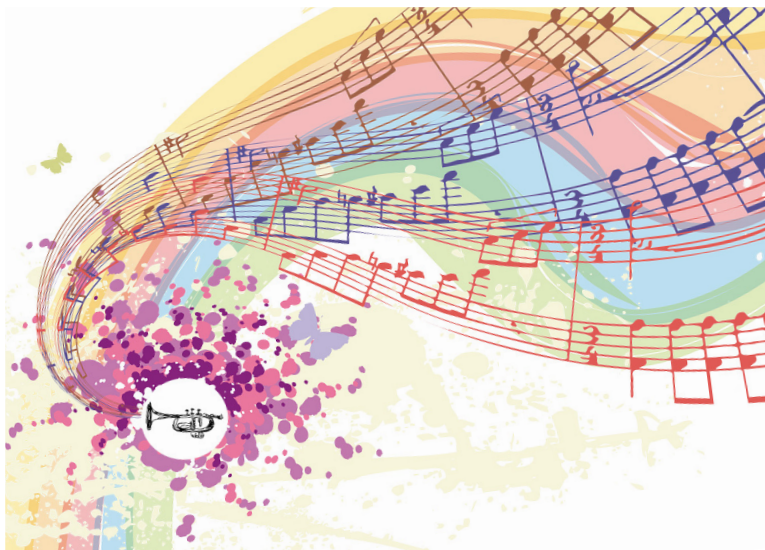
“Memphis has a traditional biotech industry especially in orthopedics and spinal implant development manufacturing,” said Dr. Tigyi. “As an academic institution, we can partner with these key players. With the coming development of the UT Biotechnology Park, we can cast a bigger net to business from around the region who are not only in the biomedical field but in food, chemical, and agricultural industries too.”

Referencing facilities such as the Plough Center for Sterile Drug Delivery Systems, Dr. Tigyi suggests that UTHSC has unique resources that can be built up and built around. He said “lots of leaps have been made in the past year” by the institution.

“We’re focused on building up our infrastructure, the clinical faculty, and are investing in and improving our core facilities,” said Dr. Tigyi. “We are developing a diversified portfolio that will drive us towards successful industry partnerships with commercial companies in Memphis and the Mid-South.”

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The UT CORNET Awards in Cancer Research Announced, Initiative's Network Continues to Grow



The 2016 University of Tennessee Collaborative Research Network (CORNET) Awards in Cancer request for applications was announced in late September at Vice Chancellor for Research Steven R. Goodman's Town Hall meeting. The CORNET Awards provide seed money to stimulate innovative, interdisciplinary, team-based research which will give rise to future extramural funding. There are several key players involved in the UT CORNET Awards in Cancer- The University of Tennessee Health Science Center (UTHSC, all campuses), The University of Tennessee, Knoxville (UTK), The University of Tennessee Institute of Agriculture (UTIA), The University of Tennessee College of Veterinary Medicine (UTCVM), The University of Tennessee at Chattanooga (UTC), and Oak Ridge National Laboratory (ORNL).

Any UT faculty member who is doing cancer research (inclusive of T0 to T4) at the aforementioned sites, including investigators from ORNL, may apply for a UT CORNET Award in Cancer. To be eligible for a UT CORNET Award in Cancer, each proposal must include, at minimum, one faculty member from at least two participating institutions. Resources are available to fund up

to two Awards, for up to \$50,000/award, for one year.

To give investigators a chance to exchange information and ideas in person, there will be a UT CORNET Cancer Conference held on Wednesday, November 9, 2016 at The Double Tree by Hilton in Murfreesboro, TN, from 10:30 am – 3:30 pm CST. The Cancer Conference is designed to bring together cancer researchers from different UT campuses, allowing them to share their research interests and catalyze new collaborative partnerships that will result in the submission of a UT CORNET Award proposal in Cancer. At the Cancer Conference, attendees will hear from keynote speakers on work being done by investigators at different UT sites and a poster presentation session will feature projects from participants.

