KENNESAW STATE UNIVERSITY ORAL HISTORY PROJECT

INTERVIEW WITH PATRICIA H. REGGIO

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TS: Patti, let's just begin by talking a little bit about your background: when you were born, where you were born, where you grew up, and things of that sort.

PR: I was born in New Orleans in 1949, and I went to school there at the Catholic Girls High School. I went to the University of New Orleans, got my bachelor's degree and also my Ph.D. from the same institution in chemistry. I really came to Kennesaw the following fall after I got my Ph.D.

TS: I thought I saw an LSU at New Orleans somewhere. Is that the same thing?

PR: Yes, I think my undergraduate degree says Louisiana State University at New Orleans. By the time I was in graduate school, they had petitioned for a name change to the University of New Orleans, but it's really the same institution.

TS: Okay. Did you major in chemistry all along?

PR: Yes, I did. My dad was a chemist, and when we were little, my sister and I, if you asked us what we were going to be, one of us said that she wanted to be an analytical chemist, and the other said she wanted to be an organic chemist. But I'm actually the only one who went into chemistry; my sister did math instead.

TS: All right. Well, that's unusual, to say the least. Where did your father work?

PR: He worked for the U.S. Customs Service. There was a laboratory there that did analyses of anything that was being imported to assign duties, and also any illegal things that were smuggled like drugs. They had to identify what the drug was, so you wind up testifying in a lot of court cases.

TS: Wow. I've been asking folks how they got interested in what they were interested in, and about mentors and so on so. I gather your father was obviously one of your mentors along the way.

PR: Definitely. And as I got later, after I got my Ph.D., I actually found someone who mentored me in my research career. His name is Harel Weinstein, and he was at Mt. Sinai Medical School in New York in the physiology biophysics department. Actually, he was the chair until last year. He just assumed a position at Cornell Medical School,

which is also in New York City. He's the person who taught me how to write grants and all that stuff.

TS: What about in the Catholic Girls High School and at the University of New Orleans; any particular mentors there that maybe got you interested in teaching?

PR: That's really funny. When I started graduate school, I started right out of my undergraduate. I went one semester, and couldn't figure out what specialty area in chemistry I wanted to go into. I wound up stopping graduate school for a while, and I got a job teaching in a Catholic girls' high school, Dominican High School. My sister-in-law was the assistant-vice principal there, and they had an opening. Someone had gotten ill; I started filling in, and they asked me back. I taught there for three years. [After that,] I knew I could teach. When I went back to graduate school, eventually, I had figured out what specialty area I wanted to go into. Every once in awhile, people would ask me to sub for them when they were going out of town, to take over their lecture sections for them. I did one lecture session for one of my really good mentors in graduate school, Peter Politzer, and I had done a substitution for him twice.

TS: What's his name?

PR: Peter Politzer; he's still at LSU, at UNO. I substituted twice in one semester for him. The day I walked in for the second substitution, a lecture hall of eighty kids stood up, and gave me a round of applause, when I walked in. Everybody was running out of the chemistry department office trying to figure out what the heck was going on. So they liked me I guess. [chuckle] And Dr. Politzer—as an undergraduate I had worked for him and he was a computational, theoretical chemist and--let's see, let me back up for a minute. When I went to UNO, all [of] the faculty had projects that undergraduates could work on. The first summer I was there, I worked for an analytical chemist, George Gilbo. The second and third summer, I worked for Dr. Al Meyers, an organic chemist. Then, when I was a senior, Dr. Politzer offered me a job in his lab. It was all computational. When I sat down in front of the computer for the first time doing work for him, I had this feeling like, I don't know how to describe it, it was like, "This is what I want to do." So when I got here, what I pursued at Kennesaw was a computational type project. So anyway, Dr. Politzer helped me figure out what kind of project I'd want to do ultimately.

TS: Okay. I noticed on your resume you had a post-doctoral research grant or associate at New Orleans.

PR: Yes, with Dr. Budreau. That was very short. I had gotten my Ph.D. in December, he had had a post-doctoral student that had left early, and he had funding for the spring and summer of that year. I sort of took over, where his post-doc had left off, and finished up and organized some things for him. I didn't really get a lot of new stuff done. I kind of finished up for the previous post-doc before I came to Kennesaw.

TS: And that was quantum chemistry.

PR: Yes, quantum chemistry. The terminology has changed over the years; theoretical chemistry at one time was all quantum chemistry, and then new techniques were developed, so it's not the only kind of calculations you can do to get at properties of molecules.

TS: At any rate, anything that has calculations and computations.

PR: Right.

TS: Then, I guess your major professor Raymond Schmidt is in physical chemistry.

PR: Yes. This is kind of interesting, too. It just shows you that sometimes what people tell you is the best thing for you to do is really not the best thing for you to do. But when I went back to graduate school after teaching in high school, I got a lot of advice from people telling me that to go into theoretical chemistry was really not a good idea; there was no way to get a job with it. You could get faculty positions, but the industry was not interested in it. So when I went back—I was listening to them—and there was a young professor, Raymond Schmidt who was actually doing laser light scattering studies. I decided to work for him because it was experimental, and it would make me more marketable when I finished. I did the project; it was fine, but it wasn't me. I didn't really like it. But I finished, and got my degree. What's ironic about it is that right about the time when I came to Kennesaw, theoretical chemistry was just breaking out, and every drug company in the world was hiring people to do what they call molecular modeling, the drug modeling for them. So, all the advice I got was really not right, it really is marketable.

