

Women in Biotech: A Seed Central Special Event

Panel biographies & industry testimonials



Seed Central

Women in Biotechnology:

Launching Early Professional Women into the Biotech Industry

Panel Presentation

University of California, Davis

March 9, 2017

Kristen Bennett, Senior Program Director, Second Genome



Education: Humboldt State (BS, MS; Botany); UC Davis (MS, Plant Physiology; PhD, Plant Biology)

Kristen received her BS degree in Botany in 1988 from Humboldt State University, her MS degree in Plant Physiology from the University of California, Davis in 1992 and she completed her Ph.D. in Plant Biology at UC Davis in 1998. She joined Monsanto at the Calgene campus in 1998 as a research scientist to study novel fatty acid biosynthetic pathways and has since lead projects in the areas of plant productivity and gene regulation. She currently works for Second Genome, a pharmaceutical microbiome company, where she is managing an alliance with Monsanto to identify novel insecticidal proteins. Kristen is a graduate of the California Agricultural Leadership program and a member of the America Society of Plant Biology, the American Association for the Advancement of Science and the

Diana Luong Nguyen, Undergraduate Student, Biotechnology



Diana Nguyen is a fourth year Biotechnology major within the Animal and Plant emphasis with a minor in Technology Management. Born and raised in San Jose, CA, she found her love for plants through helping her mother garden. Her interests in genetics and biotechnology were amplified when she took an introductory course during her senior year of high school which introduced the manipulation of genes in an organism. This became an influential factor that ultimately lead her to continue her study in Biotechnology. One of Diana's goal is to be able to contribute to projects that will help individuals in the health and agricultural sectors. With the world population projected to reach 10 billion by 2030, she hopes to discover biotechnological advances to support a huge demand in agricultural and medicinal sustainability. Since her third year of college, she started researching under Professor Dandekar in the area of walnut expressions of polyphenol oxidase proteins and its reactions to such bacteria. In addition, she is also active at her University's Biotechnology club and works as a math tutor at the Student Academic and Success Center. In her free time, Diana enjoys participating in extracurricular activities, such as swimming and biking; as well as taking own personal projects.

Poornima Parameswaran, *Co-Founder Trace Genomics*



Education: BS in Molecular Biology. University of Texas at Austin, 2004; PhD in Microbiology and Immunology. Stanford University, 2010; Postdoctoral Fellowship. University of California at Berkeley, School of Public Health, 2015

Poornima is the co-founder of Trace Genomics. She completed her BS in Molecular Biology at UT Austin, a PhD in Microbiology & Immunology (Stanford) with Nobel laureate Dr. Andrew Fire, and her postdoctoral fellowship with MacArthur Fellow Dr. Eva Harris at UC Berkeley's School of Public Health, where she also worked with the Ministry of Health in Nicaragua. She has been an author on eleven publications (371 citations), where she used NGS technologies in novel ways to address fundamental questions in pathogen-host interactions. She is the recipient of a Career Development Award from the National Institute of Allergy and Infectious Diseases, the Sidney Raffel award for Outstanding Achievement in Graduate Studies, and the Gabilan Stanford Graduate Fellowship. Poornima is passionate about pushing the genomics frontier to discover biomarkers for early diagnosis of diseases. She is working towards creating a world in which disease outbreaks are eliminated through enabling early detection of disease and adoption of appropriate preventative measures.

Nicole Coggins, *Ph.D. Student, Molecular, Cellular and Integrative Physiology*



I have always been drawn to the translational aspect of scientific research as a means to improve lives. Because of that, I have sought out a number of internships during my high school and undergraduate careers at biotech companies focused on disease research and personalized medicine, such as the Translational Genomics Research Institute (TGen) in Phoenix, AZ. It was through these experiences I decided I wanted to pursue a career in the biotechnology industry. My current research at UC Davis focuses on the identification and characterization of functional Single Nucleotide Polymorphism (SNPs) involved in the onset and progression of colorectal cancer under the co-mentorships of Dr. Luis Carvajal-Carmona and Dr. David Segal, both of whom have dedicated their professional careers to developing better biomarkers and novel therapeutics for the treatment of cancer and neurological developmental disorders respectively. After obtaining my degree, I hope to continue to contribute to the progression of personalized medicine and drug development in industry on the side of regulatory affairs. I believe working at the interface of research and development and government regulatory agencies, converting important discoveries into life-saving treatments, would be one of the most rewarding career paths as a scientist whose passion lies in translational research.

Vonnie Estes, Group Leader, Agricultural and Industrial Biotechnology; Caribou Biosciences



Education: New Mexico State University (BS, Horticulture); UC Davis (MS, Plant Pathology)

Vonnie leads Caribou's partnership and business development activities within the agricultural and industrial biotech sectors. She brings decades of experience in these industries, having held key leadership roles at prominent companies including DuPont, Monsanto, and Syngenta. She has also worked with small start-ups and venture funds to identify and commercialize promising technologies. Vonnie received a B.S. in Horticulture from New Mexico State University and an M.S. in Plant Pathology from University of California, Davis.

Adina Boyce, *Ph.D. Student, Biosystems Engineering*



As child growing up in the urban setting of New York City, sightings of rolling fields of immaculate almond orchards and strawberry groves were non-existent. Despite this fact, my interest in agriculture spawned from my love of food. Experiences as a volunteer with the UC DAVIS Student Farm and a member of the UC Davis Community Gardens, were my first immersion into the farm-to-fork culture of the Sacramento region. These experiences provided first-hand knowledge on the many challenges faced in growing, processing and distributing crops in an ever-changing food system. I am specifically interested in the intersection of conservational agriculture, renewable energy and sustainable land management. Sustainability can be defined as the careful stewardship of natural resources that permits fulfilling the social, economic and environmental requirements of present and future generations. On several fronts, this definition is realized within my research on biochar - a product which promotes waste management, greenhouse gas reductions and water conservation. My career aspiration is to work within International and Agricultural Development.

