

Edmund T. Pratt Jr. School of Engineering at Duke University | 2020

Student-written since 1940

**INSIDE:**

*Using CRISPR to Explore the Dark Genome*

*Privacy and Versatility in Machine Learning*

*New Master's Program in Financial Technology*

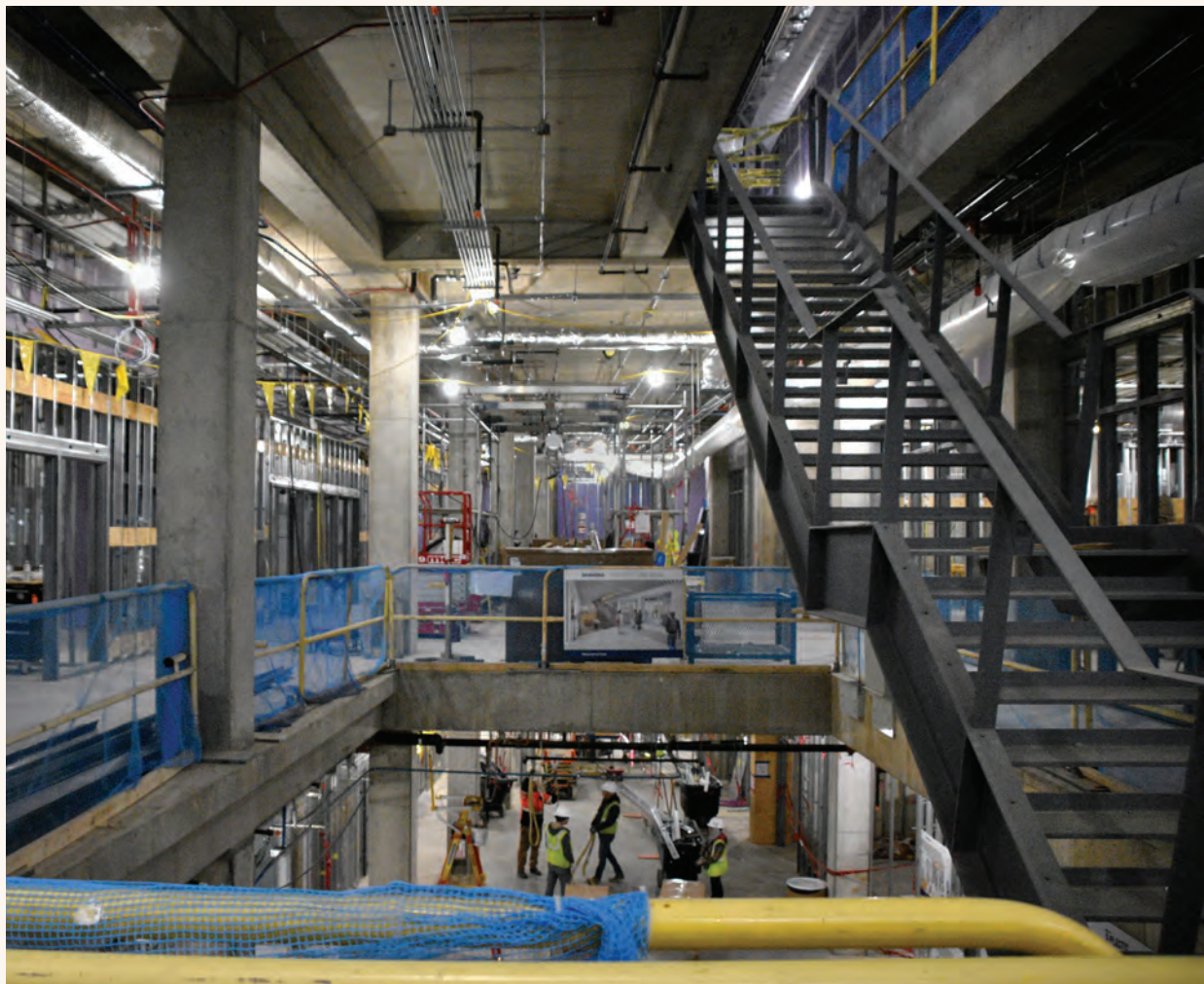
# dukeng





# PROGRESSES

**FRONT AND BACK COVERS:**  
*Areas in the New Engineering Building begin to take the shapes of the original concept art for the spaces. Photos by Morgan Feist.*



# dukengineer

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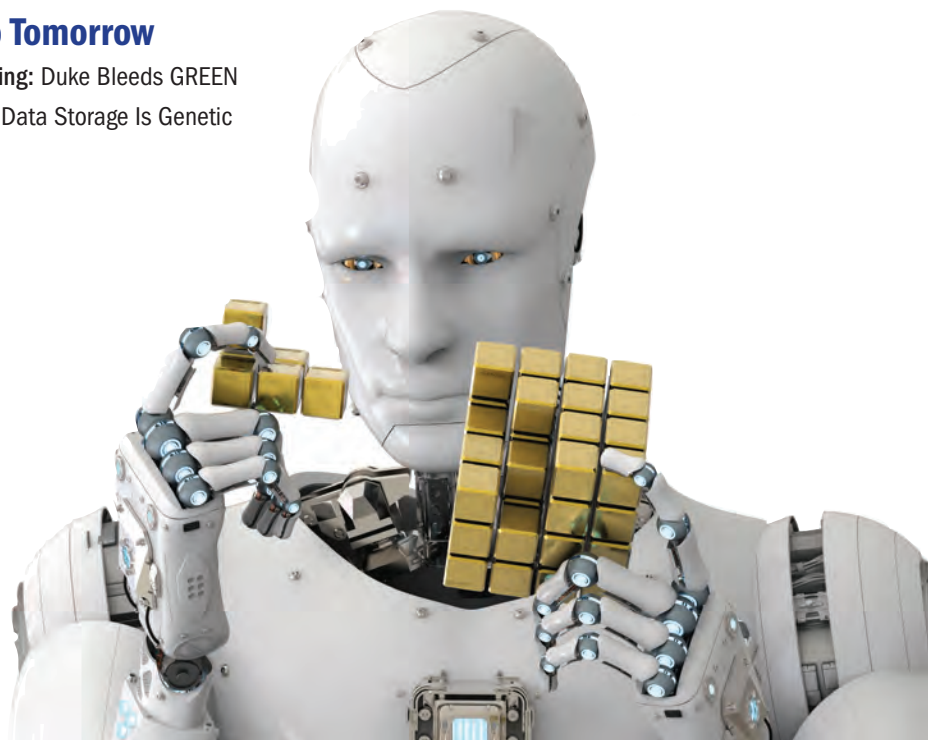
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## FROM THE DEAN

### EDITORIAL NOTE:

As we were finalizing this year's *DukeEngineer*, Duke University announced significant changes to its usual operations, limiting on-campus activities to help prevent the spread of COVID-19 and ensure the safety of our communities. To view an April 2020 message from the Dean, please visit [pratt.duke.edu/DE20welcome](http://pratt.duke.edu/DE20welcome).

### Dear friends,

It has truly been a banner year for Duke Engineering. Students and faculty have made incredible discoveries and engineered tomorrow's technologies, all while the school continues to make strides in reinventing what an engineering undergraduate education can look like. You'll see the energy and passion of our community splashed across every page of this magazine.

For example, you can read about one student team developing a low-cost solution for infants suffering from gastroschisis in low-resource settings through our new First-Year Design course, which gives students the opportunity to serve society even as they learn technical, teamwork and problem-solving skills. (page



faculty/staff mentors and engages them in small group discussions and activities to explore knowledge of self, build resilience, create community and develop personal well-being.

Meanwhile, in our research labs, faculty are pursuing solutions such as demystifying the dark genome with CRISPR technology (page 8), advancing machine learning (pages 12 and 14), creating healthier and more resilient environments and developing innovative materials. These vibrant programs create outstanding research opportunities for both undergraduates and graduate students (as you can read on pages 18 and 34).

At the end of this year, many of these activities will

move into our new engineering building, which is nearing completion for its scheduled opening date in November 2020 (photos of its

### **We're transforming the student experience not only through exciting educational programs, but by fostering personal development through a focus on ethics, purpose and meaning.**

14). And, fresh off celebrating its 10<sup>th</sup> anniversary, our Smart Home live-in laboratory is giving students the opportunity to try their hand at fresh new solutions to sustainable living (page 20). I'm also proud of our new master's program to prepare students to lead in the rapidly rising sector of FinTech, developing technological solutions for financial industry challenges (page 32).

We're transforming the student experience not only through exciting educational programs, but by fostering personal development through a focus on ethics, purpose and meaning. We recently announced our new Lane Family Ethics in Technology Program, which is embedding ethics education across our curriculum to prepare students to evaluate tough issues in tech and make responsible professional decisions. And on page 24, you can read about the experiences of some of our first students to go through Thrive, a pilot program which connects first-year students with

progress can be seen inside the front and back covers of this magazine). With 150,000 square feet of new space, the new building will expand current engineering student classroom, teaching lab and program space by nearly 50 percent, and is strategically designed to support next-generation approaches to engineering education.

As our new building has risen higher, so has our school as a whole--this year, for example, we reached all-time highs for both undergraduate and graduate rankings in U.S. News & World Report and secured a record \$96 million in grant awards to continue pursuing groundbreaking research. After reading the inspirational stories in this issue, I hope you'll be as proud as I am of our amazing students, faculty and staff--and the bright future Duke Engineering is working toward.

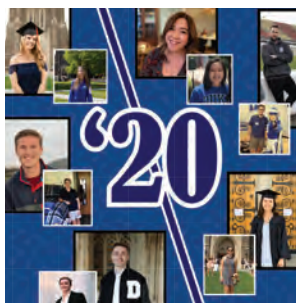
**Ravi V. Bellamkonda**  
Viniak Dean of Engineering



# NEW Podcasts

## to Keep You Connected to Duke Engineering

*Wherever you are, now you can subscribe to two new podcasts and take Duke Engineering with you!*



### **This Engineering Life**

*Behind the Scenes of Undergraduate Engineering at Duke University*

[sites.duke.edu/thisengineeringlife](https://sites.duke.edu/thisengineeringlife)

A team of our talented undergrads lead a new podcast series called “This Engineering Life,” a fun and engaging behind-the-scenes look at the undergraduate engineering experience at Duke. Hosted by faculty advisor Rebecca Simmons (MEMS) and undergraduates Elle Smyth and Rebecca Norman, the series is aimed at connecting students, as well as providing insights, resources and advice from peers and experts. Jump onboard their subscriber list and take a listen to their first season that covers topics ranging from what it takes to be a Cameron Crazie and a Duke Engineer to engineers who have decided to join a social organization to what it has been like to shift to a virtual classroom during the COVID-19 pandemic.



### **Rate of Change**

*A podcast from Duke Engineering, dedicated to the ingenious ways that engineers are solving society's toughest problems*

[pratt.duke.edu/about/news/podcast](https://pratt.duke.edu/about/news/podcast)

Produced by the Duke Engineering Office of Communications, Rate of Change spends 15 to 20 minutes per episode talking to a faculty member about their area of expertise. From creating new materials for clothing to regulate temperature on an individual scale to using stem cells to create new muscles from scratch, this series takes you into the laboratories and minds of some of Duke Engineering’s most ambitious faculty.

# EDITORIAL TEAM



**Sabrina Qi** is a senior from New York studying biomedical engineering and global health. On campus, she dances with Devils en Pointe, volunteers with Dance Expressions and is involved in independent research projects. In her free time, she enjoys reading and drawing. She has been involved with DukEngineer since her freshman year and is grateful for the opportunities to contribute to the magazine.

## EDITOR-IN-CHIEF



**Victoria D'Agostino** is a first-year PhD student in the biomedical engineering department. She works in Nimmi Ramanujam's lab, the Center for Global Women's Health Technologies. Her research is in using optical imaging to understand the metabolism of breast cancer. In her free time, Victoria loves hiking and camping in National Parks and playing with her puppy, Pebbles.



**Mary Gooneratne** is a junior studying electrical and computer engineering and computer science. At Duke, she's actively involved with the DTech Scholars program, the Duke Applied Machine Learning Group and the Baldwin Scholars program. She is grateful for the way in which Pratt has fostered her love for technology and innovation. Outside of the classroom, she loves to run, bake and read.



**Jade Grimes** is a junior from the New Orleans area. She is pursuing a major in civil engineering with a minor in environmental science and a certificate in architectural engineering. She hopes to combine her studies and work in sustainable development. Outside of class, Jade is an admissions tour guide, peer tutor and a member of Illyria. In her free time, she enjoys drawing, cooking and pyrography.



**Emilia Grzesiak** is a senior from the Chicago-land area. She is majoring in biomedical engineering and minoring in chemistry. On campus she is involved with Digital Health research and the Society for Women Engineers. In her free time, she enjoys running, rock climbing and Skyping her Polish relatives. She hopes to combine her passion for artificial intelligence and healthcare in her future work.



**Talya Jeter** is a freshman from Cleveland, Ohio. She intends to major in biomedical engineering and minor in neuroscience. She played on the Duke League of Legends gold team and this spring, she worked on a vaginal classroom model in EGR-190. Leisurely, she enjoys knitting and reading conspiracy theories.



**Ellery Jones** is a second year PhD student in biomedical engineering. In her research in Dr. George Truskey's lab, she uses tissue engineered blood vessels to study the development of cardiovascular disease and identify biological targets for future cardiovascular therapeutics. She is passionate about improving the accessibility of STEM education, mentorship, and involvement to underrepresented groups at the K-12 and collegiate levels.



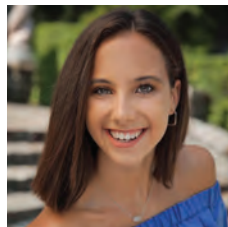
**Nimisha Pant** is a junior studying mechanical engineering from Charlotte. She is interested in sustainability and clean energy. On campus, Nimisha is involved with DEV, Brownstone and Duke Rhythh. She has been involved with DukEngineer since freshman year and is thankful for the opportunity to serve as both an editor and a writer.



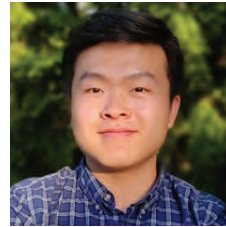
**Ryan Piersma** is a senior from southwestern Michigan studying electrical engineering and computer science and minoring in Arabic language. Around campus, he is involved in musical groups such as the Duke Marching and Pep Band and the Devilish Keys Piano Ensemble and has acted as a TA for several engineering classes. Currently performing computer architecture research in Dr. Benjamin Lee's lab, Ryan hopes to continue at the graduate level to obtain a PhD in computer engineering. In his free time, he enjoys playing chess and the electric guitar. This has been Ryan's second year working with the DukEngineer as an editor. He has immensely enjoyed this opportunity.



**Nami Reddy** is a senior from New York double-majoring in Biomedical Engineering and Computer Science. Aside from her involvement with DukEngineer Magazine, she spends her time as a Teaching Assistant for the Electrical Engineering Department, Research Assistant for the Neurosurgery Department, and working on 3D printed prosthetics with Duke eNable. Off campus, she enjoys baking, painting, and running with her dog.



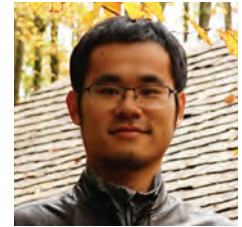
**Caroline Salzman** is a sophomore studying biomedical engineering from Kansas City. On campus she works for the math department and is involved with the Center for Women's Health Technologies, SMART tutoring program, Duke Engage in Tanzania and an independent project developing a low-cost silo for treatment of gastroschisis in Sub-Saharan Africa.



**Alex Xu** is a sophomore from New York, studying electrical and computer engineering and computer science. He is interested in the applications of emerging technologies, including robotics, AI and quantum computing. On campus, he is involved in independent research and Duke Academy of Model Aeronautics, a student-led organization that focuses on promoting UAV technology across campus. In his free time, Alex enjoys hiking and outdoor photography.



**Will Schmidt** is a junior studying mechanical engineering. He is interested in materials science and aeronautics, and enjoys reading and hiking.



**Yixing Zhang** is a graduate student from the Pratt school of engineering. His research interests include high-dimensional statistics, information theory and machine learning. He also enjoys reading, drawing and hiking.

### Additional Editing Done By:

**Isabella Wang**

# dukengineer





Polin Liu

## letters | THE ESG PRESIDENT

A

s a student organization, Duke's Engineering Student Government (ESG) is constantly evolving and looking for ways to improve the undergraduate Pratt experience. We are a small, yet impactful organization that is passionate about driving change and representing the voice of our peers to the best of our capabilities. Together, our team of enthusiastic and driven members is committed to realizing our vision of a collaborative and innovative Pratt environment.

This year we continue to grow and engage in meaningful work. Pratt's undergraduate community is brimming with talent, which is evident in the remarkable student groups and initiatives present on campus. From the Combat Robotics team, which was founded just last semester, to the Duke Electric Vehicles team, which broke two Guinness World Records for vehicle efficiency in a year, ESG continues to provide funding to all engineering groups to further their achievements and causes.

Collaboration is integral to ESG's success. That is collaboration not only within the group, but with other student groups, engineering companies, professors, administration and the Dean. ESG regularly meets with Dean Bellamkonda to discuss strategies to improve the Pratt curriculum. We are also actively involved in discussions with the administration on how to improve Pratt's academic advising, the mentorship framework, first-year design and more.

As engineering students ourselves, we understand that Pratt students are enrolled in a rigorous program that challenges them to work hard and pushes them to grow. We want to ensure

**We want to ensure that Pratt students succeed academically while maintaining a healthy and balanced life outside of classes.**

that Pratt students succeed academically while maintaining a healthy and balanced life outside of classes. As such, we are dedicated to equipping students with all the necessary tools and resources to be successful. Our new project piloting this semester was created precisely with this goal in mind. We will be launching a Pratt-wide Piazza Q&A page to utilize one of our valuable resources—each other!

Other exciting projects include planning E-Picnic, which provides students with an assortment of free food and a fun environment to relax and mingle on the Harrington Quad on a sunny Friday afternoon. Our other annual tradition, E-Oktoberfest, took place in the fall and featured a delectable selection of wursts and our ESG grill masters.

Other ongoing events include our weekly E-Socials, which provide students with a great opportunity to network with and learn about companies as well as student groups. We believe in setting students up for success not just at Duke, but in the professional world beyond Duke. As such, our Industry Relation Chairs work hard to make sure that students get the chance to talk to the best companies out there. This year we've been honored to have E-Socials hosted by innovative, growing companies like Google, Microsoft, Stryker and IBM.

ESG is proud to represent Duke's ambitious undergraduate engineering student body and strives to embody the Duke spirit in our work. We look forward to continuing to enhance and enrich the lives of every student in Pratt and are honored to be a part of this community!

**Polin Liu**  
**Engineering Student Government Executive President**





Joseph Rufo

## letters | THE EGSC PRESIDENT

**W**hen I first visited Duke as a prospective graduate student, I was fascinated by the extraordinary sense of community at Pratt. I remember walking through the Harrington Engineering Quadrangle at the end of the day and seeing graduate students socializing, playing lawn games and throwing around a frisbee. I got the chance to talk to students from different labs and hear about their research and thoughts about life at Duke. The students' research and backgrounds were all so different, but they were all brought together for this event.

It was such a memorable experience; however, I assumed that this event was only occurring because it was part of the recruitment itinerary. I was shocked when I found out that this event, called Pratt Chat, occurs every Friday and is put on by the Engineering Graduate Student Council (EGSC). Over the past year, I had the honor of serving as the president of EGSC, and we strive to promote and grow this sense of community by coordinating opportunities for social and civic engagement in Duke and in Durham.

EGSC has continued to host weekly Pratt Chat socials, with an emphasis placed on making it a welcoming environment for all Pratt graduate students. During one of our Pratt Chats, we hosted a watch party for the U.S. women's soccer World Cup game, while in another, we hosted a Halloween-themed cornhole tournament. In addition to the weekly Pratt Chat, EGSC hosted many social events throughout Durham, including purchasing tickets for students to attend a Durham Bulls game and hosting a meet-up for a downtown Oktoberfest celebration. This year was the first year that EGSC coordinated sign-ups and rented tents for Pratt students to attend campout, the weekend-long event where over 1,700 graduate students sleep outside for a chance

to win basketball season tickets. We also hosted meetups to attend Duke men's and women's soccer and volleyball games.

Another initiative for EGSC this year was to place an emphasis on giving back to the Durham community. We formed a partnership with the Food Bank of Central and Eastern North Carolina and organized quarterly volunteer sessions where graduate students helped sort through more than 12,000 pounds of food donations. These food donations, which would have otherwise been discarded, were distributed to help provide over 9,000 meals to people in need. EGSC also coordinated a school supply drive to collect supplies for the Crayons2Calculators "Fill that Bus" campaign, which helps more than 10,000 local kids in need by providing their teachers with free school supplies.

None of the aforementioned events and activities would have been possible without the support of Dr. Jennifer West and Sara Faust, and the hard work of the EGSC board, which for the 2019-2020 school year included:

**Jake Ulrich**, Vice-President

**Abby Mrvos**, Diversity and Inclusion Representative

**Kathleen Horvath**, ECE Representative

**Roujia Wang**, BME Representative

**Amy King**, MEMS Representative

**Fang Feng**, CEE Representative

**Joanna Peterschmitt**, Meng Representative

**Poojia Virwani**, Communications Director

It has been a pleasure to work with this incredible team. EGSC will continue its efforts to create a welcoming and supportive community for Pratt graduate students for years to come.

**Joseph Rufo**  
EGSC President

# Illuminating the Dark Genome

*Duke's Center for Advanced Genomic Technologies shines brightly on the horizon*

**E**ach steppingstone in the history of genetics has led us closer to understanding the complex links between our DNA and our everyday lives. From Mendel's humble pea plant studies in the 19<sup>th</sup> century to the completion of the monumental Human Genome Project in 2003, scientists have made incredible progress in a short amount of time.

Over the past two decades, researchers' abilities to sequence, organize and even edit the genome have skyrocketed with the development of rapid sequencing and bioinformatic technologies. Recently, geneticists have discovered a new route on the roadmap that ties our genetic code to our health and well-being, sometimes referred to as the "dark genome."

These stretches of our genome do not instruct our cells on how to make specific proteins but rather help control when, where and to what extent our protein-coding genes are activated or deactivated. Here at Duke, the Center for Advanced Genomic Technologies (CAGT) is launching the scientific community into the frontier of studying how the dark genome helps control human health and disease.

The CAGT began with conversations between Maria Ciofani, assistant professor of immunology; Gregory E. Crawford, associate professor of pediatrics; Timothy Reddy, associate professor of biostatistics & bioin-

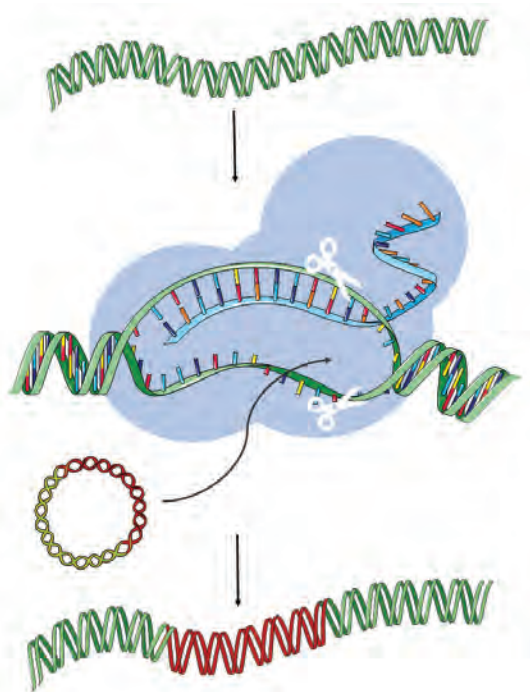
formatics; Kris Wood, assistant professor of pharmacology & cancer biology; and Charles Gersbach, the Rooney Family Associate Professor of Biomedical Engineering and director of the CAGT.

Gersbach recognized that this core group needed an identity to expand and incorporate other labs and people into it, and from these five founding members, the CAGT was born. In the brief time since its founding, the center has grown to a community of 27 professors across fields of engineering, biology, medicine, bioinformatics and more.

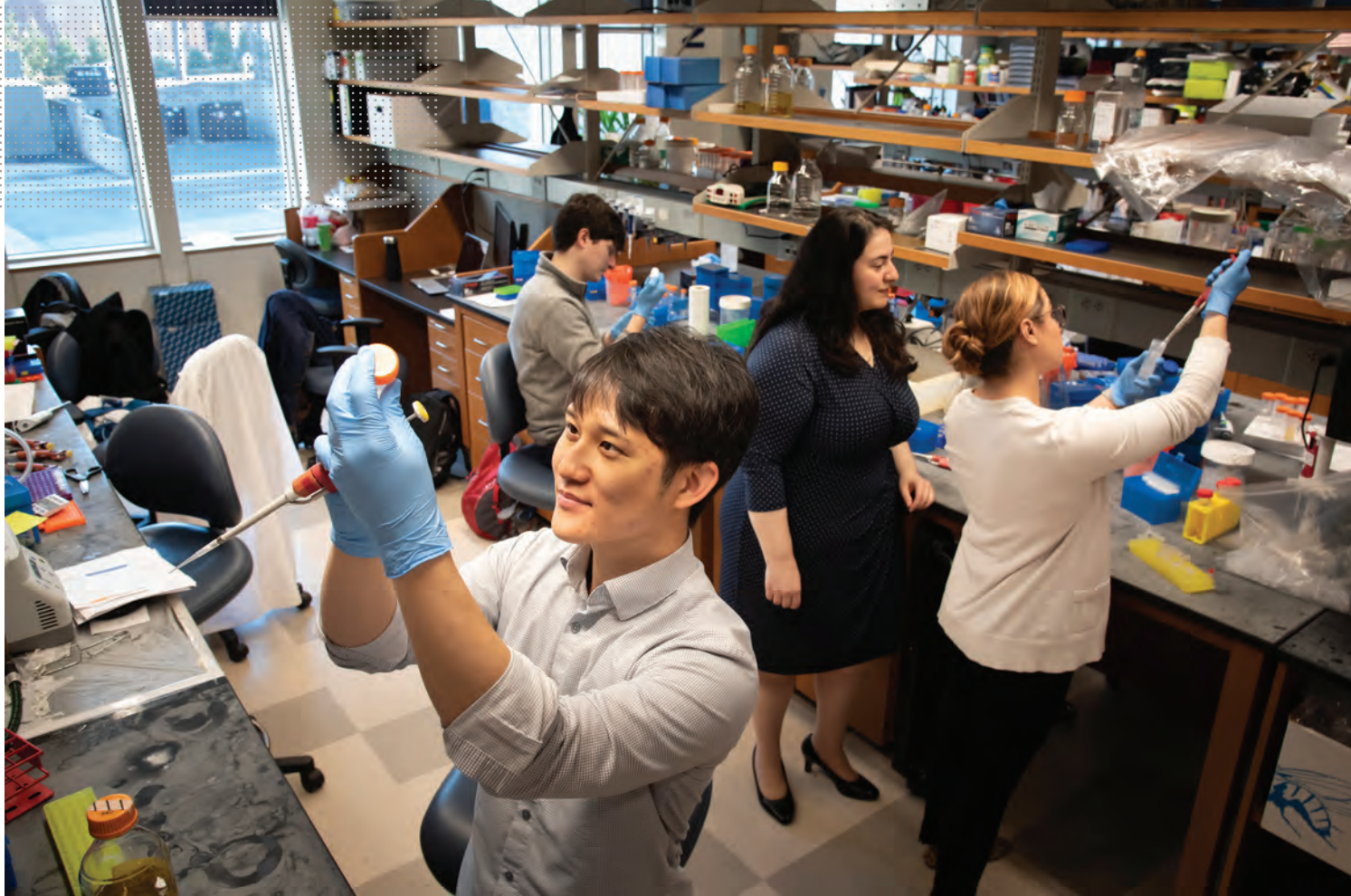
Jeni Reininga-Craven, executive director of the CAGT, has watched the center blossom

**BELOW: CRISPR technology allows the living genome to be edited with extreme precision, including the insertion of whole genes into target cells.**

**"Limitations in technology are a big reason it hasn't been studied before."**







ABOVE: The CAGT wet lab fully staffed with researchers hard at work

som into an expansive and diverse research coalition from those informal beginnings. “We recognized that there were really stellar collaborations and big research impacts through these five steering committee members,” she said. “Not only were these groups successful in their research, but in their other impacts, such as providing a rich multidisciplinary training environment, receiving grant funding from diverse agencies and participating in national consortia.”

Taking part in these national consortia, such as the National Institute of Health-backed ENCODE Consortium, the Roadmap Epigenetics Program and the Somatic Cell Genome Editing Consortium, will allow the CAGT researchers to share their work and connect with others on a worldwide scale.

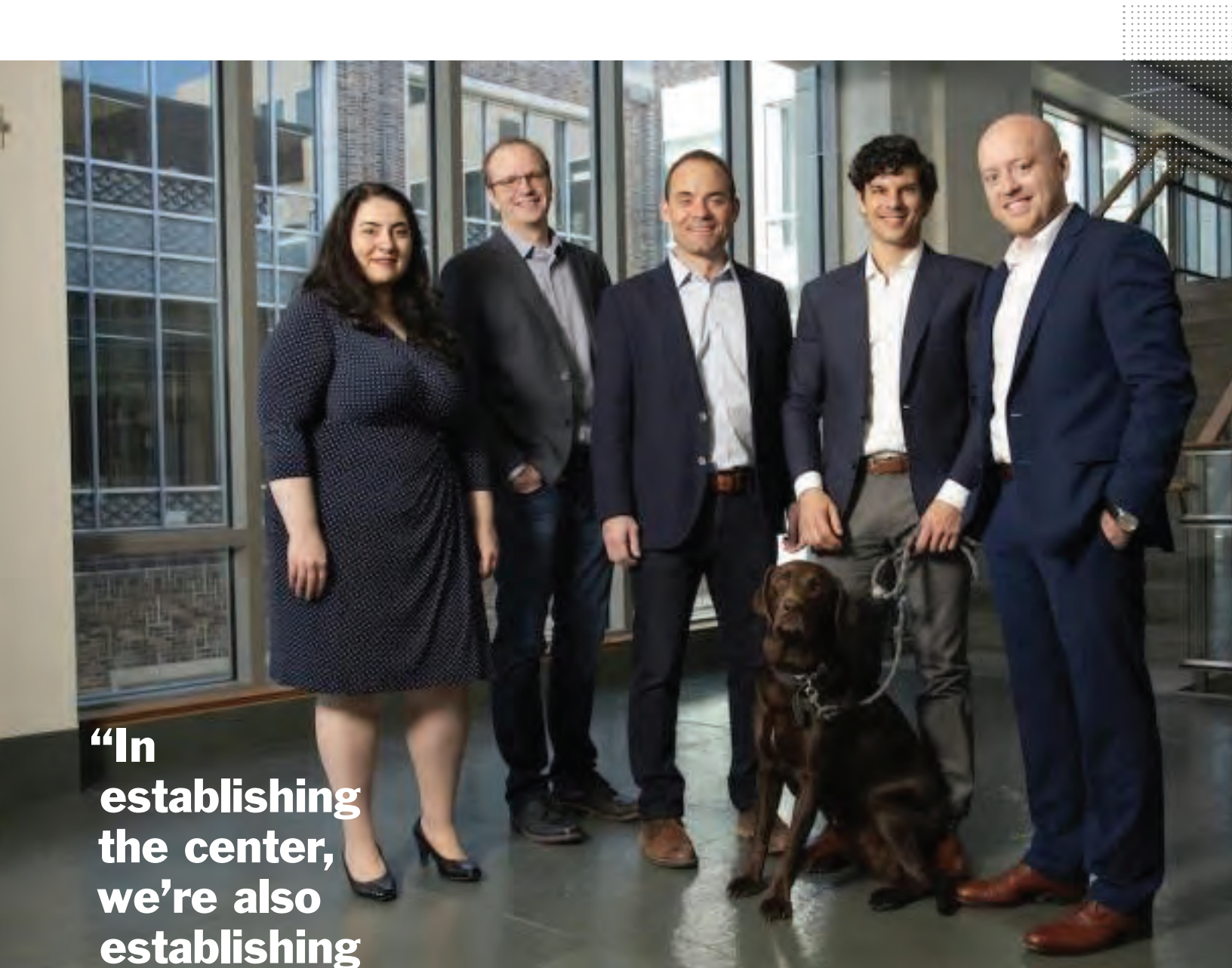
At this point, one might ask, why choose to study the non-coding aspects of the genome in the context of disease? Aren’t protein-coding genes the stars of the show? According to Reininga-Craven, this is a common misconception. “Limitations in technology are a big reason it hasn’t been

studied before,” she explained. “In the last ten years or so, genome-wide association studies have helped us understand the role of the genome in complex diseases. However, researchers didn’t uncover as many variants in protein-coding genes as they thought they would. In fact, about 90 percent of the genetic variation known to exist for complex diseases is undiscovered. That’s why we need to look at the non-coding genome next.”

One of the reasons the CAGT is uniquely suited to tackle significant challenges in genetic research is its multidisciplinary team. “One of the major challenges of genetic research is that genetic data is very difficult to measure and interpret—how do we link regulatory variation of genes to the outcomes of diseases? It’s a complex system,” said Reininga-Craven.

Gersbach, whose lab focuses on the development of Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) genome editing technologies, wholeheartedly agrees. “The primary goal of the CAGT is to unify researchers across the Schools of Engineering, Medicine, and Arts & Sci-





**“In establishing the center, we’re also establishing Duke as a thought leader in genomic technology.”**

ences to tackle grand challenges of genomics that can’t be addressed by any one approach or discipline,” he said. “One of the challenges is that engineers continue to develop more advanced high-throughput technologies that generate greater and greater amounts of data, and this necessitates innovative bioinformatic approaches to analyze these datasets in robust and statistically sound ways.”

Gersbach offered a concrete and nearly mind-boggling example of the data analysis and interpretation challenges that advanced sequencing technology produces. “For example,” he said, “how do we assign a function to every base pair of the 3 billion base

pairs of the human genome, within each of the billions of individual cells in a tissue, across thousands of different people in a patient cohort?”

