

## **NIDCR Oral History Project**

### **Interview with Dr. Martha Somerman**

**Conducted on August 22, 2023, by Kenneth Durr**

**KD:** This is an interview with Dr. Martha Somerman for the NIDCR Oral History Project. Today is August 22, 2023, and I'm Kenneth Durr. Dr. Somerman, good to talk to you today. I'm looking forward to our talk. I always start these discussions with a little bit of background, and I'm intrigued by how you got interested in dentistry and how you pursued that through your education. Can you speak a little bit about that?

**MS:** Yes, that's always a question everybody always asks everybody else of why do you want to be a dentist, how did you get into it? I think when I graduated from college, I was really struggling with what I wanted to be and what I wanted to do with my life, and so it was a wonderful experience to take a few years to figure out (while earning money) what I wanted to be.

I said, "Well, I like teaching," so I took a quick summer course to get certified as a teacher and taught up in Harlem, junior high school. It was an incredible experience for me. And I also saw an ad for studies in environmental health sciences at Hunter College, and when I went and spoke with them, they said, "Well, it's a master's program right now, but it will become a PhD program."

And I said, "Oh, this is something giving back to the community." That was at a time when environmental health sciences were just beginning to come to the forefront, and I said, "I can contribute in this area to the community and to the health of people."

So that program was okay. I actually worked at the Food and Drug Administration doing a research project on toxic drugs. I loved teaching in junior high school but realized this is not where I am going in the future. And my dad was a dentist. Never emphasized it, never focused on it. I did work in his office after school, but it wasn't on my mind until I realized it's a perfect balance of science and art. And I loved math, and I loved science, and that's what I majored in in college. I said, "This is a perfect balance."

While I was in dental school, while I loved tools, technologies and dentistry itself, I was fascinated by the area of periodontology because it was the only area at the time in the 70s where they were exploring the science—why you see this moth-eaten bone around these teeth. And I said, "What's going on here? What's happening?" And that's how I ended up going from dental school to a specialty PhD.

I only applied to two programs, and in those two programs, when I was applying, I talked all about why there was moth-eaten bone and why I want to know about moth-eaten bone and oral and systemic bone diseases. And that's when two places—I applied to only two places, and they said, "Look, why don't you do a specialty PhD, and we'll pay for your full education and a stipend?" I said, "Oh, this is nice."

And I actually went to the University of Rochester over the University of Connecticut because they offered more money. So money does count. And who knows, I'm sure I would have been fine with the University of Connecticut, but Rochester was just a wonderful experience for me, and so that's how that began.

**KD:** Talk about your early research. Clearly you were interested in periodontal. Were you getting involved in the growth factors part of research at that point?

**MS:** So what's very interesting is when I was a dental student they really didn't have any summer programs. You were off over the summer, and so I applied to NIDR at the time for a summer fellowship. I didn't even know what it was, but I applied to the NIDR—it was called the Clinical Biology and Anomalies Branch. George Martin was the head of the branch at the time.

And I said, "I read an article of his on connective tissue disorders and I want to do a summer rotation in his lab." I had no idea what it really meant. And he said, "Sure." And so, I guess I started research there. But when I was in high school, I did a research project that I won an award for, so it was something that I'd always enjoyed.

And actually, Ken, in third grade I wanted to be an explorer. That's what I decided I wanted to be. Because history and the history of explorers was fascinating, so in a way research is—I realized I came back to what I wanted to be down the road, but with the tools and technologies, and dentistry was always a passion of mine as well. Ironically, when I finished my specialty PhD, I ended up back in George Martin's lab as a staff fellow.

**KD:** OK, so you did a summer with him late 70s, somewhere in there?

**MS:** Yes, so I went to dental school '72 to '75, so probably either '72 or '73—or '74, I don't know which year. Maybe '73.

**KD:** Right. You said that at first you didn't know anything about NIDR. Certainly, by the time you got through dental school, and moving toward the 80s you knew a little bit more about it. What was the reputation of NIDR among you and your fellow students and academics at that time?

**MS:** Again, I finished my PhD specialty in the 80s and then I went to NIDR. It was very highly regarded. So NIDR had an excellent reputation. Connective tissue biology was one of the areas. Pain research was very strong at that time. And immunology. Microbiology was also an area of

strength in the intramural program at that time. But there were probably others that were as strong, but it had a very good reputation for students to get fellowships there and the ability to network, and it was absolutely true. I think it launched my career.

If I hadn't done a fellowship at NIDR and more just an isolated siloed university, at that time, it would have been very, very different. Now I think there's much more collaboration academically. And the fact that we're talking on Zoom together now, that wasn't really done at that time, you really had to travel to another place. And NIDR, in that environment I could just walk across the street and collaborate with somebody else.

And the other thing, which is really interesting, is that we saw patients. I always kept an active role and I still have an active license and did see patients over at the clinical center, and could if I wanted to now. But the patients we saw at that time weren't rare disease patients. We could see patients that were researchers at NIH.

And so, while I was working on their dental care (for free, which stopped) we would talk about research. And I remember one of the very famous researchers at NIH at the time brought me a sample of his blood because he had some type of unique blood disorder and he wanted to see the effects of his blood on my cells and the adhesion properties that I was looking at. So yes, I always continued on growth factors, more in vitro models, and then moved on.

**KD:** OK. So you become a staff fellow at the Laboratory of Developmental Biology, is that right? Was that George Martin's lab?

**MS:** It was the Clinical Biology and Anomalies Branch. And then, I always forget the title of these, and then I moved to the Clinical Investigations and Patient Care Branch.

**KD:** Why the move? Was it driven by changes in your research interests, or was it an organizational thing within NIDR?

**MS:** Great question. The Clinical Investigations and Patient Care Branch was just opening up, and it was being established in Building 10, which is the clinical building, with a new director, Bruce Baum. His focus was on salivary gland biology, but he felt as a clinician that I would fit into the group as well, but I could keep my research in connective tissue biology—so he didn't say you had to switch over to salivary glands. It was an opportunity to be a little bit more translational. At the same time, he was a solid basic science researcher as well.

**KD:** Yes, he was looking at saliva—was it looking at saliva and dry mouth at that point?

**MS:** Yes. He was at that time very well-known and very well-established in that area already as a junior investigator. He was still junior but more senior than I was.

**KD:** What kind of guy was he? What was the culture in the lab?

**MS:** The culture was driven. So it was with George Martin. But George Martin had such a larger group of researchers and fellows, so it was more interactive and collaborative, I think. Bruce was just starting out on his own; George had been established. So I think Bruce, who was a wonderful person, and caring and fantastic scientist, was outwardly driven.

His focus was salivary glands, and so some of the people in his lab maybe would do things inappropriately, and I won't go into details on that. And I think we later discussed it because I think I could have helped that person rather than just complain, complain, complain. So I learned a lot from both mentors, but he was different than George.

