Academic Senate 2020-21 Distinguished Faculty Awards

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UCI University of California, Irvine



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Chair, Academic Senate

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Hal S. Stern Interim Provost and Executive Vice Chancellor

## **Committee on Scholarly Honors and Awards** 2019-20

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### **Donald R. Blake** Distinguished Professor Department of Chemistry **Academic Senate Better World Award**

I am extremely honored to receive the Better World Award. Being acknowledged for one's impact on society is quite humbling. The path taken that got me here was not the shortest line between two points! Many factors had

roles in shaping me to be the person I am today. My immediate family, my academic family, and a low Selective Service System draft number (I started boot camp three weeks after my 19th birthday) greatly impacted me. I was extremely fortunate to connect with UCI Professor F. Sherwood (Sherry) Rowland, who became my graduate advisor in 1978. By example he taught all of us graduate students how to handle adversity, choose research projects, and try to make a positive difference.

I didn't start off very fast in making a difference once I became a graduate student at UCI. I was just happy to tell people I was working with one of the guys who proposed that CFCs could destroy the stratospheric ozone. I was assigned to measure methane concentrations in air samples collected around the world. I was pretty sure that this project was not going to lead to anything important. In the early 1980s, Ed Mayer (also a graduate student in the Rowland Group) and I observed that methane concentrations seemed to be increasing in the atmosphere. We went to Sherry's office and told him. His response of "everyone knows that methane is constant in the atmosphere" was not the response we were hoping for! Six months later I gave a group seminar at Sherry's house and I again said that atmospheric methane was increasing and listed several problems that could occur if this was true. Sherry looked more closely at the data and agreed that concentrations of methane were in fact increasing in the atmosphere. (Methane is the second most important anthropogenic greenhouse gas in the atmosphere after carbon dioxide.) I learned two things from this experience. Sherry Rowland didn't know everything (like I thought he did!) and Sherry admitted that his original comments were incorrect. Working for/with someone like that was key to my later success.

My research branched out to measure other gases, mainly nonmethane hydrocarbons. This led to our discovery that liquefied petroleum gas (LPG) leaking from more than a million LPG tanks in Mexico City was a significant cause of the enhanced pollution in Mexico City. In 1995 Sherry and I were invited to meet people from the Ministry of Environment of Mexico, and we suggested a way to reduce the impact of leaky tanks without needing to fix all the leaks: we instead suggested that they change the chemical makeup of the LPG. Two years later a law was passed doing just that. Pollution levels in Mexico City have decreased significantly since 1995, in part because of the new LPG legislation. It was my first experience with participating in science that led to an outcome which positively affected society. It was a very humbling experience, and extremely fulfilling.

In the last two decades since the Mexico City study our research group has been involved in numerous other studies that have benefited society. In 2010 the Deepwater Horizon oil spill disaster occurred in the Gulf of Mexico. Our group collected some samples from land and boats upwind and downwind of the spill. At the same time as the oil spill occurred, we also happened to be involved in an airborne project studying California air quality. Once I discussed our oil spill findings with the project scientist for the California study, it was decided to take the aircraft being used in California to the Gulf of Mexico, where two sorties were flown. Results from the airborne samples identified extremely enhanced concentrations of hazardous gases.

Six years later we were asked to help local officials determine if any hazardous gases were being emitted along with methane from the Aliso Canyon Southern California Gas Company natural gas blowout. The leak lasted about four months and resulted in widespread health problems in local communities such as headaches and nosebleeds. We again used research aircraft to sample air downwind of the gas leak, and we also did ground-based sampling on SoCal Gas property near the well and in neighborhoods downwind of the blowout. This included 'citizen science' where we provided evacuated air sampling canisters that participants would open in their yards when they smelled the sulfur odorant that is added to natural gas. Some SoCal Gas folks were saying that some of the odor the residents were smelling was from a nearby landfill, but our analysis indicated that this was not the case.

Another study in a community impacted by local industrial sources took place in 2010 in the 'Industrial Heartland' of Alberta, Canada, which is one of Canada's largest hydrocarbon processing centers. Some residents of a nearby community were concerned about the impact of the industrial emissions on residential air quality and human health. Our group collected air samples in the community and downwind of several industries. We found elevated levels of known carcinogens such as benzene and 1,3-butadiene in the industrial plumes. Long-term exposure to high levels of benzene is known to cause leukemia, and a 13-year record of male hematopoietic cancers (leukemia and non-Hodgkin lymphoma) showed a higher incidence in communities closest to the Industrial Heartland compared to neighboring communities. This led us to recommend that measures should be taken to reduce emissions of these carcinogens. Sometimes studies like this receive pushback, but Sherry Rowland (who received pushback from the chemical industry after his CFC findings) gave the example of how as scientists we sometimes need to advocate for what the science is telling us.