Cassie Hilder Manager, Business, Agriculture; Arcadia Biosciences



Education: UC Davis (BS, Plant Biology; MBA, Graduate School of Management)

Ms. Hilder has held multiple roles since joining Arcadia Biosciences in 2008, starting as a business analyst and now leading business development for agriculture products. Cassie directs new business strategy, product and technology licensing and strategic partnership management for Arcadia across crop and technology platforms. Additionally, she is on the management teams of Arcadia's strategic collaborations for commercial product development of traits in corn and soy. Cassie began her career after completing her BS in Plant Science from UC Davis as a lab technician at Dade Behring (now Beckman-Coulter) where she expanded her role to QC Manager. She returned to UC Davis to obtain her MBA from the UC Davis Graduate School of Management. Her career is inspired by her family's work in stone fruit breeding.

Julia Christine Wasielewski, *MBA Graduate Student*



Growing up, my family instilled a passion for understanding how our food is grown. My family planted over 100 fruit-bearing plants in our half-acre yard in the Sacramento suburbs. I took this appreciation for plants and agriculture to college, where I majored in Plant Biotechnology at UC Davis. My undergraduate education and internships deepened my molecular understanding of plant biochemistry and genetics. For me, this translated to a great appreciation of the complex nature of agriculture and the biotechnology that supports it. Upon graduation, I entered the MBA program at UC Davis to obtain the tools to contribute to changes within agriculture on a larger scale. I am currently interning with the Morning Star Company. I have greatly appreciated the opportunity to learn more about large-scale growing and processing of tomatoes. I have developed a better understanding of the supply chain involved between the seed and the table.

Susan Turner, Senior Vice President, Research; BioConsortia, Inc.



Education: Massey University, Palmerston North (BSc, Microbiology); University of Auckland, New Zealand (PhD, Biological Sciences)

An accomplished microbiologist and academic, responsible for bringing the AMS technology to the US and heading the US R&D efforts. Dr. Susan Turner is a microbiologist with over 25 years of research experience in the field of applied microbiology. Sue's areas of scientific interest and expertise are in microbial physiology, applied microbial ecology and microbial genomics. She has published over 35 papers in peer reviewed journals, 3 book chapters, 12 major industry reports and contributed to more than 150 conference presentations. Sue began her research career in academia at the University of Auckland, New Zealand, where she founded both the Microbial Ecogenomics research group within the School of Biological Sciences and the University of Auckland Centre for Microbial Innovation. Sue joined BioConsortia's founding company in New Zealand in early 2012 and moved to Davis in 2014 to lead the establishment of its US-based R&D facilities. She is now global head of Research for the Company. Sue holds a PhD in Biological Sciences from the University of Auckland, New Zealand and BSc in Microbiology, Massey University, Palmerston North, New Zealand.

Alexandria Igwe, *Ph.D. Student, Microbiology with a Designated Emphasis in Biotechnology*



Until my freshman year at Howard University, everything I did was in pursuit of medical school. During my sophomore year, I joined an undergraduate research program called Environmental Biology Scholars (EBS) and began research on a nickel hyperaccumulator. This program introduced me to the concept of bioremediation and ignited a fire in me that has yet to be extinguished. I reconsidered the life I wanted for myself and wondered, for the first time, if a career in medicine was the best choice for me. The feeling that I had at the thought of being a student with hundreds of thousands of dollars on the line, but without a definite career in mind was unsettling. It was made even more so because I was carrying the weight of family expectations. Fortunately, by participating in the EBS program and speaking with people from a variety of disciplines, I meandered my way into a MS program at Texas A&M and a career that I was fully committed to: environmental microbiologist. During my time at A&M, I spoke with environmental microbiologist that worked in academia, industry, and writing to research possible career paths. I found myself intrigued by the role of a scientist that worked as a business developer for a small biotech startup in Houston, TX. I began searching for biotechnology graduate programs and landed on the Designated Emphasis in Biotechnology (DEB) webpage for UC Davis. I spent a summer at UC Davis in 2012 and was already partial to attending the school, and the DEB program was a bonus. As much as I've tried to diversify, I enjoy working with plant and microbe associations to remediate contaminated soil systems, increase plant tolerance to stress, or to increase plant growth. Seed Central and the DEB programs offer unique opportunities for exploring my interest by introducing me to industry professionals and offering workshops about innovation and entrepreneurship.

Debbie Yaver, Director, Production Strain Technology; Novozymes NA



Education: UC Davis (BS, Bacteriology; PhD, Microbiology)

Originally from Stockton, California, Dr. Yaver received both her BA in Bacteriology and her PhD in Microbiology from the University of California, Davis. For over 22 years, Dr. Yaver has made extraordinary scientific contributions to Novozymes' fundamental knowledge and expertise in gene expression technology in bacterial and fungal systems. In particular, Dr. Yaver's vision and leadership in genetic engineering of industrial filamentous fungi has positioned Novozymes as the world leader in enzymes for advanced biofuels. Her scientific achievements and contributions to Novozymes are well illustrated by her rapid and impressive career progression in the Novozymes organization. Furthermore, Dr. Yaver is an author on many scientific publications in top-line peer-reviewed journals. Her vision and passion for industrial biotechnology is reflected by the fact that she is an inventor on nearly 40 issued patents. Dr. Yaver truly leads by example, and her success is a strong reflection of the inspiration and mentorship she provides to her colleagues. In 2014, Dr. Yaver was awarded the BIO Rosalind Franklin Award for Leadership in recognition of her leadership for twenty years in the field of biotechnology and engineering.