TS: They might have been right a few years earlier, but not right when you hit the market.

PR: Right. So by the time I came to Kennesaw I thought, "Okay, I'm going back to what I really like to do."

TS: Was that unusual or typical to have faculty involving undergraduate students in their research projects at New Orleans?

PR: You know, I think it was really good. I'm sure there were other schools that were doing it. UNO was a graduate degree granting institution, and a lot of graduate degree granting institutions are not interested in undergraduates; they're only interested in graduate students. But this school really had a long history of doing that, and so it did let me start to try to figure it out. You can take all these courses, but you don't know what it would be like, doing a project in that area for real. So this allowed me to actually kind of sample a little bit, to see what I would like to do.

TS: I know in history, New Orleans has a splendid reputation: you have Steven Ambrose and so on that were producing books like mad, and one of the Brinkley's, Douglas Brinkley. Some really big names in the field of history, so maybe that was true in chemistry too.

PR: Wow.

TS: You really got through graduate school in lightning speed, given the fact that you took three years off to teach along the way.

PR: Yes, well I had the one semester when I started, and then stopped because I had finished that semester, and then I think I was there two and a half more years. I got my degree in three years total. When you start graduate school, they make you take exams in all the different fields of chemistry to see if there's any remediation needed, and I didn't need any remediation. I went straight into graduate coursework, and I was able to take like three courses a semester. I got through all the graduate coursework quickly. Then my research advisor, Dr. Schmidt, wound up in my second year deciding that he wanted to work in industry, and so he left. The department chair called all of us. There were three graduate students in the group, and the department chair called us in and said, "You have to finish your project in the next year. If you don't you're going to have to start over with a new research advisor." So the three of us scrambled to get everything through. That's why it took such a short time. [laughter]

TS: Well, then you started looking around for employment, and came to Kennesaw right out of your post-doctoral research position—why Kennesaw?

PR: Well, I was interviewing for industrial as well as teaching jobs at the time, and I really liked the people when I came here to interview, Frank [W.] Walker in particular. I don't know if you remember Frank Walker.

TS: Oh yes, sure.

PR: I knew I could teach, and I knew I could teach really well. I was looking at teaching jobs, and also at research jobs in industry. It just felt like a good place.

TS: Frank Walker went from being very straight, very conservative-looking to that long beard.

PR: He was a great guy, absolutely great.

TS: So it's the people essentially that brought you to Kennesaw?

PR: Yes, and when I started, when I interviewed, I think it was the first year Kennesaw was a four year institution. I interviewed with [Herbert L.] Herb Davis because he was the division chair of natural sciences and math—he told me that we were going to have a chemistry program, and when I did my rounds I also interviewed with Dean [Eugene R.] Huck. Then, I met Dr. [Horace W.] Sturgis, the president. Dr. Sturgis said there was no way there was going to be a chemistry program. So I went back in my interview, and I saw Herb Davis again and I said, "Well, the president says that you're not going to have a chemistry degree program, and I really don't want to come unless there's going to be a

chemistry degree program." And Herb said, "No, mark my words, there is going to be a chemistry degree program." And there was. He made it happen.

TS: Well, that's right. We started out with seven majors, and I guess biology is probably a major because of the students taking the general education course in biology.

PR: Yes.

TS: We didn't have a lot back then. Dr. Sturgis had some background in physics, but I guess he was very cautious at least about expanding programs.

PR: Very cautious.

TS: Wow. Talk about conflicting opinions.

PR: It was so funny but we did. Within two years, we had the chemistry degree programs.

TS: Right. And you were deterred by the teaching load when you came here?

PR: I don't think it was as much as it is now. Honestly, I think somehow it's crept up worse than what it was when I started here.

TS: I think going from quarters to semesters made it heavier than it was.

PR: Yes. The way they did it then is that I had a double section. I taught a double section of general chemistry, and then the two lab sections that went with it. I taught one other course. So it was really two preparations, and then the lab. Honestly now, I don't have a full time teaching load because my grant buys out a lot of my time, but the faculty in my department are teaching three separate, different lecture courses now. When I started here, the lecture size was limited by the number of spaces in lab. There were twenty-five people per lab section, so a double section was fifty, and it couldn't go over because there was no way to accommodate. I might have been handling maybe seventy-five students a semester; well now they're letting eighty people in a single section, so the faculty in my department is handling over two hundred. I honestly think it's more now.

TS: It's heavier now. Wow. That's not good.

PR: No.

TS: You really are one of the few that continued your scholarship, weren't you? I mean, a lot of people did a lot of service, and they did a lot of teaching, but especially back then we weren't doing that much scholarship. How did you manage to do that?