The deadline to register for the UT CORNET Cancer Conference via an online portal is Monday, October 31, 2016. For more information on the UT CORNET Cancer Conference, please visit the Office of Research Development's website: <https://www.uthsc.edu/research/development/intramural-funding/ut-cornet-cancer-conference.php>.

To date, the CORNET Awards have provided over \$472,504 in funding to stimulate innovative, interdisciplinary, team research. The winners include nine collaborative teams that cross UTHSC's Memphis colleges who were the first recipients of the UTHSC CORNET Awards; as well as the recently announced winners of the UTHSC/UAMS USA CORNET Award which involved researchers from UTHSC and the University of Arkansas for Medical Sciences.

Dr. Goodman further hinted at his Town Hall about the creation of a Global CORNET Award, which the newly appointed Associate Vice Chancellor for Research and Global Partnerships Staphania Cormier, PhD, will help establish. The second UTHSC CORNET Awards and UTHSC/UAMS USA CORNET Awards are also said to be in the works for Spring 2017.

Have a story we should include?

Submissions and ideas can be sent to:
Sarah Fenderson at sfenderson@uthsc.edu

New Initiatives Shape Clinical Trials for Researchers

Nine Cross-Cutting Platforms, essential to each of the Areas of Excellence and Focus Areas, are described in the Operational Strategic Plan for Research. The Cross-Cutting Platform “Clinical Research Systems” details the Clinical Trials Governance Board (CTGB) at UTHSC which will be developed as a “fully integrated model of developing and sharing best practices for clinical research through institution-wide offerings.” Imagined by Vice Chancellor for Research Steven R. Goodman, PhD, and based on a Federated Model for Clinical Trials, the CTGB’s primary goals are to support and grow clinical research by advertising access to resources and opportunities for scientists and faculty throughout the UT System, and develop a statewide Clinical Trials Network (CTN).

Heading the Clinical Trails Governance Board are Ari Vanderwalde, MD, associate vice chancellor for Research- Clinical Trials, and Karen Johnson, MD, MPH, Endowed Professor of Women’s Health in the Department of Preventive Medicine.

“Currently, there are a number of clinical research offices that exist at UTHSC each with specific expertise, focus, and infrastructure,” said Dr. Vanderwalde. “Through the CTGB we are beginning to integrate these offices and share best practices across Clinical Research Offices as well as encourage a staffing model that takes advantage of resources across groups,” he said.

Dr. Johnson adds that the CTGB aims to facilitate clinical research and promote collaborations within and across departments, colleges, and campuses as well as within the UT System and beyond.

“We look forward to understanding and improving our research capabilities with a focus on improving health to better serve the people of Tennessee,” Dr. Johnson said.

Part of the charge of the CTGB is to bring into the Federated Model for Clinical Trials clinical studies being done by the UTHSC Colleges of Dentistry, Nursing, and Health Professions. An additional goal is to create and foster opportunities for global partnerships in collaboration with the newly appointed Associate Vice Chancellor for Research & Global Partnerships Stephania Cormier, PhD. A long term goal- build a UTHSC Clinical Trials Network that crosses all four UTHSC campuses.



(pictured left to right: Dr. Vanderwalde, Dr. Johnson, and Dr. Davis)

Intricately linked to the CTGB and ultimately the CTN is the development of a HIPPA compliant Enterprise Data Warehouse (EDW) for all UT affiliated medical center patients (including The University of Tennessee at Chattanooga, The University of Tennessee, Knoxville, and UTHSC Nashville) that is linked to a heavily populated biorepository. Integration of biomedical informatics into clinical research systems will enhance database building, formation of trial networking capabilities, observational research, and patient recruitment tools. Robert Davis, PhD, Governor’s Chair in the UTHSC-ORNL Center in Biomedical Informatics and professor in the Department of Pediatrics, said work on the research Enterprise Data Warehouse and the biorepository is already underway.

