Transcript – Tejal Ashwin Desai, Class of 1994

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Interviewer: Mimi Pichey, class of 1972
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Mimi Pichey: Now we press it a second time – This is Mimi Pichey, class of Brown '72, interviewing Tejal Desai. I hope I said that right.

Tejal Ashwin Desai: Tejal.

MP: Tejal? Okay, Tejal. And the date is December 5, 2017. Can you tell me a little bit about your background, your family, and childhood?

TD: Sure. So, I actually was born in the United States from immigrant parents who came from India. My father came over for actually college to the Midwest and then went back and married my mother and then they subsequently relocated to the United States and both my brother and myself were born here. I actually grew up in southern California, was born in Huntington Beach but lived most of my life in Santa Barbara which is a very interesting place to grow up as an Indian family since there were very, very, few Asian-Americans at all, much less Indians. And, so, I sort of really grew up with this notion of how do I fit in? My parents were very strongly encouraging me to assimilate as much as possible. I didn't really learn my language. I tried to do everything I could to be part of the Santa Barbara culture which is an interesting experience and didn't actually realize, you know, what it was to be south Asian until really I got to Brown. So that was – I think it influenced my interest in being involved when I got to Brown. But growing up I certainly was influenced by my parents. You know, they never really told me, you know, I should be a doctor, or a lawyer, or engineer, but I became fascinated with engineering actually in high school, like many other people do, but really because I was fortunate to participate in a women-in-science program when I was a sophomore in high school. One of my science teachers encouraged me to apply to a program where I would be able to spend the summer in New York and meet other engineers who were actually women who were working in different fields of

engineering. And so for me, from an academic perspective that was very transformative because it was the first time that I actually saw women who were leaders across all of these engineering disciplines. And I got to know what an engineer was.

MP: What kinds of professions were your parents?

TD: My dad was a chemical engineer so I knew it sort of from his lens. He worked in water desalination. But I always thought it was sort of this, you know, a field where you really – you know, I wanted to impact people. I wanted to be able to influence my community in a more direct way and I didn't see that necessarily through what he did. And it was only when I realized that, you know, there are many different ways that engineers could influence, whether it was medicine or the environment, that I became interested in that field.

MP: And your mother?

TD: And my mother worked at home.

MP: So how and why did you decide to study at Brown?

TD: It was interesting because I, although I enjoyed math and science I really enjoyed writing. I enjoyed English. I enjoyed political science. And so when I was sort of thinking about where I wanted to pursue an engineering degree I wanted it to be something broader than just a technical institute. And I remember sitting, you know, when we got the college decision letters, and really trying to think about, you know, do I want to Brown which actually had a very small engineering program – still does, but at that time particularly – versus some of the more technical schools that were, you know, some of the more obvious choices for engineering. And I remember my brother who is about six years older than me said, "Really, you want to be at a place where you'll be able to spark your passion and if your passions lie in all of these areas why not go to Brown because you'll be able to really have the freedom to [5:00] learn not just the engineering but all of the other areas." And so I remember sitting at the dining room table and I'm thinking, really? He was like, "You know, listen, if you're not happy you're never going to be able to really do what

you want in life." So I ended up going to Brown. And I think the reason that I'm in engineering is because I went to – and I'm still doing science is because I went to Brown.

MP: Do you think that if you'd gone to a straight engineering school like MIT or one of the other schools that you – something else would've happened?

TD: I think I probably – I think I would've probably not gone at least an academic route that I did. You know, part of that was I think because of the people I met at Brown but also sort of the inspiration to be a role model and be involved in the community to some extent in a way that I think pushed me towards the academic route.

MP: Did you have any particular expectations before you arrived?

TD: No, you know. I guess I thought it would be easier than it was to some extent. I mean – I – you know, I went to a public school and I did well. And actually it was a pretty big shock coming to Brown for me. I was surrounded by people who really had much more expertise or knew much more than I did. At least that's what I thought at the time. And sitting around in my classes, I felt like I knew nothing compared to those – the other students. So for someone who, you know, was valedictorian and all of these other achievements, right, I just – I remember that first year being just so difficult.

MP: Had you traveled much or was this the first time you'd lived on the east – or been – you had been to New York before.

TD: Yeah, yeah. I mean, I had traveled before and, you know, I had certainly seen different places in the world and I had had the privilege of being able to see different places but I, you know, I think I didn't realize sort of the differences as you had mentioned earlier about, sort of, the schools and their preparation for college.

MP: What were your first impressions? I mean, you mentioned feeling –

TD: Yeah so I started – I guess my first introduction to Brown was through TWTP, so this is the Third World Transition Program at Brown which they now call, I guess – they've renamed that. But it was a program for minority students to have a few days before they went to Brown. And so this was a very interesting experience to me because I had sort of grown up thinking in some ways, you know, I'm not a minority. I'm a, you know, I'm born here, I'm just like everyone else and I was trying so hard to prove that in some ways. And, you know, spending five days with Asian Americans, African Americans, Latino students, really was eye opening in so many different ways. One, that I realized wow there are all these other people that have shared experiences that I, you know, was almost afraid to talk about when I was in Santa Barbara. You know, we would go home I'd have very culturally an Indian family but when I was out I sort of shunned all of that. And two, that, you know, we talked about issues and experiences that made me realize that, you know, things were not always fair and equal in all parts of life. So you know, that five days, one, it cemented a lot of friendships that ended up being part of my Brown experiences, and two, really, I think, sort of ignited this interest in being involved in activism at Brown, to look at why aren't there more faculty of color or why aren't there, sort of, equal numbers in terms of the student representation? And all of that, again, was really these first few days at Brown which I'm like wow, you know. That was my introduction.

