

**UCLA** College | Physical Sciences  
**Mathematics**

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## We are Mathematics

FALL 2023

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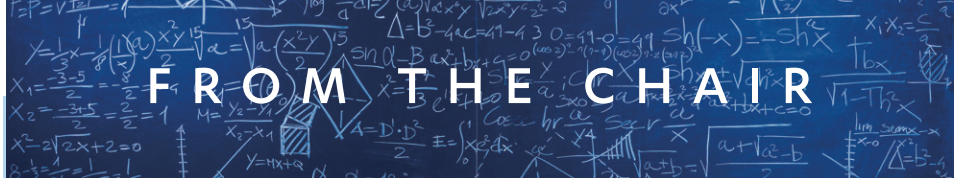
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## FROM THE CHAIR

### SOME FINAL THOUGHTS

My term as chair concluded this June after a five-year tenure. It has been an eventful period for the Department. COVID and the recent strike of our graduate students have been just two of our challenges.

The COVID pandemic forced us to explore new technology and rethink how we organize seminars, classes and exams. I am proud of our cadre of teachers who continued to provide high-quality instruction under these most difficult and unusual circumstances. An ever-present issue, particularly in the aftermath of the pandemic, is strained finances. But we have developed new resources through generous gifts from alumni and emeriti. For instance, we created a new teaching prize for postdocs, with a heartfelt donation from the Liggett family. These contributions have enabled us to maintain a strong program.

One of my priorities was to improve transparency and communications among all our internal stakeholders. We incorporated representatives from our staff and student body, including postdocs, graduates and undergraduates, into departmental committees previously and exclusively composed of faculty. We also created a departmental EDI (equity, diversity, and inclusion) committee, to provide a platform for the concerns and suggestions of all groups invested in the Department's processes and procedures.

Knowing the critical importance of our teaching and research commitments, I have devoted a large proportion of my efforts to recruiting, promoting and retaining promising and accomplished mathematics faculty. Over the last five years, many of our colleagues have retired and some have moved on to new opportunities. Seeing our new colleagues flourish and excel here at UCLA has been one of the most rewarding aspects of my job.

During my tenure, the Department underwent its regular program review, which is conducted every eight years by the Academic Senate. During the process, an external reviewer referred to us as one of the "crown jewels" of UCLA, an accolade attributable to the hard work and excellence of our mathematics community. I feel assured that this reputation will continue. I wish my colleague and successor, Chandrashekar Khare, all the best as he steers the Department forward!

**Mario Bonk**

Professor and Chair, UCLA Department of Mathematics



# 3 WOMEN TAKING MATHEMATICS INTO THE 21<sup>ST</sup> CENTURY

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Cindy Elkins '87

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Lisa Markus '89

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Davida Milo '90

## CINDY ELKINS '87

**B.S. in Applied Mathematics and Computing**

**M.B.A. from Santa Clara University**

Cindy sums up her work philosophy in a way that has served her well. “What do I want to learn, where can I learn it and how can I apply what I’ve learned?” As a child, she put this ideology to good use in mathematics, which she loves, and her efforts were rewarded, particularly by one 7th grade teacher who promoted her to an accelerated math class. She comments, “That one moment when someone notices you can stay with you forever.” Despite the validation, she acknowledges that her UCLA mathematics classes weren’t easy. “I struggled sometimes.”

Following graduation, Cindy worked as an IT specialist, but her interests evolved, and she eventually opted to pursue an MBA. She reports, “I was working full-time, and I got a lot out of my graduate classes because I had real-world questions and issues rather than theoretical ones.”

Her working life changed in 1999 when she moved to a completely different job at Ariba, a high-flying startup in the Silicon Valley that was leading the eCommerce B2B revolution. The decision was pivotal to her career. By 2000, she was vice president and general manager of supplier solutions. In 2004, she was the proud mother of twin daughters, which required her full attention.

Returning to work, Cindy set her sights on the emerging needs of the biotechnology industry, eventually landing a job at Genentech. At that time, the company had a pipeline of new therapies for hard-to-treat diseases, including cancers, which required a total digital transformation. “Our team was ready with interactive patient and provider websites, reimbursement



CINDY ELKINS '87

processes, and marketing systems the day we received FDA approvals on a drug.”

