The American Association of Immunologists
Oral History Project

Transcript

Olivera J. Finn, Ph.D.
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Interview conducted by
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Williams: This is an interview for The American Association of Immunologists Centennial Oral History Project with Dr. Olivera, "Olja," Finn.

Finn: It's like an Oliver with an "a."

Williams: We are at the 99th annual [ed. 96th annual] meeting of the AAI at the Sheraton Boston Hotel in Boston, Massachusetts. Today is Saturday, May 5, 2012. I'm Brien Williams.

Dr. Finn, I'd like to start by asking you about your family background.

Finn: Yes. So I come from former Yugoslavia, which very quickly you will hear in my accent. Even after forty-three years in this country, it's still there. As soon as I say hello, people say, "Where are you from?" [laughs] The only people who don't hear my accent are my children.

So I came when I was eighteen, and I came to this country because I had met two years before an American student on a summer exchange program in Yugoslavia, and so we fell in love in 1966, the summer of 1966. He came back the fall of 1967 for a Fulbright scholarship in Belgrade. I was growing up and going to high school in Niš, which is south of Belgrade in what is now Serbia. At the end of, like, three days after I graduated high school, we got married, and two weeks later I ended up in this country with my whole family back in Yugoslavia at the time. So that was July 1968. By the end of August, we were on our way to California and continuing school training.

So then what happened was your plans never quite go the way you make them, so 1968 was a very difficult year in this country. If you remember, the spring we were planning our wedding, [Robert F.] Bobby Kennedy was killed, Martin Luther King [Jr.] was killed, Vietnam [War] was escalating. So when we arrived, having just gotten married—my husband was twenty-one years old, I was eighteen—he had gotten a deferment from the draft to study in Yugoslavia. As soon as we arrived, there was a notice from his recruiting board, and he was basically being recruited to go to Vietnam.

So he tried to claim hardship, a foreign wife, young wife, doesn't speak English, which was all true, but they didn't care, of course. So we continued to make plans for the possibility that he might be drafted. So one of the plans was that instead of waiting to be summoned to the Army, he actually took an exam with the U.S. Coast Guard for the reserve officers' candidacy and was one of two hundred young men of thousands that took that exam that year accepted.

So within six months of our stay in California, we started school. He was at Stanford [University]. I was at Foothill Junior College. We ended up, I with my in-laws in Indianapolis where he's from, and he in Yorktown in the Officer

Candidate School. By June of that year, celebrating our first wedding anniversary, we were in San Juan, Puerto Rico, because that's where he was stationed for the next three years as a Coast Guard officer, and I went.

As you may have seen in my CV, I graduated from the Interamerican University in Puerto Rico. It was not the University of Puerto Rico, because I didn't speak Spanish when I arrived there. I spoke it very well when I left three years later. But I did get my degree in biology, specifically in parasitology, and with a very incredible scientist, Dr. Alexander Acholonu , who was Nigerian by origin, who was there because if you wanted to do parasitology, you were in the Tropics, and he was in San Juan. So I took advantage of a lot of very good people, scientists, biologists, who were there, not because it was Harvard [University] and a great school, but because it was the right place to study the diseases and the biology they were interested in. So that's how I started, and actually with Dr. Acholonu I published the first research paper; that is, my first paper as an undergraduate. It's on completing a life cycle of a parasite.

Then my husband was discharged into the reserves but not from active duty, and then we flew back to Stanford and resumed our lives the way they were before.

Williams: Both of you at Stanford?

Finn: Both of us at Stanford. He continued his master's degree program that he had started just for a few months prior to having it interrupted because of the Army, and I applied to graduate school and then I entered Stanford graduate school.

Williams: Let's go back for just a moment. When did you get the biology bug?

Finn: The biology bug was sort of always there. One of my great role models was my father, and my father had a degree in biology and degree in geology, and he did neither. Actually, he was a journalist in his everyday life, but he was just a person who sort of needed to learn a lot of things, so he had gotten these degrees before I remember him as an adult, and then he just proceeded throughout his life to study and acquire degrees.

So one of the degrees that he acquired that I especially enjoyed was in theater directing, and for a few years he was a director of not just a play, but a principal director for the city theater in the town where I was growing up. So I was among the actors and among the directors and premieres, etc., and so my real goal became to study theater and acting and directing. To do that, when I was ready to go to the university, I had to leave my hometown and go to Belgrade, and that was going to be a tremendous hardship on the family and expense, etc.

My father made me a deal. He said, "You can do that if in high school you concentrate on math and science," because in the second year of high school we

could choose languages and arts or math and science. He said, "If you're going to do arts as your life, you have to learn science first, because you'll never again do it in your life." So he was right. It was important to learn.

But I fell in love with it, and it was also a really good thing to do when I unexpectedly ended up in a country where my language capacity for writing, for speaking, for acting, whatever, was going to take a long time to acquire, whereas my biology knowledge put me right through school very quickly. And once you start science, you know, the discovery of new things is just a very addictive style of life. I mean, you discover one thing, you can't wait to discover something else. So I think that if you're exposed to science, you can't help but fall in love with it.

Williams: So your courses in Puerto Rico were taught in Spanish, I presume?

Finn: Yes, they were.

Williams: So your linguistics center must have been hyperactive at this period.

Finn: Right. Right. I had studied actually German in high school, so that's a third language. I have an ease with languages. I do like to hear foreign languages, foreign words, and to master them. Right now it's very frustrating to me. I'm getting older, so I think that language center is aging, too, but I have a number of Chinese students in the lab and I hear them and I am eager to at least a few phrases, but that's harder than my experience before. But basically I'm never in any country for more than three hours without using at least one word of whatever language they have, at least "thank you" as a phrase.

So, yes, the classes were in Spanish and most of the activities were in Spanish, but I could use English. The textbooks were in English, and I could take my exams in English. The written exams, I could write them in English. So people accommodated me.

Williams: Just before we leave your background, what about your family? Did they remain in Yugoslavia?