**KD:** So this would have been where you were getting clinical experience for the first time? Is that true?

**MS:** Not really. I maintained a practice on Saturday outside, NIH allowed me to do that. And the practice within the intramural program was really not complicated in surgical procedures and very simple dentistry. I did more complicated periodontal practice outside on Saturday.

**KD:** Any other highlights we should talk about from your time as a staff fellow?

**MS:** One of the things that is always interesting, and an area of discussion is mentorship. And at that time, I would say there was zero mentorship. I would maybe say limited, and then I thought about it and that's really an overstatement, perhaps, that there was no formal program. And yet, as I mentioned before, because of the collaborations—and NIH was smaller at the time—there were many of us around. We played tennis after, and we went to concerts, and we played soccer together. George Martin got a soccer group together.

I don't think things like that are happening now. So while we didn't have formal mentorship, there was camaraderie and collaborative spirit. Now it's so much more difficult, I think people are focused on their own work, and that collaborative networking is not as strong. It's still great, but it may not be as strong in terms of informal mentorship, and therefore maybe that is why we need a mentorship-type program, something more formal now than we did at the time.

Because I did feel unmentored, and some of the non-mentorship was lessons learned. You learn by certain ways people approach things. And we're so cautious these days that sometimes we don't learn how to interact.

**KD:** One of the things that happened during that period was David Scott was director and Harald Løe would have taken over at some point. Is that the kind of thing that you would have noticed from where you were?

**MS:** Harald Løe was a periodontist, so he did approach me. And I remember he asked me to go to Council once. And years later I realized I really didn't do as good a job as I should have because I didn't appreciate how important it was. He maybe should have said to me, "Why don't you come to one Council meeting first and see how we do this?"

He wanted me to talk about diabetes and periodontal disease, and I really feel I did do a good job at the time. When I reflect back on it, I didn't spend enough time. I didn't take it seriously. But I was aware of it, and I was aware he was the Director.

I was aware of the Director of NIDR, Marie Nylen at the time, who was very, very good. And I remember her going around to the labs and saying, "Who's going to the IADR meeting?" So dentistry wasn't the focus of NIDR; it was research and research-driven, but she wanted those that were dentists to go to the IADR, AADR meetings, and that was very worthwhile, too.

**KD:** Was she Scientific Director at that point, Marie Nylen?

**MS:** Yes.

**KD:** All right. Well, you moved on to the Baltimore College of Dental Surgery. Is that right?

**MS:** Yes.

**KD:** What was behind that move?

**MS:** Well, for a variety of personal reasons, the preference was to stay within the region. And there was no job opening, but I applied for a position anyway. And that's what I always tell people,

“Write a letter, see what happens. You don’t know.” And I was offered a position elsewhere, and discussed it with my partner at the time, who I did get married to, and he felt, “Well, if you want to move, we’ll move, but preference is to stay here.” He had a very good job within the area. And I took the position.

**KD:** Were you particularly looking to get into teaching?

**MS:** It’s not teaching when you go—It is teaching, but when you go to the—It’s funny how you say that. I was looking to do research. I was looking to establish my mark as a researcher in an academic environment. Because I did want to keep my practice, and they had faculty practice, and I also felt that teaching, that’s part of your responsibility as a researcher and as a dentist to educate and maybe stimulate some of the dentists (which I did) to consider careers in research, or at least have that as part of when they go to practice, have the research link.

I think throughout my career that theme of oral systemic, that dentists must communicate with other oral healthcare providers and the reverse, and they must communicate with the researchers, and the researchers with the community, is critical if we’re ever going to move anyplace. And we still struggle with that, but I think we’re getting better.

**KD:** But you were thinking about that in the 80s, 90s, that period.

**MS:** Oh yes. It would always frustrate me. When I was doing my PhD, I was taking a course. I forget what course. Maybe it was in pharmacology, and they were talking about arthritis and drugs, and I raised my hand and I said, “Does anyone have any knowledge of arthritis in oral diseases?”

And they kind of looked at me like I was crazy. And so I would always think of bone disorders and what effects they had on the oral cavity, even at a time when the people presenting to us



were MD researchers and never mentioned the oral cavity. And to this day, if you talk to physicians, very few of them will say— we spent something like one hour on the oral cavity.

**KD:** How did your research develop during this period?

**MS:** When I finished the fellowship at NIDR, at the time, I wanted to establish a niche for myself. You know it's a very competitive environment, was competitive then, and I was working on these adhesion molecules and how they affect cell attachment growth and using mainly in vitro models. And so I continued that, but with a focus on periodontal tissues.

And I was very fortunate to get funding right away after I wrote a grant proposal, an R01 versus the smaller grants, which we now encourage everybody to do, which I think is right. But at the time, someone said, "Write an R03." I said, "No, I'm going to write an R01." And so I didn't listen and was funded. Initially I was focused on growth factors, and specifically adhesion molecules and their role in regeneration of periodontal tissues using in vitro models and periodontal ligament cells. That was my first R01.

What I realized after I got back a review from NIH when I submitted my next proposal—with plenty of publications, sure I was going to get funded, but they came back and said, "All you're doing is dropping proteins into a dish; there's no mechanism here." And I said, "You know, they're right. And so, I went back developmentally and said, "What factors turn on the cells involved in root formation?"

And so I became focused on cementum and cementogenesis at a time when very few people were working on the root surface, which is, to me, the most fascinating tissue in the body, of course. And I really established a niche for myself in these adhesion molecules. And then along the way I just hit the right time to start looking at phosphate and phosphate regulation.

Where prior to that time, in the 90s, they thought phosphate was passive and that it was really calcium that was regulating mineralization, and then soon realizing phosphate is a critical molecule itself, and the specific factors and enzymes involved in releasing phosphate and the balance of phosphate pyrophosphate.

And that launched another path of my career with very successful funding and collaborations all over the country because other researchers were looking at the rest of the body in mouse models. Fortunately, one person was cutting the head off, and saving it in the freezer, and so they sent the heads to me, and we saw some incredible things.

And I think when NIH reviewers looked at what we were seeing, I didn't even have to write the proposal. Because it's like, "What's going on here? Why do you see huge amounts of cementum formation," which is a periodontist's dream. So I think I talked a lot, but I think it's just luck. I think sometimes I get lucky. Or you read a lot, and when you're reading you see new directions to go.

**KD:** It sounds like an NIH grant reviewer helped you get on track with the cementum.

**MS:** Yes, so when I'm mentoring people, I always tell them, "Don't get discouraged." We really, reviewers, I've been on that side in study sections. "We really want to help you." So if you get a poor score, put it in the drawer, bring it back up again a week later, and when I did, you're right, I think they were really helping me along the way. And I said, "You know, they're right." Yes, I've got a lot of publications, and my name was getting recognized, but I wasn't doing anything. I was doing something, but not mechanistic.