My group's work on air quality has also led me to be invited to parts of the world that are heavily polluted but rarely sampled. In 2012 I was invited to participate in a study on the impact of the annual Hajj pilgrimage in Mecca (Makkah), Saudi Arabia. Hajj is one of the world's largest pilgrimages, with millions of pilgrims traveling to Mecca each year and performing rituals along the pilgrimage route at the same time. As a result, the traffic congestion is heavy which leads to concerns about air quality. In coordination with colleagues, we sampled the air in Mecca both during and after Hajj. Mecca is a city of tunnels, and the tunnels are shared by both vehicles and pedestrians. One of the major findings of the study was that concentrations of carbon monoxide (CO) and benzene sometimes exceeded short-term exposure limits in the tunnels during Hajj, which poses risk to human health. The study led to additional CO sensors being placed in the tunnels so that pollution can be better monitored.

My group continues to be involved in a number of studies related to climate change, air quality and human health. We recently provided recommendations to Korean policy makers as part of a larger study looking at ways to improve air quality in Seoul and surrounding regions. Other ongoing work includes studying emissions from biomass burning, which has become an increasing air quality and human health concern that is made worse by conditions such as extended drought and warmer temperatures. My group is also currently working with local officials sampling an asphalt production facility in Irvine in an attempt to determine if trace gas emissions occur at concentrations that are harmful to citizens downwind of the facility.

The Better World Award makes me reflect on hard work with colleagues, advocating for good science when necessary, and having a supportive family and an outstanding mentor in Sherry Rowland. I am very grateful for this honor.

Fun Fact: I write Haikus after major events in my life.



## Lorraine S. Evangelista, Ph.D., RN, FAHA, FAAN

Professor Emerita Sue & Bill Gross School of Nursing Distinguished Faculty Award for Mentorship

I am profoundly honored to be nominated for this award and would like to thank my Senate colleagues for their vote of confidence.

I have always been passionate about research and wanted to express this passion and inspire others to pursue a research career. To date, I have published over 125 papers in peer-reviewed journals and am one of the first investigators to identify the relationship between obesity and survival in patients with heart failure. I also wrote two book chapters and helped prepare two policy/position statements for the Heart Failure Society of America for the treatment of adult heart failure patients and the National Heart, Lung, and Blood Institute for the nutritional management of heart failure patients.

My work highlights the first paper demonstrating the effect of exercise training on reducing hospital readmission and enhancing the quality of life of patients with heart failure. Second, I was also the first to report the period elapsed between the onset of signs of heart failure and the period they arrive in the emergency room. This understanding has changed how we teach patients how to control their symptoms and lower hospital readmission. Third, I was the first to assess pedometer reliability and validity for measuring exercise activity in this population, allowing other investigators to use it as an internal validity test in exercise studies. Fourth, my unique insights on the disparities between underrepresented minorities shed tremendous light on their adherence problems and emotional responses to chronic disease.

In addition to my research, I am proud to have been engaged in both the Ph.D. program launched in 2013 and the Master's Entry in Nursing program, founded in 2017 at the Sue & Bill Gross School of Nursing. I was also a DECADE mentor and enjoyed working with the Graduate Division to promote an inclusive environment among our students. In 2017, I received a Fulbright Scholarship to work with nurses to develop their experience, skills, and ability to engage in evidence-based projects. In this role, I helped foster a culture of research excellence that promotes cross-cultural relations, cultural diplomacy, and intercultural competence between scholars in the U.S. and the Philippines.

Mentoring was always my passion. I received two important mentorship

awards from the Western Institute of Nursing and UCI, Institute of Clinical and Translational Sciences, to recognize my efforts to promote professional growth for others. To date, seven doctoral students have completed the doctoral program at the Sue & Bill Gross School of Nursing, and I was the chair of all but one of the students' dissertations (but I was also on her committee). As a mentor, I see each mentee as part of my family and steer them to become better people who will become future nursing leaders. My challenge is to always give them the torch of inspiration and wisdom to continue to expand their legacy.