PR: Well, I was interested in doing the theoretical chemistry, the computational chemistry and Dr. Politzer from graduate school—actually when I was in graduate school they made us take two seminars. One was our thesis defense. But preceding that, they called it a

literature seminar, and it had to be in an area in your discipline, which would have been physical chemistry for me, but not related to my thesis work. So I had gone to Dr. Politzer and asked him if he had any suggestions about something computational. He had suggested molecular electro-static potential maps and their use in drug design. So I started doing research on that topic, and I identified this one research group in particular that every time I read a paper of theirs, I really loved their work. So when I got to Kennesaw, I called Dr. Politzer, and he said, "Well, if you like it that much call him, and ask him if you can go up there for the summer." So I called, and that was Harel Weinstein, the person that really served as my mentor, even till today. So I called Harel Weinstein, and asked him if I could come work during the summer. I went, and I started in the fall of 1979 at Kennesaw. In the summer of '80, I went to New York. The way I financed it was through a faculty development grant from Kennesaw, and they basically paid all of my travel expenses for going up there for the summer. I went up there to learn this technique that they were using, and when I came back Dr. Weinstein said, "Well, if you'd like to continue during the year, I'll buy you a terminal, and you can bring it back to work." So I had it; actually it was at home. What I started doing was teaching during the day, and then when I came home in the evening, I'd work on the computer for a few hours. I was connected remotely to their computer in New York.

TS: And this is really at a period when personal computers are very rare.

PR: They hadn't even been invented. I had never seen a PC in 1980.

TS: Right.

PR: I had a terminal. It was just a dumb terminal, and you had a modem. I was dialing over telephone lines to get to their computer. It was 300 baud. I don't know if you know but DSL is like 5200 or something. This was 300. I was doing that every night, basically, and keeping stuff going. I went up for the following summer again, and then worked another year remotely, and managed to publish two papers with him. Then, after I was there, I had worked almost over two years with [him]. He told me that he thought I knew enough that I could write my own research grant application. So he helped me; I wrote it, and sent it to him. It came back with a lot of red ink; I wrote it again, and sent it back; it came back with less red ink. When I wrote the third version and sent it back, he said, "Okay, I think this is good, I think you can send it." So I sent it in, and I was just lucky enough, it got funded. So that's how I got my first grant. The thing about being able to work at Kennesaw, it was perfect at the time for computation because there was no space, you know. But I didn't need anything but a terminal, so I didn't need a lab and chemicals, I didn't need all that; I just needed the computer so that's why I was able to do it.

TS: Was the first grant a grant for you to do research by yourself?

PR: Yes.

TS: This is before you get students involved then.

PR: Yes. Up until then, I didn't have any students involved because the time on the computer was very expensive, and it wasn't my project. It was Dr. Weinstein's, so I couldn't afford the learning curve of the students. But when I got my first grant, it was on my own project. The theme of the project had nothing to do with what Dr. Weinstein did. See, it was my personal research area. When I got that it was funded as an RO1 application. I think I got eighteen months.

TS: What does RO1 mean?

PR: RO1 is the regular Research Opportunity Grant from NIH. I think the first one I got was just for eighteen months, and as soon as I got it I started having students.

TS: So this was the $60,000 grant in 1985?

PR: Yes, the first one, that's it.

TS: Okay. Which is probably the biggest grant any faculty member had ever gotten at Kennesaw at the time, wasn't it?

PR: It may have been; I don't know. But see, I had a professional teaching me how to write the grant. It helped tremendously.

TS: So in terms of mentoring, where he was really helpful was kind of one-on-one.

PR: Oh yes. I would not have gotten that first grant without him. He trained me and then he helped me write the grant. He really, really helped me.

TS: What were you doing for him? What kind of research was it?

PR: He was working on hallucinogenic compounds, and they were trying to figure out what properties compounds had to have to actually cause [hallucinations]. We knew the structures of the drugs, and we were calculating their electric field, trying to see if you could make any sense out of which ones did and which ones didn't. What was it that might be making it a hallucinogen? That's what I was doing for him.

TS: Were you testing these things out on people?

PR: No, no, no. Now he had collaborators that made compounds and then actually evaluated them. He had pharmacology collaborators that evaluated the compounds, but his group never touched a compound; all they did was computation.

TS: And then all your studies from the beginning were marijuana, weren't they?

PR: Yes, when Dr. Weinstein told me, he said, "I think you're ready, I think you can work on something." My program officer from National Institute on Drug Abuse, which is the administrative person that actually handled Dr. Weinstein's applications—he had come to

Dr. Weinstein and said that no one was doing any computational work on the cannabinoids, which are the compounds in marijuana. He really felt that the field had enough information out there that someone could really do something with what's already published. So Dr. Weinstein said, "I'm not interested in branching into another area." In this case, particularly because there was no receptor that had been found for the cannabinoids yet. But he said, "I know a young person who might be interested." So he called me and said, "You can do this; you just need to go read the literature, and figure out whether there's enough there to do anything with it. Then decide whether you want to try." And so I spent every Saturday and Sunday for six months in Georgia Tech's library, going through the literature, and figured out that there really was enough there. I went up to see Dr. Weinstein, and I had it all organized, all the information that was out there. He said, "That sounds like a good idea." We went through all the iterations of the grant writing before I actually got to the point where I sent it in. So that's how I got the cannabinoids.

TS: Was there any particular reason why you were attracted in that area other than that it was there to do?

PR: Well, it's funny; my dad had been in charge of their organic group at the Customs Lab, and that was the group. Their primary work was drug seizures. When I was eight years old, he wrote a manual for the customs service on cannabinoids: what the compounds were, how you analyzed for them, and all that. It's one of those little memories that you keep forever. I remember standing next to his desk, and he was drawing out all these structures. [I asked] what he was doing, and he told me, in eight-year-old terms. I looked at him, and I said, "I'm going to know how to do that one day." So when Dr. Weinstein said they're looking for somebody on the cannabinoids, I thought, "Whoa, I told my father I was going to do something with it one day." That was another reason why the cannabinoids.