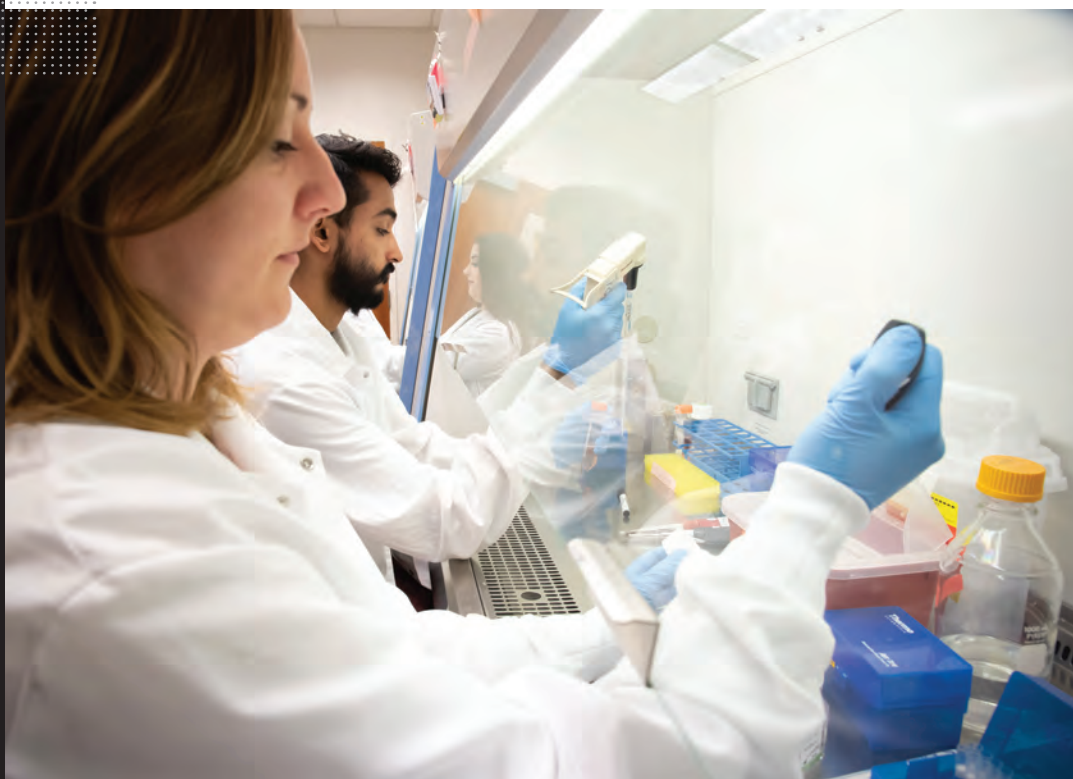
The answer lies in cooperation between multiple fields of expertise in bioinformatics, statistics and engineering. Collaborations between the CAGT and the Center for Statistical Genetics and Genomics, led by Andrew Allen, professor of biostatistics and bioinformatics, seek to address some of these challenges.

“We all meet together multiple times each week to tackle various projects in these areas,” said Allen. “Several of our faculty, such as Professors Tim Reddy, Raluca Gordian and Bill Majoros, are members of both





**ABOVE:** The steering committee from left to right, Ciofani, Crawford, Gersbach, Reddy, and Wood. These five spearheaded the development of CAGT, a diverse yet unified research group, through their collaboration and a shared vision for the future of Duke's scientific community.



centers, leading to natural integration across disciplines and research projects.”

The CAGT is poised to make international impact through its groundbreaking research, but it is dedicated to providing local educational programs and professional development opportunities in its home community as well. Gersbach shared his excitement for the translational potential of the CAGT’s research.

“For the last five or six years,” Gersbach said, “we’ve been developing exciting new technologies, applying them to various disease areas and capitalizing on novel therapeutic directions. The rapid development of genome-based therapeutics is aided by partnerships between medicine and engineering and has led to spinning our technology into patents and the biotechnology industry.”

Reininga-Craven echoed the success of the CAGT’s technology, sharing that some of their recent work has led to the creation of start-up companies and philanthropic pursuits. She also emphasized that one of the major goals of the center is to provide enrichment and professional development opportunities to students, from symposia including renowned leaders in the field to

assistance with science communications.

“We want to make sure we have programming that meets the needs of everyone across the spectrum,” said Reininga-Craven. “Let’s build around the people that are here and leverage their unique resources and experiences to aid in peer mentoring and building a community.” Excited to hear ideas from incoming and current students on how the CAGT could provide opportunities for them to grow as scientists, leaders and mentors, she added, “Now’s a great time to hear from trainees—we’re brainstorming!”

Finally, Reininga-Craven shared her vision of the CAGT’s bright future. “In establishing the center,” she said, “we’re also establishing Duke as a thought leader in genomic technology. I think we have the right people, and Duke is the right place, to make major progress.” ■

**Ellery Jones is pursuing her PhD in biomedical engineering and uses tissue engineered blood vessels to study the development of cardiovascular disease.**



# Machine Learning Protecting Human Privacy

istock

*Duke Engineers are pioneering techniques to scan a person's face while ignoring certain sensitive features that someone might not want their device to access*

**H**ave you ever wondered just how much information your phone learns about your identity when you use facial recognition to unlock it? In this era of ever-advancing technological growth, we see futuristic advances in technology paired

**The group leveraged deep learning and information theory to solve the challenge of hiding unwanted information, while still allowing a phone to recognize the individual trying to access it.**

with invasions of privacy. We are left with a difficult decision, grappling over to what extent we value our privacy over functionality.

Researchers at Duke University are implementing machine learning in an attempt to solve this dilemma.

Machine learning is a burgeoning area of study that has been applied in many fields such as self-driving vehicles and personal assistant devices like Siri. Machine learning

is the science of creating mathematical algorithms that allow computers to “think” and “act” like humans without the need for programming. Through machine learning, computers utilize data models to perform tasks solely based

upon patterns and learned “reasoning,” as opposed to a specific set of instructions.

In a collaboration within the Rhodes In-





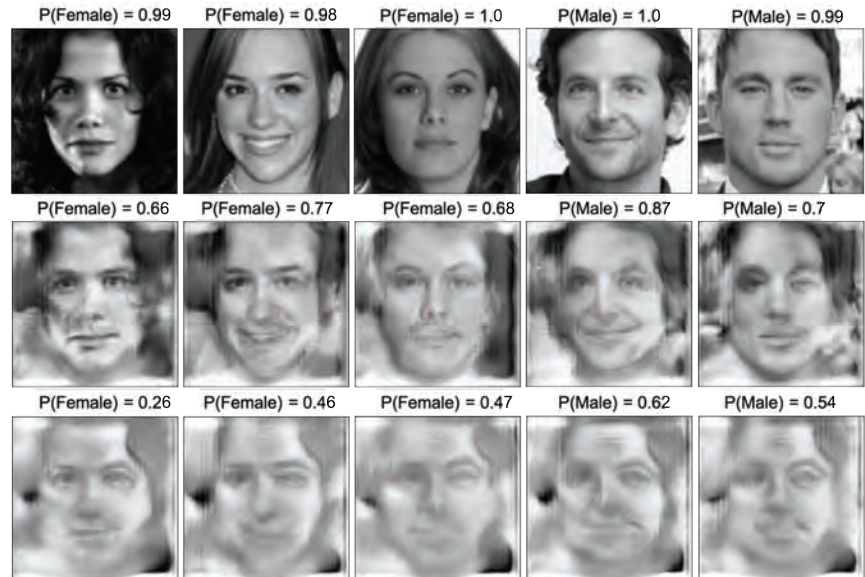
Duke ECE faculty Guillermo Sapiro and Galen Reeves

formation Initiative at Duke, Galen Reeves, assistant professor of electrical and computer engineering and statistical science, and Guillermo Sapiro, the James B. Duke Distinguished Professor of Electrical and Computer Engineering, tackled the problem of user privacy within facial recognition software. With their team, including PhD students Martin Bertran and Natalie Martinez, and Professor Miguel Rodrigues from University college London, they developed a way for a device to scan a person's face without recognizing certain sensitive features that someone wouldn't necessarily want their device to access, such as gender, ethnicity or emotion.

The group leveraged deep learning and information theory to solve the challenge of hiding unwanted information, say a person's gender, while still allowing a phone to recognize the individual trying to access it. In order to balance this trade off, they created both a "secret" variable (S), to hide gender, and a "utility" variable (U). These variables combined to give the observed data.

In the case of gender and facial recognition, these variables are of course highly dependent on one another. However, a certain mathematical transformation can preserve U while discarding S, and then input the remaining, obfuscated data to the device. The team also set up an optimization function to figure out just how much one could learn about S from observing the final data. This work was published in the *Proceedings of the International Conference in Machine Learning (ICML '19)*.

The motivation behind this research comes from a belief that privacy is a fundamental human right that is increasingly threatened in the digital age. According to Bertran and Martinez, this important application of machine learning can "help us preserve some measure of privacy but still allow us to participate and benefit from 'digital life.'" Instead of looking at worst-case scenarios in which the person attempting to violate the privacy of others has



access to infinite information and computing resources, they chose a unique approach, prioritizing both the privacy and utility of an individual user. In the future, the team wishes to learn more about data sharing between users. This would aid in developing "a more precise measure of what the user expects as a utility to cater our algorithms to preserve this with greater fidelity."

Although this work was applied to hiding gender and emotion information, it provides a baseline for minimizing many kinds of sensitive information leakage. When asked what inspires their work, Bertran and Martinez replied, "We believe that privacy is a basic human right and that privacy in the digital age is rapidly eroding." Their research with machine learning techniques has taken significant steps toward easing these privacy concerns. ■

**Chloe Derocher is a first-year undergraduate student planning to major in biomedical engineering or physics.**

*A demonstration of the way gender information can be hidden from the computer using machine learning techniques. This image displays what a digital device might see, with the probability that the subject is a particular gender displayed above each face. From top to bottom, you can see that more and more sensitive information is removed and it becomes increasingly difficult to differentiate the gender of the subject, but the identification is virtually not affected.*



## FACULTY INNOVATION

# Versatility of Machine Learning

*David Carlson is helping colleagues across campus use machine learning in their own fields of expertise while removing the “black box” from the equation*

**D**avid Carlson is an assistant professor in both the Pratt School of Engineering and the Duke School of Medicine. He works between the Departments of Civil & Environmental Engineering and Biostatistics & Bioinformatics. His interdisciplinary position allows him to solve interesting problems that connect algorithms with various fields, and he is currently working with a team of graduate students and post-docs to develop new machine learning methodology. Every couple of weeks, he meets with collaborators to scope out the

ments are only multiplied or added together. But while each individual step is easy to understand, the key issue is that the algorithm may contain tens of millions of parameters that lead to billions of operations. The sheer amount of calculations that the machine performs renders the algorithm too complex for even experts to make sense of.

Carlson doesn't believe “black box” algorithms should be the default approach in many scientific problems. He believes that it is crucial to understand the reasoning behind outputs from algorithms and why a machine made its decisions. Working backwards from the outcome, researchers can deduce the factors that played a major role in producing that outcome. These factors can then provide insight into problems that experts in various fields are working to solve.

According to Carlson, new techniques in machine learning and artificial intelligence are developed so that they can be applied in specific situations in other fields. “So if we're talking about neuroscience, or any specific application for that matter,” Carlson said, “we're forcing algorithms into a framework that we think we could explain to a neuroscientist who understands what these patterns really mean.”

Recently, Carlson has collaborated with professors studying primarily neuroengineering and environmental engineering. Kafui Dzirasa, the K. Ranga Rama Krishnan Associate Professor in the Departments of Psychiatry and Behavioral Sciences, Neurobiology, Bioengineering and Neurosurgery, and leader of the lab for psychiatric neuro-

**“The most important thing is not necessarily using the perfect method but asking the right question.”**

problem that they want to work on together.

Or as Carlson puts it, “The most important thing is not necessarily using the perfect method but asking the right question. That usually means, what is the right *scientific* question that we want to ask?”

Great algorithms can be “black boxes” that seem to magically solve problems. While these algorithms may be great in a lab setting, they can be difficult to apply to real-world problems. It can be hard to interpret them and explain how they work to experts who want to use them in their own field of study.

Take a convolutional neural network, for example. The underlying mathematical operations are very simple, largely made of linear equations and unidimensional functions that have a single variable. Most of the time, ele-

David Carlson, assistant professor of civil and environmental engineering and medicine, works with faculty across campus to implement machine learning into their areas of expertise.





Artwork by Ameer Syedibrahim and Andre Wang, showcased in Duke's AI for Art Competition. The event showcased pieces that explored the intersection between AI and creative art practice by using Generative Adversarial Networks, AI algorithms that create images from learned data.

engineering, has been working with Carlson for the past five years. Last year, they published a study on using machine learning to find biomarkers (measurable quantities) for stress susceptibility in the hopes of creating preventative treatments for depression.

While common treatment paradigms primarily intervene after an individual has already become depressed, Carlson said, "We're trying to use interpretable or explainable machine learning...to predict the future, and we want to make sure that we can frame this in the context of what's actually happening in the brain." Carlson and Dzirasa discovered a network of brain activity, or a reproducible pattern of electrical fluctuations, that strongly signals how susceptible a mouse is to depression. Moving forward, they plan to further understand these patterns and transfer these findings into treat-

ments for depression in humans.

In environmental science, Carlson has collaborated with Michael Bergin, professor of civil and environmental engineering, and his PhD student Tongshu Zheng to improve low-cost air quality sensors. They are looking to use satellite imagery data in conjunction with data from the sensors to train scalable algorithms to detect particulate matter and predict air quality by "looking" at the sky.

In addition to his research, Carlson is also a part of the "+Data Science" initiative, which encourages all students to learn how to incorporate machine learning into their majors. Through this initiative, Carlson and his colleagues have produced a lot of work in the social sciences, humanities and the arts. The arts department at Duke and Matthew Kenney have fostered the development of digital humanities. They've found that machine learning can be useful in understanding forgery and analyzing the origins of historical paintings. Students have even gone on to design art using algorithms in the Duke A.I. for Art competition.

"One of the things I really love about being at Duke and studying science in general is that I can't do it alone," said Carlson. "I like to think I have my little part, but there's a lot of work across the board in combining expertise. That's a lot of the fun for me."

The way Carlson sees it, algorithms are not smarter than humans. Their talent is in performing calculations efficiently without losing accuracy or focus. They are also inherently experienced because they have access to a large amount of data. By reaching out to and working with experts all around the university, Carlson—and his machine learning algorithms—has helped people save time on processing data and take advantage of computational power, no matter what field they belong to. ■

**Isabella Wang is a first-year student planning to major in biomedical engineering and computer science.**

# Engineering 101:

## A Low-Cost Solution to Gastroschisis

*Two teams of first-year engineers combine forces to find a solution for infants suffering from gastroschisis in low-resource settings*

Last year, the Pratt School of Engineering began offering a new engineering course for first-year engineering students called Engineering 101. The course is built to expose first-year engineering students to the engineering design process and to give them hands-on design experience.

As part of the course, the university brings in “clients” from the community, such as the Duke Forest or Duke Health, among many other groups. These clients pitch their real-world engineering design problems to the students. The students are then divided into teams of five based on their interest in each project.



*The final prototype for the low-cost silo constructed by Duke students*

Throughout the semester, students learn about the engineering design process, which includes a design analysis stage followed by a solution stage. The key steps in the design and analysis stage are clarifying the team assignment, understanding the problem and context, and defining design criteria. In the solution stage, several solutions are generated, and a structured method is used to determine the idea that most closely meets the target design criteria. Lastly, an iterative prototyping process helps teams test the physical solution

against the design criteria until a final prototype is constructed.

Most of the projects conclude at the end of the semester with a final prototype and a final presentation. However, some students choose to extend the project as an independent study for a half-credit course in the following semester. Some projects even go beyond that one additional semester.

In a recent fall semester, one client presented a project that involved designing a low-cost silo for gastroschisis that could be completely constructed with materials available in Uganda. Gastroschisis is a birth defect of the abdominal wall that results in a hole that allows the baby’s intestines—and sometimes other organs—to make their way outside of the body.

The condition is commonly treated with a silo—a long plastic pouch that protects the intestine and other organs. After being attached to the baby’s belly, the other end of the silo is hung above the baby, allowing gravity to slowly help the intestine return inside the abdomen.

However, a silo is unavailable to countries in sub-Saharan Africa, including Uganda, due to numerous factors like its high price. Therefore, the most sustainable solution would be to create a similar product to the existing silo made from local materials.

Students were so interested in this project that two teams were created to work on it. The teams brought in students and faculty from several fields, including biomedical, electrical & computer, and mechanical engineering; pediatric surgeons from Duke and Makerere University in Uganda also joined in the collaboration.





Both teams worked on the project separately for the first semester of the class, and each constructed a final prototype. For the next semester, a few members from each team formed a combined team and worked on the project as an independent study.

The independent study semester was split into three sections. At the beginning of a new section, the team would construct a “to do” list of things they hoped to accomplish within the section. The first thing the new team did was combine the two prototypes into one final prototype. Throughout the rest of the semester, the team performed testing on this new prototype. Some of the tests included tensile strength testing, water tightness testing and durability testing.

Once they had results, the team submitted abstracts, one to the 2019 Rice 360 Global Health Design Competition and one to the American College of Surgeons’ Clinical Congress in San Francisco. The team presented their research at the Rice competition alongside another team of first-year Engineering 101 students and a team of senior design students. At the end of the competition, the gastroschisis team was awarded Honorable Mention for Finalist.



**ABOVE, TOP:** *The team of students who traveled to San Francisco to attend the American College of Surgeons Clinical Congress. From left to right: Muthukurisil Arivoli, Caroline Salzman, Nolan Burroughs, Arushi Biswas, and Patrick Wilson.*

**ABOVE:** *An infant recently treated in the United States with the most advanced procedures to cure gastroschisis.*

The team continued to develop the project after the Rice competition. Over the summer, they wrote a paper summarizing their work, including the prototyping and testing they had done and the joint work they had done with biomedical engineering students from Makerere University and surgeons from Mulago National Hospital in Uganda.

During the 2019-2020 school year, the team is continuing work on the project outside of an independent study. In October, they presented their research at the American College of Surgeons’ Clinical Congress in San Francisco. The team was in the Global Surgery and Humanitarian Outreach session of the conference and gave an eight-minute presentation that sparked much interest.

This spring, the team plans to conduct pre-clinical studies on an animal model. The ultimate goal for the team is to conduct a clinical trial with colleagues in Uganda to determine if the prototype is an effective solution in treating gastroschisis. ■

**Caroline Salzman is a sophomore studying biomedical engineering.**

# Infinite Opportunities: Pratt Research Fellows

*The Pratt Research Fellows program offers juniors the opportunity to pursue valuable research experience for three semesters and a summer*

One of the many things that makes Duke Engineering special is the immense availability of opportunities for undergraduate research. With the ability to work directly under distinguished professors, gain hands-on experience through on-site projects and even design their own experiments, students at Duke are constantly redefining the undergraduate research experience.

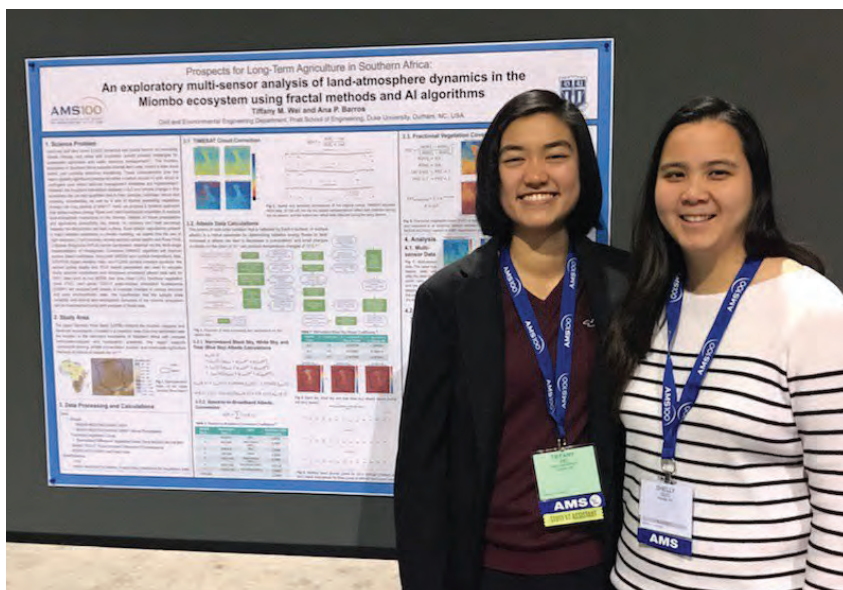
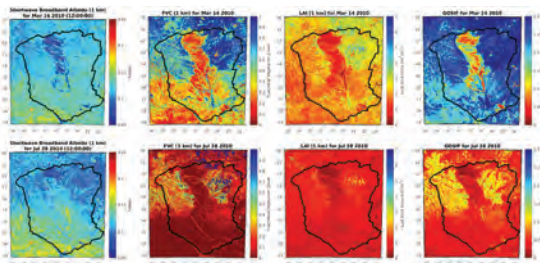
For any Pratt students looking to get more deeply involved with research, the Pratt Research Fellows program is a great opportunity. As a Pratt Fellow, stu-

dents receive the opportunity to work with engineering faculty members on an intensive research project for a period of three semesters, including a summer research experience. This allows students to truly immerse themselves in their field of study and gain a better perspective of what engineering research entails.

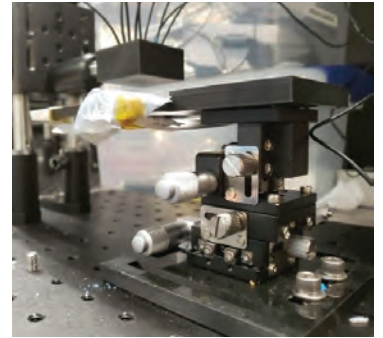
Carmen Rawls, assistant dean for advising and outreach at Duke Engineering, has been a key facilitator of this research program. She said, “Undergraduate research experiences, like the one provided by the Pratt Fellows program, are very valuable to students who are considering applying to graduate school. They complete their undergraduate education with a better understanding of the research environment as well as the expectations and the responsibilities of a graduate student. They also gain exposure to more topics within their fields of interest.”

Tiff Wei, a senior majoring in civil engineering and current Pratt Fellow, believes the program has been instrumental in equipping them with the skills necessary for higher-level research. They are currently working on remote sensing research near the Upper Zambezi River Basin, located in South Africa. Their work involves analyzing satellite data to evaluate the long-term prospects of agriculture and uncertainty of climate projections in the region.

Talking about their biggest takeaways from the program, Wei said, “My work within my research group has helped me see the importance and relevance of my coursework as it applies to environmental research. I’ve learned to hold myself accountable for my work, to communicate proactively, to







ABOVE: Pratt Research Fellow Eric Wahlstedt works on his micro-camera design for neural imaging.

OPPOSITE: Tiff Wei and Shelly Guo, in front of Tiff's poster, entitled, "Prospects for Long-Term Agriculture in Southern Africa: An Exploratory Analysis of Land-Atmosphere Dynamics in the Miombo Ecosystem Using Fractal Methods and AI Algorithms" at the American Meteorological Society's 19th Annual Student Conference in Boston, MA.

conduct research independently and to document my progress in detail."

Another important aspect of the program is the opportunity it provides for collaboration. Eric Wahlstedt, a BME senior and current Pratt Fellow, emphasizes that working with a team was integral to his learning process. "It is incredibly important to have a strong team to help you troubleshoot problems and assist you with overcoming the challenges that you face," said Wahlstedt. "I have a great lab team that I work with and I am always able to get help from them or ask them questions whenever I need."

Eric is currently designing a micro-camera that can capture neural activity at higher resolutions. Speaking about his time as a Pratt Fellow, Eric said, "Even making mistakes in the process, and having to redo the experiment or design, was a learning experience. It allowed me to grow as an engineer."

Along with preparing students for their future endeavors in research, the Pratt Fellows program also enables students to truly identify and pursue subjects they are passionate about.

"It is most important for a Pratt Research Fellows Program applicant to demonstrate interest in conducting research, and to ap-

preciate the joy of learning. Research projects provide opportunities to continue one's education through a quest of finding solutions to unanswered questions. This requires determination, perseverance and patience which are fuelled by the satisfaction of advancing in a research topic," says Rawls.

Students interested in applying may visit the Pratt Fellows website to find out more about projects that align with their own research interests, as well as the faculty in-

## Research projects provide opportunities to continue one's education through a quest of finding solutions to unanswered questions.

involved with each project. Applications are open to all Pratt students in their junior year.

So, if you are still looking for the perfect research opportunity, you might not have to look much further. The Pratt Fellows program, with its variety of project topics, could be your stepping stone into the vast world of research. ■

**Ria Thimmaiahgari is a sophomore majoring in biomedical engineering.**





TECHNOLOGY AND SUSTAINABILITY:

# Student Projects at the Smart Home

*Each year, Duke Smart Home residents and club members develop and test a wide array of new projects and initiatives focused on sustainable living*

*The Duke Smart Home has been a live-in laboratory for students since the 2007-2008 school year.*





## THE UNDERGRADUATE EXPERIENCE

Any Disney enthusiast's first concept of a "smart home" probably began with *Smart House*, the 1999 film portraying the tale of a family's residence in a high-tech house. While Disney's version of a smart home had some pretty disastrous consequences, the Duke Smart Home, our very own version of a high-tech and sustainable residential home, has allowed students to develop some fascinating and beneficial projects. David Smoot, a junior mechanical engineering student and current Smart Home resident, described the house as "both the building of the future but also the building to bring that future into today." With in-house lab facilities, a weather station and a building design created specifically for adaptability, the Smart Home, as described by Alex Weck, a senior civil engineering major, "is really the only place on campus where [students] can implement solutions and then have residents test them."

As a living-learning community, the home's 10 residents, along with Smart Home club members, develop and test new projects and initiatives each year. Most Duke students have likely seen some of the past projects in action—the solar benches and LED lighting projects installed around West Campus had their inception in the Smart Home. This year, students will not only expand on some older projects—like increasing the electric power of the solar benches—but also focus on developing new ones. Some noteworthy projects include house automation and HVAC (heating, ventilating, and air conditioning) systems, an





## THE UNDERGRADUATE EXPERIENCE

algae window, a smart mirror and beekeeping/gardening.

***“[The smart home is] one of the few places in the country where you can get [consumer smart home tech and commercial automation systems] to talk to each other.”***

While the Smart Home already has some helpful and efficient automated systems in

ing microclimate factors like temperature and humidity. For the HVAC systems, a project led by Smoot, this means analyzing sensor data, determining heating/cooling efficacy and finding solutions to deficiencies. Potential changes include smart vents that would provide on-demand heating/cooling to an area and automatic window shades that could minimize heating from solar radiation. Smoot’s goal is to “not just build the most efficient, perfectly normal forced air conditioning system you can build, but to also try to stop heat from getting into the space from the source.”

***“What if you took the bottom of the food chain and put it in a window?”***

Weck, the lead of the Algae Window Project, is piloting another option for regulating solar heat—algae-filled windows. As an alternative to automatic blinds, he hopes to filter *Spirulina* (a form of blue-green algae) between windowpanes to change window opacity. The system would pump higher concentrations of *Spirulina* through the window to reduce its opacity (and reduce solar heating), or remove the algae when more light is desired. An algae-filled window would also have an interesting secondary effect of tinting the incoming light an appealing shade of green.

*Spirulina* is a type of cyanobacteria that is easy to grow—a nutrient supply is added into the tank whenever more algae is needed. It can also live in extremely basic environments (waters of a pH of 10 or 11), which makes it hard for contaminants to grow in the same water. *Spirulina* can also be harvested, dried and consumed as food. A current hot topic in health forums, spirulina is about 70 percent protein by weight and is already being used as a health supplement. Ultimately, the goal is to have residents eat the same algae (once dried out) that pumps through their windows. As a side project, Weck wants to try making some foods out of algae. If residents can turn the algae into a flour-like substance, the baking possibilities become endless, and they could make cook-



**TOP:** Herbs harvested from the Smart Home garden, hung up to dry. **BELOW:** Beet sprouts, planted as part of the gardening project led by Andrea Kolarova, which seeks to use local fauna to create a pollinator garden.

place, like mobile app-controlled lighting, air source heat pumps and recovery ventilators, Smart Home students want to expand these systems to make them more widely applicable and more efficient. This could lead to the integration of recently affordable consumer smart tech into some of the Smart Home’s more expensive, commercially oriented systems.

For electrical systems, this means creating an open-source automation server and installing more wireless sensors for monitor-



ies, cake and granola bars from their algae.

***“Every Duke student needs a little pick-me-up in the morning.”***

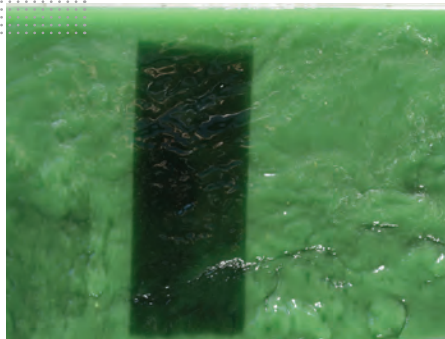
Peter Candelora, a junior studying electrical and computer engineering, is managing the Smart Mirror Project. The project’s goal is to create a visually appealing and functional information hub for residents of the Smart Home. The Smart Mirror looks and functions like a regular mirror, but has a screen placed behind the mirror pane. Similar to a smartphone lock screen, the smart mirror will show the user important notifications along with their reflection. The design is more functional and convenient compared to traditional message boards and is less intrusive than a television screen.

To achieve this, Candelora designed a custom wooden frame to house the LCD screen and used a mounting system that allows the Smart Mirror to be integrated directly into the Smart Home’s walls. Currently, the Smart Home residents have programmed the Smart Mirror to display the Smart Home calendar and fun, uplifting messages, but their final goal is to have it present information for real-time events like weather conditions, news and live bus route tracking.

***Appreciating the Pollinators***

The gardening/beekeeping project, led by Andrea Kolarova (Environmental Science, '20), involves integrating multiple new and re-vamped projects. Drawing on permaculture ideals, local fauna will be planted into the Smart Home’s current garden beds to create a pollinator garden, and in the spring, a beehive will be created. This project is especially important due to the current endangered status of many bees. The pollinator garden and beehive will involve a collaboration with local Durham groups like the Durham Beekeepers Association, which will take care of the hive when students are not on campus.

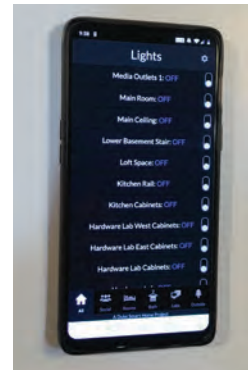
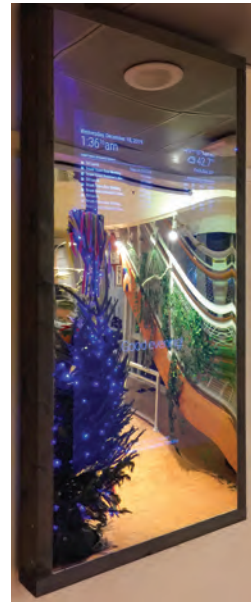
While the students hope to find local plants for the pollinator garden that do not require



a lot of watering, they also plan to build a more efficient irrigation system for the garden. The current watering system already uses rainwater from the home’s collection tanks, but this year’s improvements could entail smart sprinklers (a weather forecast-dependent watering system) for each bed, re-designating the plant zones and creating a drip irrigation system.

The idea that failures make for prime learning opportunities rings true in the residential smart tech field. It is evident that this year’s Smart Home endeavors, even if unsuccessful, have the potential to make a large impact. The Smart Home’s main goal is to explore methods of sustainable living, apply them to efforts on Duke Campus, and ultimately, share its findings with people beyond Duke. The process of getting to a less sinister, more efficient version of the smart house our generation imagined as kids is a lengthy one. But in the near future, homeowners will have the chance to install new developments, possibly ones that start right here on our campus, to create a more efficient home. ■

**Jade Grimes is a junior pursuing a double major in civil engineering and environmental science with a certificate in architectural engineering.**



*A prototype spirulina tank, part of the Algae Window project led by Alex Weck, seeks to provide algae to tint the Smart Home’s windows to help keep the house cool in the summer.*

*A smartphone app is used to control lighting in the Smart Home, one of the many futuristic technologies enjoyed by its residents.*

*The Smart Mirror project, led by Peter Candelora, seeks to show the user important notifications along with their reflection with a design that is more functional and convenient compared to traditional message boards and is less intrusive than a television screen.*



# PILOT COURSE:1 PARTS:3 CREDIT:0



# First-Year Students Learn to Thrive

*The new zero-credit course “Thrive” arms first-year students with tools to seamlessly transition into college, understand one another and realize resilience as a daily practice*

Thrive students and faculty and Dean Ravi Bellamkonda reflecting on the course at the Thrive dinner reception.

**T**hrive (EGR 79S) is a zero-credit, pilot engineering course designed to prepare first-year students for the challenges of collegiate life and life in general.

Modeled after the Clark Scholars pre-orientation program, Thrive encourages engineering students to learn about both rigorous academic material and themselves while here at Duke. Thrive is designed for a small group of 10 students who meet once a week to engage in dialogue ranging in topics from daily routines to the meaning of success and purpose of life.

Thrive was born from the vision and collaboration of several Duke and Pratt School of Engineering faculty, including David Pittman, senior director for student engagement at Duke, Bill Walker, Mattson Family Director of Entrepreneurship at Duke Engineering, and Ravi Bellamkonda, the Vinik Dean of the Pratt School of Engineering. These astute leaders realized the demand for a program to provide engineering students

with the skills to develop mindfulness and stress management in their lives. Through Thrive, students are armed with tools to seamlessly transition into college, understand one another and realize resilience as a daily practice.

Pittman divided the course curriculum into three sections: knowledge of one's self, stress management and exploring one's purpose. During the first portion, students complete in-depth personality tests like the DISC (Dominance, Influence, Steadiness and Compliance) test and 'get-to-know-you' quizzes that are then shared with the class. These activities foster group discussions, allowing students to learn about group dynamics like individual strengths and weaknesses and each person's unique outlook on life.

The second section begins about six weeks into the semester after the first round of exams—a great time to talk about stress. During this section, Thrive students are introduced to the many supportive resources on campus through visits to the Academic

## **“At Duke Engineering, we are in the midst of an ambitious reimagining of engineering education and experience.”**

Resource Center (ARC) and Student Wellness Center. At the Wellness Center, Thrive students are able to experience a private tour of the programs, including “Moments of Mindfulness,” drum therapy and group meditation with Justin Sharpe, associate director of DuWell.

Though Thrive engages students with these beneficial resources, one of its challenges in popularity is that it is a zero-credit course. To some students, it seems like another activity that they would need to allocate their time to. However, many believe the benefit far outweighs the cost.

“I wanted to create a classroom environment where students show up ready to learn, and without having to prepare anything in advance. The primary focus was on creating meaningful connections between the students and with their instructor. Thrive students opted into this wanting the class to be a value added to [their] experience, rather than adding additional stress to their already busy schedules,” Pittman said. “The experiential learning exercises alleviated any out class preparation and served as an incentive for students to stay engaged and complete a zero-credit class.”

The final portion of Thrive focuses on one’s self, but in a new light. Here, students think about their future selves—who they

want to be as Duke students and in their lives afterwards. The core of this section centers around students’ values, how those values are important and how they can help guide decision-making and interest-finding.

Through these discussions, the Thrive course fosters a tight-knit group of first-year students who can bond over the challenges they face during their first semester of college. What’s more important is that students are able to garner close relationships with their faculty instructors who serve as mentors. Walker details Thrive’s importance in helping students gain perspective as he recalls his own college transition as a first-generation Duke student from a low-income family.

“I want students to know that they’re not the only one finding the transition difficult. That they’re not the only one finding it academically and emotionally challenging,” said Walker. “Not only are their student peers facing these challenges, but faculty and staff members have gone through the same challenges. I think that realization helps to frame the struggles that students are having. It’s not the end of the world—these are common problems.”

Jennifer Ganley, Thrive course instructor and director of undergraduate student affairs at Pratt, gives a glimpse of what instructing the course is like as she teaches an insightful group of four students. “What I like about Thrive is that it’s really student-driven,” she said. “I come in with an idea of a topic and what we’re going to talk about, but where that conversation takes us is really led by who’s in the room at that time.”

For the final course activity, Thrive instructors lead their students up the Duke Chapel tower climb. Tanya Fritz, program coordinator and Thrive instructor, metaphorically connects the tower climb to the completion of first semester.





