

@PittInnovates



 UNIVERSITY OF PITTSBURGH
innovation
INSTITUTE

2014 Annual Report

We continue to foster strong partnerships across campus and beyond that spark creative, innovative, and collaborative collisions of ideas, leading to fascinating new innovations, as you'll read in this year's annual report.

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Thriving Innovation at Pitt



nnovation is alive and thriving at the University of Pittsburgh.

Whether we're talking about Pitt Innovators who submitted nearly 300 invention disclosures to the University for commercial consideration in fiscal year 2014, the more than 125 students who recently competed for \$100,000 in prizes in the Randall Family Big Idea Competition, the dozens on campus who participated in Institute education programs, the more than 600 local entrepreneurs who received assistance here, innovation and entrepreneurship are transforming Pitt's academic culture.

Everyone has played a major role in making the University of Pittsburgh Innovation Institute an unequivocal success during its first year.

The University launched the Institute last fall, bringing together its Office of Technology Management, Office of Enterprise Development, and Institute for Entrepreneurial Excellence (IEE). Together, we continue to facilitate the translation of research into innovations and startups that change the world. We also continue to leverage our entrepreneurial expertise to support Pittsburgh entrepreneurs.

But we also are developing new programs aimed at supporting innovation and entrepreneurship among Pitt students. We're developing a prestartup incubator, experiential learning opportunities, and a living-learning community, along with Startup Smashes, Popups, and other activities.

This transition year likewise has included new internal support for this activity, including new leadership across the organization, new executives in residence, dozens of business mentors, new corporate relations strategies, a new development partnership with local startup accelerator Idea Foundry, and our new interactive Web portal at innovation.pitt.edu.

Our Web site—a work in progress—is designed to serve not only Pitt Innovators but also students, Pittsburgh-area entrepreneurs, investors, those interested in licensing Pitt innovations, and IEE members.

Meanwhile, we continue to foster partnerships that spark creative, innovative, and collaborative collisions of ideas, leading to fascinating new innovations, as you'll read in this report. One of our primary goals is to promote and facilitate such convergences.

It is my privilege to be part of this exciting cultural transformation, and I'm grateful for the support we have received from Pitt's senior leadership and our community partners.

Make no mistake, this is a long-term community effort fueled by the imagination, creativity, and ingenuity of Pitt Innovators and their collaborators as well as by the driving entrepreneurial spirit that has permeated this growing region. Consequently, we can expect great things ahead.

And the University of Pittsburgh Innovation Institute is happy to be right in the middle of it all. Remember ... @PittInnovates!

Respectfully,

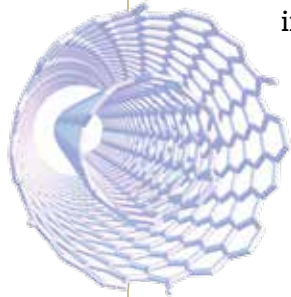
Marc S. Malandro
Associate Vice Chancellor for Technology Management and Commercialization
University of Pittsburgh

Impact at a Glance

FY2014

\$697.6

MILLION IN SPONSORED RESEARCH funding received by Pitt researchers to support world-class discovery and innovation



6

STARTUP COMPANIES launched around Pitt innovations

104

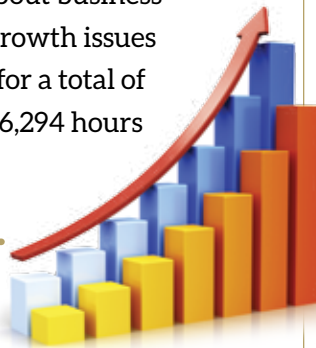
PITT-BASED STARTUPS since 1996

55

LOCAL ENTREPRENEURS ASSISTED in starting or buying new businesses

646

BUSINESS OWNERS COUNSELED about business growth issues for a total of 6,294 hours



512

LOCAL JOBS saved or created through counseling

\$10.58

MILLION IN CAPITAL attained by local businesses with help from the Institute's IEE

150

LICENSES/OPTIONS completed for Pitt innovations to outside partners including startups

74

U.S. PATENTS issued for Pitt innovations, a new record, boosting Pitt's patent portfolio to 615 issued U.S. patents

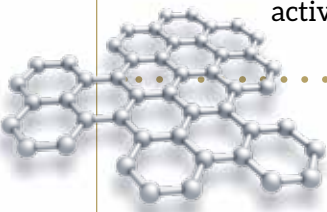




\$41.8

MILLION

TOTAL REVENUE from
Pitt's commercialization
activities



125+

STUDENTS

11 teams

4 first-place teams

\$100,000 in prizes

Randall Family
Big Idea Competition



PITT SPINOUT COMPANIES:

Western Oncolytics, Ltd.

Diamond Kinetics, Inc.

Nanovision Diagnostics, Inc.

Peptilogs, Inc.

UbiCue, Inc.

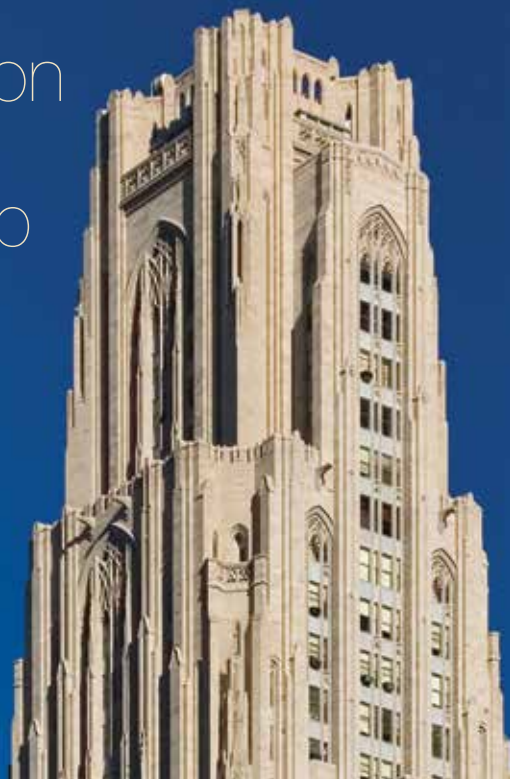
Sofregen Medical, Inc.



Commercialization

Entrepreneurship

Economic
Development



Year in Review

Success requires the new University of Pittsburgh Innovation Institute and its interrelated parts to interact in meaningful ways with many constituent audiences, from Pitt Innovators and their ideas and students with entrepreneurial aspirations to local entrepreneurs looking for assistance in starting or growing companies and others who are looking for the next great technology to license.

The Institute's collective performance depends on its ability to effectively serve those participating groups; facilitate educational opportunities and assistance; and leverage both its resources and those of its active partners to commercialize innovations, start companies, and contribute to the economic development of the Pittsburgh region.

As such, the Institute's fiscal year 2014 performance reflects a flurry of activity aimed at promoting and fostering innovation development, commercialization, and entrepreneurship on campus and beyond. Consider the following:

INVENTION DISCLOSURES

The Institute's Office of Technology Management (OTM) received 274 invention disclosures from Pitt Innovators for commercial consideration this past year, up 7.9 percent from the previous year. That brings the cumulative number of invention disclosures to 3,160 submitted to OTM since the establishment of the office in 1996.

Perhaps just as important to the development of an innovation culture at Pitt, though, is the fact that this year's number represents the collaborative

participation of at least 518 Pitt Innovators (faculty members, staff members, and students who participate in the commercialization process). It marks a nearly 10 percent increase in participation over fiscal year 2013. It also demonstrates a greater degree of collaboration among innovators.

And that includes students and postdocs. In fact, of the 518 participants, 165 were students or postdocs—almost a third of the Pitt Innovators. That’s exciting news for the Institute, which is trying to build a more collaborative environment that provides education and commercialization opportunities for Pitt students as well as faculty and staff members.

LICENSES/OPTIONS

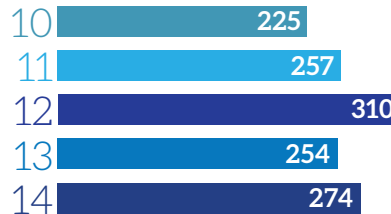
OTM’s licensing managers remained vigilant this past year in their efforts to negotiate licensing and option deals outside the University for Pitt innovations—with startup support from the Institute’s Office of Enterprise Development (OED) as well as its executives in residence. All told, OTM executed 150 licenses/options for Pitt technologies, bringing the cumulative total since 1996 to 1,122.

This includes six new startup companies launched by the University this past year as a result of OTM and OED’s efforts, boosting the startup total to 104 startups launched since 1996. What it doesn’t include are OED’s ongoing efforts in 2014 to work with at least 22 innovations—from 17 different academic departments—with startup potential and then work with the Pitt Innovators behind those innovations through a series of activities designed to further develop those business opportunities for possible startup.

