

Emmy awarded for UT-focused science and technology show

A two-season-old partnership between The University of Toledo and WGTE Public Media is earning accolades for television excellence.

The monthly student-hosted and reported science-and-technology-focused, magazine-style program, “Plugged-In,” earned an Emmy Award in the informational/instructional program series or special category June 19 from the Lower Great Lakes Chapter of the organization.

“Plugged-In” explores the latest innovations in technology and research in northwest Ohio and airs the third Wednesday of each month on WGTE. Each episode presents four stories, with UT students presenting all aspects of the program.

Darren LaShelle, executive producer, and Darin Hohman, segment producer, received the award.

“This program is a great vehicle to not only show off the talent of our UT

students, but also share the expertise and innovation of our UT faculty with the region,” said Lawrence J. Burns, vice president for external affairs and interim vice president for equity and diversity. “This award is proof positive that we are on the right path in terms of how we demonstrate the relevance of The University of Toledo to the outside world.”

“This program is a perfect example of the great things that can happen through partnership and collaboration,” said

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WGTE Executive Producer Darren LaShelle, left, and Segment Producer Darin Hohman won Emmy Awards for “Plugged-In,” which is hosted by Jennifer Mondelli and Shaun McDonald.

Researcher studies how climate change impacts Arctic

By Meghan Cunningham

Dr. Michael Weintraub is spending his summer in one of the colder places in the world.

Weintraub, a University of Toledo assistant professor of environmental sciences, is leading a research team studying soil in the Arctic tundra to gain clues to how climate change will affect the area.

For thousands of years, Arctic plants have been growing faster than they can decompose in the cold tundra soil and there is a risk that as climate change occurs, the warming will significantly accelerate decomposition. If that were to happen, a large amount of carbon dioxide would be released into the air, exacerbating the problem because there is roughly twice as much carbon in soil as in the atmosphere, Weintraub said.

“But it’s too simple a viewpoint that warmer weather will mean more decomposition,” Weintraub said. “We have to think of the seasonality plant growth and soil nutrient availability as well.”

That’s what Weintraub’s team is doing. He is the lead investigator for “The Changing Seasonality of Tundra Plant-Soil Interactions” project in northern Alaska funded with a \$1.6 million grant from the National Science Foundation.

Weintraub is leading a team of 11 people from six different universities who are gathering data on

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ARCTIC ENCOUNTER: Dr. Mike Weintraub took a break from installing stakes to hold down the black cloth used to accelerate snow melt in the Arctic.



Phase one of strategic plan recalibration nearing completion

By Chris Ankney

After more than six months of work, meetings, community meetings, revisions and more work, the first phase of the recalibration of the strategic directions document is almost finished.

Since January, the 100-person-plus strategic planning committee has been working to revise the 2007 “Directions” document to account for real, supposed and probable economic, technological and social challenges, and to more closely align UT’s strategies with those of the University System of Ohio. The group held their most recent meeting of the whole Friday, June 25, and put the finishing touches on the first phase of the recalibration process.

Those final touches included an in-depth discussion on how to integrate the document’s six main goals and more specific sub-goals with each other and the

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USA Today touts UT, Toledo solar and economic development efforts

By Meghan Cunningham

The University of Toledo and the city of Toledo were highlighted in USA Today for swapping the area's Rust Belt image for one of solar energy research and development.

The article was published June 15 on the cover of the national publication's Money section as part of the USA Today's ongoing Seeking Solutions series.

The University's world-renowned research in the areas of photovoltaics and thin-film solar panels was described in-depth, along with UT's relationship with community leaders and businesses to drive the economic development of the region.

"We belong to the community, and our fate is linked inextricably to the community," UT President Lloyd Jacobs was quoted in the article. "We're working daily to create jobs. In fact, it is our single most important motivator."

USA Today reporter Judy Keen also noted the University's effort to educate students in this growing alternative energy field with the Scott Park Campus of Energy and Innovation and the new School of Solar and Advanced Renewable Energy.



See how businesses and colleges in Toledo are making the city a hot spot for the solar industry at money.usatoday.com.

It's an honor: Rosa Zartman, 23, a 2009 University of Toledo grad, works in the school's solar lab. She says she's honored to be "part of the solution to reduce humanity's impact on the world."
By J.D. Poolley for USA TODAY

Solar power helps reinvent Toledo

University works with city to turn technology into jobs

By Judy Keen
USA TODAY

TOLEDO—This city is trying to swap its Rust Belt image for a new identity as a hub of solar-energy research and production. The mission is being led by an unusual partnership of business, academia and government that could be a model for other aging industrial cities. "We are ready to do anything; we are ready to try anything," says University of Toledo President Lloyd Jacobs.

Like many manufacturing cities, Toledo has struggled with

the loss of jobs and tax revenue, but it has taken pieces of its past as the glass capital to create a new future in solar energy. The payoff so far: At least 6,000 people work in the area's solar industry. First Solar, which makes solar panels, was founded here and employs more than 1,000 at its 900,000-square-foot plant here. There are more than a dozen solar-related start-up companies in the area. The University of Toledo is home to top solar researchers and has a business incubator that provides business services to solar entrepreneurs. It has graduated four solar companies and is working with six more. Owens Community College, which had 13 students in its first solar class in 2004, has trained 255 solar installers.

"In the solar world, Toledo is a hot spot," says Xunming Deng, a physics professor on leave from the University of Toledo.

Seeking Solutions is an occasional series on city, state and grass-roots efforts to solve some of the USA's long-standing societal problems.

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Strategic plan

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identified themes of "relevance, sustainability, land use and distinctiveness."

"We want to think about how this document starts to become whole, so that it isn't just six different parts but starts to weave itself together," said Chuck Lehnert, vice president for facilities and construction and co-chair of the strategic planning committee.

For instance, goal one's focus of having a highly ranked and distinctive undergraduate education program includes the sub-goal of increasing participation in study abroad and online learning, which leads to a more sustainable use of energy because fewer students are on campus, and an increased role in global engagement (the main focus of the sixth goal).

For a downloadable PDF version of the draft that will be presented, visit utnews.utoledo.edu. The draft includes input from every constituent group across and outside of the University's campuses, including input from the attendees of six stakeholder meetings held with community members in May.

Getting opinions on the plan from a wide range of people was an important part of the process from early on, Lehnert said. In addition to the six stakeholder meetings, a robust website acts as the strategic plan recalibration online home. The site features full-length videos of every meeting of the whole; minutes, schedules, drafts and member listings from every work group; and pages of contextual information. A Facebook page also allows those interested to get involved and provide instant feedback on the draft document.

"This plan really belongs to the community," Lehnert said. "If it's only put together by a few individuals, then the plans can be very narrow. As we increase our constituent group, the ideals become limitless, more strategic, and we get better results."

In phase two of the recalibration process, implementation plans, measures and metrics will be established using the same process that created and revised the main objectives of "Directions 2010." Also, Lehnert urged more thought in phase two about the fiscal responsibility of the plan.

"We need to have more thought about how to do this in a downside economy. We can't build a plan around 'If I get more money, I can do this,'" he said. "If everything we're doing depends on having a strong economy, money or resources, then we probably need to think more about it."

After the completion of phase two in October, the finished document is tentatively scheduled to be presented to the UT Board of Trustees for a vote in November.

To learn more about the strategic plan and how you can become involved, visit utoledo.edu/strategicplan.

Researcher

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how the timing of plant growth impacts soil nitrogen availability in the tundra, how this timing would be impacted by a warmer climate, and what the implications might be.