**KD:** So the next step was Michigan to teach? Is that right?

**MS:** Yes.

**KD:** And did you run the department there? What was your position?

**MS:** Yes. It's really funny how I ended up at Michigan. My wonderful husband traveled with me to all these places and got positions, but his position back here was really special, and he gave that up for me. But I was recruited to Michigan as a chair of a department. And at the time, my husband was a businessman. I came back and I said, "A headhunter wants to meet with me. What's a headhunter?"

And so he met with me at an airport, and I had an interview for a position at Michigan in an airport, and I had no idea what a headhunter was. And then I said, "No, I'm really not interested. I'm happy where I am."

And then the dean of the school, who I became really good friends with, moved on to be president of Utah and then the president at the University of Florida—Bernie Machin, he just knew how to recruit, which helped me. He said, "Well, maybe you're not interested, but you're going to be at the IADR meeting and I'm going to be at the IADR meeting, so why don't we meet for breakfast and just have a chat?"

And what he said is, "I don't want you to be an administrator. We need to put the University of Michigan Dental School back on the map as a research powerhouse. And I will gut a clinic for laboratories for you and six open positions."

So I went back to my husband and said, you know, if it was just a dead position and just name only... I didn't want to be a chair, but the idea of bringing my interest in mineralized tissues to a theme which is still at University of Michigan, people stay there. I think that's evidence of doing a good job is when you can walk away from a job and it's still there. And so I was the chair of a department that included dental hygiene as well as periodontology and public health.

And then I think after 10 years I was offered positions elsewhere, but because we had a son finishing high school, I didn't want to move. And so I moved over to associate dean for research at University of Michigan School of Dentistry for about a year. Before our son graduated, I took another position.

**KD:** Was that the University of Washington position?

**MS:** Right.

**KD:** Did you go right into the deanship at UW?

**MS:** They recruited me to be the dean there, and I maintained my research and so I continued in a research lab. But that position was very administrative and very political, and boy, did I learn a lot. But it doesn't fit, even though I stayed there until the NIDCR position came and got a second term and was able to do things for the community and really understand—some of the dentists in the community were so committed to patient care. It wasn't all about money.

And the students were very good students. But some of the faculty were tough, just like anyplace, and I'm sure you're learning that as well. As a dean you have to bounce all these different "me, me, mes," every single department. So as a chair ... And a wonderful dean, my department was very supported by our dean when I was at University of Michigan because we were successful. And I was involved in curriculum and education.

But as a dean, you have all these chairs going "me, me, me, me, me" and pulling you in many different directions. But one of the programs—I always cared about community, and I was able to launch this Regional Initiative in Dental Education. But it was really because of Dr. Wendy Mouradian, who was an MD. For a variety of reasons, she was immunocompromised and cared

about community as much as I did, and integration of medicine and dentistry, and we talked the same language.

She was actually recruited to that position by the previous dean (Paul Robinson, who was excellent as well), but we just linked together and developed this Regional Initiative in Dental Education. It was funded by the state to house students similar to the medical school in the first year, out in the rural communities. They were also partnered with medicine.

And we interviewed students that really wanted to work in rural communities, and for the most part it's really worked and continues on to this day. I was very proud of making a mark on, a difference in, the community. Of course, the university liked it because we added students and they got a percent of their tuition, but we got an increased percent of the tuition as well, so it's the balancing of the finance side, educational side, giving back to communities.

The other thing at that time was introducing a training program up in Alaska—I forget what it was called. It's a dental program where high school graduates spend two years in the capital of Alaska training to go back to their rural communities with computer-assisted monitors, with dentists, to be able to treat patients, rather than having white-coat dentists coming in once a year, that doesn't work.

At times I don't know how successful that program has been, but I remember in the state of Washington the dentists were very nervous that they would come down into the United States, which they have in some places. And I do think it's a good model. It has to be monitored. You have to be careful. You don't want second-class treatment. But in the rural communities, when you can't get access, it's access. Then you can evaluate it and see where to go next. They did

some types of very simple treatments, which were successful. So that was something I could do as a dean. And we increased our research program as well while I was there.

**KD:** You mentioned that at Michigan your research program was successful. You carried it into UW. I want to get a sense of where dental research was going in this period. And maybe we can do it by talking about the labs you were working with, for example. What were the big programs around the country and the big labs at NIDR that you were working with in this period?

**MS:** At the time, I was at University of Michigan and University of Washington, so I was more focused on what NIH and NIDR, maybe it was still NIDR at the time, had to offer in terms of grant funding, not necessarily what was their focus or area; it was more how it matches mine. But as a dean, and also as an associate dean for research, I would look at other areas of advancement. I think at the time things were focused on mineralized tissue, pain, immunology, microbiology. And then the areas of focus, maybe more in the 90s when I got on board as Director of NIDCR, were oral cancers and the ability to actually monitor them better and understand mechanisms of disease, especially HPV and Kaposi's and other things related to HIV infections as well. I'm probably missing some.

When I was dean at University of Washington and director of the lab, there was a wonderful call that if we had a funded project, to find a collaborator that you haven't collaborated with before that could expand your research. And that is somebody that I continue, even retired, to collaborate with and talk about animal models, Jose Luis Milan, who got very excited. He's an alkaline phosphatase researcher, and he had all these wonderful mouse models and shared them. And again, it expanded into a wonderful area for us. That was incredible.

And then the collaborations across—Oh, I did collaborate. When I was a fellow at NIDR—one just retired, Marian Young, Pam Robey is still there. Larry Fisher. So when I came back, these were people I was actually collaborating with. They sent me molecules. So that's why I said that networking from early on at NIH really helped me.

The problem, and I think we still struggle with it today, is universities. If I collaborate with somebody, or I'm a co-PI and not a PI and my collaborator is over in engineering, who gets the indirect costs? And so it becomes complicated, and I don't think it's ever been resolved.

And when I was the Director trying to do collaborations across institutes, this was a challenge. And the same type of challenge where the staff were very excited about the collaborations, but then when the directors came on board it's like, "No, no, this is mine. This is not yours, this is my territory." Like who owns the tongue? Who owns the jaws and who's doing the research?

I think it's getting better, but when money's involved, how do you split it so it's fair? I think we're always legitimate, but how do you split it fairly without getting into legal issues that, no, you can't do that, can't do this. Who gets the credit still matters.

**KD:** And it's an administrative problem, figuring out how to negotiate these systems, I guess. That's very interesting. You're getting to some of the difficulties of being an administrator. We talked about networking, and you must have had a pretty good one. You were involved with the IADR at some point, I think?

**MS:** Yes, I have always been involved, from serving on committees and serving as a president—you go up the ranks from vice president to president to ex-president. Yes, I was always involved. And that was a wonderful community to work with and network with.