Katherine "Katie" Murphy, *Ph.D Student, Plant Biology*



I have always been fascinated by the chemical reactions happening in the world around me, especially those in nature. While earning a B.S. in Chemistry at Stanford University, I enjoyed studying organic chemistry and the potential it has to develop new, purposeful molecules for human use. However, when I began researching corn genetics as an undergraduate, I realized that evolution had a head start on chemists and had already perfected the synthesis of many molecules. Plants are chemical powerhouses, creating a menagerie of organic compounds that could not be made in an organic chemistry lab, and I am fascinated by how they work. In my graduate work in the Plant Biology Graduate Group at UC Davis and the DEB, I have found a place to unite my interest in biochemistry and my desire to develop technology to feed the world. I now study plant specialized metabolism in Dr. Philipp Zerbe's lab. In my research, I investigate molecules made by corn that play a role in the plant's response to stress. In understanding the corn stress response, I hope to contribute to developing a more sustainable food system with biotechnology. I am also passionate about sharing science through outreach and education. I look forward to exploring careers in both academia and industry, where I can pursue my interests in sharing science and biotechnology research.

Kate Stuart, Founder and Director, Preclinical Development, Symic Bio



Education: Saint Louis University (BS, Biomedical Engineering); Purdue University (PhD, Biomedical Engineering)

Dr. Stuart is a founder and the Director of Preclinical Development of Symic Bio. She has over 10 years of experience in research and development in the life science field, and is an inventor of Symic's core technology. After receiving a PhD degree in biomedical engineering from Purdue University, she continued at Purdue in a post-doc focused on early translation of the proteoglycan mimics. Previous to helping found Symic, Dr. Stuart worked in mid to late stage startup companies as a scientist and consultant on multiple marketed extracellular matrix technologies. She has served as PI on 5 small business grant awards.

Sriya Maram, Undergraduate Student, Biotechnology



Sriya Maram is an undergraduate student studying Biotechnology at University of California Davis. Her interest in biotechnology sparked when she was little as she was excited by combining the life sciences with emerging technology. She recently interned in Customer Success Management at RainforestQA and currently works with Customer Relationship Management at Risk and Safety Solutions. In her free time, Sriya enjoys travelling, spending time with friends, and volunteering.

Testimonials

Kristen Bennett, Senior Program Director, Second Genome



Education: Humboldt State (BS, MS; Botany); UC Davis (MS, Plant Physiology; PhD, Plant Biology)

I found my career in agricultural biotechnology partially by accident. As an undergraduate student in the 80's, I developed an interest in plant genetics and molecular biology and eventually pursued a graduate degree in Plant Physiology. During my time in grad school, the first genetically modified food product, the Flavr Savr tomato was developed and released for public consumption. This spurred my interest in ag biotechnology, and eventually lead to my first job out of grad school at the home of the Flavr Savr, Calgene. One of the keys to success is being able to identify opportunity when it knocks and to stay networked with colleagues that you meet in essentially every professional context.

Fortunately, I have a flexible approach to work and career. This has been very important because the focus of my job has changed significantly at least 8 times over the last 20 years. I spent 16 years at Monsanto and was the project "lead" on projects ranging from cotton yield to expression of nutritional peptides to formulations for delivery of small RNAs. In every case, I was able to tackle the new science and apply principles of teamwork to advance the science and its application. Having the flexibility to embrace new projects is an indispensable personality character for success in industry.

Striking work-life balance is also critical for women entering a professional career in biotechnology. In my experience, the professional biotechnology environment in both universities and industry is very supportive of achieving a healthy work-life balance. I personally had two children while I was in graduate school – it wasn't easy but in retrospect the timing worked well. Later in my career I decided to take a "sabbatical" from work in order to live abroad for 2 years. This also worked out well and I was able to re-enter the workforce without a problem. The lesson that I have learned is to not be afraid of taking some twists and turns in your career.

Finally, I've just entered a new stage of my career with some important lessons. After my 2 year "sabbatical" I re-entered the profession working with a microbiome startup, Second Genome. This has really reminded me of why I entered the field of biotechnology in the first place – the science is so exciting and the field is full of really smart people. The lesson I've learned is to keep your eyes open for where the cutting edge of the field is going and find opportunities to be at the leading edge. This is what keeps the fires burning and the mind expanding.

Cecilia Chi-Ham, Director of Innovation and R&D Strategy, HM.Clause



Cecilia is responsible for building R&D strategy and identifying new opportunities for innovation. Cecilia also provides direction for the UC Davis – HM.CLAUSE Life Science Innovation Center, a collaboration between the University and HM.CLAUSE that facilitates innovation by giving start-up companies the opportunity to thrive. Prior to joining HM.CLAUSE in 2014, Cecilia was Director of Science and Technology at the Public Intellectual Property Resource for Agriculture, a nonprofit organization housed at UC Davis and dedicated to the transfer of agricultural technology and intellectual property to developing countries and the private sector. Cecilia earned her BSc in Environmental Science and Organic Chemistry and a Ph.D in Biochemistry before doing postdoctoral research at Michigan State University and UC Davis.

Having grown up in Honduras, Cecilia has always been connected to the agricultural community, but her interests were piqued while at UC Davis when she had the opportunity to work with Francois Korn and Kent Bradford on developing the idea for Seed Central, a project which exposed her to the seed industry for the first time. Having worked at a university, and now working for the seed industry, what fascinates her most is seeing how the innovations that come from public and private research complete the circle of development when they are transformed into new products for farmers around the world.