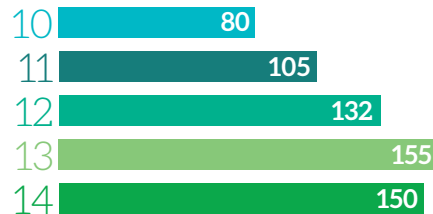
U.S. PATENTS ISSUED

The University experienced another record year in the number of new U.S. patents issued to Pitt for its innovations. The U.S. Patent and Trademark Office (USPTO) awarded the University 74 patents—a 45 percent increase over the previous year’s issued patents. This speaks well of Pitt Innovators, as well as of the diligence of OTM and the legal support it

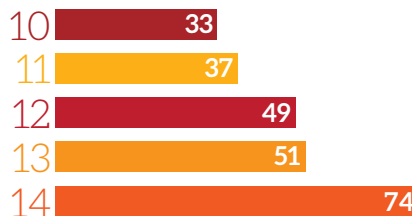
INVENTION DISCLOSURES



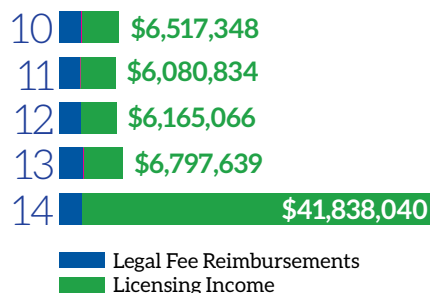
LICENSES/OPTIONS



U.S. PATENTS ISSUED



TOTAL REVENUE



Year in Review continued

receives. It also bodes well for USPTO, which has been striving to reduce the continued backlog of patent applications.

Since 1996, the University has built up a portfolio of 615 patents based on Pitt innovations—244 of them over the past five years alone. Meanwhile, the University submitted 88 new U.S. patent applications to USPTO for consideration in fiscal year 2014.

TOTAL REVENUE

The Institute's commercialization activities resulted ultimately in the generation of \$41.8 million in revenue for the University in fiscal year 2014. That figure does include a onetime payment to Pitt of \$35.6 million as the result of a patent infringement settlement from Varian Medical Systems, Inc. Also included is \$4.2 million in other licensing revenue and \$2 million in patent expense reimbursement.

ENTREPRENEURIAL ASSISTANCE, EDUCATION, AND DEVELOPMENT

The Institute for Entrepreneurial Excellence (IEE), which also is part of the Innovation Institute, likewise remained active in fiscal year 2014 in providing education, networking, and entrepreneurial assistance for entrepreneurs and small businesses throughout Southwestern Pennsylvania.

CONSULTING

IEE consultants invested 6,294 collective hours in counseling 646 local business owners about growth issues. Of those business owners, 266 were new clients. It also assisted 55 local entrepreneurs in their efforts to start new businesses. Included in that figure are 10 entrepreneurs who recently acquired existing businesses. IEE also reviewed 82 business plans.

TRAINING

IEE, through its Small Business Development Center, Entrepreneurial Fellows Center, and Urban Entrepreneurship Program, provided a total of 27 sessions of entrepreneurial training and development to 466 people this past year.

FUNDING AND JOBS

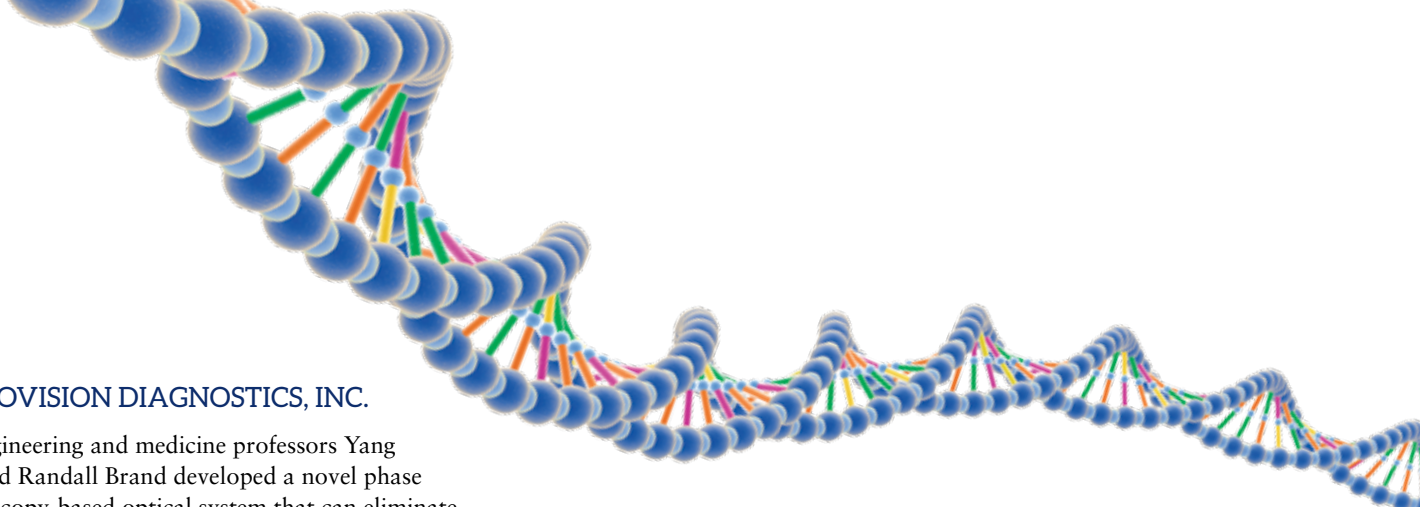
Entrepreneurial clients seeking financial help via IEE were able to raise nearly \$10.6 million in financing for their businesses thanks to the efforts of IEE and its consultants. Client companies also increased their domestic sales by more than \$23 million as a result of IEE's assistance. Moreover, consulting efforts helped client companies to save 440 jobs in the region while also helping to create 72 new jobs.

Startup Activity

DIAMOND KINETICS, INC.

This Pittsburgh-based startup company was launched to commercialize and market a motion analytics-based device and suite of computer software applications to help baseball players select the optimal bat size and improve their swing. The device was developed by mechanical engineering and materials science professor—and admitted baseball fanatic—William “Buddy” Clark in collaboration with Noel Perkins, a mechanical engineering professor at the University of Michigan. The system conveys the motion analytics via a paired mobile application. (See profile on page 24.)



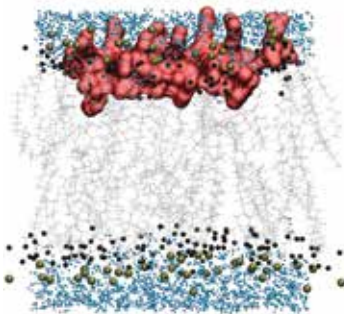


NANOVISION DIAGNOSTICS, INC.

Bioengineering and medicine professors Yang Liu and Randall Brand developed a novel phase microscopy-based optical system that can eliminate distracting variables and provide an image that maps cell architecture in three dimensions and can be measured at the nanoscale. Their innovation has become the basis for this Pittsburgh-based startup company, which will focus on the early and more accurate diagnosis of cancerous cells from biopsy slides. Supporting their development efforts was the competitive Coulter Translational Research Partners II Program in the Swanson School of Engineering. (See profile on page 12.)

PEPTILOGICS, INC.

This startup, currently under the guidance of Pittsburgh-based nonprofit startup accelerator Idea Foundry, is working to develop novel therapeutic solutions in advanced wound care, cystic fibrosis, and biodefense around peptide antibiotics that kill antibiotic-resistant bacteria. The rationally designed peptides were developed by Ronald Montelaro, a professor of microbiology and molecular genetics, in collaboration with postdoctoral scholar Jonathan Steckbeck.



SOFREGEN MEDICAL, INC.

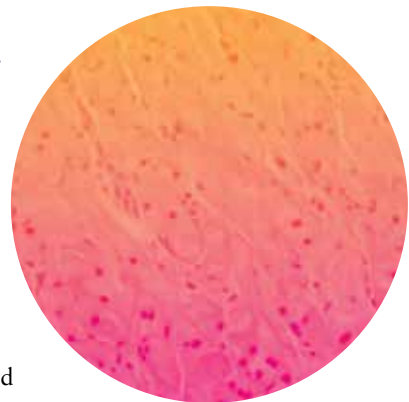
Plastic surgery professors Kacey Marra and J. Peter Rubin, in collaboration with researchers from Tufts University, have developed an injectable, porous silk scaffold to restore volume and regenerate soft tissue defects. The new material, which forms the basis of this new company, can be injected dry or hydrated and alone, with a carrier, or in lipoaspirate.