I want to take the opportunity to acknowledge a few individuals. Thanks to my mentors for your guidance and for helping me develop my survival skills to succeed in academia. I'll be forever thankful for the pearls of wisdom you shared with me. To my nursing colleagues, the nursing profession deserves recognition for your hard work, and we should be proud of it. I understand that perfection is not within our control, but I also know that acting in this world through kindness, love, compassion, and integrity is why we are here. Most importantly, I want to acknowledge my family's continuous support. To my parents, you taught me the power of faith, the value of hope, the nature of courage, and the desire to love unconditionally. To my children, TL and Wendy, you are my pride and joy, and I am so proud that both of you have grown up to be very responsible and loving adults. To my dear husband, Ted, you had believed in me even when I succumbed and felt like giving up and loved me unselfishly and faithfully, and I will always be thankful for that.

And last but not least, thank you, UCI, for everything I've experienced while here. Time has flown, and the faces have changed, but the academic excellence, the students' standards, and the research leadership I see as an emerita professor and the spirit of UCI have only improved. To the UCI students, you have chosen an excellent path, so go confidently and share your wisdom with others while you contribute to global health and well-being. Finally, I would like to end with a quote from the book *Tuesdays with Morrie:* "Devote yourself to love others, devote yourself to the world around you, and devote yourself to creating something that gives you purpose and meaning."

**Fun fact:** During a flight to Sydney Australia on Quantas Airlines, I responded to an emergency call for an older person having a heart attack. I had to go to the cockpit to convey the patient's status to onground doctors and later to the paramedics who came on board when we had an emergency landing to take her to the nearest hospital.



Judith Stepan-Norris Professor and Chair Department of Sociology Distinguished Mid-Career Faculty Award for Service

Hopefully this short statement will give you a sense of who I am as a person, scholar, teacher, and member of the UCI community. As a first-generation college student from

a working-class family (the daughter of a carpenter and stay-at-home mom), enrollment at a four-year university didn't seem to be financially feasible for me or my sisters. But admission to UCLA, an excellent commutable campus, along with a California State Scholarship to fund my UC education, changed the trajectory of my life. UC gave me the opportunity to interact with and learn from intelligent, curious, motivated, and dedicated people across all disciplines. It opened up a vast world of ideas, it motivated me, and it rewarded me as I completed each goalpost. I have benefitted from UC again and again: when admitted to graduate school at UCLA, with my first academic job at UCI, with news of tenure and then immediately thereafter, appointment as Department Chair, when elected as Academic Senate Chair, and when appointed Vice Provost for Academic Planning. I'm sure many of you share uplifting UC-related experiences like that. My personal biography leads me to strive to make these types of experiences a reality for more people, to work to level the playing field by supporting all individuals' ability to succeed – whether it be students, staff, faculty, or community members. I have learned that talent and abilities are randomly distributed throughout the population, but opportunities to discover and nurture them are not. That's why accessibility to UC's excellence for hardworking and accomplished students from all California communities is so important. And that's why I am motivated to ensure appropriate support and a welcoming climate for all who join our university community.

My sociological scholarship addresses inequalities of all sorts. Most of my scholarly publications address the internal dynamics and external roles of U.S. labor unions. Over the last 65 years, they have declined dramatically, while income and wealth inequality have increased. My current empirical project seeks to understand the factors associated with union decline over the last century. I have also been interested in and published articles on inequalities in housing (the renters' movement), esports (how to move towards gender and racial/ethnic equity), and in higher education (the ADVANCE Program). I have served in

leadership roles and editorial positions in my professional association (American Sociological Association) and have been honored with professional scholarly awards for my co-authored book and articles. In my professional and academic leadership roles, my multi-method sociological training structures my approach to data collection and its application to practical problems and issues.

As a teacher I am mindful of the ways that a high-quality education can unlock students' potential. I seek to help students find their way by identifying their strengths and weaknesses along with their likes and dislikes and then to apply hard work to carve their paths forward. I design my courses to encourage students to embark upon their roads of discovery by presenting them with new information (content), a balance of different ways to think about that information (theories), and new tools to evaluate the effectiveness of theories in organizing and explaining the information (methods). Mastery of my course content helps students to develop their skills in critical thinking, writing, oral communication, and teamwork.

As a member of the UCI community, I am committed to advancing the overall UC mission. I have spent my entire academic career at UC and all the while, I have welcomed the opportunity to serve in a variety of roles to help bolster UC's mission and to pass on some of the great fortune I have experienced myself, on to others.

**Fun Fact:** My husband and I served as Mounted Volunteer Patrols for the National, State, and Local parks during 2009-2015. We trained in horse handling, CPR, and first aid and regularly patrolled the Santa Monica Mountains in order to aid hikers and bicyclists.



