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KATHRYN B. HORWITZ, PhD

Interview conducted by
Michael Chappelle
June 15, 2008

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INTRODUCTION

Kathryn B. Horwitz, University Distinguished Professor at the University of Colorado's School of Medicine, is a pioneer in the field of progesterone receptors and breast cancer. In the early 1970's estrogen receptors (ER) were being used as markers of hormone responsive breast cancers, but they failed to be predictive in more than half of cases. Dr. Horwitz discovered that breast cancers contain progesterone receptors (PR) and that their presence in ER-positive tumors marked the truly hormone responsive subset. Today, every woman with breast cancer has her breast cancer assayed for PR because it indicates that the tumor can be treated with hormones and is less aggressive than PR-negative tumors.

BIOGRAPHICAL SKETCH

Dr. Horwitz was born in the Dominican Republic to parents who had fled there in order to escape the holocaust in Europe. She immigrated to New York City in 1952 and attended the Bronx High School of Science. Dr. Horwitz graduated from Barnard College, Columbia University, and holds a MS degree in marine biology from New York University, and a PhD degree in endocrine physiology from the University of Texas, Southwestern Medical School. Her graduate work was done in part on androgen receptors in benign prostatic hypertrophy with Jean Wilson, MD, (at Dallas) and in part on progesterone receptors in breast cancer with Bill McGuire, MD (at San Antonio). She continued her work with Bill McGuire as a postdoctoral fellow. In 1979, she joined the faculty of the Department of Medicine, Endocrinology Division, at the University of Colorado's School of Medicine. Dr. Horwitz is a basic scientist with two salient objectives – first, to keep her research tightly focused on the issue of women's hormones and breast cancer; and second, to keep in mind always the practical implications of her work. A cell and molecular biologist, her research has been translational and influenced clinical practice long before such research became fashionable. Dr. Horwitz has 150-plus published scientific journal articles, and has received numerous recognitions, including the National Institutes of Health Merit Award, election as a fellow of the American Association for the Advancement of Science, and appointment to the President's Cancer Panel's Special Commission on Breast Cancer.

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I FAMILY BACKGROUND AND EARLY YEARS

Chappelle: Dr. Horwitz—

Horwitz: Please, call me Kate.

Chappelle: Kate! Would you tell me a little bit about your family background, starting with your grandparents?

Horwitz: I didn't know my grandparents very well. My family were Jewish refugees from the holocaust in Europe--that is, my mother and father. They escaped Europe by the skin of their noses really, in 1940. They were just teenagers--both my parents--18 years old. And they were able to get out of Europe, but they had no place to go. And the only place that would accept them was a tiny island in the Caribbean called the Dominican Republic. The Jewish aid organizations had made some agreement with the dictator of the island at the time, where they actually purchased a large amount of land from this dictator and gave it to the refugees--who were arriving by the boatloads--with the understanding that the refugees would settle it, develop it, and then slowly pay off the land. They essentially created a kibbutz in the Dominican Republic. Very few people know about this type of--that this settlement ever existed. And in its heyday, I think there were about eight hundred to a thousand families. A lot of them came after 1945. These were Jews who had escaped from Europe going the other way, through Asia and China and especially in Shanghai where they hold up during the war and right after the war came to the Dominican Republic. So I was born in the Dominican Republic and had my early education there.

Chappelle: Did you have contact with the Dominican population?

Horwitz: There was--it was limited for the adults, I think, because most of them didn't speak Spanish. Most of them were German refugees or Austrian, which my mother was; they spoke German. They tried to learn Spanish. The kids, of course, kids like me, all learned Spanish right away. We played with the native kids and we messed around with them. They were our friends like everybody else, and we went to school with them.

