JEFFERSON innovator

FALL 2020

THOMAS JEFFERSON UNIVERSITY

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Reimagine is our commitment to raising the resources it takes to change the world, not in a small way or a single way, but in multiple, meaningful ways—swiftly and simultaneously. By focusing on four key themes, we're going to change the future for Philadelphia and beyond:

People Leading Optimistic Revolutions

Spaces that Heal and Inspire

Communities United for Health Equity

Discoveries that Improve Lives

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i'm in

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contributors

FALL 2020

On the cover: An illustration conveying Jefferson's textile work to help NASA slip the surly bonds of Earth.

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2030 Pandemic

Healthcare AND Education: All the tools already exist!

IMAGINE IT IS January 2, 2030, and a mutant strain of an RNA-encapsulated virus has been afflicting people around the globe. Of course, people old enough to remember the dark days of early 2020 and the COVID-19 crisis immediately panicked ... for a second ... and then they smiled. Because they knew we had evolved. They knew our economy, based on equity, would preserve small businesses even in a lockdown. They knew our healthcare system was no longer fragmented and inaccessible. They knew our schools and universities would continue to challenge students to grow and provide mentorship independent of school walls and regardless of income.

In 2030, anyone panicking at the memory of 2020 could trigger an immediate connection with their robot psychiatrist to start monitoring depression. Medications were delivered by drone. With 10G broadband connectivity a given, schools and workplaces were now gathering spaces, not human warehouses, and easily converted to all-virtual activity.

It's a far cry from what we witnessed in Philadelphia and throughout the country during the pandemic and economic lockdown of 2020.

This ride into 2030 is what we call a "history of the future." I use this thought experiment often to provoke the question: What do we want to see in 2030? How should Jefferson reimagine healthcare and higher education?

I firmly believe that the tools to achieve those ideals exist right now; we're not waiting for technology. The key to our future is the relationships we forge, and I know that everyone who is committed to the Jefferson principles is forming those relationships. They are teachers mentoring students to solve complex problems; scientists seeking to cure or ameliorate an illness; staff ensuring smooth operations; and clinicians improving the lives of patients. These are the people who are the epitome of Jeffersonians, and every day they live up to our values.

It's why we developed our nationally unique creativity core curriculum. It's why we're pushing for hospital care and caring independent of any four walls. And it's why we relentlessly ask what our students need.

The biggest risk you can take after this pandemic is to not try anything new.

Enjoy this issue of the *Jefferson Innovator*. And join us as we imagine an ideal scenario for our society and economy by 2030. Jefferson was central to our region's response in 2020. I believe we will be leaders if it happens again. Meanwhile, let's take our lessons learned and work toward a far more nimble, equitable society in the future. Let's reimagine the future together!

Stephen K. Klasko, MD, MBA
President, Thomas Jefferson University
CEO, Jefferson Health

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in this issue

The pandemic has made time into a flat circle. Everything seems like it's connected, and usually it is.

In this issue of Jefferson Innovator, we go back almost 70 years to an iconic tale of the old Jefferson Medical College (now Sidney Kimmel Medical College): the invention of the heart/lung machine. That innovation would become the Extracorporeal Membrane Oxygenation (ECMO) machine, currently maintaining life for many COVID-19 victims. Among the "magicians of the heart" who developed the machine was Dr. Michael DeBakey, who also would go on to devise a vascular graft for replacing veins and arteries using polyethylene terephthalate—better known as Dacron fabric. He didn't do that alone—he tapped Thomas Edman at the old Philadelphia Textile Institute (later Philadelphia University and now Jefferson) to design a special knitting machine to make seamless, flexible Dacron tubes in various shapes and sizes.

Turns out, as Jeff Bruner '73 observed, fabric has endless potential. These days, even NASA looks to Jefferson when it has a problem, because we find a solution.

Your story is our story. Let us know what you want to hear about and what you're up to at editor@jefferson.edu.

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An Inflection Point for Higher Education

IT IS UNDERSTANDABLE if many college and university leaders yearn for the simpler days of 2019, before COVID-19 forced us to shift most classes from in-person to online delivery almost overnight. But remember that quite a few institutions were already in a perilous state last fall: the economic value of traditional higher education was rightly being questioned, as was its ability to foster the skills and knowledge that 21st-century graduates need to succeed.

That's why it would be self-defeating for us simply to revert to the pre-pandemic status quo. If higher education is to thrive—if we are to deliver the long-term value our students deserve—we must make significant changes in how and what we teach. As a starting point, we should build upon the crisis-inspired lessons we've learned about how to conceive, develop, and deliver online curriculum.

I believe that we can leverage those lessons to create an inflection point for higher education: pursuing a new approach to teaching and learning that melds digital and in-person instruction into something better than we had before. Doing so will enable us to expand educational opportunities, more flexibly respond to students' individual circumstances, and better prepare our graduates for careers in a dynamic, digital, interconnected world.

Educators at Thomas Jefferson University are pursuing that vision in several ways. We are creating hybrid classes that integrate online and in-person components, and offering "hybrid-flexible" options that permit students to attend a course digitally or in person, synchronously or asynchronously. We are also acting on the principle that digital learning is not merely an alternative to in-person teaching: It can surmount the classroom's physical limitations and expand students' engagement with the world.

A wonderful example is a new industrial design course created by professor Lyn Godley and partners from 16 universities around the world (pg. 28). These educators challenged themselves to use online education tools to provide students with an experience they never could have had otherwise—one that would deliver both a unique set of insights and a global network of professional collaborators. The resulting hybrid course enables hundreds of students from many disciplines and backgrounds to collaborate in addressing real-world, locale-specific urban design challenges. It empowers them to create solutions for wholly new types and combinations of problems. And, as a side benefit, it gives faculty the chance to share their knowledge with many more students than could possibly fit in their physical classrooms.

This course also embodies a set of skills fundamental to students' long-term professional success: the capacity to be creative, imaginative, and innovative; to communicate effectively, with empathy, and across cultures; to continually seek new knowledge, broader perspectives, and fresh partners; and to be digitally fluent—to understand, basically, how digital systems function and how to use them to expand one's own abilities.

These skills should sound familiar. They are capacities that business, government, and nonprofit organizations are all striving to use in responding to the pandemic. They are also the skills that higher education has long known would be essential for individuals—and their employers—to succeed in coming decades. But unfortunately, they are not skills that most of today's colleges and universities effectively foster. Too many academic institutions, stuck in traditional modes of learning, have avoided making the fundamental changes in curriculum and teaching methods necessary for students to develop and hone these 21st-century skills.

But our present reliance on online learning has created a unique opportunity for colleges and universities to rethink outdated conceptions of how curriculum is conceived and delivered and the skills it fosters. If higher education leaders are courageous enough to turn that opportunity into an inflection point, we will be able to deliver on our promise of true, lasting value for the investment that students and families make in their undergraduate education.

Mark L. Tykocinski, MD
Provost and EVP for Academic Affairs
Thomas Jefferson University
Anthony F. and Gertrude M. DePalma Dean
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heart and lung

BY THOM PARRY

In May 1953, John H. Gibbon, Jr., MD ’27, made medical history by performing open heart surgery with the use of the heart-lung machine, a machine of his own invention. The procedure was the world’s first successful cardiopulmonary bypass surgery. The arc toward this success was not clean. Fatal setbacks occurred. Still, the machine found its purpose and has since saved millions of lives.

Cecelia

Cecelia Bavolek was born with an atrial septal defect, a hole in the muscle wall separating the upper chambers of her heart.

The blood of the chambers mixed, swirling the “blue,” oxygen-depleted blood with the red, oxygen-rich blood. The flow was disordered, and her heart murmured. Over the years, it swelled with pressure and grew too large.

By the time Bavolek was 18 and a freshman at Wilkes College in Wilkes-Barre, Pennsylvania, she was in heart failure. She collapsed again and again. The hole was the size of a silver dollar, the doctors said. If it remained open, she would likely die.

Bavolek and her mother came down to Philadelphia, to Jefferson, in search of help. They met Dr. John H. Gibbon, Jr.

Dr. Gibbon told Bavolek that he had a machine that could, for a while, act as her heart and lungs. It could keep her alive while he closed the hole in her heart.

No human had ever survived this procedure.

Victor Greco, MD ’51, was part of Gibbon’s surgical team.

“I’ll never forget Dr. Gibbon talking to her in a very calm manner, explaining what had to be done,” recalls Dr. Greco.

The heart-lung machine was unknown to the public at large and often decried as a monstrosity and boondoggle among medical doctors. But Bavolek was facing death. She had few options. She agreed to the risk.

The surgery was quickly scheduled for May 6, 1953.

Jack

Decades before, while in his second year at Jefferson Medical College, John H. Gibbon, Jr. told his father that he wanted to quit.

Medicine wasn’t for him, he said. He wanted to write poetry.

The Gibbons were a storied family of Philadelphia’s Society Hill, and John, whom everyone called Jack, was their tall, blue-eyed heir. He was to be the fifth in a line of Doctors Gibbon.

His father, John Gibbon, Sr., MD 1891, a professor and doctor at Jefferson, told Jack to give medical school more time, to see what would come.

Jack obeyed his father, and a few years later, he conceived of a lifesaving machine.

The idea came to Jack late at night while he was sitting at the bedside of a woman who was close to death. She was pale, lethargic. Blood had clotted in the artery between her heart and lung. The embolism had to be removed.

It was 1931, and Jack was then a research fellow at Harvard Medical School. He was keeping a vigil over the patient, monitoring her blood pressure and breathing, waiting for the moment when they could no longer delay the operation. He knew, however, that once they opened her chest, her brain would starve of oxygen and she would die within minutes.

"During that long night, helplessly watching the patient struggle for life as her blood became darker and her veins more distended, the thought naturally occurred to me," Gibbon later wrote, "the patient's life might be saved if some of the blue blood in her veins could be continuously withdrawn into an extracorporeal blood circuit, exposed to an atmosphere of oxygen and then returned to the patient…"

▲ *John H. Gibbon, Jr.*

▲ *John H. Gibbon, Jr., Mary H. Gibbon, and heart-lung machine, u.d.*

The extracorporeal circuit of Jack's conception would work as the woman's heart and lungs and keep her brain supplied with oxygen. The machine would allow the surgeon to dilate time, to work in a bloodless field, to see the problem clear and make the repair.

At 8 a.m., time was up. The chief surgeon began the procedure to remove the embolism. The patient died within seven minutes.

The lead technician at that surgery was Mary Hopkinson. Mary, or "Maly" to her friends, had attended Bryn Mawr College, studied piano in Paris, and pursued medical training at Harvard. There, she met Jack. The two married, and together they began work on what would become the heart-lung machine. They spent long days in the lab and talked through their research at night. Within a few years of their marriage, they had published over a dozen papers. Shortly before Jack deployed to the South Pacific as a medical officer during WWII, the couple operated on the heart of a cat. For 10 minutes in the course of that procedure, which was a success, they diverted the feline's heart and lung function to an early iteration of the heart-lung machine.

In the throes of a joy that Jack would never forget, he and his wife embraced one another and danced around the lab.

History credits John H. Gibbon, Jr. as the inventor of the heart-lung machine, but as Mary Gibbon's contributions indicate, the machine represented the efforts and intelligence of many. To create the "heart" of the heart-lung machine, the Gibbons used the smooth-running "roller" pumps created by surgeon Michael DeBakey, MD. The lungs were a greater challenge, requiring contributions from several minds. Initially, the Gibbons had trickled blood into a large, rotating cylinder to expose the blood to oxygen, but as they progressed from cats to dogs, they had to increase the surface area, resulting in ever-larger cylinders.

The lungs of an adult human contain 1,500 miles of airways. A heart-lung machine for humans would require spinning barrels a few stories tall.

After WWII, Jack returned to Jefferson to teach, practice medicine, and continue tackling the problems of the machine. At Jefferson, surgical residents and IBM engineers hit upon the idea of running the blood over mesh screens. With this idea, Gibbon and his team managed to recreate the equivalent surface area of a tennis court within a Plexiglas housing the size of a suitcase.

A dozen more problems remained—acidity, blood depletion, pressure, anesthesia, clotting—but solutions arrived as more doctors, students, scientists, and engineers joined the effort. In particular Bernard J. Miller, MD '43, made crucial contributions working with IBM to improve the device.. By 1952, the team at Jefferson could keep a large dog alive on the machine for an hour and a half. The team would sedate a given dog, cut a hole in its heart with a sharp tube, close the hole, and return the dog to consciousness. The residents kept vigils over them. Dozens of dogs underwent the procedure. Survival rates increased. In early 1953, Gibbon felt it was time to try the machine with a human.

The first patient was a 1-year-old girl. She had been in cardiac failure since birth. When Gibbon opened her chest, he discovered that she had been misdiagnosed. Instead of a hole in the heart's inner wall as they expected, the girl was suffering from a large patent ductus arteriosus, the failure of a critical blood vessel to close at birth. Her blood was flowing in the wrong direction. She died on the table.

The machine, however, had functioned according to its purpose. Gibbon and his team decided to press on.

▲ *Seated, Left to Right: Dr. Paul R. Hawley, Dr. E. Gordon MacKenzie, Dr. John H. Gibbon Jr., Dr. John F. Rogers*

Standing, Left to Right (IBM Engineers): Robert T. Blakely, G.A.V. Malmros, I. Smith Homans, Jr., J.H. Fraser.

May 6, 1953

On the morning of Cecelia Bavolek's operation, Dr. Victor Greco and the other residents wheeled the machine from the "dog lab" on the 10th floor of the College Building to the fourth floor of the "Old Main" hospital next door. The heart-lung machine—a massive, stainless steel box with rows of control dials, knobs, switches, and indicator lights—weighed more than that year's Volkswagen Beetle.

As Greco recalls, the procedure began with the team administering nerve-blocking shots below Bavolek's ribs. Throughout her chest, she'd feel nothing. Before she went under sedation, Greco stepped forward and gently sprayed Novocain into Bavolek's throat as a numbing agent. He then eased a tube into her windpipe to keep the airway open.

Everyone in the operating room was standing in a few inches of water. Gibbon had chosen cyclopropane gas as an anesthetic, a highly reactive gas. The static electricity of a shoe sole scraping the floor could cause an explosion.

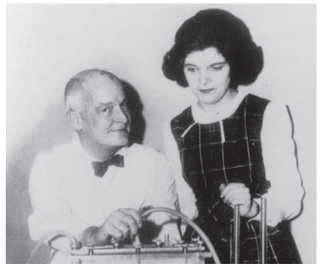
Bavolek lost consciousness. Soon after, Gibbon sliced into Bavolek's chest, cut through her breastbone, and exposed her enlarged heart. He clamped shut the vessels to it and shunted her blood through a tube to the machine.

That May morning was hot and the operating room had no air conditioning. Gibbon had the windows open to the breeze. Outside, however, pile drivers were at work pounding steel beams into the ground for Jefferson's newest facility, the Foerderer Pavilion. As the concussive thud and ring sounded in the OR, a surgical nurse mopped Gibbon's brow.

His scalpel had revealed the hole in Bavolek's heart.

Frank Albritten, MD, an assisting surgeon and key contributor to the team, peered close to document the exposed atrium with a new camera. A flashbulb went off by Gibbon's neck. Gibbon flinched and swore.

Meanwhile, as intended, oxygen-depleted blood flowed from Bavolek and through a



▲ *Dr. Gibbon, Cecelia Bavolek, and the artificial lung.*

tube that served as her out-of-body artery. Propelled by the mechanical heart of four DeBakey roller pumps, the dark blood climbed to a clear, acrylic tower that housed the aluminum mesh screens. The blood then trickled down over the screens, gathering oxygen and turning bright red.

Everything went as planned, until it didn't.

At some moment during the 45 minutes in which the machine functioned as Bavolek's heart and lungs, her blood clotted. The clots first stuck in the mesh of the screens and then traveled down to the bottom of the artificial lung. There, the clots stoppered up the exit tubes. The incoming blood frothed. Bubbles rose.

Greco, who was operating the machine with Gibbon's head technician, Joan Carruthers, jumped up onto a stool and threw his arms on the lid of the lung's housing.