Arthur D. Lander Donald Bren Professor Department of Developmental and Cell Biology Daniel G. Aldrich, Jr. Distinguished University Service Award

I grew up in Brooklyn, New York, when Saturday Night Fever was a thing and Brooklyn was not yet trendy. Motivated

by dual loves for science and musical theater, I pursued both in college and waited to the last minute to choose between them. As an M.D.-Ph.D. student at UC San Francisco, I continued putting off career decisions, but eventually did postdoctoral research at Columbia University, from which I was soon recruited to a faculty position at M.I.T. My appointment was split between two disparate departments, generating confusion about what I was supposed to do. I remember a senior colleague pulling me aside and asking, "what's a nice fellow like you doing working on *proteoglycans?*" He was referring to a research topic I'd been smitten with because it was so complicated that no one else in my field would touch it. He launched into the famous story of the drunk outside a bar searching for his keys by a lamppost. A passing police officer joined the search but, failing to find the keys, asked the drunk whether he was sure this was where he'd lost them, to which the drunk replied, "no". When the officer asked why they were searching there, the drunk replied, "because that's where the light is." The advice being delivered—that a good scientist "looks where there's light", i.e. doesn't work on things off the beaten path—was received but, thankfully, ignored.

Somehow, I received tenure, but shortly afterward moved back West to join my wife, Anne Calof, whom I'd known since graduate school. We'd gone together to Boston, but her faculty quest landed her next at the University of Iowa. Fortunately, UCI was willing to have us both, and we relocated here in 1995. Less constrained by departmental expectations, I explored new areas. Influenced by great new colleagues, and as a result of my lab's findings (on proteoglycans, no less), I was drawn to some classical developmental biology problems that found me knocking on the doors of two mathematicians: Fred Wan, who'd come to UCI to be Vice Chancellor for Research, and Qing Nie, a rising star Fred had recruited for the math department.

Our collaboration began as little more than casual meetings filled with scribbling on whiteboards. It took only three years for us to understand each

other! Soon we published an interdisciplinary paper that, for me, was gamechanging. No longer did I need to worry about looking where there was light. With their help, I could move the lamppost. I didn't realize that, at this time around 2000-2002—many other scientists were trying to do the same thing. The name "Systems Biology" attached itself to an intellectual movement quietly ushering math, physics, engineering and computer science into the heart of biology. Systems Biologists attacked any and every problem, embracing, not rejecting, complexity. I had found a calling I could sink my teeth into.

In 2001, Fred, Qing, I and a half dozen other UCI faculty set up the Center for Complex Biological Systems (CCBS), and within a few years laid out plans for a new Ph.D. program (now called Mathematical, Computational and Systems Biology, or MCSB). We were in the right place at the right time: A string of grants from the NIH and the Howard Hughes Medical Institute helped us build up CCBS and MCSB. CCBS eventually became an organized research unit (ORU) with 153 faculty from 30 departments in 7 schools. We helped recruit many Systems Biology faculty to UCI, and graduated over 70 interdisciplinary graduate students. I'm especially proud of our success in fostering collaborations among labs that otherwise might never have interacted.

Having the opportunity to build Systems Biology at UCI has been a gift. The flagrant disregard of disciplinary boundaries suits my personality, and running an ORU has let me to tap into my old musical theatre skills, such as directing, stage managing and—as you'd know if you'd been to one of our retreats—songwriting. Science and theatre actually have a lot in common: In both we tell well-crafted stories with the goal of getting people to think in new ways. Thanks to the wonderful UCI community, we've had a great run so far.

**Fun Fact:** When I chaired my department, I needed to create new breadth courses for non-science majors. I developed "Chemistry and Biology of Food and Cooking", a demonstration-based class that was one of the most fun (and exhausting) courses I've ever taught.



Natascha Trellinger Buswell Assistant Professor of Teaching Department of Mechanical and Aerospace Engineering Distinguished Early-Career Faculty Award for Teaching

I studied aerospace engineering because of the film *Apollo* 13. One day, my teacher in 9th grade physics showed the launch and

explosion scenes of the movie in class. I was so transfixed by those clips from *Apollo 13* that I insisted my mom take me to rent the movie that afternoon. At the time, I did not question why almost all the engineers and astronauts at NASA were white and male. I was simply excited about space flight and wanted to be a part of it.

I went on to study aerospace engineering at Syracuse University and found I had an aptitude for the subject. Despite my success, I was becoming less enchanted with the status quo of aerospace engineering as the years went on. I started wondering – Why are there so few women studying engineering? Why did so many people change their major from engineering? Why were the many stereotypes of engineers so persistent? I started to realize that I was more interested in the people who did the calculations rather than the calculations themselves.