In school, we spoke Spanish. We interacted with the native kids, who also went to our schools. But I think the adults had a harder time with that kind of integration, other than the fact that a lot of these people were servants. The native people--local people were servants for the Europeans who were there. But the Europeans built everything that was there: they built the schools; they built the electrical system, the water supply. And the whole thing was a co-op. So my father, who had cattle and milked them, would take his milk to the co-op where it was converted into cheese, and he was given credits for every gallon of milk that he brought in. And, as I say, that credit went towards the eventual purchase of the land that he was farming. But he was not a farmer by trade. He

had come to the Dominican Republic from a relatively big town. And my mother came from Austria. She had never seen a cow in her life before she came there. [laughs]

Chappelle: Why did your family move?

Horwitz: Obviously, this was a very rural life style and neither of my parents came from that kind of background. So as soon as the war was over--not as soon, it took awhile--they left the Dominican Republic in 1951. They--as soon as the war was over and most of the European countries, as well as America, had gotten back on their feet, and there was now prosperity in those places, they were able to leave and get permission to go to the Western countries. They first went to England where life was very tough, and they really didn't have good work permits, couldn't earn a living, and after a year came to the United States. And that's where we settled.

Chappelle: What was it like when you first arrived in the United States?

Horwitz: Well, I remember seeing the Statue of Liberty--in a snowstorm--on a ship. I'd never seen snow before; I'd never--the Statue of Liberty was pretty impressive--sliding up the river in Manhattan. But we didn't have to go to Ellis Island; we just were allowed to get off the boat and try to make a life for ourselves. We settled in Brooklyn first and then in the Bronx.

Chappelle: And what was it like when you were settling in there?

Horwitz: The Bronx? We lived in what you would today call a tenement. [laughs] At the time, no one knew--we didn't think that it was a tenement. It was a four-floor walk-up, no air-conditioning. My parents worked two jobs, both of them, to try to earn enough money to keep the family going, and my sister and I went to school.

Chappelle: Was education a priority in your family?

Horwitz: It was. Absolutely--especially from my mother's side. Her family came from a highly educated background. Her father had been an architect and engineer in Vienna. He died in the concentration camps in 1945, just before the camps were liberated. He managed to hang out through most of the war or, you know, stay alive, but--didn't make it. But both his parents--his parents before him--were also highly educated. So--on my mother's side, especially--there was an extensive interest in education and music and the arts. My family were--my mother was just an opera nut. In New York, despite the fact that she had a hard time and had to work very hard, she'd still go to the opera two or three times a week you know, the old Metropolitan Opera, standing room only. She couldn't afford to buy seats, but she could afford to stand.

Chappelle: What type of education did you have?

Horwitz: I went, of course, to the public schools in New York City. I had a great education in the Dominican Republic because the school that was set up for the kids there was put together by Europeans who had been teachers in the old country. Some of them were professors in the old country. All these people were escaping and if they'd had any kind of profession, they put it to work in the schools. So the school was outstanding despite the fact that we were in kind of a Third World country. We had professors who were professional pianists and geographers and people like that teaching us. We got an outstanding education in those early years.

And, of course, in New York City I went to the public schools. And to this day, I think that the way for upward mobility in the United States--I'm a firm believer in public education. It kills me when I see some politicians try to do away with this system--where every single kid in this country can go to school and get a good education--because it's the only way to move up in the United States. So I was able to take advantage of that. I went to junior high school; it was in the slums of the Bronx. There were good teachers there; they were highly dedicated. They, I think, recognized some sort of spark in me, and they encouraged me to take the tests to go to the Bronx High School of Science, which at the time was the premier high school in New York City, and you could only get in by doing well on an entrance exam. One of the teachers in my junior high school said, "Take the test." My parents didn't know anything about a school like that, but this teacher was very good.

Chappelle: What were your favorite subjects?

Horwitz: In high school? I think I was just trying to survive. [laughs] I don't remember. You had to take a lot of required courses and--I was in a school that had a *huge* number of really smart kids. Every single kid in my high school graduating class went to college; it was highly competitive. Most of the kids were much better prepared than I was for the rigors of a school like Bronx High School of Science. So I worked very hard. I don't know if I really had a favorite subject; I just wanted to keep my head above water and not embarrass myself or my family.

II BARNARD COLLEGE, COLUMBIA UNIVERSITY (1958-1962)

Deciding on Barnard College

Chappelle: And then you went to Barnard College.

