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IC@3401:
Where Starters Begin 22

30 *Are Founders Born or*
MADE?

34 *Biomed CEO*
OR BUST

Drexel

MAGAZINE



Driven
In the race to create a business model based on driverless vehicles, 29-year-old Stefan Seltz-Armacher '12 is in it for the long haul.

The Ledger



CLUB SPORTS

TOP GUN

It has been a good year for the Drexel Paintball Club, which in April became the No. 1 team in the country after winning the 2019 National Collegiate Paintball Association College National Championships. In addition to paintball, there are 32 other club sports teams offered to students at Drexel. And while you can probably guess some of the sports available, like soccer, basketball or volleyball, you might be surprised by some of the others. Nowadays, there are Dragons working up a sweat playing cricket, badminton and Quidditch, too.

962 Number of participants involved in Drexel recreation sports.

1,030

Average number of hours practiced per term by club sports teams.

8 Number of teams that played in a national competition this year.

85 Members in men's soccer, the largest club team.

50 Average number of practices a week.



THE VIEW FROM MAIN

FEATURES



42

With \$21.7 million raised and 65 employees hired, LeBow grad Stefan Seltz-Axmacher '12 has put his driverless long-haul trucking concept on the road to success.



22

Not Your Average Startup Incubator

The Drexel campus incubator ic@3401 mingles entrepreneurs and researchers from campus and city, and acts as concierge to Drexel's multiple tech-transfer resources. Small wonder its tenants have achieved so much.

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What Is an Entrepreneur?

It's deeper than the ink on your business cards.

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The Making of a CEO

Mihir Shah calls himself a product of Drexel. Certainly, he used every University resource at his disposal to bring to market a life-saving device built on faculty research.



The news that Drexel has joined the top-tier research institutions in the Carnegie Classification of Institutions of Higher Education marked an important milestone for the University.

Being known as a major hub for research activity is an exciting development for your alma mater, and our new designation as an R1 Doctoral University by Carnegie is a coveted distinction. It is reserved for universities with the highest level of research activity, and Drexel was one of just 34 private institutions making the list.

I view this not only as the latest indication of the impact of Drexel's research, but as recognition of the talent and commitment of our faculty. Drexel researchers are making their mark in so many ways, buoyed by an impressive, 15 percent increase in sponsored research awards last year, to nearly \$124 million.

It's at times like these that we can step back and look at the big picture showing the outpouring of entrepreneurial ideas and inspiration from Drexel researchers. We rightly take note of exceptional achievements, like the invention of the iBreastExam cancer detection device, or the progress made toward creating a unique type of atoms-thin MXene material that may make possible portable dialysis.

Our Office of Research reports that, all told, Drexel researchers currently have received more than 600 grants in support of their work, while securing 46 U.S. patents last year. Annually, the University's research activities regularly result in more than 100 invention disclosures. In support of our research enterprise, we just named the first director of the Human Research Protection Program within the Office of Research. In her new post, Gabrielle Rebillard will ensure that we uphold the highest ethical standards in the conduct of research with human subjects.

Drexel's strong record of success in driving ideas from the research stage to real-world application tells faculty and student innovators that the University is the right place for them to connect to the entrepreneurial ecosystem. For our alumni, I hope it also builds upon your own sense of pride.

Sincerely,

John Fry / President

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The men's ice hockey team are on track to achieve their goals.

A Nice Get

The squash team that didn't even exist eight years ago just finished its best season ever.

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Is it too soon to reminisce about Alumni Weekend 2019? Nah!

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Keep up with fellow alumni's careers, weddings, families and traditions.

54 Friends We'll Miss



56 Crossword

This puzzle is dedicated to everyone who ever took the plunge into entrepreneurship.



EDITOR'S LETTER

Don't Forget to Write

It's graduation time and thousands of new alumni will now reap the greatest gift of a Drexel degree: a lifetime subscription to *Drexel Magazine*. Smile emoji.

I'm not too proud to face the fact that most alumni are not close readers. I mean, there's too much to do and not enough bandwidth. But for those who make a point of checking out every issue, I think it's safe to say that you do so because, even years after graduation, you feel attached to your alma mater. (Also: Hi! And thanks!)

This letter is for you, and for everyone who left Drexel but stayed close. Having been this editor for six years, I've seen that many of Drexel's alumni have attachments that go beyond the usual college connection. Many, many alumni were not only students of Drexel, they were also its employees, its researchers or its teachers. They launched careers that began directly with their experiences here, formed companies with ties to Drexel, or took inspiration from some campus hobby. Similar things happen at every university, but I like to think that Drexel's experiential model dials it up to 11.

Page 34 of this edition, "The Making of a Biomed CEO," features a living example of how someone can embed themselves deeply in the spirit of Drexel and ride it to stunning success. Mihir Shah '00 came to Drexel as an international student, knowing no one, with only an idea in his mind that he would make the most of what the school had to offer. Today, he's the founder and CEO of UE Life Sciences, a young biomedical company that is providing life-saving breast cancer screenings to women in the developing world, using incredible Drexel technology that he commercialized. He did it by staying engaged in the University for decades after he graduated, lasting to this day. While an undergraduate, he took inspiring classes, he attended networking events, he allied with like-minded students, he got to know influential faculty, he learned how Drexel tech-transfer works, he tried to start a business and failed, and tried again, then again. He was the first tenant in the Close School's new Baiada Institute for Entrepreneurship, and he used everything he knew, everyone he met and all of the resources available at Drexel to bring something meaningful to market. I hope that you'll read about his journey and come away impressed with what he accomplished. I'm not sure if his story would have ended the same at any other university.

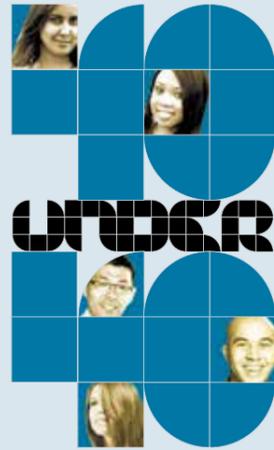
And while you're at it, read about 2012 LeBow grad Stefan Seltz-Axmacher, who is going head to head with Tesla, Google and General Motors to be the first to build a viable business around driverless vehicles. Rounding out the entrepreneurship theme, this edition goes inside ic@3401, the young startup incubator that Drexel opened in 2014 in West Philadelphia. In just the past two years, 52 member companies have raised \$54 million and a dozen have successfully exited. It's one of the key ways that Drexel is taking an active role in fostering startup successes for alumni and faculty — a service that goes far beyond the role of the traditional university and leans excitingly into the future. Good luck, graduates, and I hope you check in now and then.

Thank you for reading.

Sonja Sherwood / Editor



ABOUT THE COVER
Illustration by Tavis Coburn.



WHAT'S YOUR STORY? What does it take to be named one of Drexel's 40 Under 40?

Past honorees include authors, filmmakers, fashion designers, and founders of companies and nonprofits. They are leaders, inventors, scientists and athletes. We're incredibly proud of their stories, because they show how far a person can go with a great mind and a solid education.

We're looking for our next group of accomplished young alumni. If that's you, or someone you know, we want to hear from you.

ELIGIBILITY

- Must be 39 years or younger as of March 15, 2020.
- Must have received a degree.
- Should have achieved demonstrated success in business, the private or nonprofit sector, the arts, community involvement or advocacy.
- Must submit nominee's high resolution photograph and résumé.

Nominations can be submitted at drexelmagazine.org/40U40 or sent to the following mailing address by Aug. 30 2019.

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MAGAZINE

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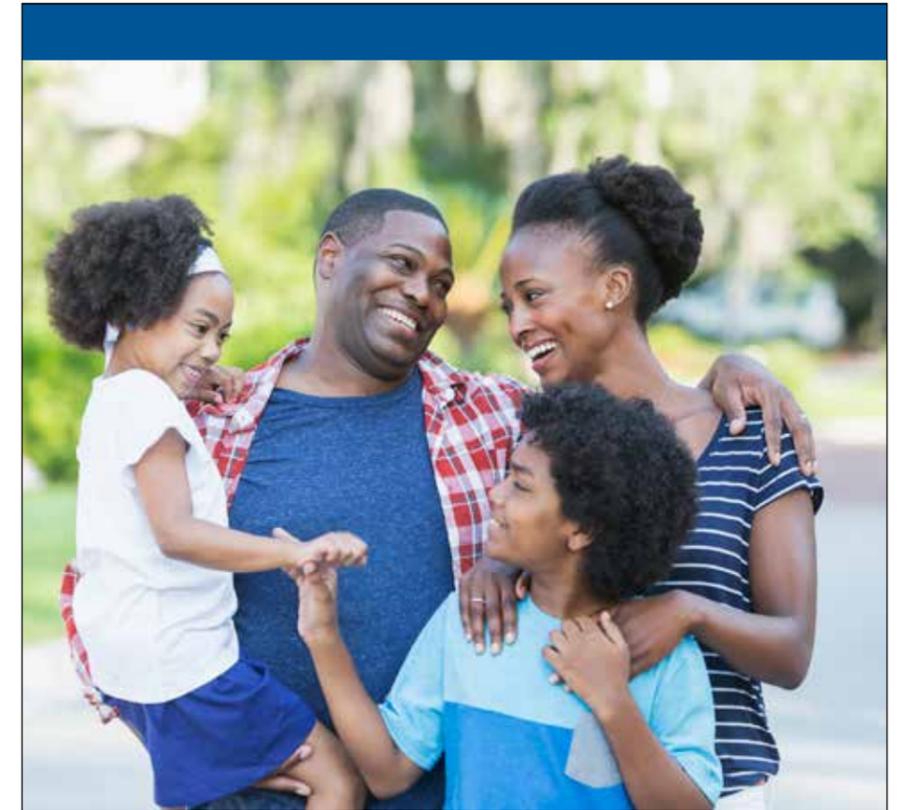
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Who Says Restaurants Are Tough?

Chengdu Famous Food, serving some of the city's most authentic Sichuan dishes in Powelton Village, was created, launched and sold by two LeBow College of Business students over the span of just a few months. By Beth Ann Downey

Nathan Chan and Mark Rao remember the longest all-nighter of their college career, but it wasn't to complete school work.

The two friends were in the midst of opening their restaurant, Chengdu Famous Food, in summer 2016. It was July 1 — already a month behind their planned opening date — and they were still setting up at 3635 Lancaster Ave., preparing menus, checking in with staff and making sure they could best serve first-day customers. They stayed up for 72 hours straight.

"In the afternoon right before our break, both Mark and I were passed out on the couch upstairs..." says Chan, a marketing major in the LeBow College of Business.

"...Next to a lot of empty cans of Red Bull," adds Rao, a fourth-year finance student in LeBow, finishing his friend's sentence.

The restaurant was a success, but their time as business owners didn't last long. In early 2017, just a few months after opening Chengdu and when they were already into the planning stages for its next-door sister business, Woosa Bubble Tea, they received an unsolicited offer to sell both entities. They sold out, making a profit they say tripled their investment.

Rao and Chan met in 2015 during their freshman year in a LeBow class, where they were assigned to present a viable business idea.



CHARLES SHAN CERRONE

Nathan Chan and Mark Rao pose inside Chengdu Famous Food.



Chengdu Famous Food's chef Jack Xue is a native of Chengdu.



Drexel now has the same top research status as Harvard, Princeton and the University of Pennsylvania.

(CONT.)

At first, their idea was to create a food delivery app, but market research revealed too many competitors. It also revealed something else: There were few authentic Sichuan restaurants in Philadelphia. Both Chan and Rao are self-proclaimed “foodies,” and also both grew up in China — Chan was born in Los Angeles but grew up in Hong Kong, and Rao was born and raised in Chengdu, the capital of China’s Sichuan province.

They decided to shift their sights. Delivering quick, affordable, delicious Sichuan food to the University City audience — especially international students — became the basis of Chengdu Famous Food’s menu.

“Their trajectory has been pretty amazing given the competitiveness of the restaurant space, and they hit the right market at the right time,” says Assistant Dean of the Charles D. Close School of Entrepreneurship Charles Sacco. “As students, they saw something that students in University City wanted.”

Their parents provided funds when they were originally trying to move forward with the app, and then outside shareholders came out of the woodwork to invest in the restaurant from as far away as Hong Kong and as close as Ohio.

Next, the students hired chef Jack Xue, a Chengdu native who also played a big part in the kitchen design. Then the students hired a contractor who guided them through the ins and outs of the industry.

For staff and marketing, Rao and Chan tapped friends and classmates, and used social media and *The Triangle*.

After half a year in business, everything was going well. Customers flowed in from local neighborhoods, and even from as far away as New York City. *Philadelphia Inquirer’s* food critic Craig LaBan gave them a glowing review in January 2018.

Then, they got an offer they couldn’t refuse, from two regulars who loved the food. The buyers were business students from Chengdu.

Chan says they wrestled with the decision at first, but that it ultimately made the most sense to sell.

“After we graduate, we’re not sure where we’re going to be,” he says. “It was time for us to sell. But I would say it was a good, one-year experience of enjoyment in opening the restaurant and nothing gives us more satisfaction than to see customers and their happy faces.”

RESEARCH

Drexel Gets Top Research Status

Drexel has been designated at the highest level of research activity by the Carnegie Classification of Institutions of Higher Education, which has recognized institutional diversity in U.S. higher education for decades. The organization’s 2018 classification system assigned Drexel to its “R1 Doctoral Universities: Very High Research Activity” category, which is the highest level of research activity.

Drexel was one of 130 colleges and universities to reach this level of status. Previously, the University had been listed in the organization’s R2 category (for high research activity). Its inclusion in the R1 prestigious category marks an affirmation of the University’s rising stature in research and national recognition of its research enterprise.

“We are familiar with the many ways in which Drexel researchers are making their mark — buoyed by an impressive, 15 percent increase in sponsored research awards last year, to nearly \$124 million,” says President John Fry. “But the Carnegie designation is a welcome affirmation by independent reviewers.”

The University was one of only 34 private institutions in the nation included on the Carnegie list, which is significant because it is not a public university and therefore lacks the public funding that supports sponsored research at those institutions.

CULINARY ARTS



Order Up!

The Center for Food & Hospitality Management’s student-run restaurant and bar, the Academic Bistro, received a new makeover over the past summer. Not only was the space redecorated with new rugs, walls, art, tables, chairs and lighting — but the updates incorporated the center’s relationships within the industry in Philadelphia.

New wall art includes photographs shot by Jason Varney, BS photography ’01, a local food and lifestyle photographer and notable Drexel alumnus who recently exhibited a show at his alma mater.

The accent wall of wooden wine crates was built by Paul O’Neill, an assistant clinical professor of hospitality, who took apart wine boxes and nailed them together to resemble a previous installation that is currently on display at Osteria (a local Italian restaurant opened by noted restaurateur Marc Vetri ’90, who also has taught classes at the center).

The Academic Bistro functions as a restaurant and bar — both of which are regularly used by internal Drexel organizations and groups, and also by outside companies. Students in both the Department of Culinary Arts & Sciences and the Department of Hospitality Management also use the space to cook for, serve and host at these events and offerings.

For more about Drexel’s research enterprise, see EXEL Magazine at exelmagazine.org.

Research

ARTS AND SCIENCES

BRAIN ZAP

Despite growing interest in brain stimulation, researchers know little about the public’s ethical attitudes toward the use of the technique. That motivated John Medaglia, a professor of psychology, and his colleagues to ask over 800 individuals if they were more willing to use brain stimulation on others than on themselves, and if they were more willing to use it with the goal of repairing, rather than enhancing, cognitive functions. “Sometimes people will report that they’re willing to use brain stimulation in less moral ways when it suits themselves,” Medaglia says. “However, it’s encouraging to know that people are generally looking out for those who might be struggling the most.”



MEDICINE



Symptoms of Sepsis

Drexel researchers have identified the specific symptoms that put patients at the greatest risk of dying from sepsis — and they’re not what many clinicians might think. A new study shows that impaired kidney function is one of the leading predictors of

sepsis patient mortality. Conversely, the researchers found that the more well-known symptoms of sepsis, such as low blood pressure, were linked to lower mortality rates in the population they studied. “Symptoms related to these systems need to be raising a red flag for doctors,” says study co-principal investigator Ryan Arnold, an emergency medicine doc-

tor and faculty member at Drexel College of Medicine.