“By linking the Enterprise Data Warehouse with the biorepository that we are creating, it will allow both junior and senior faculty, as well as graduate students and postdocs, to perform innovative research at a faster pace,” said Dr. Davis. “UT researchers will be able to collaborate on projects to develop products and solutions for health problems applicable to patients and our community no matter their physical location through these resources.”

With the Clinical Trials Governance Board already working to better support clinical research faculty and the creation of the UTHSC Clinical Trials Network and Enterprise Data Warehouse now underway, UTHSC is positioning itself to contest for competitive grants and attract and retain faculty members with the ultimate goal of stimulating research initiatives and growing its research footprint.

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Funding Opportunities: They're Personal Now

In his Town Hall address on September 26, 2016, Vice Chancellor for Research Steven R. Goodman, PhD, announced that the Office of Research Development had recently purchased Elsevier's Pure Funding Discovery Module. Pure will provide UTHSC with a public-facing portal which will allow the university to showcase its faculty and their research expertise, thus increasing UTHSC's visibility to the global research community, while also identifying and tracking targeted funding opportunities specific to each investigator's research interests.

Lisa Youngentob, director of the Office of Research Development, says "Pure will transform not only the method of how UTHSC investigators are receiving funding opportunities, but more importantly, the quality of the funding opportunities."

Using Elsevier's Fingerprint Engine™, Pure will provide all faculty currently doing, or who are interested in doing, research the ability to be 'fingerprinted'. Postdocs and graduate students will also have this ability. This unique Fingerprint is based on a researcher's publications. The Fingerprint will be used to search Elsevier's SciVal Funding database of nearly 9,000 extramural funding opportunities, matching the funding agency's RFAs to the researcher's personal Fingerprint. Investigators will be notified via email alerts of all matching funding opportunities. Researchers will also have the ability to search the funding database themselves and share funding opportunities with their collaborators.

"The investigator's Fingerprint will also be linked to a personalized searchable

profile, allowing researchers to be discovered by potential collaborators both at UTHSC and beyond," said Youngentob.

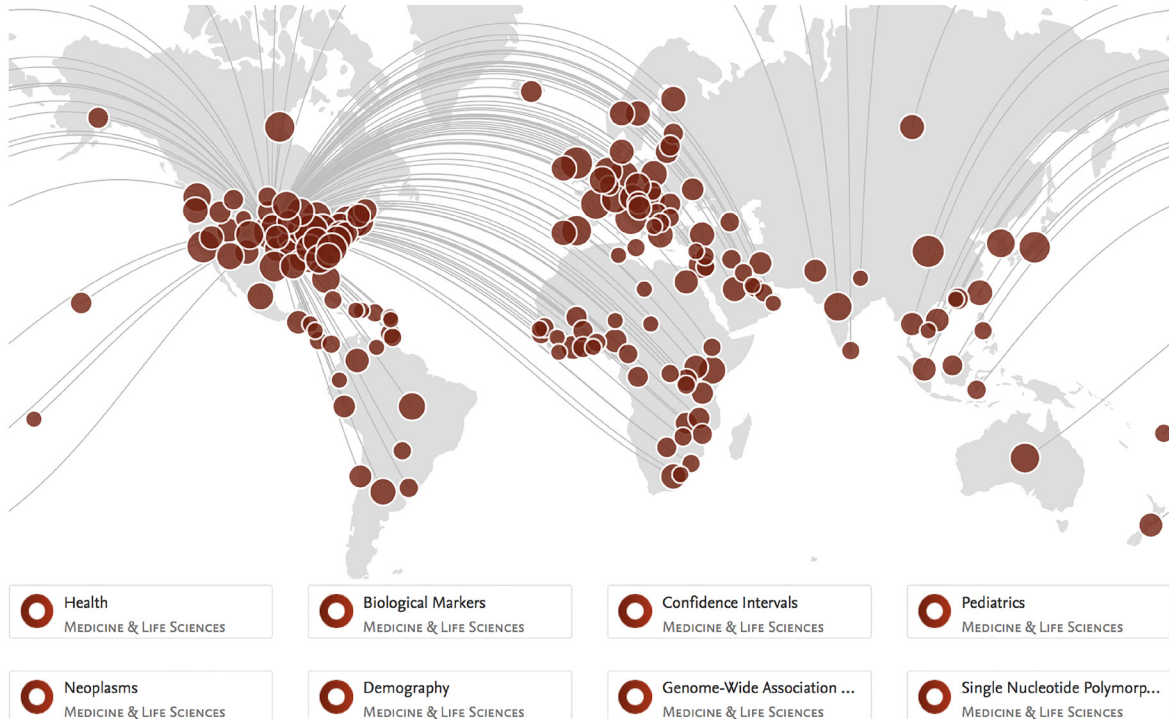
The portal, called "Experts @ UTHSC", displays aggregated information about researcher outputs- including publications, projects, awards, teaching activity, datasets, press clippings, posters, and more – all in one place. Pure creates the basic profile, but also allows users the ability to verify, add, or update their information at any time.

