

Kit Pogliano: Q & A with New Dean of Biological Sciences

On September 15, 2018, UC San Diego introduced Kit Pogliano, a professor of molecular biology and a faculty member since 1996, as its fourth dean of Biological Sciences and the division's first female leader. Born and raised in central Washington state, Pogliano attended the University of Washington for undergraduate studies and received a Ph.D. from Harvard Medical School. She was a Damon Runyon-Walter Winchell postdoctoral fellow at Harvard University before joining UC San Diego's faculty in 1996. In her laboratory, Pogliano applies cell biological tools to understanding the design principles of bacterial cells, and to discover new antibiotics and develop diagnostics for multidrug resistant bacterial infections. Six years ago, she cofounded a biotech company to accelerate new drug discovery in the pharmaceutical industry. Prior to becoming Dean of Biological Sciences, Pogliano served as dean of UC San Diego's Graduate Division.

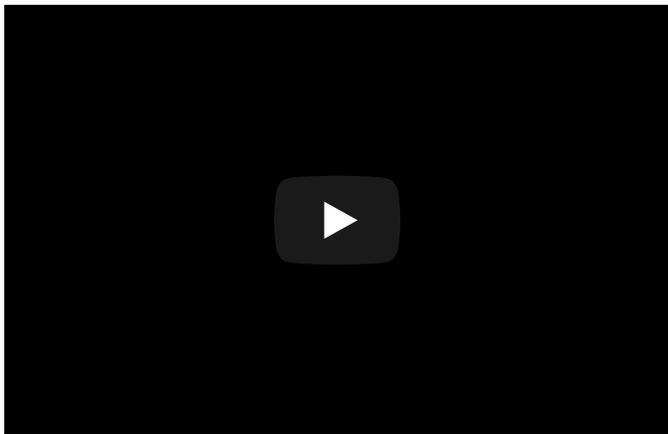


What drew your interest in becoming Dean of Biological Sciences?

Biological Sciences is a fantastic division. We have amazing faculty who perform novel, groundbreaking research and serve as mentors and role models for our students, inspiring graduate and undergraduate students who are accomplished scholars and an outstanding staff that supports the students and the faculty throughout their time. Being the Dean of Biological Sciences is a dream job, as it allows me to engage more deeply with the faculty and their science, with our students and with our educational mission. I have the great privilege of supporting the visions and ambitions of our faculty and our students, of helping to shape our research and educational efforts, and of working with our fantastic staff to ensure that our students and our faculty are able to pursue their academic endeavors and do their most creative work. My job is to foster our educational mission and the pioneering research of our students and faculty to the greatest extent possible.

You've spoken about today being a great time for biology. What makes you say that?

This is a fantastic time in the biological sciences. Technology is advancing at an incredibly rapid rate and touching virtually all realms of biological sciences. These advances range from imaging, where we can see molecules within cells, to neurobiology, where new tools to control and visualize neurons firing are allowing us to understand cognition, and to a suite of techniques that allow us to precisely assess the composition, sequence and function of complex communities in the human body and in the environment. These technological innovations can be applied to virtually any biological problem, so one is limited only by one's imagination and willingness to try new tools. This technical exploration is accelerated by the creative, collaborative and supportive culture we enjoy in Biological Sciences and UC San Diego. So this is the right time and the right place to be a biologist and it's a great time to be the Biology dean.



Why is the training provided at UC San Diego so crucial in today's world?

The Division of Biological Sciences has nearly 6,000 undergraduate students and 400 graduate students, both Ph.D. and master's students, and our training prepares them for future careers as medical doctors, dentists, business or as faculty and researchers at other universities, biotechnology companies and private institutes. We provide the students not only with foundational knowledge of biological systems, but also with key skills in quantitative

and qualitative reasoning, in experimental design and interpretation. The division has been very proactive in ensuring that our undergraduates have ample experiential learning opportunities and the opportunity to do bona fide research, both in the classroom and in a research lab. We're also integrating ethical considerations into our research effort, via the partnership between the Tata Institute for Genetics and Society and the Institute for Practical Ethics, in order to ensure that we fully consider policy, ethics and human impacts while we are developing powerful new research tools. Thus, we are taking a holistic approach to both research and teaching, with the goal of producing alumni who will be able to lead and innovate in an increasingly complicated and interconnected world.

Our faculty and students are producing discoveries that illuminate the natural world across all of its scales, from understanding how climate change is affecting ecosystems and individual species to identifying the fundamental mechanisms by which organisms develop from a fertilized egg and the mechanisms by which our brains encode spatial information. Fundamental biology impacts so many things that are happening on earth, including natural ecosystems and the human population, and it will impact how we respond to climate change. For example, faculty in the Division of Biological Sciences are studying how individual plants respond to a drier climate and how natural communities respond to

changes in the climate, and we are using our genetic expertise to develop plants that have improved yield and decreased water requirements. Basic biological research is also critical for producing discoveries that will allow us to combat infectious disease, cancer and the neurodegenerative diseases associated with an aging population. Thus, it is critical to support the basic sciences, so we can translate basic science discoveries into applications that will have a positive societal impact, at the same time that they are helping us to better understand the natural world.

What drives you on a day-to-day basis?

