

ORAL HISTORY INTERVIEW WITH NELSON JEN AN CHAO

Duke University Libraries and Archives

Submitted April 13, 2021

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COLLECTION SUMMARY

This collection features an oral history Joseph conducted with Dr. Nelson Chao on March 25, 2021. The 45-minute interview was conducted in Durham, NC. Our conversation explored Dr. Chao's upbringing in Brazil, his reflections on his medical training, his observations on transplant as a complex medical issue, and a description of his work leading the Duke Global Cancer Program. The themes of these interviews include leadership, equity in medicine, cancer treatment, and stem cell transplantation.

This document contains the following:

- Short biography of interviewee (pg. 2)
- Timecoded topic log of the interview recordings (pg. 3)
- Transcript of the interview (pg. 4-15)

The materials we are submitting also include the following separate files:

- Audio files of the interview*
 - Stereo .WAV file of the original interview audio
 - Mono .MP3 mixdown of the original interview audio for access purposes
- Photograph of the interviewee (courtesy: Nelson Chao)
- Scan of a signed consent form

*Due to COVID-19 social distancing protocols and best practices, Joseph recorded the interview remotely via Zoom.

BIOGRAPHY

Nelson Chao, MD, is Professor of Medicine in the Department of Medicine at Duke University School of Medicine. His leadership at Duke includes roles as Chief of the Division of Cell Therapy in the Department of Medicine and Director of the Global Cancer Program at the Duke Global Health Institute.

Chao grew up in São Paulo, Brazil, where he was an avid “tinkerer” with all things mechanical and an enthusiast of the region’s natural environments. This combination of interests led him towards a career in the sciences. Starting with a “nurturing” college job in a medical lab, Chao reflects that he has “always had really good mentors,” he says. After attending Yale University for medical school, he went on to complete his medical residency and fellowship in Oncology at Stanford University, where he worked with Karl Blume. Blume, who founded Stanford’s blood and marrow transplantation program, also made a deep impression on Chao. “It was not just the physicians” who steered the team, he says, “But [also] the nurses, the clerical staff, and all the ancillary support services to take care of the patient. I think that was a very full and inclusive way of practicing medicine... People really were engaged [and] involved [and] would give opinions and help make everybody better.”

In this interview, Chao recounts moving to the Triangle and Duke University during the weekend of Hurricane Fran in 1996. “I remember my wife waking me up in the middle of the night saying ‘This is a terrible storm,’” he says. “And we looked outside and the trees were horizontal from the wind.” He laughs that despite this, he came to love the area, where he immediately dove into work to rebuild Duke’s stem cell transplant program. Now the program is one of the strongest in the country, due in large part to Chao’s leadership. “What I’ve really tried to do in terms of recruiting is to find the best person I can, and then get out of the way,” he reflects. “Give the person some resources that they may need and let them do the thing.”

INTERVIEW TOPIC LOG (nelson-chao-interview-audio.wav)

- 00:00 Introductions and description of bone marrow transplantation work
- 01:53 Description of work with Duke Global Cancer Program
- 02:55 Upbringing in São Paulo, Brazil, and early interest in “tinkering” and science; early considerations of other careers in the sciences
- 06:16 Undergraduate work in medical laboratory
- 08:01 Mentorship by Dr. Karl Blume as young faculty member at Stanford
- 08:51 Impact of Blume’s “team approach” to medical care
- 11:03 Recollections of skill development and aptitude while training in medicine
- 13:01 Manual skill development
- 14:20 Interest in transplant and how total body irradiation and chemotherapy impact the body and associated treatment plan
- 17:06 Memories of Brazilian cultural inequalities; personal interrogation of implicit biases; how biases emerge in medicine; personal strategies to combat bias
- 24:37 Path to Duke, memory of first weekend in town during Hurricane Fran
- 29:01 Rebuilding of stem cell transplant program and advocacy by Chair of Medicine Bart Haynes
- 32:25 Hiring of Angela Johns and development of transplant team
- 35:06 Progress at Duke over tenure related to patient survival rates and incorporation of new cell therapies; observations on financial climate needed to maintain work
- 37:33 Typical day at day hospital
- 38:55 Advice to trainees and others considering a career in medicine
- 40:51 Opportunities specific to Duke as a larger institution

TRANSCRIPTION (nelson-chao-interview-audio.wav)

Joseph O'Connell 0:00

Okay, we are recording now. And it's March 25th 2021. I'm Joe O'Connell. And this is an oral history interview with Dr. Nelson Chao. The interview is for the Duke Department of Medicine, and the Duke Medical Center Archives. So to start out with Dr. Chao, can you tell me your full name, and when and where you were born.