And right now, I think the director of IADR at the time was not Chris Fox, but I was involved in hiring Chris Fox, who is incredible. I forget if it was every other week, but he'd come over to NIDCR, talk about initiatives with us, and he continues to this day to be a champion. And I think sometimes we don't champion him enough because we can't give him awards for a variety of reasons. And I think he should get an award from IADR himself. He's remarkable.

And I guess it's people, coming to the end of thinking about things, it's people that do make the difference. That one person that really drives. And you find the drivers that fit your personality or don't fit and therefore make it better.

**KD:** Well, we've worked our way up to when you've become involved in NIDCR big time. I wonder if you can give me a sense—I know that you'd been in touch, you've been watching, because this is where you're getting grant funding. But over this period from the 80s to 2000, what did you see as the big transitions at NIDCR? How had the Institute moved ahead, changed, reshaped its focus?

**MS:** The 80s to 2000. I took the position in 2011, so this is before.

**KD:** And up to 2011, let's say. I'm really looking for those big changes.

**MS:** I think the big changes, again, were because of directors before me. I think Hal Slavkin was a very vocal person and made sure NIDCR got more attention. And he was very focused in this area of developmental biology and making sure that NIDCR got a lot of credit for that area and a focus of research in that area.

I think Larry Tabak did a beautiful job of bringing the whole of NIDCR on the map in terms of science, bringing it into a mechanistic world that we had the strengths and the powers that other institutes had in terms of solid science. His own research in salivary gland biology, his vision in



terms of salivary diagnostics. And as you see, it takes years and years to get it, but with COVID it really did gel, if we could call saliva a gel.

And the tools and technologies were just ramping up and taking advantage of that. So when he said in calls for proposals, and I remember putting one in, it was really with a mind on mechanistic aspects of regeneration, tools, technology, scaffolds, so very innovative in that area. Again, focusing on pain and the initiatives in that area, such as OPPERA and OPPERA-2. And there were a lot of other special programs and attempts to fund different directions.

And of course, all of us have always had our mind on the training programs. That's a whole other topic, but it's the same in medicine. So these DDS-PhD, DMD-PhD, MD-PhD, specialty PhD, when it works, it works, when it doesn't work, it doesn't work. But I think lessons learned in recruiting people into those positions, the students have had to have a research experience, and that's number one.

But I think Larry really tried to work on getting better training programs. And it's the same thing again: a certain percent drop out, but the percent that remain are fantastic, and I guess that's where we'll always be. The same with academia. About 20 percent of your faculty are great, and then the rest you have to deal with. And I would say at NIDR the faculty, intramurally, are almost 80 percent okay.

So it's a different environment, but they are 24/7 focused on research. They don't understand how lucky they are that they don't have to put in these grants and teach. They deal with different politics, but not the same. It's really funny to talk with them because they just do not appreciate the difference in the environment and how fortunate they are.

**KD:** They've heard about it, but they haven't lived it.

**MS:** No. It's funny.

**KD:** Tell me about the opportunity to become Director, to apply for the directorship. How did that come up?

**MS:** I think Larry is, again, another recruiter. I'm sure he called 100 people, but he always makes you feel special. He called me to tell me about the opportunity, and in a way it was good timing. Because I was thinking after 10 years ... Norman, my husband, and I love Seattle, and I thought I would step down and continue my research. That's what I was planning. I thought 10 years is enough. I believe in that type of thing moving to the next person.

And then at nine years Larry gave me this call and I said, "Well, I'll think about it." And I really was very humbled, but I didn't know if I was the right person for this position. Because it's a huge position to set the agenda for research for the nation and to some extent internationally. And it was just frightening. At one point I asked myself "can I destroy the Institute as a Director?"

And I started writing the vision statement. They wanted me to do a two-page vision statement and I realized after I was at five pages and had to cut it that this would be a wonderful opportunity. And I really considered it as a dream job at my stage of my career. Where I wanted to keep my research going, they said, "You can." And at the same time, I had thoughts and ideas of where the research could go and where it wasn't going at that time.

**KD:** Which is exactly the question I was going to ask. You've got these five pages you're filling up. We can set aside the things you wanted to continue, but what did you want to change? What did you feel like the opportunities were? Let's start with opportunities.

**MS:** I'm actually looking at these statements at the time I wrote up and one of the first areas... So NIDCR was always recognized on campus as good, strong research, they weren't going to take

us away. But on the other hand, it wasn't considered a powerhouse, and I wanted to be considered a powerhouse. I think at the time, what I recognized is that the smaller institutes probably will never get the attention that the larger institutes have, that it's cancer, aging, neurology, versus dental and craniofacial. But I felt we could do a better job in that area. Trying to consider different types of grant proposals to get there.

And again, my focus is on bi-directional research. We needed to be more collaborative in terms of grants proposals we put in, where they are not just dental-focused, but also interact with other groups and networks.

And I also felt the involvement of dentists in the community was important. When I was a dean at the dental school at University of Washington, we were one of the schools that received the Practice Based Research Network grants. And I was fortunate enough to see the dentists involved, go to meetings, and it was different. They began to appreciate the research and that they could make a difference in what we do.

Over time, as Director (just side-stepping here) with the networks I began to realize it was working, it was good, but down the line when we looked at the future, definitely keep them in place, but maybe slow down a little bit—not slow down maybe, but fund less and have a mechanistic research base. So that's the same thing, not a siloed Practice-Based Research Network, but a network where researchers and dentists are partnering together. Does that make sense?

**KD:** Yes. I'm interested in the term "mechanistic research." Unpack that for me.

**MS:** You can go out and, as a dentist, ask questions about why one type of implant lasts longer than another. Is one type of implant better, easier to place than another? Do certain populations have

more disparities? And that's asking the question at the end, "Can we understand that as a certain group?" and then going back and saying, "It seems like the implants are failing in people that have had periodontal disease, but in those that have lost it because of caries," I'm just giving you this as an example, "we're seeing it work. So we're seeing more periimplantitis in individuals with XYZ."

Bring it back to the researcher and say, "Look what we're finding here. When patients have this condition, there's more likelihood of periimplantitis," and then going back and trying to understand why based on the mechanistic side: is it the biofilm, is it some genetic disorder in which normally they'd be perfectly okay but now because of it they're more susceptible?

Just like I don't know if you've been reading that with the long-haulers from COVID-19 they're finding about 20 percent of those with COVID-19 have a genetic disorder. It's only 20 percent, but it's probably a reason for long-haulers. So it's the same thing. Is that answering your question?

**KD:** Yes. There's the Institute, and Dr. Tabak clearly talked to you about the Institute, where it had been, where he hoped it would go, that sort of thing. NIH was also constantly trying to strengthen the intramural and extramural programs. Were there things that were coming down from Building 10 that you particularly needed to pay attention to when you came?

**MS:** Now we're moving to 2011, but even before 2011, I'll just step aside here and say one of the areas that was a huge opportunity, obviously, was tools and technologies and the exponential growth from before I came there. There was the genome project, the genome sequencing, and the microbiome project, which just opened the field in immunology and microbiology and all aspects of that, which were incredible.