"The Pure portal will help stimulate collaborations among investigators here on campus, by identifying potential partners for funding and projects," says Youngentob. "It will also allow us to promote our faculty and their research expertise by enabling external academic or industry partners to easily discover an investigator's work and foster new collaboratives."

Additionally, the Experts portal offers a visual representation of the relationships between researchers, grants, projects, outputs, journals, external collaborators and more. It also visualizes the relationships between each faculty member and their collaborators on awards and publications.

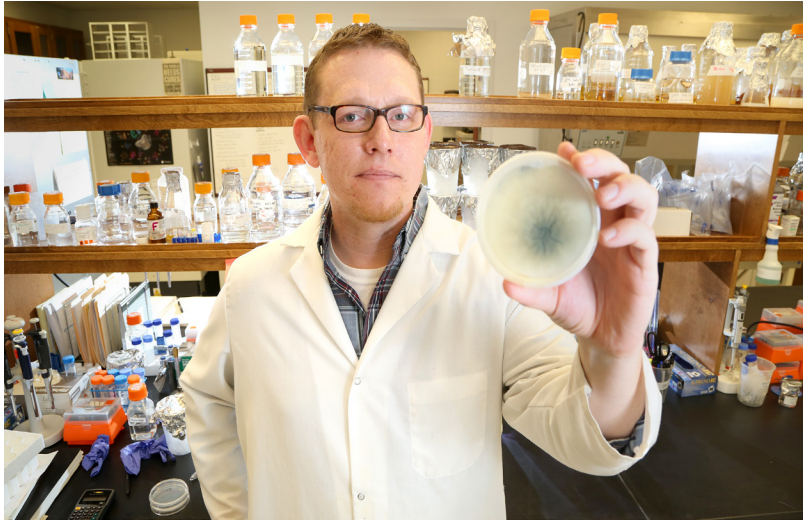
The acquisition of Pure is part of the Operational Strategic Plan for Research's roadmap to help achieve the Chancellor's goal of doubling research at UTHSC over the next 10 years.

The photo below is a snapshot of Indiana University School of Medicine's "IUSM ReSEARCH Connect," a similar representation of what the "Experts @ UTHSC" portal will look like.



Photosource: IUSM ReSEARCH Connect. Digital image. Elsevier's Pure, Scopus & Elsevier Fingerprint Engine™, n.d. Web. 18 Oct. 2016. Courtesy of <https://indiana.edu>

New Faculty Spotlight: Dr. Jarrod Fortwendel



Jarrold Fortwendel, PhD, assistant professor in the department of Clinical Pharmacy within the College of Pharmacy, joined the faculty in July 2016. After completing his BS in Clinical Laboratory Science from Indiana State University in 1999, Dr. Fortwendel received his PhD in Pathobiology and Molecular Medicine from the University of Cincinnati in 2005.

He completed his postdoctoral studies at the University of Cincinnati and Duke University.