And then, you know, I ended up meeting through that experience a lot of student mentors. You know, seniors and juniors that were at Brown who had sort of gone through and now were wiser and ended up sort of taking me under their wings more on, [10:00] sort of, the activism front and getting me involved with things. I started – I became very involved with the Asian American community but I also got involved with – I ran for student council and so I also became part of the student government there. And then I became very involved with this organization that was writing a blue ribbon report that making recommendations to the university about all sectors of faculty hiring, retention, needs-blind admission, as well as services for supporting students at Brown. And so we spent that first year, which is my freshman year, writing that report. And then, you know, at the same time I was trying to embark in this engineering curriculum which was very intense. And I had, you know, sort of tried to figure out how to do that but also how to do this other thing so it was a very, I think, schizophrenic time in some ways because I wanted to work on these issues that were so important but I also had to be in the library doing problem sets and try to actually get through my classes.

MP: Yeah, I noticed that you were quoted in the Brown Daily Herald in 1991, I believe, as a member of the Third World coalition so it must've been around that.

TD: That was exactly what it was, yeah.

MP: Just a side question on this –

TD: Sure.

MP: Did you meet other people with south Indian heritage who helped you to become more aware of your historical background?

TD: I would say, you know, sort of less maybe south Asian I would say just in general the community of Asian Americans became a big community for me. So whether it was Indian, or Pilipino, or Vietnamese, that sort of community was very integrated at Brown. And it was less, it was less sort of the Chinese Americans and the Korean Americans and then the Indian Americans, it was sort of the larger Asian American community. And, moreover, I guess I was more involved in even the broader Third World community, what we called it, which was African American, Latino, and Asian Americans coming together. So that really became the community as opposed to just sort of Indian.

MP: What do you remember most – well, let's go back to academics.

TD: Yes.

MP: You started in engineering your first –

TD: I started in engineering.

MP: – Year was a little rough because you were doing, you were tempted by, I think, the Brown phenomenon of wanting to do everything –

TD: It was – exactly, exactly.

MP: And at what point did you start to really click with your studies?

TD: Yeah, so I think it was hard that first year both because of, you know, I would say the content and not ever seeing that whereas a lot of my other colleagues had seen a lot of the statics, and mechanics, and thermo, which I had never been exposed to. But also feeling like I, you know, I was trying to find a community in the engineering school that I would resonate with but at that point actually my advisor, and I think I've told this at a panel, said, you know, "Maybe you should think about a different major. That, you know, maybe engineering is not your forte." And I think it was, you know, that was after my first semester and, you know, when I went home over break I really thought about, okay, what is it that I really want to do academically? And I decided I did want to be an engineer. I really wanted to be able to do this. The field itself was very exciting, I think the classes at that point, you know, didn't necessarily connect to the engineering I hoped I would do but I think it was that conversation – I know it was Tim saying, "Well, if you can't improve then you should, you know, do something else," which really got me to focus on my academics. So towards the end of the year, you know, I started to realize what it took to actually get through these classes. And that, you know, one of the things I always thought was that I had to do everything individually because that was what I had grown up in high school and sort of taught. And at Brown, you know, the way that people were getting through these classes [15:00] were sitting together, solving problems, actually studying together, and I realized I needed to become part of that in order to get through the classes and that there was nothing wrong with doing that. And it's sort of a different mindset than what I had been used to in high school.

MP: We can talk a little bit about how perhaps that had an impact on your approach to your career in later life. What do you remember most fondly about your time at Brown?

TD: Oh, gosh, there's so many, you know, I just think one of the things I just loved about Brown is that everybody who I interacted with was so passionate about one thing or another and they, they really, you know, they didn't just let it end there. They took that beyond in their careers and

so, you know, I feel like I have a community that, even though I was an engineer, you know, I have civil rights lawyers that are now my friends and I have people who are in the entertainment industry, or have become, you know, treat HIV/AIDS in Africa, and they took whatever they were passionate about at Brown and really allowed that to flourish and became leaders in that. So when I look back at Brown I just remember these wonderful personalities that wherever I meet them I'm just inspired and awed by them.

MP: Now, the flip side. There must've been a few low points.

TD: Yeah, yeah.

MP: What would – do you remember any that you want to point out?

TD: You know, I – yeah. I mean, the low point certainly was when I was not, you know, when I was feeling like I was not doing well in classes, when I talked to my advisor and I felt like I was not supported at that moment, and that it wasn't a conversation about, well maybe you could scale back on some of these other things or focus, it was about well, maybe you're not capable. And so that actually made me doubt myself in general. You know, was I at the right institution, why was I, you know, would I ever be successful in a career? So I definitely think that was a low point from an academic perspective. There were lots of – again, I didn't mind working hard, it was sort of the feeling that maybe I wasn't good enough, as being a low point.

MP: How did you perceive social life on campus?

TD: Yeah, so the, I think the, I mean, a lot of where my social life came from was the sort of Third World community so there was a house where a lot of people hung out and so we just – it was sort of a place that I went to study, to socialize, to hang out. I became a minority peer counselor and I did that for three years at Brown so I also was in the freshman dorms. And, again, that became part of my social life as well, you know, being both a mentor and a counselor to those coming in. And that community of counselors became part of my social life. So I didn't, you know, I think my freshman year I went to parties and things but I think that's really

transition to sort of this other community that was there both social as well as community building.

MP: And what about the relations between men and women both on a social level and interaction of men and women in the classroom?