When I came on board—and I was just very lucky again—one of the areas I cared about, again, was the integration of whole-body health and the clinical program at Building 10. While previous directors tried—I think they cared as much as I did about the program—I was just fortunate to recruit Janice Lee as the Director of the program, a dentist MD.

And I remember when I first introduced her, Ken, which is kind of interesting, around the table with a bunch of physicians at the Clinical Center, at first they were all slumped around, oh, NIDCR, dentists, and then I said, “Let me introduce Janice, an MD” you could see the body language change. And I think it still exists today.

And she’s also a key leader at the whole Clinical Center. I forget her title there, but she’s a director of the clinical research programs in addition to the clinical research. And she brought the fellowship program to the next level by, again, not just having these fellows come in and see patients with rare diseases, but at least 50 percent of their time she established a mentor for them in basic research.

So they were actually getting exactly what I was talking about, the mechanistic side of the diseases they were seeing. And the positions that they now go to from NIDCR and the fact that the fellows want to come to NIDCR is evidence of her advancements and her own research in the area as well.

**KD:** I have seen mentions of a new focus on rare and undiagnosed diseases. Tell me about that.

**MS:** I think that has always been a focus of Building 10. Building 10, you probably know that we don’t see patients there unless they are in an undiagnosed or rare disease program. And yet at NIDCR we were not recognized in that area as much as when Janice came on board. Now all

patients with rare diseases, if there is a dental or craniofacial component, that week that they spend, they come into the clinic.

I was fortunate enough that some of the rare diseases that I was working on happened to come into the clinic, so I partnered and collaborated, but Janice was involved as well. I think through understanding rare diseases you can understand the general mechanisms of a factor. Because when it's not there, what impact it has, or factor gene and protein associated with it, and then to use that knowledge in people that have just a little bit of an unusual situation. So a low-alkaline phosphatase rather than no-alkaline phosphatase, and what does that have and what impact does that have on mineralization?

And then the thing with undiagnosed diseases is to try to understand the genes involved. And Janice has been very active with that. She's also collaborated with outside. They have these X01 grants in osteogenesis imperfecta linking with other institutes at NIH as well.

**KD:** You talked about raising the stature of the Institute, and one of the ways to do that is through funding. What kind of grants are you funding? Talk about the extramural program a little bit, if you felt that you wanted to change direction there, strengthen certain parts. What was the focus?

**MS:** The focus has to be broad because the researchers out there, you don't want to cut the energy of great people, and so you always have broad areas, and yet you have to make sure there is a dental/oral/craniofacial component; otherwise, why is there a dental institute? And so I kept, for the most part, the programs that were in existence. I think we increased our focus in oral cancers, as I said, because of the diagnostics there. We continued the salivary diagnostic promotion.

And then one of the areas—as a director, you usually have one area that you expand and put set-aside monies into, and for me that was in regenerative medicine. And it was not because that's

my area of research. And I made sure, I took a long time because I didn't want it to be mine.

Interestingly enough, Larry did salivary glands, and so maybe it's subconsciously, but I realized that we were funding a lot of mechanistic research that was not going anywhere, and that's frustrating as well.

And so we put in this dental, oral, craniofacial translational research program and put monies into it where it had three phases. The first was mechanistic and then it had to go to a translational phase where they talked to the FDA—and I remember going down to the FDA with the groups, talking about their projects. And several of the projects now are in patent application and I think even in discussion with future patents.

So that model still exists, and I was hoping it could be a model for NIH. That was one area where I feel I transformed the NIDCR in terms of being on the map and being able to have basic science—don't forget it—but we are the National Institutes of Health, and so we have to have that aspect. And we as NIDCR have to have strength in that area.

**KD:** You talked about three phases: mechanistic, translational, and is the last one drug development?

**MS:** Product development.

**KD:** Do you call that DOCTRC?

**MS:** Yes, DOCTRC. Dental or Craniofacial Translational Research.

**KD:** Very friendly acronym. That got up and running in 2017. Was it a lot of work?

**MS:** One of the wonderful things about being a director at NIDCR that I think those of us that have come from the outside realize is staff there are incredible. They are 24/7, and again, very focused. So as a dean or a chair, you're not focused. That doesn't mean it's not good. I love being

multi-discipline. In this way, as a director, you are multi-discipline, but your multi-discipline is research, so it's research, research, research.

And it's really the staff. So it was a lot of work, but for me it was just staff coming to me and discussing things, and spending hours and hours and going, "No, go back to the table. No, go back to the table."

And that was almost a year of getting it to the right place. Nadya Lumelsky ran the program and Lillian Shum was just a wonderful driver. There were two great people, so if I didn't have those two great people, it wouldn't have been where it is today.

**KD:** And where is it today?

**MS:** I hear it's still moving. I talk to some of the people that are still fortunate to have the grants. And of course, those people are going to say how wonderful it is because they're getting funded. But I think it's working well. I think that, the imaging, the salivary diagnostics, I think all those areas are really moving forward. I think our areas of immunology and the microbiome area for us as dentistry and the gut/brain/oral cavity access—I'm so excited about where the research is going and mapping of single-cell analysis.

It keeps growing and growing in terms of the tools and technologies. Asking the same questions but getting better answers because of the better tools and technologies.

**KD:** Good point. You touched on the Practice-Based Research Network. That was something that came in during Dr. Tabak's time. There was some transition. There was at least a name change. What kind of refocusing did you do?



**MS:** It's tough to describe. To try to get better, stronger proposals. So many of the questions were questions that the universities could have done themselves. They weren't really strong questions. I remember we separated out the administrative from the people deciding on what grant proposals would be funded and got a better template together to address the research side, trying to streamline it so it's not overwhelming. Because if you're in practice, if you make it so difficult, they're not going to want to participate. So trying to balance it out.

And I think we clustered it into one unit where we had five all over. I think there were five different practice-based research networks, one at University of Washington, and realizing that it's siloing out. When do you silo and when do you collaborate? And we realized having a hub would be a better way to go than to have all these five different programs.

**KD:** Yes, that was the big change that I saw. I think this program's really interesting, because I would assume that people in practice would need more support than your average researcher in academia who's used to this stuff. Was that the case?

**MS:** Yes, I think they need more support and encouragement. And if they can see it being of benefit to their practice and to their patients, then it works. There are only certain dentists, and those dentists who are engaged are very excited about it. And I think it's just, some dentists more than others have a research mind and want to do something for research and the community. And the dental hygienists in their office. Because it's frequently the dental hygienist—this helps them. This is sort of like a diversion from their all-day-long same thing, same thing.

I found when I was at University of Washington that the hygienist was so excited about the program. So if you have hygienists in your office, again, just like I have wonderful staff, if you

have dentists with wonderful staff, it works. If you don't or they go home at 5 o'clock, it's not going to work. You have to have passion.