UBICUE, INC.

Andrea Fairman, then a PhD candidate in rehabilitation science and technology, and her team of Pitt researchers developed a telerehabilitation platform for the self-management of care to help clinicians to communicate in real time with patients with chronic conditions. Now an instructor in the School of Health and Rehabilitation Sciences, Fairman has launched this Pittsburgh-based company to further develop this mobile app-based technology. UbiCue currently is receiving assistance from local startup accelerator Idea Foundry.

WESTERN ONCOLYTICS, LTD.

This startup has licensed novel cancer therapies from Pitt that use genetically engineered viruses to attack only cancer cells of solid tumor types while also delivering therapeutic genes. This therapy, called WO-12, was developed by Stephen Thorne, a professor of surgery and immunology. It was designed to stimulate a stronger and more direct immune attack against the cancer cells than other oncolytic therapies and, at the same time, to remove blocks to immune activity within the environment of the tumor.



Briefs

A Real Lung-saver

If 33-year-old Oklahoman Jon Sacker, who this past year suffered from lung transplant failure in his battle against cystic fibrosis, hadn't heard of Pittsburgh-based startup ALung Technologies before, he certainly has now.

Thanks largely to ALung's new Hemolung respiratory assist device, an emergency approval by the U.S. Food and Drug Administration, and his doctors, Sacker was able to survive the wait for a new lung transplant at UPMC Presbyterian. He had come to the Pittsburgh hospital in February 2014 for his

second transplant, hospital officials said, but was too sick to undergo the surgery. That's when hospital officials turned to ALung for help.

ALung's device, which removes carbon dioxide from the blood while putting oxygen back into the blood, helped improve Sacker's condition over the next month until he was well enough for another transplant. But to use the device, which isn't yet approved by the FDA, the hospital had to seek emergency approval. The FDA approved the request.

"Jon was in very critical condition when he came to Pittsburgh, and the Hemolung

was a lifesaver for him while waiting for his second lung transplant," Maria Crespo, associate medical director of UPMC's Lung Transplant Program, said in a prepared statement.

The device was developed largely by Pitt bioengineering professor William Federspiel and his research team. The company, which already earned its CE Marking in the European Union last year, meanwhile continues to seek FDA approval to market Hemolung in the United States.

All About Innovation and Economic Prosperity

That's how the Association of Public and Land-grant Universities categorized the University of Pittsburgh recently when it officially awarded Pitt and 13 other universities a designation as Innovation and Economic Prosperity Universities.

The designation recognizes universities that work extensively with public and private sector partners within their states and

local regions to promote and foster economic development.

"This Innovation and Economic Prosperity University designation is an affirmation of the key role that the University of Pittsburgh is playing as a leader of innovation and economic development in Western Pennsylvania and beyond," Mark Nordenberg, chancellor emeritus, said at the time in a prepared statement.



Surgery, Shunts, and Signaling Sensors: Eight Funded Projects, 25 Collaborators

Eight groups of faculty researchers from the Schools of the Health Sciences and Swanson School of Engineering received a collective \$100,000 boost in funding this past year to further develop medical devices emerging from some rather unique collaborations.

Driving this effort is the Swanson School's Center for Medical Innovation, whose goal is to promote early stage R&D collaborations between the two schools that lead to innovations with commercial promise. All told, 25 collaborators are participating in the following eight projects, each of which has received between \$10,000 and \$25,000:

- New morcellation device for laparoscopic surgery that prevents the accidental release of cancerous tissue into the body
- System for rapid, accurate prehospital management of myocardial infarct patients through the use of novel ECG signal processing techniques
- Novel low-profile fluid drainage shunt for in-utero treatment of fetal hydrocephalus
- New surgical meshes for the treatment of pelvic organ prolapse that avoid the complications of current devices
- Wireless EEG sensor and signal processing system for emergency medicine, critical care, and ambulatory monitoring
- New suture that is highly visible during placement but becomes transparent during patient recovery
- Resorbable barrier membrane for faster and lower-cost guided bone regeneration in periodontal applications
- Surgically implantable prosthesis for the prevention of tracheobronchial distortion after lobar lung resection

Upstream Entrepreneurship

Aspiring entrepreneurs in Southwestern Pennsylvania's Mon Valley—distressed former steel towns along the Monongahela River upstream from Pittsburgh—will be receiving a new level of entrepreneurial education and support from the University of Pittsburgh.

This will happen thanks to a new federally funded initiative launched by Pitt's Urban and Regional Research program within the University Center for Social and Urban Research in partnership with the Innovation Institute's Institute for Entrepreneurial Excellence (IEE). The U.S. Department of Commerce's Economic Development Administration awarded the Urban and Regional Research program a two-year \$300,000 grant, which is being matched by the University, to provide educational programming and business consultation aimed at helping residents there start new small businesses.

As part of this initiative, IEE consultants will provide the education and consultation, and the Urban and Regional Research program will evaluate the effectiveness of such programs in distressed areas via predetermined metrics, focus groups, and surveys of Mon Valley residents.

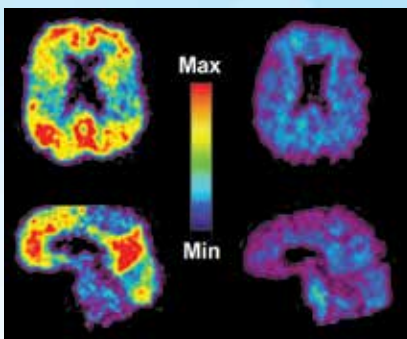
"The Advancing Entrepreneurship in the Mon Valley Region Initiative takes business professionals from Pitt and places them within the Mon Valley community, where their experience and expertise can do good for the people of Southwestern Pennsylvania," says Rhonda Carson Leach, director of the IEE's Urban Entrepreneurship program. Adds Sabina Deitrick, the initiative's principal investigator and codirector of Pitt's Urban and Regional Research program: "The mission of this initiative is to create a pathway for potential small business owners in the Mon Valley to open and develop profitable enterprises within their communities and link those enterprises to public and private partnerships throughout Southwestern Pennsylvania."

Alzheimer's and the FDA

In fiscal year 2014, a breakthrough technology for diagnosing early stage Alzheimer's disease, developed at Pitt by psychiatry professor William Klunk and radiology professor Chester Mathis, received U.S. Food and Drug Administration approval and now is available commercially.

The technology, originally known as Pittsburgh Compound B, is licensed to GE Healthcare, which completed the development and clinical testing of the diagnostic agent and now is marketing it under the name Vizamyli™.

The compound is a radioactive diagnostic Positron Emission Tomography imaging agent that helps measure beta amyloid neuritic plaque density in adult patients with cognitive impairment. It's the only FDA-approved imaging tracer that provides visual interpretation of color images rather than black-and-white images.



PET scans of a patient with mild Alzheimer's disease on the left and similar PET scans from a healthy elderly person (Control) with no memory impairment on the right. The images were obtained by using Pittsburgh Compound-B (PiB).

Dodging Diabetes

Those across the country at risk of type 2 diabetes are receiving more than an ounce of prevention these days, thanks to a program developed by epidemiology professor M. Kaye Kramer and a team of researchers at the University of Pittsburgh Diabetes Prevention Support Center.

Kramer is the director of the center, which resides in the Graduate School of Public Health.

The program, called Group Lifestyle Balance™ (GLB), promotes the idea that small changes in lifestyle, such as healthy eating and more physical activity, could lower the chances of developing the disease for high-risk individuals. The program is designed to help users lose 7 percent of their weight through healthy eating and maintain at least 150 minutes of moderate intense physical activity weekly.

So far, the program has been adopted across the country by more than 100 hospitals, medical foundations, community centers, churches, military bases, and other locations with help from the Innovation Institute's Office of Technology Management (OTM). It also has been licensed through OTM to a number of for-profit commercial partners. The evidence-based GLB was adapted from the Diabetes Prevention Program, a national NIH-funded study that was published in the February 7, 2002, edition of the *New England Journal of Medicine*.

Rejection Test, Approved

Pitt-based startup Plexision, Inc., received a commercial boost this past year when it was awarded approval from the U.S. Food and Drug Administration to market a laboratory blood test called Pleximmune.

The blood test, developed originally by Pitt surgery professor Rakesh Sindhi and his research team, is designed to aid in the prediction of the risk of rejection for an organ transplant, known as acute cellular rejection, in patients under 21 years old who have undergone liver or small-bowel transplants.