PUBLIC HEALTH



Health for all

Though Medicaid expansion has helped to improve insurance coverage for immigrant populations in the United States, uninsured rates still remain high for those in the United States who are not yet citizens,

according to a new study by researchers at Drexel and the University of Nebraska Medical Center. The researchers found that the percentage of uninsured noncitizens decreased after the Affordable Care Act went into effect, from 70 percent in 2010 to 54 percent in 2015. However, when compared to other populations, uninsured rates remained high.

BIOMED



Joint Pain

Drexel’s Lin Han, an associate professor in the School of Biomedical Engineering, Science and Health Systems, has received a CAREER award from the National Science Foundation to study fibrous tissues at the nanoscale, advancing the treatment and understanding

of cartilage diseases such as osteoarthritis. Funding from the award will allow Han’s lab to generate new knowledge about the biomechanics of the pericellular matrix — a thin coat that surrounds fibrous tissue cells. Recent studies have suggested that this “coat” could play a pivotal role in regulating fibrocartilage, which can be found, for example, in the knee joint meniscus. Han

says this research will advance research into problems like incurable, chronic knee pain, which afflicts millions every year.

ENGINEERING



Shower Germs

Researchers from Arizona State and Drexel have taken a closer look at how the spray from showers, sinks and toilets can expose us to bacteria responsible

for waterborne disease. The study focuses specifically on *Legionella pneumophila*, the bacteria that causes pneumonia-like Legionnaire’s disease. “We found that shower risks were highest, likely due to the amount of time a person would be exposed to the water spray,” says paper co-author Charles Haas, LD Betz Professor of Environmental Engineering in the College of Engineering.



Music professor George Starks contributed this west African "Dan Mask" from his collection to the Provost office decor.



Blockchain technology is best known as the framework for the digital currency Bitcoin, but it has many potential business uses.

Norma Bouchard was previously dean and professor at San Diego State University.



COMMUNITY

Drexel Expands Opioid Addiction Services

A \$1.5 million, three-year grant from the U.S. Department of Health and Human Services is enabling clinicians in the College of Medicine to undertake an ambitious project to address the opioid epidemic in Philadelphia, where 1,217 residents died from unintentional drug overdoses in 2017.

With the funds, the College of Medicine will create a Center of Excellence providing healthcare for opioid use disorder.

The center will expand addiction treatment services and extend opioid use disorder educational programs to all Drexel health care providers, among other initiatives.

By 2020, the Drexel clinicians are seeking to engage at least 300 new individuals in medication-assisted treatment, to reduce by half the number of patients in treatment who use illicit opioids, and to reduce the number of opioids prescribed by Drexel physicians.

"As a large, community-focused academic health center, with 490,000 patient visits in 2017, Drexel Medicine has a significant opportunity to expand opioid use disorder prevention and treatment," says principal investigator Barbara Schindler, a professor of psychiatry and pediatrics.

ARTS AND DESIGN



Office Decor Made By Dragons

Why line your office walls with corporate prints when there are so many talented artists at Drexel? Last fall the Provost's Office reception area, conference room and other spaces in the Main Building were remade with more than 40 pieces of art from over 15 Drexel dragons.

The call for artwork went out to Dragons across the University and over 400 submissions were received. The selected artwork features a variety of

subjects and mediums to come together to represent the talent of Drexel's community.

"What better way to show support and appreciation for our amazing student and faculty creativity than to highlight their work in plain sight for our visitors and our staff? For our office, it provides even more motivation to work hard in supporting the academic enterprise," says Executive Vice President and Nina Henderson Provost M. Brian Blake.

CLUBS

The Latest Thang is Blockchain

In November, Drexel students created a new club aimed at keeping students from all disciplines abreast of blockchain technology.

Drexel Blockchain is aiming to research, educate, communicate and consult around this digital phenomenon in a way that both elevates Drexel and helps the student club's founders leave a lasting legacy.

The founders range from majors in computer science to finance to graphic design, and its members range from first-years through fifth-years. It's this diversity that is not only the club's seminal building block, but also a key foundation of blockchain itself.

"The trust lies in the community, and that's how Drexel Blockchain operates," says co-founder Adit Gupta, a fifth-year software engineering and math student. "It's very community-driven."

The goal of Drexel Blockchain, according to its founders, is to operate like a startup group. This includes providing consulting services to companies in Center City and beyond — while giving students the opportunity to learn consulting skills through direct experience.

Drexel Blockchain has big future plans, including hosting "the biggest blockchain conference in Drexel's history," according to members.

CONSTRUCTION

\$5 Million Gift Establishes Honors Hall

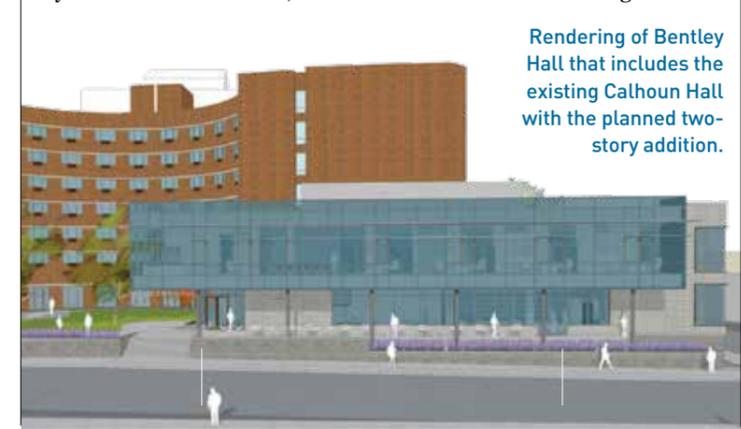
Calhoun Hall student residences will soon be fully renovated to create a new epicenter on Drexel's campus for honors students, thanks to a \$5 million gift from Bentley Systems CEO Greg S. Bentley and his wife, Caroline.

The new Greg and Caroline Bentley Hall will house a true "living/learning" community for students of the Pennoni Honors College. It will include a new, two-story, glass-and-stone addition of about 10,800 square feet that will house offices and seminar rooms for Pennoni. The honors college sponsors initiatives that serve 1,500 honors program students and the Drexel community at large.

American Campus Communities is the lead developer of the \$35 million project. In the first phase of construction, Calhoun Hall will be renovated to accommodate about 380 students and opened fall 2019.

During the second phase of the project, the two-story addition will be completed. Scheduled to open in 2020, the addition will include three seminar rooms, offices for the Pennoni Honors College, and collaborative study and social lounges.

"This is an exciting opportunity to create an intellectual oasis on campus — a place where students from all disciplines can gather to discuss ideas, take seminar-style, cross-disciplinary courses, and learn more about opportunities for research, fellowships and mentoring on campus," says Paula Marantz Cohen, dean of the Pennoni Honors College.



Rendering of Bentley Hall that includes the existing Calhoun Hall with the planned two-story addition.

ACADEMICS

New Arts and Sciences Dean

After a national search, the College of Arts and Sciences named Norma Bouchard its new dean, filling a position occupied for 15 years by Donna Murasko, who remains at Drexel as a member of the faculty.

Bouchard comes to Philadelphia from the College of Arts and Letters at San Diego State University, where she was dean of the university's largest college with 18 academic departments and 650 faculty members, and also professor of European Studies.

She joined San Diego in 2015 after 17 years as professor of Italian and Comparative Literary and Cultural Studies at the University of Connecticut-Storrs, where she was promoted through the ranks to professor; head of the department; co-chair of the Graduate Program in Comparative Literatures and Cultural Studies; and associate dean of the Humanities, the Centers and Institutes of the College of Liberal Arts and Sciences and the five regional campuses.

A native of Italy, she earned a master's in Italian literature and a doctorate in comparative literature from Indiana University-Bloomington.

She will take over from Interim Dean Maria Schultheis '98, chair of the Psychology Department and a clinical neuropsychologist, who has helmed the college since July 2018.



David E. Wilson, Gov. Tom Wolf, Kenny Simansky and Dana Dornsife.

Amount raised for three local charities at the WKDU Electronic Music Marathon



"I think that this is going to be important for our future and their future — [Tower Health is] an academic health system and they have a primary affiliation with a medical school campus."
— Valerie Weber, College of Medicine

ENGAGEMENT

Act 93: Aid for Clinical Trials

In October, Drexel alumna and benefactor Dana Dornsife '83 joined Governor Tom Wolf in Harrisburg for a ceremonial signing of Act 93.

The new law is aimed at improving patient access to clinical trials and ensuring that trials have participation from a diverse population.

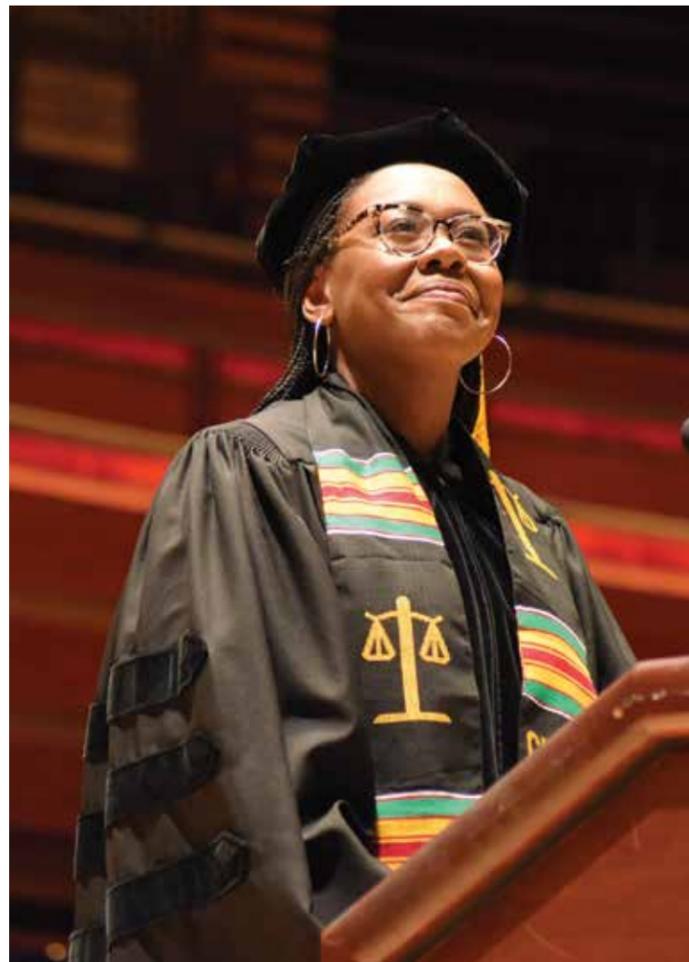
Dornsife, who is the founder and board chair of the Lazarex Cancer Foundation, worked closely with Drexel leaders (including President John Fry, College of Medicine Vice Dean for Research Kenny Simansky and Vice President in the Office of Government and Community Relations David E. Wilson) and the Wolf Administration and the General Assembly over the past three years to garner the necessary support for this issue.

The law is a step toward addressing race-related health disparities. Consider that African Americans are two to three times more likely than white citizens to be affected by multiple myeloma, and yet they make up only 4.5 percent of participants enrolled in clinical trials for treatments targeting the cancer.

For many, expenses such as transportation and lodging are an insurmountable barrier.

Act 93 allows cancer trial participants to get reimbursed for related out-of-pocket expenses, helping to remove barriers for financially burdened patient-subjects.

COMMENCEMENT



Way to Go, Grads!

Savannah Merceus delivered a powerful rendition of "The Star Spangled Banner" to the 172 new graduates of Kline School of Law on May 15 at the Kimmel Center for the Performing Arts, which also hosted 543 College of Medicine grads on May 17. Altogether, more than 6,300 Dragons celebrated graduation at a number of individual ceremonies, capped by a school-wide celebration at Citizens Bank Park on June 14. Check out more photos at www.drexelmagazine.org.

COMMUNITY

Rockin' Around the Clock

The annual WKDU Electronic Music Marathon hosted by Drexel's independent student radio station has taken on many forms in the name of good causes, and this year it linked up with several donors to break its fundraising record.

This year's marathon in October brought out DJs spinning everything from ambient music to disco and techno to experimental and house.

The station partnered with Philly AIDS Thrift for the second year in a row as well as with two organizations they support: The Attic Youth Center and the AIDS Law Project of Pennsylvania. All three received \$1,500 each from WKDU.

Chris Burrell, an adjunct marketing professor at Drexel and the electronic music director of WKDU, notes that the marathon raised a total of \$9,000 — half of which goes to the charities and half of which is used to support future WKDU programming.

"I think it speaks to the momentum that we've grown over the years doing the event and building up our relationship with the community of DJs," he says.

The EMM started as a class project in 1997, but it has grown into a Philly DJ tradition with around-the-clock programming during the marathon weekend and a remote broadcast party series.

"It's cool how we are able to bring together people from a lot of different scenes, musical styles and different walks of life," Burrell says.

MEDICINE

Regional Medical School Site Selected

Tower Health has selected a location for construction of a 200,000-square-foot building for a four-year additional location for Drexel University College of Medicine at Tower Health.

The site, which is less than a mile from Reading Hospital, will open for the 2021-22 academic year. When fully operational, the campus will educate 200 students.

College of Medicine's Senior Vice Dean for Educational and Academic Affairs Valerie Weber says this additional medical school location will provide a different type of environment than Drexel's Philadelphia campuses, as Reading is a small urban area with a diverse community with growing medical needs.

"Tower Health is a really dynamic health system, and it's an expanding health system," she says. "They have a very long history of medical excellence in graduate and undergraduate education. ... I think that this is going to be important for our future and their future — they're now an academic health system and they have a primary affiliation with a medical school campus."

A rendering of the College of Medicine location that will be built in Reading through an agreement with Tower Health.



COMMUNITY

Color for a Cause

Last October, Drexel's Office of Equality & Diversity (OED) honored national Domestic Violence Awareness Month with a purple-wearing contest.

The winner of the contest went above and beyond in wearing purple every day — even on the weekends and at home. And yes, it helped that purple was already her favorite color.

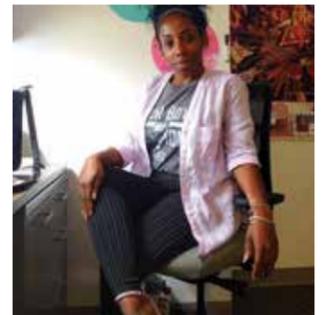
Monique Mallory, assistant director of operations and data analytics in OED, wore at least one item of purple for each of the 31 days in October — which is even more impressive considering items couldn't be worn twice.

The National Resource Center on Domestic Violence promotes the month of awareness with a purple ribbon to symbolize and honor courage, survival and dedication to ending domestic violence.

Mallory was inspired to support the month because of her own experiences with intimate partner violence in the past.

"After working here and hearing the stories of so many people who suffer with domestic abuse, I decided to start speaking up about my experiences," she says.

"While it's true that Monique works with us in OED, that's not what gave her a leg up," says Jesse Krohn, formerly associate director of education and prevention in the Office of Equality & Diversity. "It makes sense that Monique would demonstrate such an intense commitment to ending interpersonal violence — she is one of the most compassionate and caring people I have the good fortune to know."



Show and Tell

CO-OP PROGRAM

CHRIS SIRACUSA BS BUSINESS ADMINISTRATION '19

Every year, more than 5,700 students discover their careers through the Drexel Co-op program — a signature model of education that balances classroom theory with job experience within a buzzing network of nearly 1,700 co-op employers in 52 countries. What does a Drexel co-op look like? In this regular feature, we ask a student fresh off a recent co-op to show us. — *Sonja Sherwood*

THE CO-OP

I was a roving photographer on the set of "Saturday Night Live." On a given day I would take dozens of shots of the cast and guests for the archives and for media outlets to purchase for editorial coverage of the show. The behind-the-scenes images were for posterity, while the film stills I took that week went on Getty Images; NBC would push them out at 1:30 a.m. as soon as each night's show ended. One of my images of Aidy Bryant portraying Sarah Huckabee Sanders ended up on the cover of *The New York Times*.