She stayed with Genentech for almost 10 years, rising to vice president of pharma informatics across the Americas. During her tenure, the company was acquired by Roche pharmaceuticals. From this experience, she learned that the perfect time to present innovative plans is during chaos and uncertainty because there is an openness to out-of-the box ideas. She states, “Companies look for people who can find a way through, and I took advantage of the distraction.”

While at Genentech, she joined her first board, Weight Watchers, serving for five years alongside Oprah Winfrey. She remarks, “I learned so much. It was a unique business environment with an array of challenges across two industries — community and wellness. We had to rebrand the products and services, grow our target demographic and transition from in-person centers to an online business.” She now serves on four boards.

Leaning on her accomplishments, Cindy accepted a new position in 2017 as chief information officer for Juno Therapeutics, a pioneer in cell therapy. Over the course of three years, she delivered a world-class platform and associated services that enhanced the patient experience. While the work was fascinating, the firm’s ingenuity became the target of two acquisitions within a year. It was the right time to leave, and there was a need to turn her attention to family once again.

Cindy is currently focused on consulting and board membership. Looking back, she says, “I realize I have spent my career thriving in areas that were new and unproven, and my math degree helped me do that. It gave me the ability to manage the unknown and reconstruct complex issues in new and better ways.”

## LISA MARKUS '89

### B.S. in Mathematics/Economics

After almost three decades as a leader and consultant in actuarial science, Lisa remains one of its biggest cheerleaders. “I love my field because I get to work with numbers on a clear task, interpret data, tell a story and help companies plan their paths forward.” Also, she maintains, actuaries make great colleagues. “We are a hardworking, collaborative bunch.”

In the 1980s, actuarial science was a budding profession, not established as a major in the Department until 2013. So Lisa was unaware of the field before her high school math teacher, a woman, suggested it. A female math teacher was very innovative at the time, so the advice made an impression on her. Lisa signed up for courses as a UCLA freshman.

Following graduation, Lisa joined Transamerica corporation as an actuary and stayed for eight years, eventually promoting to assistant vice president. During that time, she proceeded to take the 10 exams required to become a certified actuary. The exams are two to six hours long with a pass rate of 40–50 percent. “It’s rare to pass every exam on the first try, and I didn’t always do it.” She reports that Transamerica treated its employees very well in terms of career support, giving them study hours and covering books and exam fees. They also handed out bonuses and salary increases upon passing an exam.

Lisa left Transamerica in 1997 in search of something different. After several years experimenting with actuarial positions in a range of businesses, she formed her own consulting firm in 2005. “I liked the idea of working with different organizations, and having my own business gave me that opportunity.” She even served as a part-time adjunct professor of accounting and finance at California Lutheran University for two years.

Her new venture enabled her to work with Prudential, Farmers Insurance and Pacific Life over the following six years. She explains, “It was a good choice for me during that time because I could manage my schedule while I was taking the lead in raising our two children. Being an actuary is great if you want flexibility. There aren’t that many of us, so once you become certified, you have a lot of options as well as job security.”

When her children were older, one is now premed at UCLA and the other a new college grad, she opted for a full-time job, joining AIG in 2015. The firm spun off its life insurance sector into Corebridge Financial in 2022, and she went with it as chief finance actuary of institutional markets. She was ready for a senior level role.

In addition to her demanding, new job, Lisa has become very involved in the Department’s actuarial program, particularly with the Bruin Actuarial Society. The program has undergone monumental growth over the intervening years. She remembers, “When I was at UCLA, we posted flyers trying to get other students interested. Now I have a UCLA intern working with me.” She finds it inspirational and uplifting to be involved in the Department and working with students again.

Lisa reiterates, “I can’t say enough about the profession. I’m in a very good place in my life and career right now, and that’s partly a result of the choices I made as an undergrad. Thirty years on, math students have many more opportunities. Actuarial science is thriving, data theory is the newest frontier, and I suspect, artificial intelligence is right behind it.”