Nelson Chao 0:27

So my full name is Nelson Jen An Chao. I was born in Taiwan on July 23th 1955.

JO 0:37

Okay, thank you. And I'm kind of curious about how people describe their professions to others who aren't in the same area of specialty. Can you tell me just in brief terms, how do you describe your position that you hold currently? How do you describe what you do to people who maybe aren't in hematology or oncology?

NC 1:07

So my day job is primarily doing bone marrow transplants. So it's a surgical and medical procedure that replaces one's bone marrow, from either their own bone marrow that was previously frozen or somebody else's bone marrow. And that bone marrow is just like when you crack a chicken leg and look inside -- that's that red stuff -- that's what we're putting back into people. And that is an organ, actually, that makes all the blood elements.

JO 1:44

Okay, great. And you describe the transplants as your day job.

NC 1:52

My major job [laughs].

JO 1:53

Is there another part of your responsibilities that you consider more like your night job, or your additional work [laughs]?

NC 2:07

So I run the Duke Global Cancer Program as well. And that is an effort of bringing global cancer therapies to low-to-middle income countries. So we have sites in Tanzania, in India, and in Brazil.

JO 2:32

Thank you. And I want to ask you a little bit about your path to working in academic medicine. Can you tell me a little bit about what your upbringing was like and what family or community influences you remember that kind of steered you toward an interest in medicine?

NC 2:55

So as I said I was born in Taiwan, but I left when I was four. And my family emigrated to Brazil, where I grew up. I spent all my formative years prior to coming to the US for college in São Paulo, Brazil. And probably that really was very formative. It was a time when the country was up-and-coming. It's sort of been up-and-coming forever. And it was relatively poor. And I think medicine came probably based on just seeing a lot of suffering down there. It was a way of sort of melding -- tinkering, which I really liked -- and science, together. And I think the other part is service.

JO 3:57

Yeah, so tinkering, science, and service. And kind of observing life around you when you were living in Brazil. Those kind of created a set of experiences that made being a physician feel like a calling to you?

NC 4:19

Yeah, I think that's true. I think it was a way to try to bring all three things together in one job?

JO 4:30

Well, this kind of relates to another one of my questions. I generally ask people what other kinds of jobs they've considered pursuing, maybe before they made their choice to pursue academic medicine. And I'm especially interested in the tinkering part of that, that you mentioned. What kinds of tinkering were you doing? Was that a job situation, or was it something more [like] a hobby?

NC 5:04

No, I just love to take things apart to figure out how they work. I could never put them back together [laughs]. But I was very good at taking them apart. So when I got to college, I had really not formed all these thoughts. So I started out thinking I was going to do marine biology. I love the ocean. I love water things. And growing up in Brazil, there's just a tremendous amount of coastlines and beaches. And I did a lot of diving down there, which was a lot of fun. But I ended up taking a freshman course on marine biology. I was very excited. And the prof[essor] apparently had found some Sanskrit tiles when he was diving the year before this course. And we spend the whole semester talking about Sanskrit -- these tiles -- which was totally not very interesting.

JO 6:06

It was not interesting?

NC 6:07

No, it was not very interesting [laughs]. So, that was it. That was the end of my marine biology.

JO 6:16

You probably thought you're gonna be looking at cool animals, not Sanskrit tiles. And as you were going along on your path were there other other people you met who worked in medicine who you were inspired by or who mentored you at that early point in your career?

NC 6:47

Not as much in undergraduate. In undergraduate I worked in a lab that was really quite nurturing. So there were several people. Both [those who] at that point were residents -- one was in surgery, one was in medicine -- [and] also the laboratory technicians and the PI were very nurturing in terms of helping with the science part. And it was very challenging to try and understand something very deeply. I found that very interesting, to sort of learn something that was completely new and not understood. So I think probably looking back at my career I've always had really good mentors, and people that I would aspire to become. Not necessarily in every aspect of their life, but pieces of what they were doing, I would find that very fulfilling.

JO 8:01

Can you think of any specific examples of some of those figures?

NC 8:09

The person I consider my mentor, when you asked "Who's your mentor", was probably the person who mentored me in stem cell transplant, Karl Blume, who hired me after fellowship into my first faculty job. And he was really a very good mentor, looking out for my career and making sure that things would move forward for me in my career.