Cecilia takes pride in working for the seed industry, because it is essential to the quest to feed the planet. Coming from a developing country, she is keenly aware of the significance that agricultural productivity holds for economic growth and national security. As such, she finds it rewarding to work for a company that provides reliable and innovative seed products to farmers. Moreover, she appreciates the values of HM.CLAUSE, and the company's commitment to people. Her advice for job-seekers is to consider a career at a company such as HM.CLAUSE that offers employees the ability to contribute to the success of the company while also facilitating professional and personal growth opportunities.

"The secret to building a successful career is to find the cross-section of your skills and your passions."

Aindrila Dasgupta, Technical Head of Palm Oil Platform, Novozymes India



Aindrila is currently the Technical Head Of Palm Oil Platform in Novozymes' Food & Beverage Research Division. She has been engaged with biotechnology for the past 22 years and joined Novozymes in 2008.

I enjoy working with enzymes as a product that can help mankind. I am a very application-oriented person and working using sustainable solutions makes my job very motivating. I love to educate people about how these small enzymes can change lives and the environment. Working in science gives you the opportunity to enhance your knowledge every day – so if you are inquisitive by nature, a science career would suit you.

Vonnie Estes, Group Leader, Agricultural and Industrial Biotechnology; Caribou Biosciences



Education: New Mexico State University (BS, Horticulture); UC Davis (MS, Plant Pathology)

Growing up in the American Southwest I always like being outdoors but it was high school before I had the opportunity to study biology. Once I realized I could learn about biological systems, that became my path. As an undergraduate, I studied Horticulture at New Mexico State University focused on the application of plant science. After working numerous years in greenhouses and nurseries, I was interested in digging deeper into how things worked. It was 1984, the early days of genetic manipulation of plants. I went to graduate school at UC Davis in Plant Pathology. I enjoyed learning and doing research but it soon became clear I was better at talking about science than doing actual bench work. Others were much better at coming up with great ideas in science – I wanted to see how best to apply them.

I left with a Masters degree and happily set off to find ways to translate science to improved and sustainable crop production. I spent most of my career in business development in Ag biotech; working for large companies like Monsanto and Syngenta and several start-ups. My focus has been to work with brilliant scientists, growers, and food producers to develop new products and value chains for sustainable foods.

My career path has been filled with twists and turns. I never had a grand design. I was fueled by wanting to do good work well. And by the many people I have met around the world who share the same passion. As a woman, it has not always been easy. The first 15 years I was the only women in the room and passed over many times on assignments and promotions. I was always willing to take risks and move

on when the ceiling was too thick. I see big changes over the last couple of years. More women are in positions of power. These women are now pulling up female colleagues and creating networks that never existed for women. There is so much excitement in ag today! New technologies and tools will bring great technical improvements. A more open environment brings diversity of thought that will continue and deploy the improvements.

"Far and away the best prize that life has to offer is the chance to work hard at work worth doing." - T. Roosevelt

Catherine Feuillet, Head of Trait Research at Bayer Crop Science



Look at any major scientific work and it's easy to see that great achievements are rarely accomplished alone. Working with groups and tackling complex scientific challenges that eventually will improve people's lives is what has energized me since I entered research more than 20 years ago. To take on the great challenges we face in agricultural research and development, we need to continue diversifying our teams and create an inclusive environment for great minds to thrive. This Saturday, we celebrate the International Day of Women and Girls in Science. This is a unique opportunity to remind ourselves that gender diversity is great and that we all need to pave the way for women to embrace and strive in scientific careers. And, in addition to great minds, women can bring a whole lot of fun to the table. Don't believe me? Check out the photo of some of Bayer's greatest role models from the Global Leadership Conference!

It's no secret that scientific innovation and creativity thrive in diverse, collaborative environments. If we truly want to be the best R&D organization, we must aspire to create such an environment and enjoy the benefits it brings to our business while having fun working together – something we can all appreciate.

Diversity of thought doesn't stop at gender or race. We all have unique personalities, backgrounds and experiences. So often we picture leaders with x, y or z personality traits or think we all knew very well right from the start that we wanted to be where we are now. Look no further than the evolution of my career and leadership since I joined Bayer. Originally, I wanted to be a veterinarian in Africa because I loved watching "Daktari" (Google if you are too young to know what I am talking about...). I was also more interested in pursuing a hand ball career than focusing on my studies, that is until I first set foot in a research lab... actually by chance because I forgot to register on time for my master's degree so had the opportunity to do a practical diploma for one year instead. Needless to say, I never pictured myself as a leader, let alone a leader at Bayer.

I was encouraged to examine leadership more carefully during trainings at Bayer. It was then that I realized that I had been leading teams since I was four years old starting with the kids in my neighborhood, my class mates, my handball teams, and later on research teams in academia, ultimately leading to my position now in Trait Research. What did I learn? During a StrengthsFinder test, I realized that among my top 5 strengths was empathy. A trait that, until that moment, I viewed as a weakness. Am I more emotional or caring? Yes, most likely. But I realized this isn't a bad thing. It's what allows me to truly understand others' perspectives which helps me build strong and diverse teams. Ultimately, leadership is a lot about learning and accepting who you truly are and leveraging your unique characteristics to create value. Embrace what you bring to the table and contribute to diversity for the benefit of all.

In the same way that we should embrace our strengths, being open to new opportunities is also important. I have noticed in myself and other women that we don't always realize our own potential or feel qualified for bigger roles. In fact,

when a headhunter originally called me about the Head of Trait Research position at Bayer, I assumed he was looking for names of qualified candidates, not even thinking for a minute that he wanted to talk with me and that I may too have been a qualified candidate for the job. I am really glad that he insisted on talking to me about it, as that conversation became a defining moment in my career.