## DAVIDA MILO '90

### B.S. in Applied Mathematics/ Computer Specialization

**D**avida has built her career around developing and managing information technology systems for large corporations. Lately though, she has shifted focus to her alma mater, specifically, helping to increase the resources of the UCLA physical sciences programs as a volunteer and board member. She currently serves as chair of the Division of Physical Sciences Board of Advisors, where she has been a member for 12 years, and participates in the Chair's Council for the departments of mathematics and statistics. Among her many invitations and events, she was the 2021 Commencement Speaker for math.

Davida discovered her mathematics path in high school. In particular, she credits her calculus teacher, who she remembers as remarkable and pivotal in her decision to choose a math major at UCLA. She reports, "I felt comfortable in the Department, and I developed a profound appreciation and understanding of the power of math as I went through college."

That comfort level in a field monopolized by men — "I had only one female professor and that was in my last quarter" — gave her the confidence to take advantage of a new computer science program offered to UCLA math majors as a joint course of study. She remembers, "When I started my degree, there was no Internet or email, so computer science just sounded interesting at first. However, it turned out to be crucial, opening doors for me more than once."

Following graduation, Davida accepted a job offer at Accenture. She recalls, "The template was very rigid. All new college graduates began as staff employees and were promoted from there. I had



DAVIDA MILO '90

phenomenal training, which I have relied on ever since." She worked at Accenture for 10 years, promoting to senior management and successfully leading multiple deliveries of business and technology optimization as well as system implementation.

Davida left Accenture and joined Pacific Investment Management Company (PIMCO), one of her firm's own clients, in 2001. As the head of PIMCO's global customer relationship management platform, her first task was to fix the product that was in place. She recalls, "We turned around an ailing information system and continued to improve it over the next 13 years." It remains a fixture of the firm's operations.

The job requirements at PIMCO were demanding with long hours, cross-country travel and mandatory 24/7 email/text availability. But her responsibilities offered the opportunity to explore technology development and leverage it to solve business problems, which she loved.

In 2016, she founded her own consultancy. It was exhilarating, and the new independence enabled her to better juggle work and the home front. "I created flexibility when I needed it. We are led to believe that we can have it all, but life is a matter of give and take. Ultimately, we all have the same number of hours in a day."

Like so many others, the COVID pandemic gave Davida an opportunity to take an extended break and evaluate her options. She decided it was time to prioritize personal projects and give back. Her alma mater was at the top of the list.


She muses, "Training in mathematics makes you a complex problem solver, which is the foundation of so many professions. We are trained to tackle real-world problems, break them into components and systematically work toward a solution." To students, she advises, "If you see the power and beauty of math, pursue it and find a way to forge a career you can love."



LISA MARKUS '89

# INTEGRATIVE MATHEMATICS POSTER PROJECT

## Benjamin Banneker




He was the inventor of the first wooden clock in 1752. He made the clock by studying parts of a pocket watch he borrowed from a rich friend.

**“The colour of the skin is in no way connected with strength of the mind or intellectual powers.”**  
Benjamin Banneker


**BENJAMIN BANNEKER WAS A SCIENCE GENIUS**

In 1789, Banneker began making astronomical calculations that enabled him to successfully forecast a solar eclipse. His estimate, made well in advance of the celestial event, contradicted predictions of better-known mathematicians and astronomers.



**ANNUAL CALENDER AND MOON PHASES**

This 1793 edition of Benjamin Banneker's Almanac and Ephemeris features an annual calendar, statistical information, phases of the moon, astronomical data, and tide tables. Banneker's almanacs were unique because they featured social commentary and politically oriented literature.



Poster Created by: Jason Egner

## Dorothy Vaughan



Dorothy Vaughan was an American mathematician and human computer who worked for NASA.

Undeterred, Vaughan would quickly become very good at computer programming and help upskill her colleagues to do the same. Vaughan worked as a mathematician on the SCOUT Launch Vehicle Program that sent America's first satellites into space.

She became NASA's first black supervisor and one of its few female supervisors.

**“I changed what I could, and what I couldn't I endured”**

Vaughan faced a lot of discrimination in her quest for education. White librarians would try to shoo her away from the math and computer books in the “whites only” section of the library.

**“SEPARATE and EQUAL are two different things. Just cause it's the way, doesn't make it right.”**  
Dorothy Vaughan



Vaughan was awarded The Congressional Gold Medal.