Out of their 10 100-meter-square research plots in the Alaskan tundra, five briefly had a black cloth placed over the snow in early May to absorb heat and melt the snow about a week earlier than it would otherwise, and the other half had no manipulation. In areas of all 10 plots, there are clear, open-top chambers that act like mini greenhouses to warm the soil.

In these plots, the team installed sensors to constantly monitor plant growth by measuring greenness and is using a specialized camera lowered into clear tubes in the ground to collect data on root growth.

The team also uses microlysimeters — small porous tubes installed in the ground — to collect soil water and measure its nitrogen content, which is a less invasive way than taking soil samples.

"If we push around the timing of plant growth, do we see plant nutrient uptake from the soil move around in the same way?"

Weintraub asked. "Knowing that will help us develop a better understanding of plant-soil interactions, and we can better develop forecasts to predict what will happen in the future."

Specifically, the team is measuring nitrogen availability in the soil. There is limited availability of this nutrient because most of it is tied up in plants that do not decompose, leaving it inaccessible.

During the growing season, the nitrogen is sucked out of the soil by plant roots, with a pronounced crash in nitrogen availability when roots start to grow, which could occur sooner and prolong the nitrogen-limited time if there is an earlier snowmelt and higher temperatures. The lack of nitrogen could prevent decomposition by inhibiting decomposer microbes in the soil despite the warmer climate, Weintraub said, creating a seasonal interaction between the timing of plant growth and decomposition.

Dr. Anthony Darrouzet-Nardi, a postdoctoral research associate at UT, is part of the team helping to coordinate the fieldwork.

He said he is fascinated by soil nutrients and how they interact with microbes and plant roots, which is really only partially understood.

"I hope that this research improves our understanding of soil nutrient cycling in Arctic ecosystems and provides some useful ideas for the ongoing efforts to predict the effects of global change," he said.

Weintraub, Darrouzet-Nardi and the rest of the team are spending most of this summer and the next in the Arctic, gathering data and analyzing soil nitrogen during the growing seasons. Next year they will accelerate snowmelt in the same plots again. In the final year of the three-year, grant-funded project, they will test their theories along a latitudinal transect to see if the process is similar throughout Arctic ecosystems.

"This is a great opportunity to work on research that people are paying attention to as they try to understand how warming is impacting the Arctic," Weintraub said. "We are studying change as it happens and hopefully gaining a better understanding to predict future changes."

Trustees advance UT-ProMedica partnership, reiterate support for president

By Meghan Cunningham

The partnership between The University of Toledo and ProMedica Health System continues to evolve.

The UT Board of Trustees last week approved the University appointments to the Academic Health Center Corp. that will help oversee and guide the relationship.

Representing UT on the board will be Olivia K. Summons, chair of the UT Board of Trustees; Trustees John S. Szuch and Susan Farrell Palmer; Dr. Joseph Shapiro, professor, chair and associate dean of business development in the Department of Medicine; and Dr. Jeffrey P. Gold.

To reflect Gold's leadership responsibilities for the UT-ProMedica partnership, the trustees approved his new title of chancellor and executive vice president for biosciences and health affairs and dean of the College of Medicine. (Read more on p. 11.)

The trustees also approved a new college that will address the specific needs of adult students. The College of Adult and Lifelong Learning will have adult-friendly processes and services such as prior learning assessment for credit, life coaches and financial planning.

The meeting was the last for Summons, whose eight-year term as a trustee is complete. She began the meeting by reiterating the board's support of President Lloyd Jacobs.

She discussed the recent presidential assessment, crediting Jacobs for blending the cultures of UT and the former Medical University of Ohio in a sustainable way. She acknowledged that change is never easy, and the board remains open to constructive criticism and debate.

Additional trustees expressed their support for Jacobs during the meeting. Incoming Board Chair C. William Fall thanked Jacobs for taking the approach

that an institutional focus is more important than a personal one.

Trustee Dr. Amjad Hussain echoed the comments of Summons and Fall and said it is easier when working to achieve goals to get distracted by noise here or there, but it is important to stay on course. And Trustee William C. Koester added the president has been specifically successful in the area of external affairs.

Monday also was the last board meeting for Cynthia B. Thompson, who was appointed to the MUO Board of Trustees in 2005, and student trustee Krystalyn Weaver, who was appointed to the board in January 2009.

Summons wished the board success as the University continues its journey.

SAVE THE DATE

Thursday, July 22

10 a.m.

Doermann Theater

for a panel discussion
with world-renowned
alternative energy expert
Dr. Sultan Al Jaber

Look for the next
issue of **UT News**
July 12

Membership finalized for three search committees

Search committee memberships for three leadership positions at The University of Toledo have been announced.

In the coming year, searches will be conducted for provost, dean of the College of Law, and dean of the School of Solar and Advanced Renewable Energy. Bill Logie, interim chief transition officer and vice president for human resources and campus safety, will serve as an ex officio member on all three searches.

Provost search committee members are:

- Dr. Nagi Naganathan (chair), dean of the College of Engineering;
- Dr. Lawrence Fink, associate professor of management;
- Dr. Jeffrey P. Gold, chancellor and executive vice president for biosciences and health affairs and dean of the College of Medicine;
- Dr. Richard Komuniecki, Distinguished University Professor of Biological Sciences;
- Dr. Chris Lynn, associate professor and co-director of the General Internal Medicine Division;
- Dr. Susan Pocotte, associate professor of nursing;
- Dr. Mary Powers, associate professor of pharmacy practice and Faculty Senate president;
- Matt Rubin, Student Government president;
- Dr. Alice Skeens, associate professor of psychology and associate dean of the College of Arts and Sciences; and
- Kevin West, interim vice provost for faculty affairs, senior director for faculty labor relations and interim director of the Office of Institutional Diversity.

College of Law dean search committee members are:

- Dr. Thomas Gutteridge (chair), dean of the College of Business Administration;
- Pete Casey, attorney with Eastman & Smith, Toledo;

- Claudia Dansby, head of acquisitions in the UT LaValley Law Library;
- Breanne Democko, law student and student assistant in the UT Office of General Counsel;
- Susan Martyn, professor of law;
- Kelly Moore, assistant professor of law;
- Katherine O'Connell, legal writing professor;
- Dr. Kaye Patten Wallace, vice president for student affairs;
- Nicole Porter, professor of law;
- Vern Snyder, vice president for institutional advancement;
- Mike Todak, attorney with LaValley, LaValley, Todak & Schaefer, Sylvania; and
- Judge Norman Zimmelman of the Lucas County Domestic Relations.

School of Solar and Advanced Renewable Energy dean search committee members are:

- John Barrett (chair), associate professor of law;
- Aaron Baker, government relations specialist;
- Dr. Frank Calzonetti, vice president for research and economic development;
- Dr. Robert Collins, Nippon Electric Glass Endowed Chair and professor of physics;
- Dr. Al Compaan, professor of physics;
- Lila Dahal, graduate student in photovoltaics;
- Dr. Isabel Escobar, associate professor of chemical and environmental engineering;
- Dr. Nina McClelland, dean of the College of Arts and Sciences and interim dean of the School of Solar and Advanced Renewable Energy;
- Dr. Alan Pinkerton, professor and chair of chemistry; and
- Richard Stansley, board chair of UT Innovation Enterprises.

Engineering students ride in reduced gravity with NASA

By Josh Martin

While most people probably would recoil from the notion of riding something called a “Vomit Comet,” a group of five University of Toledo bioengineering students and a faculty member jumped at the opportunity.

The UT team was one of only 14 selected nationwide and was in good company with teams from MIT, Ohio State, Purdue and Yale.