*Thrive students Sunny Li, Ian Coykendall, Evan Kenyon, and Talya Jeter with Thrive instructor Jennifer Ganley at the top of Duke Chapel after the course tower climb.*

“You’re climbing up 239 steps in a dark, winding spiral staircase that seemingly goes on forever,” Fritz said. “You’re experiencing fatigue and pressed with doubt of whether you’re going to make it out, but then you finally see the light at the end of the tunnel. At the top is a clear blue sky where you see all of Duke’s beautiful campus and can appreciate what you’ve been able to achieve here.”

Thrive ends with a formal dinner for Thrive instructors and participants, along with guest Dean Ravi Bellamkonda. With the implementation of Thrive, Dean Bellamkonda emphasizes his interest in the well-rounded development of engineering students and their individual growth. It is a motivational closing ceremony that touches on the completion of the first semester and fortifies the benefit of this multi-faceted approach to learning in engineering.

“At Duke Engineering, we are in the midst

of an ambitious reimagining of engineering education and experience,” said Bellamkonda. “Ambitious not only in reimagining how great engineers come to be through design thinking, computing, research and entrepreneurship, but also reimagining how to be intentional about our student’s success and well-being holistically. Thrive is our attempt at exploring meaning, success and resilience for our students, and this experience will inform future reimagining of our advising and residential life experiences. It is truly a special time to be at Duke Engineering.”

After its pilot year, Thrive is well on its way to becoming a focal point of Pratt students’ lives, enabling them to *thrive* at Duke and beyond. ■

**Talya Jeter is a freshman majoring in biomedical engineering and current Thrive participant.**

# Duke Interdisciplinary Social Innovators:

## Developing a Unique Skillset in a Nontraditional Setting

*DISI brings together small groups of graduate students who are interested in creating new solutions for pressing social issues*

**I**n school, students spend most of their time working on homework assignments and projects, which, despite their importance in reinforcing skills learned in class, usually have no immediate benefit to the world. In order to truly have an impact on the world outside of the classroom, students must search for other opportunities to work on engaging and meaningful projects. Enter DISI.

Duke Interdisciplinary Social Innovators (DISI) brings together small groups of graduate students who are interested in creating new solutions for pressing social issues. Each project lasts one semester, during which the students perform services for various community organizations, such as evaluating the impact of certain parameters on profit, implementing new tools and technologies, developing strategic financial plans, and more.

With typically six to ten projects per semester, DISI partnered with organizations in the fall of 2019, including Child Care Services, Book Harvest, Safe Haven for Cats and Benevolence Farm. The projects ranged from database management and data surveys to impact assessment and market research. At the conclusion of each semester, students share their projects at a showcase event, and everything starts again the next semester with a new kick-off event.

Students fill various roles within DISI and collaborate to brainstorm ideas and turn them into reality. Project Innovators (PI) commit a few hours a week to support the analysis and implementation of the projects. Innovators bring in their own technical ex-

pertise and work with each other to complete tasks. Students come from engineering backgrounds at Pratt, public policy backgrounds at Sanford, or even medical and law backgrounds. The variety of skills and experiences allows the teams to develop complex solutions for these challenges. All innovators also attend skill sessions, where they learn about topics from survey building to project





**Students come from engineering backgrounds at Pratt, public policy backgrounds at Sanford, or even medical and law backgrounds.**

management. Students can choose to become an innovator for a single semester or for as many as they would like.

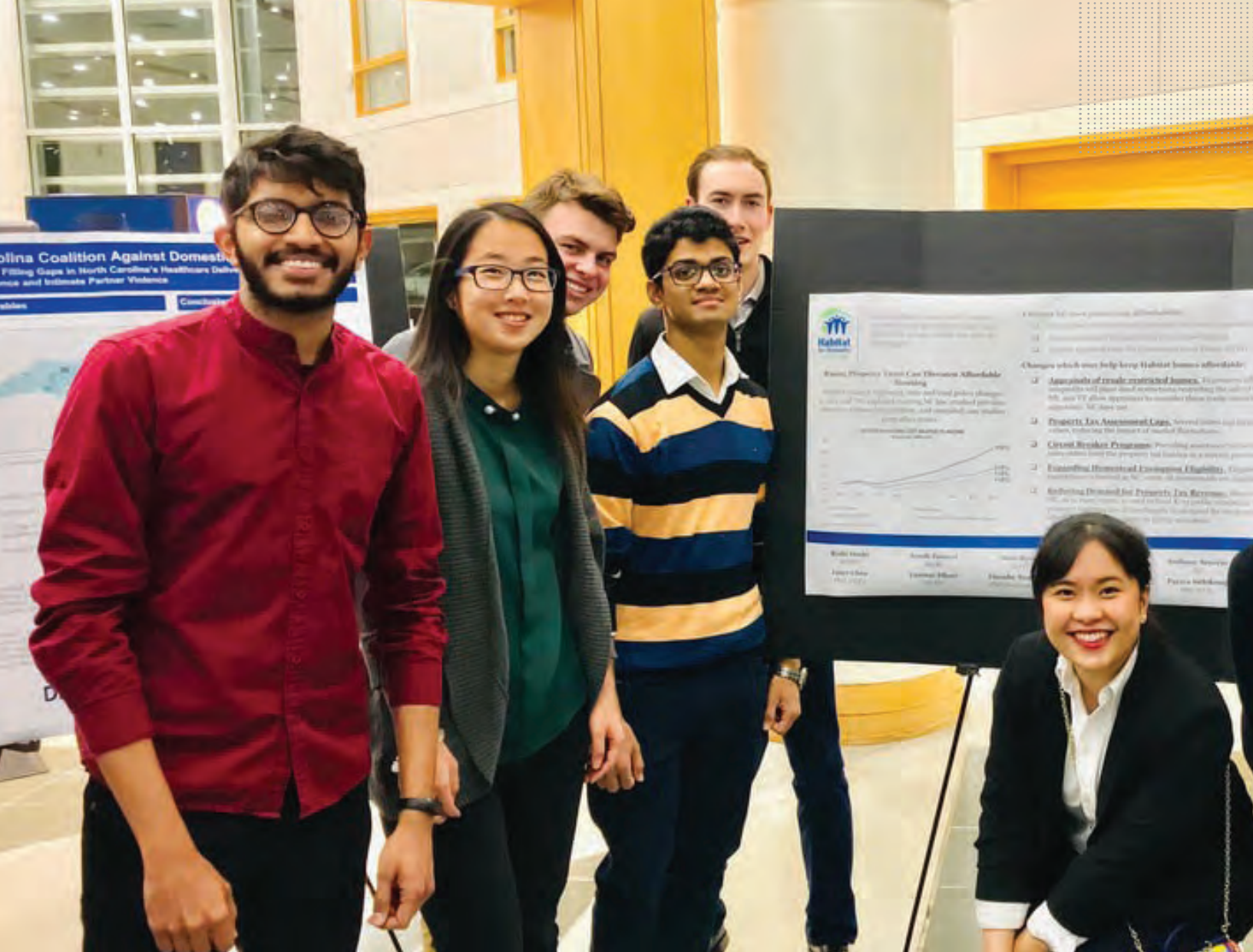
Project Innovators provide the predetermined deliverables in a timely fashion by working with their Project Managers (PMs). These students coordinate the activities of five innovators while reporting to the director of operations on the executive

board. Managers also work directly with the industry and community partners, requiring slightly more of a time commitment in comparison to the innovators. In addition to the normal skill sessions, students in the management level attend seminars to improve leadership skills. These managers provide the necessary bridge between the innovators, the executive board and the

*The Fall 2019 cohort of DISI students at the kickoff event*







community partners, facilitating the success of each project.

In addition to filling these roles on project teams, students can also apply to be part of the executive board. Over 10 positions are chosen each semester, including co-presidents, marketing, strategy and operations. The executive board oversees each project during the semester, plans the kick-off and showcase events, and hosts skills seminars and training sessions, among other responsibilities. Students often work their way up the chain of command into executive board positions through continued participation, but there is no structured prerequisite to be able to apply for these positions.

Due to the various positions within DISI, effective collaboration and successful interdependence are critical to the mission

of each project. Throughout the semester, the teams visit their clients to discuss the progress of their projects. Sometimes, they also complete team-building exercises such as “Escape the Room.” I wanted to learn about DISI from a firsthand experience, so I met and interviewed its two co-presidents, Charlotte Moore and Nick Williams. Here is a snapshot of our discussion.

### **What brought you to DISI?**

Charlotte came to DISI due to her desire for community outreach. Nick, on the other hand, was interested in opportunities to develop skills outside of the laboratory. Graduate students spend large amounts of time conducting research, studying textbooks and completing homework assignments, he explained. DISI offers an opportunity





to complete unique and technical projects with community partners, while improving soft skills and management techniques in the process. With the semester-long project limit, students can choose which semesters they participate in DISI, providing a flexibility that is appealing to graduate students.

**Why did you choose to pursue an executive board member position within DISI?**

Charlotte and Nick both agreed that serving as executive board members has provided them with a greater appreciation for the teams' impacts on the community. While innovators can focus on the details of a particular task for a specific project, the executive board members get the chance to help put the pieces together to form the big picture.

**What would you like others to know about DISI?**

Charlotte mentioned that alumni from DISI go on to earn consulting jobs at companies as big as McKinsey and Triangle Insights Group. Their time in DISI provided plenty of skills and experiences to talk about during these job interviews. Nick added that there is a position for everyone in DISI. Depending on what you are looking to get out of the experience, there is plenty of room for growth and development, whether you participate in one semester or six. ■

**Richard Hollenbach is a second-year PhD student in mechanical engineering pursuing a certificate in aerospace engineering and college teaching.**

*LEFT: Students with their project poster at the end of semester showcase*

*Students presenting their projects at the end of semester showcase*



## GRADUATE OPPORTUNITIES

# Forward with **FinTech**

## Duke's Newest Engineering Master's Program

*With an increasing number of Pratt graduates entering the financial industry, the time is ripe for the new Master of Engineering in Financial Technology—or FinTech—program*

**W**hat is financial technology, or “FinTech”?

FinTech shepherds the creation and facilitation of technological solutions to financial market challenges. It is, in short, the intersection of engineering, computer science, business and finance.

“FinTech is revolutionizing the ways we bank, travel and buy things. The potential for students is almost endless, but so is the demand for these skills,” said Jimmie Lenz, the academic director of Duke’s new Master of Engineering in Financial Technology program. The master’s in FinTech program came to fruition after more than a year of discussion. With an increasing number of Pratt graduates entering the financial industry, it has become especially important that they are given the proper instruction and context to apply their skills, Lenz explained.

The program features a spectacular array of over 20 Duke faculty members, ranging from experts in economics to engineering to entrepreneurship. With the faculty having decades of combined industry experience, Lenz says, “Students will have a chance to interact with the vast majority of professors that are involved in this program. All the courses will be very ‘hands-on’ and project-based. This is not just theory but practical application of these skills.” Classes will

teach and incorporate the newest innovations in the FinTech scene, such as in the course taught by Peter Balnaves, adjunct associate professor of engineering, in which robo-advisors provide digital financial advice based on mathematical rules and algorithms.

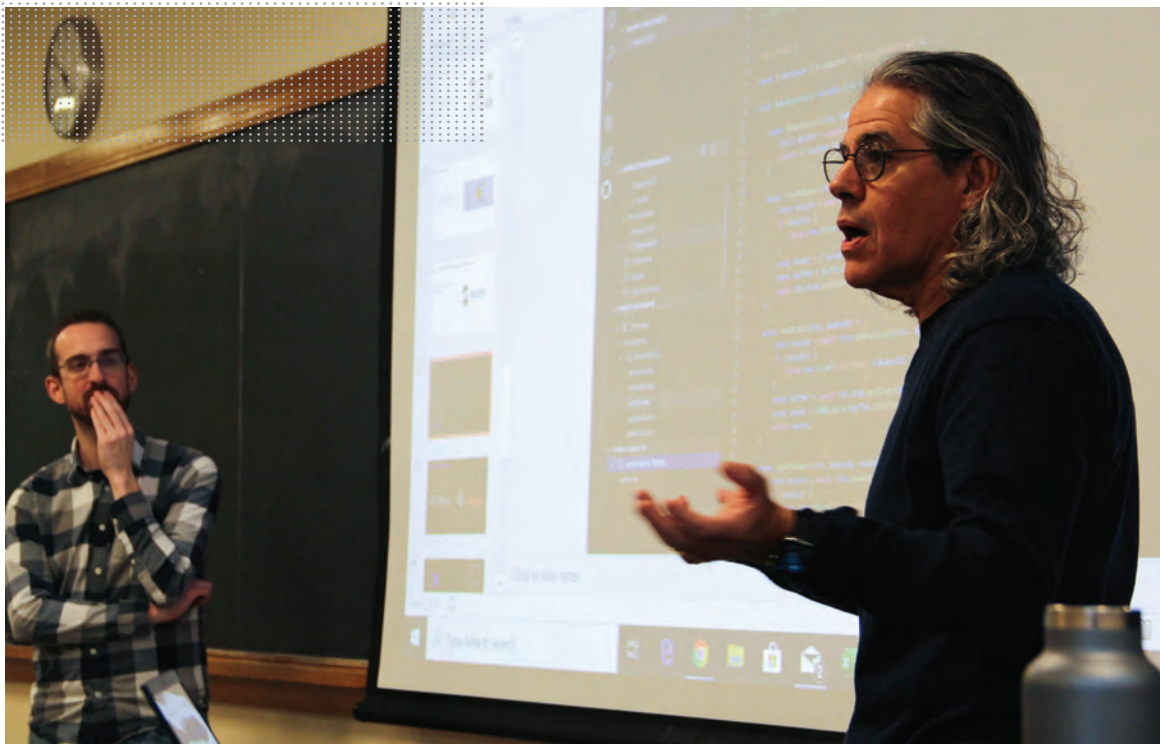
Over the span of one-and-a-half to two years, the FinTech curriculum will consist of business courses, technology electives, financial technology classes and a concluding capstone project. Students following the technology track will learn to develop FinTech products and services using tools such as machine learning, blockchain and quantitative financial analysis. Students in the management track will prepare to lead FinTech teams and projects through coursework in areas such as product management and customer-driven innovation.

A key component of the program will be an internship that students will complete during their second summer. These internships will come from a variety of areas, including large financial firms, large FinTech companies and early-stage FinTech startups, closely mirroring the fields where students will work after graduation. Lenz also believes a percentage of graduates will start their own companies, pioneering the development of cutting-edge FinTech products.

The first class of FinTech master’s stu-

*Jimmie Lenz, academic director of the new Master of Engineering in Financial Technology program*





dents will arrive in summer 2020. Originally anticipating about 15 students, Lenz has described an “overwhelming number of students who are applying and interested,” hinting at a likely increase in class size in following years. A large demand exists for people with the FinTech skillset, and the number of students will continue to rise with it.

Incoming students will form a diverse class from around the world, integrating people who have already spent time in the workforce with recent undergraduates applying as a part of Duke’s 4+1: Bachelor’s + Master’s” program. Students are also expected to come from a mix of educational backgrounds, some with technical knowledge but little experience in finance, and some with exposure to finance and business but little involvement with engineering or computer science. Regardless of prior experience, students will develop in-demand technical skills, understand key technological advances, gain industry-specific business knowledge and benefit from personalized career services.

As noted by Emma Rasiel, Duke Financial Economics teaching director, the majority of financial technology programs in the United States are run by business schools. Duke will be among the first of its kind with a FinTech degree program based in an engineering school, administering an ever-changing cur-

riculum to reflect real-world trends each semester. Because of this, students will not only develop the business skills needed for industry, but they will also gain the technical expertise necessary to thoroughly understand the technologies facilitating everyday financial transactions.

Lenz envisions the most exciting aspect of the program to be the ability to invent new products that have a significant global impact, helping Duke become a leader in FinTech innovation. Banks, firms and other companies have already brainstormed projects for classes and selected courses where they will work directly with students. “This future will be built by technologically savvy professionals with the kind of knowledge base students can gain in our new FinTech master’s program,” affirmed Ravi Bellamkonda, the Vinik Dean of Engineering at Duke University. ■

**Philip Liu is a sophomore double majoring in mechanical engineering and economics.**

**...students will develop in-demand technical skills, understand key technological advances, gain industry-specific business knowledge and benefit from personalized career services.**

*Jimmie Lenz teaches one of the inaugural classes of Duke Engineering’s new FinTech program.*

# Finding Your Place in Research

*Master's students stress the importance of doing homework on research labs before deciding to join one*

**D**uke students are not just students; they are also researchers, mentors and activists. In the Pratt School of Engineering, the role of a researcher is highly prized and sought after, and choosing the right project is critical for success.

While the pressure to join a research team often pushes students to join the first lab that replies or accepts them, this pressure promotes the wrong mentality in students. Instead of joining whichever lab responds firsts, students should focus on the atmosphere, structure and—most importantly—research topic of the group.

From the earliest moments on campus tours, tour guides like to tell prospective students that research opportunities are plentiful, then proceed to share anecdotes about their personal research experiences. This paints the picture that all one needs to do to get started with research is simply 'decide' that you are ready for it.

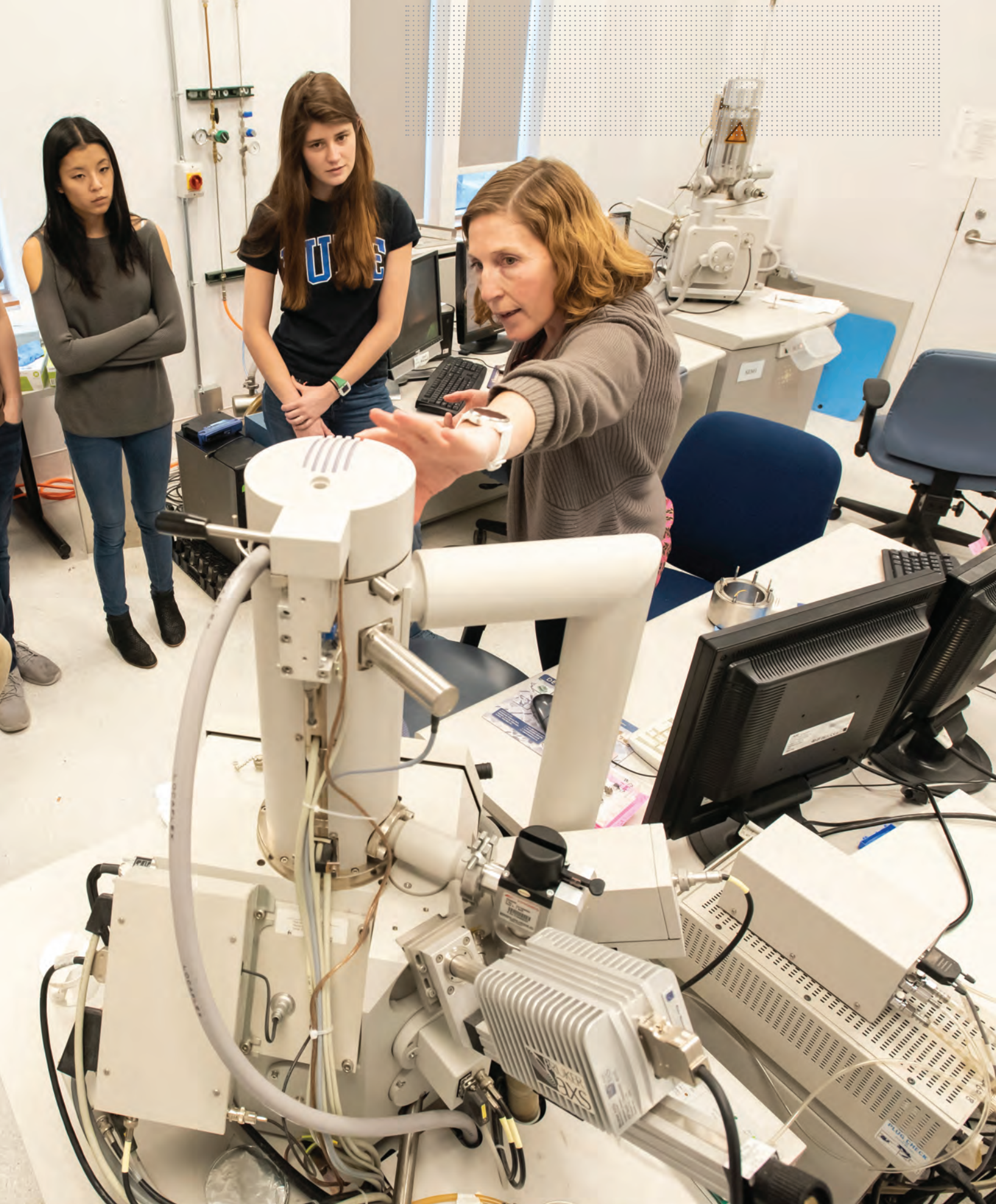
However, that is not necessarily the case. After this simple decision comes a series of rather difficult questions. With whom do you want to do research? Where do you want to do research? What type of research are you interested in? Responding correctly to these questions is crucial to shaping a research experience.

Some students arrive at Duke with the idea that they must 'do' research before they even establish what topics they are interested in and what they want to accomplish. Because research experience is highly preferred for many engineering careers and PhD programs, students view it



*Undergraduates tour the cutting-edge facilities of the Shared Materials Instrumentation Facility (SMIF).*









as something to check off on a long list of career prerequisites.

But it is oftentimes the students that decide to wait before diving into research who have much more positive experiences. These students attribute the importance of course exploration and general networking with faculty during their first year to their success

in finding the right research positions.

For example, graduate student Simiao Ren recounted that he arrived on campus interested in performing research in quantum computing, but he changed his mind in his second semester. “My first-year coursework at Duke convinced me that my true passion is in machine learning,” he ex-

*Engineering professor Leslie Collins, right, works in her lab with undergraduate Patrick Wang, left, and assistant research professor Kenny Morton, center.*



**“..it is oftentimes the students that decide to wait before diving into research who have much more positive experiences.”**

in Leslie Collins’s Applied Machine Learning Lab.

This raises the important question of how to successfully join a meaningful project. Before answering this question, you should ask yourself why you want to do research. The next question should be, what type of research, and in what field(s)? Answering these two questions will allow you to more effectively and purposefully approach professors.

A method that greatly helped Ren and other students was proactively connecting with the graduate students working in labs of interest. This strategy allows students to view the lab’s work in a closer context, see how the work progresses and—most importantly—meet the people you could be working with.

Duke research faculty truly want students to end up in roles that they are passionate about. Faculty want students to do their homework and meet with the lab before joining so that they can decide if they are interested in working with the people in the lab and are genuinely interested in the topic. As graduate student Evan Stump explained, “Joining a research group is deciding that [the research] is genuinely a topic that you are passionate about and most importantly feel is worth it.” ■

plained. “And by waiting until my second year to start research, I was able to open more opportunities by networking with the students in the labs I was interested in.”

These students were able to directly connect Ren to the principal investigators of each lab. Through those connections and conversations, he is now proudly working

**Francisco Reveriano is a first-year graduate student completing a master’s in engineering in electrical and computer engineering.**

# GREENgineering Duke Bleeds GREEN

*Initiated by Dean Ravi Bellamkonda, GREENgineering is working toward a greener and more sustainable Pratt School of Engineering*

**T**he time to start working on a sustainable future has passed, and if we continue doing nothing today, future generations will bear the brunt of our actions. GREENgineering is an initiative that thinks, talks, and works toward a greener and more sustainable Pratt School of Engineering.

The program was initiated by Ravi Bellamkonda, Vinik Dean of the Pratt School of Engineering, who believes sustainability is a generational responsibility. A few months ago, Dean Bellamkonda challenged the Pratt community to become more sustainable, and now the initiative has assumed a life of its own.

When Dean Bellamkonda first expressed interest in an initiative to work toward a sustainable Pratt, a couple of faculty and staff convened to discuss the end goals and potential initiatives to achieve them. “I felt

like I wasn’t doing enough and wanted to make myself accountable,” says Kelly Rockwell, founding co-chair of GREENgineering along with civil and environmental engineering associate professor Lee Ferguson. “GREENgineering is a great community of very passionate people who want to bring real change in our environment, no matter how small or large. I wanted to be a part of that. This is a great group for everyone who wants to make an impact.”

Initiative members comprise Pratt staff, faculty and students, who have the sole intention of making the university more environmentally friendly. Established in April 2019, the team has already been successful in identifying faculty and staff leaders who can facilitate green certification. With their help, any student or faculty can get their laboratories, classrooms, workspaces or events green-certified through the GREENgineering website.

Green certification provides practical ways to incorporate sustainability, waste reduction and efficient energy usage for staff and students. Under the initiative, the number of bottle-filling water fountains has been increased and disposable plastic bottles sold through vending machines have been removed. The initiative encourages carpooling, turning off computers outside of work hours and using sustainable vendors—actions that could reduce carbon emissions and increase fuel efficiency.

Outside of Pratt’s facilities, there is so much an individual can do. The choice of not consuming single-use plastic can produce a significant impact. For anyone interested in taking an active part in







**RIGHT: Members of the GREENgineering team talk to Pratt School of Engineering members about their efforts in making Duke greener and more sustainable.**

GREENgineering, their official website serves as a valuable resource. The location of cardboard, battery, styrofoam and plastic film recycling bins are listed on the website. The process to get a laboratory, workspace, classroom, event or course green-certified is also expounded in detail. A compiled 'green vendors' list and green-event planning tips for anyone on the campus organizing an event can be found on the website. The team welcomes anyone who wants to volunteer to make Pratt greener or is interested in creating awareness about sustainability or GREEN initiatives.

The crucial challenge that currently stands before GREENgineering is unawareness, a problem that cannot be solved theoretically. According to the team, knowledge on the

**“This is a great group for everyone who wants to make an impact.”**

effects of single-use plastics and styrofoam, and their role in waste management, must be increased. People should know about the initiatives within Pratt that work toward a greener tomorrow. The team is working toward overcoming these challenges.

The GREENgineering committee members meet once a month, and in between those meetings, the subcommittees meet. These meetings consist of actionable items and an examination of potential plans. GREENgineering is currently discussing the means to communicate to the Pratt community about recycling, composting and other sustainable options. In the spring term, the team will work on promoting Duke's recycling program to generate more impact. The initiative is also looking at developing systems that measure and report energy savings and creating a bicycle shelter.

Pratt has not waited for another school to start somewhere. As a Pratt student, don't wait for someone to do something, because we possess the potential to initiate a change.

*“All of these initiatives might be a small drop in a bucket, but the drops add. Likewise, the actions of people exert a cascading effect. Change does not happen in theory. We thought we needed to implement changes in our sphere of action and work as much as we can to generate maximum impact. The exclusive way to achieve that was to start, agree on a set of actions, work, face problems, learn from them, experiment, adapt and do it again differently. Because it is our responsibility to take care of the earth while we are here, so the subsequent generations are not burdened. After all, we have benefited from the actions of the previous generations.”—Dean Bellamkonda on why it was significant to concentrate on GREENgineering now*

**Asha Mallapragada is a graduate student majoring in engineering management.**



# The Future of Data Storage Is Genetic

*DNA-based data storage carries one hundred million times more information per gram than modern disk drives*

**C**ould you imagine having your Spotify playlists stored in DNA? If not, then buckle your seatbelts, because top research scientists in the fields of genetics and computer science have realized DNA's potential as an efficient storage mechanism.

The realization of this seemingly science fiction technology opens the prospect of encoding any and all data, from the government's secret intelligence to your weekly calendar, into DNA strands. With a theoretical storage capacity of 215 petabytes of information per gram (where "peta" represents a mind-boggling  $10^{15}$ ), DNA is on track to become the most compact storage medium ever.

To put things into perspective, the largest hard drives in today's computers are on the order of 0.001 petabytes, but weigh rough-

ly 500 times as much as DNA. That makes DNA one hundred million times better than your disk drive in terms of storage capacity.

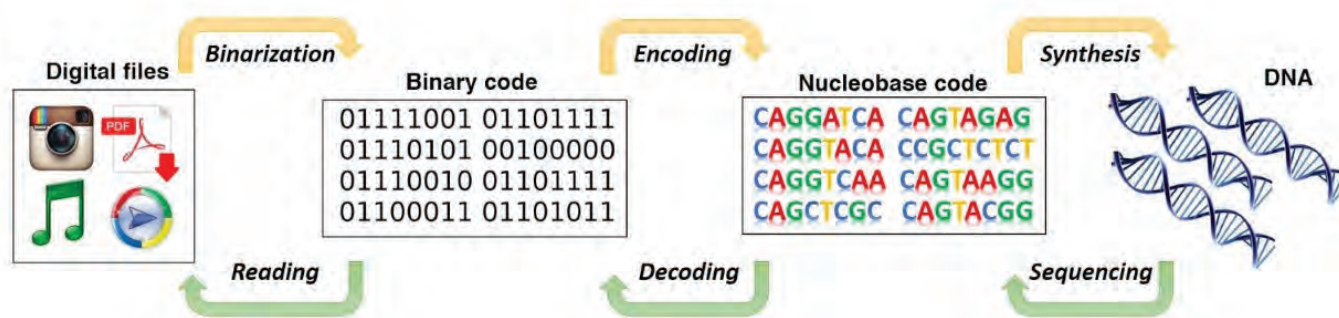
The first notable use of DNA as storage was in 1988 for a novelty artistic collaboration. Avant-garde artist and biological researcher Joe Davis worked with genetics researchers at Harvard and the University of California to store 35 bits of data encoded into the shape of an ancient Germanic rune via DNA.

Today, researchers at Microsoft and the University of Washington have built the world's first automated system that can read and write to DNA. The MIT-based startup CATALOG has reportedly been able to store the entire repository of English-language Wikipedia pages in a small vial of DNA. Adding to these impressive achievements is



the fact that the storage error rates associated with these projects is already on par or better than currently mass-produced means of storage such as hard disk drives or solid-state drives.

being done here at Duke and across the globe. In Professor Benjamin C. Lee's Systems Architecture Integration Laboratory, where I have performed research over the past couple years, the research impact of a new storage technol-



However, these astounding breakthroughs haven't come without challenges. Despite DNA's optimal storage capacity, it has been remarkably hard to take advantage of its full potential. Researchers are still in the developmental stage, striving to reach the optimal 1.8 bits of storage per nucleotide.

Naturally, DNA is part of a living organism, so using it as a storage medium outside of a living system comes with difficulties. In nature, DNA is continually replicated in living organisms and has a high probability of eventually mutating in the genome. Interestingly enough, the DNA used in all of these experiments was completely synthetic and designed to hold information using codes very dissimilar to those in living organisms.

The cost of DNA storage technology, unfortunately, remains prohibitive. As long as this remains the case, DNA technology will not be found on the market. However, researchers around the globe are working to reduce the cost so that the technology can one day be introduced to the global market.

As a current Duke researcher in the field of computing, the advent of such a radically new storage mechanism would greatly affect work

ogy would be enormous.

New research would endeavor to spell out the specific characteristics of how exactly a DNA drive would be read from and written to, as well as how a DNA hard drive might integrate with the common components we use for computer systems today. The prospect of DNA hard drives immediately introduces a multitude of questions with regards to computer systems: How do we ensure that data on a DNA hard drive would be kept secure? What is the most effective way to interface with a DNA hard drive? Can existing mechanisms be properly adapted to handle communication with one of these drives?

Humanity has entered the information age and is producing data at rates never seen before in history. New technologies are needed in order to preserve all of this data. This is the motivation behind gearing up to use DNA as a storage medium. Although there is currently no way for you to download games to a DNA-based hard drive, there almost certainly will be in the near future! ■

**Ryan Piersma is a senior studying electrical engineering and computer science.**

ABOVE: This picture shows the process of how data can be converted from typical file formats to strands of DNA, and back again.

# Classnotes

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## 1950s

**Clayton T. Hardon E'54** just retired two years ago and moved into a retirement-type home and met a few other Duke retirees. Life is good!

**William D. Beck, Jr. E'56** wife, Willette T. Beck, passed away on January 19, 2019.

## 1960s

**Roger D. Crum E'60** recently retired from professional service after serving as City Manager of Spokane, Washington and Evanston, Illinois. He also spent 30 years as an adjunct faculty of Eastern Washington University and as a management consultant and mediator for a Farm Service Agency.

**John A. Wanklyn E'64** is still practicing engineering in the Bahamas while living in Delray Beach, Florida. John spends a lot of time in Dublin, Ireland and Chicago where two of his children now live. He is very proud of his oldest grandchild who is studying Chinese and Marine Biology.

## 1970s

**Ervin H. Kelman E'72** retired in January after 43 years in healthcare, even though the BME program appears to have progressed at least by an order of magnitude since he graduated in the first edition. He feels that Duke prepared him well for whatever he chose to do, which began with managing clinical medical technology and ended with medical IT security.

## 1990s

**James W. Haydorn E'91** was named Freese and Nichols Treatment Discipline Leader for Southeast U.S. Markets.

**Henry F. Butehorn III E'94** was elected to the Medical University of South Carolina Board of Trustees by the South Carolina Legislature May 2019 to represent the 4<sup>th</sup> Congressional District.

**Steven W. Hunter E'97, G'97** retired from IBM as an IBM Fellow in 2018. He was recently selected for the NC State University ECE Hall of Fame.

**David E. Dolby E'99** is an investor and philanthropist based in San Francisco and focused on science, technology and media. Specifically, he is the managing director of Dolby Family Ventures, where he specializes in accelerating the path to a cure for Alzheimer's disease. This is in addition to roles as director of Dolby Laboratories, director of Cogstate Limited, and CFO of the Ray and Dagmar Dolby Family Fund. He also directly manages a portfolio of more than 40 venture investments ranging across internet technology, semiconductors, aerospace, Alzheimer's drug discovery, cognitive health, medical diagnostics, security and cryptography, 3D data and 3D printing, independent film impact investments, and consumer products. Dolby is a graduate of Duke University where he earned a Bachelor

of Science in engineering (civil engineering). He earned his MBA from Stanford University. Dolby represents the family on a number of philanthropic and business initiatives that honor the legacy of his late father, Ray Dolby. David joined the Salk Institute Board of Trustees, which comprises proven leaders from global business and nonprofit sectors in order to leverage their expertise and perspective as the Institute continues its important work. These individuals are committed to science, innovation, high-quality research and supporting the Institute's mission. Trustees are also charged with monitoring Institute operations to ensure the organization fulfills its scientific and training efforts while operating in a financially responsible manner.

## 2000s

**Vamsee K. Pamula G'01** is cofounder and president of Baebies, which focuses on developing inexpensive and accessible newborn screening and pediatric diagnostic products. Last March, he was named the first entrepreneur-in-residence in the Department of Electrical and Computer Engineering at the Pratt School of Engineering. In that role, he works with students and faculty to identify ideas that can be translated to products for societal benefits. In 2003, Pamula cofounded Advanced Liquid Logic (ALL) and served as its chief technology officer. ALL was based on the solution-

digital microfluidics technology he was working on at the time as a Duke postdoc in Professor Richard Fair's lab. The lab-on-a-chip company grew to 90 employees and was acquired by Illumina in 2013 for \$94 million. On the day they sold ALL, Vamsee and Richard West, another Duke alumnus who was one of the ALL cofounders, gave birth to a second company-Baebies. The startup uses digital microfluidics and other technologies to provide rapid testing for rare diseases in newborns, allowing doctors to intervene more quickly. The company has developed a platform that screens newborns for lysosomal storage disorders and is working on another tool that uses one drop of blood to rapidly test for life threatening conditions. It has raised nearly \$19 million in its latest funding round, after raising nearly \$13 million in 2018. Pamula serves as a principal investigator on several projects funded by the National Institutes of Health and is a peer reviewer for many journals and for the NIH. He holds more than 420 issued and pending patent applications and has delivered numerous talks on microfluidics, published more than 60 articles, and authored a book and five books chapters.