Vaughan died of natural causes at the age of ninety-eight on November 10, 2008, in her hometown of Hampton, Virginia.



Vaughan served as the leader for the west area computing program for 10 years. She retired from NASA in 1971.

Poster Created by: Alexandria Flores and Julian King

Representing the UCLA departments of mathematics and education, respectively, professors Wilfrid Gangbo and Kyndall Brown have teamed with mathematicians Matt Jacobs (Purdue University), Edray Goins (Pomona College) and Tatiana Toro (University of Washington) on a small but highly successful interdisciplinary project at the Mann UCLA Community School in South Los Angeles.

Part research, part artwork and part public speaking, the project was designed to introduce 8th grade students to careers in mathematics before they promote to high school where most teens begin preparing for their futures. Prof. Gangbo adds, “We especially wanted to give the students role models they could relate to now and later.”


As part of their school curriculum during the 2022 spring term, the students were first tasked with researching and identifying accomplished mathematicians from underrepresented groups. They then described their scholars’ journeys, giving them life through poster art, and finally communicating their stories in classroom presentations.

To provide an edge to their work, an art competition was held in which the whole student body voted for their favorite posters. The faculty and teachers calculated the votes and added their own. In all, 13 posters were created, and three pieces were selected for

## MIDDLE SCHOOL STUDENTS LEARN, CREATE AND ACHIEVE

# Katherine Johnson, Ph.D.

AMERICAN MATHEMATICIAN 1918–2020




**“I don’t have a feeling of inferiority. Never had. I’m as good as anybody, but no better.”**

Katherine Johnson, Ph.D.



Katherine Johnson was an American mathematician who broke barriers in the white and male dominated aerospace industry. She is most well known for her aeronautics work at NASA. Her calculations were critical to the success of the early U.S. space program, including the first manned flight.

The main challenges Johnson faced as an African American female were segregation and discrimination. In 1939, she was selected to be one of the first three black students to integrate the graduate program at West Virginia University.

Despite her access to advanced mathematics education, Katherine was initially only able to find a job as a teacher. It was not until 1953 that she was able to obtain a job working for the U.S. space program. Johnson was able to find success in her career by ignoring racial and gender barriers and insisting on joining meetings.



Johnson was famous for her tremendous mathematical capability and was often referred to as a “human computer.” During the first manned space expedition in 1962, John Glenn refused to proceed with the mission until Johnson had hand checked the computer’s calculations.



Poster Created by Karen Brantley

monetary prizes. The winning projects profiled two gifted female mathematicians who broke gender and race barriers working in the aerospace industry during the mid-20th century. The third, a mathematician and naturalist directly descended from freed African American slaves, invented the first wooden clock, among other accomplishments.

By making posters part of the curriculum, the faculty team incorporated an element of fun into the project, at the same time promoting students’ creativity. The posters were subsequently offered to university math departments around the country at \$200 each, which empowered all project participants. Said Prof. Gangbo, “As part of the sale, we required the universities to display the posters on their walls as inspiration to today’s promising mathematicians.”

Funding for the project was provided by the UCLA departments of mathematics and education, which covered supplies and teaching support. Sales of the posters brought in about \$19,700, half of which will go toward next year’s project, transforming the nascent program into a self-sufficient enterprise. The other half will be used to expand the program to more schools. Wilfrid reports that the team will make changes to the curriculum going forward in order to keep it fresh and maintain its entrepreneurial spirit.

## The Vision of Horace Mann UCLA Community School

A partnership between the Los Angeles Unified School District and the UCLA School of Education & Information Studies, the Mann UCLA Community School is an alternative to traditional middle and high school education. Based on inclusive leadership and shared decision-making structures, the curriculum offers instruction in collaborative, project-based learning and performance-based assessment centered on the individual. Community outreach extends learning beyond the school environment. The school is helping to reshape opinions about public education, and at the same time, increasing the number of historically under-represented students who attend college. This year, graduating students received invitations to study at UC Berkeley, UC Davis, USC and the U.S. Airforce Academy, to name just a few colleges. Some students were offered full-ride scholarships, including at UCLA and NYU.