New Web Portal

Whether you're a Pitt Innovator, entrepreneurial student, local business owner, mentor, investor, or a company looking for available innovations to license, you can gain quick access to educational information, events calendars, news, contacts, and a searchable database of innovations via the Innovation Institute's new Web site. Check it out.

INNOVATION.PITT.EDU



Interns, Interns, Interns

LEVERAGING ENTREPRENEURIAL CONNECTIONS

The Innovation Institute's Institute for Entrepreneurial Excellence (IEE), in partnership with Pitt Student Affairs, has launched a new internship program that will match Pitt students with many of the thousands of local companies that receive education, networking, and entrepreneurial assistance from IEE.

IEE staff members already are beginning to work with the Office of Career Development and Placement Assistance to facilitate the match making, which also includes connections to a number of outside economic development partners.

"I believe that this program will positively impact the lives of even more students and at the same time significantly support Pittsburgh's economies by keeping more of our graduates employed here at local companies made even more dynamic because of IEE's collaborative efforts," says Kathy Humphrey, vice provost and dean of students at Pitt.

Adds Robert Stein, interim director of IEE, "As part of Pitt's Innovation Institute, we now have the resources of the entire University at our fingertips and are doing more than ever to leverage our organization to benefit the University's overall economic impact."



Coulter Collaborations: Six New Technologies Funded

Research collaborators for six new technology-development projects earned the attention of—and \$100,000 in funding each from—the Wallace H. Coulter Translational Research Partners II Program in 2014.

This five-year competitive grant program, led by the Swanson School of Engineering's bioengineering department, works to promote and facilitate innovation development collaborations between health sciences clinicians and bioengineering researchers to solve unmet clinical problems. Also contributing to this round of funding was the Clinical and Translational Science Institute, with an additional \$100,000 in funding collectively for the six projects.

The goal for these projects: advanced commercial development that positions the innovations for potential startup company consideration. The following projects received funding during the latest round:

BODYEXPLORER

This is a next-generation simulation system for training health care providers that combines an intuitive user interface with augmented-reality visualization, and provides real-time feedback. Collaborators include bioengineering professor Joseph Samosky and nursing professor John O'Donnell.

INTERACTION

Collaborators Kevin Bell, a bioengineering professor, and James Irrgang, an orthopaedic surgery professor, are developing a new telerehabilitation solution to promote exercise adherence for patients who underwent total knee replacement surgery. The system includes a wearable, portable, motion-capture device and a Web-based computer software application for managing and communicating joint function data to a remote therapist.

E3 THERAPEUTICS

This potential startup is based on the development of a new platform class of anti-inflammatory compounds aimed at treating bronchitis and other diseases with fewer side effects than current treatments. The compounds, which target the FBXO3 protein, are being developed by bioengineering professor William Chen and Rama Mallampalli, a professor of pulmonary, allergy, and critical care medicine.

PRO-TECT™

Bioengineering professor David Brienza and surgeon Alan Murdock have come together to develop a novel mattress overlay for hospital intensive care unit (ICU) beds that incorporates targeted cooling of vulnerable soft tissue near bony prominences of the sacral area. Its purpose is to mitigate or prevent costly sacral pressure ulcers on ICU patients.

RESMAG

Resorbable metal screws and novel plates made with a proprietary alloy for repairing broken bones serve as the basis of this Coulter project. These technologies—designed to replace non-degrading metals such as titanium and stainless steel, which can create surgical complications—are being developed by bioengineering professor Prashant Kumta and Charles Sfeir, associate dean of research in the School of Dental Medicine and director of the Center for Craniofacial Regeneration.

SHARP

This acronym, which stands for System for Hospital Adaptive Readmission Prevention, represents a new decision-support system aimed at reducing hospital readmission rates by providing real-time risk estimates and personalized patient education. The system is being developed by bioengineering professor Rich Tsui and pediatrics professor Andrew Urbach.

Engaging Innovators and Entrepreneurs

While a culture of innovation and entrepreneurship does require great ideas, it always has to begin and end with great people. That's why the Innovation Institute and its staff members continue to put the people first, whether they are Pitt Innovators, student entrepreneurs, or local business owners.

As a service-oriented Pitt organization, Institute staff members serve as educators and facilitators of commercialization processes, educational programs, interactive opportunities, business consulting, competitions and celebrations—all aimed at helping the people of Pitt and Pittsburgh embrace a culture driven by innovation and entrepreneurship.

This past year, with the convergence of the Office of Technology Management (OTM), Office of Enterprise Development (OED), and Institute for Entrepreneurial Excellence (IEE) into the new Innovation Institute, the Institute has created considerable momentum when it comes to getting people involved.

Pitt Innovator Participants: Let's start with innovation commercialization. While Pitt Innovators submitted 274 invention disclosures for commercial consideration in fiscal year 2014, more than 500 innovators actually participated in the development of those ideas. That record number includes 165 students who contributed to such efforts. Moreover, of the 104 innovators whose innovations were licensed or optioned outside of the University in fiscal year 2014, 15 were students.

The previous year's innovators were honored at the annual Celebration of Innovation, with those whose innovations were licensed/optioned earning Pitt Innovator Awards. The celebration last November also marked the official launching of the Institute.

Education: The Institute this past year offered its introductory Academic Entrepreneurship course and two different sections of its 14-week Benchtop to Bedside: What Every Scientist Needs to Know course to faculty, staff, and students. All told, nearly 100 people attended the three Institute-based courses.

Pitt Ventures Activities: In January 2014, as part of its startup development activities, the Institute's OED launched the Pitt Ventures Gear program, which takes innovation development teams through customer discovery, business model development, and, ultimately, company formation.

Since it was launched, 22 teams—more

than 100 people and half of them students—entered the process. The result so far: one new company formed, one license in term sheet discussions, three innovations in exclusive option negotiations, and \$925,000 in additional nonfederal funding attained.

OED also worked with 30 Pitt Innovators who participated in the University's annual Science Technology Showcase event. Innovators were assigned business mentors and then produced posters that were displayed at the reception. At least 250 people attended that campus event.

Big Idea, Wells, and Other Competitions: As the Institute learned this past year, student entrepreneurs are alive and well at Pitt—and looking for opportunities to compete. The Randall Family Big Idea Competition, which offered \$100,000 in prizes, attracted 125 students across campus representing 12 different Pitt schools.

The competition included a Startup Weekend (attended by 120 students), elevator pitch sessions, and a startup bootcamp, and led up to a final awards program that attracted an estimated 300 attendees.

Meanwhile, the Michael G. Wells Student Health Care Entrepreneurship Competition last year attracted 19 student innovators, who participated in six teams. The winner received \$10,000. The Institute also supported the Pitt Innovation Challenge, hosted by the Clinical Translational and Science Institute. In the end, three innovator teams each won \$100,000 in federal grant funding to develop their innovations.

Community: The Institute's IEE continues to grow its membership of regional companies and their leadership. This past year, its membership grew to 195 companies and 406 business leaders from those companies. The membership organization provides regular opportunities for entrepreneurial education, training, and networking. IEE's Entrepreneurial Fellows Center program, meanwhile, played host last year to 36 local entrepreneurs. The IEE also counseled 646 business owners about growth issues and assisted 55 entrepreneurs in starting or buying new businesses.



Rory Cooper, Distinguished Professor and chair of the Department of Rehabilitation Science and Technology (second from right) is presented with the Pitt Innovator Award by Chancellor Emeritus Mark A. Nordenberg (far right), Senior Vice Chancellor for the Health Sciences and John and Gertrude Petersen Dean of the School of Medicine Arthur S. Levine (second from left), and Provost and Senior Vice Chancellor Patricia E. Beeson (far left).

NanoVision

Bioengineering/medicine professor Yang Liu and medicine professor Randall Brand, with support from the Wallace H. Coulter Foundation, the Innovation Institute Pitt Ventures program, and a committed executive in residence, see a big future for the startup commercializing their new cancer-detecting microscope system.

For decades, scientists have relied on the 1930s-era technology of the phase microscope to look at cells. Despite its extremely high sensitivity, though, the instrument is not able to accurately quantify the subtle changes on the nanoscale.

Moreover, the high sensitivity creates a wide array of variables that can interfere with the image itself, such as outside noise, vibrations, or the way the sample was prepared. Yang Liu, an associate professor of bioengineering and medicine at the University of Pittsburgh, and collaborator Randall Brand, a professor of medicine, saw that as a problem they could solve.

Intrigued by the potentially high upside of using phase microscopy, in 2009, they devised an optical system that eliminates the variables and offers an image that maps the architecture of the cell in three dimensions and can be measured at the nanoscale. Their new system now allows users to observe the tiniest changes of the architecture of cell nuclei in biopsy slides and then predict earlier and with far greater accuracy which cell changes likely are cancerous. Because early diagnosis often can mean the difference between life and death, the advantages of their system could prove to be extraordinary.