TD: Yeah so an interesting, I mean, so in engineering I would say at that time, yeah, there were about twenty percent women in engineering. But what was interesting is that the class started at about one hundred and ten, one hundred and twenty, and then by the end of the four years there was considerably less left of students who were just in engineering in general. And then if you looked at the men versus women, disproportionally fewer women were left in engineering. Most of those women were in biomedical engineering and I think that was because, you know, there was definitely a connection to, you know, medicine, and helping people, [20:00] but you know, there was – I only had one woman faculty in engineering throughout my four years.

MP: Do you think that the professors you had, perhaps, encouraged women to go into a certain area or do you think it was a self-selection?

TD: I think it was probably a self-selection. I mean, to be honest, I would say that I didn't get much encouragement from the faculty of engineering at all in any area. It was sort of, go to class, do you homework –

MP: So you didn't have a professor who was a mentor?

TD: I did not. And where I did get my mentorship was a woman who was in the medical school who I ended up doing research with who was a professor but not in my core engineering classes. And she, one, she allowed me to start doing research in her lab after my freshman year and, you know, with very little experience doing research. But more importantly than that she was just such a wonderful dynamic role model and said, "it doesn't matter you didn't do well your first year. You can make it up and do well these next few years and we're going to get you into graduate school and I think you should pursue your PhD." And she really kept sort of saying that

sophomore, junior, and finally my senior year. And I think without her and sort of her encouragement and probably the letters that she wrote I wouldn't have been able to do what I did subsequently.

MP: What was her name?

TD: Edith Mathiowitz. And she's still there and I, in fact, I still talk to her so, yeah.

MP: How diverse was the student body at the time you were at Brown, in terms of race, class, religion, geography?

TD: Yeah, I mean, it, I would say, you know I don't remember the exact numbers. I would say that it was probably more diverse than the other ivies and, again, that was something that definitely attracted me to the institution. I would say, in the sciences, though, there were very few students of color and so even though Brown had this great sort of reputation as being this diverse place, the people, again, that I interacted with on sort of the diversity issues were very very few and far between scientists. So it sort of gave me these messages that you know if you were interested in science and engineering, you know, maybe you're either not, you shouldn't worry, or you shouldn't be part of this other community or if you were in this other community maybe you weren't set up to do science and engineering. So you know I think, and still to this day I don't know what the numbers are but I think sort of diversity in that sector is a big issue. Yeah, there's obviously gender disparities but when you look at the underrepresented minorities it's very glaring.

MP: What social and political issues played the largest roles during your college years?

TD: So you know, I think that the biggest thing that we were, I think from an issue perspective, working on was need-blind admissions which I think only several years ago actually became resolved or addressed. And both – I also serves on the admissions committee when I was at Brown so I was a student representative to that committee. And it was very clear back then that, you know, decisions were made based on whether you had the ability to pay. And even though

they tried not to, the reality of it was that if you didn't have the money it would disproportionally impact the ability to be at Brown and so for those sort of working on diversity issues trying to resolve that was going to be one of the most important things. And so that, you know, that was sort of one of the areas that I definitely worked on quite a bit. [25:00]

MP: Well you were, it sounds like you were active in Third World coalition, of course, need-blind admissions, and certainly on the admissions committee, being a peer counselor, and were there any other activities that you were involved with? I'm sort of assuming you weren't involved with sports.

TD: I was not involved with sports. No, so it was that and then research. And all the other times I wasn't doing that I was in the lab trying to do the research.

MP: What do you think Brown taught you about gender and women's roles in society?

TD: So, you know, I think it was maybe not intentional but I think through all of the work that I did both inside and outside of science, you know, I think I recognize that it is not always a level playing field, that there are tradeoffs that one needs to make in order to pursue some of these areas but I think what I learned is that armed with the right information and mentors that can be positive role models that one can actually overcome many of the barriers or perceived barriers that are out there. So I think at the end of the day what I learned from Brown is that, one, to be resilient, to persevere through ups and downs, but that it was important to seek out role models even if they're not sort of right in front of you and that if you don't do that it's going to be sometimes very hard to be able to navigate the many expected challenges that will come.

MP: When you were at Brown do you remember having any specific expectations about what your future would look like after college regarding either work or family?

TD: Yeah, the interesting part is that I, I didn't sort of see myself necessarily as a professor or a professional. And maybe that, just because I didn't have so many of those people I sort of saw in

that role. I think I was, I knew I would get a – I wanted to get a great education, I would probably go to graduate school, but I didn't know where that was actually going to lead and –

MP: So that was, that was starting.

TD: Yeah.

MP: What about towards the end? How did that start to evolve?

TD: And then, yeah, starting, I mean then as – right – and then I, you know, I think, again, through this laboratory experience and really being able to see what it was like to be a professor I realized that, you know, maybe I could actually be that person. And so I started to learn what that path might look like, that I needed to obviously do well academically but also begin to really immerse myself in solving new problems and that I could have just as good ideas as anyone else because a lot of academia is both coming up with ideas and being able to prove those ideas out. And, yes, you know, I needed to solve the math problems and I need to be able to do that but that wasn't necessarily all there was to being an academician or a leader in bioengineering. It was about creativity and curiosity and being able to, again, not give up. So I think those attributes were things that I learned at Brown and I think have carried me since.

MP: Well, some of the things that you have mentioned we'll talk about a little as we talk about your career. You've mentioned that at Brown you learned about teams, you learned role models, the creativity, curiosity, and passion, and persistence. Sound like key themes that came out of your college experience. Did you have any thoughts about family and what kind – were you dating? Did you date at Brown?