TS: Wow. I was just thinking—before the hippie culture came along—who had ever heard of cannabinoids except a chemist?

PR: That's true. But my grandfather used to talk about [them]. They didn't call it marijuana then. I forget what my grandfather called it, but there were always problems with marijuana over the years. My grandfather was talking about a lot of sailors used to smoke it when he was a teenager. It had been around for a long time. It wasn't made illegal until 1936; the U.S. Government made it illegal. Before that, it was not illegal.

TS: Were you interested in it from the beginning in the medicinal uses?

PR: Yes. In the beginning, all they could test for in the very early part of—let's say in the '70s—was really psycho-activity. They had to do it in whole animals. But as one of the drug companies, Pfizer, I don't know how they got started on the cannabinoids, but they got interested. They figured out that there's anecdotal evidence from people that smoking marijuana helped their glaucoma, helped them with pain, helped them with muscle spasticity, nausea, bunches of things. Pfizer got interested trying to figure out if

they could separate the two, the psychoactive part from the other. They developed assays for analgesia. When I got started, I was mainly trying to figure out if there was a way to separate the psychoactivity, which would be an undesirable effect for a drug, versus the therapeutic uses. There were clearly a lot of therapeutic uses for compounds that are in marijuana.

TS: So to create a chemical that would have a result, without having the effect on your mentality.

PR: Yes. So that's how my grant started out.

TS: So I would think that the drug companies would be very interested in that kind of research.

PR: They are still to this day.

TS: There's a lot of money in it for them; I would think.

PR: There's a big drug that's about to come out. I don't know if you want me to tell you about it now.

TS: Sure, go ahead.

PR: Over the years, when I first started, they didn't know if there were actually any specific receptors that were being affected by the compounds in marijuana. In 1990, they cloned the first receptor. Now, we know that there are at least two: one primarily in the brain and one in the immune system. The one in the brain is the one that, if you activate it, causes psycho-activity. The one that is in the immune system doesn't because it never gets to the brain so the receptors are not there. One of the drug companies, a French drug company, figured out that there were these compounds that turn receptors on and compounds that turn receptors off. So compounds that turn the receptors on are called agonists and compounds that turn it off are called inverse agonists. Well, people who smoke marijuana will tell you that marijuana gives you the munchies, right?

TS: I guess. [chuckle]

PR: People will want to start to eat; that's one of the things that everybody talks about. This French drug company decided that that's an agonist. Maybe an inverse agonist would make you not want to eat. They discovered this inverse agonist that binds to the receptor in the brain, the cannabanoid CV1 receptor; it is an appetite suppressant. It has been in clinical trials. It's almost ready to be released. It causes nice, steady weight loss in obese patients, and it also has a side effect of improving your memory.

TS: Wow. You can't beat that.

PR: So it's almost going to come out, and every drug company in the United States has an inverse agonist project right now. They're going to be behind—this company is called Sanofi Research in Paris. So Sanofi will be first, but Merck, Bristol-Myers Squibb, just about every drug company—let's see, who else, the guys in California, I can't think of the name right now. Oh, Lilly, they all have projects. They've all got drugs in clinical trials right behind them.

TS: Well, I hope you got a cut out of all of that.

PR: I'm a consultant for Bristol-Myers Squibb.

TS Well, that's great. So you got your first grant, and I guess it got easier to get a second grant or a bigger grant as it went along; is that the way it works?

PR: It's never a given that you're going to get it. But every time mine went up for renewal, I've been able to get it renewed.

TS: It seems like there's been a steady progression in the dollar amount with each new grant.

PR: Yes. Some of the money in the grant is actually for experimental collaborators. I actually have a group at Research Triangle Institute, which makes compounds for me. Then, I've got several collaborators that do testing so that, when we think something will work a certain way, we can actually have it made and tested to see if we're right. That allows you to modify what you're doing if it's wrong, or it tells you to keep going in that direction, if you're right.

TS Yes. Well, tell me about how you started getting students involved, undergraduates in your research project.

PR: The first two students that worked for me were [Patrick K.] Pat Macy and Don [H.] Sams. I don't know if you remember Don Sams; he was SGA president when he was at Kennesaw. They started working with me within a few months after I got the first grant. I was able to get them, let's see, where did they go? They went to the Georgia Academy of Science, and presented work. Don Sams got an award for the best paper presented, which is really neat. They were the first two, and I've had a steady stream; I've always had somebody working with me ever since. At least one, and right now, I have three working.

TS: Was that a condition for getting the grant that you include undergraduates?

PR: No. That type of grant is a grant that people from Harvard can compete for, so it's not a grant targeted for undergraduate institutions at all; it's a pure research grant, and I just always had students working with me. But at the time, there weren't that many. When I started, there weren't that many grant programs targeted for undergraduate research. There are now. In NIH, they're called area grants, but my grants that I've got now and

I've had in the past are not undergraduate research institution type grants. They really are just regular research grants.

TS: I guess why I was wondering, were the students really helpful or was this something that really took a lot of your time to get them involved?

PR: One of the problems when you have students—especially undergraduates—is that they may only be with you for a semester or two. You spend a lot of time training them, [which] is something that you have to give. [You] realize that you're going to retrain a lot. I've had some students that were absolutely fantastic that made major contributions. I have two of them still working for me now. They're working full-time on the grant, after having graduated. And others just did their projects, wrote up their results; it kind of varies.