David Mette, Katie Kodrich, Allison Pitchler, Blaine Best, Kyle Killam and Dr. Constantine Demetropoulos, research associate professor of bioengineering, conducted a microgravity experiment for NASA in April aboard an aircraft, often referred to as the “Vomit Comet,” used to simulate weightlessness for its passengers. The euphemistic designation derives from the tendency of the passengers to become airsick during the flight.

“The experience was truly unique,” said Mette, adding he could characterize it only as “indescribable.” The effect lasted for 15 to 25 seconds “depending on the weather and the pilot’s course of action,” he said.

The group went weightless a total of 28 times during testing — and no one became sick.

The venture was part of the students’ senior design project, a requirement for engineering students to graduate. Mette said he discovered the Reduced Gravity Student Flight Opportunities Program online and the group agreed “they wanted do something

cool.” They applied to the NASA program and were accepted in December 2009.

For the project, they decided to devise a “sharps container” for use on the International Space Station orbiting Earth. These receptacles are designed to contain used syringes and related liquids in a zero-gravity environment — a situation that presents unique dangers to astronauts. Two prototypes of the container were developed and tested by the group at zero gravity.

“The first prototype — which depended on a gel layer for the sharp objects to be inserted into — did not succeed as it leaked liquid,” Mette said.

The second prototype was successful at containing the six objects and the water inserted in it for the test. Mette said it used “rubber flaps in a crisscross pattern that would quickly reseal after an object was inserted and had walls lined with liquid absorbent inside.”

The aircraft achieves zero gravity by flying along a parabolic trajectory relative to the planet’s center, similar to a roller coaster. During the 45-degree angle of ascent and descent, gravity is approximately twice as strong as normally felt on Earth. But as the aircraft moves up and over the apex of the climb, the passengers essentially are orbiting the Earth and attain weightlessness. The pattern is repeated several times.

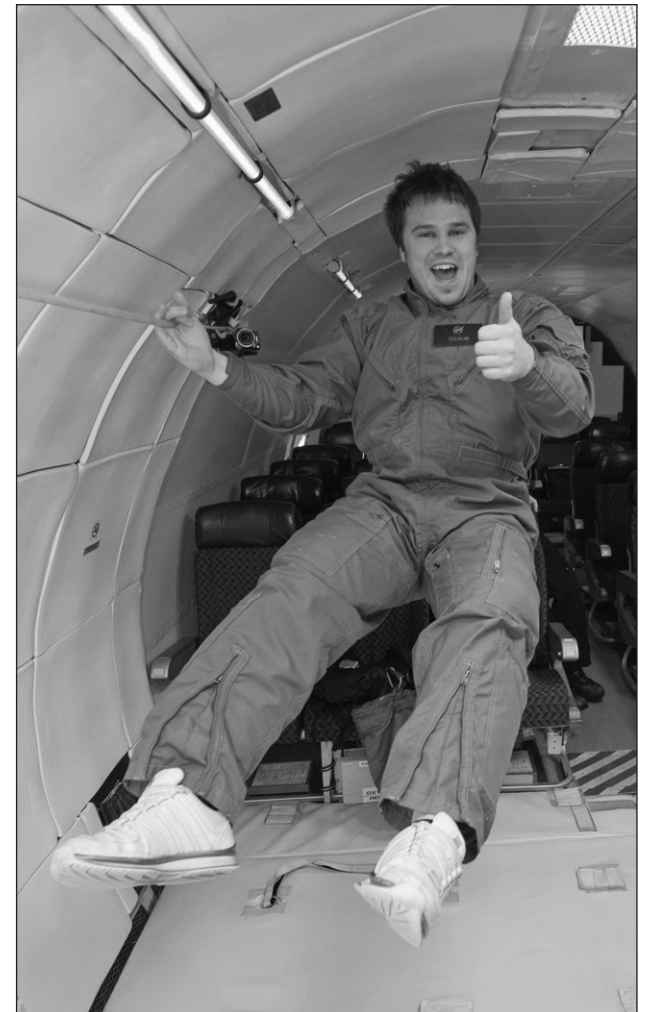
“Being a part of this experience was a rare honor,” said Demetropoulos, who valued seeing the students apply what they

learned in their classes to the design task. “Following a year of hard work, the visit to Houston allowed our students to showcase their abilities among a field of students from other top academic programs throughout the country. I was proud to be associated with their effort.”

“This was a great opportunity for our students, and I am delighted that they ambitiously pursued it and were successful,” said Dr. Nagi Naganathan, dean of the College of Engineering. “I want to thank Professor Ron Fournier of our Bioengineering Department for serving as the faculty mentor for our student team and for encouraging our students to pursue such unique experiences.”

Mette also was proud of the work and optimistic about its future impact.

“Hopefully working with NASA is something that students and faculty at UT can participate regularly in further down the road and have it become a tradition,” he said.



DEFYING GRAVITY: UT bioengineering student Kyle Killam gave a thumb’s up while riding in NASA’s “Vomit Comet.”

Bioengineering professor receives lifetime achievement award

By Josh Martin

One might say that scholastic achievement has been the “backbone” of Dr. Vijay Goel’s academic career. This statement about the Distinguished University Professor of Bioengineering was reaffirmed recently when he received the International Society for the Study of the Lumbar Spine’s (ISSLS) Wiltse Lifetime Achievement Award.

Goel is the Endowed Chair and McMaster Gardner Professor of Orthopedic Bioengineering in the College of Engineering and the College of Medicine and co-director of the Engineering Center for Orthopedic Research Excellence at UT.

The annual award is given to scientists, clinicians and basic science researchers responsible for exceptional achievement in the field of spinal medicine, according to

the group’s website. He received the award April 16 during the organization’s annual meeting in Auckland, New Zealand.

Even though it is his third such award, having received two other recognitions for his lifetime of achievements from similar organizations, Goel said he felt surprised and blessed to have won the ISSLS prize after his first nomination.

“I never thought even for a second that I would get the award, especially at the first submission — so much so that I did not make any reservations to attend the Auckland meeting, being far away,” he said.

Goel has an internationally recognized 30-year academic career in bioengineering work on spinal diseases and mechanics,



Dr. Vijay Goel, right, received the Wiltse Lifetime Achievement Award from Robert Moore, secretary of the International Society for the Study of the Lumbar Spine.

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Lake Erie wets down teachers, students while firing scientific excitement

By Cynthia Nowak

The suntan-lotion fragrance couldn't entirely overpower some of the other scents: decomposing mayflies, for example, and the sweat that comes with hours spent dredging sediment samples from the floor of Lake Erie.

But it was all the smell of science to the eager participants — UT faculty and students, plus Toledo Public Schools teachers — in a two-week learning project that took them onto the lake and into the labs of UT's Lake Erie Center.

The object of their scrutiny was the plume of warm water exiting the Bay Shore Power Station in Oregon. That warmth is creating an environmental micro-system that until now hasn't been studied in much detail, explained Dr. Daryl Moorhead, one of four UT professors of environmental sciences involved in this summer's research; the others are Drs. Timothy Fisher, Hans Gottgens and Carol Stepien.

"That little area on the output side of the power station is kind of a different microcosm," Moorhead said. "The water is much warmer than it would normally be and provides a refuge for organisms that wouldn't normally do well in the lake. So the *Corbicula* — Asian clams — are doing quite well in that area, but *Dreissena* — zebra mussels — aren't quite as prevalent as we thought they would be." Both are invasive species; both have in the past 20 years lived and died in such tremendous numbers that their shells have formed a new layer of material on the lake bottom.