JO 8:45

Yeah. And this was at Stanford, do I have that right?

NC 8:48

Yes.

JO 8:51

Do you remember any advice that he gave you that kind of stuck with you? Or were there any particular moments in working with him that still resonate or that you still reflect on today?

NC 9:06

I think a couple things. One is that his approach was really very much a team approach. So it was not just the physicians, but the nurses, the clerical staff, and all the ancillary support services to take care of the patient. I think that was a very full and inclusive way of practicing medicine. That really did resonate well. And I think it brought together this concept of a team approach, [where] prior to that time there really weren't very many folks in medicine that really would think about a team composed of all members who would tough that patient, either directly or indirectly. That's always been with me, all along. And it was not lip service. People really were engaged [and] involved [and] would give opinions and help make everybody better.

JO 10:23

So it sounds like that that was not the norm? Or the norm at the time, what did that look like? Was it just sort of an individualistic focus on individuals in the team?

NC 10:45

I think that through that time, it really was, you know, the giants who walk the earth. And each giant in medicine was that one individual.

JO 11:03

So as you were doing your training, I'm interested to hear a little bit about what some of the things were that you found came to you really easily, and what kinds of things did you find that you had to work a bit harder to acquire the skills, or to become proficient at?

NC 11:42

I think empathy came reasonably easily. I think some of the manual skills came pretty easily. I think [one] of the things I've had to work hard on probably has been implicit bias. I think I've been able to recognize them more as I've gotten older. I think I have been better at sort of broad knowledge of many things, rather than really deep knowledge of one or two things. And by and large I've been okay with that. But at times, I sense it would have been better if I had spent more time understanding the biochemistry of this or that.

JO 12:38

So do you think that the manual skills came easily to you because of your tinkering experience?

NC 12:50

I think so. I think I've always liked working with my hands and playing with things.

JO 13:01

So in doing the stem cell transplants, what's an example of a typical manual skill that you would be coming back to over and over again that's really important?

NC 13:17

Probably not that much now. I think when I think about manual skills it was mostly when I was an intern, and you had to put central lines in or arterial lines [or] you had to do cutdowns. Back then there really wasn't a whole lot of regimented breakdown of who could do what and you basically did everything. So you know, [when] you were in the CCU and you had to put an arterial line in and couldn't find the artery in the wrist you would cut down in the elbow and thread a line through there, and things like that. And you just did it yourself, there wasn't a surgeon to call or anything like that.

JO 14:02

That's amazing.

NC 14:06

Amazing and scary [laughs].

JO 14:10

It sounds like you were good at it [laughs].

NC 14:12

I was pretty good at it. I really did enjoy it. So for a while, I thought maybe I was going to become a surgeon.

JO 14:20

And in contrast what kinds of skills are you using as you're working in a transplant context, what is that experience like?

NC 14:35

I really like transplant for two big reasons. One is that the translation from the laboratory to the clinic is short. Because these are pretty desperately sick people. So things you observe in the laboratory you can bring to the bedside pretty quickly. And the other part is because we are causing a tremendous amount of mischief to the patient by what we do --when you have total body irradiation and chemotherapy -- we really have to be really good internists. So it's not just focusing on one organ. We impact, because of the total body irradiation, every organ is damaged. And so complications can happen everywhere so you have to be a pretty good internal medicine doctor, which I've really enjoyed. You've got to keep your skills up as best as you can.

JO 15:32

That's so interesting. So even though you are doing something extremely specialized, the nature of that process means that you have to keep in mind a more general view of the patient's health.

NC 15:52

Correct.

JO 15:54

I'm curious to know more about that. What's an example of sort of a situation when you might fall back on some of your internal medicine skills, or perspectives, in that context?

NC 16:17

It's like every day. So, we have to know enough about the lungs, about the heart, about the kidneys, about endocrine systems. Because we end up damaging -- not everybody gets everything, of course, but some patients to a greater extent will have adrenal insufficiency, for example, which we've caused. Interstitial pulmonary fibrosis, which we've caused. We have to be pretty up to date with all sorts of infection because they lose all their blood counts, they become neutropenic and prone to infections. And so there's all these different pieces that we have to monitor.