**KD:** Similar situation is OPPERA for TMD. That had also come in. I think you had a point—it was a seven-year and you decided to renew. How was that working? What were some of the big things that were coming out of that grant program?

**MS:** I think when you evaluated one of the biggest findings, which, there was just an article in “Lancet” related to multi-disciplinary medicine, so major research, and it was clear, that it's comorbidities, that there's not just temporomandibular joint disorders. For some reason, there is an association—and I'm not going to rattle it off for you—with at least four other comorbidities.

And in medicine, the same thing and the same complaint. So you go to your private practice, your clinical practice in medicine, and one patient's treating this disease, another is treating this. They don't collaborate and talk about the patient as a whole. And so frequently how you diagnose is not there. So I think I felt OPPERA was putting patient care on the map in recognizing that you have to look at these diseases together.

We also have strong advocacy groups, and I brought back the meetings with advocacy groups and partnering and brought in patients and had the National Academy of Medicine temporomandibular joint committee and recommendations. And also we were beginning to map, or the researchers out in the community were, beginning to map the genes associated with some of these disorders and some of the common links related to them.

Also, in this case I had a wonderful driver of OPPERA, and that was John Kusiak, who probably retired a few years before I did, who then became my deputy director. Because he was doing such a good job with OPPERA, I wanted to continue that program. So in a way his advice and

his good job, good publications, recognition of these comorbidities, convinced me that we had to continue to fund this because of the science behind it.

**KD:** Let's turn to the intramural program. We haven't talked a lot about that. Any reorganization? It seems like intramural is always getting shaken up here.

**MS:** You always want to do great science. I think NIDCR, and it probably was way before my time, in terms of gender, has always been about 50/50 versus the other institutes. And not too sure in terms of the chiefs of the labs if that was equally balanced, but more so than at the other institutes. And names were changed, but name changes and directions, I'm not too sure.

I really forget the focus in the areas when I became the Director, but again, one of the areas that was always considered a strength was mineralized tissues. There was concern that perhaps the research wasn't as strong in that area, but it was one that I wanted to continue to promote, and I think with Janice Lee on the clinical side, to continue in that area.

I think the program in immunology was strong, and then the whole area of salivary gland biology and bringing that back to the Institute and to the clinic center was unfortunately perfect timing for the pandemic, because I really think that put us on the map in our intramural program. And of course the Director, who's going to be retiring, Matt Hoffman's own area is in salivary glands. So you had a lot of people in glycobiology, which influences salivary glands and has effects on that.

Then the taste group. But they're housed in a different area. But the intramural taste group—So that's not an area we fund outside; there's another institute that funds taste outside, extramural, but intramural I think we were very well recognized in that area as well. And then we brought in

more developmental imaging people to strengthen it. And then some of the core facilities, advancing tools and technologies, to make sure that we had access to those.

**KD:** You touched on disparities very quickly, and then we moved on. I think one good reason is that I want to spend some time with that. What was the state of disparities research—You know there's two things. There's the research side and then there's the organizational side, NIDCR itself.

Let's start with the organizational side. You mentioned that NIDCR was kind of 50/50 women, much greater than other institutes. What were the programs that were happening that were taking place at the time that were encouraging diversity and of course not just women but all other areas as well?

**MS:** I think during my time there, and I forget why and how it happened, but I think all over the country an awareness that we were ... One is health disparities funding, but we're now talking about training and fellows. For whatever reason, our institutes were not enjoying the enrichment from a more diverse population.

I think part of that, as I begin to mentor some high school students now, is they are just not aware. They come from families that maybe don't encourage education in this area, or they do but they go into other fields like medicine as more prestigious than dentistry.

I always mention this. This is a sidetrack to it, but I'll get there. I always mention the case when I was a dean at the dental school, and all the health sciences would get together once a year and high school students would come in, and we'd have a table and they'd come with their parents. And I remember this father passing by the dental table and saying to his daughter, "Oh, they don't do research there, so this isn't an area of interest for you." And I pulled him back and talked

about the research. I think he was being very polite, but I don't know, maybe it made a difference to his daughter.

But I mention that because, how do you attract people into dental research? When I was a dean at UW, we had a special high school program where we brought students in—and they got so excited, they were so much fun to have— from underrepresented minorities. But that was there, and I'm hoping it made the difference.

We had a special program for students from underrepresented places all over the country, and it was a funded project, not from NIDCR, for medicine and dentistry in that area of bringing students in to help them like a year in advance to get them mentorships to get into dentistry.

But getting back to the fellowship program, we started advertising, advancing, and really promoting fellowships. And I know I put in one, a director's fellowship for underrepresented minorities. And when I look at the Institute now and I go to the clinical conference, I see the fellows are diverse. I still think we're doing a very poor job with Native Americans, and I don't know exactly why. We could do better, always, than where we are right now, but I do see a campus a little bit more diverse than it has been before I started my directorship there.

**KD:** How about on the grants side?

**MS:** On the grants side, I think it's always difficult. It's the same as the practice-based network. How do you advance access to care, cultural changes, and research at the same time? So HRSA funds some of these projects, and I feel some of them are baby steps. So we funded some of these health disparities projects, again, when I was dean at UW. We had one of those funded up in Alaska. And I think there's now one funded now. And it's understanding the culture.

So sometimes you go into an area and it's like the white doctor in a white shirt going in and not appreciating what's going on. And I think in our early funding of some of those health disparities projects, insensitivity to the cultures of the areas I think did happen to some degree—in fact, I know happened to some degree.

The one with University of Pittsburgh which was under my watch with Marian Marazita and her wonderful team, they were looking at caries. And I think the University of Michigan, Margherita Fontana as well, maybe they're now partnering with each other, are recognizing that there are certain genetic aspects of increases susceptibility to caries. But how do you get that into practice and into improving the health disparities without the issues of money, finance, economics, access to care?

So I think that these health disparities grants, again, should be collaborative with the American Dental Education Association, the American Dental Association, with dentists getting involved, with other medical groups. Otherwise, we're not going to address it. If we address health disparities as a silo in dentistry, it's not going to move anyplace. It has to address the bigger issue. And I think some of the projects we were doing were moving out. I forget if the project was in Texas, where we were moving out to a more global. Again, you can't silo health disparities.

**KD:** You mentioned pain research, which goes way back. Sort of related to that is the HEAL Initiative. Was that an NIH-wide initiative that came out?

**MS:** It was an NIH-wide. I remember Nora Volkow was running that one. She's fantastic. If you've ever met with her, she's passionate about this area. And it's so sad to me to read how it's gotten worse rather than better with all of her efforts.