"I was afraid the pressure would blow the top of the artificial lung off," Greco recalls. "You'd have blood all over the operating room."

"BJ, get over there and do something!" Greco recalls Gibbon saying to Bernard J. Miller, MD, another assisting surgeon.

Dr. Miller, who had made crucial contributions in the machine's electrical design, dropped out of the surgery, cut the pumps, and operated the machine's pressure manually.

Gibbon had intended to close the defect with a patch, but time was up. Instead, he sewed the hole closed with a silk thread.

The team removed Bavolek from the machine, and Gibbon watched her heart. It was in spasm, fluttering rather than beating. Gibbon shocked it back into rhythm.

Cecelia and Jack … Afterward

"I felt it would go my way with Dr. Gibbon's machine and lots of prayers," Cecelia Bavolek was quoted in the *Philadelphia Evening Bulletin*.

"Call it a youthful hunch," she said. She spent two weeks in recovery and refused to pose for a picture. Dr. Gibbon attempted two more bypass surgeries with the heart-lung machine that year. Both patients were children. Both patients died.

He abandoned the machine and set down his scalpel, never again operating on a heart or performing any surgery.

On request, he shared the machine's design with the Mayo Clinic in Rochester, Minnesota. The clinic improved the machine, lowering the mortality rate to 10 percent within a few years. The machine has since helped millions of patients survive the peril of open heart surgery.

In early 1960s, as the fame of heart-lung machine was growing, the American Heart Association prevailed upon Bavolek to accept the mantle of the "Heart Fund Queen," an annual title often bestowed by the likes of Bobby Darin and Bob Hope. And finally, in 1964, Bavolek and Gibbon posed for a picture before the oxygenator. When the camera flashed, Bavolek was looking somewhere beyond that artificial lung. Soon after, Gibbon retired from medicine. On a farm outside the city, he painted and wrote poetry.

In February 1973, a few months prior to the 20th anniversary of the heart-lung machine's first success, Gibbon collapsed while playing tennis. He died of heart failure.

At his memorial service, friends remembered him as a man who loved to square dance, who would swim in the coldest water, and who never dwelled on the magnitude of his achievement.

Each year, a club called "Gib's Rib Crackers," made up of his colleagues and mentees, would celebrate the pioneering doctor. One year, they invited Bavolek as an honored guest. She politely declined, but in seeking her out, the Rib Crackers discovered that Bavolek worked at a hospital in Philadelphia.

Like Mary Gibbons and Joan Carruthers before her, she had become a medical technician. Cecelia Bavolek ran machines to keep people alive, to extend a chance that not long ago, no one would have dared imagine.

Victor Greco, MD '51

After his residency on Gibbon's team, Dr. Victor Greco could have gone anywhere. He went to his hometown. Like Cecelia Bavolek, Greco was from the Pocono Mountains in the northeastern corner of the state. He returned to care for his friends and neighbors in Hazelton, Pennsylvania.

At times, he'd accept backyard vegetables and homemade wine in lieu of payment. Often, out on a walk downtown, he'd run into patients.

"It wasn't unusual that a patient would come up and lift up his shirt and say, 'Doc, see? You took my gall bladder out.'"

Greco chuckles to himself. "I know it sounds crazy."

Greco had wanted to be a medical doctor since he was five years old. One night, his mother woke and told him to come meet his uncle, a surgeon. Young Victor slipped out of bed and went to the landing at the top of the stairs. In the living room stood an elegantly dressed man wearing a vest, pocket watch, and chain. Beside Victor's uncle stood beautiful woman.

If that's what a surgeon is, Greco recalls thinking, *that's what I'm going to be.*

"I found out later that isn't necessarily what a surgeon is," Greco says with a smile.

Greco was a boy graced with intelligence and velocity, and by 15 years old, he had finished high school and become a "Junior Intern" at Hazelton General Hospital. He took patient histories, drew blood, and conducted physicals.

His patients, Greco says, used to smile.

"In a way, they felt a certain amount of pride."

Hazelton was a coal town of immigrants—Slovak, Italian, Polish, and others. Their opportunities, by and large, lay within the mines.

"Wonderful people," Greco recalls, "hard workers that never had much."

To look up and see a kid with a stethoscope and a future was a sign that their sacrifice had been worth it.

Greco made the best of the opportunity. By the time he was 18—and already graduating from the University of Scranton with high honors—young Victor had assisted surgeries at Hazelton General.

"At that time, there were no lawyers bothering the practice of medicine," Greco says. "I know it sounds crazy."

In his medical career, adventure and prestige came calling. Greco was, for example, Muhammed Ali's personal physician.

"He wanted me to go to a fight in Africa he had one time—"

Yes, that fight. The Rumble in the Jungle. Foreman versus Ali.

"And I said, 'No.' I said, 'I'm too busy. I can't.'"

Once, as a favor to Pennsylvania Governor Bob Casey, Sr., Greco visited and reorganized the state's several dozen health clinics as the Deputy Secretary of Health. After the clinics were running smoothly, he resigned.

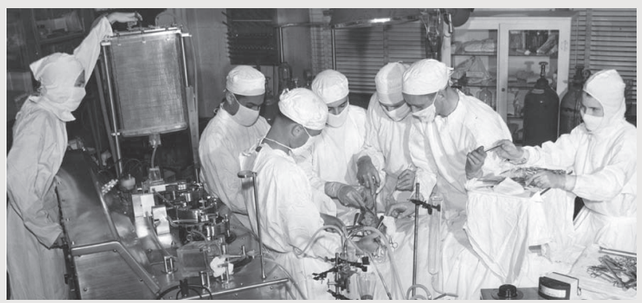
"'Look, Governor Bob,' I said, 'I can't take this bureaucracy. It's not in my blood.'"

Greco loved giving care. The rewards were simple and deep.

"Seeing patients before and after just gave me this elation, that I was able to do something for an individual," he says.

Patients–like Cecelia Bavolek–would come within moments of the end of their life. But then they'd find help in the skill, invention, and collaboration of others. They would survive.

"Somebody who was dying," Greco says, "is now living."



▲ *Dr. Victor Greco, second from left, takes part in animal trials with the heart-lung machine in 1952.*

video // magazine.jefferson.edu

CELEBRATING
THE CLASS OF 2020

Under extraordinary circumstances, Jefferson graduates look back—and to the future.

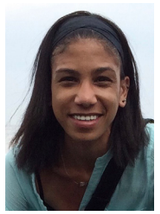
BY MIKE BEDERKA

At nearly 2,600 graduates strong, the Jefferson Class of 2020 never expected their final few months to be like this when they received their acceptance letters to attend the university. However, the unprecedented circumstances caused by the pandemic and switch to remote learning in the spring semester won't dull their achievements, stress members of the class.

"None of it changes what you accomplished," says Brandon Smith, a mechanical engineering graduate. **"It doesn't affect what you did here."**

The Nexus asked a few members of the Class of 2020 to reflect on their time at Jefferson and look toward the future.

Alexis Romney, Business Management



Alexis Romney believes in the saying, "Sometimes you need to get lost to be found." She started college in 2004 but felt the "weighty burden to forge my own educational path, make my own requirements and choose a defined future."

She temporarily stepped away from a formal education, hoping time would help her find direction. After stops at a large corporation, accounting firm, local university, and eventually settling into a career as a paralegal, she entered Jefferson's accelerated BS degree completion program in fall 2017.

Romney graduated in business management with a 4.0 GPA and was accepted into five law schools. She will attend Temple University Beasley School of Law this August.

"Earning my degree at Jefferson has helped empower me to close the gap between who I am and who I want to be," says Romney, who received the Outstanding Student Award from the School of Continuing and Professional Studies. "It has impacted my life by strengthening my existing skills and showing me new ones to pursue. Ironically, I thought getting my bachelor's degree would finally bring an end to the unresolved questions of my education. But in fact, it has only transformed me into a person capable and willing to be a lifelong learner."

Brandon Smith, Mechanical Engineering

Mechanical engineering graduate Brandon Smith missed Jefferson's virtual Commencement ceremony—for good reason. He just left for U.S. Army Officer Engineer School at Fort Leonard Wood in Missouri.

After completing his ROTC training, Smith now is a second lieutenant in the Army Reserves and will use the skills he learned at Jefferson in the Army Corps of Engineers.

"It's constant problem solving," he says of his love for engineering. "Every problem is different. You're always thinking differently and approaching things uniquely."

Smith excelled in the classroom and on the baseball diamond at Jefferson. As a pitcher for the Rams, he made the CACC All-Academic Team three times.

"My best memories will be from my time with the baseball program," he says. "Coming in as a freshman, I didn't know anybody, but having the baseball team immediately gave me 50 friends. They just took me in, and I had those brothers for four years and will have them for well beyond."

Doaa Alswaid, Communication

One of Doaa Alswaid's first jobs came at the *Al-Hayat* newspaper in Saudi Arabia. This early love of journalism inspired her to attend Jefferson and pursue a degree in communication.

"Studying in the United States will be a wonderful memory and offered me many opportunities that I might never have had in my country," she says, recalling the black and white photography class as one of her favorites.

Alswaid has returned home and plans to pursue a career in photojournalism at a newspaper in Saudi Arabia.

"No matter what's going in the world, you should be proud of yourself," she says to fellow grads. "Because you've reached your target."

Dorothy Fitzgerald, Architectural Studies

The past always is present for architectural studies graduate Dorothy Fitzgerald.

As an intern at the Athenaeum of Philadelphia, she examined archival materials associated with noted architect Thomas U. Walter. For her capstone, she used his account books, diary, and architectural drawings to piece together a history of the now-demolished mansion he built for himself in Germantown. Fitzgerald presented her work at a public Zoom meeting in May.

"The project helped me to be more self-directed in my research and challenged me to find ways to triangulate information from a variety of sources in order to form a better understanding of the 'life' of Walter's house," she says. "But more than that, I gained a sense of independence and ownership of my scholastic and professional path."

Fitzgerald will continue her journey at Jefferson this fall in the master in historic preservation program.

Setting the Stage to Further Study and Collaboration in Hemp and Medicinal Cannabis

With two new initiatives, Jefferson researchers will explore the next frontier of industrial hemp and examine the use of cannabis in patients with sickle cell disease, chronic pain, spinal cord injury and other conditions.

The Lambert Center for the Study of Medicinal Cannabis and Hemp announced the recipients of the inaugural Lambert Center Core Grants. The new program expands medicinal cannabis and hemp research at the university and encourages established scientists to apply their expertise to develop innovative therapies.

▲ *Philanthropists Joy and Barry Lambert funded grants where recipients received nearly $300,000 to study industrial applications of hemp.*

"Jefferson's research works to answer basic questions of science, engineering, and society and then translate and apply these discoveries in pioneering ways," says Ruth Charbonneau, the Lambert Center associate director. "We're building on the strength of Jefferson's research community."

The Core Grants fund a diverse group of Jefferson researchers to develop several observational studies in unique populations and preclinical applications, and support opportunities for fostering industrial applications of hemp, says Kimberly Binsfeld, director of research at the Lambert Center. These grants will provide the resources necessary to acquire preliminary data that will allow the successful applicant to obtain continued support from the Lambert Center and seek additional funding from foundations and state and federal agencies.

"Simply, the grants align the Lambert Center's role in studying the science and therapeutic role of medicinal cannabis and hemp within the broader mission of Jefferson," Binsfeld says. "We're excited by the wide range of the studies and the potential to set the stage for further study and collaborations."

In addition, Jefferson named the inaugural Lambert Center Research Scholar. The award provides the recipient with research experiences that broaden perspectives, facilitate interdisciplinary interactions, and expand institutional research capacity.

Australian philanthropists Barry and Joy Lambert funded these grants—where the recipients received nearly $300,000 in total—and have supported other Lambert Center research endeavors.

Jefferson Architecture and Industrial Design Students Help Israel Medical Center Look Toward Its Future

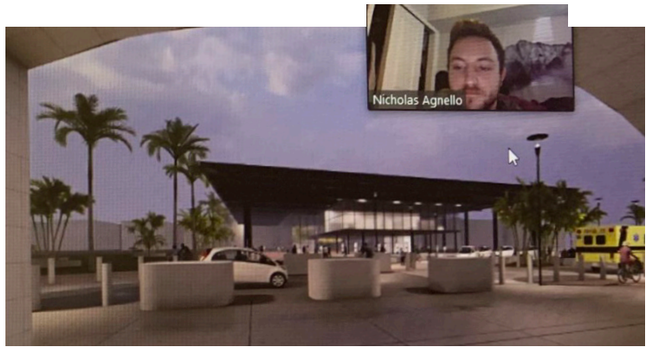
The COVID-19 pandemic nixed in-person collaborations, but the joint "City of Health" effort is still off to a wonderful start.

In a unique effort that bolstered the university's footprint in Israel, a team of architecture and industrial design students and faculty worked with an international design studio to envision concepts for Sheba Medical Center's "City of Health" initiative.

Under the leadership of the Jefferson Institute for Smart and Healthy Cities, the project—which also involved Bezalel Academy of Arts and Design and Shenkar College of Engineering, Design and Art—came about after a trip to Israel organized by Dr. Mark Tykocinski, provost and executive vice president of academic affairs at Jefferson, and Dr. Zvi Grunwald, executive director of the Jefferson Israel Center.

"Our 2017 university merger, by bridging design and health, now powers just this type of collaborative effort," says Dr. Tykocinski. "This project showcases how the frontiers of industrial and architectural design can creatively intersect with the emerging 21st century healthcare landscape."

Among the objectives were promoting "aging-in-place" concepts and products, developing master plans for the campus's physical future, marrying Sheba to its surrounding community, and bolstering public transportation and walkability over driving personal vehicles on campus.



▲ *COVID-19 prompted the cancellation of an overseas trip, but architecture and industrial design students and faculty collaborated distantly; the "City of Health" project envisioned potential designs for Sheba Medical Center's future.*

Tal Einhorn, Sheba's head architect, says that the students' conceptual ideas could eventually guide how Sheba moves forward with the City of Health concept. While architecture needs clearly differ between Israel and America, the international language of engineering and design in a healing environment shined through.

"In all of the projects, it was a vision of the future," says Einhorn. "We will eventually benefit from the novel ideas and different perspectives. It was very evident, in every way, that the students did phenomenal work. They brought fresh eyes from their own perspectives."

The Jefferson effort centered on presenting creative solutions, from the build space down to the level of the individual patient and included solutions to real-life challenges at the Sheba Medical Center for patients, health care teams, visitors and the community.

▲ *Neel Nabar*

SKMC Student Works on Dr. Fauci's Team Fighting COVID–19 Pandemic

As a former coronavirus researcher, fourth-year SKMC student Neel Nabar wasn't entirely surprised when the decision to cancel clinical rotations was made. But, as is often the case, when one door closes, another one opens.

Shortly after the cancellation, Nabar received an email from Dr. John Kehrl, under whose guidance he had previously researched the original SARS-coronavirus (SARS-CoV) at the National Institutes of Health (NIH).

"Within three days, I was back at the NIH with my credentials and ID badge. All the paperwork had been taken care of," Nabar shares. "I was asked to lead a small team within the Laboratory of Immunoregulation (LIR) on investigations into COVID-19 pathogenesis and to assist on a study of the viral spike protein that could better guide intelligent vaccine design."

He first joined that group six years ago, as he did his PhD work both through the Jefferson MD/PhD program and the NIH-Karolinska Institute Graduate Partnership Program in Washington, D.C., and Stockholm, Sweden. That experience left him concerned when word started filtering out about a mysterious virus.

"Those of us with previous expertise on coronaviruses recognized how big of a problem this could be," he says.

This spring, Nabar worked in one of eight sections of the LIR led by Dr. Anthony Fauci. Nabar led a small team investigating COVID-19's pathogenesis and assisted on a study of the viral spike protein to better guide intelligent vaccine design.

"It all felt surreal. While most of the NIH campus was shutting down, our COVID-19-related projects were ramping up to tackle the issue," says Nabar, who logged seven 14- to 16-hour days a week.

In June, he resumed his clinical responsibilities at Jefferson, but he will continue to provide input remotely for the NIH effort through his direct supervisor, Dr. Kehrl, who works closely with Dr. Fauci.