THE TAKEAWAY

In a setting that dynamic and unpredictable, you have to be on your toes. You never know who's around the corner, literally. One moment in particular I was caught between one of the camera frames and the floor seating. I couldn't move because I was going to be in Don King's shot. And then Lorne Michaels came over and sat down and then [SNL writer and producer] Steve Higgins came and sat down and then Alec Baldwin was over here and so was [SNL cast member] Beck Bennett and I'm holding the updated script and he's like, "Can I read this with you?" It was just a really cool moment for me. You know you're just so little in this whole thing and you're right there. There's nothing more real than that. You don't really hone your skills in a situation like that, but you learn what you're not good at, and you learn how to adapt.



Camera

THE OBJECTS

This is one of the cameras I used on the set of "Saturday Night Live." It's my eyes. And this is a typical call sheet I used. It's important because it outlines everything that goes on for a given assignment: what's going on, who's in the shoot and where the shoot is.

SNL Swag

Call Sheet

ETHAN O'GRADY

CROSSWALK

BRIEFS



TRADITIONS

Which Drexel Dragon Do You Remember?

Today, Drexel University's mascot is a dragon named Mario — but he wasn't always called Mario, and he wasn't always a dragon.

Mario has only been "Mario," or "Mario the Magnificent," since 1997, and the Drexel Dragon has only been a Drexel Dragon since 1928 — before that, teams from the then-Drexel Institute of Art, Science and Industry were actually called "The Engineers."

In the 90 or so years since the dragon was hatched at Drexel, the look of the mascot has changed a lot. We dove into the University Archives to show just how much.

In 1929, the Dragon made its debut at a pep rally before a big game, and a year later, was outfitted with the ability to emit smoke resembling the traditional fiery breath of the historic monsters. A few years later, this Dragon was updated to a lighter, safer version

of a dragon, made of cloth. In the decades following, new versions were created, including one made out of papier-mâché by a group of creative and enterprising fraternity brothers for a special event in 1962.

By the late '70s, the Drexel Dragon mascot became animated — a tradition that continues to this day, with Drexel students stepping into Mario's claws. The Dragon then wore a collegiate sweater featuring a big Drexel "D" over a jumpsuit-like costume with a hard mask, but then in 1997 when the Drexel Dragon was officially named Mario, he was outfitted in the Drexel navy and gold of today. The 2008 Mario starts to look more like today's Mario — mostly navy, with cartoonish eyes, navy and gold wings that have slightly changed, a tongue that stays in his mouth and a more understated set of gold spikes on his back and tail.

Which Drexel Dragon do you remember?

GIVING

Gift Expands Community Legal Services

A \$1.65 million gift from two prominent members of the Kline School of Law will enable the newly named Andy and Gwen Stern Community Lawyering Clinic to expand its free legal assistance locally and to support Kline's commitment to social justice.

The transformative gift reflects Andy and Gwen Stern's passion for community engagement, and it provides for the hire of an additional staff attorney to extend the clinic's programs under its director Rachel López.

"Andy and Gwen's generous gift will allow us to realize the clinic's full potential," López says. "Not only will it mean that we can provide more high-quality legal assistance to some of Philadelphia's most vulnerable, but it will also create new opportunities for innovations that will facilitate a more collective and holistic approach to legal problem-solving."

Andy Stern is an accomplished partner and trial lawyer known for obtaining record-setting verdicts at Kline & Specter, which was co-founded by the Kline School's naming benefactor, Thomas Kline. Gwen Stern is director of the Kline School's Trial Advocacy Program. In 2005, she established the Marshall-Brennan Constitutional Literacy Project in Philadelphia, bringing a national program dedicated to teaching city teens about the legal system and exposing them to the power of advocacy.

FROM THE DAC

ICE HOCKEY

Sights Set on the Ice

With an experienced bench, a growing roster and the players' best season yet under their belts, the men's ice hockey club team is on track to achieve its goals. By Mike Unger

One goal.

That's how excruciatingly close Drexel's men's ice hockey club team came to having a chance to achieve its own goal: winning a game in the American Collegiate Hockey Association (ACHA) tournament. Even though the season fell short, 2019 will go down as one of the most memorable seasons in the program's history, reaching a 30-5-2 record that is the program's best to date.

"This was hands-down our best year," says Coach Kyle Zoldy '13 (pictured at right), who's been a club member since first lacing up his skates for Drexel in 2008. "We had a very seasoned leadership core. The coaching staff has now been around six years together. A lot of the players that we've recruited have been here for quite some time and understand what we expect from them in terms of effort and the Xs and Os side of things."

Among the team's accomplishments on the ice: winning its third-straight conference regular season title, earning the 18 seed at the ACHA postseason tournament in Dallas, and finishing the year with a national ranking of 24.

Yet perhaps the program's most telling move forward was the establishment of a second team, which competed in the ACHA's Division II.

"We went from having 30 hockey players on campus to having close to 60," Zoldy says. "Now the guys on the top team understand that there's a hungry group on the second team that are really fighting for their spots."

Club hockey in the ACHA's Division I is highly competitive. Although there are no scholarships, players are recruited and often transfer in from NCAA Division III programs.

"It's not a club where people are showing up thinking, maybe I'll try it out," says Lucas Fraiman '20, a defenseman and the club's president. "People are in contact with the coaches, they're known beforehand and they've been playing the sport for years."

In fact, the last two programs to join the NCAA's Division I — Penn State and Arizona State — previously competed in the ACHA.

Club hockey players must commit much of their time to the sport. Practices are on Tuesdays and Wednesdays at 6 a.m. and Thursdays at 9 p.m. Weekends usually mean two, or sometimes three, games. Road trips can mean long bus rides.

"Hockey is a sport that we've all played since a very young age," Fraiman says. "It's what we all love to do. In some ways you can't imagine life without being a part of it."

Drexel's club, which has been around since the late 1970s, has never advanced out of the ACHA tournament's first round. But it's qualified for the competition three years in a row, and this season, its 5-4 loss to Oklahoma was its best showing. After falling behind 4-0, Drexel clawed its way back into the game before falling just short.

Next year will tell whether the team achieves its objective, but after coming so close this time, the goal seems nearer than ever.



TOMMY LEONARDI



FROM THE DAC



"We knew with our new team we could finally break that top eight and start competing with the top teams."
— Fiona Power '19

SQUASH

A Nice Get

From early setbacks to ultimate success, the squash team that didn't even exist eight years ago just finished its best season ever. By Mike Unger

The bookends of the Drexel women's squash team's season tell you all you need to know about the direction of the program.

On Nov. 11, the Dragons lost a close 5-4 decision to archrival Penn in the second match of the year. More than three months later, Drexel ended its best season ever by defeating the Quakers in the Howe Cup College Association National Championship consolation match to finish No. 7 in the nation, the highest ranking in program history.

"It all came down to their determination and self-belief," says Coach John White. "They started to get the wins toward the end of the season and started to believe in themselves a little more and realized that they're a team that the top players don't want to play."

Fiona Power, a senior from Ireland, won her match and played a key role in Drexel's success all season. Despite that initial loss to Penn, she and her teammates came away from the experience hopeful and optimistic, not down.

"We knew with our new team we could finally break that top eight and start competing with the top teams," she says. "After that game we saw our potential and set a higher bar for ourselves."

Following the Penn setback, Drexel defeated ranked opponents Virginia and Dartmouth in two of its next three matches. In January, the team notched its first-ever win over Cornell, an Ivy League power ranked No. 12 in the country at the time. The season also included victories over Top 25 foes Williams and Colby.

White has tried to instill a culture of success since he became the program's first coach when it was established eight years ago. After several long and trying years in which he had to educate potential student-athletes about the mere existence of Drexel's program, he finally sees signs that the team is ready to become elite.

Now, instead of scouring the internet for players, he travels to tournaments overseas in search of top recruits. Rather than trying to convince players to come to Drexel, many contact him to inquire about being recruited.

"The top eight was our goal this year and we got that," he says. "The next level is to stay there. We're all looking at the same recruits. We're all trying to get them to visit and seal the deal. It's just a matter of presenting Drexel Athletics and Drexel University to the prospective student-athlete and their parents and get them involved in the program."

Players like Hannah Blatt have helped propel Drexel to its lofty heights. The sophomore from Canada followed up a 17-4 season, when she played primarily in the No. 4 spot, by reaching No. 1 on the team. White praises her for her determination and competitiveness, characteristics she sees in her coach as well.

"John is a legend in the squash world, and his presence helps to attract and develop great players," she says. "His accomplishments and past experiences [are] infectious to us all. I am convinced that the best is yet to come."

TOMMY LEONARDI



STARTUP NOT YOUR ORDINARY INCUBATOR

WRITTEN BY LINI S. KADABA PORTRAITS BY JEFF FUSCO FEATURING EAMON GALLAGHER AS "THE MATCHMAKER" SHINTARO KAIDO AS "THE VISIONARY"
AND HEAVYWATER CEO SOOFI SAFAVI ROAR FOR GOOD CEO YASMINE MUSTAFA ASSISTANT PROFESSOR OF EDUCATION LORI SEVERINO

WHAT IS IC@3401?

It is an innovation center for early-stage tech companies located at 3401 Market St. in West Philadelphia. It was jointly conceived and managed by Drexel Ventures, Drexel's startup and tech-commercialization arm, in partnership with the University City Science Center. Everything from location to business model, layout, staffing and selection of members distinguishes ic@3401 from typical incubators.

IN 2017, EIGHT EMPLOYEES OF STARTUP HEAVYWATER MOVED INTO IC@3401 TO COMPLETE DEVELOPMENT OF A DISRUPTIVE AI PROGRAM THAT SPEEDS THE MORTGAGE LOAN APPROVAL PROCESS. THE FOUNDERS QUICKLY FOUND COLLABORATORS WITH AI EXPERTISE AMONG THE FACULTY AND STUDENTS OF DREXEL'S COLLEGE OF COMPUTING & INFORMATICS, CO-LOCATED IN THE BUILDING. THEY ALSO RECEIVED INTRODUCTIONS TO LOCAL ANGELS AND HELP WITH A CRUCIAL CFO HIRE. JUST 13 MONTHS LATER, THE STARTUP WAS ACQUIRED BY PUBLICLY TRADED BLACK KNIGHT AND GRADUATED TO NEW OFFICES IN CENTER CITY PHILADELPHIA WITH A TEAM OF 19.



HEAVYWATER
SOOFI SAFAVI
CEO

DAVID LUK
CFO

EAMON GALLAGHER JD '13 leans into a conversation about HeavyWater's latest plans with its chief financial officer David Luk and takes a swig from a Tröegs Scratch 342, a lager from a Central Pennsylvania brewery that markets to those with a spirit of adventure and curiosity.

Fitting.

Those traits, after all, are hallmarks of successful entrepreneurs — and this unique incubator and accelerator for early-stage startups is all about that. But on this last Thursday of the month, the 36-year-old program director wants to encourage another quality, one arguably harder to come by among determined, heads-down techies but central to ic@3401's successes.

Shoptalk — and what better venue than a 5 p.m. happy hour.

"It fosters community," Gallagher, tall and lean, with a mop of light brown hair, says, talking a New York minute (though he hails from Maine). "We've made it a space where entrepreneurs can come and support each other."

Launched in the summer of 2014 by Drexel and the nonprofit University City Science Center, the

innovation center is building a reputation as *the* spot in the region for embryonic businesses, particularly those in digital health, educational and financial technologies, and the "internet of things" (i.e. connected devices).

Since 2016, 52 member companies have raised \$54 million, including \$21 million last year alone. It's "a concentration of capital being raised that you don't see anywhere else in the region," says Gallagher, who also directs Drexel's Entrepreneurial Law Clinic at the Thomas R. Kline School of Law. Nearly 40 percent of ic@3401 members have attracted investments from Ben Franklin Technology Partners of Southeastern Pennsylvania, one of the nation's longest-running tech-based economic development organizations. The incubator also boasts more than 300 jobs created locally since its inception in 2014 and a healthy waitlist.

A lot of credit goes to its unconventional model and its status as the linchpin of Drexel's ambition to increase the number of University-affiliated inventions that make it to market. Unlike the typical university incubator, ic@3401 co-mingles academic tenants and classrooms with entrepreneurs from the public. That means members come not only from Drexel and its wealth of commercialization and translational research programs (think seed-funder Drexel Ventures, degree-granting Charles D. Close School of Entrepreneurship, health care solutions-focused Coulter Translational Research Partnership Program, etc.) but from other academic institutions, local industry and members of the city's startup community.



COURTESY BFTP

As Gallagher and Luk catch up, a steady flow of men and women unplug from laptops. They wear a path from the expanse of tables and swivel chairs that serve as shared offices to the snug kitchen *cum* break room on the second floor of 3401 Market St. There, food (Mediterranean from Mama's Vegetarian this day), beer and most important chatter all abound. A couple of employees from Drexel's transdisciplinary research ExCITe Center on the first floor wander up and ic@3401 alums such as Luk add to the mix.

It was at a similar happy hour that Gallagher played the matchmaker between Luk, then a principal at local venture firm Safeguard Scientifics, and HeavyWater's founder and CEO Soofi Safavi, who was looking to expand. The two men hit it off so well, Luk got the job of CFO and chief revenue officer and his venture capital connections started HeavyWater on its path to the big time.

"It would have never happened if I was not at 3401," Luk, who held office hours here, says of serendipity's role in the successful pairing. HeavyWater's legal team had emailed an ask a while back, he continues, but he ignored it at the time. "It didn't seem like a fit. ... I think Eamon did a better job of explaining why we needed to chat."

Says Safavi: "Eamon grasps at even the most complex level the mission of the company, and on its behalf articulates it and attracts other individuals."

ic@3401 helped in other ways, too. When HeavyWater needed private office space to meet Black Knight's security regulations, the large, third-floor game room was repurposed. When HeavyWater needed new hires, a "help wanted" sign on its door landed a graduate student from the College of Computing & Informatics next door. The company also partnered with Drexel's Xiaohua Tony Hu, an information science professor. Hu happens to be a founding co-director of the National Science Foundation Center for Visual & Decision Informatics, a program HeavyWater used to further develop its technology.

"Being part of an incubator like that," Safavi says, "allows you to augment efficiencies.... We were able to leverage resources to get a little forward momentum."

Christopher Wink is CEO and publisher of a network of news sites called *Technical.ly* that follow local tech startup scenes.

"Any city of any size in the world is talking about the tech renaissance," he says. "We know that innovation happens at the intersection of different communities. Universities are blessed with their own set of internal communities, students, professors, alumni. But critically, universities want opportunity for outside entities to be on campus, bump into each other."

ic@3401 is that type of ecosystem, according to Wink.

"We need spaces like this," he says, "to make sure Philadelphia is not a laggard but a leader."

ROAR FOR GOOD
YASMINE
MUSTAFA
CEO

ROAR FOR GOOD GRADUATED FROM A DREAMIT VENTURES' ACCELERATOR PROGRAM WITH A PROTOTYPE OF A WEARABLE PERSONAL SECURITY ALARM AND MOVED INTO THE IC@3401 COMMUNITY IN 2015. THE COMPANY WENT ON TO RAISE MORE THAN \$300,000 THROUGH A MASSIVE CROWDFUNDING CAMPAIGN. IT DELIVERED ITS PRODUCT ATHENA, A DEVICE USED TO CALL FOR HELP, AND MOVED OUT OF THE INCUBATOR WITH A TEAM OF EIGHT. NOW, THE COMPANY IS DEVELOPING A NEW PANIC BUTTON SAFETY SYSTEM FOR HOTEL HOUSEKEEPING STAFF.