TD: I did not date at Brown. I mean, I had a lot of close friends of both genders. I would think there were people that I liked and hung out with but I didn't really date until, yeah, maybe sort of the tail end of Brown. And, [30:00] you know, I guess I sort of assumed I would have a family but I didn't really think about how that would actually work in practicality. And which, you know, I think a lot of people – and I still try to figure that out right now. I think I didn't see, I

didn't see professors or people with their family really interacting and so I almost thought that that was sort of a different part of life and, you know, I just needed to get through this and then I'll figure it out later.

MP: So by the time you were in your senior year you were pretty sure you were going to go to grad school. And did you know precisely what you wanted to study at that point?

TD: Yeah, so I knew I wanted to go to grad school, I didn't know if I would get into grad school so I applied to jobs as well and graduate schools because I, you know, again I think I always had this little bit of self-doubt and, you know, was I good enough? So I, you know, I did that. I knew I wanted to do biomedical engineering. I really thought that this is the way that I could connect engineering to helping people. And I applied to only programs that had a well-conceived graduate degree in biomedical engineering. And, in fact, one of the reasons I had actually chosen Brown was that it was one of the few schools that had a biomedical engineering undergrad and, you know, this was the early 1990s so there weren't that many programs. And so, again, when I was looking at graduate programs I really tried to think about do they have a good program, but also what was the campus environment like? Could I still do some of the things I was also passionate about as I transitioned to graduate school? So it turned out Berkeley was sort of a natural fit for that continuation.

MP: So you graduated from Brown with an undergraduate degree in biomedical engineering.

TD: Biomedical engineering, yup.

MP: And then moved on to Berkeley for grad school.

TD: Yes.

MP: What was your grad school experience like?

TD: Yeah, so I ended up being admitted to this program which was actually a joint program between Berkeley and UCSF so I'm actually part of that program now but, you know, when I got to graduate school it was a very small class. So my cohort was seven students who were studying bioengineering. So, again, it was trying to sort of keep asking myself was I in the right place? Why did they select me? I don't know, you know, I don't feel like I'm good enough to be here. And, you know, I think that was something that I had to keep struggling and sort of reassuring myself that I was in the right place, there was a reason that I was here. But I ended up, and I think largely maybe due to my experiences at Brown, picking a mentor who was sort of outside the box in some ways. He was a civil engineer who had a background in mechanical engineering and material science and had done no biomedical engineering. But he had contacted me because he had this idea about working – developing a technology in diabetes and using nanotechnology which at that point in time wasn't really called nanotechnology. He wanted to create these small structures that could go into the body and deliver insulin. And, again, he had no background in biology, he just had some really interesting materials that he was developing and he had read that I, from my profile when I applied, that I had done some work in drug delivery and diabetes when I was at Brown and maybe I could help him conceive and sort of move this idea forward. And so I, he just, he was very charismatic, he was very persuasive and said, you know, "if you can make this work you will be able to really – to give rise to this new field and be a leader in an area that could make a huge impact in care and patients." And so I ended up joining his lab really as, he was actually an assistant professor so he also was not tenured. And I joined his lab, actually against the wishes [35:00], or sort of against some of the advice of a lot of the faculty mentors in the program because they said, you know, "if it doesn't work out you won't be able to get your PhD, you know, you may be there for ten years. Why don't you go to sort of a tried and true lab." But it was really this sort of notion of, you know, could we do something that hadn't been done before and be a pioneer in that area? And, you know, it turns out that it was the right decision but as I was going through this I remember the first, at least two years of graduate school I felt like am I in the right place, did I make the right decision? This is so hard, you know, nothing is getting off the ground, you know, nothing's working. But I think I, you know, again, I think I reached back to mentors that were my mentor at Brown, I reached out to actually people across the university who I felt like I could talk to, and they helped me sort of stay focused on what the ultimate goal was. And I have to say he was an incredibly supportive mentor who

allowed me to have a lot of latitude in how I put together the project, and believed in me. So, you know, I was actually able to finish the PhD in four years and actually, you know, work in an area that positioned me to be essentially in an area that I could then build my own lab.

MP: So what were the results of that particular research?

TD: Yeah, so in that research I developed a technology that was used to deliver pancreatic cells in the body and encapsulate them or sort of protect them from the immune system and that technology showed that one could treat diabetes with a sort of cell based device. And so it was the, I guess the first demonstration of putting cells together with nanomaterials and having a self-regulated insulin source.

MP: And has that been commercialized?

TD: It has been commercialized. You know, it wasn't my – you know, after then it was very much, you know, changed and moved into lots of different directions. So, you know, what has been commercialized is very different than that original conception but that sort of variation on that has gone on to patients. And, you know, we're still working on other types of technologies that sort of had its beginnings from there.

MP: And what about your social life during grad school? I had, I mean, I had a wonderful time actually. I – I mean, people say that grad school is very difficult and it is but I had, again, the lab environment that I was in was actually a really great lab in terms of collaboration and interacting and so I think those are things that I, also very much stuck with me. That it was not sort of a competition between the people in the lab it was because we were all in it and we were doing something new that, you know, we needed to work together. And so that theme of, instead of, you know, just trying to further one's self at the expense of others. If we can all work towards goals, even if they're not exactly the same goal but sort of in a similar direction we would get there much faster. And so it turned out, you know that, the people who were in my lab at that time, I would say three fourths of them actually ended up becoming professors from that sort of time frame because we all were supporting each other, we were collaborating on things. It wasn't

just my paper, it was all of our papers that came out together, and we're all sort of defining a new field at that time.