With one eye on what his team needs in D.C., Nabar will now focus on his final four required rotations and six months of elective time at SKMC.

Meet Maggie: Jefferson's Newest Furry Employee

In November 2019, Jefferson College of Nursing and Jefferson Center for Injury Research and Prevention welcomed Captain Jason Haag and Danique Masingill—founders of Leashes of Valor, a nonprofit that connects veterans around the country with trained service dogs to help mitigate PTSD—accompanied by a service dog named Maggie (pictured below), to Jefferson for a panel discussion and Q&A.

The presentation held a special place in Dr. Marie Ann Marino's heart. The Jefferson College of Nursing dean and former Navy Nurse Corp reservist discussed that oftentimes, it's the silent injuries that have the greatest impact.

Now, Maggie has found a permanent home at Jefferson.

Dubbed "chief compassion officer," Maggie will encourage feelings of calmness and security for students, faculty and staff, in addition to Jefferson's academic and community partners.

"Our goal is for Maggie to help mitigate moral injury and compassion fatigue and improve general mental health through companionship and affection," Dr. Marino says.

While helping students manage the day-to-day stress associated with academic life will be an important job responsibility, Maggie will also help them learn how to care for others by teaching them empathy, especially for patients suffering from PTSD and other disorders.

In the midst of the COVID-19 pandemic, Maggie's arrival couldn't be any timelier, Dr. Marino says. "These unprecedented times of uncertainty have demonstrated the need for an innovative tool to help the Jefferson College of Nursing family."

Although she already took part in some virtual meetings, Maggie will make her official debut this fall when in-person classes resume. Once on campus, she will meet her secondary handler, Dr. Jennifer Shiroff. Maggie's been trained to work in many settings and will interact with both individuals and groups depending on the situation and needs. Maggie also will visit Jefferson Health and make rounds to see patients and employees.

The lookbook highlights the work of 31 fashion design seniors.

Scan the QR code with your smartphone camera.

They've Got the Look

Jefferson fashion design students traditionally present their work in an end-of-the-year show attended by over 1,000 prospective and current students, family members, industry leaders, media, fashionistas, influencers, and Jefferson faculty, staff, and trustees.

The pandemic forced the cancelation of fashion events around the world, including Jefferson's much-celebrated annual fashion show planned for April 30 at the Moulin at Sherman Mills.

To ensure students' work still would be widely displayed, the fashion faculty and staff developed a special 76-page "lookbook" for the collections of 31 fashion design seniors.

"We had to adapt," says Darcy Marcantonio, the fashion design professor who ran point on the lookbook with Nicole Murphy, fashion design program coordinator.

Students took inspiration from diverse areas for their looks, ranging from Joan of Arc and anxiety disorders to 1920s Harlem and polluted waters. Many fashion students, including recent grad Amanda Ebeling, also collaborated with the textile design program to develop their pieces.

In the fall, Ebeling met textile students Ana Odiot and Logan Connelly, and they instantly clicked.

Odiot's jacquard and Connelly's knit helped Ebeling to bring her "Death by Wave" collection to life. Inspired by two pieces of art—Katsushika Hokusai's "Under the Wave Off Kanagawa" and Yayoi Kusama's "The Pacific Ocean"—the collection explores the dread experienced when a tsunami crashes ashore and consumes everything in its path.

Recent fashion grad Ally Laskowski worked with textile design by Olivia Manning for her "Inflorescence Untamed." Human communication through the language of flowers inspired her collection, which is the embodiment of the feminine nature of bold, modern floral arrangements.

"I truly believe they produced exceptional work despite, or perhaps in part because of having to overcome this crisis," says Jefferson fashion design professor Katie Casano. "I will never forget this group or the way they channeled their creativity and still succeeded in spite of all of the obstacles."

Making a Difference from Home

For the last decade, Jefferson College of Nursing student Sophie Ferguson and her mom, Michele, have made burp cloths from their home. However, when COVID-19 hit, they both realized they needed to shift their business to address the nationwide shortage of masks.

"I saw a girl on a Facebook video communicating with her mother who was wearing a clear mask," says Ferguson, who learned to sew from her mom and honed her skills in a high school fashion design class. "The girl was deaf, and she needed to read lips. After watching this interaction, I decided to add these masks to my repertoire for anyone who needs them."

Since March, they have sewn some 750 cloth masks in a variety of styles, including food, animal, and sports prints. Most recently, they began creating clear masks to help people with hearing impairments.

Their business, SoSoMaxx, has donated many masks to businesses and frontline workers, and a portion of the profits from those they sell goes to a local animal shelter.

"We will continue to make masks for as long as we need to wear them," Ferguson says. "We happen to have a skill that meets the needs of our community. I believe that makes us obligated to do our part."

Jefferson Alumni Give Animals a Leg Up

Bionic Pets owner Derrick Campana has created over 25,000 devices since starting his Sterling, Virginia-based company in 2004. He mainly helps dogs with a variety of injuries and chronic conditions, but occasionally works with untraditional pets, including llamas, sheep, and even ducks.

For these unique cases, Campana relies on Jefferson industrial design alumni Adam Hecht and Alexander Tholl for intricate 3D printing jobs with heartwarming results.

The two 2019 graduates instantly hit it off as freshmen at Jefferson after partnering at evoHaX, an accessibility-themed hackathon, to build a tool that turns a person's finger into a screen reader. Their team won the competition, and they got to pitch their concept at an area entrepreneurship expo.

As seniors, they founded DiveDesign, which specializes in design research and strategy, industrial design, prototyping, engineering, UX/UI design, web development, and brand development.

"We bootstrapped this entire company," Tholl says. "We were profitable in the first year. It's been a whirlwind."

While successful from the start, DiveDesign's true major break came when a friend introduced them to Campana.

Campana's traditional method for creating prosthetics is a multistep process that included casting, molding, sculpting, and refining. The whole fabrication takes about three hours for the typical dog.

"That's where 3D printing really comes in," says Campana, noting the DiveDesign partnership allows them all to help more clients in a shorter time. "These animals are in such need, and I really need these guys."

After Hecht and Tholl collect the molds from the owners, they take a 3D scan with an iPad. Next, an algorithm they developed determines how the prosthetic will most comfortably fit the animal's body. Once the 3D printer constructs the device—which can take 12 to 18 hours depending on the size—the two smooth out the mold and attach straps and mounting poles, which adds another two hours to the job.

"We love it when we get a call or tagged on an Instagram post of a dog—or a duck—walking on one of our prosthetics," Hecht says. "It's a dream. In middle school, I wanted to have my own firm doing prosthetics. I couldn't be happier."

Fashion Alumna Helps Create Newest American Girl Doll

BY BRIAN HICKEY

Her name is Courtney Moore. She rocks "totally rad" '80s gear—from acid-washed denim and splatter-print dresses to Care Bears pajamas and a cool watch—and she loves heading to the arcade to play games like Pac-Man.

Lest you think a time machine has taken us all back to 1986, it bears mention that Courtney is an 18-inch-tall doll. Specifically, she's the newest American Girl character—the creation of a team led by Liana Richardson. The fashion design alumna landed her doll-designing dream job with Mattel after graduating from the university in 2017.

Granted, Richardson isn't a child of the '80s in a chronological sense, having been born in the middle of the next decade and raised in the Portland, Maine, area. Still, the time resonated.

"My dad was in an '80s hair band called Kid Razzle. I'm talking huge hair. So, the era felt familiar for me," she recalls with a laugh, noting she never had an American Girl in her youth because of the price point. "The '80s were such a fun, interesting time, though, when consumerism met indulgence. Working on this project was very exciting for me."

For the wildly popular series, Courtney follows in a long line of historically themed premium dolls. They include Addy Walker, who shared a message to "keep love alive in the face of hate and fear" during the Civil War; Molly McIntire, an American Girl on the WWII home front; and Kaya, who urged people in the 18th century to "respect and protect the Earth because we are all connected."

As with previous iterations of a brand that aims to instill young girls with confidence and character, Courtney's backstory was meticulously researched.

The 8-year-old's story takes place in 1986 and reflects the pop culture of the decade from sky-high hair, neon-colored fashions, music television and video gaming to major historical moments surrounding women in government and space exploration, as well as larger cultural shifts around blended families and emerging technology.

The History of Costumes and Textiles course that I took at Jefferson was a major help.

She's one of the best Pac-Man players at her local arcade in "Orange Valley, California" and hopes to create video games that feature more female characters. She's from a blended family and loves playing with her Molly McIntyre doll, which debuted as a product in 1986.

"The '80s are back, and we're thrilled to celebrate this pop-culture-defining decade with girls and their parents through Courtney," says Jamie Cygielman, general manager of American Girl.

When the Courtney doll went public in September—in a partnership with the Girls Who Code nonprofit, which will sponsor four $5,000 scholarships for girls interested in computer science or a related field—the debut included a Today Show introduction headlined by the Go-Go's.

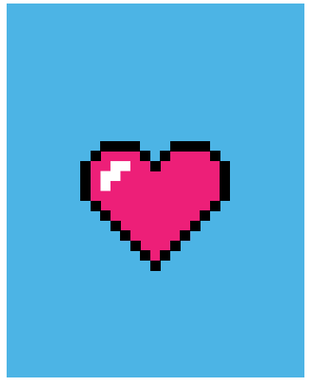
Establishing that origin story was only part of Richardson's role in bringing Courtney to life. Landing a job with American Girl straight out of undergrad was a major step in transferring a fashion design education into the world of designing dolls.

An interest in comics and costuming brought her to Jefferson—then called Philadelphia University. She specifically cites professors Carly Kusy and Katie Casano for helping her translate her fashion design skills into the field she aspired to join.

"They were really open to helping me, even in portfolio class, to make this happen," says Richardson, who created all of Courtney's outfits and fashion accessories. "The facilities and the DEC program really served me well. It laid a great foundation that you can't get at other schools."

Getting hired by American Girl meant a move to Middleton, Wisconsin. Richardson started working on contemporary fashion lines before adding a role on the line's historical team to her job description.

The process went quicker than normal, with the last-minute project taking the place of a process that generally lasts up to a year. (The '80s concept bumped another project from the queue.) A seed of inspiration came from seeing the popularity of nostalgic shows like "Stranger Things" and the resurgence of Mattel's She-Ra and the Princesses of Power.



Dolls are really teaching nurturing, compassion, empathy, and emotional–intelligence skills

Richardson started studying the fashion of the era (e.g., puffy sleeves and high-waisted denim pants) and the general history of the 1980s, including the burgeoning computer world, women returning to the workforce in greater numbers than ever before, divorce becoming more commonplace, and the Challenger explosion, which claimed the life of teacher Christa McAuliffe.

She scoured old *Vogue* and *Teen* magazines, as well as the J.C. Penney and Sears catalogs for inspiration "to see what young girls were circling for their Christmas lists."

"We saw this as a huge opportunity to not only resonate with girls today but also with their parents and grandparents, who are the purchasers. It was a perfect combination," she says.

"The History of Costumes and Textiles course that I took at Jefferson was a major help."

Richardson, who has since left Mattel in pursuit of an MBA, studying brand and product management at the University of Wisconsin–Madison, says the experience was both fun and insightful.

"These were really tough topics to work into the storyline, but in a lot of senses, they're still lingering today," she says of observations watching children interact with the dolls.

Beyond the doll itself, she mentions lessons learned along the way about the world of toys and how they interact with youth development. She notes that watching the toy-testing room during the creation process offered insights into those exchanges. In one case, a young girl had set up a funeral scene for the dolls.

"The stories they play out are fascinating," Richardson says. "Though the funeral was dark, it was interesting to see how dolls are used to help children process difficult situations, and how to behave in them, not to mention conflict resolution and emotional processing.

"Mattel has done an incredible amount of research into how doll play helps young children develop. Dolls are really teaching nurturing, compassion, empathy, and emotional-intelligence skills. I'd recommend that more boys should be playing with dolls too and hope Courtney is really well-received."

video // magazine.jefferson.edu

Establishing a Global Classroom

With an unprecedented fall semester looming, industrial design professor Lyn Godley already knew that virtual learning couldn't entirely replicate the studio experience for students. With that in mind, she started brainstorming ways to offer a unique approach for sophomores enrolled in her industrial design studio.

"Students love the studio experience, but it's just not the same online," says Godley, of the Kanbar College of Design, Engineering, and Commerce.

"How about we take the tools that online education offers us and give students an experience they never would have had otherwise—something that will set them and their portfolios apart?"

Answering that question after conversations with academic peers explains how "SEE: Our Cities," a global, urban-space, observation and intervention project, came to be.

The program teamed up with 16 partners from universities on five continents. Godley says the resulting effort "has the potential to be a substantial addition to the students' academic experience in ways that on-site classes may not traditionally offer."

Students from each academic institution will visit public spaces preselected by their instructors and document observations of human activity in the space. They will also virtually attend live or prerecorded classes from partner schools and create a final video presentation of their project, walking peers through their thought processes and proposed solutions. The top three from each school will be included in a round-up video that will be shared publicly.

"We're all moving toward getting across the finish line, with each dancing a little differently," says Erika Doering, Godley's co-lead from the Parsons School of Design at the New School in New York City. "This is about the total choreography."

"This is a global classroom taught online, and it couldn't have come at a better moment for us," says Shruti Joshi, a professor and one of the founding members of the Dr. Bhanuben Nanavati College of Architecture for Women (BNCA) in Pune, India. "Learning to adapt to new platforms, with students remotely placed in their hometowns, will help survive and grow in a post-COVID scenario despite the challenges."

"Culture, sense of place, identity for each urban space will vary as per contexts and geographical boundaries," says Dr. Bhakti More, professor in the School of Design and Architecture at the Manipal Academy of Higher Education (MAHE) in Dubai, India. "I think that's going to be very exciting to see these variations and regional approaches to every city."

"This is a good experiment," says Godley. "Education was already moving in a direction of thinking about a more universal approach to teaching and what the classroom of the future could look. This idea could be promoted as a new methodology of teaching."

Professor Shruti Joshi of the Dr. Bhanuben Nanavati College of Architecture for Women in Pune, India, says this very old post office in a major node of the city offers "a very interesting area of study for the project."

Textile Professionals Answer a Looming Need

Jefferson Graduates Keep Businesses Open to Manufacture PPE

BY CINDY LEFLER

As graduate students at the Philadelphia College of Textiles and Science (now Thomas Jefferson University), Joy McGruther Alaoui and Taya Thongyoo Haught were used to being tasked with solving complex problems.

"We would run back and forth from the studio to the looms, then back to our computers, adjusting technical aspects—problem solving on the spot," says Alaoui, who along with Haught runs The Weave Lab in Jessup, Pennsylvania. The challenges they met in the classroom trained the business partners to thrive in the professional world—but they never thought they would have to use those skills to survive a pandemic.

For Alaoui and Haught, as well as two other graduates-turned-business owners, the COVID-19 crisis could have spelled disaster—lost commerce, massive layoffs, financial ruin. Instead, they used their education and ingenuity to keep their companies running and their employees working, all while supplying much-needed essential supplies to hospitals, businesses, and individual citizens.

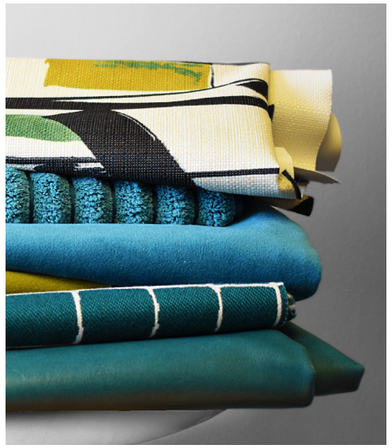
"When the pandemic hit and most furniture retailers closed, we needed to find something we could produce. So we started developing and manufacturing some PPE (personal protective equipment) products to keep our operations running," says Iv Culp, president and CEO of Culp Incorporated, a manufacturer of mattress and upholstery fabrics headquartered in High Point, North Carolina.