As an undergraduate student, I started facilitating small study sessions with engineering students where I got to try on a teaching hat for the first time. In short, I wanted to be like my best teachers and figure out why my least favorite teachers were teachers at all. The question that propelled me to study engineering education was: Why do people become professors? I remember learning about a professor who didn't like teaching and told his students that he wished he didn't need to teach. This profoundly confused me. Wasn't a desire to teach the reason people became professors? This was certainly the reason I wanted to become a professor, and while I now recognize this isn't the case for all professors, I set out to pursue a position where I could focus on teaching.

I feel so fortunate to have found this Professor of Teaching role in Mechanical and Aerospace Engineering at UC Irvine, where I can research the development of engineering graduate student and faculty teaching philosophies, how to support student learning in engineering, and the experiences of engineers in multiple contexts. I am especially interested in teaching methods that support students who identify as female, Black, Asian, or Hispanic, members of the LGBTQ community, first-generation students, and students of low socio-economic status. In essence, I have a deep desire to help anyone who wants to become an engineer succeed. The best way I have found to do this is through integrating research on inclusive teaching into my practice and being authentic with my students.

It has been a dream to come to UCI in this position, and I am tremendously honored to be recognized for my teaching with this award.

*Fun Fact:* The main item on my family's bucket list is to visit all of the U.S. National Parks. We have visited 45 of 62 so far!



Philip G. Collins Professor Department of Physics and Astronomy Distinguished Faculty Award for Teaching

I am a teacher, mentor, and researcher. On extraordinary days, those three roles merge seamlessly. It's more typical for them to be in tension, with one gobbling up the whole

week. Or month. The challenge and opportunity of working at a great institution like UCI is that we're allowed the flexibility to flow back and forth between these different roles. The most rewarding balance is often one that differs from one year to the next.

Today, it's an honor to be recognized as a teacher. Teaching is a career I chose over thirty years ago, beginning with a job at Pasadena High School. While I mostly teach undergraduates today, I've also worked with ninth graders and Ph.D. candidates and every grade in between. Along the way, I outlasted the Coalition of Essential Schools, No Child Left Behind, and now, apparently, UC's reliance on the SAT and GRE. And yet the best parts of good teaching have never really changed: good teachers inspire students, encourage independent thinking, and help every student succeed. Exciting a student and then watching them teach another will always be a joy for me.

A parallel joy exists in the research laboratory. There is a moment of awe and delight when an experiment works for the very first time, or when you realize that you've just observed something no one else has ever seen before. I've made serendipitous discoveries that no one expected, and I've watched experiments finally work after years of planning. Those moments make research much more than a mere job.

It is a tremendous privilege to have a career that swings back and forth between these two. Teaching and research are both challenging puzzles. They both require creativity, urgency, perseverance and consistency. But each is consuming and can turn into a grind. I think I have repeatedly cheated burnout by acting on opportunities to pivot from one to the other. For example, teaching high school wasn't an obvious step to take with new MIT degrees in physics and engineering, but it was a refreshing new role. After being immersed in teaching, I returned to research, going to UC Berkeley for my Ph.D. The truth is that neither teaching nor research would have been sustainable by itself for my whole career. I couldn't approach my classes today with the same enthusiasm if not for the counterbalancing challenges and rewards of research.

On top of these roles, I also help students chart their own careers. I work closely with graduate students to develop the career skills that best match their goals. As a co-Director of UCI's CalTeach program, I advise students who want to become teachers. I have worked closely with incoming graduate students and freshman to plot out the different opportunities offered at UCI.

This advising role is ironic because my own career was punctuated with advice I didn't follow. My father warned me not to "waste" my degrees teaching high school. My undergraduate advisor, a prestigious teacher at MIT, ran me out of his office for requesting a recommendation letter to do graduate research in "a field that doesn't exist." This was a decade before "nanotechnology" became a new buzzword; by the time Congress funded the National Nanotechnology Initiative, I had completed my Ph.D. studying carbon nanotubes, the world's tiniest electronic wires. Afterwards, my postdoctoral advisor at IBM predicted my move to a startup company to be "a big mistake."

Today, my laboratory builds and tests some of the world's most innovative electronic devices. We have merged electronics with biology at the singlemolecule scale, building circuits that directly measure protein recognition, binding, and catalysis. Naturally, students graduating with these skills have a range of job opportunities; and I'm able to mentor students as they begin working at, and even launching, small companies of their own. For me, it's another example of research and teaching staying interwoven, separate strands working together for a stronger fabric.

*Fun Fact:* I am a whitewater rafting guide with over 3,000 miles of experience on the river.