Finn: Yes, yes. Nobody ever came, other than to visit, yes, and when we had our children, having the grandparents there meant that every year—we came back to California, as I said, after Puerto Rico, and so we had two children there, and every year picked up a toddler and a baby, and after innumerable trips and hours on the plane for visiting grandparents, we kept that connection. My parents came when the babies were small, etc. My brother is still in my hometown. He's a university professor there. So I have nieces and nephews.

Williams: Is he also a scientist?

Finn: Yes, he's in microelectronics. He's really a world expert in chips that impart vision capacity to robots and is a very talented man.

Williams: He's your only—

Finn: He's my only sibling, yes.

Williams: So what are the highlights of your time at Stanford?

Finn: Oh, Stanford was a very exciting place, and actually I developed both a love of immunology and cancer research there, because I ended up in the group in the lab of a very amazing man, Dr. Henry Kaplan, who, unfortunately, died relatively young, in his sixties, of lung cancer. But he was an early radiologist, and part of, I think, the reasons that we believe that he did develop this very strange lung cancer was exposure to radiation. It was very difficult in the early days to have full protection.

But he was determined to cure cancer, and he did. He's in great part responsible for the fact that Hodgkin's disease, for example, is curable. He was practicing total lymphoid irradiation and things like that, but his goal was to cure cancer. He was also convinced that a number of human cancers, especially lymphoid tumors like Hodgkin's, like leukemias, had a viral origin. So a lot of his work was to discover human viruses that cause these lymphoid tumors, leukemias in particular. He had animal models where it was very clear that there was a virus that caused a lymphoid thymoma tumor. So we were all working on first discovering the cause of the tumor but also trying to understand the whole process of tumorigenesis, with the goal to somehow stop it.

He had an amazing passion. He had lost his father to cancer, so he had an amazing passion for that. But he was in the Department of Radiology in his lab to do a Ph.D. thesis. He didn't have many students; he had fellows. But he did have just four graduate students, and I was one of them. You had to pick a course of study in the medical school that was Ph.D.-granting program, and by far the greatest influence on me at the time as I was beginning to do my research were people who were immunologists, and not only these incredible Stanford professors, young at the time, assistant associate professors like Irv Weissman and Len Herzenberg and Hugh McDevitt. Speaking of history of immunology, they are our biggies, but they were all there.

But not only that, but they had very close relationships with basically an amazing Center of Immunology which was in Israel, the Weizmann Institute [of Science]. So Dr. Michael Feldman, Ruth Arnon, Michael Sela, they were the giants there, and they were coming and going all the time, and their trainees were coming to Stanford and going all the time. I actually ended up having a co-mentor with Dr. Kaplan, who was Dr. Michael Feldman, who came and did a sabbatical. The

other person was Dr. Gus Nossal from Australia, who also was very good friend of Dr. Kaplan's, so to see him was an amazing thing. He was the head of the Walter and Eliza Hall Institute, but an immunologist.

So I was so in awe of all those people and these beginnings of immunology that they were creating, cellular immunology mostly, because immunology started a long time ago, but trying to understand the cellular basis. It seemed like a really good combination. The passion for understanding the cancer process and understanding the immune system and how those two might interact just somehow became a really good thing to think about, to do as a thesis, to pursue as a postdoc and to set up a lab to do that, and that's basically what I've been doing.

Williams: Ever since?

Finn: Ever since, yes.

Williams: Was your husband doing much the same?

Finn: So my husband is also a professor, just retired. People used to ask me, "Is your husband a scientist too?" I would say, "No," and terribly offend him, terribly that way, because he was a social scientist, as he reminded me. [laughs]

So his master's degree as well as his Ph.D. at Stanford was in communications research. Now, he was very much focused on mass communications, and between his master's degree and his Ph.D., for seven years he actually wrote first and then produced television news for an NBC affiliate in San Francisco, KRON-TV. So he did that for seven years and then, actually, Stanford, the department, asked him if he would be interested in coming back because he had just gotten his master's and it was certainly enough to do what he was interested in doing, but they asked him if he was interested in coming back to complete his Ph.D. in a similar area and to teach, because he had basically been in their industry for a while, so had an experience that was valuable to them. So that's what he did. He came back for three years.

It was just at the time when I finished my Ph.D., so that I took a postdoctoral fellowship at Stanford with another really incredible immunologist, Dr. Ron Levy. So I stayed there for almost three years, and it took him that long to complete his Ph.D. Then we looked for faculty positions. So he became a faculty assistant professor at the University of North Carolina at Chapel Hill, the Department of Radio, Television, and Motion Pictures, perfectly fit for what he was interested in teaching and doing research in. So his research was in information seeking, and it's really communication, social-studies-type projects.

I was at Duke [University]. So those are very close together. We had a house near his office because, as he used to say when our children were small, he

worked ten to two twice a day so that I can go to work by eight-thirty or so and come back at eight-thirty because I had a lab to run. Also he was always a nine-month appointment, so that when the children were out of school during the summer, there was always somebody there. I couldn't do that, so it worked out very well. We were both faculty, but our different areas allowed us to devote different type of time and different parts of the day to family.

Williams: You talked about the community of Stanford as being a kind of wonderful group of people and so forth.

Finn: Yes.

Williams: Were they in competition with a similar community somewhere else in this country or abroad?

Finn: I'm sure in some way, but when you are a student and a postdoc, those things are not as obvious. I'm sure in some way, but when you are a student and postdoc, those things are not as obvious. So I'll tell you the most obvious thing, was they were in competition with each other at Stanford. [laughs] So, yes, but we tried, as trainees, to kind of stay out of that, yes.

Williams: But the lines of research they were conducting there weren't being replicated elsewhere?

Finn: No, they were absolutely, I mean at Harvard. We were sort of all working on the same thing. Our mentors were all working on the same thing. There was sort of a run to discovery, but I have to say the field, the numbers of scientists pursuing this immunology research was much, much smaller, and the questions were numerous. So even if you were sort on the same track to the same goal, there were so many different things to discover on the way.

Our community is so much bigger now. Look at the numbers at this meeting. We used to go to—immunology was just a part of the FASEB [Federation of American Societies for Experimental Biology] meetings, right, and then EB. So it seemed like it was a big meeting, but the immunology part of the meeting was not that large. Now we have freestanding annual meetings because we're so many.