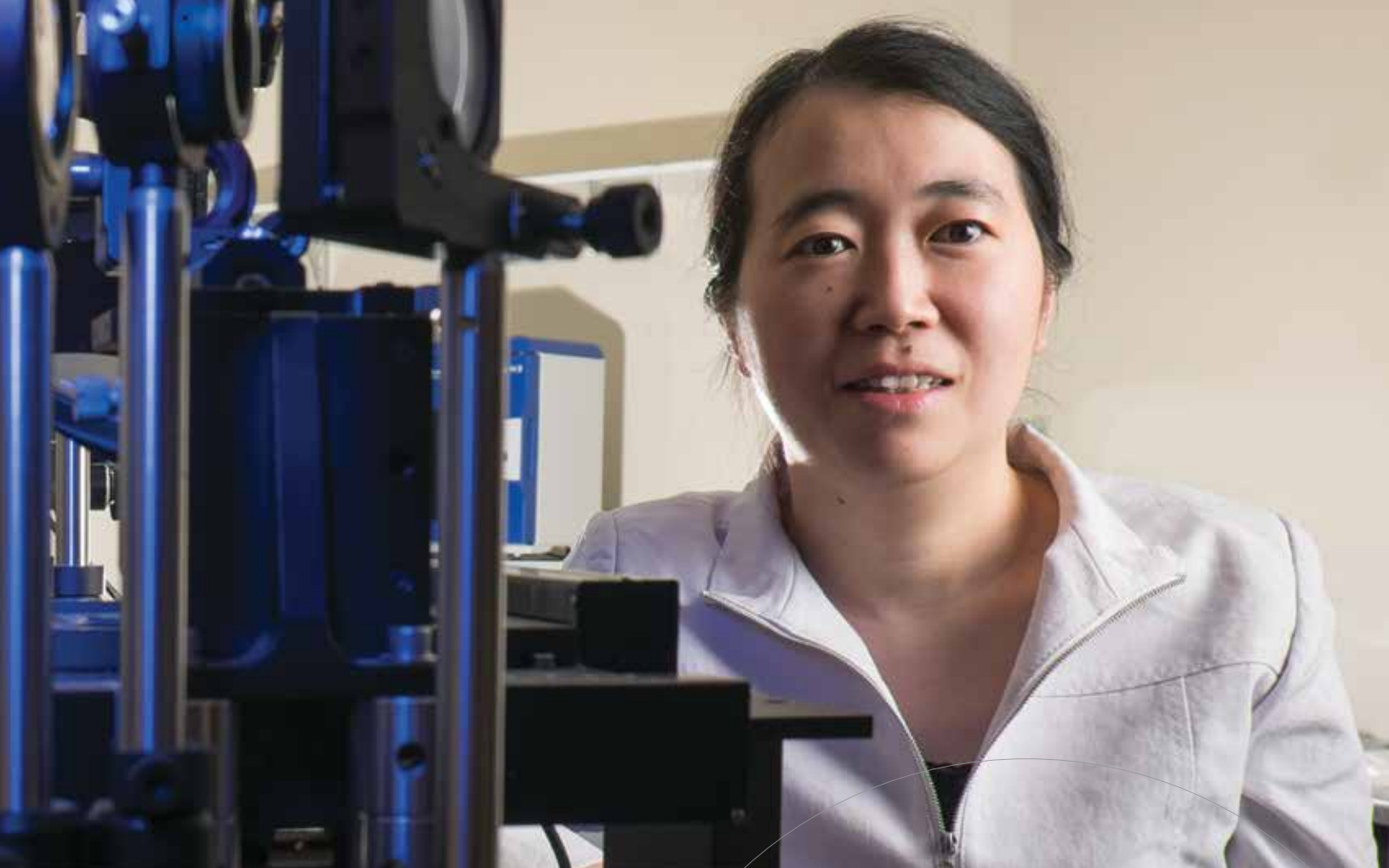
But Liu says they knew they would need extensive commercialization guidance to move their idea forward.

“I was just a university professor, and I was fairly new here at the time,” Liu says. “I really didn’t know who we should talk to.”

They didn’t have to go far for help. Liu and Brand found that they could leverage a number of commercialization programs at Pitt along the way. Chief among them were the Coulter Translational Research Partners II Program in the bioengineering department, which provided education, guidance, and funding; the Office of Technology Management (OTM), which provided commercialization support; the Office of Enterprise Development (OED)’s Pitt Ventures program, which provided the Coulter Program’s education component and startup development support; and OED’s executive in residence (EIR) program, which connected Liu and Brand with EIR Michael Lang, a serial entrepreneur with experience in medical devices.

The combined effort this past year led to the launching of Pitt spin-off NanoVision Diagnostics, Inc. Running the Pittsburgh-based company is Lang, who spent two and a half years at the OTM/OED looking for the right venture to launch. He says he was impressed with the technology as well as with the grant funding and clinical trial that Liu and Brand already had started in support of their idea.

“I’ve been around the block a lot, and I’ve seen a lot in the health care world,” Lang says. “What they were doing was unique. It allows us to understand what’s going on in the DNA in the cell nucleus.”



Lang says that he began to collaborate with Liu and Brand in 2011 on potential business opportunities for their system. As part of the process, Lang analyzed the cost of the equipment and compared the system's fledgling business model to the rest of the market. They concluded that the best course of action was to create a new company.

Lang started NanoVision Diagnostics in late 2013, licensed the technology from Pitt, and then left the University to serve as the startup's CEO. His startup team continues to forge ahead. To date, the team has raised investment capital, operationalized the company, and built a modified version of the original system to run higher volumes of diagnostic tests for commercial applications. They currently are validating the modified device's results and are launching large-scale clinical studies with other institutions as a basis for taking the system to market.

Because of her status as a university professor, Liu simply consults for the company. But the satisfaction she has realized as a Pitt Innovator is palpable.

"It's your baby, and you want it to do well," she says. "It's actually a lot of extra work from my standpoint, but we want our technology to get to the patient. You feel what you do is more valuable."

Liu and Brand's new system now allows users to observe the tiniest changes of the architecture of cell nuclei in biopsy slides and then predict earlier and with far greater accuracy which cell changes are likely cancerous. Because early diagnosis often can mean the difference between life and death, the advantages of her system could prove to be extraordinary.

A Path to Success

A

As Eric Sinagra pushed a three-wheeled cart roughly resembling a baby stroller along the sidewalks of Washington, D.C., recently, he and his development team knew they would be smoothing the path—at least figuratively—for wheelchair users in the future to find better access through that city and beyond.

Known as PathMeT, the cart is a pathway measurement tool developed by Sinagra while he was a student in the University of Pittsburgh School of Health and Rehabilitation Sciences along with a student team that included Ian McIntyre; Tianyang Chen; Jonathan Duvall; and Sinagra's faculty advisor, Jonathan Pearlman, associate director of engineering at Pitt's Human Engineering Research Laboratories, which is a partnership between Pitt, VA Pittsburgh Healthcare System, and UPMC. The device profiles surfaces, collecting data about the ground it covers with pictures and a GPS system.

PathMeT is the basis of a new startup company called PathVu. The company, according to its Web site, pathvu.com, has positioned itself as “the leading provider of technology and service that ensure compliance with standards to support accessibility, infrastructure quality, and asset management.” Its target customers include contractors, city planners, and municipal public works departments. Sinagra, who graduated from Pitt in April 2014 with a master's degree in rehabilitation science and technology,

“We have a lot of good momentum from an idea standpoint. The vision's there, and the technology is certainly capable of being developed.”

has joined the startup as its president and chief technology officer. The other student team members likewise have joined.

Office of Enterprise Development (OED). He met the development team as the students were participating in OED's educational First Gear program, part of Pitt Ventures.

The company's chief executive officer is Chip Hanlon, who began working with the development team as an executive in residence with the Innovation Institute's

Sinagra managed the development of PathMeT as his master's thesis project. His interest in the topic originated with his older brother, who has spinal muscular atrophy and uses a power wheelchair.

In the course of researching the commercial need for PathMeT, Sinagra noted two legal cases related to

wheelchair inaccessibility in Los Angeles, Calif., that resulted in multimillion-dollar settlements for the plaintiffs. A device like his might have helped the likes of Los Angeles to better assess sidewalk conditions and avoid costly lawsuits, he contends.

“If the city knows about an inaccessible sidewalk, the city ultimately is partially liable,” he says, but he adds: “How do you fix your sidewalks unless you know what their current status is?”