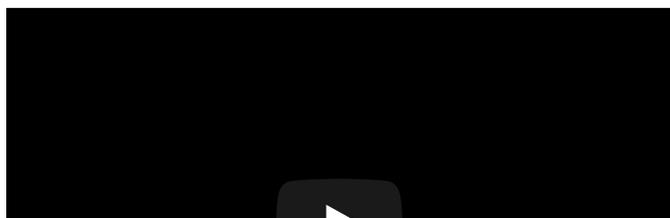
I was likely born to be a scientist, as I have always had a very questioning nature. If someone tells me something is so, I always ask: Well, *how* do you know it's so and *why* is it so? Why couldn't it be this way? I carried this with me as a student, when I read textbooks explaining that bacterial cells were just little bags of enzymes—that was literally the “fact” you would find in all the textbooks when I was in college! As a faculty member I have shown that this simple view was incorrect, and that bacterial cells are highly organized and that their simple machineries offer an opportunity to understand the fundamental biophysical properties that underlie cell structure.

As Dean, I am motivated by the amazing opportunity to create an environment where creativity can thrive, and where students and faculty can ask critical questions and make discoveries that will rewrite the textbooks.

What advice do you give students aspiring to study and conduct research in the biological sciences?

I like to tell students to never be afraid to enter into a new field or to collaborate with people outside of their own discipline because the great discoveries in science are made when you venture outside your comfort zone and when you bring two different fields together. In part, this might be because sometimes having the faith that a new experiment or approach will work requires that you don't know too much about the status quo and what everyone else believes to be true in a field. Having this *fearlessness* is really important, however, fearlessness has to be tempered with the recognition that at times these crazy projects and ideas might not work out so well and you need to be willing to walk away from something when you've convinced yourself it won't work or when a trusted colleague says, “you know, you've tried that three or five or six times—maybe it's time to think about something different or take a different angle.”

In addition to serving as dean you oversee an active research laboratory. What research are you addressing?





The research in my lab is focused on how bacterial cells are organized and how they respond to changes in the environment or stresses. My interest in studying bacterial cell structure is two-fold. First, bacteria are important in the environment and in human health, and second, they are very simple and streamlined

cells. They have just the minimal core working machinery and therefore it's likely they will be the first cells that we understand completely and that we will be able to model *in silico*, to understand how they grow, divide and respond to changes in the environment.

Becoming the first female dean of Biological Sciences speaks to diversification on campus. How have you seen these changes unfold during your time here?

I am very proud of the increased diversity on the campus in the last few years, as the face of leadership has changed. Over the last five years, with the leadership of Chancellor Khosla, we now have a diverse leadership team, and nearly fifty percent of the deans are now female. In contrast, when the Chancellor arrived, we had never had a female academic dean in campus history, which is really quite amazing.

Being the first female dean is also a huge responsibility. As a female leader it is critical that I make sure to pave the way for more female—and more diverse—leaders so we can continue to see the benefits of diversity. Studies have shown that diversity is very important in leadership positions, and I find that the more diverse the team that I have helping me make decisions, the better those decisions are. I like to surround myself with people that have different disciplinary backgrounds, different ages, different ethnicities and personal circumstances, as well as different technical expertise. Diverse teams help one to consider a problem from many different possible angles, so I consider it to be an imperative that is essential for wise decision making in an increasingly diverse and challenging world.

Why is UC San Diego's link to the biotechnology community so important?

The biotechnology community in San Diego is a thriving, innovative community that is very close knit. Much like the UC San Diego campus, it's a very supportive and collaborative network that's densely packed around UC San Diego in a huge cluster in Torrey Pines Mesa and Sorrento Valley. This connectivity helps foster this collaborative network of companies. UC San Diego has played an important role in the growth of those companies via the efforts of our faculty and alumni, and we have close connections to local biotech organizations such as Biocom and Connect. I look forward to growing these connections, so that the Division of Biological Sciences can be a partner in developing talent and so that our discoveries can move into the marketplace so they can have a positive impact.

Describe how and why you started your own biotech company.

In 2012, my husband Joe (Biological Sciences Professor Joe Pogliano) and I founded a company to accelerate antibacterial drug discovery. We first filed a patent through the campus, and our initial plan was to license the technology to an outside company because we were busy faculty, with our research effort, our teaching, our service and our family. We thought we didn't really want to deal with starting a company, because it would simply be too much work. However, it turned out that companies wanted access to the technology, which allows them to determine how their drug candidates kill bacteria, but they did not want to implement this technology themselves. We then decided that in order to make this technology available to the pharmaceutical industry we needed to found a company that would provide this service to companies, so we could help get as many drugs into the pipeline to treat drug resistant bacterial infections.

Describe some things about you that most people don't know.

There are two things very few people know about me. First, in high school, I worked as a ski instructor and was the youngest fully certified ski instructor in the nation at the time. This meant that I had to pass two exams, and that as a senior in high school I was teaching other instructors how to teach skiing. Skiing was a big part of my life, as I grew up skiing and my mother was a director and vice president of a ski school. Becoming a young certified ski instructor was a positive in my career because I was placed into a leadership position at a young age, in skiing, which in those decades was a very male-dominated sport and business. I was also a shy child, so getting up in front of a class of other ski instructors, all of whom were older than me, and teaching them how to teach skiing was a great experience and no doubt has had a big impact on my career. Second, I grew up in an agricultural area and picked fruit and worked other jobs that kids in such areas used to work at during this time. In high school I worked at a lumber mill. I was the first woman to work in the yard of this lumber mill, which was quite an experience for a 17 year old!

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