AT FIRST GLANCE, the 7,625-square-foot ic@3401 looks like any coworking space. Walk past the reception desk, past the pillars plastered with company logos, and a collection of 58 desks fill the expanse, making for cozy shared offices. It also has two phonebooths for private conversations, eight individual offices for rent, a few conference rooms with floor-to-ceiling whiteboards should inspiration strike, a kitchen with an espresso machine and on the third floor, and an 891-square-foot game room turned office.

But look closer, and it's clear ic@3401 — with the tag line "at the intersection of innovation and Market" — differs significantly from the many rent-a-shared-office options around the region.

"If you go to WeWork, or 1776 Startup Network, or MakeOffices, you're paying a market amount of rent to have a seat next to whoever else is paying rent," Gallagher says. "This space is very different. This space is *only* startup oriented."

An oft-shared story is how the incubator in 2014 was too heavy on service providers, including five law firms. "I went to every one of them," says Shintaro Kaido, who oversees the incubator for the University

EAMON GALLAGHER JD '13 PROGRAM DIRECTOR IC@3401
"WE'VE MADE IT A SPACE WHERE ENTREPRENEURS CAN COME AND SUPPORT EACH OTHER"



SHINTARO KAIDO MANAGING DIRECTOR OF VENTURE COMMERCIALIZATION DREXEL VENTURES
"WE'RE VERY KEEN TO MAKE SURE STARTUPS ARE SYNERGYSTIC TO THE COMMUNITY"



SHINTARO THE VISIONARY KAIDO

as managing director of venture commercialization at Drexel Ventures, "and asked, 'Have you met with any of our startups?' The answer across all five was 'No.'

"So, it's like, what in the heck are you doing here?" he says. "At one point, the number of service providers exceeded people involved in startups."

Law firms were sent packing.

Startups capturing capital were invited to join, enticed by an attractive location near 30th Street Station, the campuses of Drexel, University of Pennsylvania and University of the Sciences, and below-market rents. At the same time, professors with sound concepts that had spinout potential were channeled to the incubator.

Since 2014, the number of companies based at ic@3401 has doubled. Admission is competitive, including a phone-screen and in-person interview that might involve a mixer "just to see how they interact," Gallagher says. He looks for an entity of one or two founders who want to solve a problem, and know what product will accomplish it.

In addition, Drexel academics with a marketable idea get automatic admission — but only after Kaido signs off. He also puts the project through Drexel Ventures' Proof-of-Concept Academy, an accelerator program for high-growth startup teams that Kaido runs. Likewise, startups that go through the Science Center's Digital Health Accelerator, which helps companies grow in the U.S. health care market and increase revenue through sales, get a greenlight.

If Gallagher is the matchmaker, then Kaido is the visionary.

"That curation we talk about is very intentional," Kaido says, giving off a Silicon Valley vibe with his cropped black hair and 3D-printed glasses, with his shorts and Phillies jersey over a tee. "We're very keen to make sure the startups are synergistic to the community." He says some successful early stagers have been turned away because their ideas and products — in terms of technologies — were nothing new.

Keith A. Orris, senior vice president for corporate relations and economic development at Drexel and senior manager of Drexel Ventures, represents the University on the board of the Science Center, a long-time local hub for technology innovation. He brokered the deal with the center to share resources for a single incubator in lieu of two competing entities.

ic@3401, Orris says, fits perfectly into Drexel's DNA of translational research. "In order to have a successful commercialization program today," he says, "we not only want to license our technologies to existing companies, we also want to license them to startup companies around the principle investigator who invented it and support these academic innovators in standing up a company themselves. That takes services, mentoring and education. And that takes capital."

And, he adds, that takes ic@3401. He calls it a dynamic ecosystem "of like-minded thinkers and doers.... We expect you to fail fast or grow consistently, graduate and go to the next level of space."

In other words, sink or swim.

To its credit, more of the startups swim. In 2017, out of its current 48 members, a dozen companies exited and three failed, Gallagher says. On average, companies graduate in 19 months, often with a team of eight to 12 "with legs firmly under them," he says.

One reason newbies stay above water is that ic@3401 comes with built-in coaches in not only Gallagher and his connections, but other startup founders, some of whom have sold previous companies.

"This space has so many entrepreneurs," says computer scientist Zikria Syed MS '89, who is CEO of his third startup, PatientWing. The online system to facilitate patient enrollment in clinical trials has called ic@3401 home since its inception three years ago. "It's a great space to mingle and learn and share stories and experiences."

PatientWing found its first pilot customer in then incubator member, The One Health Company, which enrolls dogs with cancer in trials. As



There is more to ic@3401 than meets the eye. The 7,625-square-foot space hosts 58 desks, private phone booths, eight individual offices, conference rooms, a kitchen and a game room turned office. But its top assets are an unusual mix of tenants, drawn from both the public and the academic sector, and the business support it gets from Drexel.

PatientWing scales, it has partnered with a Science Center startup working on novel cancer treatments. So far, it has raised almost \$1 million in funds.

A decade ago, when Syed was launching his other companies, "incubators were really not there," he says. "We were much more isolated from other businesses."

ic@3401 — and Gallagher in particular — make connections to the larger business world happen, says Priya Bhutani, founder and CEO of REGDesk, a machine-learning platform that helps medical device companies navigate the regulatory process.

"Eamon goes out of his way to establish opportunities, which is what is needed in this space," she says. Quorum, a nearby Science Center event and networking space, put REGDesk in front of medical device and pharmaceutical leaders. "These types of introductions are a direct help to us."

Also, a Slack channel offers a platform for members to ask real-time questions and share industry news. Recently, a post about employee health/benefits plans for B2B customers got three swift responses. And Gallagher created a Takeout Kit, a vetted list of startup providers such as accountants, attorneys, software shops "and on and on."

Then there is the building itself. It houses myriad opportunities, starting with the presence of Ben

Franklin Technology Partners. Because ic@3401 has proven a fruitful pipeline for the investor, it maintains an office onsite, with staff managers rotating through thrice a week.

“I think it’s an ideal place to start a company,” says Anthony Green, vice president of Ben Franklin’s technology commercialization group. “When you cut to the chase, everybody needs money. They also need guidance, market strategies. Some are very early stage. They don’t even know what company they are.”

Dreamit Ventures is another funding source that has shifted from supporting back-of-envelope ideas to scaling companies. Based up the street at 36th and Market streets, the Science Center has additional commercialization programs and spaces to connect, including Quorum that’s free and open to the public and Venture Café Philadelphia, a weekly gathering of entrepreneurs, creatives and those with an interest in out-of-the-box thinking.

“ic@3401,” says Science Center president and CEO Steve Zarrilli, “leverages and builds on the success of both institutions’ legacy of supporting startups and convening communities around innovation and entrepreneurship.”

Even after companies graduate, the relationship continues.

“We caught up recently,” says ROAR for Good’s co-founder and CEO Yasmine Mustafa, who sought Gallagher’s counsel on fundraising platforms for the company’s new product. He always “lessens ... the degrees of separation from someone you want to meet. He’s really amazing.”

For the matchmaker, it was just another day at ic@3401.

ACE
LORI SEVERINO
ASSISTANT PROFESSOR
OF EDUCATION



ACE BEGAN AS A RESEARCH PROJECT AT DREXEL’S EDUCATION SCHOOL BUT EVOLVED INTO AN IC@3401 MEMBER THANKS TO DREXEL VENTURES’ PROGRAMS AND A \$100,000 GRANT TO DEVELOP A READING COMPREHENSION ASSESSMENT TOOL FOR ADOLESCENTS. THE EDTECH COMPANY ALSO WON A PRESTIGIOUS, \$50,000 NSF I-CORPS TEAM GRANT TO DO CUSTOMER DISCOVERY. ONE REASON: ACE GAINED AN EDGE THROUGH NETWORKING WITH IC@3401 MEMBERS WHO HAD PARTICIPATED IN THE NSF PROGRAM FOR ACADEMIC INNOVATORS.

WHEN KAIDO WAS HIRED in late 2014, one of his early goals was to build a supportive, on-campus community of entrepreneurs to help Drexel innovators with their entrepreneurial endeavors. To the serial entrepreneur who launched and directed a nationally recognized accelerator program in the Midwest, that meant exposing Drexel academic innovators to an ecosystem that not only offered access to seed money and support but also to an innovation nexus.

“Many from Drexel are new to entrepreneurialism,” Kaido says. “So ic@3401 was built so that there’s a critical mass of active and successful entrepreneurs who Drexel participants can work alongside to move up the learning curve as fast as possible.”

When Drexel alumnus Johann deSa ’10 looked to take his invention to market, he needed a company office.

He found it at ic@3401, where Instadiagnostics has lived since 2016. “The space is a great stepping stone for early-stage startups,” says deSa, now a Drexel visiting research professor of biomedical en-

gineering and founder and director of the business that brings laboratory blood testing to point of care. “The practice pitches are really helpful.”

On a weekly basis, Gallagher and incubator members gather to offer feedback around pitches. “You learn a lot of things you wouldn’t see in academia,” he says. Instadiagnostics has won about \$1.5 million in grants from NSF, National Institute of Health and others.

Kaido envisions an ecosystem with “a value proposition” of nurturing first-timers with urgency. “When we come to a problem, we need an answer now,” he says, speaking from experience. “Tomorrow is almost too late.”

Consider Sage Smart Garden, a University of Delaware spinout developing a smart irrigation system for landscapers and home gardeners. The startup joined the incubator last summer after going through the NSF I-Corps Team program. Almost right away — thanks to an encounter at one of Gallagher’s happy hours — Sage Smart partnered with fellow tenants GrowFlux. The two Drexel alumni use a horticultural lighting and sensing platform using some similar technology.

“We were able to significantly cut down our product-development time,” says Sage Smart chief technical officer Trevor Stephens. After only a few months, the company graduated to NextFab in South Philadelphia to focus on hardware development and manufacturing.

Meanwhile, GrowFlux moved from a small office on the second floor to HeavyWater’s old digs. The ping-pong table now serves as work table, where tinkering and testing of the agtech lights marketed to growers of cannabis and agriculture takes place.

Before its May move to ic@3401, GrowFlux kept offices at various co-working spots. None proved an ideal fit, says CEO Eric Eisele ’09 and Chief Technology Officer Alexander Roscoe ’13.

That’s because none catered specifically to startups, Eisele says. “I think,” he says, “seeing other people at the same stage as us boosts our energy.”

For ACE, which has launched pilots in Philadelphia-area schools, it’s all about networks. “It’s a space where you can bounce ideas off one another,” says Lori Severino, an assistant professor of special education and principal investigator on the I-Corps grant. “We wouldn’t have gone anywhere without Drexel Ventures and ic@3401. We would have had this great idea, and it would have just sat there.”

After all, any startup has a lengthy to-do list: “I need to find an accountant,” Gallagher says. “I need to form an LLC. I need to find someone to help me with my search optimization and marketing and webpage. ... You can go down a Google rabbit hole. You can be paralyzed by the infinite options sitting in front of you.”

Enter ic@3401.

“A lot of what we do is collapse that infinite paralysis into a few defined pathways,” he says. “Everybody else in this space has gone through that.”

Of course, like-minded colleagues only help if they intermingle.



To that end, Gallagher promotes regular luncheons, venture capital firm visits and, of course, happy hours. Even ic@3401’s physical design fosters serendipitous connections.

“We’ve got one coffee machine,” he says. “Everybody is going to go to that coffee machine. We’ve got one water fountain. Everybody is going to go to the same water fountain.”

Perhaps most important, Gallagher added monthly one-on-one catch-up meetings with each member to assess needs.

As Kaido puts it: “He knows what keeps the members at ic@3401 up at night. They’re all different issues. When somebody comes along that either has something that can solve it or help solve it, then he knows to put them together.”

In many ways, Gallagher’s background has proven perfect for matchmaking.

After a liberal arts degree in “everything,” as Gallagher says, he worked as a recruiter in the Philly area for four years, focused on the IT and accounting fields. In 2010, he entered Drexel’s Kline School of Law and its business and entrepreneurship program. At the same time, he was a fellow at the Keiretsu Forum, an angel investment group where he helped conduct due diligence on early-stage businesses.

With his degree in hand, Gallagher worked as a full-time associate at a small firm that counseled startups and a couple of years in, also took a role as assistant director at the Innovation, Creativity and Entrepreneurship Institute at Villanova University.

In 2016, Gallagher was hired to manage ic@3401 and carry out Kaido’s vision of a beacon for local entrepreneurs and investors. The incubator “really builds on all of those relationships and experiences dating all the way back to tech recruiting,” he says.

Drexel’s support of ic@3401 includes not only a curator’s attention to the mix of tenants, but also tech-commercialization know-how, funding avenues, an academic setting filled with invention-minded researchers, and networking events.



PLUNKERT

What Is An
Entrepreneur?

by LOGAN LEVENSON

illustration by
DAVID PLUNKERT

There's something about the spirit of the times. Maybe it's the return of a tech boom, the pressure of the gig economy, the excitement of rapid social change...whatever it is, entrepreneurship is definitely trending. In the era of Kickstarter and YouTube stardom and 3D printing, it seems everyone has a lead on some seed funding and a Big Idea. So what exactly sets an entrepreneur apart from a small business owner or a side hustle? Can it be learned, or is it innate? Do you have what it takes?

Entrepreneurship isn't about having "CEO" on your calling card, say our experts.

It's a state of mind.



Mike Kurzeja

SENIOR MANAGER, CSIS

EXELON CORPORATION

Kurzeja hires Drexel students at Exelon and is an adjunct professor in the Close School.

HOW DO YOU KNOW YOU'RE HIRING AN INNOVATIVE THINKER?

"Through my experience, when I hire an entrepreneur, I'm hiring a self-starter. That's one of the key differentiators between entrepreneurship students and other students. Entrepreneurship students are not waiting for direction, you give them a mission and they go and accomplish it. It's the self-starters who are unique and most consistent. Entrepreneurship comes down to a sense of empowerment, the feeling of, 'there's nothing that I can't do.' This sense of empowerment permeates everything and all the work that they do."

Subhan has over 30 years experience in the pharmaceutical and biotechnology industries including managerial roles in large multinationals, and he has raised more than \$30 million from venture firms to fund biotech enterprises. Presently, he serves as CEO of Eppin Pharma Inc. and CEO of AestasRx Inc, both emerging biopharmaceutical companies.

HOW DO YOU TEACH ENTREPRENEURIALISM?

"Rather than teach about entrepreneurship, my approach emphasizes teaching for entrepreneurship. Through experiential learning, I try to expose students to the real world of the entrepreneur. Some 'assignments' include having students work closely with customers to gain instant feedback on their perceived opportunity. I also use case studies that allow students to put themselves in the place of entrepreneurs in both successful and unsuccessful ventures so students can appreciate the challenges that are faced by early-stage companies. Simulations allow students to experience failure. Where possible students are encouraged to engage in consultancy projects with entrepreneurs and 'placements' in entrepreneurial businesses. Students must be provided with opportunities to put into practice concepts taught in the classroom."

Zahed Subhan

TEACHING PROFESSOR OF ENTREPRENEURSHIP

CLOSE SCHOOL OF ENTREPRENEURSHIP



Evan Ehlers

CEO

SHARING EXCESS

In his third year of college, Close School student Ehlers formed a socially charitable startup that allows students to donate unused meal "swipes" on their student cafeteria meal plans to community members in need.

HOW DO YOU KNOW YOU'RE READY TO START A VENTURE?

"I think you know you're ready to start something when your passion will no longer allow you to sit dormant. Rarely is there a perfect time to do something; the cards are almost never aligned fully in your favor. I think passion is the only factor that can carry entrepreneurs beyond those obstacles and imperfections in the plan. Starting something without true passion is like driving a car without tires to handle bumps in the road ahead."



Donna De Carolis

DEAN

CLOSE SCHOOL OF ENTREPRENEURSHIP
DREXEL UNIVERSITY

HOW DO YOU SPOT AN ENTREPRENEUR?

"I spot entrepreneurs everywhere. All of us have the ability to be entrepreneurial — to think and act innovatively, to bounce back from failure, to take initiative in the face of risk. We engage in what I call "small acts of entrepreneurship" throughout our lives: when we take a chance on a new job, relationship, location, or bounce back from a challenge. At the Charles D. Close School of Entrepreneurship, we engage students in experiential courses and programs to develop their entrepreneurial skills and character. Our program gives them the life skills of an entrepreneur — because entrepreneurship education empowers everyone."