But developing his device proved to be only the first challenge. Next was figuring out how to take it to market. So he took the Innovation Institute's Academic Entrepreneurship course, where he learned “a little bit of everything,” he says.

“It was a very good starting point,” Sinagra says, “because it gave me an overview of what I needed to look at and how I needed to start looking at things from the patent standpoint, from the law standpoint, but also understanding the value proposition and how I articulate that.”

Sinagra and his team also competed in the Innovation Institute's 2014 Randall Family Big Idea Competition—and won \$20,000 along with three other student innovation development teams.

Those efforts have since positioned PathVu well enough to be accepted into the state-funded Innovation Works AlphaLab Gear accelerator program. Pearlman, the faculty advisor and codeveloper, says that assistance from the Innovation Institute was crucial in taking PathMeT to market. To help him better understand, he took the Institute's From Benchtop to Bedside: What Every Scientist Needs to Know course, which he says is “a really great primer on how to think about translating what you're doing in the lab into industry. . . . Being in research is all very entrepreneurial, but the language is different.”

Sinagra agrees. “We started off thinking we were just going to sell these devices, and as we talked with these companies and as we talked with our mentors, we quickly realized it's a service/data model,” Sinagra says. “It's the information that really becomes important.”

In the summer of 2014, the company won its first major project: collecting more than 100 miles' worth of sidewalk data throughout Washington, D.C.

“We have a lot of good momentum from an idea standpoint,” says Pearlman. “The vision's there, and the technology is certainly capable of being developed.”



Eric Sinagra

This Pitt student team, led by Eric Sinagra and faculty advisor Jonathan Pearlman, has created a device and company to measure the condition and accessibility of city sidewalks.



Left to right: Jonathan Pearlman, Ian McIntyre, and Jonathan Duvall

Lymph Node Livers

Pathology professor Eric Lagasse has developed a way to grow mini organs with liver function using lymph nodes.

Roughly 100,000 people in the United States will be hospitalized each year with serious liver disease, says Pitt Innovator Eric Lagasse. But with just 6,000 organs typically available, the chances of receiving a transplant are slim.

Lagasse, an associate professor of pathology with a lab at Pitt's McGowan Institute for Regenerative Medicine, believes he has found a way to circumvent those odds. He is researching a promising new method for using lymph nodes to grow what could be considered tiny functioning livers that pick up the functions that are lost when a patient's native liver no longer can perform. Since publishing his first paper on the topic in 2011, he has been building slowly upon more complex animal models to demonstrate the efficacy of his idea.

"What we have done here is basically discover that the lymph node is also a great site for normal cells to grow and expand," he explains.

It began as what he calls "sort of this crazy idea": transplanting liver cells into mice with liver disease in places other than the liver to see if liver regeneration would occur. Lagasse was surprised to find that the transplanted cells migrated to their lymph nodes, where the cells survived and developed into functioning mini livers. When he considered the phenomenon, he says it made sense to him: lymph nodes function as the body's bioreactor for infection-fighting T cells. When you get a virus, the nodes—roughly 500 of which exist in the human body—swell because they are expanding the T cells to return to the infection and kill the virus.

Lagasse says he has been able to grow more than 20 small livers which together function at roughly 75 percent of the capacity of the native liver, thereby picking up the functions that the original organ has stopped performing. Building

on some encouraging initial data, Lagasse now is poised to publish research conducted on larger animal models in hopes of eventually moving toward clinical trials in humans.

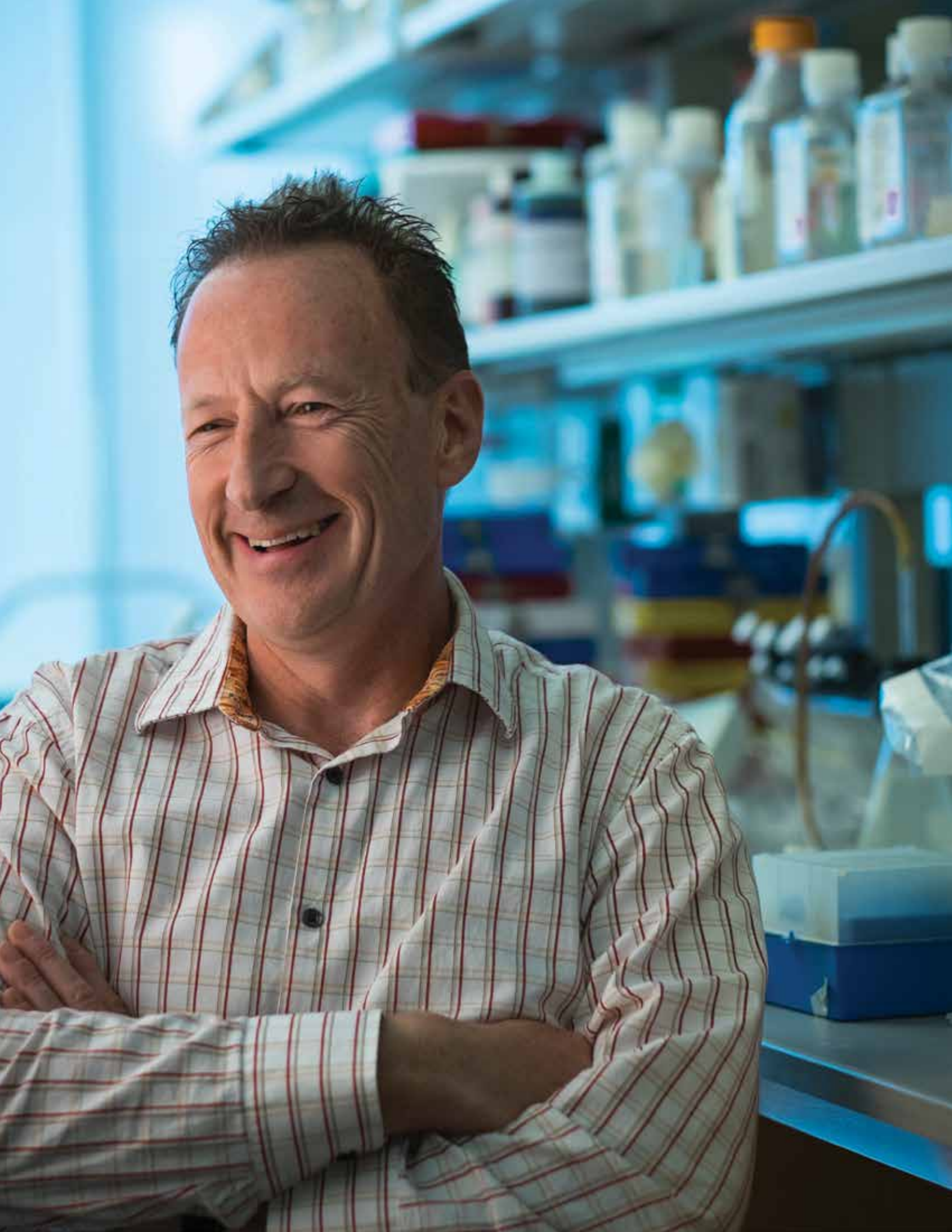
A veteran of private industry, Lagasse says that he came to Pitt in 2004 to continue working on academic questions that were less interesting to companies focused on products. Because his research focuses on the liver, he was particularly attracted to Pitt, which he considers "probably the best place for studying liver biology," because of the University's strong history of transplantation and cell biology.

He is hoping to earn private investment for additional research, with an eye toward human trials, by working with the Innovation Institute's Office of Technology Management to negotiate a license for the liver innovation with an outside investor.

"This is quite an out-of-the-box idea," he acknowledges, but he adds that researchers working in the liver transplant field have been widely supportive.

"All the elements are there," he says. "The whole thing is really exciting. Optimistically, in a few years, we may be able to move this into patients and change the lives of a lot of people."

"All the elements are there. The whole thing is really exciting. Optimistically, in a few years, we may be able to move this into patients and change the lives of a lot of people."





The art of writing well often is perceived as intuitive, while the art of evaluation seems inherently subjective. But a new Pitt spinoff company built around computer software developed by psychology professor Christian Schunn is making a bold statement: that students can learn to write better with the help of the right algorithm-driven peer review.

Local serial entrepreneur and investor Mark Limbach, with additional private investment support, last year launched Panther Learning Systems, Inc., licensing Schunn's innovation from Pitt as the basis of the startup. The computer software system, called Peerceptiv, evolved from a system first created in 2002 by Schunn, who conducts research as part of Pitt's Learning Research and Development Center, to test a fundamental theory.

"Peer review would be much better if students had an incentive to treat it seriously," he says, adding, "and it didn't require heavy instructor oversight."