Williams: So did you take your research interests with you to Duke?

Finn: Yes.

Williams: Or were you entering a new environment with different questions?

Finn: I took my research interests with me to Duke, but you always also enter a new environment. Interestingly, when I ended up in my postdoctoral work with Ron

Levy, there are two things he did that were of interest to me and different than what I had trained on under Dr. Kaplan, because under Dr. Kaplan I did a lot of mouse work in leukemias and viruses and leukemic viruses, etc., so virology/immunology.

Ron was working in the human system, which was very interesting to me, human immunology. I continued to do a lot more human immunology than mouse modeling or very basic. I was more on the applied side of the science, because, again, because my mentors were similar to that. So I liked the fact that it was human immunology, and also Ron had come back from the Weizmann Institute from a fellowship there and again had been bitten by the immunology bug himself, and he was in the Department of Oncology, so he had the same combination, let's see what the immune system can do against cancer.

But interestingly, clearly the HLA of the cell was a determinant of whether or not you'd be able to recognize something, including a tumor antigen or viral antigen, and whether those antigens would be presented to the immune system. In HLA class II, for example, very little—while everything—not everything, but a lot had been discovered about these molecules in mice, very little had been done on human cells and human molecules, mostly because it was difficult to grow human cells and then we were beginning to be able to do that. Antibodies to these molecules on human cells had not really been developed to the large numbers that were available in mice, etc. So human HLA complex was still fairly undiscovered or not well understood, and so I actually worked in Ron's lab more understanding human HLA class II, which eventually would be very much applicable to understanding how tumor antigens are presenting, etc.

But with that background and that knowledge when I got to Duke, and actually Duke was attracted to me for that reason as well, was that I was in the Division of Immunology there with Bernard Amos as the chief of the division, who was a giant in HLA, human HLA, in fact. For the first few years that I was there, I was very much attracted to the research that was going on there in transplantation, because those were human HLA antigens, the rejection antigens in organ transplantation.

So I got very close to the transplant group at Duke that I didn't even know at Stanford. So you carry your research and you set up the lab, but you do look around to see what is going on around you and try to take that as well as one of the subjects that a lab would study. So, anyway, for a while I did both transplantation and tumor. I consider them totally two sides of the same coin, because transplantation basically tells you that the immune system can get rid of a whole kidney, so it should be able to do it with a little tumor, you know. So it's helpful as a tumor immunologist to actually know what's going on in transplantation.

Williams: Did you do any clinical work while you were at Duke?

Finn: No. I'm a Ph.D. They won't let me. [laughs] No, but I'll tell you, I am involved in many clinical trials now as the basic PI [principal investigator]. In fact, I write them, and then the physicians tell me what's possible and what's not. But we work on cancer vaccines, and I've been driving that sort of in the whole field as well as in my home institution. I've been pushing testing of cancer vaccines in different settings. My goal is premalignancy and prevention. I think I've been involved in eight clinical trials, which for a Ph.D. is not bad. Also, anybody who's ever tried to do something, translate something into the clinic, knows that it takes three to six years to actually get things done, organized and written up, analyzed, etc. So eight is not bad, even for a person my age.

Williams: Were you teaching as well at Duke?

Finn: Yes, absolutely. Yes. I love that.

Williams: When you left Stanford, were you also teaching there, too, or not?

Finn: No, very little. When I was a graduate student, we used to assist in lab exercises, primarily of medical students because we were doing these things every day in the lab. So you might as well set them up for the medical students. So I started teaching and that's where you sort of got trained to instruct and hear complaints, etc., but as a postdoc, I didn't really have much teaching experience.

But teaching is easy for me. I like it. I believe you can give them the facts, but can also read them in the books, so as long as you don't give them the wrong facts, it's okay. But the reason to teach them is to show how much you love what you do or what you just heard or what you just discovered. And I think that's why in what we've done in Pittsburgh, but a lot of people do as well, is it's amazing if you can teach what you do research in so that the students can hear it from the horse's mouth, right, it's very different than if you learn it before you have to teach them. So I think that the best institutions, I think that's the way the students really benefit because the institutions have the teachers who do research. So I've always liked that combination.

Williams: So during your decade at Duke, approximately, what were the breakthroughs or the major accomplishments?

Finn: Actually, things that I sort of started there and kind of put myself on the mark there, that's why Pitt [University of Pittsburgh] recruited me. I didn't go to Pitt; it was the other way around. The reason is that my group was among the first to discover a human tumor associated antigen that, still, we're still discovering wonderful things about that molecule, but it's being tested worldwide as a target

for immunotherapy and a candidate vaccine for cancer prevention, etc., so it's an antigen called MUC1.

So that I discovered at Duke, and I actually published that in 1989 in *PNAS*, and I have a very yellow piece of paper, an article, where I was interviewed at Duke when that paper came out. They said, "So, Dr. Finn, when do you think that this may be tested in the clinic?"

So that was 1988. They were interviewing me just before the paper came out, and I said, "1993." Everybody says five years. And they looked at me like, "Okay, everybody says five years, 1993." But I also have another piece of paper, a yellow piece of paper, 1993, front page of the *Pittsburgh Post-Gazette* announcing the first clinical trial in MUC1 cancer vaccines.

I talk to my students, may not be the right advice to give them, but I believe in sort of tenacity. If you really think that something's important, stay with it. A lot of time goes by before other people think it's important, but if you're convinced, that's what you as a scientist have to do. I mean, that's what we do. We're like artists, somebody's supporting us. Just sort of stay with it because it's up to you to finally prove that it's important, because there are lots of interesting things you can do. You can do a little bit of research here, a little bit there, a little bit there, and you'll be just sort of a well-published and well-educated person.

But I like it when people have sort of a brand on their forehead. If you say, "Olja Finn," and it's followed, "You know, the one that works on MUC1," I like that. I think why don't other people like MUC1? I don't really care, but they know what I do and what I stand for. And even if you follow just one subject, you have to know everything that's happening so that you can apply it to your line of research.