"A lot of native species seem to have adapted to this substrate," he noted. "Mayflies, for instance, which are critical food for lake

fish, live most of their lives underwater, and they're in this substrate."

It's uncharted territory, he added: "Who knows what's going to happen?" The research topic, he said, was based on suggestions from last year's project participants, many of whom were back. "They're interested in energy, in the lake and in the interaction between the two."

Different aspects of the ongoing project are funded through various sources. The GK-12 Program — which pairs UT graduate students with local K-12 science teachers — is supported by the National Science Foundation (NSF) through a grant, "Graduate Fellows in High School STEM Education: An Environmental Science Learning Community at the Land-Lake Ecosystem Interface." IMPACT (Inquiry Masters Program for Advancing Content for Teachers), funded by the U.S. Department of Education, allows teachers of grades four through 12 the chance to earn a master's degree in biology within two years.

Moorhead noted that many K-12 science teachers receive little exposure to hands-on science in the course of their education. "So when they get to a research site, we want them to ask student questions, not teacher questions. Rather than 'How can I teach this?' they can get excited by the science itself. I'm hoping that attitude comes back into their classrooms."

Judging by Wendy Wilson, who teaches science at Start High School, it does. She enjoyed the sediment-sampling trips out onto the lake via pontoon boat and Zodiac, wishing her own students could share the experience. "It's important for them to see how science

applies to the place they live," she said. "And as part of this learning community, I can share ideas with other science teachers and with science researchers."

The hands-on aspect — unique in the other such NSF-funded projects nationwide — makes the experience especially valuable, said Tamara Smith, a teacher at Rogers High School who was back in the lab weighing the sediment and tallying the living creatures collected. "We see and do things we don't normally get to experience."

And they'll have bragging rights, Moorhead noted. "This truly is a preliminary research project. The data they've collected will be among the first of its kind."

The faculty hope to publish one or more papers on the research, not only expanding the science but also providing a foundation to fund more such projects — and more such learning communities.



Photo by Daniel Miller

BOTTOM FEEDING: Todd Krail, UT graduate student in biology, prepared to lower away, collecting samples from Lake Erie that researchers hope will reveal patterns in aquatic communities.

Bioengineering professor

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as well as more broadly in orthopedic and dental biomechanics.

Early in his career, he was a pioneer of three-dimensional finite element modeling of orthopedic implant-constructs and studied their load-displacement behavior. He later developed finite element models of ligamentous spinal sections at the University of Iowa, where he established the Iowa Spine Research Center.

In 2000, he joined UT as professor and chair of bioengineering and helped build from the ground up the orthopedic

departmental tract comprised of courses and labs. He also collaborated with the MUO Department of Orthopedic Surgery to establish the UT Spine Research Center.

Goel has authored more than 260 peer-reviewed articles as well as two textbooks and has delivered more than 450 presentations on scientific and clinical matters. He is also a member of the editorial boards of several prominent journals.

He continues to work on spinal implants and uses his finite elements method

to spur commercialization and economic growth as a consultant and scientific adviser.

"Dr. Goel is one of our most accomplished faculty members. His contributions to the broader community through his work on the mobility of spine and the design of spinal implants is truly outstanding," said Dr. Nagi Naganathan, dean of the College of Engineering. "The ISLLS Lifetime Achievement Award is a significant celebration of his scholastic achievements."

While at UT, Goel also has secured more than \$19 million in extramural funding from national and international industries and federal and state agencies. One of his recent submissions to Ohio's Third Frontier Ohio Research Scholar Program resulted in a grant award of \$4.6 million that will allow UT to recruit another accomplished scholar in the area of spinal implants.

Researcher takes creative approach to solving child nutrition issue

By Meghan Cunningham

A University of Toledo professor has an idea to solve the problem of chronic diarrhea, a large cause of infant mortality in developing countries, that is so simple it might just work.

Dr. Hironori Matsushima, a research assistant professor in the UT Department of Medical Microbiology and Immunology, proposes a powdered milk that could be produced with antimicrobial proteins allowing it to be mixed with virtually any water source and be safe to drink. And this enhanced milk would kill the pathogens such as *E. coli* and salmonella that cause diarrhea, the problem that is responsible for 1.5 million children under the age of 5 dying every year in developing countries.

Not only would it provide the necessary proteins to prevent gastrointestinal bacterial infections that lead to digestive problems, but the powdered milk product also would provide necessary nutrition to these young children.

“I had never really thought of diarrhea as such a serious problem, but it is for children in developing countries,” Matsushima said. “I started to think about how to help and came up with this idea. It really could be a relatively easy solution to a widespread problem.”

It’s a much less expensive approach than providing antibiotics to these countries or attempting a complete overhaul of water resources for cleaner drinking and food options, said Dr. Akira Takashima, professor and chair of the Department of Medical Microbiology and Immunology, who is assisting Matsushima with the research.

The Bill & Melinda Gates Foundation also saw merit in the idea and awarded a \$100,000 Grand Challenges Explorations grant that promotes innovation in global health.

UT’s project is one of 78 grants awarded in the fourth round of the initiative that helps scientists explore bold and largely unproven ways to improve health in developing countries.

So how exactly would the correct antimicrobial proteins get into the powdered milk to help the children? It starts with the cows.

Matsushima and Takashima explain that mammals are capable of producing antibiotics, so the plan is to engineer cows to produce milk containing human



Photo by Daniel Miller

Dr. Hironori Matsushima, left, and Dr. Akira Takashima look at a culture dish to see if the antimicrobial proteins can kill bacteria. The researchers plan to incorporate those proteins into a powdered milk that would help solve the problem of chronic diarrhea in children of developing countries.

antibiotics, specifically the peptidoglycan recognition protein-1. The milk from those transgenic cows will be turned into powdered milk that can be stored for long periods without refrigeration.

When that milk is mixed with water and ingested, those human antimicrobial proteins will work with the stomach acids to combat bacteria that would otherwise cause diarrhea.

Matsushima, with Takashima and doctoral student Yi Yao, first will test the antibiotic proteins in the lab against common pathogens to confirm it is the best to counteract those bacteria and will work successfully in the powdered milk form.

If successful, the team will pursue additional funding to test the concept in mice and then cows.

“Simple is the best,” Takashima said. “This is really a creative and interesting approach that could address the massive problem of chronic diarrhea in these

young children and at the same time provide a nutritious and preventive care method with continued drinking of this milk. It could indeed be a breakthrough.”

The funding from the Gates Foundation program is a highly competitive process with nearly 2,700 proposals submitted for this round. Scientists such as Matsushima who received the awards represent 18 countries on six continents.

“The winners of these grants show the bold thinking we need to tackle some of the world’s greatest health challenges,” said Dr. Tachi Yamada, president of the Gates Foundation’s Global Health Program. “I’m excited about their ideas and look forward to seeing some of these exploratory projects turn into life-saving breakthroughs.”

Ohio Gov. Ted Strickland will join UT President Lloyd Jacobs for an important announcement about the economic future of UT and northwest Ohio Wednesday, June 30, from 1:15 to 2:15 p.m. in the glass concourse on the Scott Park Campus of Energy and Innovation. All are welcome to attend.



Photo by Daniel Miller

ANOTHER GRADUATE: Katie J. Wambold, daughter of Dr. Suzanne Wambold, professor and chair of health professions, graduated magna cum laude last month with a bachelor of science degree in health information management. Katie passed the American Health Information Management Association credentialing exam, which earned her the registered health information administrator designation that is considered the gold standard in this field. She received the UT Pride Scholarship, the Health Information Management Scholarship and the 2010 Northwest Ohio Health Information Association New Graduate Award. Katie, who works for a Toledo chiropractor and is responsible for billing, has started course work toward a graduate degree in health informatics at the University of Findlay.