Culp, who earned an MBA and master's degree in textile marketing in 1998, transformed his facilities into producers of face masks and hospital bed covers almost overnight. He said the initiative to reprioritize operations to produce PPE wasn't as much about profit as it was to keep as many workers as possible employed and support the country in a difficult time.

Bob Berger, president and CEO of the Ontario-based MW Canada, which manufactures textiles for the window fashion market, healthcare products, and air and water filtration systems, says he also knew when the pandemic arose he would have to adapt in order to survive and save jobs. As regular orders dwindled, he began researching the American Society for Testing and Materials (ASTM) requirements for PPE products.

"We tweaked the samples a little bit, started developing fabrics that would fit the existing machine setups, then waited for certification," says Berger, who graduated in 1977 with a degree in textile engineering. Once the products

In less than a week we went from designing paisleys and polka dots to designing PPE.



were approved, the company started manufacturing fabric for hospital gowns, shipping about 20,000 yards of fabric a week to companies that sew the garments.

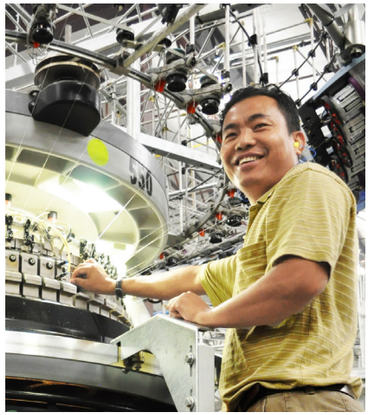
Not only was he able to hire back all 100 employees he initially laid off at the start of the pandemic, but he also is now looking to hire more people to handle the workload created by the PPE demand, as well as the regular work, which has returned to normal.

"We looked at the PPE as a filler until regular business came back, but I think these products are going to be around for years to come," Berger says, adding that as long as there is a demand, they will meet it as well as expand by developing new products. His company is now manufacturing ear loops for medical masks.

Non-medical-grade face masks have been the most in-demand product by far during the crisis.

Culp estimates that in the first three months of the pandemic, his company produced more than a million masks to sell to local businesses seeking to reopen safely and to donate to social organizations and school systems. While the masks are not medical-grade, they are designed to be FEMA approved for the average consumer so that medical grade mask supplies are available to healthcare workers.

At the onset of COVID-19, Alaoui, who earned a master's degree in textile design with a concentration in weaving in 1998, and Haught, who received



her master's in 2001 in textile design with a focus on weaving, were working for Material Technology and Logistics (MTL), a weaver of specialty apparel and home furnishing fabrics. About 18 months ago, the pair started The Weave Lab, which is associated with MTL and concentrates on zero waste manufacturing by taking leftover bits of yarn that accumulate in weaving mills and turning them into small-batch, one-of-a-kind textiles.

As the call for masks started to surge, the pair was tasked with designing masks for

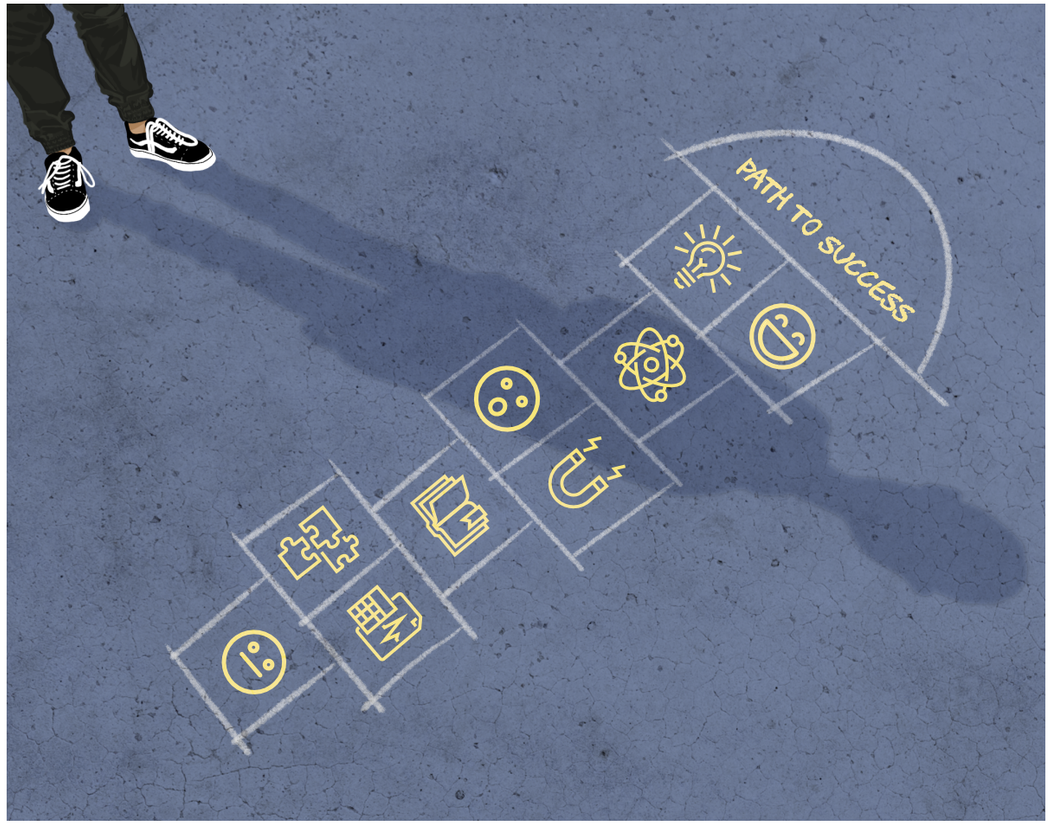
MTL to make and donate to local hospital systems and assisted living and rehabilitation facilities in the Scranton area. Shortly afterward, they began fielding calls from their own customers at The Weave Lab asking about masks.

The two combined their zero-waste manufacturing techniques with a little creativity and came up with a high-end, aesthetically pretty no-sew mask kit. "The product itself could come straight off the loom and—with a few cuts and some laces—be ready to use," says Alaoui.

"We researched particle penetration, fit, breathability, comfort, absorbency, filtration … all of the important aspects," she says. "In less than a week, we went from designing paisleys and polka dots to designing PPE."

All four Jefferson alumni predict that the need for PPE—particularly face masks—will be around for a long time, and as long as there is a need, the textile industry will be there to help.

"The textile industry is made up of a lot of great companies. It's amazing to see how fast it rallied the troops and really made a huge difference in the PPE effort," Culp says. "As long as we can help the cause and make products to help us recover from the crisis, we'll keep doing it."



Getting Physics–al

Graduate of New MS in Medical Physics Program Finds Path to Success

BY CINDY LEFLER

It was May 2017, and Matthew Schelin had just graduated from the University of Maryland, College Park, with a degree in bioengineering. He was anxious to get a job, pay the bills, and start living his life. But instead of seeking a career in science, he turned to the corporate world for his first job.

"Four years of undergrad in bioengineering was really, really grueling. I decided I'd had enough of this science stuff. I thought: Let me try my hand in something in the corporate America world and see if I like it," he says.

So he took a job with Deloitte Consulting in Washington, D.C., as a federal business technology analyst for the U.S. government. Schelin was 22 years old, working for a leading global firm, living in a vibrant and exciting city, making great money, getting great benefits, and working with great people. And he couldn't wait to get out. After only three months at Deloitte, he was already planning his escape.

"The company was fantastic—I just didn't like what I was doing. It was super slow and boring," he says. "I pretty much had no idea what I was going to do, but I knew the next move had to actually be something I wanted to do for a career."

Over the next few months, he interviewed for—and was offered positions in—the pharmaceutical industry. But that didn't excite him either. He was afraid of making the same mistake he had made by taking the Deloitte job—discovering a few months or years down the line that he just wasn't happy going to work every day.

"At that point, I didn't even care about the money. I learned the hard way that money doesn't really matter. I just wanted to do something that I enjoyed," he says.

Then he remembered an internship in medical physics he had at Anne Arundel Medical Center in Annapolis, Maryland, during his junior year as an undergrad. He recalled the outstanding training and the words of encouragement from his mentor, Brian Hasson, PhD, chief medical physicist at the facility.

"Dr. Hasson taught me a ton the three months I was there, and I loved what I was learning. He said I was good at it and was pushing me to do it for a career." Schelin says. "In the back of my head, I guess I was always thinking about it."

He decided it was time to stop thinking about a career in medical physics and act on it. He reached out to Hasson, who convinced him to take that bold step into a more exciting future. Hasson had colleagues at Thomas Jefferson University and encouraged Schelin to enroll in the brand-new master's program in medical physics at the College of Health Professionals.

the harder you work the more it pays off in the long run.

"He knew they would teach me well and set me up for a successful career," Schelin says, noting that Jefferson is the only program to which he applied.

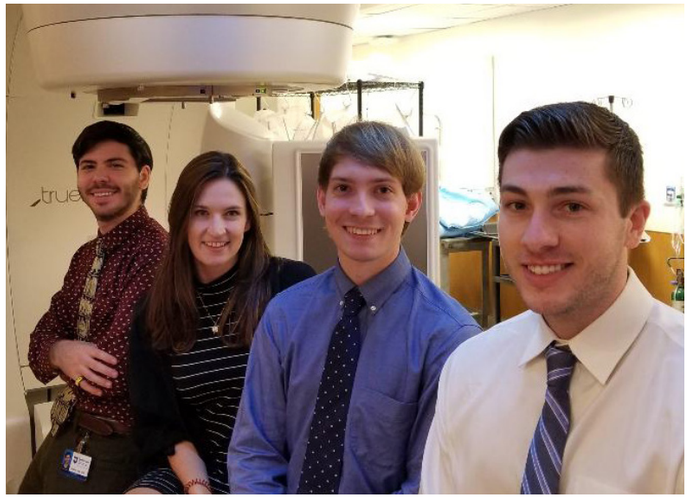
Schelin quit his job at Deloitte in July of 2018 and started the medical physics program at Jefferson one month later. He calls it "the best decision I've ever made."

Medical physics is the application of physics concepts, theories, and methods to medicine and healthcare for the diagnosis and treatment of disease. Specialties in the field include radiation oncology, diagnostic and interventional radiology (medical imaging), nuclear medicine, and radiation protection. Jefferson's program focuses on the therapeutic subfield, which is radiation oncology physics. Didactic courses and labs are complemented with extensive clinical experience, and students are trained in the latest cutting-edge technology, including the CyberKnife and GammaKnife.

Still, enrolling in the program was a leap of faith. The program was new—Schelin and three others would be the first cohort of the two-year MS in Medical Physics program at the College of Health Professions, Medical Imaging & Radiation Sciences. Jefferson hadn't even secured certification for the program in August of 2018, and without it, the students would not have been eligible for a residency. But program director and clinical instructor James Keller, PhD, assured them it would be in place before graduation; in fact, the program received full accreditation from the Commission on Accreditation of Medical Physics Education Programs (CAMPEP) by December of 2018.

Schelin says the program is rigorous and moves at a rapid pace.

this program was a huge blessing for me



▲ *Matt Shelin (far right) joins his three classmates inside one of the Varian TrueBeam vaults at Bodine. Also pictured are (right to left) Alex Bredikin, Alexis Bowers, and Andrew Jaffe.*

"It's incredibly fast!" he says. "But the harder you work, the more it pays off in the long run."

The first year consists mostly of classroom and textbook learning. "It was a lot of reading," Schelin says. "Then you graduate onto putting all that knowledge and all those pieces together in the clinic and in research the second year."

All four members of the inaugural class were accepted into residency programs at top hospital systems in the country, and they also passed part 1 of the American Board of Radiology certification.

"This is a testament to their dedication and hard work over the last two years," Keller says. "Given the quality of the residencies they have chosen, I could not be prouder of them."

Earlier this summer, Schelin started his residency at Mt. Sinai Hospital in New York City. The 25-year-old native of Long Island, New York, is excited to be home and feels fortunate to have gotten such a prestigious residency.

While the field of medical physics is growing, residencies are still very competitive. According to the United States Bureau of Labor Statistics, the fields of radiology and nuclear medicine will likely experience a substantial increase in the coming years, with the demand for some positions growing by as much as 24 percent in the next decade. The need for medical physicists will grow as the healthcare industry's ongoing development of high-tech medical equipment—and for specialists who can operate that equipment—grows. However, only about 33 percent of graduates coming out of medical physics programs currently are able to secure a residency.

"Job placement looks fantastic for us, but the graduation-to-residency part is a bit of a bottleneck," Schelin says, giving Keller all the credit for creating a program that offers Jefferson graduates the edge in a competitive market.

"Dr. Keller's contributions to the program have been tremendous; he set up the curriculum perfectly and does a ton of work behind the scenes that benefits the overall program. There isn't anything that we weren't taught or exposed to that we are supposed to know," he says.

While Schelin is not certain where he will end up after finishing his residency, he does know one thing for sure: He won't be looking to escape after three months.

"This program was a huge blessing for me," he says. "I took a really weird pathway to get here, but I found what I want to do. And I'm happy."

SHARE YOUR STORY

Jefferson Innovator: Class Notes

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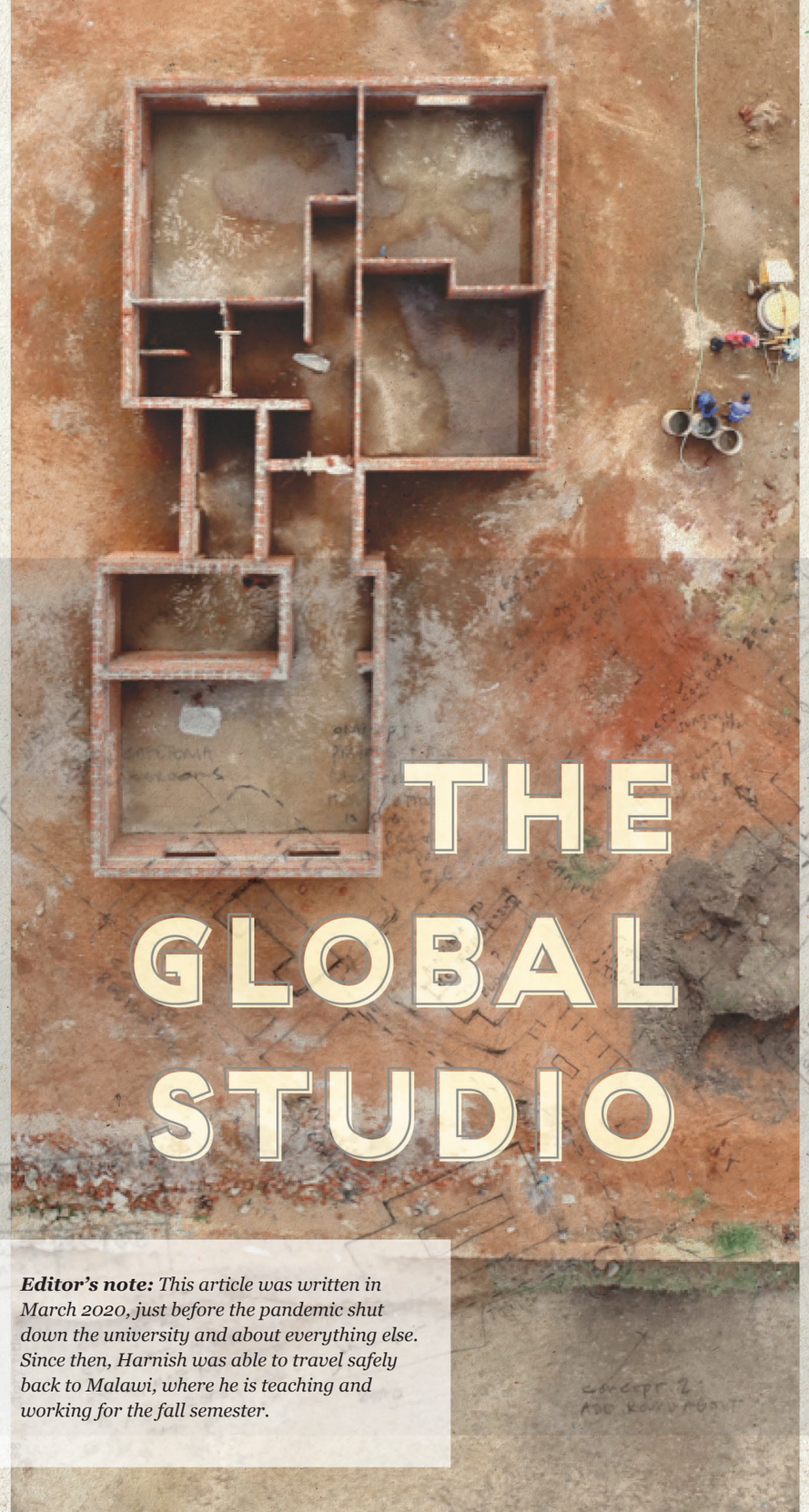
▲ **Vincent Murphy '12 and Emily Manera '12**



THE GLOBAL STUDIO

BY THOM PARRY

Africa's population will likely double in the next 30 years. Professor Chris Harnish has enlisted his Jefferson students to explore how design can solve issues this growth poses to the healthcare system in Malawi, a southern African country that's Harnish's home away from home. It's immersive, hands-on learning in a radically different environment, an education that'll last. For whatever help the students can provide in research and solutions, Harnish knows that Malawi will them teach them something greater.