**Lisa R. Betz E'02** was promoted to senior associate with professional services firm Dewberry in Fairfax, Virginia. Lisa is a senior project



manager with the site/civil group in the Baltimore office.

**John R. Means E'02** and E. Rebecca Ballard T'04 welcomed daughter, Lillian Grace Ballard-Means, on October 24, 2019.

**Lauren R. Hasson E'04** is featured in the Medium article "Women Who Tech Are Dangerous."

## 2010s

**William G. Patrick E'10** and **Matthew A. Ball E'10** established a new lab that brews microbes to create makeup and medicines.

**Karim S. Khalil E'12** and Elizabeth E. Boxberger T'13 married on June 29, 2018.

**John R. Jamieson III E'13** and **Nicole E. Rothfusz E'11** got married in August 2019. They met and began dating while at Duke.

**Constandi J. Shami E'13, G'14** and his wife, Adrienne Niederriter Shami T'13, welcomed their first child and baby girl, Leonora Annalise Shami, on April 26, 2019. She was born at 11:47 a.m. at 6 lbs. 10 oz. and 20.5 inches long. Mom, baby and dad are all doing well and embracing the chaos with their families!

**Stephen L. Page E'17** recently joined Key Tech as an Electrical Engineer. Originally from Rochester, New York, Stephen graduated from Duke University and received B.S. degrees in Electrical and Biomedical Engineering. Outside of work,

Stephen loves to stay active with a range of activities including skiing, backpacking, traveling, dabbling with the guitar, and he's always hoop dreaming.

**Ivonna N. Dumanyan E'18** and fellow Dukie, Gabrielle M. Levac T'14, both former Duke athletes, developed wearable tech to boost injury recovery and prevention. ■

# InMemory

**William "Bill" Marion Hardy E'43**, author of the Snow Camp outdoor drama "The Sword of Peace" and a central figure in North Carolina outdoor dramas, died January 2, 2020 at the Dubose Medical Center in Chapel Hill. He was 96. Hardy taught 1963-1990 in UNC-Chapel Hill's Department of Radio, Television and Motion Pictures. His wife of more than 50 years, the late Martha Nell Hardy, was an award-winning actress who taught in, and was chair of, UNC-CH's Communications Department. Hardy was a larger-than-life figure to his close friends and family. He worked frequently with the late James Wilson, co-founder of the Snow Camp theater. Hardy was born in Norfolk, Virginia, on March 30, 1922, and graduated from Duke University's Pratt School of Engineering in 1943. During World War II, he was a lieutenant on the submarine U.S.S. Billfish when it was engulfed in a tidal wave from the atomic bomb dropped on Nagasaki. After the war, Hardy taught engineering at Duke until he changed professions and got a master's degree in drama at UNC-CH. He then taught drama at Texas Western University in El Paso and Purdue University in West Lafayette, Indiana. In 1963, he returned to UNC-CH as a professor. Hardy was production director 1968-1999 for the summer outdoor drama

“Unto These Hills” in Cherokee, and also was general manager of “The Lost Colony” and “Horn in the West.” Hardy’s own play, “The Sword of Peace,” about Quaker involvement in the American Revolution, opened at the Snow Camp Outdoor Theatre in 1974 and was performed every summer until 2016. Hardy also wrote eight published novels. “Wolfpack” and “U.S.S. Mudskipper” were inspired by his wartime submarine service. “A Time of Killing” was adapted into a television movie starring George C. Scott. Hardy’s personal favorite was “The Jubjub Bird,” a satirical comic story set during 1960s civil rights unrest in a Southern university town similar to Chapel Hill. Hardy retired from teaching in 1990, but continued to act and direct professionally, notably at Theatre in the Square in Marietta, Georgia, where he won an award for his performance as Willy Loman in “Death of a Salesman.” Among his other awards, Hardy received the Marian A. Smith Distinguished Career Award from the N.C. Theatre Conference in 1991, and the Institute of Outdoor Drama’s Mark Sumner Award for his lifetime contributions to the field in 2002. Hardy was once asked whether he had any hobbies. “Not really,” he said. “The theater was my profession, and I had the good fortune to thoroughly enjoy my work. I didn’t need any other hobby.” ■

**Harmon Thomas “Tom” Gnuse E’60** was born in Huntsville, Alabama on January 19, 1938, the eldest child of the late Harmon Henry Gnuse Jr. and Donna Davis Gnuse. Tom Spent most of his childhood in Franklin, North Carolina, a small town in the Smoky Mountains. Tom received an undergraduate degree in engineering from Duke University, where he was a member of ROTC, and a Master’s in Engineering from UCLA. He served three years as an officer in the Air Force, stationed at Wright Patterson AFB in Dayton, Ohio, where he met Jeanne Pflaum, whom he married in 1965. After leaving the Air Force, he earned an MBA from Harvard Business School and began a 25-year career in the emerging computer industry, first as a manager at NCR and later as a venture capitalist. The Gnuse family moved to New Canaan in 1983. In 1993, after the youngest of their three children left for college, he and Jeanne began a new business venture together founding HTG Investment Advisors Inc., a personal wealth management firm based in New Canaan. The goal of the firm was to help families achieve their individual dreams through smarter money management. For clients, this often meant giving them the flexibility to pursue their passion upon retirement, but for Tom, running the firm and helping clients became his passion— one he enjoyed for more than 25 years, well into typical retirement age. He stepped down from day-to-day management of the firm a few months prior to his 80<sup>th</sup> birthday. Another great passion of Tom’s was supporting Jeanne as both a singer and a patron of the arts. This shared love led to tremendous appreciation of the fine arts in nearby New York City and travel to enjoy performing arts around the world. They had just returned from a much-enjoyed trip to the International Music Festival in Cartagena, Columbia. Tom was also a dedicated father who was always available to share his wisdom on how to live a life with meaning and purpose. Tom also believed deeply in giving back to his community. He sat on the board of directors of the United Way of New Canaan, the New Canaan Community Foundation, and Staying Put in New Canaan. In addition, he was active locally in the Exchange Club, the Men’s Club, the Country Club of New Canaan and St Mark’s Church. While Tom had many philanthropic interests, the one dearest to his heart was the Tourette Association. Tom began experiencing uncomfortable motor and vocal tics caused by this neurodevelopmental disorder as a young boy but was not properly diagnosed until his 40s. This sense of difference was part of what led him to become such an empathetic and caring person. He was grateful to be able to support both funding for research on Tourette syndrome and programs such as the Tourette Youth Ambassador Program, which helps young people learn skills, ensuring they won’t be held back in life by a tic. The Tourette Association of America recognized Tom and his family for their lifetime philanthropy at their annual gala in 2016. ■

**Dr. Frank Thomas “Tom” Wooten III E’57, G’64** of Manteo, North Carolina died at home on February 11, 2019. He was born September 24, 1935 in Chadbourn, NC. Tom was the son of the late Katherine McRae Wooten and Frank Thomas Wooten, Jr. Tom graduated from Chadbourn High School in 1952 and from the McCallie School a year later. He graduated from Duke University with a Bachelor of Science in Electrical Engineering in 1957. He served as an electrical officer in the U.S. Navy from 1957 to 1959, before returning to Duke to pursue his PhD, which he received in 1963. In 1966, Dr. Wooten joined the Research Triangle Institute as an engineer in the solid-state laboratory. In 1983, he became vice-president of RTI, then president in 1989. Over the course of his career, he owned three patents in semiconductor devices. Dr. Wooten retired in 1998 to pursue his passion for traveling and fishing on his boat along the Outer Banks. ■

**Edward Towson Moore G’63**, beloved husband, father, brother, uncle, neighbor and friend, passed away peacefully in his sleep in the early morning hours of January 21, 2020 in Durham, North Carolina after a short illness. In his final weeks, he was surrounded by his family and supported both near and far by an extensive network of friends and relatives. Towson Moore has a heart of gold that few others in this world could match and was blessed to live an



amazing life, full of wonder and love. Many times, over the years, especially after the births of his grandchildren, he would stop and marvel at his many blessings in life, telling his family how incredibly lucky he was. Born February 26, 1937 in Wytheville, Virginia, to Robert Brent Moore and Jane Oewel Moore, he was a Virginia farm boy at heart, but at a young age developed a passion for electricity which never left him. He went to Virginia Tech and was a proud member of the Corp of Cadets and a high jumper on the varsity track team. He was an Army veteran, serving at Aberdeen Proving Grounds. He attended Duke University graduate school, where, under the tutelage of Dr. Tom Wilson, he became Duke University's first recipient of a PhD in Electrical Engineering. Following graduate school, he embarked on a new adventure with his college professor, Dr. Wilson, together founding Wilmore Electronics, Inc. in 1963. Towson spent the rest of his career devoting his time and creative energy to the flourishing of Wilmore. He found great joy in designing and developing electrical power equipment that now provides reliable service in the energy, utility, vehicular, communications and railroad industries in both the United States and in more than 20 foreign countries. The Wilmore community was like a second family for him, and he cared deeply about everyone there. The creation of Wilmore brought him decades of purpose and a way to make a difference in society and to better the lives of others. He served on the board of the regional Goodwill Industries, serving as the Chairman of its Board of Directors, and was a member of the Board of Trustees for Durham Technical Community College. He also served on Durham Tech's Foundation Board and on the Industrial Advisory Committee to its Electronics Technology Program. He was inducted into Virginia Tech's Academy of Engineering Excellence in 2005. Happily for all of us, when he was in graduate school, the Librarian

# InMemory

of the Engineering Library introduced Towson to the love of his life, Linda Lunsford, an English teacher at Durham High School and later at Northern High School. Married in 1965, they had two children, and for 54 years have led a life of goodness, steadfastness and joy, including many trips saltwater fishing, skiing at Lake

Gaston, hiking the wilds of Montana, playing tennis and golf, and enjoying Sunday dinners with their family. His kindness and smile will be forever missed, but we are so grateful for the decades of boundless love, the life lessons he imparted and the amazing adventures we shared. ■

**Gregory D. Sabin E'92**, age 49, of Reno, Nevada, passed away on April 12, 2019.

Greg had a rare, authentic kindness that was painstaking to all that met him. He believed in three square meals a day, God as our Almighty Maker, the therapeutic value of a warm bath, being a good steward of the earth, that Livonia Rock is its own genre, the simplest of special moments should be celebrated, and that the world needs ditch diggers too. Greg incessantly discussed "Mt. Rushmore" lists on a variety of topics, visited museums of anything, drove across the U.S. at least four times, and had a true passion for learning things he knew nothing about, though there were very few topics that he truly knew nothing about. Myriad interests, amazing intellect, child-like gentleness, dedication to his mission at hand, quick wit, humility, and genuine concern for others made Greg the extraordinary person he was. Born in Livonia, Michigan, January 16, 1970, to Gary Philip and Constance Kay Sabin, Greg was a paperboy for the Detroit News and a little league baseball umpire. At Livonia Churchill High School, he ran track, played in the orchestra and was drum major of the marching band before graduating with the highest honors. He continued his education at Duke University, where he played in the basketball band, was drum major in the marching band and was the Blue Devil mascot during the sweet sixteen games at the Pontiac Silverdome. Greg graduated from Duke in 1992 with a BSE in biomedical and electrical engineering. Greg was a gifted intellect and pursued education as a way of life. He simply loved to learn. He obtained two master's degrees from Arizona State University, receiving his MSE in 1995 and his MBA in 1998. Besides earning his JD from Santa Clara University in 2015, Greg also completed informal studies in ceramics, master gardening and astronomy. He found acrylic and plain air pastel painting to be especially rewarding and several original "Greg Sabins" adorn the walls of friends and loved ones. Professionally, he worked in engineering, business development, mergers and acquisitions, teaching, and was a judge pro tem. Greg had extraordinary talent and appreciation for art and music but was also very gifted technically and was awarded 10 U.S. patents. Greg visited home venues in all but three Major League Baseball cities, and visited, camped and hiked in nearly every one of the U.S. National Parks. Greg loved to travel, dine, cook and play tennis, and he was a sports fanatic. Over his lifetime, he lived in Michigan, North Carolina, New York, Pennsylvania, Arizona, California, Singapore, France and Nevada, and visited many countries overseas. He had recently found his true calling in teaching engineering and natural resources at Truckee Meadows Community College. ■



## Dear Duke Engineering Alumni:

In a lot of ways, 2019 was a year of tremendous progress for Duke Engineering—record-setting gifts, amazing progress on the transformational new building and many other great accomplishments. Your Engineering Alumni Council is also happy to share some exciting progress in our work to continue engaging alumni with Pratt and our students.

### Mentoring

I wrote last year about the new mentoring program we had recently launched, connecting students with alumni based on common interests. Feedback from the first year was extremely positive, and I am thrilled to report that interest in the program has increased more than three-fold and we now have over 500 students and alumni participating. Thank you to everyone who is participating! We look forward to receiving your feedback so we can continue to improve the program moving forward. The EAC is already studying opportunities to expand to a wider array of mentoring options which could have a broader appeal to all students and alumni.

### TAPA Talks

I also want to give a special shout-out to engineering alums Bob Wescott E'90 and Danal Blessis E'82 for their work establishing and growing our Triangle Area Pratt Alumni (TAPA) Group. If you're a local engineering alumni, the TAPA events are not to be missed! In particular, this summer they organized a tremendous "TAPA Talks" event which featured short, TED-style talks from five faculty members who were also alumni. The talks addressed topics ranging from technical research to new changes in the Pratt curriculum to cutting edge technology. The event was so compelling and well attended that it was repeated again at Family Weekend. A second TAPA Talks event with new speakers is in the works, and the EAC is exploring opportunities to have the event live-streamed in other regions so alumni outside of the Triangle can participate as well.

### Other Areas of Interest

The EAC is continuing to work with faculty and staff to identify other unique ways for alumni to engage with the school. These include opportunities to participate in panel discussions for student groups or guest lecturing at a class for alumni who are making a trip to campus. For alumni who are not able to come back to campus, we are looking at opportunities for alumni to share real-world design problems that could be used in engineering design courses. For example, a colleague of mine and fellow alum, Evan Reilly E'16, submitted a design challenge around access limitations for scissor lifts used in construction, including those being used in the construction of the new Engineering Building. A team of students in the First Year Design class devised a clever solution to the problem, which they were able to share with Evan and our team working on the new Engineering Building. Real work applications like this and the interaction with our alumni in industry really serve to enhance the new design curriculum and greatly benefit our current students.

Thank you again to all of you who are already giving back to Duke with your time, talent and treasure. If you have any questions about these, or other opportunities to get involved, please don't hesitate to contact Pam Hanson at [Pamela.Hanson@duke.edu](mailto:Pamela.Hanson@duke.edu).

**Will Senner, E'06, X'06**

**President, Engineering Alumni Council**



# The Lord **100** Challenge

**F**or almost 100 years, Duke University has remained committed to recruiting the best and brightest students while guaranteeing the financial resources for them to attend. This steadfast commitment has created a diverse and dynamic undergraduate body, thanks to a wide range of student skills, perspectives and backgrounds. That means a richer classroom and campus experience for everyone at the university.

This bedrock principle is the right thing for Duke to do, but it is never easy. Financial aid is a

remarkable monetary burden: More than 40 percent of undergraduates receive need-based aid. In the past 15 years, the cost of supporting these scholarships rose from \$43 million to \$133.5 million—a 210 percent increase. Simply put, Duke relies on fundraising to meet this ever-increasing demand.

In November 2019, a four decade-long relationship with the LORD Foundation led to a historic \$261 million distribution to Duke University after the company's acquisition by Parker Hannifin Corporation. It is the largest single outside contribution to the university since its founding in 1924. The resulting income from that endowment will be allocated to several strategic priorities, including financial aid for Duke undergraduate students.

Thanks to this remarkable gift, Duke has set aside \$50 million of those funds for a financial aid challenge, providing donors a special opportunity to double the impact of their contributions. By matching certain gifts dollar for dollar, the Lord 100 Challenge is looking to turn that \$50 million into \$100 million or more for unrestricted, need-based, undergraduate scholarships.

Here's everything you need to know about how to take advantage of this rare opportunity.

- Lord 100 Challenge funds will match financial aid endowment commitments of \$500,000 to \$2 million, doubling each gift's impact
- Gifts must establish new endowments or be added to existing endowments benefiting undergraduates enrolled in Trinity College of Arts & Sciences, Pratt School of Engineering, Sanford School of Public Policy or Nicholas School of the Environment
- All gift pledges must be paid within four years
- Qualifying gifts may include grants from donor advised funds, private foundations and corporate matching gifts. However, deferred planned gifts such as bequests, trusts and annuities are not eligible for the match.

Your support now for undergraduate financial aid will help ensure that Duke lives up to its foundational commitment and the university competes successfully with our top-10 peer institutions for the finest students. For more information about joining the Lord 100 Challenge, please contact our development team.

**—Pratt School of Engineering  
Development & Alumni Affairs**

## **Jim Ruth**

**Associate Dean and Director of Development**  
[james.ruth@duke.edu](mailto:james.ruth@duke.edu)

Jim graduated as a mechanical engineer from the Pratt School of Engineering in 2001, and loved Duke Engineering so much he returned to Pratt almost 10 years ago. Jim focuses his time on strategic direction for the development team and works closely with the dean and faculty leaders across the school on key initiatives. He traveled extensively in his previous major gift role for Pratt and now manages principal gift efforts and major gift activity in Southern California.



## **Robert "Judge" Carr**

**Senior Associate Dean for Development and Alumni Relations**  
[judge.carr@duke.edu](mailto:judge.carr@duke.edu)

A 1971 Duke civil engineering graduate, Judge is an institution in and of himself on the Duke Engineering development team. His commitment to personalized attention for all those who have given back to the school and his knowledge of the broad Pratt alumni base have been the driving success behind Pratt's fundraising efforts for over 25 years. Judge is primarily responsible for driving ambition and success in the Annual Fund as well as principal and major gift fundraising rooted in relationships with alumni that cross generations.



## **Malinda Whitson**

**Senior Director of Major Gifts**  
[malinda.whitson@duke.edu](mailto:malinda.whitson@duke.edu)

Malinda joined the Duke Engineering development team in September 2017 after nearly 10 years as the senior regional development director for Duke in the Bay Area of California. Malinda was inspired to join Pratt by seeing all the impactful and inspiring research being done by Pratt faculty and the profound ability of Pratt students to impact society in meaningful ways. Malinda travels extensively and supports major gift activity across the country with focus on San Francisco, Seattle, Boston, Atlanta, and Washington.



## **J. Philip Duhart**

**Associate Director of Major Gifts**  
[philip.duhart@duke.edu](mailto:philip.duhart@duke.edu)

Philip arrived at Duke Engineering in June 2019. He had previously worked in various roles around the Duke campus since 2006, ranging from working and living in the residence halls, to developing campus leadership programs, to re-engaging alumni in the philanthropic life of the university. He's excited about the opportunity to utilize these experiences in support of Pratt's strategic vision. Philip travels in support of major gift activity in New York, Chicago, Texas, Philadelphia, North Carolina and Colorado.

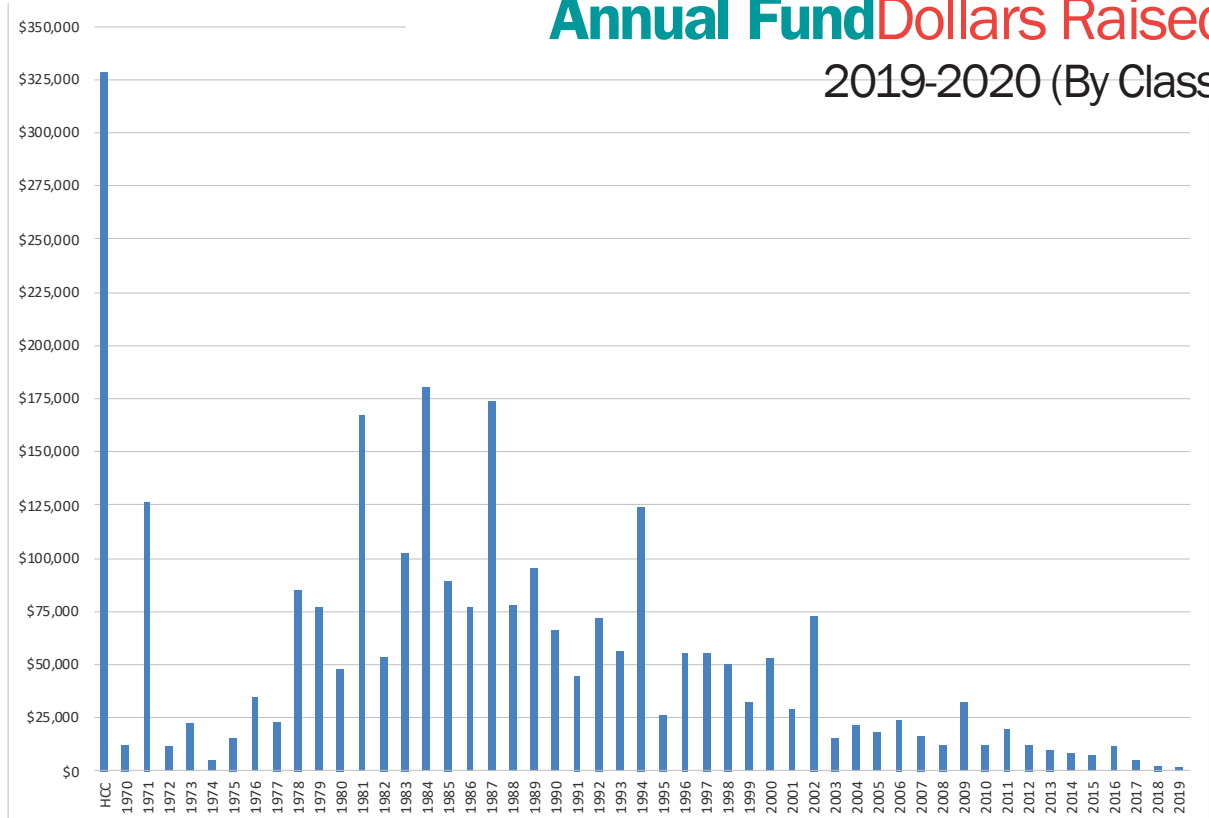


# Annual Fund Campaign

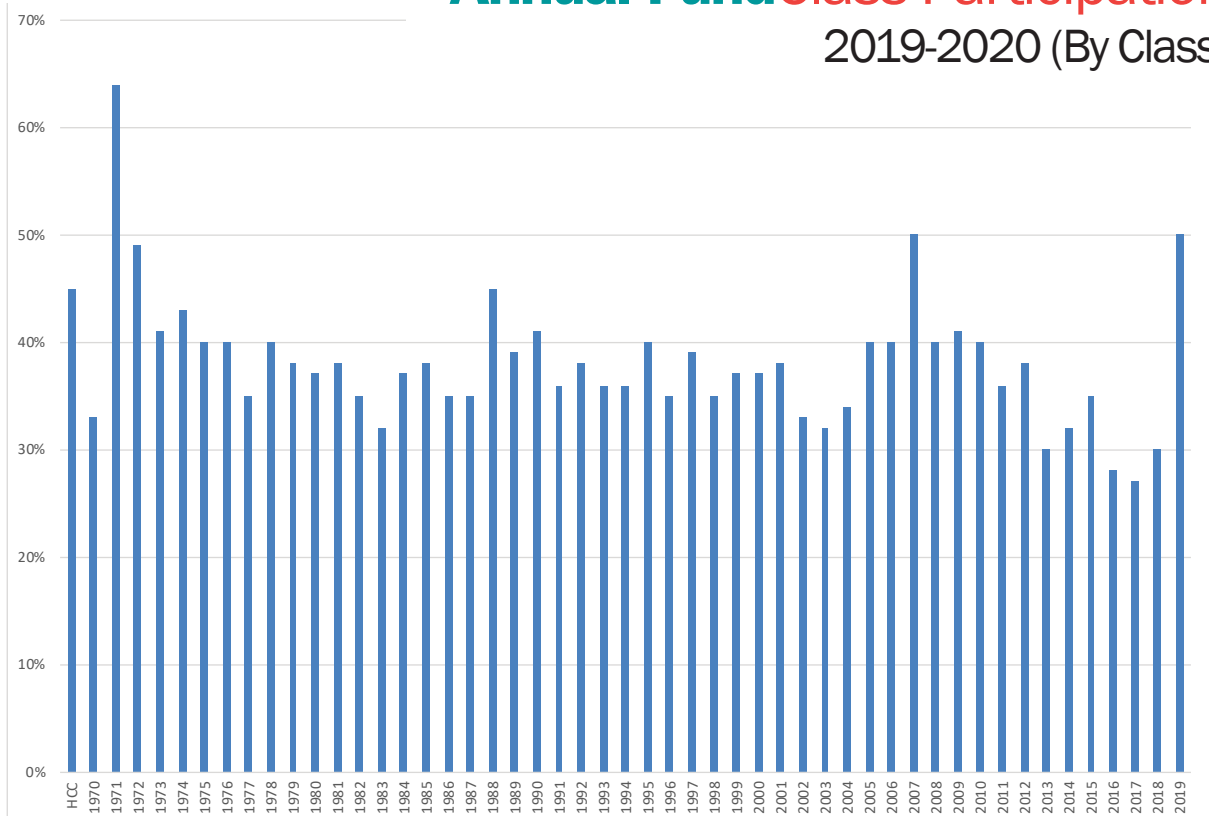
| CLASS               | GOAL 2020-2021 | Dollars Raised 2018-2019 | PARTICIPATION 2018-2019 | % Participation Goal 2020-2021 |
|---------------------|----------------|--------------------------|-------------------------|--------------------------------|
| HCC                 | \$330,000      | \$328,502                | 43%                     | 45%                            |
| 1970                | \$12,500       | \$12,025                 | 29%                     | 33%                            |
| 1971                | \$135,000      | \$126,192                | 63%                     | 64%                            |
| 1972                | \$15,000       | \$11,605                 | 37%                     | 49%                            |
| 1973                | \$22,000       | \$21,900                 | 39%                     | 41%                            |
| 1974                | \$6,800        | \$5,110                  | 41%                     | 43%                            |
| 1975                | \$17,000       | \$15,436                 | 34%                     | 40%                            |
| 1976                | \$36,000       | \$34,250                 | 34%                     | 40%                            |
| 1977                | \$25,000       | \$23,149                 | 26%                     | 35%                            |
| 1978                | \$86,000       | \$85,151                 | 34%                     | 40%                            |
| 1979                | \$77,000       | \$76,928                 | 36%                     | 38%                            |
| 1980                | \$50,000       | \$47,700                 | 33%                     | 37%                            |
| 1981                | \$168,000      | \$167,066                | 32%                     | 38%                            |
| 1982                | \$55,000       | \$53,722                 | 29%                     | 35%                            |
| 1983                | \$105,000      | \$102,314                | 22%                     | 32%                            |
| 1984                | \$181,000      | \$180,432                | 34%                     | 37%                            |
| 1985                | \$100,000      | \$89,248                 | 33%                     | 38%                            |
| 1986                | \$77,000       | \$76,644                 | 31%                     | 35%                            |
| 1987                | \$175,000      | \$173,780                | 32%                     | 35%                            |
| 1988                | \$78,000       | \$77,452                 | 34%                     | 45%                            |
| 1989                | \$96,000       | \$95,123                 | 36%                     | 39%                            |
| 1990                | \$67,000       | \$65,999                 | 35%                     | 41%                            |
| 1991                | \$45,000       | \$44,176                 | 34%                     | 36%                            |
| 1992                | \$73,000       | \$72,156                 | 35%                     | 38%                            |
| 1993                | \$56,000       | \$55,906                 | 33%                     | 36%                            |
| 1994                | \$125,000      | \$124,429                | 34%                     | 36%                            |
| 1995                | \$30,000       | \$26,627                 | 32%                     | 40%                            |
| 1996                | \$56,000       | \$55,516                 | 36%                     | 35%                            |
| 1997                | \$55,000       | \$54,954                 | 30%                     | 39%                            |
| 1998                | \$50,000       | \$49,997                 | 30%                     | 35%                            |
| 1999                | \$32,000       | \$31,889                 | 35%                     | 37%                            |
| 2000                | \$54,000       | \$53,046                 | 32%                     | 37%                            |
| 2001                | \$29,000       | \$28,746                 | 35%                     | 38%                            |
| 2002                | \$73,000       | \$72,866                 | 29%                     | 33%                            |
| 2003                | \$16,000       | \$15,485                 | 29%                     | 32%                            |
| 2004                | \$22,000       | \$21,778                 | 31%                     | 34%                            |
| 2005                | \$19,000       | \$17,972                 | 35%                     | 40%                            |
| 2006                | \$24,000       | \$23,720                 | 37%                     | 40%                            |
| 2007                | \$17,000       | \$16,715                 | 41%                     | 50%                            |
| 2008                | \$135,000      | \$12,668                 | 35%                     | 40%                            |
| 2009                | \$32,000       | \$31,753                 | 38%                     | 41%                            |
| 2010                | \$14,500       | \$12,674                 | 36%                     | 40%                            |
| 2011                | \$20,000       | \$19,782                 | 28%                     | 36%                            |
| 2012                | \$13,000       | \$12,601                 | 33%                     | 38%                            |
| 2013                | \$11,000       | \$10,194                 | 25%                     | 30%                            |
| 2014                | \$8,000        | \$7,762                  | 26%                     | 32%                            |
| 2015                | \$8,000        | \$7,728                  | 38%                     | 35%                            |
| 2016                | \$12,000       | \$11,833                 | 24%                     | 28%                            |
| 2017                | \$6,000        | \$5,140                  | 21%                     | 27%                            |
| 2018                | \$2,300        | \$2,186                  | 19%                     | 30%                            |
| 2019                | \$1,200        | \$1,155                  | 56%                     | 50%                            |
| Alumni              | \$2,953,300    | \$2,771,182              |                         |                                |
| Parents and Friends | \$946,700      | \$995,211                |                         |                                |
| TOTAL               | \$3,900,000    | \$3,766,393              |                         |                                |



## Annual Fund Dollars Raised 2019-2020 (By Class)



## Annual Fund Class Participation 2019-2020 (By Class)



# Honor Roll 2018-19

## Recognizing Leadership Giving

Each year, leadership contributions represent more than 75 percent of the Annual Fund's cash total. These gifts provide the university with flexible resources to support a wide range of important needs.

In recognition of these generous donors, Duke has established

a number of leadership gift clubs. Membership is renewable annually and is based on Annual Fund gifts made or facilitated by the individual and his/her spouse. Corporate matching gifts count toward membership if received or verified within the fiscal year.