JO 17:06

And I want to return to what you mentioned about implicit bias being one of the more difficult things to overcome in your practice. Could you tell me a little bit more about where you've noticed bias and I'm just kind of curious what your process has been like of identifying and addressing some of those issues?

NC 17:51

Yes so you know, it's interesting, because I grew up in Brazil. I used to think that there really was no racism in Brazil. And to a very large extent that's true, because the slaves in Brazil were freed earlier and the concept of a mulatto, which is a black parent and a white parent, and the color of their skin, wasn't wasn't a problem at all. And in fact, dark skinned people were frequently praised as, you know, beautiful, and there really was not this racist overtone that was overt. As I was growing up, Carnival and the samba schools and soccer, really were almost all populated predominantly by African Americans. And I don't really recall ever as a teenager seeing this as a problem. And over the course of decades being here, and thinking back, I think the major difference was essentially a caste system in Brazil, where you all the people of color were of the lower socioeconomic class and really never moved up that much. And so I think the caste system basically kept that segregated effectively, and so neither encroached on the other's turf. And on the surface, on a day-to-day basis, it really looked like a pretty good melting pot, and they wouldn't call each other names. And I think this certainly was a lot of racism that just was not overt because the people in power, the people with money, never felt threatened. I think that was a major difference. And over the years, I've sort of figured that out. It took me a while, but there clearly is racism there. I just think maybe I was too young. It was a very innocent time in that country. I think that [inaudible] never resurfaced much.

JO 20:45

So did coming to that realization -- I assumed that had an impact on the way that you do your work, when you're doing your research in Brazil?

NC 21:00

So one of the goals of a lot of these efforts we have in these low-to-middle income countries is to figure out how to reach those populations, which have less means.

JO 21:19

And did it also affect the way you were thinking about your work in the States, or in other parts of the world?

NC 21:32

It does, I think it affects me a lot. It's funny, because one of the things I've learned -- about 20-plus years ago maybe now -- is I've learned that before any major decision, it really helps to ask the question in a different language. I think it stops your brain for a second. So it's actually been really interesting looking back, because my folks from Shanghai [and] I grew up in Taiwan until age four. And so we spoke Chinese at home. And then I spoke Portuguese in the streets. And then I went to American high school in Brazil, so I spoke English. And when I came to college, every freshman had to take an expository writing class in the freshman year. And I remember getting back these papers I wrote full of red ink, because all the sentence construction was wrong. Because the grammar is different. And I remember it probably took [until] maybe my junior year of college when I finally switched to dreaming in English. But what I find actually [when I'm making a decision like] we're going to buy a house or buy a car, I'm sort of thinking about if this is the right thing to do, it's really helpful to stop and ask the same question in a different language. And then go through the thought process because I think it helps break those pathways. And so when I see patients and I try to decide what to do, I try to adopt the same

strategy. And stop and think of them, and the courses of their illness, and what to offer in a different language. Because I think whatever bias comes through -- which we all have, and you know, there's not a lot of things we can do to prevent those biases -- I think it helps you to bring those to the forefront and understand [them] so that your decision is informed by facts rather than biases.

JO 23:56

So sort of by thinking through an issue, and tapping into another one of the languages you speak, in some ways you're able to subtly reframe the way you're thinking?

NC 24:16

I think it breaks the immediate biases that have popped up. With implicit biases, they are happening instantaneously. And I think switching language forces you to stop and then rethink again.

JO 24:37

That's a really interesting strategy. I'm glad you mentioned that. I think from here I'd like to ask you a little bit about your early time at Duke. Can you tell me a little bit about how you arrived at Duke? What were the circumstances, and what were your thoughts and feelings about it at the time?