# TERRY TAO

JOINS THE  
CONVERSATION  
ABOUT

Math is the ultimate test for AI **because it cannot abide “WORKS MOST OF THE TIME.”**

“While it can write an essay, a play or a song if you provide parameters, its creations lack depth and substance. It has flashes of intuition, but it can’t think for itself.”

**P**ROFESSOR TERRY TAO’S recent sabbatical has afforded him the time and opportunity to co-author seven papers and cap his 25 years at UCLA with new projects focused on artificial intelligence (AI). “Actually,” says Terry, “AI has been around for several years. The big breakthrough is accessibility — with the emergence of ChatGPT, anyone can use it.”

He believes that the bot is effective at answering simple to moderately difficult questions on known topics. “For instance, you can query, ‘How do I measure the radius of the Earth looking at objects on the horizon?’ The bot will provide the steps in plain English or in mathematical terms.”

Regarding his own experience with ChatGPT, Terry reports, “It has proven itself to be a good partner, particularly with tedious tasks.” He used it to convert a pile of references obtained from MathSciNet and format them in the LaTeX bibliography environment. He adds, “It also saves me time writing formulas, and it excels at laying out the form of a topic, so it’s a helpful tool for jumpstarting a project.”

“However,” he maintains, “ChatGPT does not directly assist me with core tasks, such as attacking an unsolved math problem. It can provide an initial approximate answer, which can then be combined with traditional research to find the correct one.” According to Terry, there exist some very problematic elements to the bot’s performance. While it can write an essay, a play or a song if you provide parameters, its creations lack depth and substance. He concludes, “It has flashes of intuition, but it can’t think for itself.”

Because of ChatGPT’s limitations at this stage of development, Terry urges prudence when it comes to learning a subject or forging a career. “It’s like having a good and studious graduate student present a topic to the class. I can tell when that student is improvising and doesn’t have a firm understanding of the topic, but others may not. I’ve come to the conclusion that if you use the AI blithely in mathematics, it can lead you astray.”



Terry's first foray into the public arena of AI research has been both consultative and collaborative. In February of this year, he co-managed a workshop hosted by the UCLA Institute for Pure and Applied Mathematics (IPAM), bringing together computer scientists and mathematicians on the topic of machine-assisted proofs. AI has quickly become the best way for mathematicians to speed up the process of checking proofs, especially very difficult ones. "The problem appeared to be that the two specialties don't have a lot of opportunity to talk to one another, so they don't always know how to work together." IPAM's hallmark interactive workshop format gave specialists in both fields the time and space to further their knowledge over the week-long event.

Terry currently co-chairs a working group on generative AI as part of his membership in the Presidential Council of Advisors on Science and Technology. The group's original plan was to review and report on its positive impacts initially, but the controversies around AI in the public sphere led them to first consider how scientists can help protect people from exploitation. A major governmental concern is deep fake text and images. A solution may be a digital signature embedded in the file address that authenticates the text or images. Further, a checkmark on the actual document would show that it's been authenticated when copies are made for the press and social media. These applications cannot be hacked.

The members will now turn their investigations to the positive uses of generative AI. One topic is drug design. Terry explains, "The task is vital to drug development, which historically, has been slow and very expensive. The technology would be transformative if it could provide ways to put credible chemical combinations together on paper rather than conducting experiments in a lab. That would make the process vastly more efficient."

In June of this year, the National Academies of Science, Engineering, and Mathematics hosted a virtual workshop titled, "AI to Assist Mathematical Reasoning." Terry, who joined the academy in 2021, was part of the organizing committee. "There was some thematic overlap, and a few speakers in common, with the IPAM program," he says, "but this effort prioritized the technical capabilities of machine learning algorithms."

In addition to leading these projects, Terry was invited to contribute to an online publication developed by Microsoft Chief Scientific Officer Eric Horvitz. Just published under the simple title, *AI Anthology*, the work is a collection of essays from 20 experts across the knowledge spectrum considering the technology's current, nascent state. The experts were asked to base their essays on an early access version of the GPT-4 large language model and incorporate two core questions into their responses: How might this technology and