Horwitz: Right.

Chappelle: Why did you go there?

Horwitz: I always worked while I was going to school, so I worked while I was in high school as well, just to--for whatever I needed. My family couldn't afford to send me to a "sleep-away" school, you know, where you had to pay for dormitories and things like that. And the nice thing about Barnard College was that it was probably the only--it still is one of the finest schools in the country. It was one of the Seven Sister schools of the Ivy League schools where, in those days--in the 1960s--every Ivy League school had an all-women's college that went along with it. So Barnard College is an all women's school that was a sister school of Columbia. And today, out of those seven all-women's colleges, I think five remain as still all-women's colleges, and Barnard was one of them. So number one, it was probably the best college in the New York City area that I could go to without having to travel somewhere and live somewhere, which we couldn't afford to do. And at Barnard was the only--we had two classes of students: those who could live on campus in the dorms and those who could commute on the subway, and I was one of the commuters. So it was probably the best school that I could go to and still stay in the New York City area. I think it was a no-brainer, and I was lucky to be able to get in.

Zoology and early interest in biology

Chappelle: What was your major?

Horwitz: I majored in zoology. I've always been interested in biology. I remember from childhood being fascinated by natural things, natural life. I think it was in a science where I also was, I think, best at biology, not at mathematics or physics or some of the other sciences that were being taught. Biology just was always a natural fit for me.

Chappelle: Were you thinking about a specific career at this point?

Horwitz: No, I was totally ignorant about what careers were, what one could do in science, what it meant to be a professor at a medical school or in a graduate school. I just didn't have a clue about these kinds of careers that people could take advantage of. I just knew that, as long as I continued to study, it was science that I was interested in. And I don't think--I never really had very long-term far-reaching plans. I was too ignorant and naive to figure out where I was going. I let things sort of happen to me. [laughs]

Marriage and starting a family

Chappelle: Did you get married at this time?

Horwitz: I did, yes. I got married--I graduated in '62 and started to work and met my husband at that same time--or a little bit before then--while I was still in

college. He was in medical school, and we got married the day before he graduated from medical school in '64. So yesterday we celebrated our forty-fourth anniversary. [laughs]

Chappelle: Congratulations. That's great.

Horwitz: Thank you.

Chappelle: Did you have any children?

Horwitz: I did. We had two babies; I had a boy and a girl right after that.

Chappelle: Are either of them in science or medicine?

Horwitz: They are. My son is a physician. My husband, as I say, went to medical school, graduated, and eventually specialized in cardiology, and my son is also a cardiologist. My daughter is the artsy member of the family. She's a book editor.

III NEW YORK UNIVERSITY

Deciding on NYU

Chappelle: Why did you choose New York University for a graduate school?

Horwitz: Well, I went to work as a technician right after college, but I always had a hankering for more education. So I went to NYU part-time because, again, it was convenient. After we got married, my husband did his internship at Bellevue Hospital--I don't know if you know where that is, but it's sort of in the southern part of Manhattan. NYU is also in that part of Manhattan. We had an apartment right near Bellevue, and so it was just convenient to go to NYU to go to school.

Chappelle: What was your degree?

Horwitz: I eventually got a degree in marine biology, a master's degree. But decided very early on while I was doing that that marine biology was really not my cup of tea.

Chappelle: Why did you start with marine biology?

Horwitz: I have no idea. [laughs] I have no idea. I think it may have been something to do with always being a beach-lover. You know, growing up in the Caribbean and spending all your life on the beach, marine life is a natural come on: its beautiful, it's interesting and fascinating. And I knew nothing--you know as a kid you just take all of these things for granted. And I always felt that, well,

maybe I should understand what this marine life is all about that I'd always been surrounded by as a kid, but I didn't understand from a scientific point of view. I have a feeling that that's kind of what got me into that, but I think as a discipline it didn't engage me at all.

Chappelle: Were you thinking in terms of a career at this point?

Horwitz: No, actually, not at that point. That came later. I think I just wanted to get more education, and we were thinking about having a family at that point. It was a convenient time to study and work while my husband was doing his early post-graduate medical training.