## Duke Annual Fund Leadership Giving Societies

### President's Society

- Executive Cabinet \$100,000+
- Cabinet Member \$50,000-\$99,999
- Executive Council \$25,000-\$49,999
- Council \$10,000-\$24,999

### Washington Duke Society

- Partner \$5,000-\$9,999
- Fellow \$2,500-\$4,999
- Member \$1,000-\$2,499

### Young Alumni Leadership Society

- \$500-\$999 for undergraduates 5-9 years out
- \$250-\$999 for undergraduates 1-4 years out

### Student Leadership Society

- \$100+ for current undergraduate students

### President's Society Executive Cabinet \$100,000+

- 1971 Mr. John T. Chambers #^\*
- 1981 Ms. Martha Lee Monserrate #^
- 1994 Mr. Michael James Bingle #^

#### Parents and Friends

- Mr. Anthony and Mrs. Mary Barra P'19, P'21 #
- Mrs. Eryn Ament Bingle #^
- Mrs. Constance Elaine Chambers #^
- Mr. Herbert Hardinge McDade III T'81 #^

### President's Society Cabinet \$50,000 - \$99,999

- 1962 Dr. William Walter McCutchen, Jr. #^\*
- 1981 Mr. Jeffrey N. Vinik #^\*
- 1987 Mr. Lawrence D. Lenihan, Jr. #^

#### Parents and Friends

- Mrs. Irene Lilly McCutchen WC'62 #^\*
- Ms. Katherine Durant and Mr. Gordon Sondland P'20, P'21 #^
- Mrs. Laurette and Mr. Seymour Sternberg P'08 #^
- Estate of Charles W. Treat
- Mrs. Penny Vinik #^\* P'13

### President's Society Executive Council \$25,000 - \$49,999

- 1963 Mr. Charles L. Grossman #
- 1966 Mr. Thomas E. Harrington #\*
- 1967 Mr. Jerry C. Wilkinson #^\*
- 1973 Mr. William J. Hanenberg #
- 1980 Mr. James D. Heerwagen #^
- Mr. David S. Taylor #
- Mr. Eric James Schiffer #
- 1984 Mr. Kenneth Thomas Schiciano #^\*
- 1987 Mr. George Nathaniel Mattson II #^
- 1988 Mr. Thomas Alan Burger Jr. #
- 1992 Dr. Robert James Stets, Jr. #^
- 1996 Mr. Joshua Brant Skudlarick

### Parents and Friends

- Mr. David and Mrs. Jeanine Eklund P'18, P'22 #
- Mr. Jeffrey and Mrs. Martha Powers Gendell A.B.'81, P'16, 1982 P'19, P'20 #^\*
- Mrs. Marie C. Grossman A.B.'63, P'97 #
- Mrs. Patricia Lister Hanenberg P'04 #
- Mrs. Susan Harrington #^\*
- Mrs. Carol M. Kaganov #^\*
- Ms. Lena Lee
- Mrs. Holly Melissa Laningham Mattson #\*
- Mr. Michael and Mrs. Michelle Paulik P'21, P'23
- Mr. Michael and Mrs. Denise Salvino P'20
- Mrs. Elizabeth Pixley Schiciano P'21 #^\*
- Mrs. Karen Schiffer #
- Ms. Hilary A. Schneider #^
- Mrs. Susan G. Simon #^
- Mrs. Anna Oates Skudlarick
- Estate of Ralph F. Spinnler #
- Mrs. Marsha Hellard Taylor P'10, P'14, P'16 #
- Mrs. Andrea and Mr. John David Tracy P'19
- Mrs. Beverly Anne Wilkinson P'98, P'00, P'03 #^\*

### President's Society Council \$10,000 - \$24,999

- 1950 Mr. Robert Willis Chapman #
- 1956 Mr. W. John Swartz #^\*
- 1958 Mr. Harold L. Yoh Jr. #^\*
- 1964 Mr. James F. Rabenhorst #^\*
- 1967 Mr. Stephen C. Coley #
- Mr. George H. Crowell #
- 1968 Mr. Donald H. Turnbull #
- 1976 Mr. William A. Hawkins III #^\*
- 1977 Mrs. Janis J. Rehlaender #^\*
- 1978 Mr. Herman Cone III #
- Ms. Alison A. Ives
- 1979 Mr. Nicholas Zaldastani #
- 1980 Mr. Christopher M. Relyea #
- 1981 Mr. Amjad Bseisu #

- Mr. J. Bradford McIlvain #
- Mr. Armando A. Tabernilla
- Mr. Christopher Bertrand Cook #
- Mr. Russell A. Fadel
- Mr. John C. Hausman III
- Mr. Thomas Anthony Natelli #^
- 1983 Mr. David McDowell Bennett #
- Mr. Daniel M. Dickinson #^
- Mr. William James Florence III
- Mr. John Martin McDonald, III #
- Mr. Steven Craig Rosner #
- 1985 Mr. Stephen Ray Bolze #^
- Dr. Michael Joseph Cooney
- 1985 Mr. Nelson Elbert Matthews Jr. #^
- Mr. David Lloyd Pratt #
- Mr. Michael H. Yoh #^\*
- Mr. Dimitri Edward Zarboulas
- 1986 Mr. Scott Jay Arnold #
- Mr. Lewis C. Brewster
- Mr. Alexander L. Dean Jr. #
- 1987 Mr. Steven Floyd Fields #
- Mr. Cameron Harold Fowler #
- Ms. Suzanne M. Gregory #
- Mr. Court Veghte Lorenzini #
- Mr. Michael George Rhodes #^
- Ms. Denise Allen Williams
- 1988 Mr. Thomas Charles Mazzucco Jr. #
- Mr. Joseph Anthony Saldutti, Jr. #
- Mr. Manlio Valdes #
- 1989 Mrs. Susan Green Daniel #
- Mr. Peter John Perrone #
- Mr. Scott Edward Telesz #
- Mr. Robert Rudolph Wahl Jr. #
- 1990 Mr. Alfred W. Mordecai #^
- Mr. Brian Randolph Williams
- 1992 Terry J. Myerson #
- Mrs. Holly Morris Espy #
- 1994 Mr. J. Christopher Dries #





# Honor Roll

Dr. Stacy Stansell Gardner #^  
 Dr. Jeffrey S. McVeigh  
 Mrs. Tanda Shoenfelt Nizialek #  
 Mr. Joseph Croman Peterson, Jr.  
 Mr. Scott Campbell Raney  
 1992 Mr. Mahesh Chandrakant Bhumralkar #  
 Mr. Anish D. Rajparia  
 Mr. Mark B. Williams  
 1993 Mr. Tiberio Richard Alfonsi #  
 Mr. Jeffrey Kenneth Lopez  
 Mr. Brian Alex Pietrewicz #  
 Mr. David N. Buza  
 1994 Mr. Geoffrey R. Erickson  
 Dr. Shiva Sarraf-Yazdi  
 1996 Mr. James K. Henry, Jr. #  
 Mr. Vinay Jaygopal Jayaram #  
 1997 Dr. Varish Goyal  
 Mr. Bharet Malhotra  
 Dr. Bret A. Rogers  
 Mr. Malay Bansi Shah #  
 1999 Mr. David Earl Dolby  
 2000 Mr. Sean Everett Delehanty  
 2001 Mr. Bryn D. Harder  
 2002 Mr. Matthew Quinn Christensen #  
 2004 Mr. Matthew Raubach  
 2006 Mr. Andrew Matamoros Stalneckner  
 2009 Mr. Douglas William Bycoff  
 2017 Mr. Nicholas Naclerio  
**Parents and Friends**  
 Mrs. Karen Rose Alcorn  
 Mrs. Letitia U. Alfonsi A.B.'92, P'23  
 Mrs. Judith L. Anderson P'20, P'21 #  
 Mrs. Lisa Lew Aston A.B.'86, P'17  
 Mrs. Elizabeth Hanna Barton #\*  
 Mrs. Sally Polsfoot Baldwin P'07, P'08 #  
 Mr. and Mrs. D. Theodore Berghorst P'09 #  
 Mr. John W. Bernstein and Ms. Diana Davenport P'15  
 Mrs. Kara Bolwell P'19  
 Mrs. Mary A Brandt  
 Dr. Renier Brentjens #  
 Mrs. Lauren Belle Brockett P'09, P'20 #  
 Mr. Anthony G. Brooks  
 Ms. Bonnie L. Bycoff P'06, P'09 #  
 Mr. Gene A. and Mrs. Susan Carlone P'97  
 Mr. James Michael Carlson P'22  
 Mr. Eric Brian Childs B.S.'01 and  
 Mrs. Tessa Anne Chamberlain  
 Mrs. Elizabeth Young Christensen #  
 Dr. Charlotte Reeves Clark A.B.'79, M.E.M.'83, Ph.D.'07,  
 P'12 #  
 Mrs. Georgia Young Coolidge  
 Mrs. Christine Courtney  
 Mrs. Nancy A. Dabney A.B.'79, P'05  
 Dr. Stephen and Dr. Sherry David P'22  
 Mrs. Karen and Mr. Marc de Saint Phalle A.B.'88  
 Mrs. Joanne Burke Dellaero A.B.'86 #  
 Mrs. Linda Derrick #

Mrs. Stephanie E. Elbers-Donaho A.B.'78, P'08, P'11 #  
 Ms. Caroline Mae Dooley A.B.'95  
 Mrs. Lynn Kendrick Erdman #  
 Mrs. Deborah Steinberg Erickson A.B.'01  
 Mrs. Lina and Mr. Fady Fakhoury P'19  
 Mrs. Tina M. Falker  
 Mrs. Tamara Duncan Free A.B.'93, M.B.A.'99, J.D.'99  
 Mrs. Holly Schorr Beck Freestone #  
 Mrs. Dorisa King Flur B.S.'87, M.B.A.'88  
 Mrs. Patricia Gabriel #  
 Mrs. Annie Lewis J. Garda A.B.'61, P'90, GP'15, GP'18,  
 GP'19 #^\*  
 Mr. Matthew R. Gardner #^  
 Mrs. Joanna M. George  
 Mrs. Nicetas Giordano P'19  
 Mrs. Mansi Agarwal Goyal  
 Mr. Lingyun Gu and Mrs. Yiyi Sheng P'22  
 Mrs. Kimberly Smith Guerster #  
 Mrs. Mary Palmer Harman M.B.A.'98 #  
 Mrs. Nicole Messinger Harder A.B.'00  
 Mrs. Marilyn Agnes Harrison B.S.'71, P'97,  
 P'02, P'06 #\*  
 Mrs. Sara Anne Hawk P'06  
 Mrs. Stephanie Hawley Henry A.B.'96 #  
 Mr. Jesse Hermann  
 Mr. Lofton P. Holder Jr. #  
 Mrs. Eva M. Holland #^  
 Mrs. Sarah Horton #  
 Mrs. Suein L. Hwang  
 Mrs. Mary English Johnson A.B.'59, P'86  
 Mrs. Alison and Dr. Stuart H. Johnston  
 A.B.'88, P'21 #  
 Mrs. Jenny Keh  
 Mrs. Polly Jo Kemler  
 Mrs. Barbara T. Kennedy A.B.'73  
 Mrs. Carol Rogers Kern B.S.N.'64, P'94 #\*  
 Mrs. Nancy Trettis Kirby P'09, P'12  
 Mrs. Ellen A.B.'89 and Mr. Timothy Kollar, P'21 #  
 Dr. Ram S. M.S.'75 and Dr. Nalini R. Krishnan P'09  
 Ms. Helen and Mr. Roger A Krone P'14  
 Mrs. Bettsy Creigh Leib B.S.N.'62, P'93, P'95 #  
 Mrs. Nancy and Mr. Donald A. Lewis P'07, P'10 #  
 Mrs. Guillemette Loisel #  
 Mrs. Lynn Norton P'13 #  
 Mr. Lakshya Madhok A.B.'11  
 Mrs. Sarah and Mr. Garrett J. McAvoy P'20  
 Mrs. Diann W. McCants  
 Mr. Howie McDonell  
 Mrs. Melissa Theis McVeigh A.B.'92  
 Mrs. Tamara Ann Milliken  
 Mrs. Linda Greene Mize #  
 Mrs. Jacqueline Morrison Naclerio, Esq A.B.'83, P'17,  
 P'20 #  
 Mr. Jason C. Nizialek B.S.'91 #  
 Mrs. Sheryl Lynn Olson B.S.'84, and Mr. Robert E. Olson  
 P'17, P'19  
 Mrs. Leslie S. Parran B.S.N.'79, P'07, P'11, P'13

Mrs. Mary and Mr. Gregory Pearlman '19  
 Mr. Robert A. Peloso P'05 #  
 Mrs. Elaine Peterson P'22  
 Mrs. Jennifer Pietrewicz #  
 Mr. Kevin and Mrs. Beth Proudfoot P'22  
 Mrs. Priya Virmani Rajparia  
 Mrs. Melanie Johnson Raubach A.B.'04  
 Ms. Sally-Christine Rodgers #^\*  
 Ms. Julie W. Rogers A.B.'97, J.D.'04  
 Mrs. Jeanne K. Rudiger #  
 Mr. Hooman Sabeti-Rahmati B.S.'87, A.M.'91  
 Dr. John H. Ph.D.'96, M.H.S.'07, M.B.A. '11 and  
 Mrs. Mary R. Sampson M.S.N.'97, P'22  
 Mrs. Margie Sands  
 Mrs. Suman and Mr. Nimish Sanghi P'20  
 Mr. Mark Shickel  
 Mr. Ian Simmons #  
 Mrs. Anne and Mr. Richard Smalling P'19  
 Mrs. Patricia Ann Spearman P'06, P'08, P'11, P'13 #  
 Mrs. Michelle and Mr. Michael B.S.'89 Traylor #  
 Mr. Matthew and Mrs. Beth Trerotola P'21  
 Ms. Karen and Mr. Richard M. Walker P'17, P'19  
 Mrs. Sharon Crutcher Yoh A.B.'83, P'09, P'17 #^\*

## Washington Duke Society Fellow \$2,500 - \$4,999

1956 Mr. George Jones Evans #  
 1957 Dr. G. Roy Elmore, Jr.  
 1959 Dr. Raymond Eugene Goodson #^\*  
 Mr. William K. West, Jr. #  
 1960 Mr. James H. Frey #  
 1961 Mr. Ernest D. Taylor #  
 1962 Mr. Armon Dula  
 Colonel George P. Summers ^  
 1964 Dr. Richard Barton Fair  
 1966 Ms. Katherine C. Norris #  
 1968 Mr. Norman A. Cocke III #^  
 1969 Mr. Joseph H. Jarboe #^  
 1970 Dr. Alan G. Goedde  
 Dr. Chun H. Lam #  
 1972 Mr. Paul Ruffin Scarborough #\*  
 Mr. Gerald R. Whitt ESQ  
 1975 Dr. David McCallie, Jr. #  
 1976 Dr. Neal J. Galinko  
 Dr. Bayard L. Powell #  
 Mr. Edward T. Stockbridge  
 1978 Mrs. Brenda Harrison Letzler  
 Ms. Rebecca R. Lula #^  
 1979 Mr. Albert N. Gore, III  
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| 1985 | Ms. Ledi Sivewright Trutna #       |                            | Ms. Jennifer Koh   |  | Mrs. Kristin Lowe Geonnotti B.S.'03  |
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| 1987 | Dr. Douglas Charles Allen          | 2003                       | Mr. Max David Cohen  |  | Ms. Jeanette Shelor Gore   |
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|      | Mr. Steven E. Lawson               | 2004                       | Mr. William A. Simpson   |  | Mr. Roshan B. Gudapati P'17, P'22  |
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| 1988 | Dr. Salim Farouk Idriss            | 2005                       | Mr. Jeffrey Michael McCormick  |  | Mrs. Susan and Mr. Stephen P. Hindman P'00, P'04                                       |
| 1989 | Mr. Christopher Lawrence Eisenbies |                            | Mr. Kevin S. Parker  |  | Ms. Leigh Ann Holt B.S.N.'84, P'10, P'16   |
|      | Mr. James David Kolenski           | 2006                       | Mr. Daniel S. Pergola  |  | Dr. Marilyn M. Idriss B.S.'88, M.D.'92, H.S.'92-'95                                    |
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|      | Mr. Frederick G. Springman         | 2016                       | Mr. William Kane Dougherty   |  | Mrs. Anne Clark Jarboe P'04 #^   |
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| 1990 | Ms. Lisa Ann Bader                 |                            | Mrs. Debbie Allen  |  | Mrs. Susan and Mr. Richard Hubert Jones Jr. B.S.'05 #                                  |
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|      | Mrs. Linda Liu Kordziel            |                            | Mr. Jeff Bader   |  | Mrs. Mary B.S.'81 and Mr. Bradley R. Krey P'15 #*                                      |
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|      | Ms. Valecia Denise Maclin          |                            | Mrs. Tahua and Mr. Gerard Catillon P'19                                    |  |  |
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|      | Mr. Antonio Minchella              |                            | Dr. Kristi Warren Durgin M.D.'98   |  |  |
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| 2000 | Mr. Jason L. O'Meara               |                            |  |  |  |
|      | Mr. Daniel Robert Silver           |                            |  |  |  |

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| 1976 | Mr. Edward Anapol<br>Ms. Laurie C. Conner  |   |   |  |  |
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| 1989 |  | Mr. Steven Bruce Baumberger<br>Dr. Kevin John Bozic<br>Mrs. Babita Lal Deitrich<br>Mr. George Fox Jr.<br>Mr. Carl Paul Keller<br>Mr. Thomas W. Lattin, Jr.<br>Mr. Sean Welch O'Brien<br>Ms. Jennifer Kelley Robinson                                    |   |  |  |
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|      |  |   | Dr. Michael Goodwin Cetta<br>Mr. John Patrick Comerford<br>Mr. John Allan Dickson<br>Mr. Paul Thomas Hertlein<br>Lieutenant Colonel Anthony Clarence Leung<br>Dr. Eileen Bryn MacDonald<br>Mr. Thomas Eric McMullen<br>Dr. Ananth Natarajan<br>Mr. Richard E. Nicholas<br>Mr. Timothy Lucien Proulx<br>Mrs. Cheryl A. White |  |  |
| 1991 |  |   | Dr. Sandra Howard Bonat<br>Dr. Michael Dearman Lee<br>Dr. Steven Hsin-hung Lin, M.D.<br>Dr. Denise Iuliano Pittaro<br>Dr. Aurora Dawn Pryor<br>Mr. Paul Louis Rodriguez   |  |  |
| 1992 |  |   | Mr. Jaime D. Hobbeheydar<br>Mr. Christopher Kemp Hunt<br>Mr. Erik Lorscheider<br>Dr. Elizabeth McClelland Lutostansky<br>Mr. Justin B. Mean<br>Mr. William Tilghman Schlough<br>Dr. Seth Alain Watkins #<br>Mr. Matthew D. Wade   |  |  |
| 1993 |  |   | Dr. Rahul Vinod Deshmukh<br>Mr. Ian Christopher Doiron<br>Mr. Louis A. Falvo, III<br>Lieutenant Karl William Kottke<br>Mr. Michael Lincoln Krachon<br>Dr. Hong Andy Park<br>Mrs. Gillian Fischbach Parton P.E.<br>Mr. David James Sullivan<br>Mr. David S. Wasik #<br>Mr. Brian Ken Yamanouchi                              |  |  |
| 1994 |  |   | Dr. Scott Robert Andersen<br>Dr. Henry F. Butehorn<br>Mr. James Patrick Creighton<br>Mrs. Nancy Rose Ryan Donahue<br>Dr. Michael Donnelly<br>Mr. James A. Grover<br>Mr. Brian L. Helm<br>Dr. Maria A. Manning<br>Ms. Heidi Pellerano<br>Mr. Michael Todd Prewett<br>Ms. Anne Sempowski Ward                                 |  |  |
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| 2001 | Mr. Jonathan Lyons Caine<br>Dr. Emmanuel Y. Chang<br>Mrs. Lauren Smetko Dieterich<br>Mr. Kevin Edwards<br>Mr. David Richard Mandel<br>Mr. James L. Ruth<br>Mr. Nicholas W. Sehn<br>Dr. Harsha Setty<br>Dr. Amy C. Sharma<br>Mr. Navin Sharma<br>Mr. Brandon Hugh Stroy<br>Mr. Christopher Andrew Winter<br>Mr. Kent Tai-Lung Young |  |   |  |   |
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| 2003 | Mr. Mark Krasniewski<br>Mr. Matthew F. Sutherland<br>Dr. Mausumi Natalie Syamal<br>Mr. Amar Kumar Tanna  |  |   |  |   |
| 2004 | Dr. Hyun Oh Chung  |  |   |  |   |

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 Dr. Ellen deGroof P'02 #  
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 Mr. Gregory M.B.A.'91, M.E.M.'91 and  
 Mrs. Susan Emmett DeMarco M.B.A.'90, P'18  
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 Mrs. Yenii C. and Mr. Walter John Dex Jr. A.B.'88  
 Mr. Eli J. Dicker P'17  
 Mr. Christopher William Dieterich A.B.'01  
 Mr. and Mrs. Stephen Dodd P'22  
 Mr. Jack Donahue  
 Mrs. Carolyn Donnelly  
 Mrs. Dipti Patel Donnelly  
 Mrs. Tilly H. Donoho  
 Mr. Uri Doron and Mrs. Cigal Tzohar P'22  
 Mr. Mheir Doursounian  
 Mrs. Holly Dubbeling  
 Dr. Preston Dunnmon A.B.'80, M.D.'84, M.B.A.'02, P'11,  
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 Mrs. Land Douglas Elliott A.B.'04  
 Mrs. Nelda Ergin  
 Dr. Jeanne Marie Erickson B.S.N.'79, P'13  
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 Mrs. Kristen Falvo  
 Mrs. Cindy Lesonsky Farrington  
 Mrs. Stephanie Laine Feifs  
 Dr. Jeffrey Allan Feinstein B.S.'86, M.S.'87 and  
 Ms. Sherrie Fiel-Feinstein  
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 Mr. Charles Avery Fisher Jr. P'13 #\*  
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 Ms. Jessica Grounds  
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 Mr. Michael James Black  
 Mr. Shame Chikoro  
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 Mr. Chen-Ling Cheney Tsai  
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 Ms. Kerri Devine  
 Mr. Carl Erik Lawson  
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 2015 Mr. Matthew Baron  
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 Mr. Dylan Alfred Grien  
 Mr. Yanmin Ma  
 Ms. Zoe Roecker  
 Mr. Emre Bozbag Sonmez  
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# Annual Fund

Listed below and on the following pages are those Engineering Alumni that showed their affinity for the School by supporting the 2018-2019 Annual Fund Campaign. We are most grateful to those who donated to the School because they allowed us to reach 36% participation. Our goal is to reach a 39% participation rate in 2019-2020. Please don't let your consecutive giving lapse by missing a year!

To better recognize our consistent donors, their names are denoted in bold for five years of consecutive giving. For those who graduated less than five years ago their names will also be in bold if they have given each year since graduation. Finally, to recognize consecutive giving over the years, we are placing the number of years you have supported the School in parenthesis next to your name. We will update the list each year to continue recognizing our loyal alumni. THANK YOU, THANK YOU, THANK YOU!!!

## Half-Century Club 2018-19

**385 Donors/ 905 Class Roll**

**43% Participation**

### Class of 1944

**Bruce E. Hogarth (29)**

W. Young Johnston (1)

Robert E. Stroupe (3)

### Class of 1945

**William B. Gum (29)**

**Harold Ornoff (29)**

### Class of 1946

**John J. Geier (9)**

Richard D. Schwartz (1)

### Class of 1947

**John C. Bullard (13)**

**Eugene W. Griffin, Jr. (11)**

**W. Jack Hardman (5)**

**Israel S. Larkin (7)**

**Edward M. Linker (29)**

### Class of 1948

**Joseph A. Sousa (29)**

**Don G. Virgin (12)**

### Class of 1949

**Lindell A. Davidson (12)**

Irvin G. Speas (2)

### Class of 1950

**Richard K. Best (23)**

**Robert W. Chapman (8)**

**William A. Elrod (28)**

**Harvey H. Stewart, Jr. (29)**

Richard D. Wall (2)

**Hubert L. Wilson, Jr. (29)**

### Class of 1951

**Charles T. Duttweiler (5)**

Robert E. Fischell (4)

**Edgar C. Fox, Jr. (29)**

**Eugene J. Komlosi (27)**

Robert S. Raisch (4)

**John D. Rusack (29)**

**Wesley H. Shirk, Jr. (7)**

**Donald H. Townsend (12)**

Robert L. Van Dyck (1)

### Class of 1952

**W. E. Ballard (29)**

**H. William Collins (24)**

**Daniel N. Cote (10)**

**Hubert V. Davis, Jr. (9)**

**Kenneth R. Johnson (29)**

**Philip S. McMullan, Jr. (13)**

**William D. McRae (29)**

**Ralph M. Seeley (9)**

Ralph M. Winters, Jr. (2)

### Class of 1953

**Charles Sherfy Jones (20)**

E. Fred Kain (1)

**Joseph E. Kennedy, Jr. (11)**

**Lincoln D. Kraeuter (17)**

**Forrest E. Nelson (12)**

**Donald H. Rutter (21)**

**William V. Wright (29)**

### Class of 1954

**Robert M. Brown (29)**

**George H. Dawson (13)**

**Marvin C. Decker (25)**

**Lewis T. Fitch (29)**

Clayton T. Hardon (4)

**Gene L. James (9)**

Guy F. Miller (1)

**John W. Montgomery, Jr. (29)**

**Thomas E. Perry II (8)**

**Kirvan H. Pierson, Jr. (29)**

**Marshall F. Reed, Jr. (13)**

**Ronald L. Wilson (10)**

### Class of 1955

William A. Baxley (2)

**Dan E. Bellinger (9)**

John W. Caldwell (1)

**Rhett T. George, Jr. (6)**

**Edward A. Hamilton (27)**

**Norman J. Hart (11)**

John E. Larsen (4)

**Ray M. Olds (21)**

**Paul W. Pritchard, Jr. (23)**

**W. Shelby Reaves (9)**

**William Russell (19)**

**John L. Schmitt (31)**

**Charles E. Slater (26)**

**John G. Snyder (9)**

**David L. Wagner (5)**

**Gerard E. Woodbury (29)**

### Class of 1956

**Richard G. Amos (29)**

**William D. Beck, Jr. (10)**

**James A. Cavanaugh, Jr. (29)**

**R. Reginald Chapman (29)**

**George J. Evans (29)**

**Edgar J. Gunter, Jr. (12)**

**Herman C. Hambrick, II (29)**

**George Huling (21)**

Paul D. King, Jr. (1)

**William A. Kumpf (25)**

**Richard D. Manuel (29)**

**Joseph Marchese (19)**

**Robert S. Martin, Jr. (9)**

**Harry W. Merz, Jr. (7)**

Commie W. Riggsbee (2)

**Harold D. Scheid (12)**

**T. Donald Stiegler (29)**

**W. John Swartz (29)**

**Thomas E. Tabor (25)**

**John C. Williams, III (26)**

### Class of 1957

**Edwin J. Boothroyd (8)**

**Robert C. Clifton (7)**

**Lawrence D. Decker (29)**

G. Roy Elmore, Jr. (2)

**Ben M. Frizzell, Jr. (16)**

**Robert S. Goudy (6)**

**W. Edward Hammond (5)**

**Donald H. Heim (19)**

**Joseph W. Little, Jr. (29)**

**Thomas F. Lowe (17)**

**Donald F. Manning (29)**

Richard A. McConnell (4)

**William E. Richardson (7)**

**Reef Ruefer (19)**

**Parvin M. Russell, Jr. (14)**

**John D. Spanagel (29)**

**Roger W. Tatem (9)**

### Class of 1958

**Jon C. Bankert, Jr. (20)**

Edward E. Bulkley (2)

**Curtis E. Cobb (6)**

William H. Cozart, Jr. (2)

**Richard L. Goldstein (13)**

**Paul E. Heath, Jr. (20)**

**Edward G. Jenkins (29)**

**Kun-Ha Kim (26)**

**F. Sherwood Lewis (29)**

**Charles T. Lindsay, Jr. (8)**

David Lyman (2)

**Thomas J. McDermott (10)**

David P. Montgomery, Jr. (2)

G. Edward Mott III (1)

**Rodney D. Neal (13)**

**James W. Redmond (15)**

Thomas C. Stapleford (1)

**Gene L. Van Curen (24)**

**Harold L. Yoh, Jr. (12)**

### Class of 1959

**C. Leland Bassett (9)**

R. Carroll Beaty (1)

**William J. Best (29)**

**C. Thomas Biggs (13)**

**R. Wiley Bourne, Jr. (6)**

**Kim C. Cannon (22)**

Anthony W. Clark (3)

**Ralph H. Clinard, Jr. (26)**

**Norman W. Dean (28)**

**Archie L. Fitzkee (9)**

**Bob Gamble (19)**

**James F. Girand (16)**

**Harrison C. Givens III (6)**

R. Eugene Goodson (2)

William K. Hoch (1)

Henry L. Howard (4)

Charles H. Hutchison (3)

**H. Richard Kessler (23)**

**J. Tate Lanning, Jr. (22)**

**David A. Lower (26)**

Richard A. MacEwen (3)

**Robert B. McFarland (22)**

**Fred H. McIntyre, Jr. (26)**

**Louis M. Mogol (20)**

**David A. Page (29)**

William A. Reichard (1)

**John D. Roberts (29)**

**Powell S. Smith (6)**

**Thomas R. Taylor (26)**

**Mebane E. Turner, Jr. (21)**

**William K. West, Jr. (22)**

**C. Joseph Wine (9)**

**Joseph A. Yura (26)**

### Class of 1960

**George Bandre III (18)**

**James N. Barton (29)**

Jon R. Blyth (1)

Jack B. Bowman, Jr. (1)

**William F. Chambers (25)**

John P. Decker (1)

**Rix A. Dieffanbach (9)**

James H. Frey (3)

**James R. Grube, II (22)**

**Howard P. Haines (5)**

Elliot P. Hinely (2)

**Walter A. Johnson (6)**

**Edward E. Kaufman (29)**

**Daniel E. McConnell (10)**

**J. Samuel McKnight (29)**

**Jan L. Mize (29)**

Allyn S. Norton, Jr. (1)

Rudolph W. Oeben (4)

**George H. C. Shutt, III (26)**

**Philip C. Smith (17)**

**Gerald Strickland (29)**

### Class of 1961

Michael P. Bell (2)

**Robert P. Biggers (17)**

**Ronald E. Busch (26)**

**John M. Derrick, Jr. (28)**

**Carlyn E. Dinkler (6)**

**James J. Ebert (26)**

Thomas L. Engleby II (1)

**Wilson W. Farrell (10)**

**Robert A. Garda (29)**

**Charles F. Gibson (16)**

**Larry B. Hester (29)**

**Joseph M. Hunt, III (25)**

Jan B. Kane (4)

**Tom E. Leib (5)**

Peter Moller (1)

L. Russell Ranson, Jr. (3)

**Gerry E. Roberts (29)**

**Carl E. Rudiger, Jr. (19)**

**Thomas R. Styers, Jr. (6)**

**Ernest D. Taylor, Sr. (23)**

**Kenneth Watov (7)**

**William H. Wheeler (14)**



### Class of 1962

**Louis B. Bresee (28)**  
Robert M. Burch (1)  
**Douglas M. Chapin (6)**  
Joseph B. Clemmons III (2)  
**David M. Dean, Jr. (21)**  
**Armon Dula (28)**  
**Thomas E. Gallagher (29)**  
James T. Gobbel, Jr. (2)  
**Richard A. Helwig (8)**  
**Randall C. Herring (29)**  
Frederick C. Jacobs (1)  
**Cleveland C. Kern, Jr. (10)**  
**William W. McCutchen (29)**  
**Thomas E. Newman (8)**  
**Tom Paul (25)**  
John S. Preston (1)  
W. George Roach (2)  
**Robert W. Ross (28)**  
**J. Lee Sammons (29)**  
Howard C. Shaffer III (1)  
**Bernard M. Stanton, Jr. (21)**  
**George P. Summers (29)**  
**William M. P. Taylor (9)**  
**Robert Voorhees (20)**

### Class of 1963

**George R. Bailey, Jr. (7)**  
**David W. Blumfeldt (6)**  
**Travis C. Broesche (16)**  
**Leon W. Couch II (11)**  
**Don A. Dettmering (25)**  
**Richard T. DeWitt (20)**  
**Robert "Sonny" Epps III (28)**  
**Carl L. Freeman (5)**  
**Warner W. Freese (17)**  
**Charles L. Grossman (28)**  
**Robert J. Knorr (10)**  
**Ted S. Levy (28)**  
**Steven L. Matthews (17)**  
**Eugene C. Menne (28)**  
Edwin H. Mumford (1)  
**Sid Nurkin (28)**  
**James T. O'Kelley, Jr. (10)**  
**John C. Orr (13)**  
**Charles M. Poel (8)**  
**Paul A. Rauschelbach (24)**  
**Wilfred J. Vaudreuil, Jr. (25)**  
David M. Waggoner (1)  
**George J. Wisecarver (15)**

### Class of 1964

**Sid E. Atkinson (17)**  
**Frank Bernstein (19)**  
**Charles R. Bowman (9)**  
**David A. Coolidge (12)**  
**Richard B. Fair (5)**  
**John R. Gabriel (12)**  
**Allan R. Haworth (7)**  
**Arthur C. Hutzler (8)**

**Katharine E. Jordan (7)**  
M. Esat Kadaser (2)  
**Kenneth D. Kennedy, Jr. (27)**  
**Stuart D. Leland (29)**  
**Richard C. Linger (11)**  
**Michael Nickelsburg (29)**  
**James F. Rabenhorst (29)**  
**John H. Roediger (26)**  
**Stuart I. Rutkin (15)**  
Robert A. Sewell (2)  
**J. William Springer (29)**  
**John A. Wanklyn (17)**  
Samuel H. Williams, Jr. (2)  
**Robert R. Wonsidler (6)**  
**G. Toms Yarger (29)**

### Class of 1965

**Edward F. Baird (10)**  
**Nathanael Broker (10)**  
**Paul F. Brown, Jr. (21)**  
**Robert C. Campbell (16)**  
E. Evans Cayce, Jr. (4)  
D. Mason Clark (1)  
**William F. Cromartie (20)**  
**Ronald B. Falciani (8)**  
Edward W. Fishback, Jr. (1)  
Jerry D. Francis (3)  
**Richard A. Frazer (22)**  
Thomas A. Furness III (1)  
**John B. Goody (22)**  
**Quincy B. Hocutt (9)**  
**William Lanier (18)**  
**James R. Mathewson, Jr. (11)**  
**John C. McClain (10)**  
**C. Blake McDowell III (22)**  
Lyman F. Narten II (1)  
**James M. A. Parsley (26)**  
William S. Plumer, Jr. (4)  
**Robert R. Reed (12)**  
**James R. Scuffham, Jr. (8)**  
**Terry A. Simpson (8)**  
**William A. Simpson (23)**  
Michael S. Walsh, Jr. (3)  
**Richard B. Woods, Jr. (15)**

### Class of 1966

**Robert N. Armstrong (8)**  
Donald H. Bellman, Jr. (2)  
**Jeffrey M. Brick (17)**  
**Charles H. Cruse (14)**  
Thomas E. Harrington (3)  
**Grady T. Helms, Jr. (14)**  
**Roger W. Hughes (25)**  
**H.T. Lyons, Jr. (16)**  
**Roderick A. MacLeod (29)**  
**Frank A. Manola (29)**  
**William L. McClenahan (10)**  
Roger B. Midura (4)  
Fred W. Newton, Jr. (1)  
**Judith A. Nicholson (15)**

**Katherine C. Norris (27)**  
**William C. Pendleton (8)**  
**Randolph K. Repass (15)**  
**Charles H. Rogers (27)**  
**Hendrik G. M. Sijthoff (16)**  
**Chris Stiles (19)**  
**William L. Thomas III (10)**  
**Samuel A. Walker, III (29)**

### Class of 1967

**Donald A. Ashby (10)**  
**Kenneth C. Behnken (28)**  
Michael C. Booth (4)  
**Peter C. Brockett (28)**  
**Charles G. Browne (22)**  
**Stephen C. Coley (28)**  
**George H. Crowell (24)**  
**Robert C. deGroof (25)**  
**Marshall A. Gallop, Jr. (27)**  
**Randall A. Henry (9)**  
**Nina M. Lord (20)**  
John H. Luecker (4)  
Howard P. McJunkin, Jr. (3)  
**F. Barry McWilliams (27)**  
**Herbert Mumford III (19)**  
**Lindsay O. Robinson (10)**  
**Frank M. Slater (24)**  
Gary R. Stengl (1)  
**Roger W. Stokes (22)**  
**D. Bruce Wiesley, Jr. (12)**  
**Jerry C. Wilkinson (28)**

### Class of 1968

**Kenneth S. Chestnut (10)**  
**Charles W. Churchman (29)**  
**Norman A. Cocke III (29)**  
**Martin E. Falk (29)**  
Thomas E. Flynn (4)  
**Tom Gunn (19)**  
Lee M. Kenna, Jr. (1)  
**Harold H. Lane, Jr. (6)**  
**Samuel P. Lapham (12)**  
**James E. Lunson, Jr. (29)**  
**Robert B. MacDuff (25)**  
**Dennis H. Matthias (23)**  
Charles N. Moore, Jr. (1)  
**Eric R. Myers (29)**  
Kenneth T. Page (2)  
**Lee D. Petty, Jr. (16)**  
Philip N. Post (1)  
**Russell L. Schoudt (24)**  
**Robert T. Summers (12)**  
Donald H. Turnbull (3)  
**Robert P. Weismantel (29)**

### Class of 1969

**26 Donors/ 67 Class Roll**  
**39% Participation**  
**Sharon L. Bonney (27)**  
**Thomas W. Brohard (9)**

Thomas E. Davenport (2)  
**H. Richard Emerick (12)**  
Thomas L. Farquhar (2)  
**William G. Fry (29)**  
**Paul A. Gottlieb (29)**  
**Ethan D. Grossman (13)**  
**Michael D. Harper (12)**  
**Henry T. Harris (22)**  
**Joseph H. Jarboe (27)**  
**Daniel E. Kincaid (18)**  
James E. Lenz (3)  
Ernest G. Lunsford, Jr. (4)  
**Robert C. Marlay (29)**  
Alvin H. Mayo, Jr. (3)  
A. Dean Morgan (3)  
**Richard A. Nay (29)**  
**Robert A. Phelan (17)**  
**Frederic M. Ramsey (15)**  
**James T. Riley (27)**  
**Brian W. Sheron (16)**  
**William C. Webb (13)**  
**Turner Whitted (20)**  
**Thomas M. Woodard (29)**

### Class of 1970

**17 Donors/ 58 Class Roll**  
**29% Participation**  
**Walter G. Bashaw (22)**  
**Kenneth D. Bieber (29)**  
Wendell E. Brown (2)  
**Alan G. Goedde (28)**  
**R. Keith Harrison (32)**  
Clifton C. Hickman (3)  
**William R. Impey (6)**  
**Richard D. Ireland (13)**  
**Raymond J. Kuhlmeier, Jr. (22)**  
**Jonathan F. Llewellyn (29)**  
**Robert E. Milbourne, II (25)**  
**John G. Ordway III (23)**  
**Kenneth H. Pugh (10)**  
**Robert K. Smith (10)**  
**Richard S. Taylor (29)**  
**Ronald E. Terry (5)**

### Class of 1971

**50 Donors/ 80 Class Roll**  
**63% Participation**  
**Robert W. Althaus (29)**  
**R. Scott Bayles (27)**  
**Marion L. Blount (29)**  
**Stephen M. Bonwich (24)**  
**Robert W. Carr, Jr. (29)**  
**John T. Chambers (23)**  
**Robert E. Cheney (29)**  
**James W. Davis (12)**  
**Henry R. Derr (29)**  
**Truman D. Donoho, III (29)**  
**Arthur L. Downes, Jr. (29)**  
**David W. Erdman (29)**  
**Ted K. Field (29)**