Williams: Is your Pennsylvania license plate MUC1?

Finn: [laughs] It's a good question to ask. No, not actually, because I do drive, but as a family we've always limited ourselves to one car. It's our third Prius we are on, so we're very conscious about that. So I can't take propriety of the vehicle. It's for everybody. [laughs]

Williams: Was there a eureka moment at Duke?

Finn: Yes.

Williams: Describe that.

Finn: Again, sometimes it just helps to know who's around you, and it's a set of circumstances that sort of led to this eureka moment. When I came to Duke, Bernard Amos was my division chief and who was just an amazing person and

scientist. Was not much of an administrator, you know. [laughs] So I arrived and there was nothing ready for me, no lab. He literally walked me to the professor in the department who had most space and said, "Do you think you can give her something? A bench?" It was really quite amusing at the time. But I trusted him. You know, it was okay. So I'm here.

It happened to be in the lab of Dr. Richard Metzgar, who was working on generating monoclonal antibodies to human tumors, tumor antigens. We still do that, to find immunotherapeutic targets or therapeutic targets. It was also very shortly after the monoclonal antibodies became a technique. So he was immunizing mice with various human tumors and generating antibodies. Once they had the antibodies, then he had students trying to identify the molecules.

Well, I had done a lot of the kind of biochemical molecular studies at Stanford that really would help them identify this, so in exchange for space, I was overseeing his students' experiments. One student, who was a very talented student, and I, there was an antibody that they could never identify what it was seeing. It clearly was staining tumors, but on a gel, which is what we all used to identify at least the molecular weight. We would make precipitates and run it. Nothing. There was just blank gels.

Then I was working with the student, and I said, "Let's keep the top of the gel intact," because usually the top where you load the molecules, you cut it off, you throw it out, you expose the gel to film that is radioactive. So I realized that whatever we were trying to resolve on the gel was just staying right where we loaded it. I said, "It's just too big. Whatever it is, it's huge, so let's run it not on a regular protein gel, but let's run it on a DNA gel that allows huge molecules like DNA to go through."

So we identified this molecule and it happened to be MUC1. I thought that I had not necessarily wasted my time, but I was basically paying rent by advising this student. It never occurred to me that it would be a lifelong interest until independent in my own lab, independent of Dick Metzgar's students or anything, we were growing a couple years later, several years later, we were growing human T cells from lymph nodes from cancer patients that drained the tumor site, and we were asking what do the T cells that expanded in lymph nodes see on the tumor? Because the T cells are the ones that are going to kill the tumor. And we discovered that the T cells we were growing for many patients, those were pancreatic cancer patients, were killing tumors beautifully, but all tumors. They didn't really care about the HLA, my important molecule. They didn't seem to care about that. So they were HLA unrestricted.

So we tried to sort of draw a picture of what would a molecule have to be like to have that ability to be recognized by the T cells without any participation of HLA? So we proposed a really sort of crazy idea, which is not that crazy at all,

actually, now, and that is that there would be a molecule that has sort of repeating units so that it would crosslink T cell receptors, and those units would be very stable and look the same from one to the other, crosslink the receptors, activate the T cells, and the T cell will kill the tumor. So we had this picture of what the molecule would be like.

Simultaneously in the Biochemistry Department, the head of the Biochemistry Department, Bob Hill, was working on glycosylation of molecules, O-linked glycosylation. He was using a pig mucin as a model molecule that is very heavily glycosylated. So if you want to study glycosylation, you might as well take something that has hundreds of sugars on it. But he was also interested in where those sugars are, so they actually cloned the gene for the pig mucin.

I heard about it. I heard a seminar. The gene for the pig mucin had what is now known as the typical mucin, which is tandem repeat region. So he had 200-and-some amino acids in a repeat, repeated 200-some times, and those amino acids, many of them were scaffolds for sugars. So I looked at that, and I thought, "That's really interesting, because that would be exactly the kind of molecule that could crosslink the T cell receptor, just the tandem repeat region." Then I said, "You know, we have this molecule on the tumor cells from this antibody that we identified," this big molecule. So that was the eureka moment. I said, "You know what? I'm sure that it's the mucin."

And, sure enough, we used the same antibodies that helped us identify the molecule that Dick Metzgar was interested in to block the T cells from seeing the tumor, because once the antibody would bind to the molecule to those same parts where the T cell would bind, the T cells couldn't do it anymore. They would not kill the tumor. So we showed that actually the same thing seen by the antibody was being seen by the T cells and the T cell receptor, whereas other T cells grown to some other antigens we couldn't block with that antibody, etc., etc., and that's in the *PNAS* papers.

But it's one of these, "Aha," and it was completely unexpected. The T cells were not supposed to do to bind native proteins. T cells were not supposed to be HLA unrestricted, none of that. So it was an aha moment and a scary moment, too, because I knew we would have a hard time publishing that, we would have a hard time getting funded, because people go, "What?"

But to the credit of all my colleagues—and I was very young, and who was I? I wasn't publishing under Dr. Kaplan or Dr. Levy. But to the credit of the community, we published a lot and we got funded a lot and pursued this. Now everybody knows that's what it is, and we grew other cells that were MHC restricted, HLA restricted, etc. We have vaccines all from that tandem repeat region that was so—but it was the first time that we had seen the molecule of that sort.

Williams: That's a wonderful story.

Finn: Thank you.

Williams: It is.

Finn: Yes, it's nice to have a eureka moment, right?

Williams: So University of Pittsburgh heard about you and said, "We want you to come to us," or how did that work?

Finn: Dr. Ron Herberman, who was the discoverer of NK cells, he discovered NK cells when he was at NCI [National Cancer Institute], so he was recruited in 1985 to Pittsburgh by a very inspired and inspiring dean at the time, Tom Detre, who basically is responsible for the renaissance of the University of Pittsburgh School of Medicine, School of Health Sciences. It's now third in the country in terms of NIH [National Institutes of Health] funding, etc. Over the last twenty or so, twenty-five years, it's just skyrocketed in terms of ranking and everything.