Editor's note: *This article was written in March 2020, just before the pandemic shut down the university and about everything else. Since then, Harnish was able to travel safely back to Malawi, where he is teaching and working for the fall semester.*

At 8:30 a.m. on a Friday in February, the voices of students and professors rebound beneath the honeycomb grid ceiling of the second-floor studios of Jefferson's Architecture and Design Center. Some classes are carrying out critiques in open spaces. Others cluster around design carrels crowded with models, foam core, and cardboard.

Chris Harnish, associate professor of architecture, stands at one end of the space and gathers his students between the rows. With a voice on the soft side, a wide grin, and tousled hair, he's the friendly, relatable sort of professor, a demeanor that belies the exacting nature of this course.

This is Architecture 508, also known as "fifth-year studios." His section is known as the "Global Studio," though these days, it's all about Malawi.

Don't get too comfortable, Harnish tells his students. They have two video calls coming in next door at the Kanbar Campus Center from points across the globe.

A trio of students—Adam, Kate, and Enya—set off to answer the first, a call from Linda Robinson, a Peace Corps midwife with years of experience in Malawi.

Harnish's phone buzzes and his screen lights up. Stefano Vatteroni has just texted. Vatteroni is a Malawian architect. He recently completed drawings for renovations at Queen Elizabeth Central Hospital, in Blantyre, Malawi. He was supposed to be the second call, but he's momentarily lost power, a common occurrence in southern Africa.

Malawi is one of the economically poorest countries, yet it has one of the fastest-growing populations on Earth. The hardwood reserves are mostly gone, cut down to fire ovens for bricks. All steel is imported. Roads are mostly treacherous. In Vatteroni's lifetime, the population has more than doubled. The United Nations predicts that in the next 30 years, Malawi will likely jump from 19 million to 45 million. It's a good place for architects who are up for a challenge.

Malawi's challenges are a microcosm of Africa's. By 2050, the continent's population will likely go from 1.2 billion to 2.5 billion, radically outpacing every other continent, according to the World Health Organization and the UN. Against this immense challenge—the skyrocketing need for housing units, schools, hospitals, roads, and more—Harnish has zeroed his Architecture students in on the health infrastructure of Malawi. Hence the calls from Robinson and Vatteroni. To him, health infrastructure is the most critical issue there is.

Vatteroni texts again, the power's back on, and the second group heads out to Kanbar. It's a

wet and cold morning, and the students, Hutton, Adam, Matt, and Solomon, dodge puddles and hike their shoulders against the rain. Once they reach their Kanbar conference room, the team plug in laptops. In turn their screens are blank and without sound, until at last a man with close-cropped hair and rectangular glasses appears. A ceiling fan turns behind him.

Over the next hour, Vatteroni proves something of a practical Buddha.

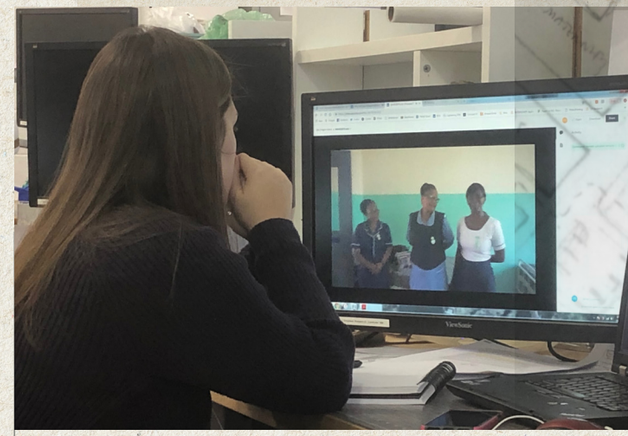
"From a spiritual point of view, beauty gives energy," Vatteroni says.

Descending into particulars, he explains that a well-designed health clinic will give rise to training schools, chapels, food stands, and more, and if it has "roots," by which he means that Malawians themselves have built it with Malawian materials, it will evolve to meet Malawian needs. Malawi has great materials, he says. Rubber and eucalyptus trees, which grow well there, can be pressed and laminated into excellent boards. It must be of the place.

The students ask Vatteroni about the rebuild at Queen Elizabeth Central Hospital.

Vatteroni tells them that he was working on a Malawian banker's wine cellar when the banker fell. The banker was rushed to Queen Elizabeth. While known as one of the best hospitals in the country, the facility was inherited from the colonial era, run down and overburdened. Disturbed by the conditions there, the banker wrote a check, and Vatteroni got busy. The rebuild stabilized power with solar panels, increased patient privacy, and improved hygiene, sanitation, water quality, and pest control, all while using local tradespeople and, to the degree possible, local materials.

"You could use steel from China, or bring in a container full of 3D printed stuff, and it might be good for the building," Vatteroni says, "but it won't be good for Malawi."



Chris Harnish traveled Africa multiple times in his twenties and thirties. On one journey, he found himself in a brutal heatwave on the Mozambique coast. He hung a sharp left up into the mountains of Malawi, a place known for its mild climate. He found a deeper relief.

He'd grown up in the Midwest as the son of a minister and a schoolteacher. Something in the way Malawians treated one another, an everyday kindness, felt right to him. A freshwater lake reminded him of home.

Malawi had pain and trouble—HIV and tuberculosis, crime, poverty—but it had a sense of social cohesion and communal good that he's struggled to find in America.

Neither its distance from the world he'd known, nor his status as a stranger bothered him. In fact, he liked it. As a kid in a homogenous Michigan farm town, being on the other side of otherness felt good to him.

At journey's end, Harnish returned home, which at that time was New York City. There, he worked at a high-flown architectural firm, designing Manhattan art galleries and, for example, staircases for media celebs.

Before long, he quit New York to return to South Africa, taking a job with Architecture for Humanity, a nongovernmental organization that placed architects in humanitarian projects across the globe. Once, in a Johannesburg bar, an Afrikaner got in his face.

"You Americans are always coming down here, trying to fix Africa," Harnish recalls the man saying. "Go the [expletive] home."

When asked how he reacted, Harnish smiles and laughs. He doesn't exactly remember.

But the question stuck. "I do it for me," he said. "This isn't some ritualistic sacrifice. I want to be there."

Harnish chooses this work because to do so rewards who he is. He helps designers race against the population boom because he is an architect and the problem is, to his mind, "the greatest built environment challenge in the world." He works in Malawi because it's Malawi.

The story of Africa is fraught with intrusions from the "Global North." From centuries of brutal exploitation to a litany of better-hearted but ill-fated interventions, often self-serving. America and Europe have a bad record on humanity's first continent.

So, why get involved?

Harnish chooses this work because to do so rewards who he is. He helps designers race against the population boom because he is an architect and the problem is, to his mind, "the greatest built environment challenge in the world." He works in Malawi because it's Malawi.

"I'm not trying to rescue Africa," Harnish says. "I'm just and architect trying to do compelling work in a place I like to live."

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Harnish began teaching at Philadelphia University in 2009 but kept his connections to Malawi alive. He's returned almost every year since and in 2017 taught at the Polytechnic of the University of Malawi as a Fulbright Scholar. Recently, Harnish formalized his work in the country into the Malawi Health Design Collaborative (MHDC), a joint effort between Thomas Jefferson University and several Malawian stakeholders, including the country's central hospitals, the Polytechnic, the University of Malawi College of Medicine, Kamuzu College of Nursing, and Malawi's Department of Buildings.

On the aim of the MHDC, Harnish is adamant:

The MHDC is not about one-offs. It's not about copy-and-paste plans from the West. It's not about importing materials, builders, or even architects. The MHDC is about system strengthening. Its goal is strengthening Malawi from within, building its capability to meet the demand for local sustainability. Harnish recalls saying as much when he pitched the MHDC to the Malawi Institute of Architects last year.

"That was the hardest presentation I've ever had to give," he says. "I could feel them staring at me, wondering, 'Who is this guy, and what's he doing in Malawi?' I had to impress upon them that I was not there to take work away from Malawi, but as an academic, to facilitate better opportunities, more rigorous practice, fill voids that the profession currently needs filled."

For now, MDHC is providing evidence-based design research for the Ministry of Health. Harnish wants to create the best possible architectural, infrastructural, environmental, and health-outcomes data to help the country rapidly produce the medical infrastructure they'll need.

"It's a unique niche. There's simply not enough architects to conduct the design research that's needed. They're fighting to keep up just getting buildings built. Academia can play a critical role. These are new design challenges in emerging contexts; cut-and-paste designs from the north don't solve them."

With each semester, Harnish and his students are adding to and honing a body of data that examines medical literature to understand architecture's influence on patient outcomes and worker performance, infection control strategies, and best options for passive heating and cooling, and so on.

By practice, the students are learning these skills for themselves. They are expanding. They are reading "On the Postcolony" by Achille Mbembe and "The Shadow of the Sun" by Ryszard Kapuscinski, disassembling their own notions of North and South, Africa and the West, the self and other. By being of use to Malawi, Malawi is preparing the "Global Studio" for the future of work.

Houston, We Have a Solution

BY EUGENE MYERS

The art of weaving dates as far back as 27,000 years, but it is still being used to manufacture the clothes you wear today—and to launch the next generation of NASA spacecraft tomorrow.

NASA has been developing new fibers made from carbon nanotubes (CNT), which are carbon atoms bound in cylinders less than 1/80,000 the diameter of human hair. Because CNT composite materials have a number of desirable qualities for engineering—they are 200 times stronger than and five times as elastic as steel, and extremely lightweight and high performance—NASA plans to use them for aerospace applications, such as components in spacecraft, thereby reducing their weight by as much as 30 percent. To help understand the properties and potential of this revolutionary material, NASA's Langley Research Center tapped two Jefferson professors, Marcia Weiss and Christopher Pastore, PhD, to draw on their expertise in working with textiles.

"It's not uncommon when NASA has need for textile materials to reach out to us," says Pastore, who is professor of Transdisciplinary Studies and assistant provost for Faculty Development. "They needed help converting these fibers into a stable form. And textiles are the natural way to work with fibers—to convert them into a stable form that then can wind up as a composite material."

"we are real problem solvers"

"I think the reason why companies like NASA come to us is because they value our textile expertise and the fact that we are real problem solvers," says Weiss, associate professor of Textile Design, director of the Fashion and Textile Futures Center, and director of the Textile Design Program. "So, they come to us with, 'Here's what we have, and here's where we're trying to get: How do we get there?'"

At its most basic, weaving involves interlacing horizontal yarns ("warp") with vertical yarns ("weft"). Back in the Paleolithic period, and for much of human history, this was a manual process; however, over the last 300 years, mechanized looms and automation have replaced

▲ *Marcia Weiss, Director, Textile Design Program*

manual handlooms in much of the modern world. In addition to brand-new, state-of-the-art industrial looms in its academic studios, Jefferson's Henry Avenue campus maintains several old-fashioned, 50-year-old handlooms—now hooked up to computers—as well as looms that are as old as the college, which was founded as the Philadelphia Textile School in 1884.

This unique juxtaposition of the old and the new, a legacy of tradition and innovation—hallmarks of Jefferson—also makes the university an attractive partner for projects like this.

"Certainly, educationally, there are some other institutions that have some similar capabilities," Weiss says. "But really, ours overall far exceeds what most other institutions would have in terms of the older technology, but also in terms of the state-of-the-art, newest technology."

NASA sent its CNT yarn, one of the most technologically advanced textiles ever created, to Weiss and Pastore, and they got to work testing it—not on their fancy, modernized looms, but on their outmoded looms. Pastore explains: "When we're playing with weird materials, we can't put them on an industrial loom. Those looms have been optimized to handle cotton polyester, nylon thread, and they can do it amazing well. But if it's not cotton or polyester or nylon, those looms don't know how to handle it. It's like you can't put diesel gas in your gasoline engine."

Weiss, Pastore, and a small team of collaborators that included students, handled the space-age thread themselves to figure out the parameters necessary to allow it to be processed on those industrial looms rapidly and in mass quantities.

"We were experimenting with different woven structures to determine the appropriate construction, meaning how many yarns in the vertical direction and how many yarns in the horizontal direction could interlace to maximize the qualities that NASA was looking to achieve," Weiss says.

They produced flat pieces of fabric in a range of different configurations and sent the samples back to NASA to be cut up, stacked, put into vaults, and used to make components. "And we also were able to give them feedback on what was working in terms of putting the fiber into a woven structure and what was not working," Weiss says.

The project lasted about 18 months and concluded in August 2019. Following the first phase in spring and summer 2018, NASA used the information and samples it received and further developed the fiber. "They came back with different fiber the second time around. It was constructed in a different way," Weiss says. Then, last summer, she and Pastore went back and put the novel fiber through the same process they had used before.

"One of the insights that struck them as important was that the fiber from the first summer, we were able to cut with scissors," Weiss says. "The fiber from the second summer, we could not cut with traditional scissors." Cutting-edge research, indeed.

The experience didn't just benefit NASA's research and development; Weiss and Pastore also learned from working together, learning from each other. "There were some elements that required Marcia's expertise. Some that leveraged off of my expertise, and it was the combination that made it work instead of one individual," Pastore says.

They also try to involve students whenever possible, according to the skill sets needed; during the first round of research in 2018, a student was part of their team before she graduated. "I think one of the things that's so important about these projects is that we model for our students the fact that interdisciplinary and transdisciplinary collaboration is incredibly important to innovation," Weiss says. "When our students see us working together, they go, 'Ah, you guys do it too. You don't just make us do it.'"

Transdisciplinary collaboration like this always has been deeply woven into the fabric of Jefferson, particularly when it comes to textiles, which have a remarkably broad range of applications, from fashion design to aerospace engineering to biomedical manufacturing. One interesting challenge Weiss and Pastore have tackled is a project for the U.S. Department of Energy's Oak Ridge National Laboratory to help create artificial seaweed capable of collecting uranium from seawater.

"We all had fiber or yarn to work with, and we approached it from a knitting perspective, a weaving perspective, and a braiding perspective," Weiss says. "We each brought out own expertise to the table and understood the parameters and tried it in multiple ways—which, again, is the opportunity to go back to the sponsor and say, 'Here are the possibilities. You tell us which is going to be the most effective.'"