Doc Parghi

PARTNER

SRI CAPITAL

Parghi is an early-stage venture capitalist and board member of Ben Franklin Technology Partners, a Philadelphia-based investent firm. SRI Capital of Philadelphia operates a \$100 million fund for investments in enterprise tech startups.



HOW DO YOU CHOOSE A GOOD STARTUP TO INVEST IN?

"Being an entrepreneur, I look more at the person, rather than the idea. Someone who has had a failed startup or a successful exit is typically a candidate for investment because the second try shows grit, tenacity and the ability to pivot. Technically, we are looking for an entrepreneur who is looking to solve a problem in enterprise. We like to invest in early-stage companies with some traction from Series A to an A Round. A driven entrepreneur with a customer-validated idea can be a home run."

T H E
M A K I N G
O F → A
B I O M E D
C E O

WHEN SHAH RUKH KHAN walked onto the stage of a new primetime show in January 2018, the audience was primed for action: The film actor and producer known as the King of Bollywood is the most famous celebrity in India. All eyes were on him as he stood on the vividly lit set of “Ted Talks India Nayi Soch,” a TED Talk series produced in Mumbai for India’s largest TV network.

On that night, though, Khan wasn’t the star. He was there to present Mihir Shah, 40, a youthful-looking, unassuming guy in round glasses. Shah is the Indian-born, Drexel-educated CEO of Philadelphia-based UE LifeSciences, a company that recently debuted a breast cancer detection device unlike anything else on the market.

“Cancer is not a death sentence,” Shah began, speaking in rapid Hindi.

As cameras panned across of the faces of women in the audience, Shah explained that their chances of surviving breast cancer is roughly half that of women living in the United States or Europe, where early detection is more routine. Traditional mammograms are high-tech machines that depend on trained radiologists, he explained; but India has 10 times fewer radiologists than the United States, and they serve four times as many people.

Then Shah showed the audience a 2-inch-square wafer that he promised will even their odds of survival.

The wafer is a unique sensor invented by professors at Drexel, commercialized through the University’s venture infrastructure by Shah when he was a young graduate of Drexel’s computer engineering program, and developed into a one-of-kind, life-saving medical device by Shah’s company. It’s

In 1996, 18-year-old Mihir Shah left Mumbai to study at Drexel. He spoke little English and had barely used a computer, but he wanted to study computer engineering, and he wanted to make an impact. Over the years, using technology invented at Drexel, he built a breast cancer detection device that is already saving lives in the developing world, signed a prestigious distribution deal with a global corporation, and became fêted in his home country. This is the story of how he got from there to here.

BY ● ADAM ● STONE



TOMMY LEONARDI

called the iBreastExam, and it is the developing world's most promising tool for affordable, radiation-free, portable breast cancer screening.

When Shah displayed the device, he spoke not only to the couple hundred people in the studio audience, but to every woman in the developing world who lives far from a hospital, who can't afford a physician, or who fears radiation.

He finished speaking amid rounds of applause and received a standing ovation. For four minutes and 13 seconds in January 2018 — and to the tens of thousands who have already been screened by his device around the world — this Drexel alum was a superstar.

SMALL, SIMPLE, INEXPENSIVE AND SAFE

The iBreastExam is no heavier than a paperback book, is so simple it operates with just an on/off switch, and is capable of producing individual scans for pennies on the dollar. Unlike hospital mammograms, it is painless and uses no radiation. Yet it is as effective as a mammogram at detecting abnormal breast lumps.

Its size, affordability and simplicity make it uniquely suited to reach women in the developing world where poverty, resources or taboos about radiation deter women from getting basic medical attention — with profound health consequences. In the United States, successful early detection drives breast cancer survival rates of 90 percent, but that rate falls to just 50 percent in countries like India, according to the World Health Organization.

The iBreastExam has been deployed in India, Mexico, Myanmar and Botswana so far and will soon be available in at least eight other countries in Southeast Asia and Africa. It has been used to screen more than 175,000 women and successfully identified more than 120 cases of breast cancer. UE LifeSciences recently inked a global distribution deal with GE Healthcare, the world's largest purveyor of women's health imaging products, to expand the device's reach.

Though the device has been on the market for just two years, the story of how it went from a professor's lab bench to clinics and community health fairs around the world is tied to Shah's personal story, and goes back nearly 20 years to when he came to Drexel as a student.

Shah grew up in Mumbai, a city famous for its movies and density. Home life was stable — dad would call every day to make sure he'd gotten home from school — but things were not easy, certainly not by American standards.

"We had all the basic necessities and things seem to last forever," Shah says of his childhood. "We had one television that we used for 10 years! Dad always had a car, nothing fancy though. He's very modest, Old Spice is the only cologne he's ever used. Other kids had the latest toys and I got them maybe a season or two later."

His first English word, "load shedding," speaks volumes about growing up in India. Load shedding is when the power goes down because too many



The iBreastExam is based on research that Shah licensed from Drexel researchers Associate Professor Wan Shih and her husband, Professor Wei-Heng Shih, who found a way to use electric currents to identify abnormal lumps within tissue. The technology is unique because it can detect tiny early tumors, even in dense breasts, making it perfect for early detection.

households are drawing on the grid. "We would lose lights all the time and I heard my parents talk about it," he recalls. "My dad would work 12 hours a day and when the power was out he would come home and manually fan me so I could go to sleep."

It took a Drexel scholarship, all the family's savings and some high-interest loans to bring Shah to the United States at age 18 in 1996.

When he entered Drexel as a freshman, he spoke only adequate English: It's his third language, after Gujarati and Hindi. He came seeking a computer engineering degree, even though he'd only ever used a laptop twice. A self-described "straight B+" student, he didn't seem cut out for academic stardom. But his family had scrappy business instincts: His dad was a "trader," which in India meant he cobbled together an upper-middle-class living buying and selling used textile manufacturing equipment.

Shah got his first formal insights into business when he took a class in basic entrepreneurship from Robert Loring '84, a Drexel alumnus who founded a multi-million-dollar health care services company before returning to Drexel to teach and assist faculty and students with tech transfer. (Today, Shah is teaching that same class himself as an adjunct.)

"It appealed to me at the core because I had seen my dad and my family do this, even if it had been in a very unorganized way," he says, describing how his dad and family members would strike ad hoc deals with textile manufacturers, buying and selling used equipment on the fly, without a set plan but always with a little profit at the end. "They were winging it. My dad has never signed a single contract in his business life, and yet he's never had a single legal issue. He showed me what matters. Conversations matter. When you promise something verbally, you take that very seriously. Dr. Loring's entrepreneurship class opened my eyes to what I had been seeing all those years."

The class inspired him to attend a networking event for students interested in entrepreneurship, where he was pulled into a project writing real estate appraisal software for Drexel alumnus Mark Silverman '86. A few years later, Silverman helped Shah compete in Drexel's business plan competition. Shah and his partner Nilay Jani won the contest and earned \$5,000 and office space in Drexel's new student startup incubator, the Baiada Institute for Entrepreneurship, run by the Close School of Entrepreneurship — becoming the incubator's first tenants in 2002.

Being in Baiada put them alongside staff from Drexel's Office of Technology Commercialization, some of whom have remained mentors to this day. "We'd share lunches and learn what tech transfer is," Shah recalls. "I was amazed: Are you telling me that the best discoveries and inventions made at the University could be commercialized by someone like me? I'm thinking, 'That's what I want to do.'"

He spent some time in the following years exploring technology trends, but he was searching for something bigger. He gradually became more embedded in Drexel's venture ecosystem, getting to know the players in tech commercialization. One



was Banu Onaral, who served as the founding director of Drexel's School of Biomedical Engineering, Science and Health Systems and who spearheaded the Coulter-Drexel Translational Research Partnership Program — a major Drexel conduit for bringing faculty inventions to market.

Onaral, who is now a senior presidential adviser for global innovation partnerships at Drexel focused on emerging economies, says she championed Shah because she could see that he had his heart and mind set on making a difference in the lives of the underserved and unprivileged.

"He had what it took to effect change in health care," she recalls thinking. "He just needed to be tested on the ground."

In 2004, Onaral invited Shah to take a prototype of a non-invasive cardiac monitoring device to India for clinical evaluation. "They wanted real-life data, and I wanted people in India to benefit from this medical innovation," Shah says.

The catch: he would have to come up with \$25,000 to "buy" the prototype that he took with him. Shah, then 26, pulled together his earnings from his earlier real estate software venture and

booked a working vacation.

"I called seven or eight top-notch cardiologists in Mumbai, introducing myself as an entrepreneur from the United States and describing this medical invention," he recalls. "I showed them the brochure and suggested we work together as 'clinical collaborators;' all I really needed was these key opinion leaders to try it out."

The next thing he knew, he was in the operating theater getting scrubbed.

"I saw a live birth take place. I saw open heart surgery. All these people were benefitting from the cardiologist and the anesthesiologist constantly looking at this machine," recalls Shah. "When I saw real life patients benefitting from this medical innovation, I was hooked. I decided to drop everything I was doing and pursue medical technology development and commercialization."

He returned to Drexel with 60 case studies, enough data for Drexel's tech transfer office to get the device licensed to a U.S.-based med-tech company. He'd found his niche.

And then, in late 2006, his soon-to-be mother-in-law in India was diagnosed with breast cancer.

The iBreastExam is portable, painless, radiation-free, and as effective as a mammogram at detecting abnormal breast lumps. It costs just \$2 to administer an individual scan, versus mammography fees that typically range from \$6 to \$30 per screening. It is sold as a kit in a leather case that includes the handheld breast scanner and a smartphone that runs an app for quickly analyzing test results and storing results in the cloud.



THE PATH TO DISCOVERY

His wedding was just six months away when Shah's mother-in-law learned that her cancer was already at stage 2. It was invasive, and had moved into her lymph nodes. She underwent surgery, then six months of chemotherapy. At the wedding, she wore a wig.

Over the following years, Shah learned of eight other women among his friends and family who were diagnosed with breast cancer. Four didn't make it. "India's national average is similar: for every two women diagnosed, one doesn't survive," Shah says.

"You cannot escape it when breast cancer happens so close to your home," he says. He began educating himself about the disease: Where does it come from? How is it detected?

"I started learning there was this huge disparity of outcomes for women in the developed world versus the developing world. In the United States, my mother-in-law's case would have had an 90 percent survival rate, but in India it was 50, a coin flip," he says.

Why the disparity? Early detection is a big reason. In India, like many developing countries, women

can't always travel to a faraway clinic for a screening. Cultural taboos may discourage exposure to radiation. Mammography is expensive and harder to access.

As Shah learned more, he found that early detection is also stymied by breast density. When the tissues of the breast are densely wound, radiation from the mammogram cannot penetrate them — and tumors go unseen.

Naturally dense breasts are common among young women, women of certain ethnicities such as Asians, and about 40 percent of women over 40. The sensitivity of a mammography machine, which can be as high as 80 to 98 percent, drops to between 30 and 64 percent in women with very dense breasts, according to the Radiological Society of North America.

As chance would have it, faculty researchers at Drexel were experimenting with technology that could address just this problem.

In the School of Biomedical Engineering, Science and Health Systems, Associate Professor Wan Shih had been studying a phenomenon called "piezoelectrical effect" for a couple of decades. Piezoelectrical

WHEN I SAW REAL LIFE PATIENTS BENEFITTING FROM THIS MEDICAL INNOVATION, I WAS HOOKED.

effect refers to the ability of certain materials to generate an electrical charge when pressure is applied.

In collaboration with her husband Wei-Heng Shih, a professor of materials science and engineering in Drexel's College of Engineering; PhD candidate Haki Yegingil; and surgeon Ari Brooks, MD, director of the Integrated Breast Center at the Pennsylvania Hospital, Shih investigated how piezoelectrical ceramic materials, when compressed by an electric current, could be used to map adjacent substances. Their innovation was to find a way to manipulate the ceramic material — a finger-like tool that is flexible like a diving board — in such a way that it could be used to detect the slightly harder form of a tumor within surrounding tissues.

The technology can detect tiny early tumors, even in dense breasts, making it perfect for early detection in all women — young, old and across all ethnicities.

"That's something entirely new," she says. "Without this, the only way to quantify tissue stiffness is after the tissue is cut out from the human body. Now you have an instrument that you can use to measure the stiffness of tissue on a living human being."

Shih and her co-researchers obtained a patent for a "soft material stiffness" sensor in 2009 — one year after being herself diagnosed with aggressive ductal carcinoma of the breast and undergoing treatment.

By this time, Shah was serving as a Drexel entrepreneur-in-residence and had begun working — with his UE LifeSciences co-founder Matt Campisi (an introduction made by Banu Onaral) — on a different non-invasive breast cancer detection tool that used thermal imaging to spot telltale concentrations of heat that indicate a tumor.

Shah thought that that tool, called the NoTouch BreastScan, would be cleared by the FDA in a few months. Instead, the FDA lingered over it for two and a half years while the agency fretted that it would confuse consumers and deter them from getting mammograms. Then, the FDA said no.

"That was the darkest hour," Shah remembers. "I had no Plan B." He and Campisi had started the company with a \$150,000 friends and family fund — practically nothing for a med-tech startup. For three years their head of operations and de-facto co-founder, Bhaumik Sanghvi, went without a salary. A year and a half into it, Campisi was offered a six-figure salary by another company. Campisi turned it down, saying he believed in Shah and the mission. No pressure!

"There's a resilience and team bonding that only failure can make happen," Shah says of the experience. "Now when something doesn't go the way we expect, we don't get stressed out."

They wrote a letter to the FDA explaining the situation and incredibly, that worked. The FDA cleared NoTouch BreastScan in February 2012.

But by then Shah had been introduced to Wan Shih and her piezoelectrical sensor technology through his involvement with Drexel's Coulter-Drexel Translational Research Partnership Program — a major Drexel conduit for bringing faculty inventions to market. He immediately saw the technology could



In the United States, early detection of breast cancer has helped national breast cancer survival rates achieve 90 percent. But that rate is just 50 percent in India, which has 10 times fewer radiologists than the United States, and four times as many people.

reach women in their community better than the more cumbersome and costly NoTouch BreastScan.

Major med-tech companies were interested, too. Shah went to the Shihs and to Alexey Melishchuk, the associate director of licensing in Drexel's Office of Technology Commercialization which managed the University's intellectual property, and he promised, "This technology would be one among many for those large companies, but I'll make it my life's work."

He got the license.

THE ROAD TO MARKET

Still, UE LifeSciences needed funds.

"We had licensed the technology from Drexel in late 2010 but had no money to further develop it," Shah recalls. "Our first machine [the NoTouch BreastScan] wasn't yet FDA cleared so we had all these bills to pay and our first working product was still in limbo."

An assist from Drexel saved the day. A mentor in the Office of Technology Commercialization, Senior Associate Vice Provost and Executive Director of Technology Commercialization Bob McGrath, tipped Shah off to a Pennsylvania Department of Health call for grant proposals, and as luck would have it, the state wanted to fund specifically the development of tools for cancer detection and treatment.

"That Pennsylvania grant was akin to the one shot that Luke Skywalker had in 'Star Wars' to destroy the Death Star — that one chance in a million to hit the target," recalls Shah.

Despite never having written a grant proposal before, Shah went head to head against accomplished PhDs to compete for the grant money, and he vividly recalls the phone call in February 2012 telling him he had won.

"That's when life changed," Shah recalled. "It took me a while just to adjust my mindset. I thought it must be one of my friends playing a prank. But I opened my email and there it was in official words."

Later, at a formal ceremony handing over the \$878,000 grant, the state Secretary of Health took Shah aside. "He told me, this is your golden ticket. Spend this money as if it's your own. We are trusting that you will build a product that will save lives," Shah remembers.

Shah and Campisi put together a team of 27 clinicians, researchers, engineers and coders in the United States and India and began building.