Huolin Xin Associate Professor Department of Physics and Astronomy Distinguished Early-Career Faculty Award for Research

I was born and raised in Beijing, China in a family with an academic background. My grandfather is a physicist who built the first cloud chamber in China. My father, due to

the cultural revolution, chose a slightly different path and became a professor in management and business. Although my parents never told me so, I kind of knew that the burden is on me to carry on my family's legacy in physics. Maybe physics was a thing that could be inherited through genes; my favorite subject in high school was physics and I loved doing experiments. Every time I did not do well in the theory portion of the national physics olympiad contests, I was able to pull myself back to the top contestant list with my excellent experimental skills.

Knowing that I had the potential to become a physicist, I entered Peking University and chose Physics as my undergraduate major. The life at Peking University is certainly a memorable one and it built the foundation for all my skills and instincts in physics. After that, I became a Ph.D. student in Physics at Cornell University and studied electron microscopy under the advice of David Muller. My Ph.D. training was rigorous and thorough and I still remember the days and nights working in the lab. During my Ph.D. training, thanks to my advisor, I was able to attend the Microscopy and Microanalysis (M&M) conference every year. There was one year, I gave three contributed talks in a row. Through those opportunities, even as a student, I quickly built up a reputation in the electron microscopy field.

After two years of postdoctoral training at Lawrence Berkeley National Laboratory, I was recruited by Brookhaven National Laboratory to work in their nanoscience facility as a staff scientist. The experience to work in the DOE national labs is certainly a critical one. It opened my eyes and completely altered my view on doing research. After five years of working there, I felt the desire to build a larger team and pursue my own 'missions'. Because of that, I moved to UCI Physics and Astronomy to start a new career in Fall 2018.

Although I have only been at UCI for two years, I have accomplished more than I had done in my previous 'life' at the national lab. I built a robust research program in the Department of Physics and Astronomy with three main thrusts: 1) deep learning-enabled superresolution microscopy; 2) sustainable lithium-ion battery materials and; 3) activation of small molecules by biomimetic materials. I received the DOE Early Career Research Award and won two federal awards (DOE and NSF) and one industrial (Toyota) research grant as the PI (a total worth of \$3.65 million for the four contracts). My group has published more than 50 manuscripts, 20 on which I am the senior author. These 20 articles have been published in top-tier journals such as Nature, Proceedings of the National Academy of Sciences, Nature Energy, J. Am. Chem. Soc., Angewandte Chemie, Nature Communications, etc.

Apart from the scientific achievement, I have taken on leadership in my field and got involved in many society businesses. One society service that I am most proud of is that I had taken on the chief organizing duty of Microscopy & Microanalysis 2020 (M&M) and successfully led everyone in my community through the pandemic. While other major professional societies had chosen to shut down their meetings in March and April, I made a decision not to cancel our meeting. I quickly realigned everyone in my task force and gained the support from the MSA/MAS society leaders and council members to turn our annual Microscopy meeting into a virtual event. But I faced a particularly daunting challenge. While all of us wanted to have a meeting as interactive and even more awesome than an in-person one, we can not necessarily plop and drop what we have done in person into the virtual world. My team and I were forced to reinvent nearly every aspect of the event, from shifting in-person presentations to remote platforms, to thinking about how to recreate the social environment that people can randomly bump into each other and how to promote gender equality and inclusive excellence.

In July 2020, I was granted tenure and accelerated promotion to associate professor. To many people, that is a milestone; to me, my joyful adventure at UCI has just begun.

*Fun Fact:* I stubbornly thought all road shoulders are safe to park on until my car got trapped in roadside volcano rocks in Iceland.



Laura E. Enriquez Associate Professor Departments of Chicano/Latino Studies and Sociology Distinguished Early-Career Faculty Award for Research

I became a professor because college provided a critical space to understand my experiences as a woman of color and learn

to combat structural inequalities. As a second-generation Latina, I was raised keenly aware of my lineage of strength. Steeped in stories of independent women and my family's immigrant experiences, I knew the power of marginalized individuals to resist inequality and create change. I found myself drawn to sociology and Chicana/o, Latina/o, and Ethnic Studies in college because these courses gave me vocabulary and frameworks to contextualize my own experiences, understand structural inequalities, and identify systemic and everyday ways to combat injustices.

I have continued in this tradition by conducting research that aims to map inequalities and inspire social change. Seeing how anti-immigrant laws and xenophobic sentiment shape my family, my community, and our society, I have focused my research on illuminating how immigration policies structure the lives of undocumented immigrants *and* their citizen family members. Focusing primarily on 1.5-generation young adults who came to the U.S. as children, I investigate how laws and policies make undocumented immigration status consequential in everyday life and turn these into a lasting source of inequality for the immigrant generation and beyond.