Another of Weiss and Pastore's recent collaborations

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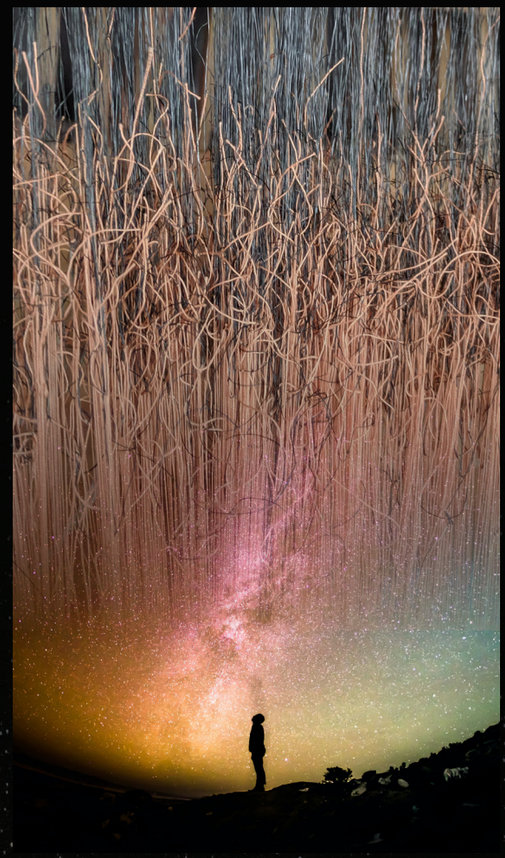

"there is such a diverse range of knowledge and experience on our campus..."

involved with that," Pastore says.

The reality of contributing just one puzzle piece to a large picture with thousands of other pieces provides another valuable teaching moment for students. Pastore continues, "I had a student, he's a great student, but he couldn't take this part of academic life, that we would do a research project and when we finished our part, we were finished. He wanted to know what happened next. And I tried to convince him that never happens. We just do our part and then we find the next project."

And there's always another project.

"There is such a diverse range of knowledge and experience on our campus that comes to bear, regardless of what the project is," Weiss says. "This happened to be one that Chris and I did, but I am sure there are many examples of these kinds of projects ongoing on a daily basis."

has been JeffMask, a university-wide effort to meet the extreme demands on Thomas Jefferson University Hospital during COVID-19 by producing personal protective equipment (PPE) for frontline healthcare workers. Weiss, who led the JeffMask initiative, remarks, "That involved people, obviously, from our clinical pillar, our medical colleagues, as well as people from different engineering disciplines, different textile disciplines, industrial design, fashion design. We've been involved in opportunities to innovate around the whole PPE project."

As for NASA's aerospace material, Weiss and Pastore don't know whether their research has yet been applied in developing the rocket and spacecraft components they were aiming for. "As far as we know, NASA took the samples we sent them, converted them into composites, and did some experiments to quantify their performance, but we weren't

ambassadors of the human being

MAURO PORCINI

Designer, Innovator, Magician, and Chief Design Officer of PepsiCo

Mauro Porcini joined PepsiCo in 2012 as its first-ever chief design officer. In this newly created position, he imbues PepsiCo's culture with design thinking and leads a new approach to innovation by design that impacts products, brands, and the organization itself. He heads up design offices in New York City, Dallas, Chicago, Miami, London, Dublin, Moscow, Cairo, Bangkok, New Delhi, Shanghai, Mexico City, and Sao Paulo. Led by Porcini, PepsiCo's design teams have been recognized with almost 1,000 design and innovation awards, and Porcini has been singled out with numerous honors, which include top spots on lists of the world's most influential, most creative, best dressed, and hottest rising star. He will be awarded Jefferson's first Innovator of the Year at the next Celebration of Innovation.

"Our vision is to grow the business of PepsiCo, of course, but before anything else, our vision is to create value for people," Porcini explains, "because we believe that if you create real value for people, then you will also grow your company."

Why did PepsiCo think it needed a chief design officer?

I think it was a mixture of something that was happening in the world and in the markets. We live in a world where we need, more than ever, what companies call "consumer centricity." I prefer to call that kind of approach "human centered." "Consumer centered" defines human beings as business entities that you want to make money on. In reality, what you want to do is add value to their life.

PepsiCo had a CEO, Indra Nooyi, who understood that because the world was changing, it was necessary for the company to change the way it was doing two things: building brands on one side and driving innovation in the other. Indra had the vision and the courage to do it, not by herself, but together with a few individuals. They understood that design is much more than packaging. My job interview with Indra wasn't about what products I could design for PepsiCo. It was about how to make a shift of culture, how to design the culture of the organization to drive creativity and innovation. When the current CEO, Ramon Laguarta, took the helm in 2018, he doubled down on design and its culture, accelerating the role of the discipline in two areas close to his heart and his vision: innovation and sustainability.

What's the connection between innovation and design?

There are three lenses that we use in the design-thinking world. The first is people, human beings. The second is business—marketing, macroeconomics, branding—and the third is technology and material science. Innovation starts in one of these three areas. But wherever you start, in one way or another, you need to take everything back to people. This is what design is about: monitoring the three dimensions of innovation—technology, business, and people. Then, once you have the right intuition, it's about connecting the three of them with a human-centered approach.

But you also have to sell these ideas to the organization, which means you have to be in the right culture for this approach to be accepted and to grow inside the company. If you want to take design to

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That's why I keep talking about the importance of people—not just the human beings we design for but the human beings innovating inside the organization. The magic is in the people.

the next level, even in design-driven industries, a lot of your work is not just doing design work; it's designing the right environment from a culture standpoint, a business-model standpoint, and a process standpoint for the design culture to thrive and grow and succeed. That's a big chunk of what I do every day.

On the wall of PepsiCo's Design & Innovation office in NYC are these words: "We are crazy enough to think we can inspire the future." Inspire the future how?

It's important to understand where society is going and then create products that the world both needs and wants. All our efforts in sustainability, in health and wellness, and in the customization of products like Spire and SodaStream Professional are examples of how we're trying to inspire people to behave in a different way and get companies to follow our lead.

But we're just one player out of millions who are shaping the future. So the only thing we can really do is inspire through our products and our brands. As designers, we think we're really the ambassadors of the human being, of people inside big corporations and people outside them. We want to inspire everybody—the company itself and the society—to really shift everyone in the right direction. But it's a collective effort, and we don't control all the variables.

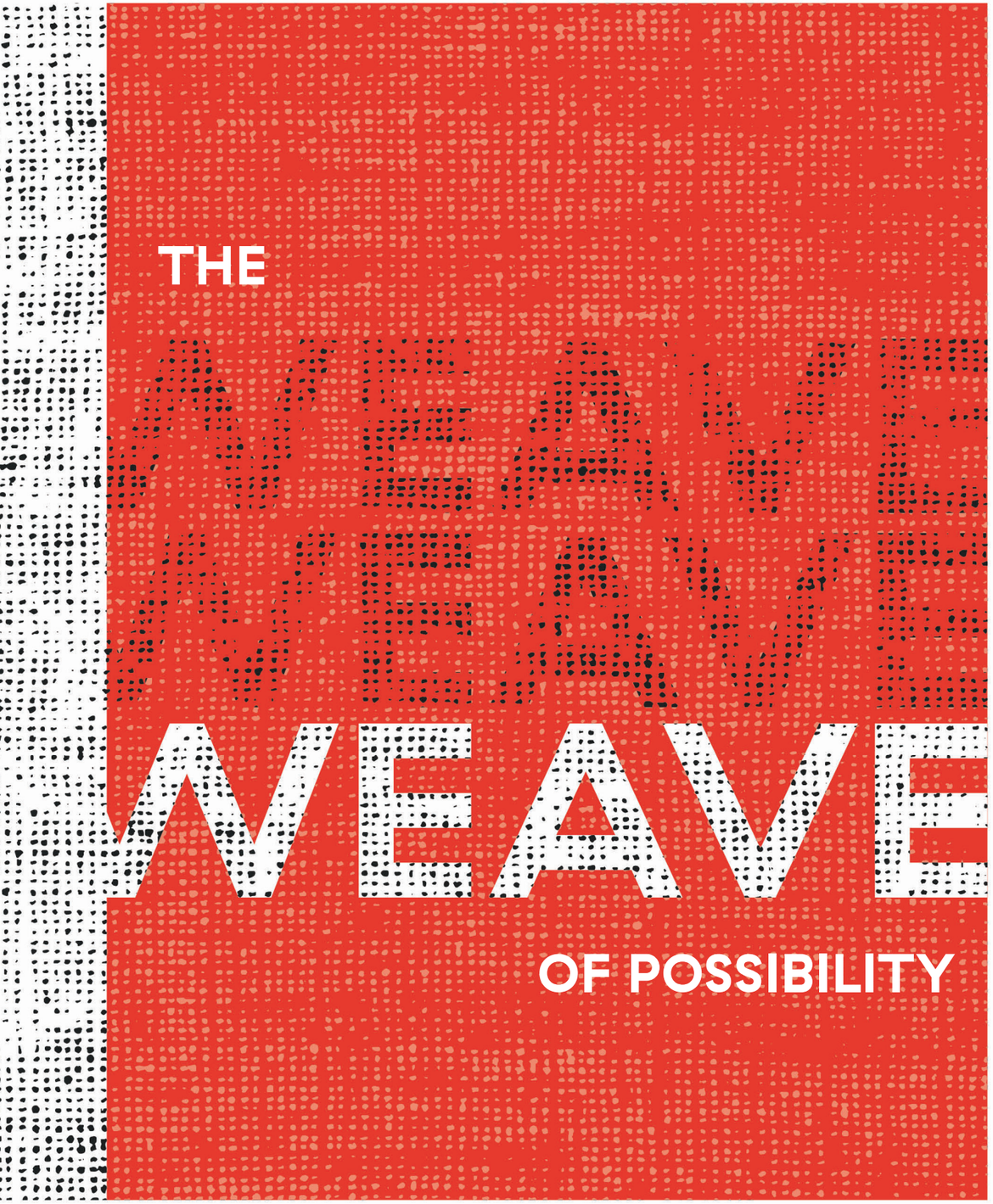
You once described design as the "magic balance between emotions and rationality that defines the success of the product." Tell me about the magic.

Innovation that is relevant and meaningful to people is all about the balance between something that is functional and something that is pleasurable. Something works on your mind and on your heart. I call it "magic" because it's impossible to define.

To arrive at the right mix, you need a lot of experimentation, but you also need a sensitivity and an intellectual agility that's difficult to describe. That's why I keep talking about the importance of people—not just the human beings we design for but the human beings innovating inside the organization. The magic is in the people.

As a leader—as someone designing an organizational culture—you need to give people a formula. You need to give them process. You need to give them tools to help them as much as you can. But there's something you can't touch, and that's the magic of the genius, the intuition. It's what made Richard Branson and Steve Jobs and Bill Gates who they are. You can take their playbook and do exactly what they did—and you can still fail.

There are tons of books written about these kinds of things. I think you can coach it, and you can have people growing and getting better and better. But ultimately, it's untouchable. It's very difficult to put into a bucket and carry inside an organization. That's why it's scary: We don't know how to define it and quantify it, but it's the most important thing ever.



The Jeff Bruner Materials Characterization Lab is letting students in on a secret

BY THOM PARRY

Fabric has endless potential.

This singular and expansive truth blew Jeff Bruner's mind back in 1969. Bruner had just begun his studies at Philadelphia College of Textiles and Science, and his professors were explaining that textile engineers could, for example, weave a fabric that was supple enough to patch wounded veins.

In fact, cardiac surgeons had been using these patches—knitted vascular grafts—for over a decade.

"It was eye-opening," says Bruner. "I was hooked."

The secret to unlocking the possibilities of a fabric, Bruner discovered, was in the science. By understanding the character, the chemical properties, and the microscopic make-up of particular fibers, a textile engineer could create virtually anything.

"I knew so little coming in, but the professors, the research, the experience, it showed me an entire world."

For almost 50 years, this revelation has driven Bruner. He remains fascinated.

"I never get bored. I'm amazed every day," he says. "The challenges and opportunities are endless."

Take the ocean. A few years ago, Bruner began working on a project commissioned by the U.S. Department of Energy to create a power source that mimicked the look of kelp beds, those forests swaying in the sea. Specifically, Bruner helped create the fake-kelp leaves from a polymer fabric that would absorb uranium.

There are, apparently, invisible masses of uranium floating about the world's oceans, 3.3 parts per billion, which is potentially enough to meet world's electricity needs for a few hundred years, according to researchers from the Department of Energy and Stanford University.

Uranium-absorbing kelp forests that solve humanity's energy crisis remain an aspiration. Much of Bruner's other innovations are closer, more tangible. Most likely, you've recently sat on one of them.

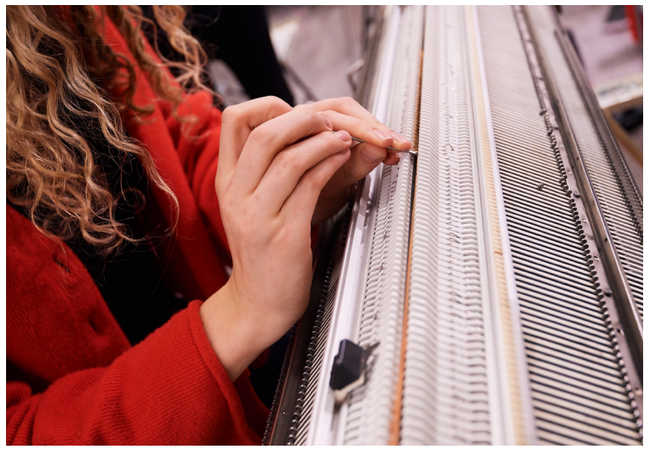
In the 1980s, while working out of his living room, Bruner developed a way of layering elastic fabrics within car seats for General Motors that allowed the car maker to stop using coiled springs. Gone are the squeaks, the lumps, the pokes down below.

About 10 years later, Bruner partnered with Herman Miller—manufacturing titan of office furniture—and changed the way we sit at work. To complete Herman Miller's new "Aeron" chair, Bruner created Pellicle®, a durable yet pliant woven fabric that stretched across the plastic frame. Before the Aeron and Pellicle, comfort had meant upholstery, wood, and foam. The design was so radical that New York's Museum of Modern Art put the chair on display. While you may not have an Aeron at your desk, virtually all office chairs now suspend us with a body-conforming, breathable fabric.

Bruner's journey along the edge of what's possible with textiles began, he says, at his alma mater, a place he calls "that incredible campus at the corner of Henry Avenue and Schoolhouse Lane."

He's taught its students as a professor and has given generously to support its growth. More recently, to usher students into the hidden realm of textiles' potential, he made a gift to name the Jeff Bruner Materials Characterization Lab.

“that incredible campus at the corner of Henry Avenue and Schoolhouse Lane.”



The university has had a textiles testing lab since 1976. For decades it was known as the Grundy Lab after the Bucks County-based Grundy Foundation, a charitable organization that made crucial donations in the lab’s early years. In 2004, the lab moved off campus and became part of the Philadelphia University Research Center (PURC). While it remained a source of innovation and industry, the lab was tough for campus-bound undergrads to access.

Eventually, the building that housed the PURC sold, and the lab equipment returned pell-mell to Henry Avenue and Schoolhouse Lane.

“When we came back, I literally had equipment in five different rooms in a building,” says Janet Brady, Associate Professor of Materials Technology. “A lot of it went into storage.”

The Hayward campus—a site of changing names but steadfast reputation in textile science—was without a central, fully operational fabric research facility.

That is until fall 2019, when Jefferson opened the Kay and Harold Ronson Applied Health and Applied Science Center and, with the help of a certain textile alum, the campus got a new lab.

Professor Brady’s office door opens to onto the Bruner Material Evaluations Lab. In addition to her teaching load, she runs the place. It’s hard to imagine anyone better suited.

“Are you kidding me? This is the most fun. I rip things apart all day long,” Brady says.

With a gleam in her eye, she explains the lab’s tensile testing machine.

“I can pull apart a fabric and it could take 10 pounds before it ruptures, or it could take 22,000 pounds,” Brady says. Tensile strength is key to understanding how a fabric behaves, where it might fail, and where it would succeed.

Brady raises another favorite of the lab: “We have a walking, sweating mannequin.”

The mannequin is six feet tall, olive-colored, and smooth. He sports cables from his eye sockets. Within a large control chamber, he walks over a metal track and perspires, helping Brady and other East Falls researchers discover what fabrics might, for example, protect a soldier’s skin against toxic gas without overheating the body.

“It’s pretty unique,” she says with a smile.

Like Bruner, Brady was a young student when she discovered hidden potential of textiles. She had begun undergrad at the Fashion

Institute of Technology in New York City with plans to become a fashion buyer. “But the course that sparked me was a textile science course,” she says. “It drove me into textiles, textiles technology, and I found my way here.”