But we had the American Dental Association meet. I was at the table with her. Because in dentistry, we have reached the clinicians to use less addictive pain medicines. But the HEAL Initiative has been sort of a collaborative effort to put grants together in the area of pain. I was at the table. I've been disappointed at times when they've opted not to fund the dental projects. But I think it's a good initiative and they are setting aside monies, just like the Common Fund, really helping to expand the research. Because you get that initial funding, and then from there it can grow. Or the NIDCR can pick up grants that weren't funded through the HEAL program. But I think it keeps it on the radar, keeps researchers interested, and recognizing the importance of this.

**KD:** Let's return to your research for just a bit. You had a lab at NIAMS.

**MS:** National Institute for Arthritis, Musculoskeletal and Skin Diseases.

**KD:** Tell me about the work that your lab was doing in the 2010s, some of the things, some of the people you were working with, some of the papers that came out.

**MS:** That was a wonderful collaboration across the NIH and also my continued collaborations outside. I focused on phosphate-pyrophosphate regulation. And was very fortunate to have rare diseases at Building 10 associated with that, so we were able to see patients, and when they needed tooth extractions to actually look at the teeth as well. And we recognized that individuals that have low levels of pyrophosphate, which is an inhibitor of mineralization, have huge amounts of cementum. We saw it in the mouse model, and then we had it in the human, so proof of concept was proven that in fact the mouse model was a good model to understand this disease. At the same time, we were working on projects related to adhesion molecules as well, and we found out that one of the specific proteins, bone sialoprotein, also caused periodontal disease. So

we had these common themes with even a slight, subtle alteration in phosphate-pyrophosphate in this BSP knockout mouse. It's interesting, there's no human counterpart and I don't understand why. It must be so lethal is my thought, versus it doesn't exist, that if you don't have BSP, just day one you can't survive.

But I think that area, having patients in the clinic, collaborations over in Building 10, collaborations carefully with other people at NIDCR—because the researchers at NIDCR are MDs—Mike Collins, Rachel Gaffney—were seeing these patients as well with FGF deficiencies and overexpression. We had those animals as well. And then Carlos Ferrera. I think there was somebody ... Wendy. We were working on. You just walked down the block and you ended up with collaboration.

And then I was collaborating with somebody at Yale, and we continued to collaborate. And then my fellows moved on to other universities and continued the collaboration, so I'm very proud that I was able to have good timing. I didn't want to bring in new postdocs. That was one of the reasons for retiring, to make sure all my postdocs were happy, and they all ended up with positions.

We then moved on. And I have fellows back in Japan that I speak to every three weeks that have positions back there, and one of the patents in process is related to that. And then I have somebody at Ohio, somebody at U Maryland, and a couple of people that ended up going to dental school after their PhDs from my practice, and some from my lab, and other things like that.

One of the exciting things is related to one of the factors, an enzyme, alkaline phosphatase, that breaks down the pyrophosphate in the local region. And in an animal model, we were able to



show that it's very, very potent in local delivery to promote cementogenesis. And so we have a patent in application at NIH for use for local delivery. It's used to treat patients with alkaline phosphatase mutations right now. I think in 2017 the FDA approved it. But I keep trying to want people to use it off-label for the oral cavity, but they're not ready to do that. But I think that's very exciting.

And then there's another regulator of pyrophosphate, and that's something called the MPP1, and we've also tested that in some animal models as well through industry support while I was at NIH. So these CRADAs are incredible opportunities to get additional funding, and NIDCR has done that as well.

**KD:** And it sounds like getting all your postdocs placed is quite an accomplishment.

**MS:** I feel really good about it that they weren't just stranded because that's how I planned it, letting them know beforehand and other things like that.

The other thing I didn't mention as I'm thinking about postdocs and NIDCR and these CRADAs is, when I was at NIDR, we had a lot of people taking sabbaticals, so international collaborations were expanded because of my interactions with people from Canada and from Europe. That, for whatever reasons, has slowed down or it's almost nonexistent.

And I tried to encourage that while I was at NIDCR, but I think there are missed opportunities there, because that's another expansion, cultural and networking, as well. Maybe more difficult to get visas, more difficult for educational, for your children. It's just probably more complex than it was, but I think that needs to be expanded.

**KD:** OK. We haven't talked about two things, the second Surgeon General's Report, and also NIDCR 2030. These are complex vision statements, plans. Tell me about those efforts and what was behind them.

**MS:** The Surgeon General's Report was a no-brainer. It was 2020s and what did we do with it? A need to go back and reflect on where it was. It was a profound statement, a blast that without oral health you have no health, and yet baby steps, baby steps, struggling. Can we do more? What is different now? Fortunately, Larry Tabak, the Deputy Director of NIH at the time, and Jerome Adams, the Surgeon General at the time, were very excited and very supportive of this initiative, so it was easy to do.

People that I contacted were interested, and I also wanted to focus on getting dentists outside of the community involved in writing this report; that it wasn't just a research-focused silo. And having a special set-aside on research. And when I look at the wonderful, beautiful models, visual, if you look at the research directions and where they're going from the 2000s to 2020, it's huge in terms of tools, technology, and where the research has gone. And then looking over a lifespan, while we've done okay, there are still huge disparities and gaps, and I think that's important to bring that to attention just because we wrote the report and said, yes, we need to do more in this area.

So I think it was good, the report is comprehensive and detailed, much more so than the one in—so my thought was, when you start college, there are certain universities that have a required book that you have to read. I was thinking for medicine and dentistry that this is a requirement before you go to dental school. And then at the first week when you do your CPR and other things, you spend time on this report and actually have a conversation with students about it. And

maybe that's one where you have an IPE, Inter Professional Experience, where that four hours is medicine and dentistry together and the dentists have to read a comparable report in medicine.

So it just doesn't sit on a table somewhere and maybe two years later you bring it up again and say, "So, how did that influence what you're doing now, now that you're going into the clinic," something like that. It drives me crazy that this is such a beautiful report that it can't just sit on the table. So Ken, that's your job.

**KD:** OK. [Laughs] Well, we're doing our best here. How about NIDCR 2030? Was that a no-brainer as well?

**MS:** No, I think that was one, I think that was not a no-brainer in a way. We were writing up our strategic plan for the next year, two years, seven years, and I realized, as many organizations are now, that in order to realize it, we have to think about where we are 10 years from now and not just to say, "Let's write up a strategic plan for the next seven years."

And then John Kusiak said, "What about NIDCR 2030?"

And I said, "That sounds perfect. That's the direction we're going to go." And there we were. I think I set five different areas that you could probably look up. I thought it was a good way to go. I don't know if you want me to expand on that.

**KD:** I'm interested in what you think you gained by this type of visioning exercise. You mentioned the difference that you're projecting here's where we need to be in 2030. What were some of the insights that gave you?

**MS:** I think by doing that it wasn't just, okay, let's do it and write it up. We had breakout groups with the intramural people. I brought Council into it and had special sessions with Council on this

area. So I think you want your community involved, and so by having this vision for 2030 and then bringing everybody on board, I think everybody was involved, embraced, and it wasn't just a siloed—just the NIDCR Director, Deputy Director, or you, putting the vision together; it was a community effort. So I think everybody felt embraced by it.