**Glen M. Gallagher (29)**  
**Vance D. Gregory, Jr. (26)**  
**J. Bill Hanson (29)**  
**R. Reeves Hayter (8)**  
**John H. Hebrank (11)**  
**Donald M. Helfer (29)**  
**Jack C. Holland (27)**  
**Michael D. Jones (22)**  
**Thomas R. Kagarise (6)**  
Allen J. Kasden (1)  
**Brian H. Kennedy (10)**  
**Chun H. Lam (29)**  
**John S. Marold (29)**  
**Thomas D. Matlock (27)**  
**Thomas H. Medlin (29)**  
**Hunter Moricle (24)**  
**George T. Muller (7)**  
**Michael C. Parrott (29)**  
**Douglas S. Perry (11)**  
**William R. B. Potter (29)**  
**Curt A. Rawley (20)**  
**James L. Reese (29)**  
**Peter R. Romeyn (29)**  
**John H. Rudd (29)**  
Charles G. Sandell (2)  
William B. Seith (2)  
**Charles M. Skinner (15)**  
**Jeffrey O. Smith (5)**  
**Duane Southerland, Jr. (29)**  
**James L. Stuart (23)**  
**Allen F. Suit (29)**  
**Ciarence E. Thomas, Jr. (29)**  
J. Lawrence Waldruff (1)  
**Thomas L. Warren (29)**  
**George J. White (26)**  
**Robert S. Willig (14)**  
**Phillip S. Wilson (5)**

### Class of 1972

**25 Donors/ 68 Class Roll**  
**37% Participation**  
**Frank Birinyi (29)**  
**Joseph F. Chudecki, Jr. (25)**  
**Daniel A. Dell'Osa (25)**  
**Thomas M. Diccico (22)**  
**George D. Graham (10)**  
**Samuel M. Grant (29)**  
Donald P. Halsey III (2)  
**Joseph A. Harland (23)**  
**Tedd H. Jett (29)**  
**Ervin H. Kelman (13)**  
**Robert Y. Li (10)**  
Leonard Z. May (4)  
Stephen D. McCullers (2)  
**Larry W. Mobley (27)**  
**William D. Needham (21)**  
**John H. Nicholson III (15)**  
**Royden P. Saffores (12)**  
Paul R. Scarborough (3)  
**Alan D. Sherwood (29)**

Giles W. Vick III (9)  
Gerald R. Whitt (10)

**Class of 1973**  
**33 Donors/ 84 Class Roll**  
**39% Participation**

Robert R. Ando (23)  
Joseph C. Bates III (29)  
Henry P. Betz (29)  
Walter J. Bishop (21)  
John J. Borgschulte (11)  
Peter A. Bozick (14)  
Robert B. Brower (29)  
William E. Cowart (20)  
Dewey J. Cunningham (5)  
Mark C. Davis (9)  
John G. Dudley (29)  
Donald W. Goodman (11)  
William J. Hanenberg (24)  
Edward R. Harback (6)  
Charlotte S. Harman (21)  
Ozey K. Horton, Jr. (29)  
Glenn D. Jordan, Jr. (9)  
Kenneth W. Lumsden (10)  
Kenneth W. Marinak (8)  
Scott A. McHugh (23)  
Frederick E. Munschauer III (4)  
James B. Nicholas (16)  
Donald R. Riekert (1)  
Stephen B. Rogers (29)  
Randall J. Rost (5)  
Blair B. Sanders (17)  
Joseph H. Schmid (1)  
Warren B. Shaw (12)  
James A. Strycharz (1)  
Paul A. Vadnais (10)  
David H. Watts (29)

**Class of 1974**  
**30 Donors / 74 Class Roll**  
**41% Participation**

John P. Ankrum (7)  
Dwight S. Aston (27)  
R. Jack Bowers III (29)  
Clyde R. Butler, Jr. (9)  
John W. B. Curtis (18)  
Robert E. Fraile (28)  
Jeffrey J. Ginsburg (4)  
Robert A. Hyde (21)  
Richard C. Johnson, Sr. (1)  
James D. Klein (4)  
Bruce Klitzman (28)  
James E. Krekorian (27)  
Carl E. Lehman, Jr. (23)  
John M. Logsdon (27)  
James F. McAlister, Jr. (29)  
David E. Thomas (5)  
Philip W. Thor (1)  
David T. Troyan (3)  
D. Mark Upham (12)

Stephen A. Van Albert (10)  
Philip H. Vorsatz (12)  
Samuel S. Waters IV (8)  
Stephen L. Whiteside (6)  
J. Erby Wilkinson (15)  
Blake S. Wilson (4)  
Ray L. Wooten (29)

**Class of 1975**  
**34 Donors/ 99 Class Roll**  
**34% Participation**

Athanasios Aridgides (13)  
Peggy L. Asplund (23)  
David G. Autrey (2)  
Mark E. Baldwin (24)  
Stephen D. Boyd (2)  
Montford W. Bryant (22)  
Timothy M. Byess (3)  
Frank J. Coulter, Jr. (29)  
Patricia T. Crisenbery (7)  
Tyler Dawson (8)  
Donald J. Ennen (29)  
David B. Epstein (22)  
Ian P. Fetterman (3)  
Michael A. Freeman (20)  
John C. Garvey (12)  
Frank W. Gayle (20)  
Kenneth E. Gerlitz (1)  
Michael L. Halladay (29)  
James E. Higgins (4)  
John A. Hornaday, Jr. (9)  
R. Thomas Hower (1)  
Kent C. Hustvedt (16)  
Christopher R. Long (5)  
David P. McCallie, Jr. (1)  
Martin R. Meyer, Jr. (20)  
Cory D. Rind (20)  
Alan K. Schuler (22)  
William L. Shoemaker (28)  
Bruce D. Sterrett (1)  
R. Gregory Stortstrom (29)  
David Ullmann (20)  
Peter W. Waxter (18)  
David M. Wheeler (29)

**Class of 1976**  
**32 Donors/ 95 Class Roll**  
**34% Participation**

Edward Anapol (29)  
Jan W. Cacheris (23)  
Lawrence C. Caldwell (21)  
Laurie C. Conner (19)  
Peter J. Deutch (9)  
Robert E. Donaho (28)  
Neal J. Galinko (29)  
Phillip J. Hawk (28)  
William A. Hawkins (22)  
Stuart J. Heyman (29)  
George A. Irwin (1)  
Dwight T. Kernodle, Jr. (3)

Kenneth R. Maples (25)  
Gordon E. Melville (2)  
Betsy Miller-Jones (21)  
Stockton Miller-Jones (21)  
DeWitt A. Nunn, Jr. (27)  
Lawrence D. Osborne (3)  
Margery F. Overton (6)  
Curtis M. Pearson (17)  
Bayard L. Powell (29)  
Thomas C. Rearick (2)  
William B. Scantland (9)  
Clay E. Scarborough (2)  
James M. Snyder, Jr. (5)  
Jeffrey I. Spiritos (12)  
Edward T. Stockbridge (29)  
Howard M. Swartz, Jr. (1)  
Dennis M. White (17)  
Robert K. Willet (29)  
J. Grafton Withers (9)  
William A. Worrell (18)

**Class of 1977**  
**31 Donors/ 120 Class Roll**  
**26% Participation**

M. Scott Albert (15)  
Steven C. Bartolutti (25)  
Jeffrey D. Blauvelt (15)  
Phillip C. Buescher (16)  
Doug S. Doores (15)  
Stephen K. Y. Eng (20)  
George D. Gehrett (14)  
G. Robert Graham (29)  
Bruce W. Hoffman (23)  
Keiko Hsu (4)  
Robert T. Hyatt (23)  
Michael C. Keel (1)  
Kenneth B. Keels Jr. (3)  
Robert T. Kraemer, Jr. (12)  
William H. Lamason II (23)  
Robert G. Leech (29)  
David H. Llewellyn (16)  
Mary Z. Luckenbaugh (3)  
George E. Murphy (29)  
Richard M. Prevatt III (17)  
Thomas F. Rahlfs (1)  
Janis J. Rehlaender (29)  
Robert B. Rosequist (5)  
W. Russell Scheirman II (16)  
Eliot D. Shook (2)  
David P. Spearman (29)  
Claire M. Van Matre (4)  
Collier T. Weiner (1)  
Cliff A. Younger (29)

**Class of 1978**  
**47 Donors/ 139 Class Roll**  
**34% Participation**

Arthur Astorino, Jr. (1)  
Elise T. Atkins (29)  
Scott B. Baden (9)

Victoria S. Bell (24)  
Melton C. Bost (11)  
Kathleen S. Bowman (1)  
Gary W. Burchill (7)  
Banks J. Clark (24)  
Herman Cone, III (27)  
Richard O. Deaderick, Jr. (3)  
Jonathan P. Eagle (9)  
David S. Enterline (14)  
James B. Ferguson III (11)  
Eric L. Ferraro (9)  
Brian F. Gaston (10)  
Ella M. Gipson (4)  
Michael L. Gollobin (5)  
Dale T. Guidry (26)  
Richard A. Henrikson (18)  
Jeff H. Hinson (2)  
Joseph G. Hitselberger, Jr. (9)  
Lisa G. Hoffman (24)  
Henry Kent Holland (18)  
John G. Hovis (10)  
Alison Ives (28)  
Jeffrey D. Ix (29)  
Joe M. Kellis (9)  
Robert A. Kusnetz (1)  
Carolyn C. Leech (29)  
Brenda H. Letzler (2)  
James C. Lordeman (29)  
Rebecca Lula (23)  
Pamela R. Moore (18)  
F. Wesley Newman, Jr. (1)  
Lisa S. Orton (18)  
Elizabeth D. Peloso (29)  
Ronald L. Sapio (9)  
Stephen B. Slawson (29)  
B. Davison Smith, Jr. (6)  
Randall T. Smith (18)  
Deborah D. Stevens (3)  
C. Thomas Stuart, Jr. (24)  
Thomas S. Tully (9)  
Jackie Walker (19)  
Shao F. Wang (12)  
Gregory S. Wolcott (28)  
Richard G. Wolfe (3)

**Class of 1979**  
**51 Donors/ 143 Class Roll**  
**36% Participation**

Russell C. Albanese (1)  
Michael W. Alston (22)  
J. Theodore Ralph (29)  
Richard A. Beck (4)  
G. Andrew Bauer III (1)  
Bradley S. Perkins (1)  
Cynthia N. Brooks (29)  
Carol D. Burk (4)  
Beth R. Caron (6)  
Jill S. Cobbs (3)  
David M. Cobosco (2)  
David B. Dabney (2)

John C. Downing (8)  
Douglas E. Farst (21)  
Betsy J. Frauenthal (22)  
Albert N. Gore III (3)  
Alden Hart (19)  
John N. Hodges-Copple (4)  
Kathleen D. Ix (29)  
James E. Kemler (29)  
Helen Krauss (2)  
David J. Kusko (4)  
Donald K. Lee (26)  
Michael Lorusso, Jr. (23)  
Joseph M. Luchetski (29)  
Joan L. Marks (29)  
Karen S. Martin (17)  
Douglas A. McGraw (26)  
Scott F. Midkiff (9)  
John Milner, Jr. (29)  
Jay A. Nadel (24)  
Jonathan Norton (20)  
Richard B. Parran, Jr. (22)  
Michael T. Plantamura (10)  
John W. Rathke (1)  
Cristian M. Rodriguez (1)  
David M. Savard (27)  
Alvin J. Sill III (29)  
Laurence S. Sloman (3)  
Stephen R. Specter (29)  
Julia L. Stevens (3)  
Jonathon D. Truwit (1)  
Howard O. Watkins III (2)  
Bradley G. Watts (29)  
R. Davis Webb, Jr. (29)  
Richard M. West (1)  
Bryan K. Wheelock (16)  
Ronald C. Wong (4)  
Nicholas Zaldastani (7)

**Class of 1980**  
**60 Donors/ 181 Class Roll**  
**33% Participation**

Betty Ann H. Abblitt (3)  
Nancy E. Alston (22)  
Katherine Andriole (16)  
Clinton C. Bennett III (24)  
Robert K. Brandt (9)  
Scott A. Brandt (6)  
Michele M. Carbonell (16)  
Robert S. Conway (2)  
David O. Cook (29)  
Harry C. Dietz III (1)  
Brockton R. Ellwood (5)  
Pedro C. Fenjves (25)  
Lynn T. Flach (17)  
Thomas H. Flournoy (12)  
Linda S. Floyd (27)  
Tench C. Forbes (2)  
Marla J. Franks (29)  
Linda J. Gabbard (2)  
Michael C. Gasparian (3)



# Annual Fund

**William M. Gilliland (8)**

**John G. Holland (12)**

**Robert D. Huang (5)**

**Andrew L. Kirby (29)**

Kathryn B. LaFortune (2)

**William F. Larson (6)**

**David G. Lutz (5)**

**Steven T. Maher (9)**

**Beverly Marson (19)**

Donald T. McComas (1)

**Donald B. McGonigle (25)**

**Donald C. Mikush, Jr. (18)**

Jeffrey W. Miller (2)

David W. Molter (1)

**Paul R. Moulton (29)**

**David Munnikhuyzen (21)**

**Gregory S. Nizich (9)**

Steven S. Nohara (3)

**Nancy J. Pelc (20)**

**Jeffrey W. Reedy (24)**

**Christopher M. Relyea (29)**

**Mack T. Ruffin IV (29)**

**Andrew E. Scherer (29)**

**Cheryl S. Sourbeer (5)**

**Jonathan B. Sourbeer (5)**

**Charles W. Stankiewicz (19)**

**Dale R. Stanton-Hoyle (18)**

**Lisa F. Stilwell (10)**

Joseph M. Szwczak (3)

David S. Taylor (4)

Alison R. Vuille (1)

**Cynthia P. Walden (22)**

**Warren R. Weber (16)**

**Marc D. Weinshenker (27)**

**Richard E. Williams (23)**

**Craig A. Witt (22)**

**Kyle S. Witt (22)**

## **Class of 1981**

**56 Donors/175 Class Roll**  
**32% Participation**

**G. Daniel Adams, Jr. (10)**

**Richard L. Aicher (8)**

Caryn L. Bacon (3)

**Amjad A. Bseisu (9)**

**Sara E. Bures (9)**

Patricia S. Byrne (4)

**Kwokming J. Cheng (5)**

Thomas E. Clarke (1)

**Alan R. Cohen (8)**

Vincent J. Constantino (4)

**Darryl W. Copeland, Jr. (24)**

Lowell T. Hedrick, Jr. (4)

**Edward F. Hendershot (24)**

Craig S. Henriquez (1)

**Deborah J. Herts (9)**

**William A. Huting (5)**

A. Steven Johnson (1)

**Cynthia D. Kaiser (7)**

**Patrick J. Keegan (29)**

**Mark J. Keister (9)**

**Brian S. Kelleher (8)**

Simon Y. C. Lau (1)

**Perry H. Leo (20)**

**Linda W. H. Mackie (29)**

**Carl E. McCants (20)**

**Martha M. McDade (29)**

Eugene D. McGee (2)

Michael A. McGlockton (2)

**James B. McIlvain (25)**

**Nicholas I. Morgan (18)**

Laurent Nicolov (1)

**Laura S. Nystrom (28)**

Desmond S. O'Neill (1)

**Richard W. Pekala (29)**

**George S. Plattenburg, Jr. (25)**

**Louise C. Riddle (17)**

**Thomas B. Robey (23)**

Heyward G. Robinson (1)

**David I. Rowland (16)**

**Caroline S. Schlaseman (29)**

Joseph P. Sherman (4)

**Janet L. W. Slagle (10)**

**Craig J. Soloff (22)**

**Armando A. Tabernilla (28)**

Thomas G. Tilden (2)

**Vestal C. Tutterow (27)**

Gordon B. Van Dusen (4)

Jeffrey N. Vinik (4)

**Michael S. Wainer (29)**

**Janet M. Weber (12)**

Edward H. Wright (3)

## **Class of 1982**

**53 Donors/182 Class Roll**  
**29% Participation**

Anne F. Ayanian (2)

**John W. Barton (25)**

**Alan R. Blankshain (6)**

**Danal A. Blessis (20)**

**John A. Board, Jr. (27)**

**Robin K. Bochner (8)**

J. Jon Brophy (3)

**Carolyn N. Chase (29)**

**Christopher B. Cook (29)**

Damian M. Craig (1)

**Becky A. Cuthbertson (15)**

**Hal A. Davis III (12)**

Russell A. Fadel (2)

Melodie K. Feather (3)

**Kevin E. Flynn (20)**

**Elizabeth A. H. Fortino (9)**

**William B. Gex (18)**

Jane W. Gezon (3)

**Virginia T. Gibbs (9)**

**Scott D. Greenwald (11)**

Bradford S. Grob (4)

**Randolph M. Haldeman (14)**

**John C. Hausman III (15)**

**Akiko Hayashi (13)**

**Steven P. Hayes (29)**

**Catherine L. Iacobo (16)**

**Mark R. Jeffers (22)**

**Pamela C. Jenkins (5)**

**Mark B. Kardonoff (22)**

Dori A. Klass (4)

**Bruce T. Kroeschell (29)**

Mary Josephine R. Lee (3)

**Howard I. Levy (15)**

Charles D. Lutes (2)

**Joel M. Marks (13)**

**Barbara C. McCurdy (20)**

Bruce A. McDermott (1)

**William R. Mendez (14)**

Brian D. Miller (2)

**Thomas A. Natelli (14)**

**Lisa Z. Olens (25)**

**John Ortiz (19)**

**Anthony Pines (9)**

**LeeAnn Robinson (5)**

**Susan B. Ross (14)**

Katherine M. Ruben (2)

**Kenneth G. Sandberg (23)**

**Mitchell J. Shein (13)**

**Peter T. Tucker (21)**

## **Class of 1983**

**45 Donors/ 194 Class Roll**  
**23% participation**

**Lillian P. Baldwin (5)**

David M. Bennett (2)

**Ivan L. Blinoff (17)**

**Farley W. Bolwell (17)**

**Robert C. Bourg (24)**

Robert A. Canfield (4)

**James S. Carter (29)**

**Bart R. Combs (9)**

**J. Mark Dennis (17)**

**Daniel M. Dickinson (25)**

Andrew Ditchik (1)

**Robert J. Ferrall (12)**

**William J. Florence III (6)**

**Graziano D. Giglio (20)**

**Allison H. Glackin (29)**

**Daniel J. Griffith (29)**

**Boris I. Ilcic (18)**

**Elizabeth T. Jolly (6)**

**Bart R. Kessler (25)**

**Mark Kitchens (19)**

**David E. Korn (29)**

**Cynthia L. Manieri (29)**

**John M. McDonald, III (27)**

**John T. Meaney (17)**

**Alan K. Novick (15)**

**David S. Orlin (5)**

**Elizabeth S. Owen (28)**

**David R. Pitser (29)**

**Letitia E. Roe (10)**

Steven C. Rosner (2)

**John L. Russell (9)**

**Eric J. Schiffer (12)**

**Allan B. Shang (10)**

Cheryl B. Smith (3)

**David M. Strickland (29)**

**James P. Toomey (11)**

**Joseph B. Wood, III (23)**

**Harold L. Yoh, III (29)**

Rebecca P. Zayatz (2)

## **Class of 1984**

**74 Donors/ 218 Class Roll**  
**34% participation**

**Bruce J. Andersen (25)**

**John D. Barker (18)**

**Laura B. Barker (18)**

**Kym T. Bean (24)**

Stephen P. Blake (4)

**Benjamin C. Bonifant (10)**

David A. Bouchard (1)

**Andrew M. Brown (11)**

**Robert G. Brown (6)**

Pinetta J. Bruce-Brookes (4)

**David A. Brumbaugh, Jr. (9)**

**Marjorie G. Bryen (11)**

Susan F. Bueti (4)

Laura G. Bulson (4)

Karen B. Callard (1)

**Elizabeth A. Carter (6)**

**John Chae (8)**

**Andrew Cowan (20)**

**David W. Craig (10)**

**Jose B. De Castro (18)**

**Thomas F. Dziwulski (16)**

**Jeffrey S. Ebeling (29)**

Gregory G. Economos (3)

**Kevin J. Fellhoelter (6)**

**David G. Fernald, Jr. (13)**

Philip V. Geraffo (1)

**Omar Ghattas (13)**

**Daniel R. Gilmore (28)**

**Douglas E. Giordano (7)**

**Leonard Ray Goldfarb (17)**

Michael S. Good (2)

**Gregory D. Graflund (13)**

**David J. Gregory (15)**

**R. Campbell Hewell, Jr. (6)**

Antoinette T. Iacobo (1)

**Julie A. Keenan (24)**

**Joel C. Kent (5)**

**Andrew J. Lawson (21)**

**Richard B. Lazarus (21)**

**Wah K. Lee (11)**

**Page I. Lemel (29)**

**Samuel M. Liang (27)**

**Alain G. Magro (17)**

Bridge D. L. McDowell (1)

Peter F. McIlveen (3)

**Carolyn O. Molthrop (13)**

**Corell L. Moore (21)**

**David H. Moore (24)**

Reginald K. Moore (3)

Thomas W. Myers, Jr. (2)

**Nicolette B. Naso (29)**

**Michael J. Natoli (6)**

**Amy A. Petersen (29)**

**Walter M. Petroll (11)**

**Dean W. Pletz (12)**

**Dawn K. Pratt (29)**

**Raymond R. Rackley (6)**

**Scott H. Robinson (11)**

**Charles J. Rogers (28)**

Robert W. Rooks (1)

**Kenneth T. Schiciano (27)**

Phillip A. Scott (2)

Saba Shibberu (3)

Gary J. Smerdon (1)

**David R. Smith (22)**

Trent W. Spear (1)

Scott S. Spencer (1)

Andrew M. White (2)

Katharyn M. White (2)

**Frank E. Wierengo (29)**

**Christopher T. Wilde (26)**

## **Class of 1985**

**73 Donors/ 219 Class Roll**  
**33% Participation**

**Matthew D. Bacchetta (20)**

**Belinda A. Bacon (16)**

**Peter T. Baker (6)**

**Christopher J. Bedell (27)**

Jeffrey D. Behrens (4)

**Paul G. Bernhard (21)**

**Stephen R. Bolze (22)**

**Dale L. Brunelle (12)**

Richard G. Bryan (1)

**Karen E. Conover (8)**

Michael J. Cooney (3)

Marietta J. Costa (2)

**Michael G. D'Antonio (23)**

**Aileen M. De Soto (10)**

**Kevin A. Dorsey (15)**

**Richard A. Ferguson (17)**

**Scott P. Gatje (29)**

**Stuart M. Gaynes (23)**

**Bryan C. Gee (22)**

**Jane L. Gerb (20)**

**Charles A. Gove (18)**

**Teresa A. Habacker (5)**

Michael P. Hebert (1)

**Warren S. Hilton (5)**

# Annual Fund

David Lee (1)  
Michael C. Lenz (4)  
**Jean G. Levett (29)**  
**Tanya J. Lind (10)**  
**Darren K. Maness (20)**  
**Marie L. Marchesseault (6)**  
**Paul M. Matsumura (27)**  
Nelson E. Matthews, Jr. (3)  
Laurence E. McCall (1)  
**Marybeth McGinn (20)**  
**Kevin B. Nace (29)**  
**James R. O'Connell, Jr. (19)**  
**Debra M. Parrish (12)**  
**John L. Penvenne (12)**  
**Timothy D. Pettit (22)**  
**Richard J. Pond (17)**  
**David L. Pratt (29)**  
**Henry M. Quillian III (5)**  
**Michael T. Renaud (5)**  
**Douglas S. Rex (8)**  
**Brian J. Roach (15)**  
**David E. Robbins (15)**  
**Robert E. Robinson, Jr. (17)**  
**Barry E. Schneirov (29)**  
**Bryan A. Shang (5)**  
**Jeffrey S. Spear (18)**  
**Ledi S. Trutna (26)**  
**Beth Urdahl (20)**  
**Peter W. Waring (10)**  
**Spencer W. White (21)**  
**Kemp B. Wills (22)**  
Roni H. Wolfe (1)  
**Michael T. Yamamoto (21)**  
Dimitri E. Zarboulas (2)  
**Orest B. Zborowski (5)**

## Class of 1986

**69 Donors/ 221 Class Roll**  
**31% Participation**

**Daniel T. Adams (7)**  
Samuel M. Al-Aish (2)  
James E. Albright (3)  
Thomas L. Antonino (1)  
**Scott J. Arnold (10)**  
**Jun Asai (27)**  
**J. Lang Aston (5)**  
Mark E. Atkinson (1)  
John J. Barnes, Jr. (2)  
Deborah R. Behrens (4)  
**Mark R. Benz (23)**  
**David P. Boch (29)**  
Lewis C. Brewster (4)  
Elizabeth P. Brosnan (1)  
Jacqueline E. Brown (2)  
Kenneth A. Cannon (4)  
**Curt A. Cimei (14)**  
**Thomas C. Daily (19)**  
Alexander L. Dean, Jr. (1)  
**David T. Dellaero (5)**  
**Lisa L. Dworkin (7)**

**Linda S. Ermides (9)**  
**Gregory A. Esses (12)**  
**Jon R. Fahs, Jr. (9)**  
George A. Fang (2)  
**Allen H. Farrington (17)**  
**Peter W. Flur (29)**  
**Gary W. Geck (10)**  
**Sam A. Ghazaleh (22)**  
**Richard M. Greenwald (20)**  
**Julie H. Grill (24)**  
**Jonathan M. Guerster (29)**  
**Kurt W. Haas (10)**  
**Robert J. Harward (10)**  
R. Barton Houck II (1)  
Aric J. Keller (3)  
**John M. Kuttler (12)**  
Stacy E. Lawson (3)  
**Kenneth B. Lazarus (16)**  
**Robert S. LeVine (29)**  
David S. Lindquist (2)  
**Jane F. Mashiko (14)**  
**Douglas M. McCracken (9)**  
**Thomas C. McThenia, Jr. (6)**  
Kathryn L. Miller (2)  
**Michele H. Miller (29)**  
**Mark M. Murray (11)**  
Amy M. Novak (3)  
Kathleen O. Olsen (1)  
Jeffrey A. Parker (2)  
**Mark A. Potsdam (29)**  
Steven B. Royster (2)  
**Judith B. Schmitz (11)**  
**Robert F. Shuford, Jr. (19)**  
**Mark W. Sikorski (19)**  
**Dee M. Stewart (25)**  
Steven K. Stranne (1)  
**Elias J. Torre (29)**  
**Billie S. Walden (10)**  
Paul A. Wiese (1)  
Kristen L. Zakian (4)

## Class of 1987

**63 Donors/ 196 Class Roll**  
**32% Participation**

Douglas C. Allen (2)  
**Henrik Bacho (6)**  
**Robert F. Brandenburg III (16)**  
**Richard C. Brown (23)**  
Jennifer E. Buck (1)  
**Brenton E. Bunn (19)**  
Paul Chae (2)  
**David Claffa (19)**  
Daniel C. Connell (1)  
Celine J. Crowson (2)  
Thomas W. Dellinger (1)  
James L. Dolan (4)  
David N. Edmiston (1)  
**Karim S. El-Fishawy (5)**  
Marc J. Falleroni (2)  
Steven F. Fields (2)

**Cameron H. Fowler (26)**  
**Kenneth A. Fox (16)**  
James D. Geyer (4)  
**Laura B. Graham-Ford (13)**  
**Charles A. Grandy (12)**  
**Suzanne M. Gregory (25)**  
Christopher T. Gullo (4)  
**Kenneth J. Heater (14)**  
**Barbara Thompson Isaf (13)**  
**Steven E. Lawson (13)**  
**David G. Leason (5)**  
**Lawrence D. Lenihan, Jr. (6)**  
**Timothy F. Loomis (5)**  
**Court V. Lorenzini (9)**  
**Robert P. Maliff (19)**  
George Mattson II (4)  
**Jeffrey P. McCrea (9)**  
Katherine M. Melton (1)  
**Gregory A. Murray II (6)**  
**Lowell Nelson (19)**  
**Roger W. Nightingale (29)**  
Michael E. Peacock (1)  
**Christopher M. F. Poli (6)**  
John A. Ragunas (2)  
**Hollace S. Rhodes (17)**  
**Michael G. Rhodes (15)**  
Peter A. Rich (4)  
Andrew K. Rist (1)  
**William L. Rollins (8)**  
Iyad S. Saidi (3)  
Maureen A. Shaffer (4)  
Robert S. Shepard (3)  
**Craig R. Stiffler (9)**  
**Martin C. Trively (8)**  
**John-Kelly C. Warren (12)**  
Thomas J. Weck (3)  
**Denise A. Williams (12)**  
**Lisa M. Willis (25)**  
**Richard A. Wortman (10)**  
Kyle W. Young (2)  
Phillip P. Zammataro (1)

## Class of 1988

**58 Donors/ 173 Class Roll**  
**34% Participation**

**Gregory J. Alcorn (20)**  
**Gerard W. Appert (25)**  
James R. Bell (1)  
**Catherine C. Betor (7)**  
Lawrence K. Brown (4)  
**Christopher D. Caldwell (20)**  
**Jackie T. Chan (11)**  
**Diane T. Crean (6)**  
**Jeffrey M. Dodson (8)**  
William J. Donnelly (2)  
**Christopher J. English (29)**  
**Erik T. Eppers (8)**  
**Kristen A. Fisher (14)**  
Paul R. Freestone (2)  
**Randall J. Fuller (15)**

**Carlton H. Gerber (7)**  
Thomas A. Godin (3)  
**Robert J. Goebel (12)**  
**Richard S. Goldenson (28)**  
**Judith S. Gordon (9)**  
**Michael A. Harman (15)**  
**Richard F. Herbst (17)**  
**Jennifer S. Hill (18)**  
**Richard K. Hill (18)**  
**Gregory O. Hjelmstad (6)**  
Ruby G. Holder (2)  
**Jeffrey W. Hughes (12)**  
Amede W. Hungerford (2)  
Salim F. Idriss (3)  
**Gregory A. Janicik (14)**  
**Meredith S. Josephs (16)**  
**Sarah E. Levin (29)**  
Eric T. Lind (3)  
**Thomas S. Lindsay (19)**  
James R. Lowry (2)  
Thomas C. Mazzucco (2)  
**Steven P. Monti (26)**  
**Michael Munley (19)**  
**Tracy A. Nickelsburg (26)**  
**Randy Redmon (17)**  
**Bartt H. Richards (22)**  
**Paul F. Ridgway (25)**  
**Charles M. Roebuck, III (27)**  
**William C. Ruotola (14)**  
**Joseph A. Saldutti, Jr. (18)**  
Gregory L. Slover (1)  
Alexander P. Stavrides II (1)  
**Lee J. Tiedrich (9)**  
Manlio Valdes (4)  
Kecia P. Walker (2)  
**Karen D. Wehner (5)**  
**Eric F. Winakur (22)**  
Charles W. Wyble, Jr. (2)

## Class of 1989

**62 Donors/ 173 Class Roll**  
**36% Participation**

**Troy G. Arnold III (12)**  
**Jeffrey G. Bassett (20)**  
**Steven B. Baumberger (7)**  
**Thomas M. Betor (7)**  
**Kevin J. Bozic (5)**  
Tricia E. Brentjens (3)  
**Kevin A. Brooks (5)**  
**Jonathan H. Burdette (6)**  
**Mary C. Carlson (8)**  
Nixon P. Childs (1)  
Lisa A. Coyne (1)  
**Susan G. Daniel (6)**  
**Babita L. Deitrich (20)**  
**Christopher L. Eisenbies (7)**  
**Jason M. Ettinger (8)**  
**Todd C. Farley (6)**  
**George Fox, Jr. (22)**  
**Dwight Galbi (18)**

Mark A. Guffey (4)  
**Beth F. Hanson (22)**  
**Steven R. Harman (8)**  
Timothy A. Harrison (1)  
Alexandra P. Henriquez (1)  
**William F. Herbert, Jr. (21)**  
**Laura L. P. Hlucak (24)**  
Steven C. Holliday (4)  
Christine L. Hunter (3)  
**David A. Igel (7)**  
Carl P. Keller (4)  
**James D. Kolenski (6)**  
**Thomas W. Lattin, Jr. (9)**  
**Deborah D. Leland (6)**  
Benjamin T. Madden (3)  
**Mia K. Nadasky (21)**  
**Stephen M. Nickelsburg (25)**  
**Kathryn R. Nightingale (29)**  
David M. O'Brien (3)  
**Sean W. O'Brien (9)**  
**Richard J. Pattinson (29)**  
Joseph A. Paydarfar (2)  
Peter J. Perrone (1)  
Eli J. Richardson (3)  
**Krista B. Ridgway (25)**  
**Jennifer K. Robinson (28)**  
Judith A. Robinson (1)  
**Brad E. Rosenthal (11)**  
**Steven C. Sands (5)**  
Robert J. Scheer (1)  
**Vijay M. Shah (25)**  
Donald P. Shatto (4)  
Frederick G. Springman (2)  
**Scott E. Telesz (29)**  
**Stephen G. Tell (23)**  
**Sheila K. Van Nederveen (15)**  
Andrew J. Violette (1)  
**Robert R. Wahl, Jr. (17)**  
**John L. Willis (25)**

## Class of 1990

**91 Donors/ 261 Class Roll**  
**35% Participation**

**John D. Adkins II (5)**  
**Jamal Ahmad (18)**  
Sean J. Allburn (1)  
**Eric W. Anderson (19)**  
Phillip A. Ayoun-Chee (1)  
**Lisa A. Bader (5)**  
**Alan H. Baydush (12)**  
William E. Beasley, Jr. (2)  
**Susan B. Beauchamp (9)**  
**Torsten Berger (10)**  
**Katherine Y. Bielefeld (21)**  
**Matthew R. Bielefeld (18)**  
Frank G. Bowman (1)  
Anne M. Brack (1)  
**Thomas K. Callaway (25)**  
**William P. Cerreta (5)**  
**Michael G. Cetta (24)**



Peter J. Chomyn III (3)  
**Kai-I Chung (6)**  
 Andrew E. Clark (2)  
**Gregory J. Clary (17)**  
 John P. Comerford (4)  
**Dennis J. Courtney (7)**  
 John A. Dickson (1)  
**Michael P. Dierks (27)**  
**Jeffrey D. Dinkel (14)**  
**Christopher G. Duffy (6)**  
**Kenneth J. Dunleavy (16)**  
**Bruce L. Faulkner (7)**  
**Cynthia A. Fink (5)**  
**Christopher V. Forinash (23)**  
**Elizabeth K. Forinash (23)**  
**Rick Gayle (7)**  
**John J. Glushik (15)**  
**Shawn J. Goodier (21)**  
**R. Brooks Gronlund (5)**  
**William A. Gutknecht (16)**  
 Robert A. Herstein (3)  
**Paul T. Hertlein (23)**  
**Michael A. Hughes (8)**  
**Michael J. Isman (7)**  
**Chris Johnson (19)**  
 Douglas E. Johnson (4)  
**Andrew K. Jones (5)**  
**Elizabeth S. Joslin (24)**  
**Lance M. Kaplan (9)**  
**Mary M. Kile (20)**  
**Douglas C. Kley (13)**  
 Linda L. Kordziel (3)  
 Anthony C. Leung (4)  
**Christine C. Lodge (18)**  
 Eileen B. MacDonald (3)  
**David P. Matarazzo (7)**  
**Thomas E. McMullen (13)**  
 David S. McNeil (3)  
**Brian E. Miller (5)**  
 Michael A. Miniati (2)  
**Brenda Y. Mirabile (21)**  
**Alfred W. Mordecai (27)**  
 Karen G. Morris (2)  
 Robert A. Naslund (2)  
 Ananth Natarajan (1)  
**Richard E. Nicholas (29)**  
**Robert A. Oliver (8)**  
**Douglas B. Pfaff (23)**  
 Brian A. Porras (2)  
**Timothy L. Proulx (21)**  
**Robert L. Seelig (25)**  
**Brenda C. Shepherd (11)**  
 Chalin A. Smith (3)  
 Jerome C. Smith (4)  
**Brian P. Somerday (26)**  
 Paul A. Steffens (1)  
 Samuel J. Stevenson (2)  
 Daniel F. Strauch (1)  
**W. Mark Strickland (5)**  
**Hans-Peter Tandon (11)**