TS: But this was something you were really committed to in terms of undergraduate people.

PR: Yes, University of New Orleans did it for me, so I should do it for other people. So that's what I did.

TS: Well, you won the Distinguished Teaching Award in '87, which is right at the end of your first grant, I guess.

PR: Yes.

TS: How important do you think your research with students was in winning the Distinguished Teaching Award?

PR: I'm sure it was a factor because you don't ever know what the deliberations were; I mean, you had to be nominated by students, but I'm sure it was a factor.

TS: I guess, overcome your natural modesty and talk about [it]. What techniques worked well for you as a teacher? What made you successful in the classroom?

PR: Nothing special really. Chemistry is basically taught [in] lecture format. I never, ever, ever whizzed through material; I've always tried to look at all the things, you know, the chapters. Let's say that we were supposed to cover and try to figure out what the most essential thing in each chapter [is]. I basically would leave out things that were superfluous, that would take up a lot of time, so that, when I spent my time in lecture, when it was a really difficult concept, I could just slow down, and spend time on it. I basically aimed the class at the middle, not the really smart kids, but the middle kids. I figured if I could keep the middle kids up with me, then I would be successful at teaching that group. Because you always have some that are, they don't come, there are always some like that. Obviously, I'm not aiming the class at that. I've always done it that way, and I think on my teaching evaluations, people always say that the lectures are very organized. I think kids feel secure when it's a pretty organized way that the class is being presented.

TS: When you use the term "kids," are the chemistry majors, are the students that take the chemistry classes, more the traditional students than the older students?

PR: No, we always have had a mix. It's shifting though; they're getting younger and younger.

TS: For everybody!

PR: Yes. But in the beginning, I always had [students] like Don Sams and Pat Macy that were my first undergraduates; they were both in their late 20's, early 30's. They had both come out of the military and then gone back to school. I've always had some students over the traditional age.

TS: How would you define a master teacher? What's it take to be a master teacher, do you think? What attributes?

PR: I have no idea! [laughter] I don't know. I think you probably have to have some charisma for the kids, you know, to make it interesting; organized; somebody who conveys to the students that you're actually interested in them learning—somebody who's available. Although, I have to say, I've never been a person that wanted to have their entire lecture section come visit them once a week in their office. I don't want to do that.

TS: Well, you're not going to get any research done.

PR: Nothing will get done. But I think, you know, being available when somebody really needed to talk; that's all I've ever really done.

TS: Have you become a kind of teacher of teachers along the way? Did anybody ever ask you for advice on how to teach?

PR: On how to teach?

TS: Have you been a mentor to anybody?

PR: Yes, I have with junior faculty that has been in the department. I had just finished a grant that I had gotten from the Dreyfus Foundation called the Scholar Fellow Grant. The purpose of that was to hire a post-doctoral student who would work in your research project, but also would be teaching in the department. My role was to mentor that person, both the research and teaching. The student just finished in January actually; her name is Rajnish Singh. I spent a lot of time with her because she was my responsibility, solely my responsibility. The first semester, she had a classroom of seventy nursing students, and my department chair, I thought, "Gosh, you just threw it to her. That's a big classroom to put a person who's never taught before." But she did fine. She's got a faculty position at Southern Tech.

TS: Good. I know we've got a lot more technology [in the classroom], and we were talking about it earlier with regard to research, but has it changed the way that you have taught in any way over the years?

PR: Yes. When I lecture, I really don't do anything special; I just talk. I write just about everything. I haven't done a lot of special changes to my lectures, per se, but I was able to get the department a modeling lab from the National Science Foundation. I wrote a grant, and so what I have done is incorporated that into my lecture section so they actually have times when they go to the modeling lab, instead of to the lecture hall. The purpose of that is they actually can build molecules, and look at their structures. That is something that, in 1979, I didn't really have the ability to do with them. They've had exercises. They've done term papers, all kinds of stuff with that.

TS: Have you gone to PowerPoint and those kinds of things?

PR: I do PowerPoint when I present talks at meetings, but I never do PowerPoint for lecture. It's really funny. I teach physical chemistry, and physical chemistry is very mathematical. I don't know how to do it, except a lot of it has to do with developing equations. The students have to learn how to do that. I feel like I have to pattern for them how you go about, how you approach the problem, and how you go through every step.

TS: So you still need that board up there.

PR: Yes, I need a board. I don't want a pre-canned lecture because I want to be thinking about each step while I'm teaching it, so I've never used PowerPoint.

TS: Well, I haven't either.

PR: Okay. [laughter]

TS: It seems to me that it can take away from the flexibility and the creativity in the classroom. Sometimes, my class is going to revolve around who asks the first question in there, that day. I haven't made use of PowerPoint in the classroom, or anywhere else for that matter. Well, sometimes, when I go out and make speeches in the community, I have photographs on PowerPoint, and that kind of thing. Although, I haven't figured out yet how it's superior to a slide projector.

PR: That's true.

TS: At any rate, I just wondered what your take was on technology. Let me ask you about the administration. When you started getting these grants, it kind of sounds like you certainly got a lot of support from off-campus. You did an awful lot of work on your own in the evenings and on the weekends; did you have administrative support for what you were doing? Did they care whether you were getting grants or not?