Shah knew that to succeed commercially, the device would have to be portable enough to serve remote villages. It would have to be simple enough for any community health worker to use it without a doctor or radiologist. It had to connect wirelessly to the internet and use small data files. It had to be rugged in humid and hot environments. It had to be impervious to breast density.

All that, and it also had to be "ridiculously affordable," Shah says.

In two and a half years, they had the iBreastExam.

With FDA clearance in hand, and approval for medical use in Europe, his company now employs over 70 people in the United States, India and Malaysia.

Two key numbers help to explain the adoption of the new screening test: 85 and 92.

"It has been through four clinical studies and has shown over 85 percent sensitivity and over 92 percent specificity," Shah says. "Both of those are measures for the detection of breast lumps and lesions. Sensitivity means you can detect a lump when it is there, you don't miss it. Specificity means you can tell when it is not there: It means you have fewer false alarms."

Another key figure: \$2. That's how much it costs to administer an individual scan with the device, versus mammography fees that typically range from \$6 to \$30 per screening.

In line with these findings, the World Health Organization included iBreastExam in its latest compendium of innovative health technologies for low-resource settings, noting that in India alone, which is home to over 190 million women age 30–65, approximately 35 percent of the female population may benefit from access to early detection.

Things are picking up speed now for UE LifeSciences. A big piece of the commercial puzzle fell into place in summer 2016, when Shah was invited by Terri Bresenham, chief innovation officer at GE Healthcare and the head of its Sustainable Healthcare Solutions effort, to give a demonstration of iBreastExam's technology. GE Healthcare had been scouting startups for emerging technologies to help serve people in developing countries.

Shah presented to a room packed with about 80 executives, including the heads of its mammography, ultrasound and MRI divisions. Diplomatically, he described ways that their mechanisms fell short in some parts of the world, and how iBreastExam — handheld, mobile, easy — was filling in the gaps.

"And I kind of see Terri sit more upright in her chair," recalls Shah. "I had her right in front of me, with the head of the ultrasound business sitting next to her. I could physically, visibly see their expressions change. She started looking behind at her colleagues, like, 'Are you seeing this?' And she had a little smile on her face."

Bresenham was thinking it was one of the best ideas she'd heard in a long time. In November 2017, GE Healthcare inked a deal to distribute iBreastExam in more than 25 countries in Southeast Asia, South Asia and Africa as an adjunctive tool in its health care portfolio — expanding screenings to more than 500 million women in developing countries.

'MISSION DRIVEN'

At the Close School of Entrepreneurship, Dean Donna De Carolis has watched Shah bring his company to life.

She says that on a scale of 1 to 5, with 5 being the hardest, bringing medical technology to market is a 7.

"He's been determined to make this a success, come hell or high water," she says. "He also has a very engaging personality, he's a great storyteller, and that is something entrepreneurs need to get people to buy into your vision."

Shah achieved that buy-in by telling a story that struck precisely at the intersection of high-minded idealism and commercial potential, says Kathie Jordan, director of the Coulter-Drexel Translational

Mihir Shah received a standing ovation from a primetime audience last year in Mumbai when he spoke about the iBreastExam on India's televised version of the Ted Talk.



“HE'S BEEN DETERMINED TO MAKE THIS A SUCCESS, COME HELL OR HIGH WATER.”

Research Partnership Program.

"What we are doing [at Drexel] always has a greater purpose, to serve humanity in general," Jordan says. "Then we add this other piece by thinking about the commercial pathways as a means to turn those dreams into a reality."

Within the University, a network of programs, mentors and funding and top-notch ideas exist to get entrepreneurs started, says McGrath in the Office of Technology Commercialization. In addition to the Technology Commercialization office, Shah had access to the then-new Baiada Institute incubator; Drexel's School of Biomedical Engineering, Science and Health Systems; and to a range of entrepreneurship expertise. "He has been plugged into a very supportive community," says McGrath.

The opportunity to impact health on a global scale

would never have materialized without the support mechanisms at Drexel, Shah agrees.

"To develop an idea like this means you need clinical validation, regulatory approvals. You need funding to sustain the venture and commercialize it. You have to have partners to give you ground strength," he says. "It's a challenge that can only be overcome by an entire ecosystem."

Over the years, Shah's parents have watched his progress with pride and joy.

"Many years ago, when I decided to send my son to study at Drexel, it was not just to get a good education," Shah's father Bakulesh recalls. "I truly wished for him to bring something of much greater value back to India and help people in a unique way. I believe Mihir has far exceeded those expectations. He has all our love and blessings, every step of the way."



T H E L O N G H A U L

IN THE RACE TO CREATE A BUSINESS MODEL AROUND [AUTONOMOUS VEHICLES](#), 29-YEAR-OLD LEBOW GRAD STEFAN SELTZ-AXMACHER THINKS HIS TRACK RECORD IS BETTER THAN MOST.

BY BEN SEAL



STEFAN SELTZ-AXMACHER '12 ISN'T AFRAID TO DREAM BIG.

THE CUM LAUDE LEBOW BUSINESS GRAD IS CO-FOUNDER AND CEO OF SAN FRANCISCO-BASED STARSKY ROBOTICS, WHICH HAS MANAGED, IN JUST A FEW SHORT YEARS, TO PUT ITS NAME ALONGSIDE GOOGLE, GENERAL MOTORS, TESLA AND UBER IN THE CONVERSATION ABOUT SELF-DRIVING VEHICLES. BUT SELTZ-AXMACHER DOESN'T JUST WANT TO BE PART OF THE CONVERSATION; HE WANTS TO CHANGE IT. ALONG WITH A TEAM OF 65 EMPLOYEES, HE IS FOCUSED ON PUTTING DRIVERLESS LONG-HAUL TRUCKS ON THE ROAD — TRUCKS THAT HE SAYS WILL MAKE AMERICA'S HIGHWAYS SAFER AND SOLVE THE TRUCKING INDUSTRY'S LABOR SHORTAGE. HE SPOKE WITH DREXEL MAGAZINE ABOUT TRUCKING, ROBOTICS AND THE WILD WORLD OF STARTUPS.

Q:

What makes Starsky Robotics different from all the other companies trying to build a self-driving vehicle?

The way we differentiate ourselves is in how we're thinking about the problem. Most of the teams in this space are working on machine learning and deep learning models that are in a vehicle that will eventually drive itself. What we're doing is making trucks drive without people in them, while still having a driver's input. Our trucks will be autonomous on the long stretches of highway, but remote controlled by a person sitting in a central office during the more challenging parts of the trip at the beginning and end.

We started off looking to solve the long-haul truck driver shortage. During my first co-op at Drexel I worked for a company called Southco that was a supplier for Mack Trucks with a factory in Allentown. Since trucking is a commoditized service, there's downward pressure on how much you can charge for it, which translates into a cap on how much you can pay your drivers. That cap isn't sufficient to get people to drive a truck for a month at a time, and there's a shortage of people willing to do it because it's long hours, it's extremely hard and it's lonely, with long stretches away from family and friends.

If we made trucks remote controlled we could provide drivers with meaningful employment opportunities where they can utilize years of experience while remaining close to their homes and families. In addition, our use-case has the potential to relieve downward pressure on wages, increase safe driving practices and reduce driver turnover. This makes us more pro-driver than other companies; our business model makes it possible to employ truckers and send them home every night.

What milestones has your company achieved so far?

We've raised \$21.7 million to date, which is quite a shocking number to see in a bank account app on your phone. To our knowledge, we're the first people to move stuff for money with a street-legal vehicle that has no one behind the wheel. That was in August 2016. We were paid to move trailers around a truck yard. In January 2017 we first hauled freight on a highway. We started doing that regularly for money in March of that year. We first started doing end-to-end trips where the person in the vehicle wasn't needed for any of it in December 2017, and in February 2018 we first did a fully unmanned trip, on a closed-down road.

What's it like to be working in a field where you're competing with some of the biggest tech and car companies in the world?

They aren't competition because nobody is doing anything commercially yet. It's all still experiments and demonstrations, even at Google where they've been at it for 13 years. So it's actually a level playing field. It's a race, and I think we're winning that race.

There really is something to specialization. If you're a large company you can throw a thousand things up against a wall and if 10 of them stick you've had a really good year. As a small company you can only throw one thing and that thing has to stick. We've been able to be very thoughtful and very deliberate with what we're going after in a way that the larger companies haven't had the pressure to do. The value of focus to a specific problem is a force multiplier that often allows you to compete and win against organizations with a thousand times the manpower.

What Google started off trying to do is build a car that could drive everywhere all the time in any conditions, and that's really hard. Driving in the snow is really hard, driving in West Philly is hard, driving on the Pennsylvania Turnpike is hard, and they're all hard in slightly different ways. So trying to build something like that out of the gate is really difficult and requires decades to craft.

At Starsky our hard problems are that we need to make tele-operations work, and we need to make robotics work, and that's it. Starsky trucks drive autonomously on highways under known weather, lighting and traffic conditions. When the trucks get off the highway or the conditions change, our highly skilled remote drivers take control of the vehicles.

How did your time at Drexel and your co-ops help you understand the trucking and robotics industries?

My second co-op was a safe choice, and it made me pretty miserable. I worked as a paralegal filing paperwork to sue poor people. That made me pretty adverse to making safe decisions. I ended up for my third co-op doing a study plus co-op abroad in Singapore at a startup. Because I was hardworking and had ideas, even though I was a co-op, I was able to get a position where I was managing other interns.

Because of the chaos of a startup, as an intern I was able to do big stuff and that was very attractive to me. After I graduated I spent a summer in Boston increasing my startup skills and moved out to San Francisco in September 2012. I only started digging into this idea of driverless trucks as a thing to do in 2015.

What sparked your desire to start this company?

I was on a road trip with a friend who was into robotics and we were brainstorming ideas for his next robotics project. There were a lot of trucks on the road and I thought, "What if we made trucks remote controlled?" It was one of those ideas that as I started digging into it became a better and better and better idea. There are all of these articles about self-driving cars and they're like, "Obviously trucks will be first," but nobody was working on self-driving trucks, so I thought, "Maybe I can."

What about the trucking industry makes it ripe for automation?

A fundamental impetus for robotics in general is places where there are labor shortages. Robots as a broader area are really expensive, way more expensive than anyone ever thinks they're going to be. They're hard to make and harder to make reliable. A robot has to be able to create quite a bit of value to justify how much it costs in R&D, let alone actual funding. We're defining a robot as something that senses, something that thinks and something that has to move in the physical world.

Our system is doing the work of two-and-a-half people who you can't hire enough of, but if you could, you would pay each of them \$90,000 a year.

What have been the biggest challenges so far?

With startups, your default state is dead. Many things can kill you at any point and they are compounding in complexity. So everything about having a startup is hard. To start off with, the autonomous space is a weirdly dogmatic space. Even though no one has ostensibly done anything — there aren't self-driving cars — there's a relatively exclusive clique of people who've been working on this for 15 years, and those people have been able to raise disproportionate amounts of money because they're experts, but they're essentially experts in not getting the job done. So fundraising for us was very hard, until we got into Y Combinator.

So, getting initial credibility was hard. Because of how differently we see the world from other startups, we have to always be selling our worldview for how this will happen and how these things will work. We have to make that point all the time to people who are ostensibly well read and intelligent in this space.

How far away do you think we are from truly autonomous vehicles being commonplace on our roads?

I think autonomous trucks are going to be here very soon. We're going to make that happen. I don't know what's going to happen with self-driving taxis, though. I think we're in the beginnings of a very bad year for that industry. There's a lot of money going in and not a lot of progress coming out.

Of course, creating a seamless national regulatory structure for self-driving trucks is critical to ensuring their safety and further development. Today, the rapid development of AV technology is outpacing the development of corresponding regulation. We work closely with relevant legislative and regulatory entities to ensure compliance with all the requirements and regularly consult law enforcement agencies to help develop best practices.

What do you say to people who worry about the safety of sharing a road with driverless cars?

Most people have a story about a time when a truck driver nearly killed them. We have 40,000 people who are dying every year on the roads. And truck drivers are way more likely than other drivers to cause vehicle accidents.

The way that the trucking industry is set up is such that it makes it really hard for there not to be a lot of accidents. Truck drivers are only paid per mile that they haul freight, so if they're stuck in traffic they're not making money. They have to take bathroom breaks while they're still moving. If a truck driver has self-identified as being tired and needing to go take a nap, they may not be able to find parking because there's a shortage of parking spots for trucks, so drivers who have said "I'm no longer safe to drive" might have to drive for a couple more hours.

We think that exit-to-exit highway automation combined with well-trained and well-rested remote drivers will make the roads fundamentally safer. By getting a person out of the cabin we can significantly reduce accidents that are attributed to human error.

Trucking is a \$700 billion industry in the United States. If you're able to deliver on your vision, how big is the market potential?

Europe's market is about the same size as America's and the rest of the world is double that. So probably it's \$3 trillion a year in revenue worldwide. We should quite easily be able to be an ExxonMobil-size company, a hundreds-of-billions-of-dollars-a-year organization.

What motivates you as an entrepreneur?

This is the coolest thing I've ever done, by far. Between co-ops and work after college, I've had quite a number of different jobs, and nothing has ever used every corner of my being, every corner of my personality, every random tidbit of what I know. Nothing else I've ever done has ever called on all of that so frequently that I've been so incredibly engaged. And that's really cool.

We have the opportunity to build a world-changing organization, and along the way I have the opportunity to make drivers' lives better, to work with really smart, dedicated people, and to reach something that approaches self-actualization.

ROBOTS ON THE ROAD

To date, Starsky Robotics has raised \$21.7 million and currently employs 65. The company conducted its first fully unmanned driving trip on a closed road in February 2018. Says Seltz-Axmacher: "[There isn't] competition because nobody is doing anything commercially yet."





Our recent graduates know how to have a good time! The Main Building was the place to be on Friday night at the Young Alumni Beer Hall.

Good Times Had by All at Alumni Weekend 2019

It was certainly a weekend to remember! Around 1,800 guests (from 68 class years!) celebrated at more than 50 events on campus and throughout Philadelphia. Check out the photos below to relive the fun — or if you weren't able to join us, see what you missed!

Mark your calendars now for Alumni Weekend 2020 on May 15-17!



Drexel's 50-Year Reunion Class of 1969 poses for a group shot on the Main Building staircase. Many Golden Dragons recall hanging out on these iconic steps with friends between classes.



The Art Museum hosted this year's Drexel After Dark and the dance party in the Great Stair Hall did not disappoint!



Hannah Garber, BS '89; David Greco, BS '89; and Cindy Corson, BS '89, recognized themselves on the Class of 1989 30-Year Reunion invitation!



Catherine Nicolaidis Codella, MD HU '89, and Mark Codella, MD HU '89, toast to the start of the weekend and their 35-Year Reunion with Alfred Geissele, MD HU '89, at the College of Medicine All Alumni Celebration.



60s

William R. Abt, BS business administration '69, endowment manager for Carthage College in Kenosha, Wisconsin, was featured in *Bloomberg Business Week* about how Carthage's returns beat Harvard's \$37 billion endowment and most others.

Steven R. Kafrissen, MD medicine '67, was honored with the Community Wellbeing award by the Geisinger Commonwealth School of Medicine.

Maurice E. Snook, BS chemistry '67, received the 2018 American Chemical Society E. Ann Nalley Southeastern Regional Award for volunteer service at the Southeastern Regional Meeting of the American Chemical Society.

70s

Gary A. Krimstock, BS business administration '70, was a panelist at the annual Pennsylvania and Delaware Valley Chapter of Community Associations Institute State of the Industry breakfast at the Union League in Philadelphia.

Joanne Barone Dragun, BS home economics '72, MD medicine '88, published "Listening to Cancer: Witnessing Power, Spirit and Courage."

John J. Peirce, BS civil engineering '73, MS civil engineering '78, founder and principal of Peirce Engineering, was elected as the 2019 Delaware Valley Engineer of the Year.