In memoriam

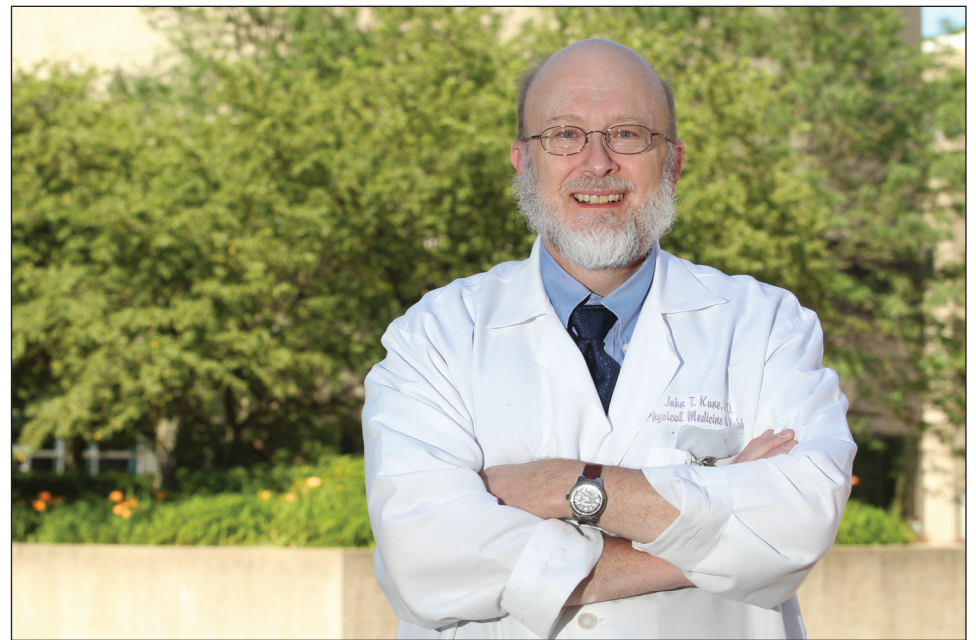
Gloria A. (Dzingleski) Dittmer, Toledo, a custodial worker at MCO from 1970 until her retirement in 2005, died June 9 at age 83.

Barbara L. Fuller, Maumee, a health unit coordinator at MCO from 1980 to 1995, died June 9 at age 71.

Jan A. (Adams) Kistler, Toledo, former medical technologist at MCO, died June 10 at age 74.

Ann W. Locher, Sylvania, clinical nurse specialist who coordinated the Ryan White Program at UT Medical Center since it was first funded in 2000, died June 6 at age 58 of an aneurysm. She worked at MCO since 1973. An AIDS-certified registered nurse with a 1977 bachelor of science degree and a 1995 graduate degree in clinical nursing, both from UT, she opened northwest Ohio's first grant-funded HIV testing clinic in 1985. She was nationally recognized for her work in HIV education and treatment, also receiving the Outstanding Alumna Award for Distinguished Service from the UT nursing alumni affiliate in 2008, the Ruppert Scholarship for Academic Excellence from the Academy of Medicine of Toledo and Lucas County, and the Ohio Department of Health AIDS Service Award. The family suggests those wishing to make a donation consider the Ann Wayson Locher Memorial Fund for HIV Care, a fund for direct patient care she helped establish that was named in her honor. Contributions may be made to the fund online at www.utfoundation.org or sent to the UT Foundation, Mail Stop 319, 2801 W. Bancroft St., Toledo, OH 43606.

New chief of staff cites leadership goals



Kane

Photo by Daniel Miller

By Kim Goodin

Communication is central to several goals set by Dr. John Kane as he begins his term as the University's 23rd chief of staff.

Kane, associate professor and service chief of physical medicine and rehabilitation in the Department of Orthopedic Surgery, assumes the position July 1 as the University braces for significant changes due to federal legislation, community partnerships and technological advances.

"My goals include five key components: facilitating effective communication, increasing knowledge of what we do as a health-care team, creating an atmosphere of mutual respect, striving for the highest quality of care for our patients, and making sure the medical staff is well-represented as medicine continues to evolve," Kane said.

The first priority, he added, is to enhance teamwork for optimum patient care.

"We all need to work together to be the best team," Kane said, noting that in his specialty, he has practiced team management since his residency days. "I've learned some principles I'd like to facilitate in the name of more collegial, positive communication."

He references strategies of best-selling author John Nance, whose book, *Why Hospitals Should Fly: The Ultimate Flight Plan to Patient Safety and Quality Care*, outlines barriers to better practices.

Nance returns to UT this week for several follow-up programs with UT physicians, faculty, staff and students. Kathleen Bartholomew, registered nurse, noted author and Nance's spouse, will join him.

Kane believes feedback from the medical staff will be crucial as the hospital transitions into the era of health-care reform.

"We're being told we'll have to do more with less," Kane said. "We have to cut expenses, but the patients' needs still must come first."

The medical staff leadership with two-year terms will be Vice Chief of Staff Dr. Kristopher Brickman, associate professor, chair and clinical service chief, Department of Emergency Medicine; Secretary/Treasurer Dr. Alan P. Marco, professor, chair and clinical service chief, Department of Anesthesiology; and Member-at-Large Dr. Munier M. Nazzal, professor and director of the Vascular Lab, Department of Surgery.

Emmy

continued from p. 1

Tobin J. Klinger, associate vice president for university communications and marketing operations, and UT lead on the project. "And that collaboration extends beyond University Communications and WGTE. It includes the faculty who take the time to participate in the segments, the colleges and departments that support it financially, and the students who bring it all together."

Support for the program also comes from UT's College of Engineering, Office

of Research and Development, College of Business Administration, College of Health and Human Service, and the College of Nursing. LAUNCH, a technology-based business incubation program of the Regional Growth Partnership, also provided support for "Plugged-In."

To view previous segments from the show, visit youtube.com/utoledo and click on the "Plugged-In" channel along the right side of the page.

Dark chocolate can prevent stroke damage

By Meghan Cunningham

You should eat more chocolate. Really. But it has to be the dark kind.

A few bites of dark chocolate a day can help prevent extensive brain injury from a stroke, according to research by Dr. Zahoor Shah, UT assistant professor of medicinal and biological chemistry.

“It doesn’t give you a license to eat chocolate all day, every day,” he said. “But chocolate can be good for you.”

Before coming to UT, Shah was a member of a research team at Johns Hopkins University that studied the effects of epicatechin, found abundantly in cocoa, both before and after a stroke. Their study recently was published in the *Journal of Cerebral Blood Flow & Metabolism*.

The researchers gave mice a small amount of epicatechin, a polyphenol antioxidant, 1.5 hours before a stroke was induced and 3.5 hours after a stroke. In both cases, the neurological defects were less pronounced in the mice that had digested the epicatechin than in the mice in the control group.

And not only did the mice that “ate” epicatechin have better mobility and function, but there was a lower mortality rate. In fact, none of the mice that received it after the stroke died, Shah said.

Strokes are the aggregation of blood cells and clots that block the blood flow, and the dark chocolate works to combat that by helping dissolve platelets, lower blood pressure and enhance blood flow, he said.

Other studies have shown that epicatechin, which also is found in green tea and grapes but more abundantly in cocoa, has positive effects on people with cancer, cardiovascular diseases, diabetes and other conditions, Shah said.

It’s important that it is the dark chocolate, because milk chocolate and other forms have sugars and other ingredients added that make them sweeter but reduce the health benefits.