Throughout my career when I was doubtful of my own ability to lead or take on responsibilities outside my comfort zone, I have let my curiosity, passion, attraction to daunting challenges and joy of working with teams overcome that fear. It provided me with unique opportunities such as leading the International Wheat Genome Sequencing Consortium, moving from academia to the industry side while having the privilege to work and meet incredible people along the way.

Looking back to that call with the headhunter, while I wonder why I did not have the confidence to imagine myself in the position, I am proud that my initial response was to think about others including highly qualified women. It is our job as leaders to not only value and promote diversity but to live it each day, pulling others up along with us, just as others, including two women mentors, have done with me. In the same way that I enjoy bringing groups together to tackle challenges, I strive to mentor others. Nothing pleases me more than seeing those around me start to believe in their potential and spread their wings. In the end, it is not the glass ceiling that will hold women and girls back but the barriers that lie within our own heads.

Amanda Fischer, Fungal Expression Group Leader, Novozymes



*Education: BS- Humboldt State University, Biology 1999;
PhD- UC Davis, Cellular and Molecular Biology & DEB 2005*

First of all, thank you for giving me the opportunity to reflect on some interesting personal questions and for taking the time to read my story. Looking back, it is clear that three factors have helped me find a rewarding career in the field of biotechnology- mentors, following my passion, and my core values in hard work and striving to do better. I hope you find my story interesting and inspirational. Best, Amanda

How you got into biotech.

When I started college I was motivated to do well and was a hard worker but lacked any sense of focus toward a big career goal. I decided that my best course of action was to take the most difficult math and science classes I could in order to keep all of my career options open. It wasn't until I was taking my first genetics class as an undergrad, that my interest in science was piqued. I started asking questions that my professor didn't have an answer for; it may sound silly but it was a real revelation to me that there were so many unanswered questions in the area of biological sciences. Looking back, this is really what spurred my interest in the field of biology- there are so many interesting questions to ask and to find the answers you have to be creative.

One of my professors must have seen the spark in my eye, as he asked if I would like to take a work-study position in his lab washing dishes. I was thrilled that he had recognized me and given me this opportunity. He believed in me and this support really opened the door for me to imagine myself for the first time working in the field of science. I didn't really know any scientists besides my professors. A career in science had honestly never crossed my mind, what does a scientist even do? I just knew that I had a passion, I followed it and worked hard with every opportunity that I was given over the next few years. With time, I moved from washing dishes to working on a small research project in the lab. I had the chance to travel to conferences and present my work- it was a lot of fun. My favorite part was spending time in the lab- designing experiments, spending hours at the microscope, chatting with lab mates about my results and immersing myself in science.

I really enjoyed the academic aspects of science but felt that applying science to solve commercial problems is where I could have an impact on the world. I ended up graduating with a BS in Biology with a couple of years of experience working in a lab. This experience encouraged me to pursue my interest in science at another level. I followed this passion to graduate school at UC Davis with the ultimate goal of applying science to solve problems that will have an environmental impact. One of the main reasons for deciding on UC Davis was the Emphasis in Biotechnology Program that would allow me to carry out an internship with a local biotechnology

company. To make a long story short, this internship subsequently led me to the position I have today with the same biotech company for which I was an intern.

The rewards you found in this industry

For me personally, there are three very rewarding aspects of working in the area of biotechnology. First off is my big "Why", the work I do has a positive impact on the environment; working for a company that provides green solutions on a large scale is a big motivator. Second, a lot of my work is done in small teams, finding solutions and being part of a team with a clear focus is a lot of fun for me. Third, I thrive working in a fast-paced environment where there are constantly new challenges, new opportunities to explore, and new problems to solve. These aspects create an intrinsic drive for me to work hard, deliver and improve myself, in return it gives me a lot of satisfaction.

The difficulties you encountered, and how you managed to overcome these.

I have always been very focused on results- eager to deliver and move onto the next challenge, working in a very individual manner. As I was given opportunities to supervise others, lead projects and manage larger groups of scientists- moving from the role of individual contributor to being a leader was incredibly challenging and revealed some major blind spots I had around building relationships and earning the trust of my colleagues.

In order to grow in my position, I was forced to confront this weakness. It was difficult at first, as an individual contributor I had always received very positive feedback. I wondered if I should give up, try something new, move on because I am not good at this? Then I started to realize that, yes, I have a pretty big deficiency in this relationship building area and making some improvements could make both my work and personal life a lot easier, more rewarding and less of a struggle. After moving past my resistance and taking this on as a challenge, there were a couple of important things that began to nudge me in the right direction. I received a lot of constructive feedback from my manager. Learning to listen to critical feedback and taking it in the spirit it was given has been a very valuable tool- it is not easy and by no means am I an expert but I think it is powerful. Hearing constrictive feedback can initially be painful but do yourself a favor and listen, and think- what is this person trying to tell me and how can I use this to do better.

Looking back, it is important to recognize the people that guide you on your path- sometimes they are mentors who see a spark and give you an opportunity- believing in you, other times they are the people that do the hard job of identifying a weakness and help you grow- believing that you can do better. I hope to have the opportunity to mentor others in the same way as I grow in my career.

Cassie Hilder Manager, Business, Agriculture; Arcadia Biosciences



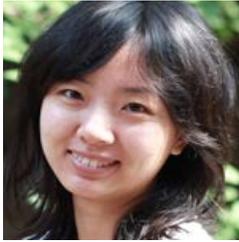
Education: UC Davis (BS, Plant Biology; MBA, Graduate School of Management)

I have always had a strong interest in agriculture and a love of science. My grandfather started a breeding program for stone fruit trees in Modesto and when not in school I was working in various aspects of the business. Not only did his breeding program improve the consumer and commercial quality of peaches, nectarines, plums, and cherries, he also spearheaded work in hybrid combinations of these fruit, creating new categories such as the Pluot and Aprium. His passion and ambition to improve stone fruit and create novel combinations of fruit instilled in me a value for innovation and exploration that has helped get me to where I am today.