IV LIFE IN TEXAS AND BOSTON (1967-1970)

Moving to Texas; working as a technician

Chappelle: How did you end up in Texas in 1967?

Horwitz: Well, it was Vietnam. People were getting drafted. My husband was drafted into the Air Force, and he was given--as a medical officer at that point, so that part was good. And there were some programs available for physicians where they could--where they were given several different types of options. One of his choices was to go to Vietnam and practice medicine there, the other one was to go to San Antonio, Texas, to the Air Force Base School of Aerospace Medicine and do research. And so it wasn't a hard choice. We went to Texas.

Chappelle: Besides raising a small child and an infant, what were you doing at this time?

Horwitz: I was working. I tried staying at home for about six weeks when I had my first baby, and my husband would get home and find a crying wife. And I told him, "This is not for me; I've got to go out and work." I got a job at the School of Aerospace Medicine, as well, again as a technician doing research. It was kind of interesting research on the effect of acceleration stress on the immune system; that is, when astronauts go out in space, they undergo this *huge* amount of g-forces, and no one really knew what that did to a person's health and especially their immune system. If you're subjected to these huge stresses and you catch a cold, does your cold get worse? Do you get over it faster? What's the story? So we had experimental models that were set up at the School of Aerospace Medicine to try to study that. It was really interesting. We actually published a paper. I think my very first paper came out of that research.

Boston: teaching at Wellesley College

Chappelle: How did you end up in Boston?

Horwitz: After the military, my husband decided to study cardiology, and he was accepted into the Harvard cardiology program. While he was doing his fellowship in cardiology at Harvard, I taught biology at Wellesley College to first-year biology students. It was at Wellesley, which is another one of the Seven Sister schools, another all-woman school, where I decided I needed to go back to school and get more of an education, mostly because the professors at Wellesley treated me like dirt because I didn't have a PhD. And I said, "The hell with this, I'm not going to be treated like dirt for the rest of my life. I'm going to go back to school and be a PhD like them." [laughs] That was not a very rational reason for going to graduate school, but it did the trick.

V UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL SCHOOL (1971-1975)

Physiology and endocrinology at Texas Southwestern

Chappelle: Where did you go for graduate school?

Horwitz: After my husband finished his cardiology fellowship, we went back to Texas, but this time in Dallas Southwestern. He was an assistant professor in cardiology, and I was a graduate student in the physiology department there.

Chappelle: And why physiology?

Horwitz: Ah, good question. I think I was always interested in biomedical issues, and that was probably the closest discipline that would allow me to study that and get a PhD--it's *human* biology, *human* physiology. And, of course, endocrinology is an integral aspect of human physiology studies, so I studied endocrinology. The department that I was in had been focusing on endocrinology and especially neuroendocrinology, but all aspects of endocrinology.

Chappelle: Had you considered becoming a physician?

Horwitz: I did. We talked about it extensively and, as I said, by then I had two kids, and we just decided that it probably made more sense for me to go to graduate school and get a PhD than to go to medical school; that the rigors of medical school for a woman with two children would be more intensive than the rigors of graduate school. So it was just a practical decision of what would be better for my family. But in some way I regret that. I would have liked--in retrospect it would have been interesting. I still would never give up the research career that I've had, but it would have been interesting to have done that with a more intensive medical background, too.

Chappelle: Who was your mentor in Dallas?

Horwitz: I worked with Dr. Jean Wilson, who's a former president of the Endocrine Society, genius, and Renaissance man, who knows a great deal about a lot of things, and his specialty was working in androgen action in the prostate. Scared me to death; he was so smart, still is. We did some--he--at that time people were first trying to demonstrate that androgen receptors existed in the prostate, and he was interested in the development of the prostate gland. He had asked me to demonstrate androgen receptors in neonatal rats or even pre--just newborn rats; it was the most difficult project I've ever worked on. I would spend hours and hours and hours dissecting enough tissue to do a single assay. It's tricky.

Chappelle: What did he teach you about conducting yourself as a responsible scientist?