But it was a sleepy little school and Tom Detre came from Yale and just changed everything. But part of that change was to establish a Cancer Center. So in 1985 he hired Ron Herberman to start a Cancer Center at the University of Pittsburgh. Literally, Ron and six people started it. It is now a 500-member Cancer Center.

So Ron, being an immunologist, he brought a few immunologists with him and then started to set up to recruit people. It's a matrix center, so you recruit from other departments. So he looked at what are the strengths of the institutions so that certain programs they can start developing as Cancer Center programs and with those programs go to the NCI and get funding. It actually became very quickly, like within five years or so, a comprehensive Cancer Center.

So he would see me at some meeting or so, and he knew what I was doing, especially after we published a number of papers on the tumor antigen, and previously with Dick Metzgar I was publishing antibodies, etc. Every time he would see me, he'd say, "You know, you should come and take a look and see what we have in Pittsburgh."

I go, "Okay. Someday." You know, my husband had a very nice job. My kids were happy. I was not unhappy. I was not thrilled with Duke. For women it wasn't a very friendly place. It was friendly, it just wasn't supportive in the way that a woman with ambition would like to be supported. It was friendly to women as good little girls. But, you know, if you talked too much, they wondered why. [laughs] But I was doing well, so it was not enough reason to move.

But Ron, every time he saw me—so finally I actually went to a meeting in Pittsburgh, and it was the first time that coming from the airport—I don't know if you've been to Pittsburgh, but you're in this beautiful hilly suburb, sort of, and then you go through a tunnel and the city just opens up in front of you, the two rivers forming the Ohio. It's spectacular, and it took my breath away, really. Then I stayed at the Sheraton, sort of across the river from the downtown. I opened the drapes, and there it was, just glistening. Then I turned on the TV, and every anchorperson, the news was going on, had sort of my last name. My last name is Jankovic Finn. So everybody was Savitch [phonetic], Jakojin, and I thought, "Hmm. All the locals have Slavic last names."

That night they took us on a boat ride, in fact, around the point in Pittsburgh, which, again, when you are on the river and you look at the downtown, it is really amazing. People are always surprised. So I'm standing, thinking about this place just feels good to me, genetically I'm predisposed to be here. I sense somebody next to me, and it was Ron Herberman going, "So what do you think?" [laughs]

I said, "I think I want to come and visit." So that was 1990, probably June of 1990, and I started April in 1991. It took me one visit to say, "You know, we can work on this." My problem was my son was going into his senior year of high school. He was a junior that year, and then he was going to be a senior after I would start in Pittsburgh. My husband had just been tenured, you know. So I didn't know exactly how to break it to them.

But as always, the family just said, "If any one of us feels really strongly about something, we all go for it." So, yes, even the kids said, "Go for it, Mom." So I did. [laughs] It took us a while to—so my son, for example, never really lived in Pittsburgh. My husband stayed one year with my son in Chapel Hill so that Sasha could finish Chapel Hill High, and then he started at Brown [University]. So just one summer he was in Pittsburgh.

My daughter, fortunately, had just finished sixth grade and was going into junior high, which was a different school. So as long as she was going to different school, she went into a different school in Pittsburgh, so that she and I were in Pittsburgh. The guys were in Chapel Hill, so the family was separate and there was a lot of driving back and forth, but worked out just fine, gave her a lot more independence because I was never there. [laughs] She had to fend for herself, and Daddy wasn't around. So it worked out.

Williams: And then did your husband finally come north?

Finn: Yes, he did. Yes. In fact, it took him four years. We had a commuting marriage, but it really wasn't that bad, because if you're not sharing little children family responsibilities, everything can be arranged. In fact, he would leave on Monday morning, come home Thursday night. He would have all his classes and office

hours and everything. The rest he would work from the computer. Literally there were Thursday nights when I would come home and go, "You're back." [laughs] How did these four days go?

So it was okay. It was all right. He actually ended up with—you don't want to be a trailing spouse, it's not the best situation to be in, but if you can do that and still have a satisfying position, it's okay. He and I have been trading off that role from the day we were married, because he's exactly a degree ahead of me. So he had already gotten his university degree and I was just starting. So there was always one of us had to do something in a certain place, certain amount of time, and the other one had to arrange to make that possible. So it was nothing new, and so we managed.

But what was interesting was that when everybody in Pittsburgh, including the dean, Dr. Detre, was looking for a job for Seth, because they were so afraid that if he doesn't move that somehow or other my time there will be shorter. So everybody was looking for a job for him, which made him even more uncomfortable. He said, "I can do it. Don't worry about it."

But except for the job that he ended up having, which was a professor of communications and information systems at Robert Morris College, which was a business college just outside of Pittsburgh, or really in Pittsburgh, just towards the airport, and they were looking to start a Ph.D. program in communications, so they were looking for somebody who would start that program. That was going to be the program that would make them a university, because they didn't have any Ph.D. higher-degree programs. They had the B.S.

So they came after Seth. Somebody had told them, but they had no idea that he had actually been looking to move to Pittsburgh, so that was actually the best solution. Somebody came after him without knowing he had anything to do with Pittsburgh, that his wife was already there, and for a while he never even told them. He just said, "Okay, I'll take a look." But it ended up so that he did end up there, started the program, the program was successful. They became a university and they formed other graduate programs. So he had a sense of building something, accomplishing something, not just moving because he had to.

Williams: He's, you said, retiring from Robert Morris?

Finn: He retired last year from Robert Morris, yes. He has an emeritus status.

Williams: So what were the highlights of your work at Pittsburgh? I put that in the past tense, and I shouldn't say that. What have been your highlights?

Finn: Yes. No, I mean, you're right; they're ongoing. So it was at Pittsburgh that I started translating to the clinic our discoveries in the lab. And while it's difficult,

it's difficult everywhere. If you compare, other than financially, Pittsburgh is not a wealthy school. So if you want to do something, you have to find money to do it, and the money's not going to come from the university.