Brady knocked out her bachelors at Philadelphia College of Textiles and Science and became the first graduate student in the college’s new textiles engineering program. Soon after, she began teaching undergraduate textile students, passing along the spark that lit up the likes of her and Bruner.

On a Monday morning in late January, the Bruner Material Evaluations Lab is hosting its first class. The lab, composed of two large rooms separated by a glass partition, is not entirely set up.

Along its worktables, counters, and shelves, some of the devices are still wearing bubble wrap. Among the exposed devices are metal boxes with cylinders, hoses, and dials, heavily footed illuminated microscopes, and Da Vinci-esque contraptions of spindles, wheels, and gears. The mixed vintage attests to our millennia-long fascination with fabric.

At the moment, the Bruner Lab’s inaugural class has gone Stone Age: The students, nine undergraduates, are lighting strips of fabric on fire and watching the fabric burn.

Professor Brady advises the students to keep a close eye. The way the fabrics reacts to the flame—whether it melts, sputters, or leaves ash—reveals a clue.

Brady has given the students swatches of mystery fabric, and it’s up to them to identify the fibers that make it up.

“Identifying fibers is like doing a jigsaw puzzle, but without the picture on the box,” Brady says.

If they know what fibers compose a fabric, they’ll begin to know what it can do.

“That thing lit up!” says one student in a blue sweatshirt and a single black earring. “Professor Brady,” the student says, smiling, “what’s the most flammable fiber?”

Brady, a teacher with nearly four decades; experience, answers with a question: “Was there an afterglow?”

The student pauses, nods, and then twists another strip of the fabric into his blackened

“Identifying fibers is like doing a jigsaw puzzle, but without the picture on the box”

"Among the students, there's likely another Brady, another Bruner, another devotee to the hidden potential in the fabric all around us."

tweezers. He brings it near the flame again.

Farther down the work table, a trio of students get a waft of vinegar from the burning fiber. The swatch is glossy and gray. Likely acetate, the students say. Brady runs the swatch between her fingers.

Another group is working on a rayon hypothesis. They've teased out strands, and beneath a microscope, those strands are remarkably uniform. As a final step to test their hypothesis, Brady releases a touch of sulfuric acid from an eye dropper onto the microscope slide.

Each fiber, Brady has explained, has particular solvents under which it liquefies.

The microscope is connected to a monitor that shows the magnified weave to the entire class. The students fall silent, captivated by the change taking place on the screen: The fibers fade into ghostly impressions.

The vanishing is basic chemistry made visible by simple technology, yet it feels like a secret. The silence holds for several moments longer.

The student in the blue sweatshirt captures the mood: "That's the coolest thing I've ever seen," he says.

Among the students, there's likely another Brady, another Bruner, another devotee to the hidden potential in the fabric all around us.

The Kay and Harold Ronson Health and Applied Science Center

Built Today for the What's-Next Professions of Tomorrow

With the October 13 virtual ribbon cutting for the Kay and Harold Ronson Health and Applied Science Center, Thomas Jefferson University stepped boldly into the future of higher education.

The Center is built smart for high-tech, real-world Nexus Learning and for boundary-crossing research and innovation. The LEED Silver building, which includes a green roof, is a home to the Jeff Bruner Materials Characterization Laboratory, the College of Health Professions, and the College of Rehabilitation Sciences. There's also a 62-seat Nexus classroom and six learning hubs; collaborative breakout areas; and labs for clinical simulation, physical diagnosis, and athletic training.

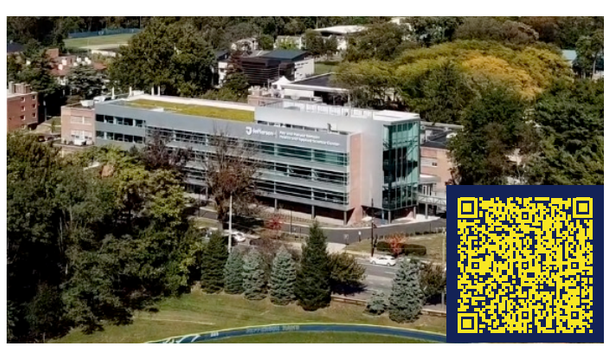
The online dedication ceremony included tributes to Harold Ronson '51 for his philanthropic leadership and his service as a trustee, culminating in the presentation of the Graham J. Littlewood III '42 Time, Talent, and Treasure Award.

"Thomas Jefferson University is disrupting conventional notions of education, leaping across disciplinary boundaries, jumping outside professional boxes, and blurring the lines that once separated the classroom from the workplace."
– Stephen K. Klasko, MD, MBA

"The new building is a wonderful asset to our campus. I consider myself so lucky to have had such a wonderful experience in my first year at Jefferson and look forward to using the Ronson building throughout my education."
– Sydney Melillo '23
Student, BSMS Occupational Therapy Program

"The Bruner Lab, housed in the Ronson Center, offers me the opportunity to investigate material strength using the exact equipment and methods found in industry, thus giving me experience I'll need in the field."
– Abdur Rahaman Sk
PhD Candidate, Textile and Engineering Sciences

"I hope this building inspires the students to chart their own course, inspiring the next generation of innovators and leaders."
– Harold Ronson '51



Scan the QR code with your smartphone camera app for a virtual tour of the new Center!

To learn more, please contact:
Lisa Repko
Vice President for Development, Thomas Jefferson University and Planned Giving
lisa.repko@jefferson.edu
215-955-0437

Florence Stewart Scholarship Helps Recipient Toward His Dream

Bulgantamir Jargalmaa is working his way through college as a restaurant server while carrying a full course load. His mother, Jagdora, goes between two jobs to help support him and his studies. So, when a letter came in the mail notifying him that he was the recipient of a generous scholarship, they both felt as if a huge burden had been lifted from their shoulders.

"I could just see the relief of stress and pure happiness in her eyes," Jargalmaa says of his mother, who is a certified nursing assistant and manager of a dry cleaning business. "She started smiling and laughing. It was phenomenal."

Last year, Jargalmaa, now a rising junior at Thomas Jefferson University, was awarded the Florence Stewart Scholarship, which supports international students, especially those from Asia, who have demonstrated dedication to their studies. The endowed fund was started by Liong Keng Kwee, '68, in 2010, who named the scholarship in honor of Florence Stewart, a local host "mom" for international students.

The $10,000 scholarship is helping the health science major/psychology minor, who was born in Ulaanbaatar, Mongolia, toward his dream of becoming a physical therapist.

He says he was inspired to seek a career in PT at a young age when he learned firsthand the benefits of the specialty.

Following a car crash in which he was seriously injured when he was 6 years old, Jargalmaa came to America for surgery, ongoing medical care, and rehabilitation. He, his mother, and brother settled in the Philadelphia area.

"After my surgeries, the PT staff was fantastic," he says. "They were really inspiring. I just fell in love with it."

As his interest in PT grew, his mother suggested applying to Jefferson.

"I didn't know anything about Jefferson, but I looked further into it and I realized there were a lot of great programs," he says. After meeting with professors, staff, and other students, he was convinced Jefferson was where he wanted to be—the place that would help him achieve his goals.

Receiving the scholarship, he says, has made all the difference in the world.

"It's heartwarming to realize that there are alumni who are helping students through mentoring and financial support," he says, noting the particular importance of scholarships for minorities.

"Scholarships like these makes it feel like we're being seen, like we're being heard, like our need for aid is recognized," he says.

The ongoing crisis of the COVID-19 pandemic has created a particular need for scholarships, as it has put increased financial burdens on students and parents.

Jargalmaa says that he plans to someday repay the generosity. "As an alumnus, after I graduate and get established in my own businesses, I definitely want to contribute back."

For now, he's just grateful that his mother can finally relax a little.

"It's helped her a lot," he says of the financial aid. "Now she can have some time for herself."

video // magazine.jefferson.edu

Reimagine Scholarships

The only thing better than having a door opened for you is opening one for someone else.

Jefferson's 1824 charter states that "ten indigent young men of talents … shall receive instructions and be entitled to its honors without any charge." In those days, ten students amounted to nearly half the class, if not more.

Later, the 1832 Annual Announcement of Lectures by the Trustees and Professors continued to express concern about the importance of financial aid. Some students, it noted, "are, from the misfortunes of their families and their restricted pecuniary means, unable to purchase the necessary tickets to enable them to acquire a thorough knowledge of their profession and to graduate." The students were called "gratuitous students," those who received a Jefferson education—"a thorough knowledge of their profession"—through the graciousness and generosity of others.

The Philadelphia Textile School—which evolved into Philadelphia University and later into Jefferson—traced a similar path for enrolling, and retaining, the best students through generosity. Speaking at Commencement in 1905, Theodore Search, who founded the school, said, "No effort has been spared to maintain the high excellence of the school, and to guard against ever turning out a man or woman stamped with its approval."

Search went on to note that during the first 10 years of its existence, the school was supported almost entirely by "gifts of public-spirited individuals, and the funds raised in various ways by trustees and an untiring associate committee of women."

From its founding (both times), Jefferson has recognized the need for financial assistance to students "of talents." That philanthropic tradition has carried on to this day, especially through the gift of endowed scholarships.

Here, alumni have long led the way.

Of the 400 named scholarships, more than 80 percent have come from alumni.

Alumni giving is a lineage of generosity that gets handed down from one generation, one class to the next—similar to the legacy of skilled professionalism, thorough knowledge, and creative innovation that alums know embody the ideal of a Jefferson graduate.

When we launched the Reimagine Campaign, Jefferson's boldest fundraising effort ever, scholarships were a key priority—we set out to empower the leaders of tomorrow's optimistic revolutions. Then Covid19 happened, and our students and families were burdened with an enormous, generational toll.

And once again, alumni have stepped up to do the right thing. This academic year, through the Reimagine Scholarship initiative, we've already raised nearly $700,000 in scholarships support for Athletics, CABE, DEC, JCHP, JCN, and SKMC. Several alumni have set up matching gifts, encouraging their peers to double or even triple the impact of their generosity.

If you'd like to learn more about what you can do to help this effort, visit Jefferson.edu/ReimagineScholarships, or email giving@jefferson.edu.

Scholarship giving strengthens the bond between future alumni and past graduates, and shows current students the importance of alumni in the life of the community.

As an alum, your legacy is about more than what you received in education and experience. It's about what you give back. It's also about looking back, and looking ahead. It's about what you do right now.

Elizabeth A. Dale

Elizabeth A. Dale, EdD, MPA
Executive Vice President and
Chief Advancement Officer
Office of Institutional Advancement

215-503-5138
elizabeth.dale@jefferson.edu
@elizabeth__dale

Please contact me if you'd like to learn more about the doors you can open and lives you can change. I'd love to hear from you.

RAM ROUNDUP

For the latest news and updates, subscribe to the Ram Roundup newsletter at **Jefferson.edu/Newsletter**

Essential Alumni

Recognizing three of our our Jefferson Athletics alumni who served as "essential personnel" during the COVID-19 pandemic.

JACKIE PANICHI

Jackie Panichi was a member of the Rams' women's basketball team from 2010-14 under the Philadelphia University name. She was a Health Sciences major and now works at Temple University Hospital and Lehigh Valley-Cedar Crest Hospital as an orthopaedic and trauma nurse. Panichi said the most rewarding part of her job is helping patients become healthy again.

When asked about COVID-19 and how it has changed her life, Panichi said that it was petrifying to go into work every day at the start of the pandemic. Eventually, she and the other doctors and nurses started becoming more comfortable.

Anyone who has played under Coach Shirley has the 5 P's ingrained into their head: Prior Planning Prevents Poor Performance. When asked how PhilaU prepared her for success, the 5 P's was her answer. Panichi said that Coach Shirley's life lessons were the main thing from college that prepared her most for life. She went on to say that he is not just worried about wins and losses, but he wants to teach the women on his team the importance of being prepared for every situation.

It was quite difficult to balance schoolwork with the demands of a sport at the collegiate level. However, Panichi said she was able to manage thanks to Coach Shirley. She said that he pushes all of his players to do well both on and off of the court.

Reflecting on her time at PhilaU, Panichi said that she really misses her team and the sense of unity that they had. She loves how her profession encompasses a sense of unity, but she misses the team aspect. The relationships that are built in sports are bonds that are hard to put into words. Most athletes would agree.

MARY NEWELL

Mary Newell played basketball at Jefferson, formerly Philadelphia University, from 2012-16 and was the team's starting center during her senior year. She helped lead the Rams to a CACC Championship and secure an NCAA Tournament bid; Mary was also the CACC Tournament MVP. While she was at PhilaU, she received her degree in Health Sciences.

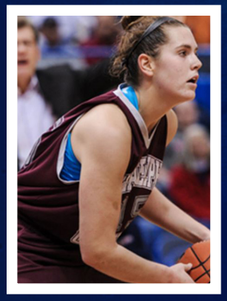
Mary now works at two different firehouses in Pennsylvania, where she responds to emergency calls and assists people until help arrives. Newell stated that her favorite part of her job is "being able to help people." She also said that she loves her co-workers and how close they have become.

Newell recalled how important study hall was for maintaining a balance between school and basketball throughout her collegiate career. She also praised her teammates, stating that everyone on the team helped each other out. She also spoke about how encouraging and dedicated her professors were.

Newell says that not much has changed for her during the COVID-19 pandemic as far as working goes. She still has to go to work every day, but there are some new safety precautions that include having her temperature taken and wearing a face mask.

In regard to how PhilaU helped prepare her for success after college, Newell again touched on how great the professors were and how she could always count on them for help. She also mentioned her coach, Tom Shirley, and how he prepared her for her life ahead. Newell said that being a Jefferson student-athlete taught her a lot about how to overcome adversity. Looking back on her college days, Newell said that she really misses being a part of a team. The unity that she and her teammates had was great and made everything much more fun.

TORI ARNAO



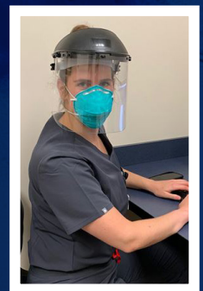
Tori Arnao attended Jefferson, then Philadelphia University, from 2011-18 and obtained her MBA and physician's assistant degree. She played on the Women's Basketball Team for four of those years and totaled 1,242 points and 1,199 rebounds. There have only been four other players in program history to record 1,000 points and 1,000 rebounds in their careers. She was also part of the 2016 CACC Championship Team.

Now, Arnao works as an orthopaedic trauma physician assistant in Salisbury, Maryland. While not exactly on the front lines treating COVID-19 patients for symptoms, her team has been in close contact with COVID-19 patients who have suffered orthopaedic injuries.

Working in the medical field requires a lot of safety precautions, especially during a pandemic. Arnao must have her temperature taken every day, wear a plastic face shield and a N-95 mask while seeing patients, and monitor whether she experiences any potential symptoms.

As hard as her job is right now, Arnao still loves doing what she does, stating that it is very rewarding to know that every day, she helps people become healthy again. Another aspect of Tori's job that she really likes is that it keeps her on her toes and that she loves each new challenge.

Arnao's time in PhilaU and Jefferson's coveted PA program helped prepare her for her career in multiple ways. Arnao said that learning to network and talk to people has really helped her to get to the position she is in today. Her confidence level and perseverance are what got her to where she is today.



When asked what she misses most about college and being a student-athlete, Arnao said that she mainly misses seeing her friends all the time and just being on campus. She misses being able to see them at practice every day and the camaraderie that they had.

SMART INVESTING. SMART GIVING.

The SECURE Act increased the RMD (Required Minimum Distribution) age from 70½ to 72. However, you can still make a Qualified Charitable Distribution (QCD) at 70½.

When we realized our IRA's required minimum distribution would put us in a higher tax bracket, we were glad to discover we could make a distribution from our IRA directly to charity. What a win–win: no taxes for us, and Jefferson gets the entire distribution! It's such a great way to support the students at Jefferson!

— Den Cullen, '74

Why make a gift to Jefferson with your IRA?

- Rollovers can qualify for your required minimum distribution.
- You can reduce your taxable income, even if you do not itemize deductions.
- You can designate your gift to any area or program at Jefferson.