PR: Yes and no. Dr. [Herb] Davis, who was the dean, was not particularly thrilled, but I got a lot of support from my department chair Frank Walker. I got a lot of support above the dean so it was kind of a mixed bag.

TS: Why was he not thrilled?

PR: He thought it wasn't an appropriate activity for this institution.

TS: That it was taking away from something else that he thought you should be doing?

PR: I think he just didn't want to see us move in that direction. He didn't want to see research creeping into the institution; he wanted to keep it just teaching. And what Frank used to talk to him about it, but what he needed to realize, is that I had undergraduates working with me, doing the research, so it was really teaching. He tolerated it being there, but if I ever needed anything special, any change in a policy or whatever, I really had to go straight to Dr. [Edwin A.] Rugg or . . .

TS: Rugg being the Vice President for Academic Affairs.

PR: Right, or to [William E.] Bill Durrett.

TS: Bill Durrett?

PR: Yes, he was a real character.

TS: Why Bill Durrett?

PR: Bill Durrett was the [Comptroller]. So if I had budget problems, or whatever, or I needed them to let me buy something a certain way, or whatever, Bill Durrett was the person.

TS: And so he was very accommodating?

PR: Very helpful. It's always been that way here. Sometimes, my direct supervisors have not been so thrilled, but I've lucked out with other people on campus in higher positions actually helping me.

TS: I always liked Bill. [chuckle]

PR: Yes. He's a real character.

TS: I'm trying to get back into our mindset on this campus. In the mid-80s, of course, Dr. [Betty L.] Siegel was here by this time and Dr. Rugg. In the mid-'80s, our focus was very much on teaching and service. I know you did a lot of service here.

PR: I did. In the beginning, I decided that since Dr. Davis was real keen on it, I didn't want to give him any reason to say, "This is what will happen; people won't do service. People

won't do a good job teaching." I made sure that I have always done a good job teaching—but I made sure that I kept up my service work, so that he would never be able to say this is what will happen if I let research blossom here. I was very busy trying to keep it all going.

TS: Has there been a change in the climate with regard to support for teaching and scholarship over the years?

PR: It's the biggest problem at this university, I think, because I'm an anomaly. The research that I wanted to do required little space and little money to do it. So that's why I've been able to keep it going. To really have research being done in the sciences, there's lab space requirements, equipment requirements, supply requirements. It's expensive; science is expensive. Kennesaw still is not at the point where it can offer research start up funds so that faculty can really get into experimental science. It's still really not very possible here to do that. There's been a shift in emphasis in promotion and tenure toward scholarship since I've been here. In the beginning, there were very little scholarship expectations on people, and of course, now in my department, promotion and tenure guidelines say that to be promoted to associate professor, a person has to have published one paper. So that's a big change from what it used to be. Unfortunately, one paper is not very much research output. People say, "Well, just get a grant, and then you can bring in money, and . . ." Well, the grants follow your expertise; you have to have the expertise first. I'm on the grant review panels all the time for NIH. One of the things that reviewers look at is your research output. Basically, they look at your vita, and they look for research publications. Well, if you only publish a paper once every five years, you're not very competitive. Even in the AREA [Academic Research Enhancement Award] program at NIH, which is for undergraduate institutions, they are still expecting to see maybe a publication a year. So we're still not at the stage where our faculty is competitive for most research grants. That's a real problem.

TS: How do you get to that stage? We're going to have more than 18,000 [students] in the fall.

PR: I know. Unfortunately, in the sciences it's going to take money. It would have to start with some kind of endowment, I would think. The state's not going to be able to do it. An endowment which would have start-up funds for new faculty, that's one thing; but the other thing has to be that the expectations for teaching have to be reduced, and that's another problem right here. In my department, the faculty teaching loads are heavier than they were when I started, and it was really a totally teaching institution. They're actually higher now. Until they can shift that idea, and reduce teaching loads to allow people to do research—you know, if you're teaching and you have 240 students that you're managing, you can't do much else.

TS: When you say the teaching loads are heavier now, you're really talking about the number of students in the classroom have gone from. I think you said you had 50 when you started.

PR: A double section would be 50, a single section 25, when I started. Right now, chemistry is running lecture sections with single sections of 80 people in a section. I have a reduced teaching load because my grant pays part of my salary, so I'm not really getting overwhelmed. That's why I can still get research done. But the faculty in my department, there's just no way.

TS: So it's kind of a vicious cycle that you're describing. Until you do the research, you can't get the grants; until you get the grants, you're not going to get the reduced teaching load; unless there's somebody out in the community [that] wants to give 10 million dollars to the chemistry department.

PR: Right, exactly. Other institutions have done it. They've gotten endowments to make the shift, but I can't see how it's ever going to be possible here, unless something like that happens.

TS: We've got an Office of Advancement. They're raising money in the community, but you're saying there's no real focus on raising money for scholarship.

PR: Right. It just takes money. It's the investment that the institution makes. In the long run, it'll pay off tremendously because when people start bringing the money in, the institution benefits tremendously every time somebody gets a grant. But unfortunately, you're going to have to put the money up first before you reap the benefits.

TS: Right. Was Jackie Givens [Jacqueline L. Givens, Director, Office of Sponsored Programs] even here when you started getting your grants?