After earning a B.S. in Plant Biology from UC Davis, I decided not to return to Modesto and work with my family. It was a difficult decision but I wanted to find my own path in my career. I found a job with a medical diagnostics manufacturer and worked in various aspects of manufacturing, quality assurance, and operations. After several years, I decided to return to UC Davis for business school. Following completion of the MBA program, I was hired at Arcadia Biosciences as a business analyst and am now leading business development for agronomic traits.

My favorite aspect of my work is being in the intersection of science and business. I love being at the forefront of technology development in agriculture and being able to turn that into a product concept, business plan and value proposition. Arcadia's technologies span all crops and geographies and have provided me the opportunity to understand the many diverse crops in agriculture and its impact around the globe. Modern agriculture is a unique combination of technology and scientific advancement with the time-honored tradition of breeding and growing crops. They are dependent on each other for success. Being able to understand, participate, and contribute to this is not only fascinating but also an honor.

Yitong Liu PhD, R&D Team Leader, Household Care, Novozymes China



Yitong grew up in a small city in northern China. After obtaining her PhD, she joined Novozymes Beijing in 2011. In 2013, she spent a year in Novozymes Denmark and is now back in Beijing.

For me, the most enjoyable thing about having a career in science is the challenge of solving a problem. I love the fun of working it out after failures and dilemmas, and the joy of working with brilliant people. My greatest professional achievement has been the successful launch of a new product into liquid detergent in China. Chinese consumers will experience better cleaning performance with Novozymes' technology.

Shamoni Maheshwari, Post Doctoral Fellow, UC Davis Genome Center



I grew up in New Delhi, India, an urban jungle with no exposure to agriculture or sadly, even plants in their natural environment. I did however have a lot of exposure to science and technology having grown up on the Indian Institute of Technology Delhi campus. I ended up doing a Ph.D. at Cornell studying speciation genetics of fruit flies. Four years ago my career as a scientist took an exciting turn when I decided to switch model organisms and began postdoctoral research in *Arabidopsis thaliana*. While the change in genetic systems was rather dramatic, the fundamental question driving my research remained the same: what are the genetic and molecular basis of reproductive barriers and genome evolution? This question, while academic in fruit flies, turns out to be of direct relevance to the application-based field of plant breeding. This has been a highly gratifying experience and has cemented my desire to continue in this field. My current research focuses on a fast evolving centromere protein and I have found that natural variation in this protein can cause extensive mis-segregation in hybrid crosses, including the production of haploid progeny. Haploids, are a breeder's best friend since they allow for genome-wide homozygosity in a single generation. Thus, a better understanding of this phenomena would have profound effects on plant breeding and my results suggest that the natural variation of centromere-associated proteins could offer a cache of testable hypothesis.

Juliana Osorio-Marin, Post Doc Researcher, Plant Sciences



My path to agriculture and breeding started when I was looking at what profession to choose in my last year of high school. All I knew at that time was that I like to be outside, and be in contact with nature, so I decided that agriculture would give me that chance. I spent one year in a community college learning about farm management before getting into the Universidad Nacional de Colombia to get my bachelor's degree in Agronomy. Being always very enthusiastic about learning and being involved, brought me to meet and work with my first college mentors maintaining the potato tissue culture collection. It was then when my curiosity for plant breeding started, and therefore moved to the University of Arkansas to get a Master's degree in plant and environmental sciences with emphasis in cotton biotechnology. At that point I knew I wanted to focus my career in Plant Breeding, and went to Texas A&M to get a Doctoral degree in Plant Breeding. I learnt, beyond many other things, that plant breeding is a science and an art that empowers people and communities around the world. After getting my PhD, I worked with Seminis-Monsanto as a Research Associate in the squash breeding program for about three years, which allowed me to get familiar with the work in the seed industry. My work in Seminis-Monsanto brought me in close contact with UC Davis, where I work now. I am currently the first spinach breeder at UC Davis, and one of my aspirations is to build a strong program to enhance local productivity with public varieties, conducting collaborative research and taking advantage of the great presence that the seed and biotech industry has in our area.

Poornima Parameswaran, Co-Founder Trace Genomics



*Education: BS in Molecular Biology. University of Texas at Austin, 2004
PhD in Microbiology and Immunology. Stanford University, 2010
Postdoctoral Fellowship. University of California at Berkeley, School of Public Health, 2015*

I've always been drawn to "puzzles" and "mysteries," and unique solutions to these, and I would spend most of my free time during my childhood reading detective stories and books with titles such as "The Unsolved Mysteries of the Universe." Yes, I was definitely one of the "geeks" in school - I loved the adrenaline rush that came from learning a new scientific fact or solving a math problem successfully. Despite my love for math, I was more drawn to biology, because I was extremely curious about the functioning of the human body and I would ponder for hours over how everything in our body must be perfectly coordinated and perfectly orchestrated for us to be alive.

I started researching colleges and programs in the U.S. and India when I was 14 years old, and realized that (a) I wanted to be a scientist, (b) Actually, specifically, a scientist in Molecular Biology, because I really wanted to understand life in terms of the nitty-gritty components that make us alive and tick, and (c) At the time, the U.S colleges had many more opportunities for undergraduate research. I started doing molecular biology research in plants and fruit flies towards the end of my very first semester of college at the University of Texas at Austin. In my senior year, I became fascinated with viruses after taking a course on viruses, and decided that for my Ph.D., I would pursue my desire to know the "nitty-gritty" molecular details in the context of virology (the study of viruses), to research the molecular mechanisms on what makes a virus "good, bad or ugly".