MP: So that's pretty fascinating. What happened after you graduated? You got your PhD in four years –

TD: Got my PhD in four years.

MP: – And you helped to start to define a field, a new field. Did you do postdoc work? What happened?

TD: Yeah, so I, you know, it turned out because this was, you know, it's 1998 that I graduated. At that time a lot of programs were realizing, hey, biomedical engineering is a great field. It's also a field that attracts a lot of women, [40:00] we should start a biomedical engineering department at our institution, that a lot of new programs were being started. And so when I went out to sort of look for postdocs or faculty positions I ended up getting more faculty positions than I did postdocs. And I, you know, as I was finishing up my PhD I hadn't even submitted my dissertation. I actually hadn't even published. I had published, you know, a couple of papers but not sort of my final paper. I started to get interviews for faculty positions. And so that was, you know, very exciting but also daunting because here I was. I was a graduate student, really four years out of undergrad and starting to put together packets for what was I going to do with the rest of my life in terms of my research directions, and my teaching portfolio, and my mentorship plans? But again, I ended up reaching out to both my advisor and some of my advisors outside of my lab and they, they really helped me think about where I wanted to go. And my, in particular my advisor said, you know, "you are still interested in all of these other issues" because I, you know, as a graduate student I was also teaching middle school science, and I was volunteering at the Asian American law center, and I was also working for NARIKA which is a south Asian women's organization focused on combating violence, domestic violence, and so, you know, those were still sort of things that I wanted to be part of and so he said, you know, "if you go down the academic path not only can you do the research that you're passionate about but you'll also have a platform to be able to do work in some of these other domains." And he said, "if it

doesn't work out, you know, you're still so early in your career that you could always go back and you could do a postdoc, or you can work in industry, and you could do something else so, you know, you should go for it." And, yeah, I think, you know, again, looking back at that I'm glad he said to go for it because it has been, you know, the path that has been very very fulfilling for me.

MP: So what happened? You became a professor?

TD: So I became a professor. Again, I had the, I had a few different offers but one of the offers was to go to University of Illinois – Chicago. So this is a large public, urban university and, you know, again, the student population was very different than a Berkeley, than a Brown. It was a very diverse population. A lot of first generation students. A lot of commuter students or students who have come back after college. But they were wanting to start a biomedical engineering department and they had hired a chair but they hadn't hired any other faculty. So I went there and I remember interviewing there and what struck me, again, was sort of, this is an opportunity to start something new. This is an opportunity to also engage with a community that maybe hasn't had a, you know, had exposure to sciences in the way that I did. But I could be a role model and I could also, you know, do some of the things that I was, you know, again, passionate about in terms of building the pipeline and being able to create programs in the community. And so I also remember a conversation with one of the professors here who said, "why would you want to go there? You know, you can, if you just wait a year you can go to a place like Stanford or you can go to a place like MIT. Just do, you know, spend one more year here, publish a little more, and they've already told us, you know, they'll be open to your application." And I said, "well, you know, if I go to this other place I have this opportunity to build something." And, you know, to me I guess the name of the place didn't matter as much as sort of the opportunity and the ability to work with students that I wanted to. So, you know, I graduated in June and I UIC in August. And suddenly [45:00] you know, suddenly I was a professor and I had to start my own lab. At the same time, we were building a brand new department so we were hiring faculty, we were actually developing the undergraduate curriculum. I would, you know, our faculty meetings were sort of out of two, and then out of three, because we were sort of hiring as we built the program. And that experience, although it was probably the hardest that I've worked in my life

because I was sort of trying to do all of those things, really was an experience I probably, you know, I'll never forget because I was able to do all of these things to build a new program. And, yeah, it was fun.

MP: It was very creative.

TD: It was creative and it was, you know, I literally with my chair we would be writing on the blackboard, okay, these are the classes we want to create, this is what we want to do, these are the focus areas. And as a new professor I wouldn't have had that opportunity anywhere else.

MP: How long did you stay at UIC?

TD: So I was there only about four years. And I think, again, not that I didn't want to stay there but I, you know, I was building up my lab, I was actually becoming quite successful in getting grants, and I had built a lot of collaborations as well at UIC. But there were some other engineering faculty that made the place not so desirable for me to build my career there. And, in fact, there were some faculty who, you know, were almost making it more difficult for me to be a professor. They wouldn't allow me access to some facilities, they were sort of, you know, if I look back on it, maybe, you know, it was not a very inclusive – they were making it very much not an inclusive environment for me. I was one of two female faculty in engineering. I think there were about one hundred faculty at that point across mechanical, electrical. So even though I had a very supportive chairman some of the other faculty there were not as welcoming.

MP: Now, do you think that, I mean you basically had, it sounds like three potential areas where the non-welcoming piece could have come in. First off, you're trying to start a new department in biomedical engineering, that could be very threatening to academics in the area who see it as poaching on their turf. Of course, there's the obvious issues of you being a woman, as you say, one out of two in one hundred professors in the department. And third, of course, you're a woman of color.

TD: And I was very young so I, you know, I was, I think I was twenty five when I started so at that point it was, I mean it was, I would be mistaken for the students, I would, you know, a lot of things that happen that I'd have to be very careful with how I sort of conducted myself. I would have, you know I would have students who would hang out and you know, try to come to my office and I would be like, you know, leave. But also professors as well so I don't know what it was but it was definitely not, you know, there were a lot of sort of issues that came together that made it a place where I sort of thought I don't know if I'm going to be able to build the successful research career that I want here.