Horwitz: I think he first demonstrated to me what real hardcore science is all about, what science at the highest level of academic discipline ought to be like. He himself was so highly respected and already well-established in the scientific endocrinological community that he--he as a role model--and others who came through who I met through him, other members of the department of medicine at Southwestern--it was a very high-powered group. I think that just the general environment first opened my eyes about what academic medicine and an academic career could be like. He introduced me first to the Endocrine Society, and I probably went to the Endocrine Society the first time while I was still working in his lab.

Transferring to the University of Texas Health Science Center at San Antonio

Chappelle: Then you transferred to the University of Texas, San Antonio.

Horwitz: Then I transferred to San Antonio--still the University of Texas. My husband had gotten a job as an assistant professor, or I think maybe he had been promoted to associate by then in San Antonio. I decided, of course, to go down with him and settle our family in San Antonio. But we were still at the University of Texas, and I wanted to continue to do research in the field of steroid hormones. I'd been working with androgens and testosterone with Jean Wilson, and the only lab at San Antonio that still focused on steroid hormone action was Bill McGuire's lab, and he worked with women's hormones, estrogen. His interests were not in the prostate, but in breast cancer. He was one of these people who in those days had combined training in both oncology and endocrinology. So he was a board certified oncologist and also a basic scientist and endocrine physiologist.

Chappelle: What was he like as a mentor?

Horwitz: I think he was my most important mentor. He showed me--he taught me how to

do science. Jean Wilson didn't do that. Bill McGuire was a very thorough scientist: he taught me how to do an experiment, what controls to use, how many points to have, how to do the statistics, how to analyze the data, how to think about it, how to ask the next question based on the experiment that I'd just done. He was also extremely smart. And I am talking about him in the past tense because he died at a relatively young age in the early 1990s. But I think that I became a good scientist--I was not a good scientist in Jean Wilson's lab; I became a good scientist in Bill McGuire's lab.

Chappelle: What did he teach you about the politics and ethics of science, and maybe the competitive side of science?

Horwitz: I think he taught me all of that. He himself was *extraordinarily* competitive. I think I learned from him that if you want to be a good scientist, you have to have a fire in your belly. You really have to want it badly. You want to have to--you know, science--one always thinks about academic pursuits and science as being for the greater good of society: You want to do some good and blah, blah, blah. But what you really want is to beat out all of those other bastards who are working in the same area that you're in [laughs] and do it better than they are! And it's not only the way to get ahead, but it's the way that science really moves forward. And I tell my students now, and I really recruit students only on the basis of--I want to see if they're hungry; I want to see if they really want this. Are they willing to--it's not just spending the nights and days, but do they have the competitive juices that are going to make them move ahead in this field? And really I think that's an integral part of a strong scientific personality, and Bill McGuire taught me that. I must have had it in me innately because you can't make someone want it, but you have to show them that it's important. Maybe--I don't know--that's my way of looking at science and competition in science. But I bet you that most successful scientists are highly competitive people.

A PhD training with MDs

Chappelle: You are a PhD and your mentors were both MDs.

Horwitz: That's right.

Chappelle: What kind of effect do you think that had on you?

Horwitz: I think it was critical to the subsequent type of research that I did. Because I've always tried to keep in mind--first of all, I've tried to stay--to keep my research to be always human oriented. I'm not going to do experiments in a mouse: mouse is not man. I work with *human* cells, *human* breast cancer cells, try to remember what the long-term implications are of the research that I do and, hopefully, even be able to do some research that is translational, so that it will impact clinical care. I try to keep that in mind, and I think the fact that both of

my key mentors were MDs probably fostered that--made that point most clearly for me. And I try to do it now with my own trainees. Even though I'm not an MD, I still tell them, "I want this to have practical implications for human health and disease."

VI DISCOVERING PROGESTERONE RECEPTORS IN BREAST CANCER

Chappelle: What questions were you asking when you were in Dr. McGuire's lab?