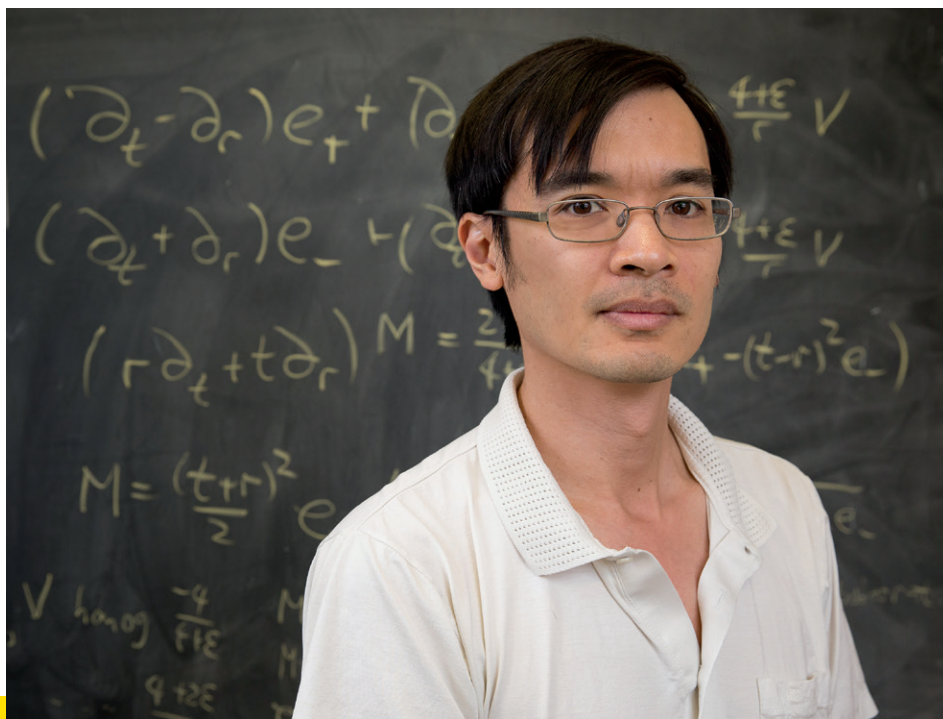
its successors contribute to human flourishing and how might we as a society best guide the technology to achieve maximal benefits for humanity?

Returning to Australia with his family this summer, his first trip back since the pandemic started, Terry coincidentally picked up a new award. He was named the 2022 Global Australian of the Year by Advance.org, a federally funded organization that highlights the work of Australian high-achievers. He has the added distinction of being the first person to receive this newly established honor.

While in Australia, he connected with an old friend to discuss a book they want to co-author on measurement as it relates to the universe. He has a life-long fascination with astronomy. He explains, The book will be divided into chapters representing different scales on the cosmic distance ladder. "It will be part storytelling and part mathematics."

Terry remarks that he is at a different place in his career now, and he's enjoying it immensely. He was 21 years old when he came to UCLA in 1996 as a Hedrick Assistant Professor, researching and writing at full-throttle. "That's all I did, and I was rewarded with prizes and honors and even the Fields Medal. Now, I find myself in a different role, collaborating with others on papers, projects, conferences, committees. I'm also doing more one-on-one consulting with other mathematicians, including students. I didn't see myself as a more senior academician when I started out, but I'm finding it very fulfilling."

Reflecting on his early life, he recounts, "When I was a child, I had no idea that you could be a mathematician by profession. Pure mathematics was not tangible, so what would you do? I always imagined a shopkeeper as the only job." He chuckles. "Now almost every profession includes math."



# MATH GRADS ARE POSITIONED FOR SUCCESS

**Employment opportunities for mathematicians and statisticians are projected to grow 30 percent from 2022 to 2032.**

**U.S. Bureau of Labor Statistics, 2022**

Many mathematics students ask the same question as they near the end of their college days: What can I do with my degree? Some pursue master's programs to enhance or complement their skills, and a few enter doctoral programs as preparation for academic careers. However, most are seeking good-paying, professional jobs in industry or government, and the outlook is exceptional.