Dr. Fortwendel's research interest centers around understanding the mechanisms used by fungi to cause disease, specifically for the fungal pathogen *Aspergillus fumigatus*. On average, most people breathe in hundreds of *Aspergillus* spores every day without getting sick. This is due to strong pulmonary immunity. However, people with debilitated immune systems, like those undergoing treatment for specific cancers, are at a higher risk of developing Invasive Aspergillosis (IA). There is, unfortunately, a 50-90% mortality rate among those who develop IA.

"A major hurdle for successfully treating IA is that the fungal pathogen and the human host have very similar cellular physiology. Therefore, our current antifungal drugs can be quite toxic to patients," said Dr. Fortwendel. "My research aims at understanding fundamental aspects of how the fungus invades lung tissue. Because the process of tissue invasion directly underpins virulence of *A. fumigatus*, we hope to use this knowledge to identify more effective drug targets."

Dr. Fortwendel has been focusing on the pathogen since he was a graduate student. During his time at Duke, Dr. Fortwendel was awarded an NIH K22 Career Development Award to better understand mechanisms regulating Ras protein localization within *Aspergillus*

cells. Proper localization is required for Ras function. Ras is a highly conserved signaling protein found in many cell types, from humans to fungi. By focusing on Ras signaling networks, the Fortwendel lab expects to uncover essential processes supporting growth in *Aspergillus*.

"We are now following up on those earlier

studies by concentrating on the enzymes controlling Ras localization to see if they have potential as antifungal targets," he said.

In a closely related project, Dr. Fortwendel is currently delineating fungal-specific aspects of Ras protein signaling.

"During earlier studies as a postdoctoral scientist at Duke, I discovered a novel domain in fungal Ras proteins that does not exist in human Ras proteins," said Dr. Fortwendel. "My work showed that this fungal-specific protein domain is critical for Ras function in *A. fumigatus*. We are working to understand a precise mechanism, as it may define a new paradigm for the regulation of Ras signaling in pathogenic fungi. This, in turn, might allow us to target Ras proteins in *Aspergillus* while minimizing toxicity to humans."

Dr. Fortwendel currently teaches in a Foundations of Pharmacy class at UTHSC, and will be contributing to the development of a Microbiology course for the College of Pharmacy. He is excited to be a member of a growing core of UTHSC researchers focused on fungal infections and is extremely interested in collaborating with other researchers to further understand host-pathogen interactions. His work is currently funded by an NIH NIAID R01 Research Project Grant.

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Genotation, a Novel Informatics Solution for Scientific Readers

As biomedical researchers, we rely on peer-reviewed journal articles to improve our knowledge and stay abreast of current information, techniques, and ideas. Journal articles often contain interrelated concepts of biological systems including biochemistry, immunology, molecular biology, genetics, diseases, and drug therapies, making it difficult for any single reader to know details of all the content. Therefore, we often resort to doing keyword web searches while reading to learn specific details about them. This is an inefficient and relatively time-consuming approach that may not always yield the desired results due to search engine rankings and a large number of search results returned.

To address this issue, scientists at the UTHSC Center for Biomedical Informatics and Department of Pharmacy, spearheaded by Panduka Nagahawatte's (pictured right) lab, developed Genotation that enhances researchers' reading experience with supplementary content. UTHSC experts Ethan Willis, Mark Sakaue, Rony Jose, MPH, Hao Chen, PhD, and Robert Davis, MD, MPH, played key roles in this initiative. With Genotation, a user can visually interact with supplements while reading the article as well as share a summarized graphical representation of the supplements with colleagues. The experience begins by uploading an article on www.genotation.org, where the Artificial Intelligence (AI) module sets on a quest to search and provide a wide array of information.

We now invite UTHSC researchers to play a key role in this initiative by becoming a Genotation user for free. Although designed to be intuitive, there is a video tutorial available in the help section, if needed. We are continuously improving Genotation to address three major challenges: (1) accurately identifying the subset of terms from an article to be linked to external knowledge, (2) synthesizing a centralized knowledgebase containing information from multiple databases, and (3) present the



supplementary knowledge intuitively to enhance the reader experience. We urge you to use this service and provide us feedback through either the surveys in the help section or by emailing panduka@uthsc.edu regarding the improvement in user experience, additional data sources and species of interest, other applicable scenarios, and the AI module that searches for genomic terms. Furthermore, we solicit datasets that relates biomedical knowledge to gene symbols, from scientific good Samaritans, to further enhance the knowledgebase of Genotation.