MP: Did you have a sense, you know, so now you've talked about a fourth possibility of why you felt that you were being discriminated against in some way. Well, at least you felt that you could no longer progress at the rate that you wanted to.

TD: Exactly.

MP: Did you have a sense of which one of those might have been more prevalent?

TD: I think it was because of my gender. At that point, I mean, there was – so I did a lot of nanofabrication and there was a big facility that I needed to access and there was a professor who was in charge of this facility who really made it hard for my group and myself to gain access to this facility when everyone else had open access. And so, you know [50:00] I ended up going to the dean and actually to the provost and it didn't actually ever get resolved in a way that was satisfactory to me. And, in fact, my chair, although he really wanted me to stay, also was sort of like, "maybe you should think about some of these other opportunities that have already come your way."

MP: So, again, you found yourself at a crossroads and just before we progress on that, I just wanted to ask, did you experience any sexual harassment in that workplace?

TD: You know, I can't say – I would say workplace harassment. I wouldn't say it was sexual harassment. Definitely, sort of, intimidation, feeling like if I, you know, one, if I didn't do this I

wouldn't get access to these resources and facilities. There, yeah I remember several times some of the professors would come by my office and say, you know, you need to be doing x, y, and z, otherwise we're not going to let you – yeah. So it was a very interesting dynamic that was, I would say it was harassment but it, you know, at that point, you know, I was a young professor and I just, you know, I wanted to do what, you know, what I needed to do to be successful and get tenure at that point. Yeah.

MP: So it was more do it our way –

TD: Do it our way or, yeah. This is how we do it here, don't think you're going to change the system. Right.

MP: So, you were faced with a crossroads and what did you decide?

TD: So I decided to actually move. It turned out that another institution – Boston University – was also looking to expand their efforts in cellular nanotechnology and they had, even sort of separate from that, they had reached out to me about coming over to help lead a new center over there. And so this was an opportunity to go to a place that, well, had a lot more resources in general. Was a very established biomedical engineering department. They had about thirty five faculty already. But within that at least be able to build a center that would be in my area. But also be in Boston which I knew would be a great place to do science and be able to be more entrepreneurial and start to translate things, work with the medical centers there. So I did that, I really did it at the encouragement, I mean, I actually got married while I was at UIC. I met my husband and so he was the one who said, "you should go for it. You know, if you stay at UIC, yes you'll be able to probably, you know, get tenure and all that but you will not be able to, you know, grow the way you want to grow, on your terms." So he encouraged me to take that opportunity and move to Boston.

MP: Sounds like you met a good husband.

TD: I did! I mean, he also encouraged me to ask for tenure when I moved because they were going to bring me over there as an assistant professor. I had only been at UIC for three years or so, so I was sort of right in the middle of sort of the six-year tenure mark. And I was like, no. There's no way. You know, I'm not ready to be an – I would never do that. And he said, "what's the harm in asking? You know, you have to take the risk in moving there midstream, they need you to be able to build this area, so if you don't ask you're never going to be able to – you can't get what you don't ask." And so he definitely made me do that and they, they initially said "well, I don't know, we don't do this." But they, they ended up talking to their faculty and then going out for letters early and they promoted me. So I ended up entering as an associate professor with tenure and that was in, I guess 2001, early 2002.

MP: And, going back to your husband, how did you meet him and what kind of profession, an education, does he bring to you?

TD: Yeah, so I actually, I met him in Chicago, he was a student at Northwestern. He was actually [55:00] finishing up his MD and his MBA in a combined program there. But I actually met him through a friend from Brown. It was his ex-girlfriend who was one of my friends from Brown so it was sort of a, there was a Brown connection there. But he, although he was trained as a physician he ended up going into management consulting. And so the benefit of that was that he really allowed me to move because he could move to, you know, as long as there was a big city, be able to move with his firm to follow sort of an academic career in that sense. So it actually was really nice for me to be able to take the opportunities and be able to navigate sort of a two career family.

MP: And what – so you both ended up in Boston, at Boston University for you, and how did things transpire there?

TD: Yeah, so you know, it was great. You know, I was able to build a center with new, we hired some new faculty. I really actually love the department there. And, you know, I probably would've stayed there for longer. I was there also for about four years and, you know, I really – I think what I appreciated being there is that there was so much science going on and there were so

many people doing amazing things that I realize that, you know, one, there, you know, lots of collaborations that I [inaudible], but also that I needed to – it was an opportunity where I could really focus on science and sort of build that. Build my research, build my lab. But about four years later I realized, so I had my first child while I was at BU and since, and actually my husband was also from San – he grew up in San Diego, so we sort of realized that it would be beneficial to come, try to come back to California. And so we weren't really seeking it out but I, I guess about 2004-ish, 2005, early 2005, was in touch with one of my old mentors who was at UCSF who said that UCSF was interested in building up their bioengineering program, irrespective of Berkeley.

So Berkeley had a bioengineering department and we had a joint program with UCSF but UCSF never had a department of bioengineering and so she had followed, had been following my career. Knew I was in Chicago, knew I had moved to Boston, and said, "would you be interested in coming back to UCSF? We are thinking about, you know, trying to get this off the ground. If you come back it won't be there so you're taking a risk. You're going to come back, probably we'll put you in physiology, and, you know, you can help us try to get this department off the ground here." And, you know, I, again, was sort of like, this is a big risk. One, it's a medical school, it doesn't have the same sort of funding structure as a conventional undergraduate university. I would not be in an engineering school. I'd be put into this biomedical environment. But, I also knew that the people I knew here wouldn't have brought me out here if they, you know, didn't believe that I could help them do this. And so I thought, well, openings in faculty positions in California don't happen all the time. Also, UCSF is sort of a premier place to do biomedical sciences and if I could bring bioengineering to that place it could really both help the institution but also again create this new entity for USCF.