But what is so amazing in Pittsburgh and what really made me want to be there wasn't just what I was telling you, I mean my comfort, physical, almost, comfort, with the place, with the city, but also the people at the university. There were no prima donnas. I mean, everybody I talked to was sort of part of the community, and they had a lot of things to be proud of and even a little bit vain about, but I didn't encounter a single vain person.

I intimated that it wasn't the most comfortable existence at Duke because it was sort of steeped in tradition that I didn't care for. Every time you would say, "You know what we should do?" you would immediately get this blank stare from whomever and would say, "No, we've never done that before. We've never done it this way before. We've never done that before."

In Pittsburgh I heard exactly the same words, but it was like, "Whoa, that's an interesting idea. We've never done that before." You know? And I thought, "You know, these people are forward-looking, not looking back," and it was exactly the truth, because everybody was willing to work together because, "We've never done that before. Let's try it."

So that allowed me to actually do things that may have taken me a lot longer to do at Duke. So the aha moments were many because I was allowed to do something that I may not have been allowed, to see things in the clinic, to bring things back, to say, "Wow, here's a reason why a patient is not responding. This is something new we're discovering." So the difference of having a long peptide versus a short peptide, glycosylated versus not glycosylated.

Recently probably the crowning glory so far for me was that after many years of advocating cancer vaccines in the prophylactic setting, where people in conferences would say, "Wait. Wait. What are you talking about? If you want a prophylactic cancer vaccine for colon cancer or breast cancer, you would have to vaccinate 10,000 people and wait 25 years to see if it works." Right? And it sounds like that's the right criticism, but actually it's quite dumb because you don't have to do it that way. There are different ways to do it. You can vaccinate a person at high risk, whose risk can be expressed within three years, and you'll know if you've reduced the risk.

So the thing that we just did and are about to submit for publication is we vaccinated people who had advanced colon adenomas removed and are at a very high risk for recurrence of those adenomas and, if they're missed, for progression to colon cancer. Once it's colon cancer, everything changes about the prognosis, the immune system, etc. So we are trying to prevent the recurrence with the

vaccine that would then therefore, by definition, prevent colon cancer, not that different from an HPV vaccine that tries to prevent infection and therefore the consequence, cervical cancer.

So in this population, which are many people, I mean, we had planned sixty patients, we did forty, decided that we had enough data to understand completely what's going on, so we can just close the trial, analyze it, and then move on to bigger trials, randomized trials, etc., that population of patients, 48 percent recurs within three years. So you can vaccine forty people or sixty, let's say twenty more, and then you can wait three years, and you know whether you actually have an effect. Very, very few drugs will give you that, and the vaccine, we don't vaccinate people against HPV or HBV and give them the virus to see, but this you actually can see if something is happening.

So there are many settings and we managed to do that, and I think that the reason we managed to do this in perfectly healthy people who respond to the vaccine, etc., is because we drove so many other trials and showed why they didn't work and discovered, together with the larger community of immunologists, the immunosuppressive environment, the tumor microenvironment, etc., we were right there because, again, the community is open, and the clinicians.

My G.I. doc, who's my co-PI on the clinical trial, he does colonoscopies, but if you go to him and you say, "You know, we should do this," he says, "Okay. Let's try it." And that's what I've found very supportive in Pittsburgh, supportive to many small aha moments that get you actually to your goal.

Williams: How do you account for such a variance of cultures between the two institutions?

Finn: I think that sort of reputation, previous reputation. It's like Pittsburgh. The University of Pittsburgh is not that different from Pittsburgh. People don't know how wonderful Pittsburgh is. [laughs] They know how wonderful Boston is and San Francisco and Chicago, etc. And Pittsburgh is sort of—you know, it's also most critical of itself, the city. So there is in the city itself a little bit of underdog mentality. It doesn't impair much, but they're not very showoffs. They're not showoffs.

So actually, when you choose to be in the city and you choose to be at the university, the culture is such that if you're a showoff, not that people are not necessarily going to like you, but they're not going to be so impressed by you, and usually you leave. [laughs] So it's for people who are very good, they don't have to show it to anybody, they don't have to be in your face. It's just the culture of the place, and I really, really like that. I'm not a modest person. I can brag. I'm not a modest person, but I brag about myself and everybody else around me. So I would much rather brag about and have other people brag about me, and that place is that way.

Williams: When you came to Pittsburgh, you joined a group of fairly young people, is that correct or not?

Finn: Well, in a way it is correct. There was a big turnover, part of the renaissance of Pittsburgh. We were in our forties, and I sound very old now when I tell my faculty, "You know, you need to take this over from me. I've been doing it for twenty years, and I was forty when I took it." [laughs] "So you can't tell me you're too young for this. Of course you look at me and go, 'You know what you're doing,' but I didn't when I was forty, so you just have to do it."

The most important thing probably wasn't that we were young. The important thing was that we, many of us, arrived at the same time, and every one of us, so we were collectively on a honeymoon with the institution. You have a few years when you arrive at a new place, so to have everybody else feel the same way, so you don't have people whining. So everybody arriving about the same time on a honeymoon with the institution and therefore interested in each other is, I think, where it all sort of cemented itself. So now when we see each other and we need something from each other, twenty years ago we helped each other, so why not now? And then as you continue to recruit new people, they come into that culture.

Williams: How have you absorbed your increasing administrative responsibilities with your instincts as a scientist?

Finn: So, you know, people ask me, "Do you like administration or does it bother you?" The truth is that I don't feel like I administer anything. I have a department administrator. He tells me if we're in the red or in the black. I feel like I'm a cheerleader for my faculty. I am a scientific cheerleader, and also I have all my antennas up for any sort of opportunity for any one of them. If I can name them to some award or send them to some training or name them to a study section, all of those things require a lot of work on their part, but it's good for them in terms of building their career.

So I have a sense that I would do exactly the same thing whether I'm in the chair's office or not. Being in the chair's office gives me more clout to actually get these things accomplished. So I've always been very interested in the career development of my junior colleagues, of my students and postdocs. People have always come to me unofficially for advice, etc., and what I could do was give advice and put their names up, but with just a little bit increased authority, I'm able to do it much better. That's one of the reasons why I said yes to being a chair.