When I entered Stanford in 2004, the era of next-generation genomics was just beginning. For me, it quickly became a tool with which we could peek into the molecular genetic code of viruses as well as the host immune response to the virus - essentially the "tug-of-war" that happens when a virus infects another living entity. I spent the next 10 years researching and publishing on breakthroughs in our understanding of virus and host molecular biology using a toolkit of biological assays, genomics (sequencing), and bioinformatics. It was also during this time in 2010 that Diane Wu (co-founder, Trace Genomics) and I came together to develop technology to apply genomics and analytics to dirty samples such as sewage and soil, for the purposes of identifying early warning indicators for disease outbreaks. During the course of our market research, we started talking to the agricultural sector about our technology, and identified an urgent need for soil disease and health testing to identify early indicators of soil health and disease, driven by the phasing out of Methyl Bromide, the best product available to growers for combating soil diseases. Having seen the pull for our technology from the agricultural sector, I simply could not miss the opportunity to start a company to help solve one of the biggest problems facing our world today - the problem of agricultural productivity. Along the way, we have been chosen to be part of the Illumina Accelerator, raised \$4 million in seed funding early in 2016, and have won many prestigious awards at various startup competitions, including the Thrive Innovation Award at the Forbes AgTech Summit in 2016.

Madu Rengasamy, Product Development Regulatory-Program Management,
Genetech



Growing up I had a difficult time answering the question- "What do you want to be when you grow up?" I knew my interest lay in biology and history but could never figure out a single profession I wanted to choose. I just knew I enjoyed learning- every single day.

Pursuing my love for Biology, I completed my Bachelors in Microbiology, Chemistry and Zoology at Bangalore University in India. Having a keen interest in Microbiology I pursued a master's degree in Microbiology at M.S. University in Baroda, India where learning the impact of microorganisms in every aspect of our existence had me hooked. At Baroda, I worked on studying locally isolated strains of radiation resistant bacteria and their potential use for bioremediation.

A chance class presentation on gene therapy got me deeply intrigued in the field and I moved to the island nation of Singapore where I worked on gene therapy for glioblastoma at the National University of Singapore. Although I found this is a fascinating area of research I yearned to go back to basic science.

I then started my doctoral research at the Mount Sinai School of Medicine in New York where I worked on the epigenetic regulation of breast cancer. Doctoral work was an intellectually satisfying (though sometimes nerve-wracking) experience. However towards the end of my PhD, I felt that it was time to move on.

Having moved countries (and continents) in the pursuit of my dreams, I now felt a little disenchanted with the world of academic research. While in conversation with an alumna of Mount Sinai, I discovered the world of regulatory affairs and decided to take a leap of faith and moved to California for an internship in clinical regulatory affairs (oncology) at Genentech.

The transition from academia to industry especially to a field where I knew little was initially a daunting experience. But soon my initial apprehension was lost as I delved into the intricacies that constitute a career in regulatory affairs.

As a regulatory affairs professional, you orchestrate the interplay of varied functions including (but not limited to) clinical science, drug safety and marketing to send a unified message to health authorities. It gives me immense satisfaction in knowing that I am helping to bring drugs closer to patients.

From my perspective, one doesn't need to have a defined career path to be a successful professional. If you ask me where I see myself five years from now, my answer is simple- pursuing a career where I will continue to enjoy learning- every single day!

Viviane Serpa Müller PhD, Research Manager, Novozymes Latin America



Viviane joined Novozymes Brazil 5 years ago. Last year, she took over the R&D department manager position and leads R&D initiatives in Latin America within Agriculture & Bioenergy.

"I like the idea that things can be different and better, we just need to find the solution. Science allows us to achieve this. I was inspired to pursue a career in science by the possibility of discovering new things that can help us to understand some of the world's biggest challenges. It is great to be directly involved in something that gives us the power to change our lives."

Kate Stuart, PhD, Director Preclinical Development, Symic Bio



In graduate school, I unexpectedly learned about entrepreneurship. A colleague's project was on a translational path, and I found it quite intriguing, so much so that as soon as I completed my PhD thesis I began working full time on the project. The lab had received seed funding and we pursued early stage feasibility work in two different indications. Both studies were successful, and I was passionate about continuing the work.

It was a long road with many detours and side-trips, but we eventually got government grants, angel investment, and VC funding for the company. Symic now has 2 clinical trials ongoing and a team of nearly 40. Being a part of a company from its inception through this type of growth has been incredibly rewarding and also incredibly challenging. I have been able to carve my own career path, while also hiring levels of management above me. Throughout it all it has been very important to surround myself with others that have some similar experiences to celebrate the wins and empathize with the struggles. Additionally, it has been important to focus on balance and recognize that life is more than just your career. I would recommend anyone take risks early and be open to alternative ideas from their planned career path.

Susan Turner, Senior Vice President, Research. BioConsortia Inc.,.



I can still remember the very first time I looked down a microscope, I was about eight years old and was immediately fascinated by this ability to make the invisible world come to life. I decided in that moment that I was going to become a microbiologist. As the years went by I aspired to a variety of other careers but science was the recurrent theme. When I finally went to University and the opportunity to study microbiology presented itself, I was hooked.

I completed a BSc in microbiology but having grown up on a farm in a small rural district of New Zealand I wasn't ready to spend all day in a lab. What followed was a series of defining career opportunities that built on my formal training in science and microbiology. These included four years with the New Zealand Dept of Health, administering legislation relating to environmental, occupational and public health, then six years with a Regional Council working as Senior Water Quality Scientist. During the latter I started my studies towards a PhD, working in the office during the day and in the lab in the evenings and weekends. It wasn't as hard as it sounds. To my surprise, I discovered that I really enjoyed being in the lab and especially the wonderful sense of achievement that comes with research and discovery.