Genotation currently contains information regarding 59,905 gene symbols, 5633 drug – gene relationships, 5981 gene-disease relationships, and 713 pathways. We are currently expanding the knowledgebase with information on mouse and rat. The platform currently accepts documents in Portable Document Format (PDF) or Hyper Text Markup Language (HTML). We are currently assessing the possibility of expanding to Word, Excel, and PowerPoint documents.

Readers can upload PDF or HTML documents, at which point the AI module searches through the document to identify genetic terms that could be linked to supplementary information. Subsequently, each identified term is queried against the knowledgebase to gather descriptive, functional, clinical, and pharmacogenomics information as supplements. These terms are categorized into genes, diseases, and drugs. The application displays the article in its original format, presenting the user with an unhindered view for reading. Supplements are stored inside an interactive, expandable, and searchable menu accessible to the user while reading the document.

The service is freely available on www.genotation.org. We look forward to your feedback.

-Panduka Nagahawatte, MS
Staff Scientist, UTHSC Center for
Biomedical Informatics

Forging a Path in the Field of Dental Research

At the core of the College of Dentistry (COD) at the University of Tennessee Health Science Center (UTH-SC) mission are three fundamental values: Teaching, Service, and Research. The COD has placed an increased emphasis on research in the past few years which has started them on a journey of transformation. While teaching will always remain their primary focus, the college has recognized the educational significance of dental research and the results are incredible.

Through the successful hiring of several new research-oriented faculty members, the COD has acquired five patents since 2014. Furthermore, in the past academic year alone, the college published over 106 papers and brought in nearly \$1 million in clinical and lab studies over the past 3 years. Franklin Garcia-Godoy, DDS, MS, PhD, PhD, senior executive associate dean for research (pictured top right), states the College of Dentistry is striving to build their research reputation from the ground up.

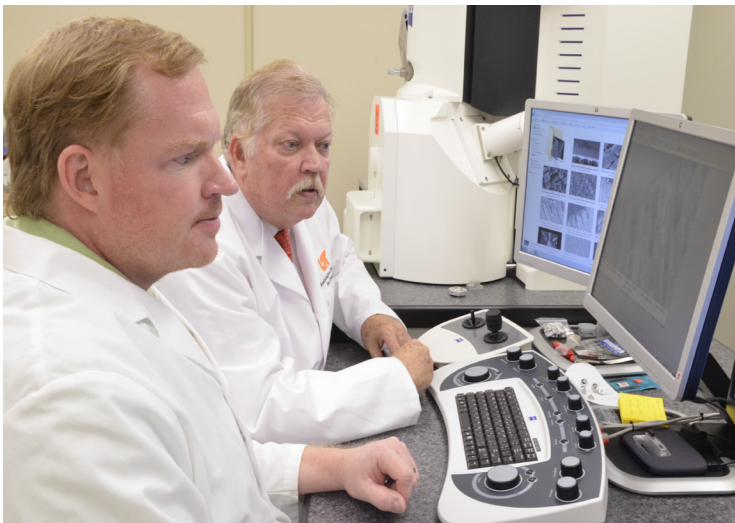
Currently, the COD has 27 dental students doing research including several foreign exchange students. The faculty have multiple ongoing collaborations across several departments, colleges, and the state of Tennessee



including projects with the Department of Pediatrics, Vanderbilt University, and Oak Ridge National Laboratory to name a few. The college has been featured in publications such as the Dental Products Reports and texts like “Cancer Metastasis – Biology and Treatment” and “Stem Cell Niche.”