The other reason was that we didn't have a Department of Immunology at the University of Pittsburgh. There were many immunologists, and we liked to

congregate, etc., but what happens is that when other chairs sit around the table and resources are discussed, etc., there's nobody representing immunologists. So I thought it was a very deserving group of people that needed a seat at the table, and I was sort of the most visible and most senior in that group.

I would not have probably applied for a chair position at some other institution that I knew was open or when people came after me, which they do all the time. I'd say, "No, I'm really not moving." But in my own institution, after about ten years of being with the same group of people and trying to promote them and working with them, it was really a benefit to say yes.

Williams: And a matter of real pride, too, because it sounds like you are the mother of the department.

Finn: The mother, oh, yes. You're not the first one to have said that expression. Yes, and I'm about to transfer that responsibility. I told the dean it would be ten years, because that allows me to get some things sort of firmed up, because the group worked well. So get the department on firm footing, hire some new people, be there to promote them, which I have, and then for sort of the next infusion of talent and resources and space and everything, space of growth, should be a different person. So we are in the process of finding a new chair.

We're a little bit behind because we're supposed to move into a new research building, which is a little bit behind because of the economic downturn, so it was put on hold for a couple of years. So I'm a child of a socialist system. I like to plan in five-year periods, so I'm behind on this next five-year period, and so I'm a little unhappy about that, but kind of you have to compromise a little bit because I can't be that adamant. I can destroy a lot of things that I built, so I'm trying to be patient. But as a result, though, there are other responsibilities that I have said yes to, that now I'm trying to organize my time so that I really don't drop the ball in any of them, and that's not always easy.

Williams: So with a successor, you look forward to going back to doing research more full-time? Would that be correct?

Finn: That's all I'm doing anyway. [laughs] It really is all I'm doing. It's all part of my—yes.

Williams: I'm just curious. You may not want to answer this. But in the case of this where you are looking for a new head, is it inevitable that you go outside or do you consider inside?

Finn: Even when I was asked to do this, there was a certain unease that we were doing this from inside, but few people argued that I should do it. I mean few people objected to my doing it. It was sort of a natural. But there was certainly an

expectation that the next person should be from the outside. Now, there's also a practical reason, and that is the dean will always make a better deal for the person, not for himself or herself, with a person from the outside than a person from the inside. So the department will benefit more. So we have this self-serving as well as sort of idealistic reason to bring a person. If you bring a person from the outside, you have new talent, new infusion, certainly, because we all know what we do. So you bring something new, but you also bring resources that otherwise may not come to the department.

Williams: So in your twenty years at Pitt, just briefly, how's the funding gone? Has that been difficult? And what's your reputation at NIH, for example?

Finn: So I have been funded nonstop through NCI from the time I was at Duke, and then ACS [American Cancer Society], Leukemia Society, foundations. But my major funding has been NCI. So right now NCI is at 7 percentile, but they also dock you not having a pay line. It is so low, that's what the point of having it? You might as well just handpick some projects that are funded. It's really scary.

I went through a period of funding before the doubling of the NIH budget, so it was low. It was 12 percentile, 13 percentile, 14 at most. You had to be in the outstanding range to get funded, but somehow that's still better than 7. So I've never seen it this bad, and as a result, I really have two feelings. One is the only reason to feel good about being old is that you can say, "Well, okay, I have funding until sixty-five." So in the worst circumstances I can do something else, take an emeritus status, write, edit a journal, whatever.

But I do worry about my younger colleagues, because each one of them, they're writing grants like crazy and they're getting the reviews and they're getting the scores, and each one of them, three or four years ago would have had three or four grants because that's how the grants are reviewed. But they don't have any. So the difference between being able to have a very successful program and no program at all, and you're the same person and the same ideas and the same grants, is really devastating, absolutely devastating.

The universities have grown primarily on soft money, research universities, so there is no safety net. Basic science departments have no other source of money but grants. In my department now we are trying to think what else can we do. We teach, we get a little bit of money from the school for teaching, but nothing that covers research costs. So we are starting an online certificate program. It requires some investment up front, but maybe it will give us some income to fill a few holes. So now we're kind of steady. We could have had an explosive growth with the talent and the ideas that we have.

Williams: Is there any national spokesperson for your interests on the national scene that might have influence over Congress, which is pretty much the heart of the—

Finn: Well, AAI [the American Association of Immunologists] is. The professional societies absolutely are. AAI is trying to involve the young people as well, because it's their future. I can talk to the congressmen, but he or she will appreciate my insight, but a young person may have a much more convincing story because it's really "Will I do science or will I not do science? And if I don't do science and our country doesn't do science, what happens? What happens with our standing in the world?" So AAI now has these public policy fellows, a dozen or so young people who are going to focus on taking the message to the [Capitol] Hill, in addition to the Public Policy Committee.

Williams: Have you testified at any point?

Finn: I have met with the various representatives and their staffers. One thing I did when I was the president of the society, which was 2007–2008, I met with various advocacy groups because they, too, can really transmit that message. So the message is strong when it comes from the patient, from the patient advocate, from young people, from young scientists. I am probably the weakest person to talk to Congress because it's not as compelling. I don't have money for research. But the advocacy groups like the Breast Cancer Coalition and all the different—Diabetes Association, etc., what I wanted them to know, and I especially focus on the cancer groups because that's what I do, what I wanted them to know is how important immunology is in the disease that they're interested in eliminating, and therefore, fighting for funding for immunology research, for example, because I was doing it at as an AAI president, so, yes, bravo for all the efforts to provide funding for the research in that particular disease, but don't forget how important immunology is, so it has to be on the list.

Williams: Was that your major part of your program as president of AAI?

Finn: The other major part of the program that I took as a unique role in because I'm one of the very few presidents, I think, who's a foreigner and from an underdeveloped country, I'm very interested in promoting immunology research, promoting the science to be done in underdeveloped countries because the diseases are all there as well. So the development of therapies, etc., needs to be local.