**Torii P. Turman (5)**  
**Cheryl D. Vecchio (9)**  
**William F. Walker (5)**  
**Jeffrey L. Warhaftig (5)**  
 Joseph P. Wedding III (3)  
**Robert D. Wescott (15)**  
**Cheryl A. F. White (29)**  
 Brian R. Williams (3)  
**John C. Wroton (29)**

**Class of 1991**  
**59 Donors/ 175 Class Roll**  
**34% Participation**

**Michael J. M. Arichea (23)**  
 Robert A. Armistead (1)  
**Rob Aung (19)**  
**Peter F. Biro (6)**  
 Sandra H. Bonat (2)  
 Michael W. Broome (3)  
 Andrew A. Butler (1)  
 Robert C. Castellino (1)  
**James L. Chittenden (7)**  
**T. Glenn Coleman (12)**  
**Thomas A. Corpus (24)**  
**Jonathan L. Danielson (24)**  
 Khanh A. Duong (4)  
**Richard L. Feliciano (18)**  
**Eric J. Felt (14)**  
**Eric M. Free (6)**  
 Alan D. Friedman (1)  
**Stacy S. Gardner (28)**  
 John S. Goode (2)  
**Timothy A. Gosnell (19)**  
 James W. Heydorn (1)  
**Jon R. Hibschan (21)**  
**Robert Ari Hirschfeld (21)**  
**Josefina S. Hobbs (11)**  
**E. Vincent Jolley (6)**  
**David C. Kaelber (6)**  
**William G. Karpovich (12)**  
**Eric W. Koehler (8)**  
 Carla M. Lawson (1)  
**Benjamin H. Le Blanc (20)**  
 Michael D. Lee (2)  
**Steven H. Lin (15)**  
**Tanya Shoenfel Nizialek (21)**  
 Erin M. O'Brien (3)  
**Michael S. O'Leary (26)**  
**John D. Pазienza (21)**  
 Chris Pencis (1)  
 Jennifer B. Pencis (1)  
**Robert E. Perry (5)**  
**Joseph C. Peterson, Jr. (9)**  
 Denise I. Pittaro (2)  
 Aurora D. Pryor (2)  
**Timothy J. Rade (25)**  
 Scott C. Raney (4)  
**Thomas C. Robey (13)**  
 Paul L. Rodriguez (1)  
**Barry S. Safier (20)**

Erich S. Schreiber (2)  
**Sheila F. Steele (28)**  
**Craig A. Straley (6)**  
 Matthew W. Twigg (2)  
**Meredith C. Upchurch (7)**  
**William D. Webster (18)**  
**Kenneth S. Weinberg (18)**  
**Dixie T. Wells (27)**

**Class of 1992**  
**73 Donors/ 209 Class Roll**  
**35% Participation**

**Derek D. Albert (6)**  
**Kristen S. Bernhardt (16)**  
**Michael S. Bertisch (7)**  
**Mahesh C. Bhumralkar (20)**  
 William H. Blackmon (1)  
 Scott D. Booth (1)  
 Ronald G. Burt II (1)  
 Christopher A. Casper (1)  
**N. Abraham Cohn (20)**  
 Richard G. Collins (3)  
 Jeffrey M. Constantine (4)  
 Gregory W. Council (4)  
 Cyrus K. Dastur (1)  
 Harry W. Durgin, Jr. (1)  
**Greg A. Erens (15)**  
**Susan M. Eugenis (27)**  
**Tricia G. Gilbert (23)**  
 John E. Grupp (2)  
**Karen M. Guido (27)**  
**Michael L. Guido (27)**  
**David B. Hanes (24)**  
**Douglas A. Hardy (22)**  
 Todd B. Harshbarger (1)  
 Julie M. Hasenwinkel (2)  
**Lisa M. Hibschan (21)**  
**Jaime D. Hobbehydar (9)**  
**Christopher K. Hunt (5)**  
 R. Kyle Justice (1)  
**James C. Lacefield (20)**  
 James V. Lawler (1)  
**Kemper E. Lewis (21)**  
 Brian M. Long (4)  
**Erik Lorscheider (13)**  
**Jarvis T. Lowndes (13)**  
**Elizabeth M. Lutostansky (8)**  
 Valecia D. Maclin (3)  
**Mark E. Mason (9)**  
**Andrew W. McCown (6)**  
**David W. McNabola (5)**  
**Jeffrey S. McVeigh (7)**  
 Terry J. Myerson (1)  
**Julia J. Nakhleh (26)**  
**Brian J. Nalle (6)**  
**Joseph A. Oswald III (7)**  
**James L. Pratt (26)**  
**Anish D. Rajparia (10)**  
 Christopher J. Roy (1)  
 Gregory D. Sabin (4)

**John A. Sartor (7)**  
**William T. Schlough (12)**  
**Peter V. Schroeder (8)**  
 Elizabeth J. Sciaudone (2)  
**Judd W. Staples (14)**  
**Robert J. Stets, Jr. (27)**  
**Bradley A. Stewart (16)**  
 Mitchell L. Strachan (1)  
**Matthew C. Strauss (27)**  
**Matthew D. Wade (26)**  
**Seth A. Watkins (26)**  
**Mark B. Williams (10)**  
**Scott E. Williams (5)**  
 Ursula E. Wilson (4)  
**David J. Witzel (13)**

**Class of 1993**  
**67 Donors/ 204 Class Roll**  
**33% Participation**

**Filip Banovac (7)**  
**Sridevi V. Basavaraju (10)**  
 Barbara H. Bodenstein (2)  
**Adam W. Cates (26)**  
**Emil T. Chuck (5)**  
**Julie H. Cochran (20)**  
**B. Cason Coplin (26)**  
**Michael L. Davitt (8)**  
 David A. Deal, Jr. (3)  
 Rahul V. Deshmukh (2)  
**Ian C. Doiron (8)**  
**Thomas S. Eppinger (26)**  
**Holly M. Espy (26)**  
**Louis A. Falvo III (26)**  
 Amy K. N. Fazio (1)  
 Nicole S. Finger (2)  
**James F. Fox II (20)**  
**Michael R. Gustafson II (11)**  
**Jeffrey A. Hancock (22)**  
**Grant T. Hollett, IV (21)**  
**Jill M. Hudkins (10)**  
 Alva S. Huffman III (2)  
**Stephen S. Huh (21)**  
 Hoi T. Huynh (3)  
**Karl W. Kottke (9)**  
 Michael L. Krachon (2)  
 Devendra T. Kumar (3)  
**Gregory P. Lissy (18)**  
**Rickard C. Loftman (6)**  
**Jeffrey K. Lopez (9)**  
**Brian E. Mackay (11)**  
**Spiro J. Maroulis (5)**  
**Jay Moller (10)**  
 Christine M. Nesbit (1)  
 Eric C. Nesbit (1)  
**Erik N. Oberg (26)**  
**Stirling E. Olson (18)**  
**Graham A. Orriss (13)**  
**Jennifer K. Orriss (13)**  
**Abraham D. Palmer (26)**  
**Debra M. Parisi (21)**

**Hong S. Park (9)**  
**Gillian F. Parton (7)**  
**Neeraja B. Peterson (7)**  
**Brian A. Pietrewicz (7)**  
**W. Stephen Poole (10)**  
**Richard T. Rhee (21)**  
**Michael K. Ryan (11)**  
**Joseph E. Schafstall (21)**  
 William J. Scheesele (2)  
**Ershela L. Sims (15)**  
 Lisa O. Singh (1)  
 Elizabeth A. Strom (1)  
**David J. Sullivan (10)**  
 Samir M. Tamer (2)  
**Jon R. Tervo (25)**  
**Sheila C. Tsai (12)**  
**Tracy B. Verhoeven (20)**  
**David S. Wasik (22)**  
**David T. Wei (17)**  
**Jason N. Workman (26)**  
**Robert A. Wyatt (8)**  
**Brain K. Yamanouchi (26)**

**Class of 1994**  
**91 Donors/ 265 Class Roll**  
**34% Participation**

**Stephen C. Abate (22)**  
 Scott R. Andersen (1)  
 Matthew J. Anderson (4)  
**Anthony J. Bellezza (15)**  
**Michael J. Bingle (21)**  
 William J. Blanke (4)  
 Dana D. Branham (1)  
 Henry F. Butehorn III (2)  
**Chalmers H. Butler (7)**  
 David W. Choate (1)  
**Brian S. Clise (16)**  
**Russell B. Copeland (25)**  
**Eric C. Correll (10)**  
**James P. Creighton (17)**  
**Taylor M. Davenport (20)**  
 Patricia L. Davis (1)  
**Elizabeth A. Debartolo (25)**  
 Nancy R. Donahue (1)  
**Michael J. Donnelly (21)**  
 Rebecca B. Drabenstott (2)  
**Richard S. Dreger, Jr. (12)**  
 J. Christopher Dries (1)  
**Stefan A. Dyckerhoff (14)**  
**Jason L. Ekedahl (25)**  
 Geoffrey R. Erickson (1)  
**Dennis M. Feenaghty (16)**  
 Cecelia A. Gassner (2)  
 Mark A. Golden (1)  
**James A. Grover (23)**  
**Susan H. Guswa (20)**  
**Halim Habiby (16)**  
**Dennis J. Hanzlik (17)**  
**Brian L. Helm (10)**  
 Kevin M. Hilton (1)

**Steven C. House (16)**  
Daniel T. Hull III (1)  
Scott D. Ikel-Johnson (1)  
**Warren H. James (10)**  
Douglas M. Jarrard (2)  
**Pamela D. Jobert (8)**  
**Chad R. Johnson (22)**  
John R. Koon (1)  
David J. Krauss (4)  
**Mark E. Kraynak (11)**  
**Wilson Y. Lee (12)**  
**Joseph A. Levitin (21)**  
**Audra P. Loftman (6)**  
David C. Lott (2)  
**Valerie M. Love (25)**  
**Maria A. Manning (8)**  
**M. Jonathan Mathers (11)**  
**Elizabeth G. Mazhari (14)**  
Antonio Minchella (4)  
Paul J. Orsulak, Jr. (3)  
Heidi R. Pellerano (1)  
**Malcolm W. Peverley, Jr. (17)**  
**Julia V. Phillips (25)**  
**Michael T. Prewett (23)**  
**Michael L. A. Reams (21)**  
George E. Robbins (1)  
David A. Roberts (4)  
**Andrea R. Roddy (20)**  
**Christopher R. Salter (10)**  
**Robert G. Santos (17)**  
Shiva Sarraf-Yazdi (1)  
Gayle H. Schlueter (1)  
Anne Sempowski-Ward (1)  
Danielle W. Shelley (1)  
**Mark V. Slominski (10)**  
**James R. Sokolowski (19)**  
Timothy J. Sovich (1)  
Carter R. Stowell (1)  
Christopher J. Thacker (4)  
**Andrew T. Vedder (10)**  
Romita L. Wallen (4)  
**Alan L. Whitehurst (20)**  
**Jonathan M. Williams (19)**  
**Christopher D. Wilson (24)**  
**Yin Yin (9)**  
Linda Q. Young (3)

**Class of 1995**  
**63 Donors/ 183 Class Roll**  
**34% Participation**

**Matthew J. Alinger (23)**  
**Lisa L. Anderson-Hall (7)**  
**Thomas H. Ayala (13)**  
**Robert R. Bailey (24)**  
**Jennifer T. Bhojwani (20)**  
**Clifford J. Billings (24)**  
**Jeffrey E. Bischoff (10)**  
David N. Buza (2)  
**Michael S. Caines (17)**  
**Jeffrey A. Chard (21)**

**Charles D. Choi (23)**  
**Allison B. Cleveland (17)**  
Monica D. DelCampo (3)  
Mark S. Donnithorne (4)  
**Scott W. Dubbeling (24)**  
Nikolas C. Endrud (2)  
**Elizabeth J. Gaske (17)**  
David J. Genova (1)  
C. Kristian Hanby (1)  
**Heather A. B. Harries (24)**  
Scott E. Harrington (4)  
Laura V. Hawkins (1)  
Elizabeth L. Hitchcock (2)  
Thomas W. Huff (3)  
**Michael J. Jurgens (16)**  
**Benli Kao (21)**  
**Andrew V. Kayes (16)**  
**Kevin G. Klinedinst (13)**  
David A. Landau (2)  
Eric M. Manoff (3)  
Brian K. Marchiel (3)  
Wesley D. Margeson (1)  
**Steven A. McClelland (22)**  
**Robert A. McClung (16)**  
**Joel R. K. Moody (21)**  
Eric A. Movassaghi (2)  
**Thanh Nguyen (8)**  
**Naomi A. Oak (24)**  
Uche S. Osuji (2)  
**Gregory D. Parker (13)**  
Amit I. Patel (3)  
**Brian T. Racilla (12)**  
Anupama N. Reddy (1)  
James P. Rizk (3)  
**Marshall A. Robers (19)**  
J. Judge Robinette (1)  
**Vineet K. Sarin (19)**  
**Betts S. Slingluff III (10)**  
Neil K. Stafford (4)  
Rodney J. Stanley (2)  
**Christopher D. Tapia (14)**  
Robert A. Vincent (3)  
**Stephen M. Waite (11)**  
**Robert J. Waldner (8)**  
H. Davis Ward (1)  
**Judd T. Willmann (16)**  
**James C. Woodring (9)**  
Fair L. Yeager (1)  
**David R. Zalesky (5)**

**Class of 1996**  
**73 Donors/ 204 Class Roll**  
**36% Participation**  
**Swati Agarwal (13)**  
Sherry M. Altman (3)  
**Imron T. Aly (21)**  
**Andrew J. Armstrong (8)**  
Joseph T. Bailey (2)  
**Gary J. Barnhart (23)**  
**Ethan I. Berger (23)**

**German E. Blomeier (9)**  
**Thomas M. Brundage (23)**  
**Frank Bruni (23)**  
Peter E. Bryan (2)  
Brian K. Campbell (4)  
**James D. Campbell, III (21)**  
**Andrew B. Carver (23)**  
**Chui-Shan L. Chila (9)**  
**Brian J. Chung (23)**  
Daniel V. Covello, Jr. (1)  
**Angelo B. Cruz (23)**  
Leslie L. Dickey (2)  
**Laura B. Feeley (17)**  
**Sunil N. Gandhi (20)**  
**Geoff K. Gavin (23)**  
Kathleen M. Greaney (3)  
**Robert J. Haley (23)**  
**Lorie D. Helms (5)**  
James K. Henry, Jr. (2)  
**Keren Hilger (7)**  
**Benjamin M. Holzman (10)**  
**Catherine N. Hounfodji (14)**  
Vinay J. Jayaram (3)  
**Holly C. Kelly (8)**  
Brian Y. Kim (1)  
Jason S. Kim (1)  
**Andrew H. LaVoy (8)**  
**Jeffrey D. Lewis (23)**  
**Franklin J. Lin (6)**  
**Jeffrey M. Milheizler (23)**  
**Amanda M. Montgomery (13)**  
**David B. Morton (8)**  
William A. Mourad (2)  
**Roberto C. Munoz (23)**  
**Suneel N. Nagda (12)**  
Drew G. Narayan (3)  
**Michael T. Nowak (5)**  
**Allison C. Pajunas (5)**  
**Clement D. Pappas (15)**  
**Robert J. Parsley (22)**  
**Estela J. Patron (21)**  
Daniel J. Paul (2)  
**Alexander W. Rice (9)**  
**Evangelos B. Ringas (23)**  
**Christopher T. Sabatino (21)**  
**Kevin R. Schwall (20)**  
Amy M. Scott (1)  
**Scott M. Shimp (23)**  
Sanyin Siang-Miller (1)  
**Joshua B. Skudlarick (17)**  
Shunmugavelu D. Sokka (1)  
**Daniel J. Sorin (20)**  
Michael D. Swinson (1)  
Janis M. Taube (2)  
**Shannon O. Thornton (13)**  
Maura G. Tira (1)  
**Joshua M. Unger (6)**  
**James S. Walsh (7)**  
Daniel P. Weinstein (2)  
**Elizabeth C. Wong (7)**

**Eric K. Wong (7)**  
**Class of 1997**  
**63 Donors/ 207 Class Roll**  
**30% Participation**  
**L. Ross Baker, Jr. (15)**  
A. Warren Brackin IV (4)  
**Peter C. Carlone (22)**  
**Natasha D. Case (8)**  
Sandra M. Cavazos (2)  
Y. B. Alan Chang (2)  
**Jim Chartier (8)**  
John D. Choi (4)  
**Amy E. Croot (22)**  
**Lee Anne Duval (7)**  
**Steven W. Fass (13)**  
**Francisco J. Fernandez (8)**  
**Robert P. Flowers (22)**  
**Sara H. Furber (6)**  
**Daniel A. Godrick (19)**  
**Varish Goyal (10)**  
**Amara L. Hildebrand (9)**  
Melanie K. Hsiao (2)  
**Elaine Y. Hsieh (10)**  
**Harris H. Hwang (17)**  
Joseph S. Joson (1)  
**Mara E. Kingsley (9)**  
Kurt E. Knaub (3)  
Brian J. Kott (3)  
Karen Krady (2)  
**Robert C. Kunz (10)**  
**Morgan B. LaRue (16)**  
**Melanie J. Lisis (16)**  
**Bharet Malhotra (10)**  
**Mi-Mi L. McCloskey (22)**  
**Theron L. Metz (22)**  
**Jeffrey K. Mills (18)**  
**Maureen L. Mulcahy (7)**  
**Gregory J. A. Murad (11)**  
**Sangki Oak (7)**  
Abigail L. Pachon (2)  
**Rebecca L. S. Peterson (22)**  
**Jason B. Piche (13)**  
**Bryan S. Rheem (9)**  
**Heather Y. Rodin (18)**  
Martina B. Roediger (3)  
**Bret A. Rogers (22)**  
**Susan A. Rolls (6)**  
**Charles W. Saletta (22)**  
Jill A. Schreiber (2)  
Malay B. Shah (4)  
**Todd A. Spears (22)**  
Dierdre V. Strigenz (2)  
**Anita M. Suchdeo (13)**  
**Marwan K. S. Tabbara (29)**  
**Linda M. Thomas (17)**  
**Patrick C. Thomasma (11)**  
**Lanette Y. Tyler (10)**  
**Sanjay K. Vanguri (10)**  
**Matthew J. Walker (5)**

**Michael A. Wesley (22)**  
Ross F. Widding (1)  
**Ian D. Wood (8)**  
**Christopher H. Young (17)**  
**Jennifer G. Zawacki (11)**

**Class of 1998**  
**66 Donors/ 217 Class Roll**  
**30% Participation**  
Lena F. Balucan (4)  
**Paul G. Bamert (19)**  
Kevin E. Bonebrake (1)  
Aimee V. Chappelow (2)  
Christopher P. Cheng (2)  
**Rajeev K. Chopra (9)**  
Jesse S. Claypoole IV (4)  
Jennifer E. Coker (3)  
**James D. Congdon (21)**  
**George J. D'Ambrosio, Jr. (5)**  
Jeffrey C. Demenkow (3)  
Damian V. Dolland (4)  
**Steven J. Drechsler (19)**  
Colton W. Ebersold (1)  
**Alexander H. Feng (14)**  
**Samuel C. Fiechter (7)**  
**Amanda H. Gelber (18)**  
**Nicholas R. Gelber (19)**  
Joseph L. Giacobbe (2)  
**Adam M. Giannone (13)**  
Russell M. Glass (4)  
**Sacha N. Goodson (17)**  
**Russell S. Groves (18)**  
**Deborah C. Hartman (14)**  
**Jessica R. B. Hindman (14)**  
William M. Houston (2)  
**Faraz Hussain (11)**  
**Ram M. Jagannath (5)**  
**David M. Jordan (21)**  
**Robert K. Judge (16)**  
**Katherine L. Karazim-Walker (8)**  
**Teresa C. Kelley (10)**  
**Brian A. Kilpela (10)**  
**Julius C. Lai (21)**  
**Lawrence P. Lai (21)**  
Annette Y. N. Lam (4)  
**Marc R. Larochelle (7)**  
Timothy P. Lessek (1)  
Deborah L. Liu (1)  
Jason F. Luck (2)  
**Ross Mayo, Jr. (13)**  
**Patrick M. McLaughlin (16)**  
**Gerald S. Meyer (19)**  
Eliza S. Nevers (2)  
**Sean M. O'Connor (11)**  
Lee Ott IV (3)  
**Yung H. Park (21)**  
**Audrey E. Penrose (8)**  
John S. Perry (4)  
**Jennifer J. Peters (13)**  
**Bradley A. Phelps (14)**



# Annual Fund

Neda B. Poommipanit (3)  
**Michelle E. N. Reichenbach (11)**  
Ronald J. Ricci, Jr. (1)  
**Lucas G. Rugani (19)**  
**Mark W. Sessoms (18)**  
**Pinata H. Sessoms (20)**  
**Neil N. Snyder, IV (21)**  
**Cheryl E. Starcher (20)**  
**Frederic T. Tenney (13)**  
**Travis M. Troyer (20)**  
**Jonathan B. Tyler (10)**  
Chungpei W. Wang (4)

## Class of 1999

**66 Donors/186 Class Roll**  
**35% Participation**

**Brigitte M. C. Addimando (11)**  
**Timothy E. Allen (20)**  
**Joshua P. Arwood (10)**  
**Neil S. Berlin (17)**  
**Sarah S. Bernstein (17)**  
**Brian R. Bleus (16)**  
Tynesia S. Boyea-Robinson (1)  
**Jennifer Brownlie (15)**  
**Chadwick L. Campbell (6)**  
**Margaret P. Chiou (10)**  
Young J. Choi (2)  
John C. Cocker (2)  
Michael R. Contarino (3)  
Jason W. Custer (1)  
Rachel M. Cyrus (2)  
**Jason G. Darling (10)**  
Brooke S. Davies (3)  
**Anthony T. Debenedet (8)**  
David E. Dolby (3)  
Kelly B. Dyar (4)  
**Megan T. Elfers (19)**  
**Jonathan A. Feifs (6)**  
**Phillip M. Garber (5)**  
**Angela Y. Giuffrida (14)**  
Kevin P. Golart (3)  
Amy M. Goodman (2)  
**Kathleen R. Grishman (12)**  
Jesse N. Krohmer (1)  
**Vladislav Ivanov (13)**  
**Anthony Lagnese (20)**  
**Jeannie Young Lee (20)**  
**Mark C. Lim (6)**  
**Keri E. Lorincz (12)**  
Wesley R. McClelland (4)  
**Kevin B. McGowan (20)**  
**Mark S. McKeag (8)**  
Jennifer M. Meuchel (4)  
**Ann N. Mittelstadt (18)**  
Riley W. Murdock (4)  
Christopher Nygren (2)  
Shena H. Park (1)  
**Laurel B. Passantino (15)**  
**William L. Portnoy, Jr. (7)**

Sasapin G. Prakalapakon (3)  
Jennifer Preston (1)  
Francis D. Preuss (1)  
Mia K. Rahn (1)  
Walter K. Robinson (1)  
Matthew C. Rogers (3)  
William T. Seddon (2)  
**Dipak P. Shah (5)**  
**Jason T. Shibata (6)**  
**Kristina Smith (5)**  
**Suneeta S. Sohoni (6)**  
**Jordan P. Steinberg (17)**  
**Jason D. Stipanov (5)**  
**Sarah C. Townsley (20)**  
**Brian A. Turner (8)**  
Daniel L. Wang (2)  
**Eric Z. Wang (12)**  
**James G. Warriner (11)**  
Steven E. Williams (1)

## Class of 2000

**68 Donors/210 Class Roll**  
**32% Participation**

**Grant R. Allen (6)**  
Jeffrey T. Barber (2)  
Maria Barton (1)  
**Todd E. Behrens (8)**  
Bernie E. Beigh (1)  
**Carla W. Benigni (19)**  
**Herbert F. Bohnet IV (13)**  
**William N. Camp II (19)**  
**Kevin Cheung (8)**  
**Li C. Cheung (8)**  
**Matthew A. Cornwell (19)**  
**Tate L. Crumbley (18)**  
James F. Current (1)  
Sean E. Delehanty (2)  
**E. Keith Donnelly (10)**  
Kevin M. Eckhardt (2)  
**Mehmet E. Ergin (19)**  
Christian Essiger (3)  
Michael S. Ferrell (2)  
**Brian C. Fox (7)**  
John M. Gagliardi III (3)  
John H. D. Gyurko (3)  
Geoff W. Habicht (3)  
**Manish M. Hebbar (8)**  
**Michael Hernandez-Soria (19)**  
**Jeffrey M. Hindman (18)**  
**Laura Huang (13)**  
Jonathan E. Hughes (1)  
**Brian D. Jones (5)**  
**Michael G. Kamas (19)**  
Arnaud P. Karsenti (4)  
Daniel R. S. Kauffman (1)  
**Samuel R. Kuo (12)**  
Jon P. Lam (2)  
**George C. LaVerde (15)**  
**Christopher R. Levering (10)**  
Nana H. Little (3)

**Daniel C. Lowrie (17)**  
Whitney B. Novak (4)  
**Jason L. O'Meara (11)**  
**Stacy L. Pineles (15)**  
**Isai Ramirez, Jr. (5)**  
**Jeremy B. Ratz (17)**  
**Jacquelyn J. Renton (10)**  
**Nathan S. Samras (6)**  
**Adam R. Schimel (5)**  
Kenneth G. Schopfer (4)  
**Albert J. Schuette, Jr. (8)**  
Cary K. Shiao (3)  
**Daniel R. Silver (19)**  
Rebecca A. Simmons (1)  
**Brian M. Stempel (17)**  
**Adam G. Stewart (17)**  
**Yushing E. Sun (7)**  
Chi-Tsai Tang (1)  
Danielle M. Taylor (3)  
Andrew P. Tojek (2)  
**Gabriel E. Tsuboyama (12)**  
**Paul H. Tzur (14)**  
**Justin L. Van Buren (19)**  
**Richard S. Vandermass (10)**  
**Elizabeth A. Vickerman (13)**  
**Peter A. Weld (6)**  
**Lauren K. Wisniewski (20)**

## Class of 2001

**65 Donors/185 Class Roll**  
**35% Participation**

**Ingrid L. Abendroth (18)**  
**Brian C. Alonso (10)**  
**Brian R. Appel (7)**  
**Alexis L. Beatty (12)**  
**Ashish A. Bhimani (9)**  
**Christopher T. Blitz (17)**  
Jonathan L. Caine (2)  
Paul A. Caplan (1)  
Emmanuel Y. Chang (1)  
**Stephanie S. Cook (6)**  
Melissa L. Desnoyers (1)  
**Lauren S. Dieterich (16)**  
Justin L. Doull (1)  
**Jason B. Dunham (7)**  
Kevin Edwards (2)  
**Andrew S. Exnicios (10)**  
**Jessica L. Foley (18)**  
Ethan J. Fricklas (4)  
**Allison H. Gaskins (17)**  
**Stephan R. Gaskins (16)**  
Alan M. Gust (1)  
**John F. Hack III (17)**  
**Bryn D. Harder (16)**  
**Gregory T. Hasbrouck (18)**  
**Sarah B. Higgins (18)**  
**Judith Jacobson (10)**  
**Aydin A. Kadaster (14)**  
**Kerry M. Kidwell (18)**  
**Jin S. Kim (11)**

**Paul A. Klenk (18)**  
**Jennifer Koh (15)**  
Rebecca M. Kohl-Gomez (2)  
Charles S. Lin (3)  
**Lauren N. Louis (18)**  
**David R. Mandel (10)**  
**David J. Marquard III (10)**  
Thomas M. Meese (3)  
Sami A. Mian (1)  
Mahesh R. Narayanaswamy (1)  
**Daniel B. Neill (10)**  
Christopher L. Peretti (2)  
**Anthony M. Pettes (5)**  
**Clayton D. Poppe (16)**  
Brent J. Reid (3)  
**James L. Ruth (11)**  
**Sophia T. Santillan (18)**  
**Nicole S. Schwartz (18)**  
Nicholas W. Sehn (1)  
Harsha Setty (1)  
**Amy C. Sharma (18)**  
**Navin Sharma (17)**  
**Harmander Singh (9)**  
Alexander R. Sistla (3)  
**Lauren S. Stienes (17)**  
Brandon H. Stroy (2)  
Tobias O. True (2)  
**Emily D. Tzur (14)**  
**Michael E. Weissinger (10)**  
Ngai C. Wong (2)  
**Amol R. Yajnik (14)**  
**Kent T. Young (16)**

## Class of 2002

**50 Donors/174 Class Roll**  
**29% Participation**

**Benjamin J. Aitken (7)**  
**Nader H. Al Ansari (9)**  
**Benjamin D. Atkins (14)**  
**Jesse L. Atkinson (17)**  
**Benjamin S. Borns (10)**  
**Cody Brownell (8)**  
Adam P. Burns (3)  
Danielle Chalson (4)  
Wai L. Chan (2)  
Jonathan C. Chappelow (1)  
Chien-Chung Chen (2)  
**John F. Cheng (15)**  
**Matthew Q. Christensen (9)**  
Herbert J. Cooper, Jr. (1)  
**Joshua P. Davis (13)**  
Jeffrey S. Earhart (2)  
**Sitaramesh Emani (5)**  
**John A. T. Fath (12)**  
**Julie K. Furt (17)**  
Tan Gao (1)  
**Christopher M. Grocki (12)**  
**Jaclyn E. Hanifen (17)**  
**Benjamin M. Harrison (8)**  
Ara A. Karamanian (4)  
Dorlan J. Kimbrough (4)  
**David H. Lake (9)**  
Kristina L. Lundberg (1)  
**Christina M. Luquire (14)**  
**Patrick B. Luquire (14)**  
**John Means (17)**  
**Andrew J. Meyers (8)**  
**Steven R. Meyers (17)**  
**Ryan J. Miller (14)**  
**Clark M. O'Niell (16)**  
**Sarah A. Park (16)**  
**James A. Romes (10)**  
**Maulin V. Shah (11)**  
Tiffany A. Spadaro (1)  
**Laney S. Stoddard (16)**  
**Stephen T. Thompson (14)**  
Alyssa F. Varadhan (2)  
Stacey E. Varsani (1)  
**Clinton D. Walker (17)**  
Alfred Wong (2)  
Gabriel K. Yuen (1)  
Enrico A. Zappi (1)  
**Rami D. Zheman (17)**

## Class of 2003

**48 Donors/167 Class Roll**  
**29% Participation**

Annie E. Adams (2)  
**Joseph G. Baltz (16)**  
Ian D. Berman (2)  
**Darin H. Buxbaum (16)**  
**Stephanie C. Chan (8)**  
**Ka Y. Chau (13)**  
**David Y. Chong (14)**  
**Max D. Cohen (16)**  
**David S. Di Pietro (13)**  
Thomas L. Earp (1)  
**Martin A. Elisco (16)**  
**Charles P. Gelatt (14)**  
Anthony R. Geonnotti III (3)  
**Elizabeth A. Herbst (14)**  
**Alexander L. Hooper (5)**  
**Karen C. Hwang (9)**  
**Huikai Karol (11)**  
Derek K. Juang (4)  
**Robert T. Kazmierski (16)**  
Jed J. Kim (2)  
Jeong M. Kim (2)  
Seung Y. Kim (1)  
**Mark D. Krasniewski (16)**  
**Gopind N. Kumar (9)**  
**Christine T. Lin (14)**  
Patrick J. Linarducci (1)  
**David H. Logan (10)**  
**Matthew J. Mailloux (16)**  
David R. Maloney (2)  
**Margaret F. Mandell (11)**  
Victor S. Mangona (1)  
**Andy T. Ng (17)**  
Jake Palmer (1)

# Annual Fund

## Vadim S. Polikov (16)

Christopher A. Ross (2)

## Elizabeth R. Strautin (16)

## Matthew F. Sutherland (7)

## Mausumi N. Syamal (6)

## Amar K. Tanna (16)

ShiBin M. Wang (1)

Dorion D. Watkins (1)

## Gregory M. Williams (16)

## Fran L. Wu (16)

## Mark W. Younger (6)

## Class of 2004

### 70 Donors/224 Class Roll

### 31% Participation

## Jamie M. Alders (6)

## John D. Alexander (15)

Michael A. Babcock (1)

Megan A. Baldwin (2)

Steven J. Barmach (2)

Jonathan J. Bittner (1)

## Christopher M. Boston (8)

Nicolas Buraglia (2)

Thomas E. Burney (1)

## Jason E. Chatterjee (13)

## Udayaditya Chatterjee (12)

## Meredith M. Cheng (9)

## Kengyeh K. Chu (14)

## Hyun O. Chung (11)

Paul D. Colavita (1)

## Patrick R. Colsher (7)

## Teresa T. Crowe (14)

Nicholas G. Csikesz (1)

## James M. Dayton (6)

## Christopher J. Dillenbeck (15)

## Allison M. Douglas (14)

## Jonathan D. Drillings (13)

## Joseph T. Elliott (9)

Colleen N. Farrell (4)

Matthew P. Farrell (4)

Ethan L. Filip (3)

## Eric J. Gardner (10)

Jeffrey R. Garro (4)

Brett A. Hainline (4)

## Bradley H. Hledik (14)

Calvin M. Hui (2)

## D. Brandon Jones (15)

## Jeffrey R. Jones (12)

## Jeffrey A. Keeney (7)

## Beum K. Kim (10)

## Megan M. Klenow (5)

Emily A. Kloeblen (1)

## Jason B. Laderman (15)

Seth E. Lankford (1)

## Patrick C. Matthias (11)

## Vito F. Mecca (15)

## Alice H. Meyer (15)

Shadia A. Oshodi (1)

## Michael R. Parsons (13)

## Rizwan A. Parvez (14)

Victoria K. Pugsley (1)

Daminda M. Rajapaksa (1)

## Matthew R. Raubach (9)

Scott W. Reid, Jr. (1)

## Georgia A. Richter (12)

## Christopher J. Sample (15)

## Sumit A. Shah (5)

William A. Simpson (1)

Sydney D. Southerland III (1)

Andrew D. Steinberg (4)

Russell Swagart (3)

## Jennifer L. Thompson (8)

Richard P. Thomsen III (3)

Jeremy M. Tucker (4)

Andrew R. Tupper (2)

Brian D. Waddy (2)

Brent T. Warner (1)

Kristine K. Warner (1)

## Stephen T. Wu (12)

Sai S. C. Yagnyamurthy (1)

## Class of 2005

### 89 Donors/ 253 Class Roll

### 35% Participation

Christopher B. Abbott (1)

Charles F. Adams (1)

Ronen Adato (1)

## Pasquale Arcese IV (14)

## Varun R. Baba (6)

## Noel Bakhtian (14)

## Jeffrey D. Burlin (14)

Benjamin L. Burnham (1)

## Jonathan R. Carter (13)

## Dennis S. Casey (12)

Rajeev Chaudhry (1)

## Melvin H. Chiang (6)

## George A. Crowell (8)

## Michael G. Curcio (14)

## Jeremy R. Davis (14)

## Pierre J. deBoisblanc (7)

## Julius K. Degesys (14)

Brian O. Diekman (1)