Roseann Termini, BS human behavior and development '75, published a new print 2019 edition of "Federal Regulation of Drugs, Biologics, Medical Devices, Foods, Dietary Supplements, Personal Care, Veterinary and Tobacco Products." In December 2018, she

LEGACY

Drexel Bonds Three Generations



Carson and his twin brother Gary flank their father Scott and grandfather Joseph. All three generations studied business at Drexel.

It had been nearly 30 years since Scott Brotz '84 visited Drexel when he brought his son Gary for a campus tour in 2012.

At the time, Scott expected to return to what he referred to as "a sidewalk campus," of the 1980s: urban and practical, but not flashy or fashionable.

In a way, the impression Scott had as a student reflects his own trajectory from studying business to a co-op experience with a certified public accounting firm in Center City to a career as a CPA and owner of his own firm: professional, straightforward, no-nonsense.

Twenty-eight years later, as they toured the campus, Scott and Gary were both drawn to the Recreation Center — one of many notable campus additions since Scott's time — and were awed by the state-of-the-art facility that includes an elevated jogging track, climbing wall, world-class squash courts and more.

"We stepped outside, and Gary looked down Market Street and I said, 'What do you think?'" Scott recalls. "He said he really liked it here and I thought, 'You do? Really?'"

"I fell in love with the energy of the city," Gary recalls. "I didn't need the gated campus feel, the trees — I wanted to be where the action is."

From that day, Gary was sold on Drexel, and soon his twin brother, Carson, also decided on Drexel. "I always wanted them to go to school together," Scott says. "To have one here and one somewhere else didn't seem natural, but I wasn't going to force it."

Though a photo of the twins when they were 3, dressed in Drexel sweatshirts, on the beach at Long Beach Island seems prescient now, both sons and father say there was no pressure for Gary and Carson to

follow in their father's footsteps — or their grandfather's. Yes, Scott's father Joseph Gary Brotz '58 was the first Dragon in the family, and after Gary's epiphany on Market Street, Scott could clearly see his sons becoming the third generation of Brotz to attend Drexel.

The fundamental values of Drexel — the importance of cooperative education, gaining professional experience alongside academic work — span generations. These values were just as vital to the institution when Gary and Carson were considering their college choice as when Joseph Gary attended Drexel in the 1950s and for Scott three decades later. "They told us that finding a good job after college was hard, especially in a very competitive market. Drexel's co-op program and academic reputation will give us a leg up with prospective employers," Carson says. "That was a huge appeal for both of us."

For family patriarch Joseph Gary, his path to a Drexel education ultimately led him to a career at Campbell Soup Co., where he worked for decades following a brief flirtation with professional baseball, playing in the New York Giants farm system for a season. "There was something in the paper about the Yankees being interested, but it never came to anything," he recalls. "I had to finish school."

Good press isn't the only thing that Joseph Gary has saved from his days at what was then the Drexel Institute of Technology. Tau Kappa Epsilon (TKE) fraternity composites, several editions of the Lexerd yearbook and a rare blanket only given to five-year lettermen all fill out a Brotz family archive that his wife Margery has maintained over the years.

Close to 60 years since his start at Drexel, how did he receive the news of his grandsons entering the school that would begin what is now a three-generation legacy? "I felt good," Joseph Gary says. "I felt I did something to put them there."

That's putting it mildly. He and Margery babysat them starting from when they came home from the hospital, born prematurely and underweight. From their first days in their grandparents' house, home to a grandfather clock with Joseph Gary's fraternity crest on it, Drexel loomed over the twins' lives — but from a distance. "No one pushed Drexel on us or told us we had to come here," Gary says. "Only after we both said, 'We want to go here,' that's when the support really piled on."

Of course, the family's Drexel lineage continued when Gary and Carson were accepted, and they, like their father and grandfather, studied business. It wasn't truly sealed, though, until their graduation in June 2018, and with their accomplishments here and the promising start to their careers — Gary in finance, Carson in accounting — their father now looks back at his Drexel days with even more fondness.

"The feeling you get knowing that you are another generation that's come here, you can't really describe. You want to make your father proud, right? For Gary and Carson that pride was felt as both sons and grandsons," Scott says. "I don't know how I would feel if I went to another school. You're not connected to history; you're not really representing or honoring the last generation. There always has and always will be a special something here."

Scott is the connector now, though his Drexel experience was distinct from his father's and his sons' — both Gary and Carson and Joseph Gary shared the same Greek life experience as members of TKE, and Carson played a season for the University club baseball team. Scott says, "though I didn't join a fraternity or play a sport there's something special about being in the middle, the bridge between the last and current generations." That's where Scott will stay, carrying his father's legacy forward as his sons carry his, until another generation frolics on the beach in Drexel gear. — *David Allen*

served as the moderator and keynote speaker at the 72nd Annual Conference Society of Cosmetic Chemists.

Jack Goldstein, MD medicine '77, associate professor of medicine at Cooper Medical School, director of the Cooper Digestive Health Institute-Endoscopy Center at Willingboro, New Jersey, was the recipient of the 2018 SCOPY award for Best Call-to-Action and Best Initiative to Address Health Care Disparities.

P. David Shafer III, MS environmental engineering '79, was appointed program coordinator for the new environmental safety management major at Thiel College.

80s

Michael Hopkins, BS electrical engineering '80, was the first-place winner of Wisconsin People & Ideas annual statewide writing contest for his short story "Static."

Francis M. Chmielewski, BS business administration '81, won a Juror's Selection Award in the New York Center for Photographic Arts competition.

Lisa Freundlich Guss, MS communications '86, launched her first book, "The Essential Admissions Handbook" — a step-by-step approach to successfully navigating the complex world of admissions.

John M. Prater, MD medicine '86, family physician for Geisinger Health Care System, was honored for being ranked in the top 10 percent in patient experience nationally at the health system's Top Patient Experience Clinicians Awards Dinner.

Kathi DiClemente Eichman, MS Group Process and Group Psychology '89, was promoted to

vice president, Quality, Safety and Compliance, at New Vitae Wellness and Recovery.

Gerald Patrick Oetzel, MBA business administration '89, was named CFO at Wisconsin-based Gunderson Health System.

90s

Kevin M. Blake, BS commerce and engineering '90, started a new law firm, Smith Mirabella Blake.

Erin O'Brien, BS fashion design '92, and **Stella Nolasco, BS fashion design '92**, collaborated on a photoshoot with actor John Leguizamo for the *Smithsonian Magazine* Ingenuity Awards.

Gina Furia Rubel, BS corporate communications '91, was appointed to chair of the Philadelphia Bar Association's Law Firm Risk Management Committee by Rochelle M. Fedullo, 2019 chancellor.

Kenneth R. Fulmer, BS architectural/civil engineering '92, MS engineering management '00, was given the Corporate Leadership Award by the Global Philadelphia Association at its fourth Annual Luncheon and Globy Awards ceremony.

Glenn W. Muschert, BS international area studies '92, started a new position as professor of sociology at Khalifa University in Abu Dhabi, United Arab Emirates.

Nancy Cathers Demme, MS library and information science '93, had her debut crossover young adult novel, "The Ride" published by the Stephen F. Austin State University Press in February of 2019.

Nicole Cashman, BS design and merchandising '94, president and CEO of Cashman & Associates, received the Women-Owned Business Award from PHL Diversity



We're interested in hearing about your weddings, new babies, special traditions, group trips and regular get-togethers with fellow alumni. Send stories and photos to Sara Keiffer at seb434@drexel.edu.

CROSS ROADS

CLASS NOTES

WEDDINGS AND BABY DRAGONS



Joy Godowski Zappacosta, BS digital media '08, and Jason Zappacosta, biomedical engineering '09, were married on Sept. 29, 2018.



Virginia Chase Ralls, JD law '16, and her husband, James Ralls, welcomed their son, Vincent James Ralls, on Sept. 22, 2018.



Jamie Duncan Buttler, BS psychology '09, and Kevyn Buttler, BS sports management '09, welcomed their first son, Finn Sebastian, on July 7, 2018.



Kevin Glover, BS mechanical engineering '10, and Samantha Sukonick, BS architectural engineering '13, welcomed their first child, Holden Francis Glover, on Sept. 7, 2018.



Patrick Griffin, BS computer engineering '06, his wife, Arpeeneh, and son, Alexander, welcomed a baby boy, Stephen Ararat, on Nov. 11, 2018.



Trevor Krause, BS information technology '09, and Katelyn Krause, BS nursing '10, welcomed a baby boy, Logan Reese, on Sept. 3, 2018.



Amanda Martahus Miller, BS design & merchandising '11, and her husband, William Miller, welcomed their daughter, Madelyn Gabrielle Miller, on Oct. 11, 2017



Zachary Andrew Riley, BS architectural engineering '08, and Emily L. Messner Riley, BS chemistry '08, welcomed their daughter, Eleanor Emma Riley, on Dec. 27, 2018.

and the "The Police Athletic League 2019 Award" from the Police Athletic League of Philadelphia.

Chipo Mafarachisi Jolibois, BS chemical engineering '94, was hired as an associate in the Intellectual Property Department at Fox Rothschild LLP.

Richard C. Liu, BS corporate communications '94, was named vice chair of the Performing Arts Board for ArtsQuest.

David J. Glass, PhD law-psychology '98, published his first book, "Moving On: Redesigning Your Emotional, Financial & Social Life After Divorce," with Lioncrest Publishing.

Samantha Pozner, MD medicine '97, started her term as president of medical staff at Overlook

Medical Center in Summit, New Jersey. She is the first woman and the fourth family physician to serve as medical staff president in the hospital's 113-year history.

Dmitriy Kublanov, BS computer science '97, MS '00, started a new position as vice president of pricing, contracting and analytics at TG&S Advisors.

00s

Gerard Michael Donovan, BS computer engineering '05, JD law '09, was promoted from counsel to partner at Reed Smith LLP in the firm's Washington, D.C., office.

Patrick S. Griffin, BS computer engineering '06, was promoted from associate to counsel at Cantor Colburn, one of the largest intellectual property law firms in the United States.

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DREXEL UNIVERSITY
Goodwin College
of Professional Studies

Congratulations to all of our outstanding 2019 Alumni and Student Award recipients.

They are leaders, risk-takers, influencers and role models.

Nicole Cashman, BS '94
Silver Dragon Society Award

K. Blair Christie, BS '94, MBA '99
Silver Dragon Society Award

Mallory Clites, PhD '19
Outstanding Student Award

Christopher Diaz, BS/MS '16
Young Alumni Distinguished Service Award

Evan Ehlers, BS '19
Outstanding Student Award

Elaine Garzarelli, BS '69, MBA '78, HD '92
Golden Dragon Society Award

Gerald Haffey, BS '00
Alumni Entrepreneur Award

Patricia Imbesi, BS '69, Trustee
Golden Dragon Society Award

Benjamin Kay, BS '12
Service to Community Award

Sarit Kunz, BS '00
Faculty/Staff Alumni Award for Campus Impact

Bruce Maryanoff, BS '69, PhD '72
Golden Dragon Society Award

Gerardo Meléndez, PhD '94
Silver Dragon Society Award

Devi Murthy, BS '08
Special Distinction Award

Milan Patel, BS '94
Silver Dragon Society Award

Rina Patel, BS '16
Young Alumni Entrepreneur Award

Charles Peck, BS '10
Young Alumni Emerging Leader Award

Stanley Silverman, BS '69, MBA '74, Trustee
Golden Dragon Society Award

Charles Chia-Yi Yang, MS '97, PhD '01
Service to Profession Award

Visit drexel.edu/alumni/about/awards to submit your nomination for a 2020 Alumni and Student Award.

Drexel ALUMNI

SNAPPED DRAGONS



John Fehlauer, BS/MS electrical engineering '73, PhD '77; Bradley Garris, chemical engineering '74; Larry Rarig, mechanical engineering '73; Thomas Kahler, civil engineering '74; Robert Karr, chemical engineering '73; Gordon Gaugler, commerce and engineering '74; and James Heintz, electrical engineering '73 reunited for their annual gathering and celebrated their life-long friendships that started 50 years ago in Drexel University's Kelly Hall.

Olivia Johnson Hinebaugh, BS media arts and design '07, published a young adult novel, "The Birds, The Bees, And You And Me."

Kathryn E. Bowser, BS biological sciences '08, MD medicine '11, vascular surgeon, has joined Christiana Care Health System's Center for Heart and Vascular Health in Delaware.

John F. Lamb, MS library and information science '08, was promoted to associate professor of library science with tenure. In December 2018, he received an MFA in creative and literary arts from the University of Alaska Anchorage. His thesis, "What Turtle Blood Tastes Like: Poems," received a 2018 Jason Wenger Memorial Award for Literary Excellence.

Elizabeth Gee, BS music industry '09, joined the law firm Tanenbaum Keale LLP as an associate in its Malvern, Pennsylvania, office.

10s

R. Sarah Solomon, BS graphic design '11, published her new book, "Guac Is Extra But So Am I: The Reluctant Adult's Handbook."

Eleanor F. Small, PhD chemical engineering '12, principal scientist at Johnson & Johnson Consumer Inc., was named 2019 Delaware Valley Young Engineer of the Year.

Kate A. Beishline, PhD biochemistry '14, was named a Jessica S. and Stephen R. Kozloff Faculty Fellow at Bloomsburg University.

Robert Douglas Koch, MS higher education '14, joined WFAE as director of development.

Alexander Martin Zygmunt, MD medicine '16, was named to the 10-member Residents and Fellow Board of the *Journal of Child Neurology*. He is in the third year of his residency in child neurology at Cincinnati Children's Hospital.

NETWORKING

You're Never Far from a Dragon Network

If you've never participated in a Drexel Regional Alumni Network event, you're missing out on meeting some great Dragons in your town.

In recent years, alumni volunteers have helped to run alumni networks in cities across the country and as far away as Mumbai and Hong Kong. And they've helped to organize exclusive events like gatherings at Major League baseball games, tours of landmarks like The Glass House in Connecticut and Universal Studios in California, and the biggest world-wide gathering of Drexel alumni — the Global Night of Networking (GNN). We asked several volunteers to share what they enjoy most about these groups, why they look forward to GNN every year, and why you should, too!

Meet the Dragons in your regional network by attending the 9th Annual GNN on Sept. 12! For more details visit drexel.edu/alumni/gnn.



COURTNEY GETTER

MFT Family Therapy '09
Atlanta Alumni Network

"I love how a community has been created through the Atlanta Alumni Network. One of the best things for me has been meeting so many wonderful people I would not have met without it. GNN isn't a boring networking event; it's about creating memories with your community of Dragons. And it's also cool to know that other alumni groups around the world are sharing a similar experience. It's like New Year's Eve, but Drexel style!"



XIAODONG HAN

MBA Business Administration '03
China Alumni Network

"It's been really inspiring and rewarding for me to discover, recognize and connect with so many generous and talented members of the Drexel community through the China Alumni Network. Participating in or helping to plan GNN helps keep this great Drexel alumni tradition strong. GNN Shanghai has always been held at the rooftop bar at the Renaissance Hotel facing the landscape of the financial district. It's the very best place to salute our great founder and financier, A.J. Drexel."