Horwitz: He asked me--he had been working on estrogen receptors in breast cancer. And what those receptors mean--the presence of those receptors in breast cancer means that a tumor is hormone dependent. That means it's growing in response to a woman's hormones. People were just starting to treat breast cancer that contained estrogen receptors with hormone antagonists: with hormones that kill breast cancer cells--or at least suppress their growth. But what was evident in those early years is that: if you take a hundred women that had estrogen receptor positive breast cancer, you would have expected, based on theory, that all of them would respond to hormone treatments. But, in fact, only about half of them were responding to hormone treatments. So the question was, Why is that? Why is the presence of the estrogen receptor not sufficient to make that tumor hormone responsive? Dr. McGuire had an idea that you needed to measure not only the estrogen receptor, but to find out whether that estrogen receptor was functional, was working properly. And the way to test that was to find a gene that the estrogen receptor controls. And one of those genes--we knew in those days from animal work--was the progesterone receptor. So the idea was, if we could show that a cancer has not only estrogen receptors but also progesterone receptors, then we'd know that the estrogen receptor was functional and that that tumor would be truly hormone dependent. So when I came into the lab he said, "Kate, see if you can figure out how to measure progesterone receptors in a breast cancer." Well, that was tricky. We didn't have the tools then that we have today--the antibodies or anything like that, that was before all of those days. You had to measure the presence of a receptor with a radioactive hormone and show that the radioactive hormone bound to some protein and prove that that protein was a receptor. And it took me a couple of years to figure out how to do the assay, and then we started working on human cancers--real human cancers--and found that some of them did have progesterone receptors. And that was--I still remember seeing the data coming off the centrifuge with a progesterone receptor peak coming off. You know, there is nothing like a scientist seeing that raw data, seeing something for the first time. I was the first person in the world--*ever*--to see the progesterone receptor in a human breast cancer, and I still remember how I felt, and that was many years ago. [laughs] That's kind of part of the excitement of science. I don't think you can transmit that to anyone, you have to feel it for yourself. You have to have that experience of first discovery for yourself. It's indescribable. I'm trying to describe it, but--[laughs]

Chappelle: You're doing a good job! [pause] How was that research supported?

Horwitz: Dr. McGuire was well supported from NIH grants and, I'm sure, from pharmaceutical support--which was easier to get then than it is now--and things like that, but I wasn't really privy to that. As far as I was concerned, there was enough money around to do what I needed to do. And I was pretty free, I was a graduate student; he didn't pay me a salary. [laughs]

On being first

Chappelle: Why do you think you were able to be the first person to see [the progesterone receptor in human breast cancer]?

Horwitz: Well, I think that Bill McGuire was asking the right questions. And we had the right background, both from a steroid receptor--because that's just the kind of work I'd been doing in Jean Wilson's lab, too--with a radioactive androgen instead of radioactive progesterone. But the tools--the experimental methods that I'd been using in Jean Wilson's lab were the same that I then applied to this question. So he was asking the right question, and I had had the right experimental background to take advantage of that. It was a good synergy.

Chappelle: Did you consider patenting anything?

Horwitz: That's a very good question. At that time nobody was patenting anything, and no one even thought about it. No one mentioned it; it never came up. I think in retrospect--an assay like that--if we had patented it, we would be millionaires by now [laughs]--very, very rich because millions of those assays get done every year on every single breast cancer that gets diagnosed. But no, as far as I know, no one ever asked me about patenting it, and I doubt that--he never mentioned it.

Chappelle: What was the impact of your success on your career?

Horwitz: That's hard to say. [pause] I don't think it had any impact on my career in those early days. My kind of movement through the academic medicine community was not related to those successes, interestingly enough.

Chappelle: What was the response in the media or by the public?