David R. Dorrough (1)

## Andrew F. Dreher (14)

Marcus A. Feehan (2)

## John R. Felkins (14)

## Thomas J. Fernandez (9)

## James V. Finchum (11)

## Jacob J. Flomenberg (5)

## Andrew D. Galanopoulos (6)

## Haven R. Garber (14)

## Darwin Goel (7)

Michael Guadano (3)

## Twinkle R. Gupta (6)

## Charles T. Hagan IV (13)

Adam P. Hall (2)

Megan Hanson (1)

## James D. Heaney (13)

## Stacey Hero (12)

## Brian R. Hirsh (14)

## Andrew B. Holbrook (14)

## Tushar S. Kirtane (13)

## Jia-Wei K. Ko (5)

## Emily M. Kovalchick (14)

Timothy C. Lamson (2)

## Richard M. Larrey, Jr. (12)

## Anthony G. Lau (8)

Cameron V. Levy (2)

## Jennifer M. Libling (12)

## Bo Liu (13)

## Vincent C. Mao (13)

Kyle A. McCarter (1)

## Jeffrey M. McCormick (7)

## John R. McDowell IV (10)

## Douglas G. Mullen (8)

Kelly F. Naylor (1)

## Paul S. Nesline (14)

## Shaun M. Noonan (14)

## Lauren Opoliner (14)

## Kevin S. Parker (14)

## Nathan M. Partin (5)

## Julianna S. Peacock (14)

Yashar Pirzadeh (3)

## Andrew D. Portnoy (14)

## Michele E. Pugh (14)

Melanie B. Roller (1)

Merrill J. Roller (1)

Sarah C. Ruffner (1)

Justin M. Shapiro (3)

Evan R. Shaw (1)

## Nathan S. Sherrard (12)

Gary C. Sing (4)

## Lindsay M. Smith (5)

## Charles B. Solleau (8)

## Isaac E. Specter (11)

Daniel Stepner (2)

## Jason S. Su (8)

## Joseph P. Tadduni (12)

Charles Y. Tao (1)

Peter B. Toth (1)

Andrew L. Walls (2)

Megann V. Watters (1)

## Adam L. Weinberger (14)

## Jennifer L. Wilbur (14)

Jonathan M. Zile (3)

## Michael D. Zordan (8)

## Class of 2006

### 84 Donors/ 226 Class Roll

### 37% Participation

Todd E. Aetherwyn (2)

## Bilal M. Aljazi (8)

## Christine N. Armstrong (9)

## Terry M. Arnold II (11)

## Gareth T. Barendse (9)

Nasir H. Bhanpuri (1)

## Omaira C. Brightman (13)

Joseph M. Bruni (1)

## Katherine E. Bulgrin (13)

## Zubair H. Chao (7)

## Patrick T. Cleary (6)

## Mark H. Connell (9)

## Michael D. Cote (11)

## David R. Crowe (13)

Bonnie S. Davis (1)

## Robert R. Demason (10)

## Roger M. Diebold (12)

Eric W. Dooley (2)

Joshua M. Dubnow (1)

John T. Erickson (3)

## Stephen C. Felkins (13)

## Caroline W. Fox (13)

## Steven W. Gangstead (13)

## Ryan S. Habbly (13)

## Matthew W. Hawk (13)

## Melissa Hawk (13)

## Clare B. Hawthorne (13)

Kathryn D. Hedlund (1)

## Vy U. Hoang (12)

Michael A. Holliday (4)

## Derek R. Hower (13)

## Xinfeng Hu (5)

## William L. Hwang (13)

Carolyn E. Jones (1)

## Daniel M. Kaplan (13)

## Andrew S. Katz (5)

## Clifton E. Kerr (7)

Daniel Kim (4)

## Emily Y. Kos (13)

Raymond T. Kozikowski III (2)

David A. Loaiza (1)

## Qahir Madhany (9)

Michael R. Mathis (1)

## Albert G. Moore III (6)

Christopher R. Morecroft (1)

Laura B. Moss (4)

## Emily M. Mugler (13)

## Ty K. Mukherji (5)

## Shelby A. Neal (13)

## Devin C. Odum (9)

## Courtney L. Olmsted (13)

## Branon C. Painter (13)

Daniel S. Pergola (1)

Jialing K. Png (3)

## Brent G. Powers (12)

Mahir H. Rabbi (1)

## Anna L. Rack-Gomer (13)

## Brooke L. Rennick (6)

Darren P. Rivas (4)

## Andrew R. Schmidt (13)

## Roman G. Schwarz (9)

David A. Semko (1)

## William B. Senner (13)

James W. Short, Jr. (1)

## Blake E. Sowerby (9)

Andrew M. Stalneck (2)

Peter L. Staver (2)

## Kathryn F. Sullivan (13)

Charlie Suwankosai (1)

## Mika J. Tanimoto-Story (13)

Kimberly W. Truesdale (2)

Jia Wei (1)

Gihan S. Wickramaratne (4)

Thomas A. J. Williams (2)

## Randy M. Yamada (5)

Siu-Chung Yau (1)

Brian C. Yeh (1)

## Adam J. Zuckerman (11)

## Class of 2007

### 81 Donors/ 197 Class Roll

### 41% Participation

Ronal G. Abraham (2)

Byron Alvarez (2)

## Jonathan M. Arnstein (5)

Joshua L. Ashley (2)

## Nicole L. Axelrod (12)

## Aaron T. Baxter (10)

## John B. Borofka (12)

## Elan H. Bresslour (12)

## Carlos D. Brisenio III (6)

## Robert A. Buechler (9)

## Lisa J. Burton (10)

James J. Bush, Jr. (1)

## Dennis J. Cattel (12)

Rachel L. Chaitt (3)

## Matthew D. Clements (10)

Stephanie J. Chen (2)

## William L. Cooper III (10)

## Elizabeth F. Courtney (8)

## Conlin D. Crow (12)

Michael C. Dameron (4)

Gregory A. Darland (4)

John M. Dayton (1)

## Nishanth K. Dev (12)

## Frank M. Dreher (12)

## Natalie C. Eagleburger (12)

David A. Fiedler (3)

## Arthur C. Fischer-Zernin (9)

## Amanda M. Fuller (11)

John P. Galanek (4)

Meng Gao (2)

## Peter M. Gebhard (12)

Eric L. Geller (2)

## Shaina M. Gram (6)

## Kelly F. Greer (12)

Daron N. Gunn (1)

## Richard C. Harting (12)

## Jeffrey C. Herbert (12)

## Meredith C. Herbert (11)

## Justin D. Hilliard (5)

## David Huie (9)



Emily S. Kelley (1)  
 Jeffrey A. Kessler (1)  
 Andrew T. H. Kim (1)  
**Tobias F. Kraus (12)**  
**Gregory B. Larkin (12)**  
**Brian J. Lewis (12)**  
**Andrew J. Longenecker (12)**  
**Shawn J. Mendonca (12)**  
 Wendy Merkelz (2)  
**Meredith C. Min (9)**  
**Kristin D. Morgan (10)**  
**Lu Morrison (12)**  
**Amy R. Motomura (12)**  
 Isaac Nagel (2)  
**Phillip D. Nicholson (6)**  
**Ryan C. Pertz (11)**  
 Casey J. Rubin (1)  
**Noah Sakimura (12)**  
**John M. Schoenleber (7)**  
 Jessica Son (1)  
**Eric M. Spitz (12)**  
**Michael H. Stanley (12)**  
**Jason Strasser (12)**  
**Caroline A. Strojny (5)**  
**Bryan J. Van Dyke (9)**  
**Elizabeth A. Vasievich (12)**  
**Aida M. Wiebke (10)**  
**Lori Yu (6)**  
**Xin Zheng (7)**  
**Michael D. Zimmerman (10)**

#### **Class of 2008** **77 Donors/ 219 Class Roll** **35% Participation**

Robert C. Allen (2)  
**Nii A. Ampa-Sowa (11)**  
 Timothy D. Antonelli (1)  
**Scott K. Bailey (9)**  
 Dennis M. Bartlett (1)  
**Michael E. Bauer (10)**  
**Matthew P. Burke (9)**  
 Corey M. Butler (1)  
**Andrew P. Camacho (9)**  
**Matthew F. Campbell (10)**  
**Ian L. Cassidy (10)**  
**Heidi Y. Chang (11)**  
 Xiaoying S. Chen (1)  
 Dean S. Chiang (1)  
**Priscilla F. Chyn (11)**  
**Stephen T. Clark (9)**  
 Homero Coronado, Jr. (1)  
**John A. Crowell (7)**  
**Q. Chelsea Curran (11)**  
**William W. Davis (9)**  
**Audrei E. Drummond (7)**  
 Patrick J. Eibl (3)  
**Amauche Emenari (5)**  
**Thomas J. Feehan (5)**  
 Addison W. Ferrell (1)  
**Audrey J. Gaskins (9)**

**Philip J. Gorman (11)**  
**Karli S. Griffeth (9)**  
**William A. Hoffman IV (9)**  
**Alexander Hwang (5)**  
 Priscilla Hwang (1)  
**Jordan B. Icton (8)**  
 Ngozi L. Kanu (4)  
**Michael A. Keel (10)**  
**Neha Krishnamohan (11)**  
 Steven M. Lattanzio II (1)  
 Yong Liang (3)  
**Sebastian Liska (9)**  
**Cristian C. Liu (11)**  
**Justin C. Maxwell (5)**  
**Alexander N. McKinnon (7)**  
**Leslie V. Means (11)**  
**Gregory Meyers (6)**  
**Arthur Mui (6)**  
**Christopher J. Neufeld (7)**  
**Holly H. Ohlsson (11)**  
**Eric J. Ojerholm (11)**  
**Chinyere T. Okoli (11)**  
**Christopher M. Parides (6)**  
 Lee M. Pearson (2)  
**John L. Perkins (7)**  
**Drew G. Rindner (9)**  
 Matthew T. Rinehart (2)  
**Alyx C. Rosen (10)**  
 Stephen J. Rosenzweig (4)  
**Daniel L. Ryan (10)**  
 Paul R. Scarborough, Jr. (3)  
 Michael T. Schaper (2)  
**Craig S. Silverman (8)**  
**Geoffrey L. Southmayd (11)**  
 Kyle W. Squillario (2)  
**John F. Sullivan (11)**  
**Rick A. Szcodronski (9)**  
**Megan K. Tooley (9)**  
**Adam R. Udasin (10)**  
 Scott K. Wagoner (3)  
**Terence P. Wallace (11)**  
**Andrew S. Waterman (11)**  
 Philip J. Wolfe (1)  
**Yvonne J. Yamanaka (11)**  
 Timothy D. Zepp (3)  
**Edison M. Zhang (9)**

#### **Class of 2009** **104 Donors/ 274 Class Roll** **38% Participation**

Ersen Akici (3)  
 Peter W. Allen (2)  
**Laura M. Angle (10)**  
 Kevin A. Autrey (2)  
 Alexander T. AuWerter (3)  
**Jessica B. Becker (10)**  
**Molly R. Bierman (10)**  
 Jennifer C. Bloch (1)  
 Kevin W. Brightly (1)  
**Seth P. Brown (9)**

**Thomas A. Burkland (9)**  
 Aneesh R. Butani (1)  
**Douglas W. Bycoff (10)**  
**Laura H. Chavez (7)**  
**Katharyn Cordero (10)**  
**Rafael A. Cordero (8)**  
**Amanda J. Daly (10)**  
**Adam J. Dixon (10)**  
 Yuanlong Du (4)  
**Elana B. Edwards (11)**  
**Arthur J. Everson (8)**  
 Caitlin F. Farming (1)  
 Bryan E. Fleming (1)  
 William G. Gardner (1)  
**Christopher G. Gibson (5)**  
 Lucas M. Gong (1)  
**Mikhail Gordin (6)**  
**Alexander H. Gorham (10)**  
**Benjamin D. Grant (9)**  
 Shi Gu (1)  
 Xin Gu (1)  
**Thomas J. Hadzor (10)**  
**Philip S. Harvey (8)**  
**Perry B. Haynsworth (10)**  
**Antonia R. Helbling (10)**  
 Alexander Ho (1)  
**Peter J. Hollender (6)**  
**Whitney S. Kirchoff (6)**  
 Daniel H. Klein (2)  
**Mary Ellen I. Koran (10)**  
**David W. Kunz (9)**  
 Curtis W. Lane (2)  
**Daniel D. Lee (9)**  
**Alex S. Li (7)**  
**Vincent Y. Ling (10)**  
 Winston A. Lynk (2)  
 Amanda R. Magli (1)  
**Jenna E. Maloka (10)**  
**Eric S. Mansfield (10)**  
 Chloe M. Mawer (3)  
 Peter M. McGroddy, Jr. (1)  
**Irem Mertol (9)**  
**Daniel W. Mistarz (10)**  
**David J. Mitteness (10)**  
**Todd E. Monson (7)**  
 James C. Montupet (3)  
**Justin N. Mullen (10)**  
**Kathleen M. Murphy (10)**  
**Mhoire L. Murphy (10)**  
 Pradyumna Nadakuduty (5)  
 Adam L. Nelson (3)  
**Andrew Ng (6)**  
**Dana R. Nicholson (10)**  
 Jonathan L. Odom (1)  
 Jun-Jeong Park (1)  
**Sahil P. Patel (10)**  
**Daniel A. Phillips (10)**  
**Ryan G. Pitera (5)**  
 Harsh V. Poddar (1)  
**Preston S. Porter (9)**

Feini Qu (4)  
**James V. Razick (10)**  
**Bryan P. Reisch (7)**  
**Paul M. Riherd (6)**  
 Christopher R. Rowland (1)  
**Michael B. Russell (7)**  
**James L. Schulhof, Jr. (6)**  
 Preeyanka K. Shah (2)  
**Michael L. Silver (9)**  
**Anne Sloan (10)**  
 Todd H. Stamp (4)  
 Scott A. Steinberg (2)  
**Bryan D. Stem (5)**  
**Di Sun (5)**  
**Caitlin A. Therrien (7)**  
**Ibrahim K. Toukan (10)**  
**Christopher M. Wade (9)**  
 David Wang (1)  
**Yifan Wang (10)**  
**Andrew P. Ward (8)**  
 Lauren E. Wessel (2)  
 Kenneth S. White (2)  
**Daniel C. Wolf (10)**  
**Duo Xu (7)**  
**Tianhe Zhang (7)**  
 Jiang Zhu (1)

#### **Class of 2010** **89 Donors/ 245 Class Roll** **36% Participation**

**Pongpitch Amatyakul (9)**  
 Jason H. Begleiter (2)  
**Nicholas P. Bobrinskoy (9)**  
**John M. Burton, Jr. (9)**  
**Christopher Y. Caughman (9)**  
**Vyshak Chandra (5)**  
**Olivia C. Chang (9)**  
**David Chen (6)**  
**Alex D. Edelsburg (8)**  
**David A. Eitel (9)**  
 Jason H. Ethier (3)  
**Stephanie R. Everett (9)**  
 Manuel P. Fanarjian (2)  
 Zachary M. Fernandez (3)  
**Margaret I. Finch (7)**  
**Stephanie K. Finch (9)**  
**Andrew D. First (9)**  
**Erin A. Franz (7)**  
**Thomas C. Gallmeyer (5)**  
**William R. Gamerota (9)**  
**Douglas M. Giannantonio (9)**  
 Samuel C. Gibbs IV (4)  
**Jordan C. Goldstein (9)**  
**Jing Guo (9)**  
 Arnav Gupta (4)  
**Adrienne L. Hamrah (7)**  
 Wei Han (1)  
**Daniel F. Hanks (9)**  
**Zachary M. Harvanek (8)**  
**Douglas M. Helferich (9)**

**Katherine M. Henderson (9)**  
 Racquel M. Hill (4)  
**Pia F. Hoellerbauer (9)**  
 Xiaodi Huang (1)  
**Elizabeth H. Hwang (7)**  
**Scott M. Ings (5)**  
**Stephanie M. Korszen (6)**  
**Michael J. Kramarz (9)**  
 Nicholas C. A. Laucis (2)  
 Devon M. Lauer (4)  
**Gustavo Lee (9)**  
**George W. Lefelar (9)**  
**Jordan A. Lewis (9)**  
**Jack Li (9)**  
**Xiao T. Li (9)**  
**Victor C. Lieu (9)**  
**Genevieve Lipp (5)**  
**Emily A. Liu (9)**  
 David B. Lue (1)  
 Ashley H. Lyerly (1)  
**Samanthe M. Lyons (9)**  
 Mark L. Maynard, Jr. (1)  
**Michael A. McArthur (6)**  
**Matthew T. McKenna (8)**  
 Carson C. Moore (2)  
**Gerard J. Moorman, Jr. (8)**  
 Brian G. Moy (1)  
**Alexandra Nichols (9)**  
 Corbin T. Page (4)  
 William G. Patrick (3)  
**Leonard Pfeiffer V (5)**  
**Alaina R. Pleatman (9)**  
**Emily Poplawski (9)**  
**Ankit Prasad (9)**  
**Jason D. Rehlaender (7)**  
**Samuel J. Reiss (9)**  
**Taylor C. Rhyné (8)**  
**Kalen J. Riley (9)**  
 Emily M. Robison (2)  
 Rishabh B. Sinha (1)  
**Kevin C. Story (9)**  
**Mathavi J. Strasburger (9)**  
 Prashant K. Swaminathan (1)  
**Jason S. Taylor (7)**  
**Michelle A. Torski (9)**  
**Amy M. Wen (7)**  
**Jamie F. Wilkie (6)**  
**Peter C. Williams (9)**  
**Tianyi Wu (9)**  
**Patrick P. Ye (9)**

#### **Class of 2011** **74 Donors/ 262 Class Roll** **28% Participation**

**Joseph K. Ahdoot (9)**  
**Pamela G. Anderson (7)**  
**Michael R. Ansel (5)**  
 Stephen R. Bardin (3)  
**Michael T. Bell (8)**  
**Rachel L. Belzer (8)**

Joav Birjiniuk (1)  
**Michael J. Black (5)**  
**Adam W. Caccavale (8)**  
**Haoyu Chen (8)**  
 Kaiting Chen (1)  
 Shame Chikoro (2)  
**Brett B. Cook (8)**  
**Hatti Cutcliffe (8)**  
**Matthew T. Davis (7)**  
 Hudson H. Duan (3)  
**Jared A. Dunnmon (8)**  
**Megan K. Finley (8)**  
**Jeffrey L. Forte, Jr. (8)**  
**Lyndsey M. Fyffe (8)**  
**Ankur B. Gupta (6)**  
**Andrew J. Harris (7)**  
**Justin M. Haseltine (8)**  
 Corinne E. Horn (2)  
**Robert W. Hyberg (8)**  
**Sean L. Hyberg (6)**  
**Brandon D. Jones (8)**  
**Ga-Young Joung (8)**  
**Samantha M. Klug (8)**  
**Jeffrey S. Kreutter (8)**  
 Francesco Larocca (2)  
 Anna M. B. Laucis (2)  
 Tiffany T. Lee (2)  
**Charles R. Levergood (8)**  
**Chao Li (5)**  
 Richard Y. Li (1)  
**Edward Liao (8)**  
**James E. Love, IV (8)**  
**Trisha K. Lowe (6)**  
**Elyse L. Marks (7)**  
 Timothy J. McDowell (3)  
**Daniel J. Moss (8)**  
 Maura H. Mulroy (4)  
**Ralph Nathan (8)**  
**Samuel F. Pancoast IV (7)**  
 Richard B. Parran, Jr. (4)  
**Cameron E. Parrish (8)**  
 Andrew T. Pettit (1)  
**Adam W. Pollak (5)**  
**Mark W. Pratt (8)**  
**Anita M. Raheja (8)**  
**Travis J. Rapp (7)**  
 Joseph P. Repp (1)  
 John M. Reynolds (4)  
 Kristina T. Rotolo (1)  
**Emma V. Rovit (8)**  
 James L. Royce (1)  
 James M. Royston, Jr. (1)  
**Laila Sharafi (7)**  
 Laura A. Struzyna (1)  
**Eric N. L. Thorne (8)**  
**Chen-Ling C. Tsai (8)**  
**Anjali S. Vora (8)**  
**Jeremy T. Walch (8)**  
**Kelly A. Waldman (8)**  
**Matthew M. Wander (8)**

**Xin Wen (6)**  
**Scott A. Winkleman (6)**  
 Cristina I. Wong-Nomura (1)  
 Blair B. Woolheater (1)  
**Benjamin Y. Xie (5)**  
 Ka Zhang (2)  
**Scott N. Zhang (8)**

### Class of 2012 89 Donors/ 269 Class Roll 33% Participation

**Vidhan Agrawal (7)**  
 Hamid A. Ali (1)  
**Amy M. Allen (7)**  
**John T. Anton (7)**  
 Megan C. Arias (1)  
**Bharat Arora (5)**  
 Brian A. Au (1)  
 Mark J. Baden (1)  
 Samuel J. H. Baek (1)  
**Laura L. Barnes (7)**  
 Paola L. Baskin (3)  
**Christopher R. Bayliss (5)**  
**Adam J. Bennett (7)**  
**Annelise J. Blomberg (6)**  
 Walter W. Bruno (1)  
 Akshay Buddiga (1)  
**Meng-Yang Chen (7)**  
**Michael Chen (7)**  
 Kathryn M. Chiarelli (1)  
**Elizabeth R. Cobb (7)**  
**Robert M. Curtis (6)**  
**Michael J. Deng (6)**  
**Robert J. Dimaiolo (7)**  
 Caleb M. Duncanson (2)  
 Shun Fan (4)  
 Michael B. Fausone (3)  
**Rachel A. Fleming (7)**  
**Cody N. Freeman (7)**  
**Michael J. Fritz (5)**  
**James C. Gabriel (7)**  
**Nicolas S. Gorman (7)**  
 John A. Hodge II (2)  
**James Hsieh (7)**  
 Jung H. Ko (1)  
**Steven J. Kober (7)**  
 Siddhartha Kosaraju (3)  
 Sarah O. Larson (1)  
**Jessica A. Lehigh (7)**  
**Ming J. Li (7)**  
 Tian Li (1)  
 Kevin M. Lieberman (2)  
 Qiuchen Lin (3)  
**Jared M. Lippell (7)**  
**Dianna D. Liu (7)**  
**William G. Mackabee (7)**  
 Dyuti Mahendru (1)  
**Benjamin Maimon (6)**  
**Andrew G. Mang (7)**  
 Margaret E. G. Milby (1)

**Jennifer L. Molnar (6)**  
**Zaki D. Moustafa (7)**  
**James W. Mullally (7)**  
**Michael D. Oberst (5)**  
**Izundu C. Obi-Onuoha (7)**  
 Han S. Park (3)  
 Jeffrey W. Peyser (3)  
 Hilary N. Pherribo (1)  
 Rose M. Phillips (2)  
**David C. Radford (7)**  
**Vijay Ram (6)**  
**Jordan H. Rehlaender (7)**  
**Michael R. Rhodes (7)**  
**Andrew G. Rohm (7)**  
**Roshan K. Sadanani (7)**  
**Steven L. Schlaseman (7)**  
 Thomas G. Schuhmann, Jr. (3)  
**Catherine R. Schulte (7)**  
**Robyn N. Schwartzman (7)**  
**Han-Yu Shen (6)**  
**Lauren E. Shwisberg (7)**  
**Alex B. Sloan (7)**  
 Taylor J. Steindel (4)  
**Martin H. Steren (7)**  
**Michael S. Sullivan (7)**  
**Ross K. Taggart (7)**  
**Anna C. Territo (7)**  
 Joshua L. Thai (1)  
 Daniel P. Tweed-Kent (1)  
 Margaret V. Upshur (4)  
**David R. Vander Schaaf (6)**  
 Katrina M. Wisdom (1)  
 Thomas Q. Xu (1)  
**Jiaqi Yan (7)**  
 Kevin S. Zhu (3)

### Class of 2013 73 Donors/ 291 Class Roll 25% Participation

**Supriya M. Balachander (6)**  
 Thomas M. Bierbower (1)  
 Joyce Y. Cahoon (2)  
 Ross P. Cahoon (2)  
**Timothy A. Carlson (6)**  
**Natalia R. Carvalho (5)**  
 Frank K. Chang (1)  
 Sijie Chen (3)  
**Christine D. Dalton (5)**  
**Danielle R. Dean (5)**  
**Chris Dennis (6)**  
**Kerri Devine (6)**  
**Derek C. du Plessix (6)**  
 Casey J. Dunn (3)  
 Gregory A. Evans (2)  
**Robin L. Farrell (6)**  
**Lee A. Ferber (6)**  
**Christina A. Gancayco (6)**  
 Lee S. Gilbert (3)  
**Juan F. G. Granados (5)**  
 Jake E. Greenstein (2)

Alexander J. Groszewski (2)  
 Jeremy D. Hockman (1)  
**Donald V. Husa (6)**  
**Wei Q. Jiang (6)**  
**Mark Kagika (5)**  
 Ishan Kapoor (1)  
 Jeong H. Ko (2)  
 Caleb S. Kroloff (4)  
 Hersh Lakdawala (3)  
**Christine E. Larson (6)**  
 Daniel D. Lasowski (2)  
**Carl E. Lawson (6)**  
 Betty Liu (2)  
 Jinchin Liu (2)  
 Justin T. C. Liu (3)  
**Alexander T. Mariakakis (6)**  
**Mason H. Meier (6)**  
**Ryan D. Millner (5)**  
 Marietta J. Morris (1)  
 Sagar G. Naik (3)  
**Brian G. Norton (6)**  
**Amit Parekh (5)**  
**Bradley R. Peet (5)**  
 Nicholas Pignotti (3)  
**Howard C. Ray III (6)**  
**Michele Reshef (6)**  
**Gregory A. Robins (6)**  
 Dominick I. Robinson (4)  
 Derek J. Schulte (1)  
**Laura E. Sciarrino (5)**  
 Constandi J. Shami (1)  
 Michael W. Simmonds (1)  
 Alexander S. Skabardonis (2)  
**Emily Sloan (6)**  
**Colette B. Soloff (6)**  
**Evan Strother (6)**  
**Bennie Su (6)**  
 Gregg B. Thawley (1)  
**John Tran (6)**  
**Joshua O. Usoro (6)**  
 Zhichun Wang (1)  
 Adam J. Williams (1)  
 Tianxiang Xiong (1)  
**Steven K. Yarmoska (6)**

### Class of 2014 72 Donors/ 276 Class Roll 26% Participation

Jawad N. A. Al-Masannat (4)  
 Claire C. Alligood (1)  
**Andrew M. Ang (5)**  
 Ifeoma Anyansi (1)  
**Jade M. Brown (5)**  
 Jessica Cao (2)  
 Kanchan Chauhan (1)  
 Jeffrey S. Chen (1)  
**Deborah Chi (5)**  
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**Class of 2015**  
**80 Donors/ 290 Class Roll**  
**28% Participation**  
**Jessica B. Allen (4)**



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**66 Donors/ 278 Class Roll**  
**24% Participation**

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 Muhammad Wasim (2)  
 Courtney White (2)  
**Edward Yin (3)**  
 Jiawei Zhang (1)  
**Sherry J. Zhang (3)**

## Class of 2017

**65 Donors/ 311 Class Roll**  
**21% Participation**

Babatunde S. A. Abu (1)  
 Kerim Algul (1)  
**Sebastian R. Baquerizo (2)**  
**Madeleine G. Bernstein (2)**  
**Andrew Buie (2)**  
**Derek Y. X. Chan (2)**  
 Mayank Dubey (1)  
**Michael R. Duch (2)**  
**Meghan E. Fox (2)**  
**Udita D. Ghoshal (2)**  
**Jeremy T. Gonzales (2)**  
**Dylan A. Grien (2)**  
**Daniel A. Hull (2)**  
**Anirudh Jonnavithula (2)**  
 Claire Kaptinski (1)  
 Andrew T. Katsohirakis (1)  
**Cassidee R. Kido (2)**  
 Edward Kim (1)  
 Rekha S. Korlpara (1)  
**Kai Y. Lee (2)**  
**Marianne Lee (2)**  
**Matthew A. Levantin (2)**  
 Richard R. Liu (1)  
**Yanmin Ma (2)**  
 Michael J. Maslin (1)  
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## Class of 2018

**56 Donors/ 289 Class Roll**  
**19% Participation**

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**Arya Deniz (1)**  
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**170 Donors/ 303 Class Roll**  
**56% Participation**

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 Andrade, Gustavo  
 Anning Yoshihara, Sakura  
 Avlani, Manav  
 Baer, Kyle  
 Barbano, Matthew  
 Barone, Michael  
 Bergamini, Ryan  
 Berger, Mitchell  
 Bernt, Daniel  
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 Blau, Sarah  
 Blumenstock, Alexander  
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 Bognar, Mitchell  
 Brooke, Nathaniel  
 Catillon, Eva  
 Chojkiewicz, Emilia  
 Cohen, Jack  
 Cohen, Rebecca  
 Cox, Elaine  
 Culbert, Alexander  
 Dalla Rosa, Brandon  
 Das, Rohit  
 Davis, Noah  
 Detwiler, Paige  
 Dharra, Monika  
 Dhillon, Sachal  
 Dickson, Matthew  
 Dierman, Rory  
 Dighe, Zui  
 Ding, Weiye  
 Donley, Patrick  
 Ellis, Audrey  
 Esses, Cameron  
 Fakhoury, Taia  
 Faulkenberry, David  
 Fenjves, David  
 Fettes, Logan  
 Fisher, Edward  
 Fleeting, Chance  
 Freire, Remy  
 Garlanka, Sujay  
 Gehsmann, Kevin  
 Goldman, Gregory

Gottiparthi, Vishnu  
 Green, Daniel  
 Griffin, Elizabeth  
 Gross, Amanda  
 Guo, Katherine  
 Gupta, Neil  
 Gwynn, Olivia  
 Holt, Danielle  
 Johnson, Connor  
 Jones, Garrett  
 Kaiser, Joseph  
 Kelleher, Andrew  
 Krogius, Michelle  
 Kurtaliaj, Era  
 Kwon, Young Jae  
 Langford, Lauren  
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 Li, Kelsey  
 Liang, Kendall  
 Lin, Elliot  
 Linde, Benjamin  
 Liu, Samuel  
 Lorenzana-Saldivar, Erick  
 Lu, Tracy  
 Lyu, Cheng  
 Madhira, Marisha  
 Malhotra, Vidur  
 Meathe, Tyler  
 Mehta, Avni  
 Merriner, Ryan  
 Meuser, Ashley  
 Molino, Nicole  
 Montgomery, Courtney  
 Moon, Samantha  
 Mullett, Jacob  
 Murtagh, Rachael  
 Muyres, John  
 Myhre, Jack  
 Nazario, Andres  
 Nellore, Adarsh  
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 Nisbet, Riley  
 North, Claire  
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 Ortiz, Michael  
 Osei, Madden  
 Owsiany, Joshua  
 Palmer, Emma  
 Paroby, Rachel  
 Patel, Dhruv  
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 Paul, Anthony  
 Pearlman, Charles  
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 Watson, Nathan  
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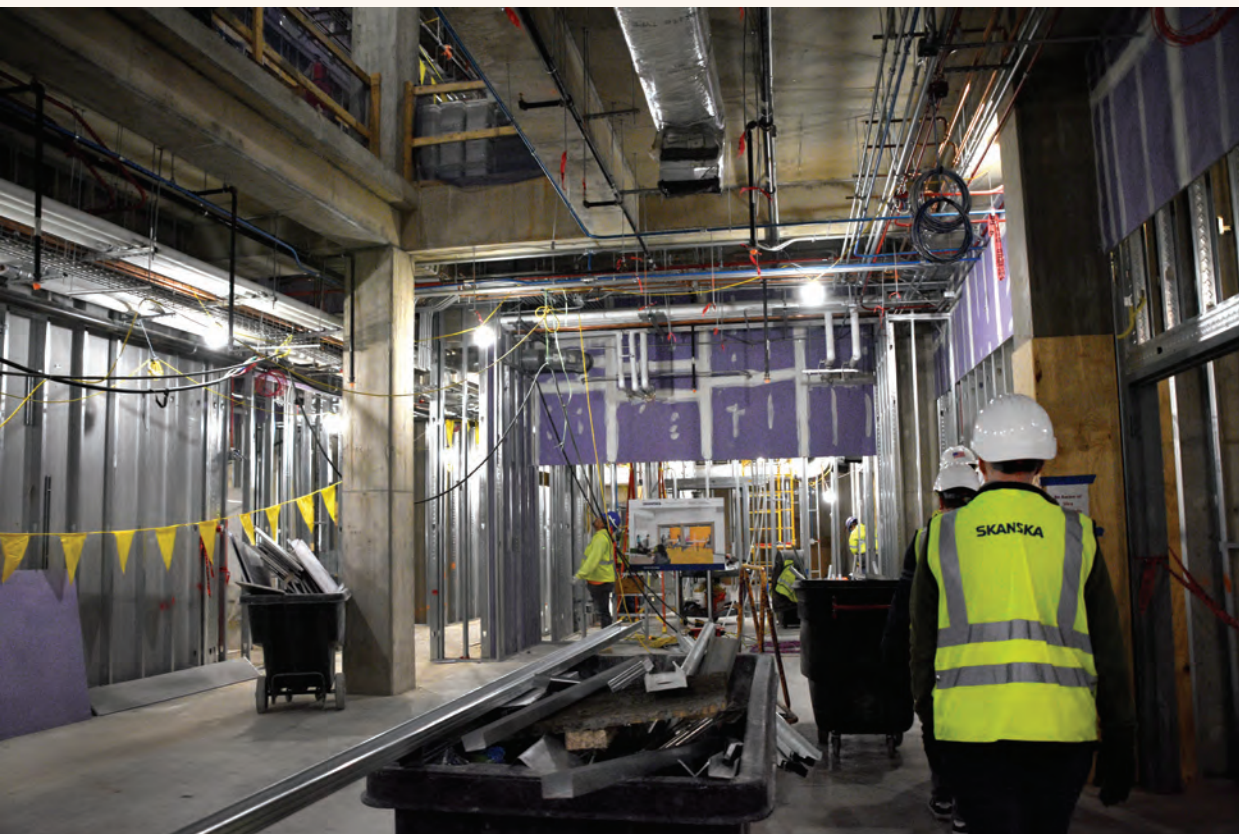
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Dr. Linda Franzoni Serra  
Dr. Richard K. Serra

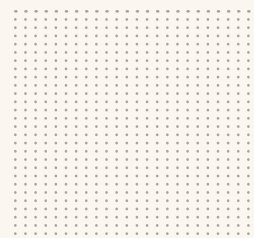
Dr. Allan B. Shang  
Ms. Mica S. Smarse  
Professor Daniel Jeremy Sorin  
Dr. and Mrs. Leonard D. Spicer  
Mr. Neil Kenton Stafford  
Dr. Betty Boyd Staples  
Dr. Stacy Lynne Tantum  
Dr. Gregg Edmund Trahey  
Dr. Kishor S. Trivedi  
Professor George Alexander Truskey  
Mr. Tuan Vo-Dinh  
Dr. Jeffrey Lawrence Warhaftig  
Dr. Adam Perry Wax  
Professor Mark R. Wiesner  
Professor Blake S. Wilson  
Dr. Patrick Donahoe Wolf  
Dr. Fan Yuan  
Mr. Rami David Zheman  
Professor Pei Zhong





# PROGRESSES

**FRONT AND BACK COVERS:**  
Areas in the New Engineering Building begin to take the shapes of the original concept art for the spaces. Photos by Morgan Feist.





# ineer