And so I ended up moving to USCF in 2005 as a professor of physiology. Again, I did what my husband asked which was I asked whether they would consider me for full professor [1:00:00] and they did. So I became a full professor in 2005 when they brought me over here and the argument was really because I was leaving a place where I had a guaranteed salary at BU, I was leaving an engineering school. I was coming into a place where if it didn't work out I really wouldn't have a home department and so for me having, you know, being promoted and having the wherewithal to be able to make some changes would be important. And I remember my husband said, "you need to have, you need to be a full professor because no one's going to take

you seriously at UCSF, especially if you want to institute change. And you've seen what happens when you come in and try to do something so make sure you come into the place armed with, you know, the stage and the responsibility that will make it successful." So, you know, I did that and it really did, it sort of changed the conversation because now I didn't have to worry about, sort of at the level at which I can interact with all of the other faculty here who were making the decisions and I could help really put together what would be needed to get a new department of biomedical engineering off the ground at UCSF.

MP: at the panel of 125 –

TD: Yup.

MP: – Years of Women at Brown, you mentioned that you had negotiated another rather interesting aspect of the contract which I had never heard about before and so could you talk a little bit about that?

TD: Yeah, so I had had my first child at BU and so she was about two when I was moving but I was also pregnant with my second child so I knew that especially if I was going to a new institution and asked to do this that I needed to have child care. And I had heard from many people living in the Bay area that childcare was very difficult to get, especially for young infants and so I actually asked them – I negotiated as part of my startup at UCSF to open up two childcare spots at their institutional childcare which is something that actually is very difficult to get into because there's a huge waiting list and there's not that many spots for all the people who need it. But I knew that, you know, I was coming in from a different city, I wouldn't have the chance – I was actually expected to – I moved July 4th, I had my daughter August 6th so four weeks later, and then, you know, the fall, I needed to have something in place. I knew I wouldn't have that if I didn't have something guaranteed. So that actually was maybe one of the hardest parts because they had to, it turns out that the provost has an allotment of child care slots which I did not realize at that point. So they could add those additional slots it was just a matter of funding. So that became a very important piece of my startup package.

MP: Well I think that tips us on to the work-life-family balance. You now have two children?

TD: I have three children, actually.

MP: Oh, three. So you subsequently had another.

TD: Yeah, I had one more after. Yeah.

MP: And you've stayed at UCSF.

TD: And I've stayed at UCSF since. So, yeah.

MP: So you have three children. You run an active career. You helped start this new department. And I will get to it later but I'm assuming you also do some volunteer work as well. Talk a little bit about how you juggle everything.

TD: Yeah, it's been, you know, I think it's been a series of calculated tradeoffs, if you will. Or maybe just decision making. I – it's hard. I mean, I think every day is sort of a, you know, if I can get through the day and everything happens as planned, that's a good day. But I think two things, maybe three things have really helped. One is that I, again, had gotten to a level in my career track so I, you know, a full professor, where I didn't have to worry as much about, you know, I'm not here at a certain time or I, you know, just have to have face time to be here [1:05:00]. I very much have been deliberate about how I set my hours, and when I take meetings, who I take them with. You know, how do I plan my day. Ever since I had my, yeah, since my second child I've always, you know, left at four o'clock unless there's a meeting that I schedule which is, you know, a chair's meeting, a dean's meeting, something that's an important meeting, so that I can, to go home to get the kids from daycare or the bus or wherever. And then I will work later on at night but I always try to be at home between that sort of four to seven p.m., four to eight p.m. time frame. And I know, you know, at first I was very, I would like tiptoe out and make sure nobody saw me as I was leaving and now I just sort of, everybody knows in my lab, you know, just because I'm not here doesn't mean we stop working or we're not doing and that

I'm not being productive. I just, you know, make sure that I am always responsive and lead, you know, I'm accessible, I can be reached if there's anything they need. But to me those are sort of my boundaries. You know, I'll be here after I drop off the kids and I leave at that time. And, you know, the – when I took the chair position of the department I also, you know, I told my deans, I said, "I want to make sure that I can do this position but I don't want it at the expense of you know, having to, you know, be here for late meetings and doing, you know, taking away from my family." And they both – I report to two deans – they both were very understanding about that and said, "we totally get it," and have actually adjusted some of their meetings to make sure that they aren't after five p.m. or, you know, later in the day when that was sort of the norm before.

MP: And your husband is working.

TD: He works.

MP: So he too has some work-life balance issues to deal with too.

TD: Yeah, he – yeah, in fact I would say he is sort of in a less, he is in a less flexible role in some ways. He travels a lot. He's a partner at a consulting firm, large consulting firm, and so he travels all over the country and so I think what has worked is that, you know, I have some flexibility to be able to make it to things but when he is here he's definitely here. So he'll travel but when he's here he's actually very much sort of a partner in trying to do as much as possible. Let me then do what I need to do. And we tradeoff for travel. You know, I block in times where I have to be away and he tells me when he has to be away. And we sort of, we've done handoffs at the airport, we – yeah so we've done all kinds of things. But we also, you know, one of the reasons we came back to California is that both of our parents are still, are here, and so we've been lucky enough to have them be able to come up and watch when we've both needed to be away, or at conferences, or doing things.