We, as a very large and relatively wealthy society, need to be looking outside of just our own group, so supporting various courses and trainees and meetings and teaching. We have courses here. AAI supports attendance in each of its courses of trainees from underdeveloped countries and they apply, we select them, and then they attend the course. They're fully supported, registration, room and board, etc. So as the president of AAI, I was focused a lot on what AAI can do for others, not just for AAI.

Williams: And that effort has continued beyond your presidency?

Finn: Yes, yes.

Williams: Good. We're nearing the end of our time here, but I definitely want you to talk about the role of women in science.

Finn: Yes. So I am actually giving a talk tomorrow hosted by—it's a roundtable session that we do at every AAI meeting, and we always have an invited speaker. So I'm invited this year to start it off. The title of the talk is "Make an Effort," sort of a secret to success in science, or something like that. It will be focused a lot on a few general comments about what "Make an Effort" stands for, but it will be focused a lot also on the role of women in science.

I have been very much involved in promoting women, just making sure that in every activity, scientific activity, in every meeting that's organized, every discussion that's held, every think tank that is put together, that people don't just put these things together because they remember friends' names and most of them will be the male friends' names, but to actually look at the list of women, of names of very competent, smart, great scientists. If you look by those criteria, many women's names will come to the surface.

So one of the ways that AAI deals with that, we have a Status of Women Committee, and we actually have lists of women scientists who can be chairs, who can be speakers, who can lead courses, discussions, everything, who are absolutely wonderful women. So you can't say, "Oh, we didn't know where to look." If you're an organizer of this conference, you know where to look. Here's a list. So we're actually putting people to the test. We're saying, "Here are the women. There's no reason not to involve them." So that's one part of it.

The other part of it is encouraging women as they get into science to pursue their dream, to not compromise ahead of time, meaning every time you find yourself in a situation you have to find the best solution for that particular situation. One thing that bothers me the most is that women, I have seen many women adjust their expectations of themselves and their career plans and their ambition to the fact that someday they might be mothers, someday they will have a family, they will be mothers, so that years before they're thinking about that and they're taking paths that would sort of be more friendly to that situation. I think it's a mistake.

I think you have to set your course and your ambition on your goal and on your success, and then you have a child at that particular moment, you make the best of the situation that you can. If that means you don't go to the AAI meeting, you stay home with the child, that's fine. It's for that one year or two years. The third year you'll go to the AAI meeting and you will be invited to give a talk. But if as

a postdoc you decided, "I'd better do this because I'll have a child," then that third year nobody is going to be inviting you to give a talk at AAI.

So I'm trying, with my students, with my trainees, with my colleagues, to say, "No. If this is what you want to do, this is what you want to do, and life will give you challenges and at that particular moment you find the solution, but then you go on." There was a very interesting article in the *American Scientist* a few months ago, and I'll focus a little bit on their findings in the talk.

So the third part of it is as a woman who has had to deal with all of these issues and who could have been benefitted a lot from the societal responsibilities to supporting women in the professional—women at work. Basically science is no different than any other job. The society doesn't do a very good job to support family responsibilities. So, as a woman at the university, I've worked through committees to advocate for family leave, daycare centers, that sort of thing. Part of it is it has stopped being a women's issue. Part of it is just young faculty issues. So if you want to recruit very good young faculty and their wives are lawyers and doctors and they have little children, you need to say, "You as a father, when the child is sick, will probably need to stay home, and so let's make sure that you're supported as well." So that is helpful. Some of the women's issues have become more general.

But what I want to make sure is that a woman doesn't hold herself back because she doesn't expect support from the family, the partner, the husband, and the society, because that's the fact. That's how it's going to be, but it doesn't mean you have to hold yourself back or to sort of meekly subscribe to the situation.

Williams: Talk briefly about the role of AAI in the immunology universe.

Finn: Oh, it's huge, actually. You know, AAI is the largest immunology society in the world, and I think that other societies have had to form federations to accomplish what AAI accomplishes as a single society. So there's a European federation of immunological societies, called EFIS. All the European countries have it. They are really incredibly successful, important in supporting many programs that highlight the importance of immunology and train students, etc. AAI has been doing this for a long time.

So AAI is really something that the rest of the world looks up to as a society. All you have to do is open the program and see how many guest societies are coming to give a symposium at our meeting. It is because it's important to them to show in this forum their successes. *The Journal of Immunology* is the official journal of the society. That's where you want to publish. So as every really good professional society, you maintain a standard for the science. So what's presented here is great. What is published is great. No, without AAI there would be a

whole lot of little societies and little topics of immunology, but AAI is sort of the metronome as well as the monitor of the quality of our basic science.

Williams: I expect you did some thinking about this oral history interview today. Is there anything left that you would like to say?

Finn: So it's probably not an original thought, because I think quite a few of us are thinking along those lines, is that in the last century and in the more recent years, thirty, forty years or so that I've been the student of immunology, I think we have focused a lot on disease. We know what happens when the immune system doesn't function well. In a way, that teaches us if something is wrong, that's the opposite of the right. So if it doesn't function well, then we assume that if it functioned that way, that would be a good way to function, but we really don't have a way of evaluating immune health of an individual. So we've been talking a lot about that. You go to the doctor, he can tell you if your pressure is good, if your heart is good, etc., but really what's making you able to sit here and talk to me is that your immune system is good. So you're not suffering the virus and you have diabetes. But we don't know.

When you go for your physical, you won't know if you're immune system will be failing, if something should be given to you to keep it up, how does nutrition, diet, all of this. You go to the health food stores, they have shelves and shelves of immune potentiators, but the truth is, immunologists don't yet have anything on the map that says this is what a healthy immune system should look like at that age or that age or that age. That's one thing.

The other one is where I think our association has not done enough is in public health. So the immune system is so important in the public health policy, vaccines and things like that, and yet if you actually look at who makes decisions as to what vaccines should be given, when, how, etc., there isn't a single immunologist involved, absolutely not. So we've been talking about that. So we are great for our science, etc., but when it comes to policy, we have no influence, you know, health policy. I think that as an association we probably should do more in that direction.

Williams: Thank you. Thank you very much for this interview.

Finn: You're welcome. Thank you.

[End of interview]