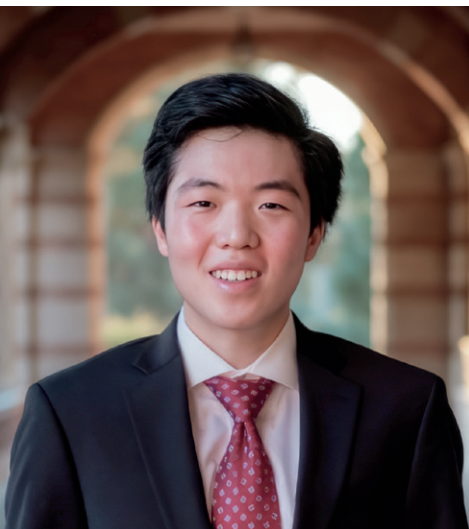
The most common employment fields for math majors are business, technology and science. The [US News 2023 100 Best Jobs](#) listing reflects career categories that are particularly suited to mathematicians, such as finance and data analysis. However, it is understood in professional recruitment circles that a background in advanced math and an ability to understand and analyze data are unequivocal advantages in many jobs. Armed with the depth and scope of their training and the Department's outstanding national reputation, UCLA mathematicians are uniquely positioned in today's job market.

Recent math grad Andy Chen ('22) secured a position as Quantitative Trading Analyst at the proprietary trading firm, DRW Holdings in Greenwich, CT. Utilizing his applied mathematics and statistics double major, he helps create mathematical models that give traders cutting-edge strategies to maximize profits. Andy states, "Trading relies heavily on mathematics, especially game theory. It's a nice blend of rigor and risk-taking, and that combination drew me to the industry."

Andy's résumé was enriched by his extracurricular student activities. He was a member, and ultimately, vice president, of The Data Science Union at UCLA for three years and an analyst and associate with the Bruin Hedge Fund for two and a half years. He is also an alum of the 2020 Summer Computational and Applied Mathematics Research Experience for Undergraduates (CAM REU), which is organized by Professor Andrea Bertozzi every year. He says, "That experience gave me a chance to showcase my applied math training, and it was a great talking point during job interviews."

As new UCLA math grads are considering a wide swath of opportunities, more seasoned alums have attained success as leaders and authorities working in industries they chose years or even decades ago.

Andy Chen





Almost 30 years into his career, math graduate Matt Cravets ('92) is Senior Vice President of Biometrics at GossamerBio, a clinical-stage biopharmaceutical company based in San Diego. Since his first job at Abbott Laboratories, Matt has served in data management roles of increasing responsibility across multiple pharmaceutical firms, both small and large, including Amgen and Biogen.

To increase his job potential, Matt chose to complete a master's program in applied statistics following graduation. He says, "There are many more opportunities for math grads today, and statistics is integral to the UCLA program now." He subsequently landed a position in an industry that he could be passionate about. He discovered early in his career that mathematics has the capability to change lives by improving outcomes for people with serious diseases.

He says, "The most amazing part of my career has been the ability to participate in clinical trials that have substantially contributed to successful drug therapies." One of his first opportunities was working on a drug called ritonavir at a time when the AIDS crisis was at its peak. "I was a very tiny cog in this huge machine, but being a part of that team was one of the most gratifying work experiences of my life."

Mathematics has been used to help uncover the universe, predict and plan momentous events and help resolve problems of all kinds, most recently and notably, the COVID-19 pandemic. The field is constantly evolving, and collaboration with other disciplines, such as science and engineering, is now *de rigueur*.

One of the Department's primary goals is to prepare students with the appropriate mathematical skills so they may excel in whichever paths they choose. While equations and data can seem unfathomable to some, mathematicians know that the prize at the end is simple — a path to a solution.

**Mathematics has been used to help uncover the universe, predict and plan momentous events and help resolve problems of all kinds, most recently and notably, the COVID-19 pandemic. The field is constantly evolving, and collaboration with other disciplines, such as science and engineering, is now *de rigueur*.**



Matt Cravets

## COOL JOBS FOR MATHEMATICIANS

- ▶ **Gameplay Engineer/Game Designer**
- ▶ **AI Analyst**
- ▶ **Meteorologist**
- ▶ **Pollster**
- ▶ **Investment Banking Analyst**
- ▶ **Bioinformatician**
- ▶ **Sports Statistician**
- ▶ **FBI Analyst**
- ▶ **Market Researcher**
- ▶ **Biomechanist**
- ▶ **Machine Learning Engineer**
- ▶ **Modeling and Simulation Analyst**

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