Peerceptiv begins with a systematic peer review of papers by classmates but then also requires authors to rate their reviewers on how helpful their comments are. The system then manages the reviews, basic score calculations, and the curving of scores to produce useful grades for the instructor and valuable feedback for the students.

Students can learn to write better with the help of the right algorithm-driven peer review.



Christian Schunn, left, and CEO Mark Limbach

Promising Peer Review

The Learning Research and Development Center’s Christian Schunn has elevated the virtues of student peer review to improve writing skills, and a local startup is taking his innovation to market.

In the early days of his development efforts, Schunn says he initially tested his software program in a few classes before making it publicly available, at which point its usage proliferated. Schunn upgraded his system in 2009, and the corresponding uptick in usage prompted him to stop advertising because he simply didn’t have the time or resources on his own to provide effective customer support.

“For me, it was a research fun space,” he explains, but he didn’t see such ongoing support as part of his job as a professor. Still, he did decide one day to participate in a poster reception hosted by the Innovation Institute’s Offices of Technology Management and Enterprise Development. The point of the reception was to pitch ideas to potential investors. That’s where he first met Limbach, who attended the session with investor Bill Rooney.

“After we saw Chris’ presentation, we were very impressed,” Limbach says, noting that Schunn managed to build a loyal following for his academic project without any real sales effort or market development. The system seemed ripe for commercialization, particularly in light of seeming education trends toward larger classes and less funding, making the job of teaching critical thinking skills even more challenging for instructors.

Limbach says a discussion with a teacher from Pittsburgh’s City Charter High School sealed the deal for him. The teacher reported a whopping 98 percent proficiency rating for his students on the state’s standardized test—unheard of for an urban charter school—after using Schunn’s software.

“From that point forward, it’s just been a steady progression,” Limbach says. He now serves as Panther Learning Systems’ chief executive officer; Schunn is its director of technology, and Rooney serves as the chief financial officer.

The company now is focusing on multiplatform integration and making the interface simpler, easier, and more elegant. Limbach also sees market potential in the corporate world, where unbiased feedback could be of value.

For his part, Schunn is viewing the collaboration as a marathon, not a sprint.

“You have to pace yourself accordingly—figure out what’s the most important piece of what you want to keep going and have regular face-to-face time with the people who will be in the company,” he says. “I found that to be really quite helpful.”

Wound-healing Vision

A research team from pathology, nursing and ophthalmology is developing a peptide to improve the healing process for glaucoma surgery patients.

W

hat do you get when you combine the wound-healing research of pathology and nursing professors at Pitt with knowledge from the insightful chair of the Department of Ophthalmology and his team? You wind up with a vision to develop a novel molecule that helps glaucoma surgery patients to recover more completely, saving their eyesight in the process.

Glaucoma, the second-leading cause of blindness in the United States, affects about 2 percent of the population over the age of 40. The condition often requires surgery, but scarring sometimes can cause the procedure to fail, according to Joel Schuman, chair of Pitt's Department of Ophthalmology, Eye & Ear Foundation Professor, and director of the UPMC Eye Center. An agent that would allow doctors to better regulate wound healing at the surgical site could have tremendous impact, he notes.

“Unless it gets commercialized, it’s just an interesting find in the laboratory. It’s so important that this sort of discovery gets from the lab to a commercialized product if you want it to actually help people.”

Enter the research team of Alan Wells, Thomas J. Gill III Professor of Pathology, who collaborated with Cecelia Yates-Binder, then a postdoctoral fellow (and now an assistant professor in the School of Nursing’s Department of Health Promotion and Development), on a project involving wound healing. They were studying the body’s post-injury signal that shuts off a period of rapid growth and repair to return the wound site to a quiet phase after an injury.

Their research identified peptide fragments that are responsible for this form of vascular regression. Thinking it might help diabetic patients—for whom abnormal vascular growth is a problem, especially in the eye—they brought their research to Schuman, “who knows more about the eye than even he cares to know about,” Wells jokes.

Schuman, whose research team also includes Ian Conner, an assistant professor of ophthalmology, says that he saw great potential for using their peptide fragments to help glaucoma patients. Glaucoma causes an increase in eye

pressure from a buildup of fluid in the eyeball. To release that pressure, surgeons will drill a hole in the eyeball, but the surgery can leave scars that complicate recovery. In tests on animal models, the team’s peptide both maintained the surgical opening, built to lower eye pressure, and caused a lining of cells at the front of the eye to grow in larger numbers, helping to maintain the eye’s integrity and health after surgery.

It also might serve as a treatment for dry eye, says Schuman.

“We’re hopeful that the agent will be effective there as well as in the glaucoma surgery,” says Schuman, who describes the new molecule as a potentially important breakthrough for dry eye.

The team found help in commercializing its idea through the Innovation Institute’s Office of Technology Management (OTM), which assisted with invention disclosures and in filing patent applications. OTM also shepherded the team through the process of negotiating with eye care companies.

“They were very good in helping us to understand the business aspects of how the process works in going from discovery to the laboratory to an actual product,” says Schuman, who was involved in the invention of another device many years ago.

Wells agrees with Schuman. “At least three of us have had experience with dealing with outside companies and have been consulted or been involved in setting up outside biotech, but this is not our arena,” Wells says. “It’s not the best use of our expertise, whereas OTM has people who have been there and done that, and they have the expertise for guidance.”

The team hopes to find the best pathway toward bringing the molecule into a clinical trial, an important step on the road to getting it to patients.

“Unless it gets commercialized, it’s just an interesting find in the laboratory,” says Schuman. “It’s so important that this sort of discovery gets from the lab to a commercialized product if you want it to actually help people.”



Left to right: Alan Wells, Joel Schuman, and Cecelia Yates-Binder

Building Value and Balance

Emeka Onwugbenu, owner of E Properties and Development in Pittsburgh, honed his entrepreneurial acumen as a member of the Institute for Entrepreneurial Excellence's Entrepreneurial Fellows Center program.

Emeka Onwugbenu knows a thing or two about building. Whether building a new life in the United States, building acclaimed educational credentials, or building a new business, Onwugbenu radiates a passion and entrepreneurial spirit that exemplifies the American dream.

Onwugbenu, a graduate of the Entrepreneurial Fellows Center program at the Institute for Entrepreneurial Excellence, which is part of the University of Pittsburgh Innovation Institute, is the founder and president of his own company, E Properties and Development, in Pittsburgh's Lawrenceville neighborhood.

Growing up in Nigeria as one of eight siblings, he was a member of the Igbo ethnic group long known for its entrepreneurship. Onwugbenu says he first learned about free enterprise as a young boy by selling eggs from a pair of chickens his grandmother gave him. When he first came to the United States to study engineering at Pennsylvania State University, he continued his entrepreneurial endeavors via buying and selling on Craigslist and eBay.

Onwugbenu graduated in 2006 and made his way to Pittsburgh to serve as a facilities and products engineer for MEDRAD, a medical device manufacturer. While there, he enrolled in Carnegie Mellon University's MBA program and took his first steps into the world of real estate development. Despite a very busy schedule, Onwugbenu, who says he always had an interest in the real estate industry, used the recession at the time as an opportunity to buy an undervalued house and, with the help of a hired crew, to renovate it.

"The program forced me to step back, look at my business, and to be honest with myself. I asked, 'What am I doing right and wrong?' All of the sessions were valuable because they focused on practical applications."



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That was the beginning of E Properties and Development, a company that builds and renovates structures in the Pittsburgh neighborhoods of Lawrenceville, Garfield, and Friendship, including the distinctive Croghan's Edge development. In fact, E Properties and Development received a design award from the American Institute of Architects in 2012 for the innovative design of this development, which includes four modular homes on a single property.

Many entrepreneurs, Onwugbenu says, view participation in a program to improve management skills as time they can't afford to spare. But he doesn't see it that way. Once enrolled in the yearlong Entrepreneurial Fellows Center program, he says he quickly recognized it as time well invested.



“The program forced me to step back, look at my business, and to be honest with myself,” Onwugbenu says. “I asked, ‘What am I doing right and wrong?’ All of the sessions were valuable because they focused on practical applications.”

The Entrepreneurial Fellows Center program is a dynamic educational experience designed to provide business leaders with direction, knowledge, and connections to take their businesses to the next growth level. Participants benefit from custom-designed program materials, peer learning and sharing, and custom-matched mentoring. Onwugbenu had the highest praise for the two mentors with whom he was matched as part of the curriculum, one from the construction industry and the other from development and finance.

“The contributions made by my mentors were priceless,” says Onwugbenu. “You can’t pay for that.”