“The rule: The more bitter the chocolate, the healthier it is,” Shah said. “If you have a dark chocolate bar, I would say eat three squares or bites a day. That’s what I do and I hide the rest so I don’t eat more. I started on a chocolate regime after this research because I really believe in its benefits.”

Shah said he enjoys conducting research on the healthy effects of things found in nature and is embarking on a similar study to investigate the

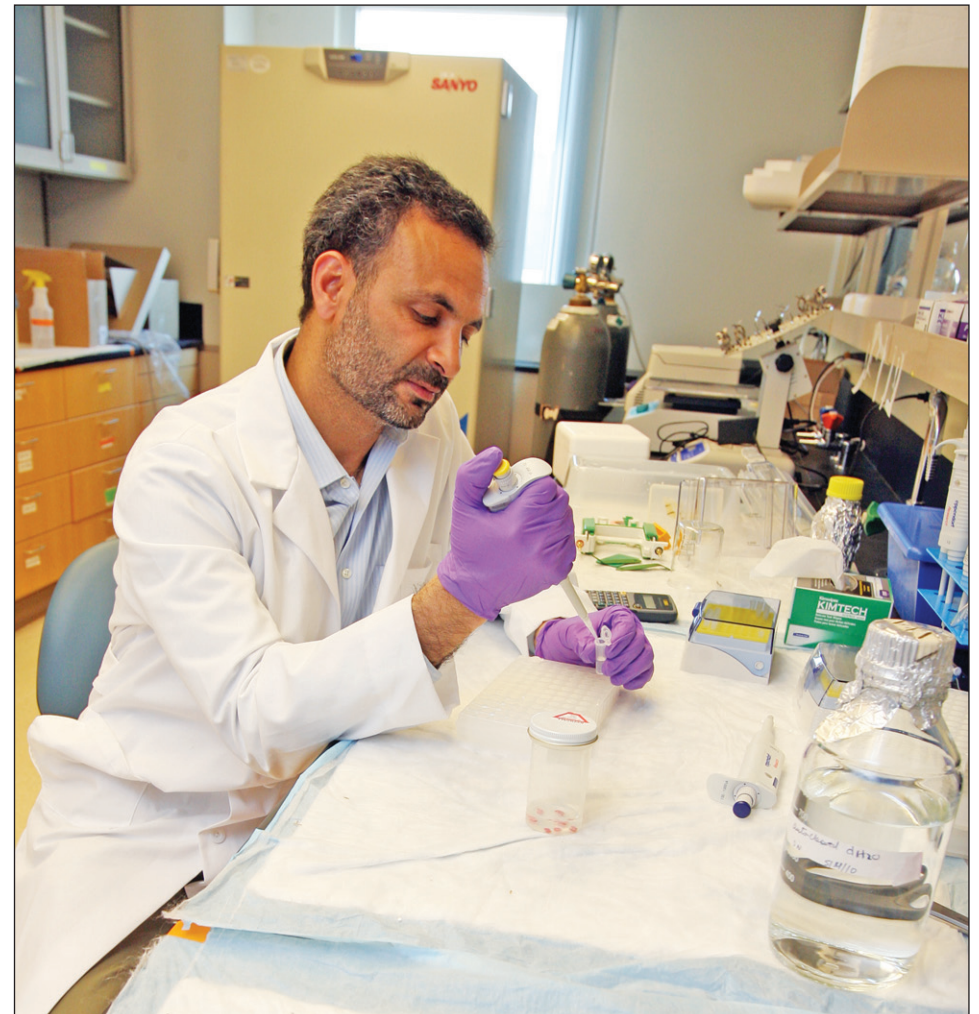
preventative nature of Ginkgo biloba on stroke damage.

“These are natural products that don’t have side effects,” he said. “My interest is to see what these natural products have to offer us and the ways we can take advantage.”

UT College of Pharmacy Dean Dr. Johnnie Early II said it is unique research from quality faculty members like Shah that helps the college maintain its reputation as a leader in the discipline.


“Shah’s research is not only advancing scientific knowledge, but he is finding ways to help people lead healthier lives and that is the goal of all of us who work in health care,” Early said.

To read the article on Shah’s research in *Cerebral Blood Flow & Metabolism*, visit www.nature.com/jcbfm/journal/vaop/ncurrent/abs/jcbfm201053a.html.



IN THE LAB: Dr. Zahoor Shah is conducting research on the preventative nature of Ginkgo biloba on stroke damage.

Photo by Daniel Miller




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UT receives grant to build algae biofuels research facility at Scott Park Campus

By Meghan Cunningham

A research and development facility for algae biofuels soon will be built on The University of Toledo Scott Park Campus of Energy and Innovation.

The pilot-scale facility is part of a research project recently awarded a nearly \$3 million grant through the Ohio Third Frontier Wright Projects Program that links research capabilities of Ohio colleges, universities and nonprofit research institutions with the needs of industry in the state.

Ohio University and UT are leading the three-year Center for Algal Engineering Research and Commercialization project that has a dozen collaborators, including many Ohio businesses involved in the energy industry.

For UT's part, the half-acre facility at Scott Park will be constructed to include open ponds, ponds in a greenhouse and enclosed photobioreactors to test efficiency of a variety of growth systems. The facility also will have pilot-scale "downstream processing" capabilities where the algae materials could be converted to fuel — a complete system, said Dr. Sridhar Viamajala, UT assistant professor of chemical and environmental engineering and a principal investigator of the project.

"What we would like is not only for University researchers to use the facility, but also to invite our business partners to come here and test their ideas," Viamajala said. "We will look at what types of strains produce the best types of fuel, optimal ways to grow them, and the most economical approaches for conversion of feedstock into fuel."

The oil from algae can be used to make fuel, just as soybean and vegetable oil can, but the difference is that algae are not a food source. Algae don't need clean water or high-quality land to grow, and because they are simple, single-celled organisms, they grow much faster than more complicated plants, Viamajala said.

But creating fuel from algae is not yet done commercially. This research project will help advance the best practices of doing so and put Ohio on the map in this field.

Dr. David Bayless, Ohio University's Loehr Professor of Mechanical Engineering, said UT's role is instrumental in the research project because it will create a place for researchers and industry to test different aspects of algae. OU already has such a facility and will increase its analysis through this project, Bayless said.