Future growth opportunities for the COD include the creation of a new Master’s program, the formation of an Oral Cancer Research Institute that will be used mainly for diagnosis, and starting a Saliva Research Center aimed to define biomarkers for general diseases. Infrastructure improvements to the Memphis campus include the modernization of the Dunn Building and the new addition of the Dental Building in the coming years giving students and faculty alike access to state of the art facilities and resources to further research efforts.

“The University of Tennessee is uniquely positioned to be a leader in the research community,” says Dr. Garcia-Godoy. “One way we are doing that is keeping the National Institute of Dental and Cranial Research’s mission to improve dental, oral, and craniofacial health through research, research training, and the dissemination of health information. Dental research is also leading the way through collaborative team efforts, such as the CORNET projects, to help establish the development of practice parameters and standards to benefit all areas of health care.”



(pictured left to right: Brian R. Morrow and Dr. Garcia-Godoy)

“Research provides a foundation for evidence-based practices,” says Dr. Garcia-Godoy. “56% of our full-time faculty have participated in research at the College of Dentistry. The morale is heightened in our faculty and students. They are not only excited to participate in research, they are receiving national recognition for it.”

Publication # for the Rainmaker: E070116116(002 WO#170484)
 The University of Tennessee Health Science Center is an EEOC/AA/TitleVI/Title IX/Section 504/AA/ADEA institution in the provision of its education and employment programs and services.

8 The Research Rainmaker

“Sun Showers & UTHSC-Industry Partnerships” A Message from Dr. Steven R. Goodman



The rain in a sun shower is actually coming from a different location and being blown into the sunny region by a strong wind. In the case of University-Industry partnerships, it also requires a strong force to blow the resources of industry, that allow products to reach the public, towards the ability of the academic partner to provide cutting edge research. In-

deed, as pointed out in our Operational Strategic Plan for Research, that Industry rain is blowing towards a smaller number of academic partners.

Quoting the OSPR- “Business-industry partnerships need to be beneficial in very significant ways to both UTHSC and the industry, as well as support the overall mission of each participant. The current trend is for industry to partner with fewer universities in order to have a more defined and deeper relationship with the academic institution. To that end, we must also identify our strengths and capabilities in the entrepreneurship environment and identify ideal partners. This can be done by utilizing the Areas of Excellence and Focus Areas found in this document, as well as the Cross-cutting Platforms.”

Why should UTHSC become involved in Industry Partnerships? There are several reasons: [1] As an academic health science center, we are concerned about human health which requires bringing new therapeutics and medical devices to the public. [2] We want to grow the economy of Memphis and the State of Tennessee. [3] We want to bring in new financial resources to support our faculty’s research, and [4] bring new training options and opportunities for Industry networking for our graduate students and post-doctoral fellows.

So why is UTHSC a good target for this sun shower from industry?: [1] As discussed above, the OSPR describes both our strengths and aspirations for the next five years; [2] our UTHSC leadership understands the role of our health science center in academic-industry partnerships as evidenced by both the creation of the Plough Center for Sterile Drug Delivery Systems and strides towards creating a UTHSC Research Park; [3] as

VCR I have experience in creating these partnerships as exemplified by my leadership role in establishing the CNY BioAccelerator; [4] and our recent appointment of Dr. Gabor Tigyi as the Associate Vice Chancellor for Research and Industry Relations. In this role, Gabor will lead the efforts towards creating these new partnerships. Dr. Tigyi comes to this new administrative role with strong experience including co-Founding and serving as



Photosource: “Sunshowers” © 2010-2016 Sandrita-87 Courtesy of deviantart.com

Chief Scientific Officer for RxBio Inc., a biotechnology company developed at UTHSC, and serving as an inventor on over twenty patents and disclosures.

We are about to launch an effort to develop increased strategic and sustainable UTHSC- Industry Partnerships. Dr. Tigyi is the right person at UTHSC to lead this effort from the Office of Research as his career has straddled both cultures. We are at the beginning sun-shower stage, of a culture change, but the hard rain is about to fall.

-Steven R. Goodman, Ph.D.
Vice Chancellor for Research