NC 25:14

So I was asked to come to look at this job at Duke. And I came and really was not looking for a job, I wasn't looking to move. I was actually pretty happy. And so I came a couple times, and they offered me the job. And I said, "No, I don't think I really want to move." And they keep upping their offer to the point I couldn't say no [laughs]. So I came in '96. I had responsibilities at Stanford through the end of the year so the plan was that I would come back and forth between Durham and Stanford, and that the family would move after the kids were done with the first semester of school. The two older ones were eleven and nine at the time. So I took the job in May. And we said "Well, we'll just commute this for the rest of the year." And then in June, we said "This is probably not a good thing, to bring the kids in the middle of the school year." So we put our house for sale, it's sold in a day, we were scrambling to find a place to live. So I came, my wife came, there was really nothing available. So my second visit here looking for homes one house came up, which was in Chapel Hill which would work. And I bought this house sight unseen by her [laughs]. So I said "Well, we'll move in. If we don't like it, we'll sell it." And so we moved in on a Friday, I think. We had moved here, our stuff was shipped. We didn't have a paper. We didn't have radio back then, you didn't have smartphones. And so we hadn't really been looking at the weather. And we moved in. And that night Hurricane Fran came through. And we had no idea [laughs]. Before we moved we knew there was a storm coming through the east coasts, but we didn't pay attention to it. I remember my wife waking me up in the middle of the night saying "This is a terrible storm." And we looked outside and the trees were horizontal from the wind. And when I was being recruited the person who recruited me -- Russ Kaufman [who] was head of the [hematology] division at the time -- basically said, "This is a great place, we have no natural disasters. So we don't get hurricanes. We don't have to worry about it." So we went back to sleep. And in my defense, the first storms off the coast in California will pack

intermittent winds at 100 miles an hour. So we get very strong winds at times. It's rare, but you still can get those. Well, we got up the next morning. We had these huge trees down in our backyard. We had totally missed it. So that was our introduction to Chapel Hill.

JO 28:46

That is a pretty rude awakening. Well, I hope the person who recruited you later apologized about the natural disasters remark [laughs].

NC 29:01

Yeah, that was terrible. That, and then we had an ice storm. And then we had one big snowstorm. But other than that he's been right, it hasn't been very bad at all. But work has been okay. It was hard here because [we] didn't have anybody here for a long time. So we had to rebuild the whole program. And that took a lot of work.

JO 29:35

Is this the stem cell transplant program, or hematology-oncology more broadly?

NC 29:41

The stem cell transplant program.

JO 29:42

So at the time you arrived, it was just starting out?

NC 29:53

No, there was a transplant program here for maybe six or seven years. But the person had left two years before, and there were just a few people left [who were] doing only breast cancer transplants at that time.

JO 30:10

Would you like to talk a little bit about the process of building the program, and if you were involved in recruitment, who you were thinking about getting involved, and why, and how that process went?

NC 30:32

So rebuilding the program was painful, because there really was not much here. I think the really good part of it is that the Chair of Medicine -- Bart Haynes at the time -- and the hospital leadership really wanted to invest in this. So they were resources. And so what I've really tried to do is rebuild it in the same mold that I learned with my mentor. So bringing people in and sort of ingraining the idea that it's a team effort. And what I've really tried to do in terms of recruiting is to find the best person I can, and then get out of the way. Give the person some resources that they may need and let them do the thing. I think that's worked pretty well.

JO 31:28

What were some of the ways that you tried to instill that team-based culture or team-based way of working?

NC 31:40

Primarily through being a role model. The first couple of years, I really didn't travel much at all. I was there all the time. And I think if you're there, and you show people how you're behaving in bringing people together, I think that brings that concept to the forefront. If people aren't being collaborative, you point that out. If people are, you praise them for it. Those are probably the major things.

JO 32:25

And I'm generally asking people to share a little bit about some of the important collegial relationships they've had during their time at Duke. So I wonder if you could tell me a little bit about any of your coworkers who have been important to that team that you've helped help build, and what it's like to work with them.

NC 33:02

Every physician has been important. As a group, we've worked really well together. I think one of the most important persons, in developing the transplant program, was hiring the previous head nurse from Stanford to come here. So this whole idea of having a team was pretty foreign still when I got here. The nurses were very antagonistic at times with the physicians. Almost kind of a turf battle [about] who owns the patient and who's gonna make the final decisions about what to do. And the ability of this person to come -- and her name is Angela Johns [and she] was a head nurse at Stanford -- [and] really bring the whole nursing staff together and say, "Look, this is really the only way to move forward, and the best thing to do for patient care is to work together." And that really has changed, I think the whole working relationship with that group. And it's really been a very positive model for everybody else.

JO 34:25

So when you're describing that kind of culture of teamwork, those are two broad groups of people who might not have always been on the same page had you not been bringing people who could help pull them together?

NC 34:44

Correct. Because the thing is, I can't pull the nurses together. Because I'm not a nurse and I'm not their boss. And I think it really takes somebody who is their leader to collaborate like this. Otherwise they're not gonna listen to me, necessarily.

JO 35:06

So during the decades that you've been at Duke, what kinds of things have changed about your job? What have been some of the paradigm shifts that you've seen take place either related to stem cell transplants, or related to Duke as a place?