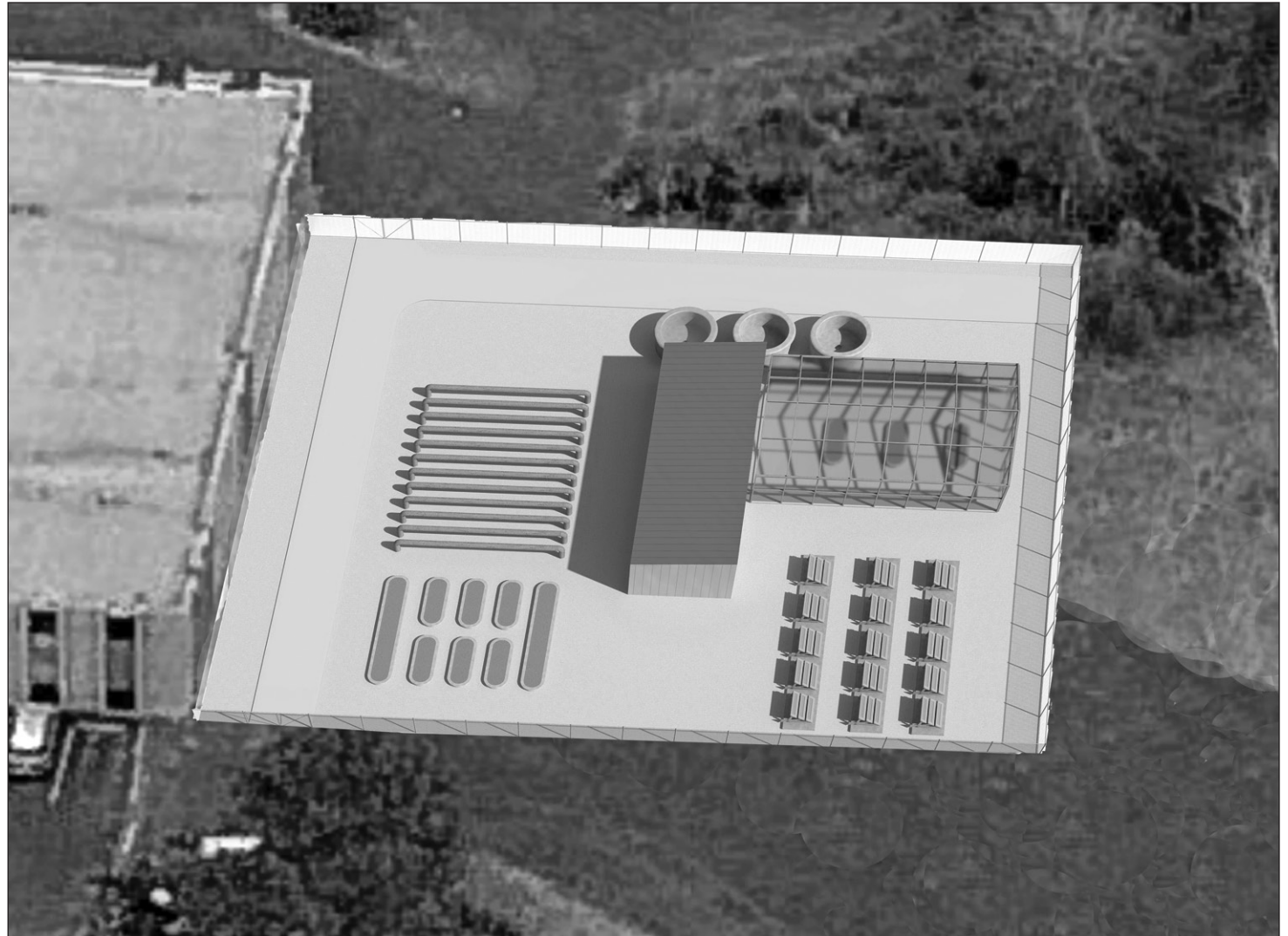


Image courtesy of SSOE Group

This rendering by SSOE Group shows the Center for Algal Engineering Research and Commercialization that will be built on the Scott Park Campus of Energy and Innovation and include open ponds, ponds in a greenhouse and enclosed photobioreactors to test the efficiency of different growth systems. It also will have pilot-scale capabilities of converting the algae materials grown there into fuel.

"Ohio is in a race with the southwestern states when it comes to algae," he said. "But Ohio has something they don't — fresh water. You need a lot of water to grow algae, and at The University of Toledo the plan is to focus on Lake Erie algae that are adapted to local environmental conditions."

UT College of Engineering Dean Dr. Nagi Naganathan said the ability to facilitate vibrant university-industry partnerships will accelerate the development and growth in the field of algal biofuels.

"Rather than having our University researchers do their own testing in the lab and the businesses doing their own development, we will combine our resources for the greater benefit," Naganathan said. "This will allow real-world testing that isn't being done now, and we can only imagine the quality and quantity of products that will materialize from this

partnership. This is especially pleasing to see one of our young faculty members, Dr. Viamajala, actively engage and lead such an important technology transfer and economic development initiative."

Naganathan also recognized the support from several individuals that made this possible: Chuck Lehnert, vice president for facilities and construction; Dr. Frank Calzonetti, vice president for research and development; and Tony Damon, CEO of SSOE Inc., and his staff.

"This has been truly a team effort," Naganathan said.

The additional partners on the state algal biofuels project are: Algae Producers of America, Center for Innovative Food Technologies, Recombinant Innovation, Harrison County Engineer, Red Lion Bio-Energy, Midwest Biorenewables,

Lubrizon, Independence Bio-Products, Tri-County Career Center, Parker Hannifin and Univenture.

The Ohio Third Frontier Wright Projects Program awarded a total of more than \$20 million in funding to advance the state's key technology sectors by supporting improvements to colleges, universities and research institutions, which in turn support the commercialization objectives of Ohio companies.

"Our colleges, universities and research institutions are developing Ohio's next entrepreneurs, and the Ohio Third Frontier is connecting our students with the technologies of the future," Ohio Gov. Ted Strickland said. "The Wright Projects Program is helping prepare Ohioans for the new kinds of jobs our economy is creating."

Better. Together.

The University of Toledo and ProMedica Health System are working together like never before. This new relationship is a model for how universities and health-care systems can collaborate. And that's good news for northwest Ohio.

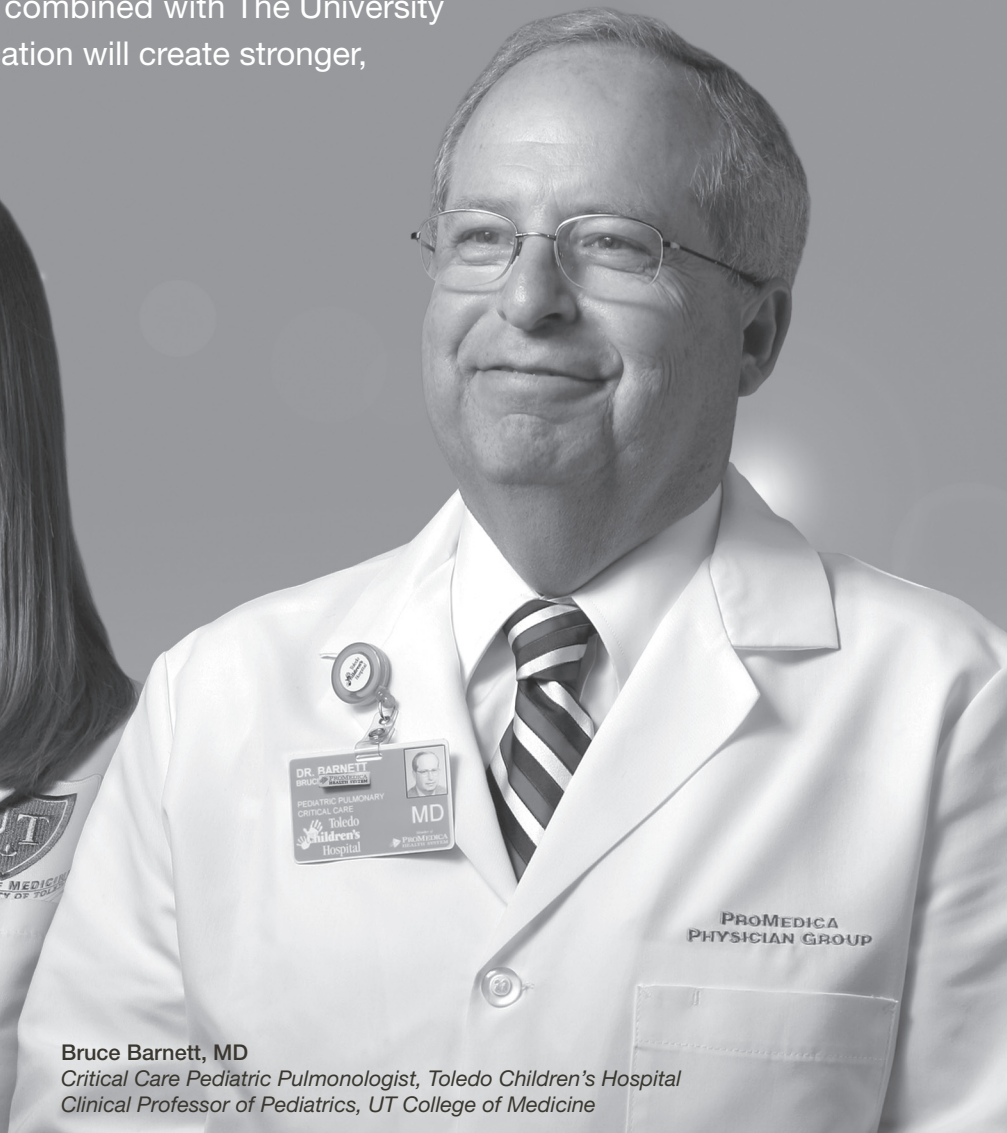
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Jenn Kelbley
UT College of Medicine Graduate, June 2010
The Toledo Hospital, Family Medicine Resident, July 2010