MP: Could you just give a summary of where your research is at the moment. Just a very brief one. And then I think I'd like to get into – well, first off let's, let's get this other thing out of the

way. Are there any other, or maybe it dovetails. I'd like to talk about women in STEM education and your thoughts about moving women through what we sort of see as a funnel, where a lot of women start and then at the very end there's only a few coming through the pipeline. I think that's an important area. So why don't we just talk a little bit about your research in a nutshell.

TD: Yeah, so my, you know, I'm still very much focused on developing new materials using nanotechnology and nanofabrication approaches, really for two different big areas. One is the area of drug delivery. So we're interested in how do we make drugs get to the right place in the body at the right time and do that so you can increase patient safety and patient efficacy. We've worked on everything from, again, diabetes to cancer. We have developed some technologies [1:10:00] for delivering drugs to the eye, delivering drugs across the skin. And several of those technologies actually are now being commercialized in different startups that have come out of my lab.

And then the other area is really on the regenerative medicine side of how do you coax cells to help heal and regenerate tissue within the body. And, again, we use nanomaterials to serve as a blueprint for getting cells to respond to the micro environment. And in particular we're interested in fibrosis in the body, how to prime the immune system in order to combat autoimmune disease, and ways in which we can generate the heart.

MP: Sounds like very exciting work.

TD: Yeah, so lots of – we do lots of different areas. So, you know, we don't just focus in cardiovascular disease or cancer. But really with the intent of bringing new technologies to the forefront.

MP: How many people do you have in your lab, who are under your direction? How many people are in this program that you came to work for twelve years ago?

TD: So there are about twenty people in my lab and those are a combination of graduate students, postdocs, a few undergraduates as well, and a research technician. And the department has twenty two faculty that are full time.

MP: Excellent. Let's talk a little bit about STEM and bringing more women in and how do we get more women in and move them forward, keep them afloat, so they can succeed.

TD: Yeah, it's a – I, I think as we talked about, there's a – You know, I think women are increasingly entering the field so I think we're doing a better job in getting women into science and engineering. For me it's really coming down to how do we keep them in the field? Even at the undergraduate level, many of the biomedical engineering programs are at least fifty fifty, sometimes even more women now. But, you look at certainly the faculty level there are still very few women who make it to the full professor ranks. At UCSF we look at things like endowed professorships or sort of the awards that go with science and they're very very much disproportionately male. And so even though we are training women scientists, for some reason we're not allowing them to reach the highest levels of at least sort of the academic track. Yeah, so, you know, I think of course we still have a lot to do at the middle school levels and earlier but I think the very big thing that we need to focus on is how do we retain women and how do we promote them so that they have the same opportunities to progress in their careers.

MP: What are your thoughts on retention and promotion?

TD: Yeah, I mean, I think the – well, we were just in a faculty meeting yesterday and one of the things that came up was the, especially at a place like UCSF, many women are encouraged to take adjunct appointments or to take appointments that are not, you know, not tenure track, ladder rank, faculty. They may be just as qualified but they're not, for some reason they're sort of steered into this other path even though if they were their male counterpart with the same qualifications they would be steered into another track and once you're in that track, one, you have very much fewer resources. You're not afforded the same privileges as in the other tracks. And so it's a spiral in which you can't actually begin to grow your career and attain those higher levels because you're not in a track that supports that. And so we were talking about this in the context, especially of women who are planning a family, because still to this day the notion is if you are [1:15:00] interested in planning a family, well maybe you should go towards the adjunct series and not the latter rank series which, you know, really should not even be a question because it should be based on what you're doing here and now, not what may be something in

the future. So I think we have a lot of education on that front. And we actually have to systematically think about appointing people to what is correct for their qualifications.

MP: You, I know, are involved in and have been involved with middle school education in the past and some other volunteer efforts. What are your interests at this point?

TD: Yeah, so I'm still very interested in middle school STEM education. And I say middle school because really that, you know, fifth through seventh grade is very formative in terms of whether or not you're going to, you know, veer towards science, or engineering, or math, versus not. And I see this even with my own daughters in that, you know, in fourth grade there are tons of girls who are doing the robotics team and they're all, in fact, more girls than men, or than boys. By eighth grade there were two girls left out of, you know, thirty. So within that span something happens and sort of understanding it, it is, you know, the social element. And when girls perceive it not to have that social either fun or sort of a gathering of other girls and they start to see girls leave they feel like it's not the right place for them as well. It really is important to both imbed a social element into the science and into those activities at that time. And also make sure there's a critical mass because as soon as we start to lose people it just forces this cascade.

MP: Well, we've covered a lot of territory and I know your time is limited. Are there any other areas on which you'd care to comment?

TD: You know, I, I think there's a lot of, yeah a lot of efforts that are going on to, again, support women in STEM but maybe, just to reiterate, I think one of the things that we have to do is almost be sort of proactive in our encouragement and mentorship. Just doing, you know, doing the same that you do for all students may not be enough because I think women in particular need that added encouragement to take the extra step because there is this feeling like maybe I'm not good enough or maybe, you know, or maybe I shouldn't go after it, you know, that's too forward. And so I think it's not just a question of having mentors available but it's having those mentors be proactive and really take an interest at any level, whether it's middle school or college or beyond. Even, you know, we're trying to think about faculty who are, you know, they

may have gotten tenure but they're at the associate level and now they don't really know how to make that, take that next step because there are really a dearth of role models for them to have and so I think it doesn't matter what step you're at to really have those role models.

MP: Thank you very much.

TD: You're welcome!

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