Horwitz: I think the scientific community and the biomedical--the medical community was extremely interested, the oncology community. And the assay for progesterone receptors was very rapidly adopted for clinical decision-making in oncology. So it was confirmed and adopted very quickly. In fact, I think I told you that even before the data on the progesterone receptor were published, a very prominent breast cancer patient found out about it, and I assayed her tumor. So it took no time at all for the assay to be adopted. I can talk about it

now; I didn't talk about it for many years because I didn't know whether I was violating patient confidentiality, but the patient was Betty Ford, who was the President's wife at the time, she was First Lady. She was diagnosed with breast cancer while she was in the White House. Her doctors somehow found out that I had developed this assay, and they asked us to analyze Mrs. Ford's tumor. And her tumor had a lot of progesterone receptors, which was a good sign; it meant her tumor was hormone dependent, not aggressive. It was probably the very first breast cancer--out of the millions that have been done since then--that had its progesterone receptor analyzed. Her tumor progesterone receptor is part of my PhD thesis. She gave me permission about a year ago to talk about it.

VII UNIVERSITY OF COLORADO HEALTH SCIENCES CENTER (1979-PRESENT)

Chappelle: And then you went to the University of Colorado Health Sciences Center, what brought you there?

Horwitz: I was dragged there by my husband, as usual. I followed him around everywhere he went. He was hired as chief of cardiology at the University of Colorado in the department of medicine. And so I went to the chairman of the department of medicine and I said, "I need a job!" And he was very annoyed. [laughs] He gave me a choice--no, he didn't give me a choice--I think he asked me to go and talk to the chief of oncology and chief of endocrinology. And I don't think the chief of oncology was interested. The chief of endocrinology grudgingly gave me a desk in his lab and said, "Here, work here." Even though--I brought a grant with me because I knew that we were leaving and I wanted to come with money. So the last three months I was in San Antonio, I wrote an NIH grant that was my first RO-1. And I have held that grant since then. I still have it; it's now in its twenty-ninth year.

Chappelle: How did the move from Texas to Colorado affect your research?

Horwitz: That's kind of interesting. I obviously had now been trained in steroid hormone action and steroid receptors, and I wanted to continue working in that field. Bill McGuire, as I say, was very competitive. It was fine while I was in his lab that I would be highly competitive, but I made him nervous when I left because now I would be *his* competitor and not working for him, but as his competitor. And he knew I was competitive, and I knew he was competitive, so this was not a happy time. [laughs] He actually told me at one point that: "It's okay, Kate. You can leave and you can stay in research, but you can't continue working with steroid receptors." And I was naive and young and stupid at the time, and I thought, Wow, is that really the rule? And I actually went and talked to some other people who I'd met in the Endocrine Society, especially Jim Clark and Bert O'Malley, and I asked them, "Is that true? When you leave a lab you can't continue working in that field?" And they looked at me and they said, No, Kate. You can continue working in that field. [laughs] So I did.

Producing resources; planning research

Chappelle: You said you had a grant?

Horwitz: Yes, I brought a grant with me to Colorado.

Chappelle: How much of your time is spent on grant proposals?

Horwitz: Well, it varied a lot from those days to now. In those days, I was the only person doing the research, so I was actually hands-on, doing the experiments every day--I didn't have a technician. But once I did get the grant, I was able to hire someone to work with me. So for probably the first, I don't know, ten years or so, I would work every day at the bench, had a technician, was lucky if I could recruit a graduate student to work with me--something like that. The thing is, as time progresses in science and you're successful, you end up spending less and less time working at the bench and spending more and more time writing and trying to get money to pay the other people who are working at the bench on your behalf, because no one else is going to pay them. The University of Colorado, for one, supports research very badly and even supports faculty salaries very badly. An FDE at the University of Colorado is something like \$17,000. And I have always paid a hundred percent of my own salary off grants, as well as the salary of everybody who works for me, which means that now that my lab has fifteen people in it, I have to spend a lot of time writing grants and trying to get money. So that's kind of been the progression over many years: from being the sole person doing the research to now--I mean the people in my lab would kill me if they saw me touch a pipette because they know [laughs] that something would get screwed up. They won't let me. And it's a joke. I spend a hundred percent of my time writing, planning research, discussing research with all of the people in my lab, thinking about the next experiment, as well as the next five years in terms of writing grants and things like that.

Chappelle: Once you began working on receptors, breast cancer, and estrogen and progesterone, you essentially maintained the same focus. What is your strategy?