Bruce Barnett, MD
Critical Care Pediatric Pulmonologist, Toledo Children's Hospital
Clinical Professor of Pediatrics, UT College of Medicine



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Gold discusses new role in UT-ProMedica partnership

By Meghan Cunningham

Dr. Jeffrey P. Gold has a new title: chancellor and executive vice president of biosciences and health affairs and dean of the College of Medicine.

The chancellor role will retain the full responsibilities as the chief academic officer for all of the health science colleges and programs, which will allow for enhanced collaboration not only on the education and research aspect of the University's mission, but also on the engagement and clinical care aspects.

Gold answered some questions about his new role.

Can you explain your new title and responsibilities as a result of the partnership between The University of Toledo and ProMedica Health System?

The new title is chancellor and executive vice president of biosciences and health affairs. This title represents the addition of responsibilities to oversee the expansion of the educational and research programs as it relates to our new footprint in the ProMedica Health System and to continue to work hard to bring the health-care academics and delivery systems of our region together. In addition, given the recently passed national health-care reform, numerous regional and university opportunities will need to be managed to avail ourselves and our patients of the very best continued health care. All of this is now embodied under the responsibility of this new title.

You have spoken about the Club of 100 top academic medical institutions. How will this partnership help elevate UT to that club?

This partnership through the increase of the number of health-care professional education opportunities and through the expansion of our clinical research programs will move us much closer to status as a top-tier academic health center. Through a partnership with a large, highly integrated clinical delivery system, we will be able to expand and enhance learning opportunities for our students and residents in the community and hopefully minimize the need for out-migration for educational purposes, as well as for purposes of enrollment in clinical trials. This should hopefully allow us to recruit the best and the brightest of our students to stay in the northwest Ohio community and form the future generation of health-care providers.

When the partnership was signed on May 17, you said that the real work lies ahead. What has happened since the relationship became official? And what can be expected in the future?

The relationship calls for the development of not only a University of Toledo-ProMedica Health System Academic Health Center Board of Trustees, but also for an operations committee. This board and this operations council have been formed and the individuals have been meeting on a regular basis. The first formal meeting of the board will occur June 28 and it will continue to meet monthly or at more frequent intervals as an overall strategic plan for the enhancement of academic services and relationships is formed. Multiple meetings, tours and other informal sessions on the ProMedica campus have occurred with the senior leadership of the academic teams from the health science colleges in order to begin to build the relationships that will form the basis of moving this agreement forward. While this will no doubt be hard work, it will also be extremely gratifying.

How does this partnership impact the larger issues that have been the topic of conversation at the University for some time regarding graduate medical education in the Toledo area and the anticipated physician shortage that we face?

As many know, the shortage of graduate medical education (residents and fellows) in medicine, pharmacy, nursing and other specialties has a current and increasingly critical impact on the health-care delivery work force of northwest Ohio. We already have substantially fewer physicians and other types of health-care providers than many other parts of the country and many other parts of the state. And as the work force continues to age and the demand for health-care continues to rise due to the aging of the baby boomer population and enhanced ability to treat and prevent disease, the demand will continue to rise by identifying new and better opportunities to educate the next generation of health-care providers. We will hopefully prevent these young men and women from leaving our region and hopefully motivate them to stay in our region and care for our friends and families.

UTMC ranks highly in surgical care measurements

By Meghan Cunningham

The University of Toledo Medical Center's surgical care measurements have never been better.

UTMC, along with most other hospitals in the country, documents and reports a series of measures related to care before and after surgery. Those overall core measurements in the Surgical Care Improvement Project are all at target, with a number of them at 100 percent.

"The data shows we are among the top performing hospitals in the United States," said Dr. Ronald McGinnis, UT associate dean for clinical affairs and UTMC medical director. "You can be assured of quality care taking place here, and we have the measurements to show it does."

Measurements include providing the right antibiotics at the right time before surgery, maintaining a patient's temperature, taking measures to avoid clots, and more.

Through the implementation of the Surgical Care Improvement Project guidelines, UTMC has improved patient care in a short amount of time. The medical center instituted new forms, held numerous educational sessions and meetings, and began a daily monitoring of these care measures to increase its compliance with guidelines.

For its efforts, UTMC was selected to participate in the University HealthSystem

Consortium safety and quality forum this fall in San Diego, where McGinnis will share the hospital's progress in increasing its ratings on the measurements.

Correcting the documentation was a major component of meeting the guidelines. For example, physicians switched several years ago to clipping hair around a surgical site rather than shaving it because it is cleaner and there is less risk for an infection. But sometimes on the charts, the documentation would continue to list that the patient was shaved when actually the hair was clipped, McGinnis said.

"People were getting excellent care before and they are getting excellent care now, but now we are doing a much better job of documenting that care," McGinnis said.

And as new guidelines have been added, such as removing a urinary catheter within two days of surgery, UTMC has been able to meet the target right off because of its close attention to evidence-based practices, McGinnis said.

In addition to its high scores for the surgical care measurements, UTMC is rated in the top 10 percent of all hospitals with its acute myocardial infarction care measurements. The medical center also is highly ranked on the congestive heart failure and pneumonia measurements, McGinnis said.

UTNEWS

UT News is published for faculty, staff and students by the University Communications Office weekly during the academic year and periodically during the summer. Copies are mailed to employees and placed in newsstands on the Main, Health Science, Scott Park and Toledo Museum of Art campuses. UT News strives to present accurate, fair and timely communication of interest to employees. Story ideas and comments from the UT community are welcome. Send information by campus mail to #949, University Communications Office, Vicki Kroll. E-mail: vicki.kroll@utoledo.edu. Fax: 419.530.4618. Phone: 419.530.2248. Mailing address: University Communications Office, The University of Toledo, Toledo, OH 43606-3390.

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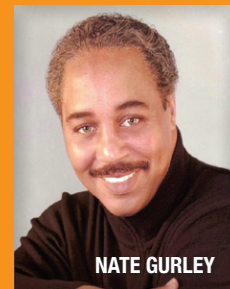
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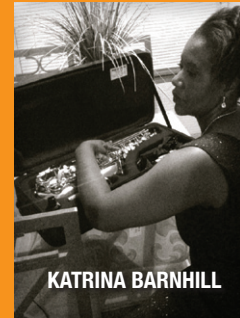
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