PR: She was not; [she came in 1985, shortly after the application was submitted for the first grant]. She's helped tremendously. She and I have talked many, many, many, many times, about this situation I'm describing to you, because it's a frustration for them, because it can't. They located all these grant programs that people can apply for, but people need to be able to be competitive to be able to get the grants. I think we're competitive for grants in the science education, and the people in my department have gotten quite a few. But for research grants, we're just really not competitive.

TS: You were talking about the increasing focus on research; how would you describe, in terms of expectations of the job, what you have to do to get tenured and promoted around here? How that's changed since you started here?

PR: This institution has always been good in that it didn't keep people who couldn't teach. I've seen many people over the years rotate out of here because they just were not doing too good a job of teaching. I think it's done a beautiful job of keeping people who can teach. But you know, in the beginning, I would say people got promoted here mostly based on service.

TS: You had to be a good teacher, and your second area would be service.

PR: So scholarship was very low in priority. When I first came here, a lot of people were working on Ph.D.s. I think a lot of the scholarship that you would see was basically people completing their Ph.D. theses. That's what I saw.

TS: Which is really academic achievement, not scholarship, as we define it now.

PR: Exactly. So now we are seeing scholarly activities on campus. There are high points in each department, people who really have a lot of output. In our department, the person really who had more research output than I did is Daniel J. Williams. Dan was publishing with students, has been publishing with students for years, as well. Dan and I were usually the two in our department who had publications.

TS: And yet the focus is becoming more and more on scholarship?

PR: I think that the shift is in that direction, but I think there's going to be a limit to it for the sciences until there are some accommodations made.

TS: So it's got to create a lot of anxiety among young faculty when they're hearing one thing from the administration, and the reality is something else.

PR: It's very different, yes. I don't know what will happen.

TS: Has the definition of service changed any over time, like more toward professional service?

PR: Yes, I think at least in our tenure and promotion guidelines, there is more weight given to service outside the institution. I think, in the beginning, the major thing was service within the institution.

TS: How many committees you served on?

PR: Yes.

TS: Now, I notice that you've got a long list of professional organizations that you've been officers in, and so on. That's certainly professional service that we really ought to be rewarding.

PR: Well, some of the service that I've done recently has been outside the institution. The kind of service that I've done is serving on grant review panels. When someone submits a grant, [NIH] assigns it to a particular review committee, and that committee is staffed by people with expertise in the area of the proposal. I've been on one of those review committees, and, right now, I'm serving a three-year term. I've served a total of probably ten or twelve years on committees like this. You learn a lot about how people look at things, about how they evaluate, and all that. It is a lot of work to be on a Study Section (review committee). I'm not sure that the institution appreciates how much work it actually is because, in June, I had eleven applications assigned to me. It takes me—even

after all the years I've had experience with writing reviews and stuff—it takes me a minimum of one day per application. I mean, from eight o'clock in the morning, until probably ten o'clock at night, to do one. That's eleven days I had to cut out of my schedule to do those reviews, and that's a lot of service.

TS: Well, it sounds like you work all the time, and that's the way anybody manages to do scholarship on this campus.

PR: Exactly.

TS: I don't know exactly how to word this, but I'm wondering, until we get administrators who have actually done this kind of thing on a large scale and have won a lot of grants and have done crackerjack papers and books and so on, how can they possibly know?

PR: I think that's true. That is part of the problem that people would know from graduate school, how research is done, and all that. I think sometimes people don't really realize how much time it takes to get things done, to get papers written.

TS: In terms of intellectual climate—let's get away from the administrators—do you feel supported by your fellow faculty members in the sciences? And more than support, is there anything that really nourishes you in your own scholarship from what you encounter on campus?

PR: From here? On campus, it's been more of me giving than me receiving I would say. I got a minority supplement one summer, and Al [M.] Panu worked with me. I've done more mentoring I'd say, than getting much. When I first started, I got a lot of emotional support from a few faculty [members]. Bowman [O.] Davis in biology and Frank Walker in chemistry [were] real emotional supports. Over the years I have had Dr. [Leon L.] Combs, who's the department chair now, give me a lot of emotional support to keep going. Most of my intellectual interactions have been with other people that are in the field that I'm in—people not on campus.

TS: Right. Have you had support over the years to go to professional meetings and that sort of thing?

PR: Yes, always. My grant has got travel funds in it, but the department has always been very ready to give me money to go if I needed to go. My way gets paid because I get invited to give seminars that are paid. But for professional meetings, I've gotten departmental support for that, for sure. Actually, the first grant I ever got on campus paid for my complete summer in New York.

TS: And that was a faculty development grant?

PR: That was a faculty development grant.

TS: Yes, I got one of those little faculty development grants when I started putting together my book, *Cornerstones of Georgia History*. I was on that committee years later, and I was telling them how wonderful it was that I got that one release in the summer. They said, "Well, we don't give them for that kind of research any more." [laughter]. I think it's kind of like what you were saying: the classes being smaller in the earlier days, that is almost like there was more support for research back then, than there is today.

PR: Yes. And I also think what's going on around here, right now, is the state budget also. There's a lot of pressure to let the class sizes grow because there's not enough money to hire more faculty to teach, so you can't split into two sections. I think the faculty's paying for it; I really do.

TS: Well, fortunately, in history, we've kept the class sizes about the same as what they always were. Although they've got these double sections that go up to eighty, faculty are credited with teaching two classes. I've never taught a double section. I think we've kept our class sizes down, but an incredible number of the general education classes are being taught by part-time faculty, which is nice, in terms of full-time faculty being free to do other things, but not so nice for the students.