As I was reaching the end of my PhD studies I followed my passion, leaving a secure and well paid job for a soft-moneyed post-doctoral position. What seemed like an enormous risk at the time turned out to be one of best career decisions of my life. With the assistance of some great mentors the post-doc eventually gave rise to a lectureship and then to a tenured academic position at the University of Auckland. There I established my own research group working in the field of applied and environmental microbiology. My primary interest was in the microbiology of wastewater treatment, but I remained excited by the tremendous versatility and value of microbes to everyday life. This interest led to my involvement in collaborations across a broad spectrum of fields, each building on my understanding of the microbial world. Working with industry to use microbiology in very practical applications was always a highlight, so after twelve years in the academic system I again followed my heart and left academia for an opportunity to work in the Ag Biotech industry.

I joined BioConsortia's founding company, BioDiscovery, which was developing an exciting new platform for discovery of microbes for crop improvement. That role led me to becoming BioConsortia's SVP of Research and brought me to Davis to set up our US R&D operation. My current role draws on everything I have learnt through my career and provides the perfect blend of challenges, excitement and opportunities to learn more. Most importantly it enables me to apply my understanding of microbiology to drive improvements in Agricultural productivity and sustainability.

My advice to others: Follow your interests and don't feel that you always need know what your next step will be. Careers aren't necessarily planned – they evolve.

Dr. Sarah Teter, Global Manager of Biomass R&D, Novozymes North America



Sarah manages a global team of researchers who have developed the Cellic® enzyme product line, which is currently being used by global industry front-runners in commercial scale production of advanced biofuels.

In third grade, we had a guest visitor in the classroom. She was very passionate about science, and pointed out that there weren't that many girls making careers in science, and commented that she thought we girls were missing out. I remember thinking that something which inspired so much enthusiasm from such a cool woman was not worth missing out on! I was not willing to let boys have all the fun. I volunteered at the local vet in fourth grade, learning about animal medicine. This began a lifelong interest in biology.

Debbie Yaver, Managing Director, Novozymes Inc., Davis, California



I have worked for almost 25 years in Research and Development in the industrial biotechnology industry. My path to this career was by no means straight and was fueled by hard work, timing and a bit of luck. As Thomas Jefferson said, "I am a great believer in luck and I find the harder I work, the more I have of it." From a very young age I loved science and math, and I was fortunate to have teachers, counselors and parents who encouraged and challenged me. In high school, I had the opportunity to take two full years of physics which sparked my passion for physics. I enrolled at UC Davis as a physics major; how did I end up with a BA in Bacteriology from UC Davis?

My parents encouraged me as a child to not only focus on academics, but to also lead a balanced life. I was involved in many different activities including team sports which taught me the value and joy in achieving a goal together as a team. During my first year and a half of physics courses at UCD, I could not find anyone like me among my fellow students or instructors and did not feel like I was part of a "team". At that point in time there were very few women role models in physics and 95% of my classmates were young men who were brilliant while lacking in people skills. I just could not see myself spending my days working together with them as my colleagues for the next 30 to 40 years.

That set me on a path of exploration looking at different disciplines of science and I found my niche in microbiology. When I graduated with my bachelor's degree I was not sure if I wanted to go to medical school or to graduate school so I worked for two years at SRI International as a microbiologist on an oil field microbiology project. I really loved doing research and decided to return for my Ph.D. at UC Davis in Microbiology where I studied protein secretion using molecular and cellular biology in the laboratory of Dr. David Ogrzydziak. He was a great mentor to me and

allowed me to work independently. I always planned to go into academia since that was the expected route; my husband's career led to me doing a short post-doctoral position in Dr. Dan Klionsky's laboratory at UC Davis.

Opportunity knocked when a women professor mentioned to me that a biotechnology company was setting up a R&D site in Davis and that they were looking for folks with my expertise. I decided to throw my name into the hat and see what would happen. I have to say that I have not looked back with any regret in the 24 years I have been working for Novozymes (formerly Novo Nordisk). I enjoy working on technology that allows the discovery and development of enzymes used in or to produce everyday products such as laundry detergent, leather, bread, juice, beer, wine, fuel ethanol, and animal feed. I am also proud to work for an international company that helps meet the needs of a growing world sustainably. I started as a scientist engineering microbes to produce enzymes and proteins. I have had a chance over the 24 years to dabble in a lot of different areas including protein engineering, antimicrobial peptides, project leadership and business development. I feel fortunate to have had these opportunities and believe they have contributed to my ability to lead managers and scientists toward solving real world problems. I have been fortunate to have great mentors at Novozymes including Dr. Randy Berka and Ejner Bech Jensen who believed in me and helped me to develop along the way.

I have also remained active at UC Davis, co-teaching a graduate level seminar in microbiology on "Industrial Biotechnology: from discovery to commercialization. I am also very active in the Society of Industrial Microbiology and Biotechnology (SIMB) having organized sessions at the Annual Meeting as well as serving as program chair for the Annual Meeting, on the program committee for a special conference on Recent Advances in Microbial Control, on the Board of Directors. I am currently President-Elect of SIMB. I am firm believer that networking and taking on leadership roles outside of my job allow me to continue to grow and develop and make contacts that have been valuable in the past, now and in the future.

I would like to close by challenging industry and academia to continue to increase diversity (both gender and ethnic) in their senior and executive leadership teams. There is no doubt that diverse teams with different backgrounds and perspectives are better equipped to deliver new innovation, solutions and products that will help meet the challenges facing the world today and in the future.