**KD:** So in some respects just the process was important.

**MS:** Yes. Process. So one of the things I've learned for my deanships moving forward is process is always important, that people need to be a part of it. Without that, things don't work. You're smiling at that, because at times early on I just wanted to get things done. And you realize that doesn't bring people on board.

**KD:** Anything else we should talk about from your time as Director?

**MS:** We talked about the mechanistic side, and you explored that a little bit more. Autoimmune diseases such as rheumatoid arthritis, periodontal disease. One of the things I always feel, and thank you, Ken, is communicate, communicate, communicate, and no matter how much you communicate, you can't communicate enough. And it's a tough area, because no matter how you communicate, we're going to complain that you didn't do it enough. So I appreciate your trying to get this in place.

The other area which you mentioned is Council. And so that's communication. And what I started doing is, after Council (and maybe me just continuing on this), I would have a breakout lunchtime where they knew, you know they're always running off to the planes and trains, but they knew that I had very specific questions that I was going to address so to try to get them more engaged.

Because Council comes in, you sit there, and they go check, check—you give a talk, no one really listens. The outside people in Seattle and California, it's three hours' difference; they're not going to wake up at 6:00 in the morning. So when I was on Council, I would try to bring it back to my dental school and say, "This is what Council addressed. These are areas and directions."

But how do you communicate that? I know you archive it, but maybe there's a way of once Council meets, like right after, we posted the six major things that came out of the Council. Because otherwise, you have to read this two-, three-hour thing to get to where you want. And I know we would bring researchers in from the intramural to talk about their research, and other people, we'd bring them in if we wanted pain focus.

That's great for Council, but nobody else saw it, so how do you make it of value to others? So when I was on Council, I appreciated my ability and all that I learned, but what about the other schools that didn't have a rep on Council?

And then when I was a Director, you had these top people in your field on Council, and yet we don't take advantage of their knowledge and try to engage them. And I think I did a better job toward the end, but I think it's a good question. I asked the Council, "What do you want to do? How do you want to engage," and tried to assign specific things to the group, recognizing they are very busy people also, but it's a shame that we bring the top people in for Council and yet we don't take advantage of their brilliance. So that was just a nice way of saying that.

**KD:** Yes. Can you do that by changing the format or the procedures?

**MS:** I think that format of having that lunch breakout to try to engage them at that time. So when I had that 2030 project, that was a way. We had a specific area, specific focus, something I wanted

to do, mapping out the different areas to focus on and really engaging them. And they would bring things back from their schools. I think that helped, but I think the format has to be changed.

So one of the things that Council has to do is approve the grants. Maybe that's done first. Then how do you make the rest of their time there of value? I'm not too sure if bringing in three people from intramural to talk about their research—it's good for the people on Council, but what good is it for the broader community that you really want to engage with? I don't know the answer.

**KD:** It's an interesting question. It's a statutory thing. You have to have it.

**MS:** And that's good, but it's a lot of mileage and cost to travel to check off boxes. And the Council always wanted more information sometimes, and no, you can't give them that. Sometimes they wanted more information on grants. They could look it up, but it was interesting. How you fund. I think we were more transparent.

**KD:** Right. I'm glad you brought that up. Why did you decide to retire?

**MS:** It's funny, I saw that. That's one people ask me, and some people hypothesize family issues. And I think, as I mentioned to you, the pandemic probably altered the dates of retirement because the lab was difficult to close during the pandemic, so I extended it. I felt I was in a very good place. I felt NIDCR was on a high. I was almost at 10 years, yet I wanted to make sure my postdocs were positioned. If I had to bring in another postdoc, then that would be another three years at least, and I didn't want to leave a postdoc in a lurch.

So I felt—I *felt*—that NIDCR was in a good place after almost 10 years. I believe in the seven-year itch, and that it's a time to reflect and make sure you're doing a good job. And then leave it

to the next person to make sure things continue. And if you stay too long, “To an Athlete Dying Young” is one of my favorite poems, and I always remember that. The timing was right.

**KD:** You’re still very involved. One of the things I noticed that you’re involved in is the Santa Fe Group, and I’d love it if you could tell me a little bit about that, because it seems like its mission is really consonant with NIDCR.

**MS:** Yes. That’s interesting that you highlight the Santa Fe Group. It’s probably my interaction with Wendy Mouradian, who was part of the Santa Fe Group when I first decided to become the field chief editor for *Frontiers*. And that was not something I discovered. *Frontiers* is over 200 journals, and they had already started the *Frontiers in Dental Medicine*, but they didn’t have a chief field editor. And when I spoke with them—I’ll get to Santa Fe—when I spoke to them, I said my interest is to get this journal that focuses in on oral-systemic. And not oral-systemic at the clinical side, but the balance.

And mechanistic side. as you know, has expanded beyond associations; we now have causes.

And with that, and with Wendy Mouridian at Santa Fe—she always was a part of the Santa Fe Group, even when I was the dean at University of Washington. She partnered with me to develop this grand challenge, I think you the area of the oral-systemic link, and you can phrase that any way you want to. But it was really something that we both cared about, so it was a natural link for both of us.

And so the Santa Fe Group came on board with this grand challenge, and we developed, I think, five or six archived videos all in the area of oral-systemic links, from economics to health disparities to periodontal disease. We focused on several different areas. And if you go in the

archives for *Frontiers* you may see it. And it was wonderful because I got to see the people at Santa Fe.

So that was where the focus was. Now I look at some of the Santa Fe things, but I'm not that focused or linked to that; I'm more focused on *Frontiers in Dental Medicine* and my subdivisions and trying to launch new research initiatives.

So one that I just launched and put in a manuscript myself is in linking between clinicians and researchers to advance what we do clinically. And I've had a debate with clinicians and researchers on what are the best products to use for regeneration of the periodontia and I just got a manuscript approved, with the clinicians and researchers. There was one researcher on the team. That's kind of my focus and emphasis these days, of does it have anything to do with moving patients and yet basic science at the same time?

**KD:** Terrific. Anything else we should talk about before we wrap up?

**MS:** One of the areas I've gotten more involved with is the American Dental Association and the American Dental Association Scientific Research Institute. It started in about 2020—they asked me after I stepped down as Director to be on their board. And it's an opportunity—so this is a science arm to the ADA. It's separate and it's doing basic research, as well as their continued standards research and the seals program.

But they also are doing very strong research and trying to get clinicians and researchers at the table together. And I'm very excited about the opportunities here with this Institute. It's a small institute, and that's my only concern, what's the right size to actually have this. And I think the researchers we're recruiting in the area have been good so that's another accomplishment.

**KD:** Well, this has been an excellent talk. I really appreciate your time today.