My book, *Of Love and Papers: How Immigration Policy Affects Romance and Family*, explores how immigration policies constrain the dating, marriage, and parenting experiences of undocumented young adults and limit intergenerational mobility within mixed-status families. I am also Principle Investigator on the Undocumented Student Equity Project (USEP) and the UC Collaborative to Promote Immigrant and Student Equity (UC PromISE); both are collaborative research initiatives that examine how immigration policies disrupt the educational experiences and wellbeing of undocumented college students and students from mixed-status families.

My research answers substantive and theoretical questions but is driven by my desire to shed light on the struggles of marginalized populations and advance

change. I often draw on my research to author policy reports and op-eds. It also informs my work as Faculty-in-Residence at the UCI DREAM Center, where I actively mentor undocumented undergraduate and graduate students. For example, data from USEP inspired and facilitated the funding of the Scholar-in-Residence program, which aims to empower undocumented graduate students and enable them to share their knowledge with undocumented undergraduates interested in pursuing graduate and professional degrees.

My research agenda has flourished because of my collaborations with students and colleagues who share the goal of explaining and disrupting inequalities for marginalized communities. These partnerships have pushed me to dig deeper and dream bigger.

Fun Fact: I've traveled to 47 of the 50 states in the U.S.



Roman Vershynin Professor Department of Mathematics Distinguished Mid-Career Faculty Award for Research

I am a probabilist, but not a traditional one: I study random structures in highdimensional worlds. Probability theory explains how global order can emerge from

local chaos. Daily fluctuations of stock prices or movements of air molecules may look completely chaotic. But as we zoom out, such random processes start to look more "smooth" and predictable. Classical laws of probability theory -- the law of large numbers and the central limit theorem -- describe the global behavior of such processes.

Probabilists have been traditionally concerned with random processes in low dimensions. Dimension 1 corresponds to random numeric effects (such as stock prices), and dimension 3 corresponds to random processes in our threedimensional world (for example, movements of particles). Big data, however, has big dimensions. Every pixel of a photograph, every gene, every health parameter of a patient counts as a dimension. Theoretical foundations of modern data science need to be built in a huge, potentially unlimited, number of dimensions. Can probability theory explain randomness in such huge-dimensional worlds? As the dimensionality of the world increases, can the global order still emerge or will such a high-dimensional world be globally chaotic?

Paradoxically, high dimensionality often tends to simplify the picture. Let me give an example. We normally visualize three-dimensional objects by their projections onto a two-dimensional plane. Projecting a three-dimensional cube onto a randomly chosen plane, we almost always get a hexagon. If the dimension of the cube increases to infinity, we expect the shape of the projection to be more and more complicated. Surprisingly, this does not happen! A random projection of a cube approaches a circle, which is a very simple geometric shape. High dimensionality turned out not our enemy but our friend.

I am fascinated by high-dimensional worlds, by random objects living in them, by random actions one can make to "tame" high-dimensional objects. My purely aesthetic passion is fueled by a demand to build a mathematical theory of big data. Perhaps the future generations will view us as something like pre-Newtonian physicists to whom the most fundamental laws of the physical universe had yet been unknown. Just like them, we are trying to discover the fundamental laws of big data, and we bet that high-dimensional probability will give us the key. So we are standing there knocking at the door, mesmerized by the patterns that arise from the still elusive laws of big data in high dimensions.

*Fun Fact:* I am inspired by mathematics and music alike. Being a singer and a conductor, I have directed choirs in Orthodox Churches in Michigan and California.



Michele Bratcher Goodwin Chancellor's Professor of Law School of Law Distinguished Senior Faculty Award for Research

It is an honor to be the recipient of the 2020-21 University of California, Irvine Distinguished Senior Faculty Award for Research. I am grateful

for this recognition and share it with my colleagues here and those in the field who have courageously pioneered in disciplines that did not exist even forty years ago. I count my contribution as being within that space as the field of health law did not exist during my law school matriculation. My work, leading the nation's first ABA accredited health law program, founding the first law center to focus on race and bioethics, and helping to establish and shape fields of study and discourse including health law and biotechnology and the law, has benefited from great scholars and pioneers before me.

My scholarship, which engages the intersections of law and medicine, and the regulation of healthcare, science, and biotechnology, benefits from my early training in sociology and anthropology. This training, which began at the University of Wisconsin in its renowned schools of sociology and anthropology, shapes my research, scholarship, and how I view the ethical commitments of scholars. I value empirical data and view it as vital to understanding how societies function, healthcare is accessed, and the law works. For the past three decades, I have conducted field research across the world, including in Asia, Africa, Europe and North America, focusing on human trafficking (marriage, sex, organs, and other biologics). Sometimes the work is harrowing and dangerous, but I am always grateful to be in this profession.