RACHEL NUSSBAUM

BS Design '78
Los Angeles Alumni Network

"Serving as a regional network volunteer has been a great way for me to give back to the University and expand my personal and professional network. It has been so rewarding to connect with so many Dragons who call southern California home. This past November, I hosted a Thanksgiving dinner for alumni and friends in the area; it was such a special experience. And GNN is one of the best ways to meet alumni living in your city — you just never know who you'll meet!"



drexel.edu/YourImpact

**FIND OUT
WHAT HAPPENS
WHEN YOU
GIVE.**

 **THE FUTURE IS
A PLACE WE MAKE.**
THE CAMPAIGN FOR DREXEL



Friends We'll Miss

1930s

Marie Bader Dare, BS commerce teacher '38
Joseph Gallo, D/C chemical engineering '37
Roderick Johnson Hobart, D/C secretarial '38
Nathaniel Lestz, BS mechanical engineer '39
Josephine Wolf Walsh, BS commerce teacher '37

1940s

Sidney August, D/C library science '40
Bruce Becker, BS mechanical engineering '48
Jean Bickle Smith, D/C library science '47
Margaret Brownell-Gotch, BS secretarial '46
Martin Burrows, BS mechanical engineering '47
Stanley Bysiewicz, BS business administration '49
Joseph Compton, BS mechanical engineering '48
Carmella Davids, AS medical lab technician '40
Elinor Dobson Brown, D/C library science '47
Ruth Eberly Kauffman, RN nursing '47
Robert Eckardt, BS commerce and engineering '44
Maxine Eiseman Beir, BS home economics '46
Joseph Entine, MD medicine '49
Edith Everhardt Diehl, RN nursing '42
Leonard Evelev, BS electrical engineering '48, MBA business administration '75
Herbert Hermann, D/C mechanical engineering '41
Paul Jarrett, MD medicine '43
Edward John Klein, D/C mechanical engineering '41
John Kappel, BS business administration '48, MBA '57
Helen LeCompte, AS medical lab technician '43
Thomas Leidigh, BS civil engineering '49
Laura Lippincott Goodman, RN nursing '49
Mary Anne McNabb Foote, BS home economics '47

Charles Meyer, BS civil engineering '48
William Mitchell, BS electrical engineering '48
Mildred Morris Roth, RN nursing '49
Carolyn Poole Dettinger, BS library science '43
Joseph Raymond, BS mechanical engineering '49
Dolores Rogach Zbikowski, BS home economics '46
Dorothy Schroder McAfoos, RN nursing '44
Joy Schultz Miller, D/C library science '46
Helen Snyder Ferber, BS home economics '46
Sydney Sossin, BS mechanical engineering '47
Miyuki Yasui, BS home economics '49

1950s

William Archer, MS mechanical engineering '59
Herman Babin, BS home economics '51
Vincent Baldanza, MBA business administration '57
Elizabeth Borzelleca Czop, BS home economics '53
Ambrose Bredbenner, BS chemical engineering '52
Robert Brennan, BS business administration '59
William Bridgeford, D/C mechanical engineering '52
Walter Cavanaugh, BS chemical engineering '56
L. Cranstoun, D/C mechanical engineering '55, BS '58
Richard Crowley, BS business administration '55
Peter Cupple, MD medicine '54
William Daknis, BS business administration '57
Leila Dangelo Daly, D/C secretarial '50
James DeBenedictis, BS chemical engineering '50
Eleanor Dino Montague, MD medicine '50
Karl Dorschu, BS metallurgical engineering '53
Joseph Faulkner, D/C electrical engineering '55, BS '57
Benjamin Fay, BS chemical engineering '52
Charles Ferraro, BS business administration '52
Frank Franco, MD medicine '53
Stanley Golaski, BS mechanical engineering '55

Francis Gorman, D/C civil engineering '53, BS '55
Norman Grede, BS commerce and engineering '53
Joanne Greenspun, D/C library science '59
Elmer Hamme, MD medicine '52
Robert Harsch, D/C electrical engineering '58
John Hebler, BS commerce and engineering '57
Patricia Henry Pollock, RN nursing '57
Nancy Hersh, BS home economics '53
Joseph Hoffman, BS mechanical engineering '57
Gerard Kaiser, MD medicine '58
Norman Klavens, BS electrical engineering '57
Stella Ku Yang, BS home economics '50
Helen Labinsky, BS home economics '53
George Lodge, BS business administration '54
Ruth Lutz Zwicky, BS home economics '51
Willett Malone, BS mechanical engineering '56
Joseph Matunis, MD medicine '57
Donald McDonald, C/C civil engineering '55, BS '63
William Miller, BS civil engineering '54
William Mitchell, BS electrical engineering '59
Mary Morros Negrete, RN nursing '56
James Murphy, D/C electrical engineering '55, BS '64
Helen Norris Roesler, BS home economics '52
Shirley Parsons, BS home economics '53
William Paullin, D/C electrical engineering '54
Jacob Petersen, BS electrical engineering '58
Clive Potter, D/C mechanical engineering '59, BS '61
Arlene Reedy Brown, D/C home economics '52
Albert Reet, D/C mechanical engineering '57, BS '59
Paul Rehal, BS electrical engineering '54
Francis Ricci, MBA business administration '57
Walter Robinson, D/C mechanical engineering '55, BS '58
Nancy Rogers Shanahan, MD medicine '57

George Rowan, MD medicine '58
John Rutherford, BA architecture '53
Charles Sanzare, D/C electrical engineering '54, BS '56
Edward Saradarian, MD medicine '55
Clarence Schatz, BS mechanical engineering '56, MBA business administration '67
Gustav Schwarz, D/C architecture '55
Donald Senior, D/C chemical engineering '53, BS '55
Robert Shaw, BS electrical engineering '57, MBA business administration '68
Suzanne Sheffer Lincoln, BS home economics '57
Josephine Shields Freese, RN nursing '57
Ronald Silverman, BS electrical engineering '50
Solomon Sorin, MBA business administration '52
William Stotz, D/C electrical engineering '59, BS '68
Alfred Streleckis, BS mechanical engineering '52, MS '65
Gustav Strese, D/C electrical engineering '54, BS '56
Barbara Thomas Dutkiewicz, D/C secretarial '58
Jack Trechock, BS chemical engineering '55
John Trimble, BS electrical engineering '52
George Watson, BS mechanical engineering '57
Dorothy Wentworth Woods, BS home economics '53
Charles Wilkins, MD medicine '56
Betty Yuhus Musser, D/C home economics '56

1960s

David Appleby, BS chemistry '67
Margot Arnken Wright, BS home economics '63
Clifford Boehmer, MS physics and atmospheric science '60
E. Brockenbrough, BS business administration '69
Thomas Bustard, MS mechanical engineering '61
Diana Carlettini Lardon, BS business administration '65
Linda Carlin Koeckert, BS fashion design '65
Edwin Carter, BS business administration '62
Alan Chamberlain, BS civil engineering '63

Joseph Chupein, BS chemical engineering '63
Stanley Dlugosz, BS civil engineering '60
Gerard Dobinson, D/C civil engineering '62
John Dobrota, MD medicine '65
John Dolan, MBA business administration '64
George Dryden, MS engineering management '69
Terry Duffield, MS electrical engineering '64
Howard Eckenroth, MS engineering management '66
Doris Ehrenfried Freudenberg, MD medicine '60
George Elias, BS civil engineering '62
Judith Entine Glaser, MS human services management '69
John Fassano, BS commerce and engineering '68
Jay Feingold, BS humanities and technology '69
Terry Fisher, BS biological science '67
Ronald Fox, BS mechanical engineering '69, MBA business administration '73
John Franz, BS mechanical engineering '62
John Gaffigan, MS environmental engineering '66
William Gallagher, BS mechanical engineering '69
Edward Gilbert, MS metallurgical engineering '68
Richard Grzywinski, BS mechanical engineering '68
James Heflin, BS business administration '61
Edward Henderson, BS electrical engineering '65, MS '73
Robert Hicks, BS chemical engineering '69
Marjorie Hopfmann Morgan, MLS library science '65
Maira Hurley, MD medicine '69
William Isbister, BS business administration '67
Daniel Johnson, BS civil engineering '60
George Johnson, MD medicine '63
Constance Karwoski Yanalavage, RN nursing '60
John Kempf, BS electrical engineering '63
Marion Kramer, MD medicine '67
Thomas Kuchma, BS mechanical engineering '60
George Kurisky, BS metallurgical engineering '60
John Logan, BS civil engineering '63

Christian Ludwig, BS commerce and engineering '69
Anthony Maggio, MS electrical engineering '60
Edward Maginnis, BS electrical engineering '69
Marilyn Marks Cooper, BS business administration '63
Robert McConnell, BS electrical engineering '62, MBA business administration '79
Edward Miller, MS chemistry '66
Marjorie Morgan Freeman, MS library science '66
Norman Morphet, MS library science '67
Robert Neal, MS library science '66
Peter Pratt, MD medicine '61
Richard Roberts, BS mechanical engineering '61
Alan Russakov, MD medicine '64
Mark Saks, BS mathematics '67, MS '69
Robert Schickling, BS mechanical engineering '66
Russell Seto, BS mechanical engineering '65
Ita Shulman Brandman, MD medicine '66
William Smith, BS electrical engineering '62
Jean Spickler, MS library science '69
Stanley Spiegelman, BS mechanical engineering '67
Richard Stewart, BS mechanical engineering '65
Ramesh Thakarar, BS civil engineering '66, MS '69
Barbara Troetel, MS library science '67
Kenneth Wallat, BS metallurgical engineering '69
William Weber, BS chemical engineering '69
Donald Welde, BS industrial administration '67
Honie Wilson Crandall, MD medicine '67
John Ziegler, BS electrical engineering '68

1970s

David Aldinger, MD medicine '74
Crawford Allison III, MBA business administration '75
Brian Ambruster, BS architecture '72
Thomas Antozzeski, BS mechanical engineering '71
Karen Bartelt, MS chemistry '75
Anthony Brasacchio, MBA business administration '70

Hatim Carim, MS biomedical engineering and science '73, PhD '76
Ralph Castaldo, BS mechanical engineering '70
Eileen Catterson, MD medicine '74
Charles Chew, BS mechanical engineering '78
John Christie, BS general studies '70
Louis Clairmont, BS mechanical engineering '70
James Everling, BS chemical engineering '75
Gary Fritz, BS biological science '72
Muriel Gray, BS business administration '79
Joseph Izzo, BS business administration '71
Robert Jaskolka, BS mechanical engineering '71
Sue Jones, MS library science '75
Curtis Kiefer, MS library science '78
George Kirkpatrick, MD medicine '71
Melvin Kulp, BS mechanical engineering '75
Ruth Ann Laubach Focht, MS library science '72
William LeMasters, BS chemistry '77
Robert McFall, BS electrical engineering '75
Ronald Meany, BS general studies '71
Sheldon Michaelson, BS accounting '75
Joseph Murphy, BS accounting '75
Florence Murphy, RN nursing '79
Sarah Ann Noecker, BS operations management '78
James O'Hara, MBA business administration '70
Charles Olney, MD medicine '70
Joseph Rakitsky, BS business administration '70
Eugene Saklad, PhD biomedical engineering and science '71
Nevin Scholl, BS accounting '76
Richard Shaner, BS history and politics '74
Harriet Shapiro Nash, MS library science '74
Richard Silva, BS civil engineering '78
Mark Singer, MS physiology '78
Li Chieh Szema, MS applied mechanics '76
Cheryl Villar, AS radiologic technology '77

1980s

JBarbara Averett, MD medicine '86
Gregory Baber, MS engineering management '89, BS electrical engineering '86
Mark Bell, BS business administration '81
Victoria Brown, BS mental health technology '80
Robert Brown, MD medicine '86
Jonathan DeLong, BS mechanical engineering '80, MS science of instruction '95
Walter Karolkiewicz, BS chemical engineering '81
Lisa Krenzel, MD medicine '87
James Krynski, BS civil engineering '81
Steven Lichtenstein, MD medicine '84
Charles McCardell, MS library science '88
Dean McClure, BA architecture '89
Mark McLaughlin, BS business teacher education '87
Thomas Mikolinnas, MD medicine '87
Glenn Morocco, MLS library science '87
Chester Patko, BA architecture '85
Eugene Peters, BS computer science '81
Naomi Sandy, BS nursing '80
Fred Shapiro, MD medicine '88
Joy Sutton Collins, MS Library Science '81
Linwood Taliaferro, BS chemical engineering '81
Barbara Temos, MS library science '82

1990s

Gary Diehl, AS nursing '98
Anna Kutzler, BS nursing '99
Michael MacNeel, MD medicine '94
Kathleen Madden McGee, BS computer science '92
Joseph Wall, AS nursing '94
Hiran Yii, BS finance '95

2000s

Olubola Sode, BS nursing '06

2010s

Amy Chiefari, MHS physician assistant '10
Heather Belott, MS nursing '11
Vy Nguyen, MS biomedical engineering '11
Ryan Cornelius, BS business administration '12
Matthew Smith, BS mechanical engineering '16
Kenneth Fogelstrom, MS engineering management '18

Crossword

▶ **THINK YOU'VE GOT ALL THE ANSWERS?** If so, send your completed puzzle to the address at right to be entered into a drawing to win a great Drexel prize. And congratulations to the winner of our winter/spring edition contest: Daniel Ziegler of Eureka, California.

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RISKY BUSINESS

In this puzzle, we tip our hats to all our alumni who have taken the path untraveled into entrepreneurship.

ACROSS

- 1 4:1, e.g.
- 5 Bobby in a Janis Joplin hit
- 10 Golfer's item, or a golfer's organization
- 14 Messy pile
- 15 "Full speed ___!"
- 16 Ship frame
- 17 Possible name for a risky home coverage company?
- 20 "Flashdance...What a Feeling" singer Cara
- 21 Rim attachment
- 22 Impulses
- 23 Papal name derived from a Latin word meaning "devout"
- 25 Furry mammals that float on their backs
- 26 Possible name for a risky drug dispensary?
- 31 Reveal the identity of
- 32 In a blue state?
- 33 Ride for Huckleberry Finn
- 37 Least fresh, as bread or jokes
- 39 NYC hospital with a biblical name
- 41 Pawn, as at a pawnshop
- 42 Score between a birdie and a bogey
- 44 Like the photograph of a man standing in front of tanks during the 1989 Tiananmen Square protests
- 45 Possible name for a risky scrap iron supplier?
- 47 Where hangers are hung
- 51 Noticed
- 52 Letter before beta
- 53 Lawn material
- 54 Deserted places, perhaps
- 59 Possible name for a risky dating service?
- 62 Kuwaiti or Qatari leader
- 63 4:1, e.g.
- 64 Luxury hotel chain
- 65 Success for a defensive lineman
- 66 Worrisome engine noise
- 67 Direction opposite 8-Down

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|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
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| 14 | | | | | 15 | | | | | | 16 | | | |
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| 20 | | | | | | 21 | | | | 22 | | | | |
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| 47 | 48 | 49 | 50 | | | | 51 | | | | | | | |
| 52 | | | | | | 53 | | | | 54 | 55 | 56 | 57 | 58 |
| 59 | | | | | 60 | | | | 61 | | | | | |
| 62 | | | | | 63 | | | | | 64 | | | | |
| 65 | | | | | 66 | | | | | 67 | | | | |

DOWN

- 1 "Funny coincidence running into you here!"
- 2 "___ Santa ..." (start of a child's Christmas letter)
- 3 Stupefied state
- 4 Stretch across
- 5 In a red state?
- 6 Bicep-strengthening exercise
- 7 English rock band whose debut album featured the song "In the Beginning," aptly
- 8 Direction opposite 67-Across
- 9 End of a Drexel address
- 10 What a doctor consults
- 11 Fencing maneuver
- 12 Stomach ailment
- 13 Give a benediction to
- 18 Restful state
- 19 Boring routines
- 24 Stain caused by writing fluid
- 25 Of the past
- 26 Directive from a midwife
- 27 "Hold ___ your butts" (line delivered by Samuel L. Jackson in "Jurassic Park")
- 28 Apple product since 1998
- 29 Polio vaccine developer Jonas
- 30 Hasty escape
- 33 Disturbance in the streets
- 34 Kendrick of the "Pitch Perfect" film series
- 35 Be totally unsuccessful
- 36 Behavioral quirks
- 38 Paycheck deduction
- 40 Like routes near the ocean
- 43 Trattoria rice dish
- 45 Blue-green shade
- 46 ___ the Entertainer ("The Original Kings of Comedy" comedian)
- 47 Some lunch locales
- 48 Peruvian pack animal
- 49 Fiber-___ cable
- 50 Creature featured for a week each year on Discovery Channel
- 53 Modern term for a zealous fan that rhymes with "fan"
- 55 Stash
- 56 ___ juice (ingredient in a cosmopolitan)
- 57 Extremely long periods
- 58 Grumpy mood
- 60 Noah's vessel
- 61 "Good to go," to an astronaut



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PUZZLE BY EVAN BIRNHOLZ