How it Works

- The gift must be made on or before December 31 of the tax year.
- You must be age 70½ or older at the time of your gift.
- Transfers must be made directly by your IRA administrator to Jefferson.
- You can transfer up to $100,000 annually from your IRA to Jefferson; spouses can transfer up to $100,000.
- Gifts must be outright. The rollover must be from a traditional IRA, not a 401(k), 403(b), or other retirement plan.

Jefferson does not provide tax, legal, or financial advice.

Please consult your own advisers regarding your specific situation.

Questions? | We're here to help.

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reimagine.jefferson.edu

1966
JUDI SCHWARZ
Fashion Design

Schwarz was featured in *VUE* magazine, co-authoring the article, "Home is the New Normal."

1967
MARC A. SHUMAN, MD
Medicine

Dr. Shuman retired from seeing patients at UC San Francisco in 2018. He returned on a Recall appointment and is mostly involved in teaching and mentoring fellows and faculty. He is still teaching the course Bioengineering 260 in the joint UCSF-UC Berkley Masters in Translational Medicine (MTM) Graduate Program. Also, he continues to serve as chief medical officer of MORE Health, Inc., in nearby San Mateo. Over the course of the last 20 years, Dr. Shuman has been an invited lecturer at approximately 10 institutions in China, including Peking Union Medical College Hospital, the No. 1 government-rated hospital there. He is also an adviser and consultant for Meridian Inc., a medical A.I. company in San Diego. He and his wife have enjoyed living in San Francisco in the same house for 44 years.

1971
DONALD BERGMAN, MD
Medicine

Dr. Bergman recently received the ACE Yank D. Coble, Jr., MD, Distinguished Service Award from the American Association of Clinical Endocrinologists. He also received The Mount Sinai Alumni Special Recognition Award from the Alumni Association for the Icahn School of Medicine at Mount Sinai.

1973
BRUCE E. JARRELL, MD, FACS
Medicine

Dr. Jarrell was selected by the University System of Maryland (USM) Board of Regents to serve as the seventh president of the University of Maryland, Baltimore (UMB), effective Sept. 11, 2020. Dr. Jarrell had served as UMB's interim president since January 6, 2020. The selection was made following a nationwide search.

1975
GREG LEWIS, MD
Medicine

Dr. Lewis is a retired gastroenterologist living in Central Pennsylvania. He and his wife enjoy traveling and spending time with their two grandchildren. He also contributes his medical expertise to a local Federal Health Clinic for underserved patients.

1977
LINDA MARIE (BOJANOWSKI) MCWILLIAMS
Medical Technology

After many years of working as a transfusion service manager at multiple Philadelphia hospitals, McWilliams now works in IT as an educational analyst with Haemonetics Corporation. She has traveled all across the country giving on-site training for blood bank software.

▲ *Katherine Wagner-Reiss, MD*

1979
KATHERINE WAGNER-REISS, MD
Medicine

Dr. Wagner-Reiss retired to Florida with her husband after practicing pathology for over 30 years. Professor Gonzalo Aponte, "The Gonz," had told her that pathology would be good to her, and it was! Her daughter practices orthodontics, and her son, Jacob Reiss, MD '18, followed in her footsteps by completing Jefferson's Penn State Accelerated Program; he is currently an Internal Medicine resident at Lankenau Hospital, where he was chosen to be a chief resident.

1983
THOMAS CARNEVALE, MD
Medicine

Dr. Carnevale was elected chair of the board of directors at Penn Highlands Clearfield Hospital. Additionally, he recently received the Educator of the Year Award from Family Medicine residents at Penn Highlands Dubois. He is currently an active OB/GYN staff physician at both hospitals.

1986
ANNE MCCAFFERTY
Fashion Merchandising

McCafferty is back for a third time at Textile/PhilaU/Jefferson, completing a Doctor of Management in Strategic Leadership. She writes, "Third time's a charm!" She is about 75 percent done, and has loved the excellent professors and her fellow doctorate candidates.

1990
GALICANO INGUITO, MD
Medicine

Dr. Inguito is the 2020 recipient of the University of Delaware Alumni Association's Alumni Wall of Fame Award. Selection is reserved for University of Delaware graduates who exhibit outstanding professional and public service achievements as well as a commitment to their alma mater.

SALVATORE J. PATTI
Accounting

Patti has joined WSFS Bank, the primary subsidiary of WSFS Financial Corporation (Nasdaq: WSFS), as senior vice president, director of commercial banking and wealth client management – Greater Philadelphia. Patti is also a board member for Kanbar College of Design, Engineering, and Commerce, director and treasurer of the Union League of Philadelphia, and co-chair of the 2020 United Negro College Fund Philadelphia Mayor's Masked Ball. Patti also previously served as an executive board member for the American Liver Foundation from 2016-2019.

1994
MAHESH KRISHNAN, MD
Medicine

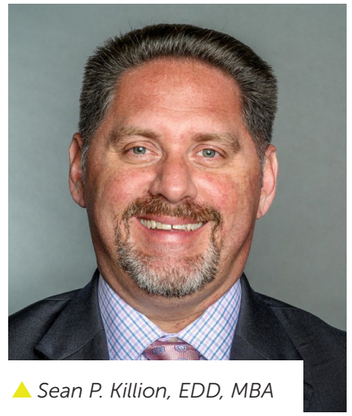
Dr. Mahesh recently transitioned from being the founding international chief medical officer for DaVita to heading up the DaVita Venture Group. He says he loves being accountable for external innovation while building and deploying great products and services for patients with renal disease.

1995
VERONICA (KAZANDJIAN) BABAYAN
Fashion Design

After living in the United Kingdom for 16 years, Babayan moved back to the United States in 2017. She is currently an associate director in the Office of Alumni Relations at Jefferson. Veronica enjoys connecting with Textile, PhilaU, and Jefferson alumni.

1997
AMANDA GRANT SMITH, MD
Medicine

Dr. Smith is director of clinical research at the USF Health Byrd Alzheimer's Institute and professor of Psychiatry and Behavioral Neuroscience at the Morsani College of Medicine at the University of South Florida in Tampa.



▲ *Sean P. Killion, EDD, MBA*

1998
SEAN P. KILLION, EDD, MBA
Business Administration

In March 2020, Dr. Killion was invited to join the board of directors for Archbishop Ryan High School in Northeast Philadelphia. In May 2020, he was also elected to serve on Jefferson's Faculty Advisory Committee. Since 2007, Dr. Killion has been an adjunct faculty member in the Kanbar College School of Business. Also, for the past 13 years, he has been working in Housing and Residential Life at Temple University. Dr. Killion continues to serve as an adviser to the local Sigma Nu chapter at Jefferson (Mu Pi); the group is celebrating its 25th anniversary on campus. The chapter plans to celebrate its official chartering anniversary on December 4, 2021.

PHILIP OVADIA, MD
Medicine

Dr. Ovadia has established Ovadia Heart Health, an online telehealth practice focusing on optimizing metabolic health and cardiac risk factors

through dietary and lifestyle modification. He also continues to work as a Locums cardiothoracic surgeon throughout the southeast United States. He lives in St. Petersburg, Florida his wife and 2 daughters.

2005

KAREN A. SCHINDLER, PHD
Biochemistry and Molecular Biology

Dr. Schneider is associate professor in the Department of Genetics at Rutgers University–New Brunswick, and her scientific manuscripts are widely published. Her lab explores how meiosis in females is regulated and why it is so prone to chromosome segregation mistakes. FASEB selected Schindler for its 2020 Excellence in Science Early-Career Investigator Award due to her distinguished research on the causes and consequences of female infertility, and her devotion to mentoring her undergraduates, graduate students, and postdoctoral fellows.

▲ *Christopher McGowan, MD*

▲ *Avery and Grayson Hayes*

2006

CHRISTOPHER MCGOWAN, MD
Medicine

Dr. McGowan announced the opening of his new practice True You Weight Loss in Cary, North Carolina, which is the nation's first and only physician-founded medical practice exclusively focused on providing nonsurgical, state-of-the-art, endoscopic weight loss procedures and support. Dr. McGowan is one of the few physicians in the nation who is triple board certified in internal medicine, gastroenterology, and obesity medicine. He is a world-renowned leader in endobariatrics, a new field of gastroenterology that aims to address the obesity epidemic.

2007

ALEXA AND RYAN HAYES
Graphic Design

Alexa Couphos Hayes '07, M'12, and Ryan Hayes '07, welcomed Avery Dean to the family this summer. Avery joins his big brother Grayson, who turns three this fall.

▲ *Stacey Baer*

2009

STACEY BAER
Occupational Therapy

Dr. Baer just joined the team at Jefferson and is returning home in a sense. She graduated from the MSOT program at Jefferson in 2009. She also worked at Thomas Jefferson University Hospital as a staff occupational therapist (2010-12) before moving to New York for several years.

▲ *Eric Riedinger*

2013

ERIC RIEDINGER
Construction Management

Eric works for Onyx Equities, a large private equity firm in New Jersey, as a project manager/owners representative. While overseeing construction improvement on a project in Philadelphia, Eric has connected with several fellow PhilaU alumni.

Eric's firm hired JKRP Architects for its design, where he works directly with Zac Garman, B. Architecture '15. He has also contracted Scungio Borst Associates, co-founded by Phil Borst, Architectural Studies '97, for construction, and has ended up working with Muzalier Gaussaint, B. Architecture '14, as well.

He says, "It's extremely exciting that the entire project—ownership, design, and construction—are all being handled by recent PhilaU grads!"

2014

TARYN WARAKSA
Medical Laboratory Sciences & Biotechnology

Waraksa was recently named one of the American Society for Clinical Pathology's "40 Under Forty," which recognizes members under the age of 40 for their achievements and leadership qualities that are making an impact on pathology and laboratory medicine.

2017

REGAN MARRINER, MS
Textile Design

Marriner is the design catalyst for Hemp Black, a startup hemp technology company and subsidiary of Ecofibre that operates separately from but also maintains a partnership with Jefferson.

RACHEL SNACK
Textile Design

After operating a successful yarn and textiles business online, Snack opened Weaver House, a yarn shop, textile studio, and weaving school in the Bok building in South Philadelphia in October. She and her team create heirloom textiles in homage to craft tradition and the dialect between maker and loom. They teach mindfulness and mediation throughout all of their workshops, and they believe that weaving can be therapeutic and healing. The workshops include all levels of weaving and sometimes highlight other craft techniques, like yarn and fabric dyeing, sewing, fiber sculpture, macramé, and embroidery. She writes, "Have you ever wondered how a floor loom works? Visit the studio and try your hand at weaving."

2019

HANNAH DERWICK
Public Health

Derwick is a clinical research coordinator at the Children's Hospital of Philadelphia. She works on an observational cohort study of children with chronic kidney disease studying kidney disease progression, growth and nutrition, cardiovascular health, and neurocognition.

RITU JADWANI, MS
Global Fashion Enterprise

Jadwani has moved back to India to work on her company, Namaste NYC. They work with disabled women in India to generate employment opportunities for them. Recently, a she and a friend created a short film to encourage people across the world to appreciate nature and connect with it.

Philip Kodroff

1959-2020

It is always difficult saying goodbye to someone we love and cherish. Family and friends must say goodbye to their beloved Philip Kodroff of Fort Lauderdale, Florida, who passed away at the age of 60, on August 3, 2020.

Phil was a self-made man through and through. From modest beginnings, Phil grew his high school lawn mowing business into a commercial landscaping business. His business was so successful that Phil used it to pay his way through Philadelphia College of Textiles & Science (PCT&S)—now Thomas Jefferson University—while he pursued a degree in accounting and finance. After graduating from PCT&S in 1982, Phil worked in accounting before connecting with upstart shoe designer Stuart Weitzman, who then hired him to manage the business end of Stuart Weitzman, where he worked for 25 years. Phil has held the title of vice president and was Mr. Weitzman's "right hand man" for the business. In recent years, Phil had invested in a thriving laundromat business in Florida. Phil also diligently served as a member of the Kanbar College Advancement Council.

Phil credited his mother, Rachel DiMarco, for encouraging him to go to college, which led to his successful career in the fashion industry. In her honor, Phil decided to make a gift to the Fashion & Textiles Future Center (FTFC) to name the Rachael DiMarco Collaborative Design Studio. In 2019, Phil made a generous $100,000 gift to his alma mater to establish the Phil Kodroff Business Research Award, which was awarded for the first time in fall 2020.

Phil was loved and cherished by many people, including his mother, Rachael DiMarco of Pembroke Pines; his siblings, Bruce Kodroff of Georgia and Marcy Johnson of Philadelphia, Pennsylvania; and his girlfriend, Paula Giordano.

David Archibald, EdD

1947-2020

We are sad to report the passing of longtime Abington and Jefferson Trustee David Archibald. David's true passion was education. In his words, "As an educator, I believe it is important to adopt change in order to meet the needs of all students through innovative programming and to maintain an absolute uncompromising commitment to excellence."

He carried this passion through his professional career, his work with the U.S. State Department in Africa, and his work as a member of the Board of Trustees of Thomas Jefferson University and Jefferson Health, and Abington – Jefferson Health. Donations in his memory may be made in support of the David Archibald Scholarship at Jefferson by visiting Jefferson.edu/DavidArchibald.

1944
Henry C. Ricks, Jr., MD

1945
Audrie D. Johnson
Caroline R. King
Harold J. Laggner, MD

1946
Rudolph E. Gosztonyi, Jr., MD

1948
Jeanne M. Campbell
Francis R. Schwartz, MD
Jean S. Wighaman

1949
Marjorie B. Hoeck

1950
Frank Devries
Emily N. Hollenbach
Nancy H. Orsini

1951
Joseph Iacovitti
Nancy E. Powell
Bernard W. Mayer, MD

1952
Matthew G. Brown, MD

1954
Helen M. Besecker
Warren W. Brubaker, MD
Sarah A. Wagner

1955
Howard E. First, MD

1956
Murray R. Glickman, MD
Rex G. Mabey, Sr., MD
Robert C. Magley, MD

1957
William T. Lampe, II, MD
Thomas R. Mainzer, MD

1958
David J. Jones, III, MD
Louis W. Welsh, MD

1959
Carl F. Schultheis, Jr., MD

1960
Elizabeth Bender
Harvey W. Oshrin, MD

1961
Arthur D. Boxer, MD
Martin M. Widelitz, MD

1962
Margaret A. Furey

1963
Morrie E. Kricun, MD

1964
Kenneth A. Greenawald, MD
Edward A. Jaeger, MD

1965
Sandra L. Kolodziej

1967
David H. Miller, MD

1968
Jacquelyn J. Wilson, MD

1970
Steven Frumkin

1971
David J. Siegfried

1972
William H. Brubaker, MD

1973
Calvin E. Akins
Philip S. B. Fuller, MD

1975
Richard J. Fugo, PhD
Ethel M. Weinberg, MD

1976
Joel L. Glauser

1977
George F. Speace II, MD

1978
Kenneth Kovalsky, MD
Roman P. Stanko

1980
Gabriel Ceron, MD, PhD
William E. McLemore, MD

1981
Paul M. Newell, MD

1982
Philip J. Kodroff
Andrew J. Norton, MD

1991
Maria Wilson

1992
Michael Boggs

1998
Janice Wagher

2015
Jon Marc Finamore, MD

JEFFERSON INNOVATOR Magazine

TRIVIA

Give our open-book quiz a shot!
HINT: All of the answers are in this issue!

1. **What year did John H. Gibbon, Jr., MD '27, make medical history by performing open heart surgery with the use of his invention, the heart-lung machine?**

A. 1824
B. 1953
C. 1987

2. **What is the name of the newest American Girl character—the creation of a team led by fashion design alumna Liana Richardson?**

A. Courtney Moore
B. Michelle Tanner
C. Jessica Jones

3. **Where can I learn more about supporting scholarships?**

A. Jefferson.edu/ReimagineScholarships
B. Call 215-955-0437
C. All of the above

Submit your answers at **Jefferson.edu/InnovatorTrivia** or scan the QR code with your smartphone camera by December 30, 2020. A perfect score will enter you in a drawing to win a Jefferson T-shirt.

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