NC 35:37

I think we've made a lot of progress in terms of patient survival, [we've] made a lot of progress in bringing new types of cell therapies to the clinic. I think patient care has been pretty important as the major foundation for why we're here. I think that's been really good. I think that for Duke, I

think the key has been continued support of our program over the years. I think that's been very, very good. And I think the positives have been that we're still quite lucrative for the institution. A few years ago, when we were still able to see all our revenue streams, we were close to 30% of the net revenues for the health system. Just our small division. So we're bringing a lot of funds. On the negative side, I think we're ending up [inaudible] being more bean counters. Revenue is important, but we end up focusing more on revenue, which can be uncomfortable at times.

JO 37:33

You mentioned at the beginning, sort of the idea of your day job. And one thing I want to ask you about is, especially as we're kind of in this mode of being in our own spaces on account of the pandemic. I wonder if someone were in person with you, as you're going about your day job, I wonder, is there a particular space at Duke that you think about that you could kind of take us to and describe or that's a particularly meaningful place where you work.

NC 38:30

It's probably our day hospital where patients who are post-transplant come every day, sometimes every day, some at least two or three times a week. [It's] probably where we deliver maybe two thirds of all the care we give to the patient. And that's a space where all the docs and nurses are working every day. I think that's been a good working space.

JO 38:55

And I also want to ask about how you share your experience with other people who are considering a similar career, maybe trainees at Duke or others. What kind of advice do you give people who are going into the field of stem cell transplant, do you have particular things that you tell students again and again?

NC 39:36

I think what I tell them is if you don't like what you do, you don't do it. Because life's too short. Within the field of medicine anyway, there's so many different slots you can fall into that you really have to be sure you really like what you do. Because there's a lot of sacrifices that go into it. When you look back and you're looking back at a lot of the good things that have happened, I think that's your typical way of telling your story. But there's a lot of bad things that happen, too. There's a lot of pain involved, a lot of sacrifices you make. So I think at the end of the day, if you're not getting up in the morning and saying, "I really want to go do this," then you're probably not going to be successful [and] you're probably not going to be very happy in what you're doing. So I really tell folks to think hard about whether they really want to devote all this time and effort to it, because because time is short, you don't get that back. And if you're not happy with what you're doing, then you shouldn't be doing it.

JO 40:51

I know we've covered a lot, and there's probably a lot more that we could address. Is there anything that you particularly want to add to this interview before we close it?

NC 41:12

I would add that I wasn't sure I would stay here this long. I think this is a fantastic institution. I think there is so much here that is very unique to Duke that. It's not everything to everybody, but it has enough of everything that almost anybody can find a niche here. I think that there's enough support, there's enough funds, there's enough of everything. And in contrast to some very specialized cancer centers, this is really a remarkable, top-notch academic center where you can find specialists in almost any aspect of medicine which I think is pretty unique. And I think this area is fantastic too, probably not a whole lot of areas that are better to live than here.

JO 42:19

I wanted to follow up on a couple things you said, too. So as opposed to being at a specialized cancer center, I'm kind of interested in how you feel like that affects your work or your experience, having a lot of other areas of medicine represented and nearby?

NC 42:41

Well, I think you have all this special help that a patient could need. I think that's probably one of the most important things. On the research side, in the lab, we've worked with biomedical engineering, for example, we work with people in cell biology. So those are things which also you would not necessarily find in a more specialized center. And then just having the undergraduate university next door is also quite unique. You don't have to go across town to get to the college. And that also brings a lot of students in the humanities.

JO 43:27

So the intellectual environment is different, it's broader. And then lastly, I want to follow up on what you said about the area. Do you still live in Chapel Hill?

NC 43:46

We moved to Durham, about six years ago now.

JO 43:51

And what keeps you in Durham in particular?

NC 43:57

It's just the beauty of the place. So I'll tell you something. It's 15 miles to the medical center from where I live. And I pull out of my driveway and I pull into the parking lot and there's not a single traffic light. I've figured that out. Isn't that amazing [laughs]? I take all the back roads, I hit 85 for a small stretch, and then where I pull in our building's right off 147. So I can get from door-to-door without a traffic light.

JO 44:30

That is cool. You found the perfect place to live.

NC 44:34

It's pretty amazing.

JO 44:36

Great. Well, thank you so much for doing this Dr. Chao, and I'll stop the official recording here and then we can chat a little bit about the next steps.