This research has resulted in numerous articles, several books, and many collaborations. Among these works are *Policing The Womb: Invisible Women and the Criminalization of Motherhood* (2020); *Baby Markets: Money and the Politics of Creating Families* (2010); and *Black Markets: The Supply and Demand of Body Parts* (2006). I am also the author of the leading academic casebook on biotechnology and the law: *Biotechnology, Bioethics, and The Law* (2015). My work is also published in law reviews, including *Harvard Law Review, Yale Law Journal,* and *Cornell Law Review* and peer reviewed journals, including the *Journal of Law, Medicine, and Ethics.* 

My intellectual curiosity is driven by the puzzles of law and society and when pieces of the quilt are missing, I have sought to fill them in. Layered within the gaps are often the concerns of women, people of color, and vulnerable communities. I have sought to normalize and center the value of studying how healthcare intervenes in the lives of women and people of color.

Apart from my research, community engagement and leadership matter in my life. I serve on the executive committee and national board of the American Civil Liberties Union, am an elected member of the American Law Institute, and an elected fellow of the Hastings Center, and the American Bar Foundation.

Finally, I am grateful and humbled for the recognitions bestowed upon me, including this distinguished honor.

### Honors

Professor Goodwin has won national awards for excellence in scholarship, outstanding teaching, and committed community service. Gov. Paul Patton of Kentucky commissioned her a Colonel, the state's highest title of honor for her outstanding contributions to K-12 education. In 2020 Orange Coast Magazine named her one of 35 Kickass Women. In 2019 she received the Be The Change Award. In 2018 she was bestowed the Sandra Day O'Connor Legacy Award by the Women's Journey Foundation. That same year, Professor Goodwin was named Teacher of the Year by the Thurgood Marshall Bar Association and received a commendation from the United States House of Representatives for Outstanding Teaching.

*Fun Fact:* In 2000, Gov. Paul Patton of Kentucky commissioned her a Colonel, the state's highest title of honor for her outstanding contributions to K-12 education.

### Presentation

### 75 Years After Nuremberg: Lessons in Equality and Justice for Law, Medicine, and Ethics

Today, governments find that ethical breaches on which German eugenics, the Tuskegee experiment, Japanese research on Chinese prisoners of war, and other medical research atrocities clearly transgressed basic moral principles and respect for the dignity of others. In hindsight, commentators and governments agree that these tragic events violated basic human rights. That is, the basic principles of self-determination, autonomy, and consent were reduced to meaningless aspirations when such basic human and medical rights were stripped from vulnerable people subjected to nonconsensual, government imposed human research experiments.

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In Germany, Adolf Hitler's military conducted horrific abuses against Jewish people and others. Their murderous experiments resulted in an international trial 70 years ago, now commonly referred to as the Nuremberg Trials. In the United States, the infamous Tuskegee experiment denied hundreds of poor, Black farmers medical care necessary to treat syphilis, while deceiving the participants. Japanese experiments on Chinese prisoners of war resulted in at least 3,000 deaths. These flashpoints of the last century represent a fraction of notorious breaches of ethics and law carried out in the name of promoting research, health, and science.

Unfortunately, history passively nods to the past. A review of dozens of health law syllabi reveals few scholars who study law and medicine teach about Japanese medical experimentation on prisoners of war. Perhaps that experimentation is eclipsed by the more notorious abuses in Germany during that same period. Sadly, however, neither the Japanese nor German governments laid bare claims to medical atrocities; they were not the only world powers disregarding basic human rights in medical experimentation. The United States was in the throes of its infamous research in Tuskegee on poor, mostly illiterate Black farmers suffering from syphilis during the same period. During the same period of time, states throughout the U.S. engaged in their own eugenics campaigns, forcibly sterilizing tens of thousands of poor girls, women, and men. Were the U.S. actions less morally corrupt than those carried out by Germany and Japan? How do we judge? Importantly, what does informed consent mean in times of controversy?

Professor Goodwin's Distinguished Research Lecture addresses lessons that can and should be drawn from the past. For example, how do we expand the nomenclature of experimentation to include a more nuanced distinction between medical participation that is willing, voluntary, coerced, abusive, torturous, or frankly evil? Most literature captures human experiments as either acceptable or unacceptable; good or bad; ethical or non-ethical. However, might there be finer degrees to distinguish medical experimentation from either being permissible or utterly unethical? Considering these basic questions takes on an important urgency during a time of global pandemic, national health crisis, concerns about racial justice, and the search for vaccines.