Horwitz: I don't know why I've done that. Maybe it's a sign of lack of intellectual curiosity. I don't know. I've always insisted on a focus in this. Even today when my lab has a tendency to stray away into other areas, I kind of feel like a shepherd bringing them back into that focused area of hormone--steroid receptors, estrogen, progesterone, and breast cancer. Now obviously, our work has matured and evolves continuously; it wouldn't be good science if it didn't evolve. We're now doing the type of research I could never have envisioned even ten years ago, but it always is focused on the issue of women's hormones

and breast cancer.

VIII THE ENDOCRINE SOCIETY

Chappelle: When you were President of the Endocrine Society, what were the most compelling issues that you were involved with?

Horwitz: Isn't it an amazing thing that a little girl from Sosua, Dominican Republic, can become president of the Endocrine Society? I think it's one of the strengths of this Society that it fosters young people. It brings them into its administrative infrastructure, it puts them on committees, it allows you to work your way up through the committee structure, it helps women do that as well as men; I mean there is no gender nonsense in this Society. I was lucky that I was able to get appointed to some committees and then, in time, to become president of this Society was a great honor.

At the time--that was nine years ago--I think we were trying to--the Society obviously was already doing exceptionally well and is the premier endocrine society in the world. And when I sat down, especially with Scott Hunt [Chief Executive Officer of the Endocrine Society], and tried to think about what we could do--where we could lead the Society into the future--one of the clear things were financial issues. And Scott and I decided that we would like to be able to integrate the pharmaceutical companies--their support, their expertise, et cetera--into the activities of the Society. Scott and I spent a great deal of time, the year I was president, traveling around the country going to some of the big pharmaceutical companies--I forget which ones they were--Pfizer, Genentech, places like that--to ask them to support the Society, both scientifically as well as financially. And I think many of them came through. And the Society's continued to try to bridge the gap between academics and industry since then. So it was an area that I was keenly interested in, and I think the Society has broadened those interactions more and more over the years. If I think of anything as a legacy, having started that may be one.

IX CURRENT VIEWS ON ENDOCRINOLOGY

Chappelle: What are your current views of the field?

Horwitz: Of endocrinology? Well, endocrinology is almost a catchall phrase these days. Just take a look at the Society's abstract book; it's this thick. People study every single organ in the body. They study normal organs; they study diseased organs. Endocrinology has very broad appeal. I think you will find that many of the best scientists who are physician-scientists tend to converge on endocrinology as a subspecialty because it's an area that allows you to do research that is both important for patients, as well as you can go to any depth at a molecular level to study it. And as a medical discipline, endocrinologists, I think, tend to have more control over their time than other physicians do. So a

cardiologist--when an MI [myocardial infarction] comes in, he's got to drop everything, go to the operating room, and take care of that patient. Endocrinology is much less emergent in that way; you don't have emergency crises all the time. You take care of patients routinely; you can control your time and your life. So you have more time to do research. Physician-scientists, MDs, who are really interested in having a high-quality research ability, tend to gravitate toward endocrinology; it's one of its strengths. That's why I think we have so many outstanding physician-scientists in our discipline. Probably more so--but maybe I'm bragging--than most other medical disciplines.

Chappelle: Well, thank you.

Horwitz: All right. It's been a pleasure. Thank you.

End of Interview

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Interview History—Kathryn Horwitz

Dr. Horwitz was interviewed by Michael Chappelle on June 15, 2008, during the Endocrine Society's Annual Meeting held at the Moscone Center in San Francisco. The interview took place in a conference room at the Marriott Hotel and lasted 47 minutes. The transcript was audit-edited by Mr. Chappelle and reviewed by Dr. Horwitz prior to its accession by the Oral History of Endocrinology Collection. The video tape and transcript are in the public domain, by agreement with the oral author. *The original recording, consisting of one (1) 60-minute videotape, is in the Library holdings and is available under the regulations governing the use of permanent noncurrent records.* Records relating to the interview are located in the offices of the Clark Sawin Library's Oral History of Endocrinology Project.