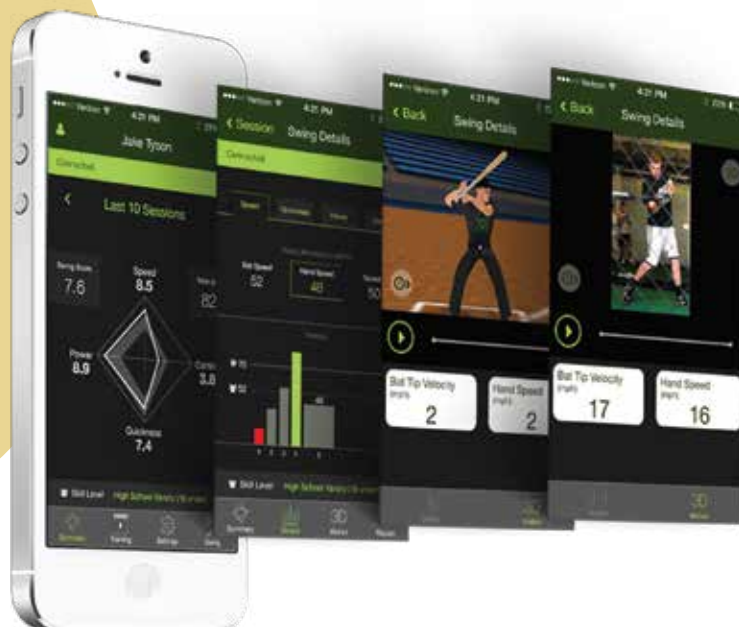
Onwugbenu had two major goals he wanted to achieve through the program. First, he wanted to develop a deeper understanding of how to manage financial growth. Second, he wanted to develop a better method of choosing which properties to purchase. The program gave him applicable tools to accomplish both of these goals, and his classmates, while from different fields, provided valuable insight as well.

“The program brought me a sense of balance,” says Onwugbenu. “It was an investment in myself and my business that will pay dividends for years to come.”



Left to right: Jeffrey Schuld, C.J. Handron, and William "Buddy" Clark

Engineering professor Buddy Clark transformed his passion for baseball into a viable motion analytics device company for coaches and players.



Swinging for the Fences

The swing of a baseball bat takes 0.2 seconds to complete, making any critique by the human eye difficult. So coaches, recruiters, and players alike sometimes spend countless hours watching and rewatching film just to assess the quality of one swing.

Mechanical engineering and materials science professor William “Buddy” Clark, who admits to being a baseball fanatic, couldn’t help but see this as just another innovation challenge. And he came out swinging.

His solution, which has become the basis for a new local startup venture called Diamond Kinetics, Inc., is a motion analytics-based device and suite of software applications which the company now calls SwingTracker. The device features a number of small sensors that capture precise motion data in real time and send the information to a paired mobile device, Clark says. He developed the product in collaboration with Noel Perkins, a mechanical engineering professor from the University of Michigan.

SwingTracker allows users to compare swing metrics against other players by age and skill level and let them see their own swing and motion data together through a 3-D viewer and video function.

Clark at the same time developed what he calls BatFitter, which helps coaches and players to determine the optimal bat size for the players.

“The question of optimal bat size turned out to be an interesting challenge that allowed me to combine my passion for baseball with my background in dynamic systems and measurements,” Clark says. “I developed a method for determining the ideal bat for players based on their individual abilities. Initially, the method focused only on specific parameters of the swing, but that evolved into the use of inertial sensors that could capture the complete path of the swing—every detail of the bat’s motion—which provides a huge amount of data for coaches and players that’s never been available before.”

So began Clark’s entrepreneurial journey, and soon the issue was raised of how Clark would get his products to market. So he turned to the University of Pittsburgh Institute for Entrepreneurial Excellence (IEE), which is part of the

Innovation Institute, for help. He worked closely with IEE’s PantherlabWorks program, which assists entrepreneurs in technology-based startup development, and its director at the time, C.J. Handron.

“I understood the technology but was in the dark about what needed to be done on the business side,” Clark, a prolific Pitt Innovator, admits. “Visiting IEE was probably the best decision I made in the early days of the company. They provided a tremendous amount of help in developing the business model, planning for fundraising, and generally getting the company from concept to reality.”

Says Handron of the relationship, which extended beyond simply a professional consulting role, “I’m a baseball guy through and through. I know how to approach the target market because I am the target market.”

In fact, Handron found himself so impassioned by the business opportunity that he eventually decided to take on the role of CEO of Diamond Kinetics full time and left IEE.

“We worked together for almost a year at IEE before I made the decision to join the company full time as CEO to build out the infrastructure from a business perspective,” Handron says. “Through my work at IEE, I developed a strong network within the early stage technology community, which certainly has been valuable as we work to raise capital and add team members.”

Diamond Kinetics and its products since have been featured in *Sports Illustrated*, on the Web site Mashable, and at the MIT Sloan Sports Analytics Conference. It also found a spot on the *Pittsburgh Business Times*’ “20 Companies to Watch in 2014” list.

Moreover, Handron says, additional applications and uses of the technology in these sports are in development, which should come as no surprise. “Diamond Kinetics remains focused on driving a fundamental change in baseball and softball training and performance.”

“Through my work at IEE, I developed a strong network within the early-stage technology community, which certainly has been valuable as we work to raise capital and add team members.”

QuitNinja

A

s creatures of habit, people easily fall into patterns of behavior. This certainly rings true for those trying to quit smoking, who face triggers throughout the day that make them want to light up. If only those smokers could have an encouraging reminder to not smoke when the impulse to do so presents itself, they might be more successful in quitting.

Ellen Beckjord, an assistant professor of psychiatry and of clinical and translational science, and her research team, including technology partner Vignet Corporation, have, in

fact, developed a unique mobile app for that. She calls their smoking cessation support system QuitNinja.

Beckjord says she has found in her work as a psychologist that many patients want to stop unhealthy behaviors such as smoking, but because direct behavior reinforcements are not available in real time—at the moment when the patients often need them the most, they fail in their attempts to change their behavior.

QuitNinja is a context-aware smart-phone application focused on improving self-regulation in the context of smoking cessation, Beckjord explains. It uses evidence-based, ecological momentary assessment protocols to gather data in real time from smokers during a quit attempt and then delivers context-appropriate messages and images to help them stay motivated to resist the urge to smoke.

This ability to provide evidence-based real-time intervention, she says, is what differentiates QuitNinja from other smoking cessation and health behavior change apps.

“Face-to-face counseling can’t reach people when they really need it,” Beckjord says. “A mobile platform is the game changer that can extend the reach. While other apps provide some real-time intervention delivery, QuitNinja provides intervention at the right time.”

Her team’s development is paying off, especially on campus. In spring 2014, Beckjord and her team entered QuitNinja in the first-ever Pitt Innovation Challenge (PInCh), which was hosted by Pitt’s Clinical and Translational Science Institute in collaboration with the Office of the Provost and the Innovation Institute. The PInCh competition focuses on encouraging innovation development and commercialization around health care solutions. Of the 93 submissions to the competition, QuitNinja was named one of only three first-place winners.

As a result, the QuitNinja team was awarded a \$100,000 grant to further develop the innovation along with a project manager to help execute a 12-month project development plan.

“It was humbling to see the other teams’ ideas,” says Beckjord of her competitors.

Beckjord says she first learned about the PInCh competition through an educational course offered yearly by the Innovation Institute titled From Benchtop to Bedside: What Every Scientist Needs to Know. The course teaches researchers and clinicians how to transform basic research discoveries into commercial products and companies for the benefit of patients.

Beckjord says she has appreciated the commercialization education and development opportunities at Pitt.

“The PInCh competition is well designed and provides a fantastic opportunity for Pitt and its community of researchers,” she says. “The course prepared me for the competition by teaching me invaluable entrepreneurial skills and how to effectively pitch an idea.”

Moving forward, Beckjord says her team plans to use the PInCh funds to develop a new version of QuitNinja that can predict when smokers most likely will encounter urges to smoke so that interventions can be delivered not only in real time but preemptively, without users having to ask for help.

As Beckjord noted in her PInCh pitch: “We don’t want the QuitNinja user experience to only be ‘I can reach out to QuitNinja for help.’ We want the user experience to be ‘QuitNinja knows when I need help and reaches out to me.’”

“The PInCh competition is well designed and provides a fantastic opportunity for Pitt and its community of researchers. The course prepared me for the competition by teaching me invaluable entrepreneurial skills and how to effectively pitch an idea.”

Psychiatry professor Ellen Beckjord and her team have developed a mobile app that provides real-time—and maybe preemptive—behavior reinforcement for smokers trying to quit.



Ellen Beckjord with her daughter, Louise Burke

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