PR: Yes, I agree. Chemistry does not have as many people for general education that are taking chemistry, except maybe the nursing students. They have to take chemistry. But biology on the other hand, of course, has huge enrollments. They've had lots of part-time. We also have part-time. Over the years that we've been looking at retention of majors and stuff, [we've] figured out that it really helped if one of our full-time faculty was actually teaching those entering chemistry classes, rather than the part-time.

TS: Yes. Have you seen any change in the students other than getting younger over-time, over the years?

PR: Younger, more sophisticated, more capable, I would say, over time.

TS: I've been asking everybody why they stayed at Kennesaw, and we might as well say for the tape that this is your last semester at Kennesaw. Why don't you tell us a little bit about where you're going, and why you're going. I think I calculated that you've maybe brought in something close to three million dollars in grants, or maybe more than three million.

PR: I think it's about three, yes.

TS: I'm sure you've had offers to go other places over the years. Maybe, I could phrase it in the context of what has kept you here for twenty-five years, and why, now, are you going to go elsewhere?

PR: Why did I finally move? Well, what kept me here was that it was a place that would accommodate that research project. That research project is like my child, and so as long as the procedures and the policies on campus were conducive to letting me run the

research project here, I had no reason to leave. I own a house here; I've lived here for twenty-five years. There's no reason for me to go. But, unfortunately, I think it's gotten pretty hostile for the research project to be run here, and so under those circumstances, I needed to find somewhere where it wouldn't be hostile.

TS: And when you say hostile, it was really over the budget?

PR: Yes. Well, over the past year, decisions were made that impacted my project a lot: decisions about space, secretarial help, and about indirect costs.

TS: The project has paid for secretaries?

PR: When I first started this, probably in about 1987 or so, I was paying for a part-time secretary, and then that cost was put into the department budget. I actually had a secretary for a long time in the department budget that was put there for my project, but federal grants will not pay for secretarial help. That's something the institution has to do. So basically the institution was paying for me to have a secretary. There's indirect costs on federal grants that go to the institution, and the money I was bringing in indirects . . .

TS: You mean to pay the light bill and such as that?

PR: Right. Any costs that the institution incurs to support the project. I was bringing in enough money in indirects to cover the cost of that secretary and more. I had secretarial help, and that basically has been taken from me this year. And then the indirects . . .

TS: You don't have a secretary at all?

PR: Well, she's now 90 percent working for the department, and 10 percent working for me. That's one thing that changed this year; the other is that I was also being given some money back to buy equipment and supplies. This year the decision was made that that would be taken away from me, as well. I was able to keep it this year by fighting, but I'm not interested in continuing the fight.

TS: Right. So we talked about some of this off the tape. So like when you get a $500,000 grant, the institution typically takes [a percentage] for these indirect costs?

PR: The way that it works is that the institution gets their indirect costs; recovery rate is 50 percent of salaries and wages. So the grant also has supplies in it, and I actually have sub-contracts in there for people to do synthesis and pharmacology.

TS: So you write all this into the grant, knowing that they're going to take.

PR: I think my grants have been generating about between $50,000 and $60,000 in indirect costs a year.

TS: For the institution?

PR: For the institution.

TS: And then they decided to take more.

PR: Yes.

TS: And that's where you lose your secretary.

PR: Without ever talking to me, no warning, just . . .

TS: So the situation here got untenable.

PR: Hostile.

TS: Hostile. Then tell us about where you're going to go to and why you're going there.

PR: I'm going to the University of North Carolina, Greensboro. They actually recruited me. They are also a predominantly undergraduate institution in chemistry. The institution has Ph.D.s in lots of things, but only a master's degree in chemistry, right now. They made the decision about five years ago that they wanted to shift from a primary teaching focus to a research focus so they could support graduate projects. Their chancellor made a commitment of start-up funds for faculty. They've recruited five junior faculty over the past couple of years, with $100,000 to $150,000 start-up packages for each junior faculty member, and teaching loads reduced to one course a semester, which is what you need to do, if you're going to do this. But then, they decided that their senior faculty—most of them had been at UNCG for twenty-five years, and really had done mostly teaching, not research. They needed some senior faculty, they felt, that had research experience to mentor the junior faculty, who will have these high research expectations on them.

TS: So they needed to recruit somebody who had done a lot of research.

PR: Right. So they hired me, and they hired another faculty member, another senior level faculty position this year. Next year, they'll hire one more.

TS: And the grants that you've won, you can take with you to Greensboro?

PR: Yes, they can be transferred. In fact, Kennesaw has already filled out all the paper work to relinquish the grants, and I'm in the process this week of doing all the paperwork for UNCG to assume the grant awards.

TS: So Kennesaw has lost out.

PR: Yes. I hate leaving.

TS: Well, everybody is going to miss you around here.

PR: Thank you.

TS: Why don't you say a little bit about the Distinguished Scholar Award in 1997. You also won an award from the Board of Regents in 2000, Distinguished Professor for Undergraduate Research. Do you want to say a little bit about that, how that came about?

PR: Yes, it was a new award that the Board of Regents started, and it was meant to recognize people who primarily involve undergraduates in their research. They gave three actually: they gave one for the research institutions, one for our level institutions, and one for the two-year institutions. I think that was the first year they did it, and they're continuing doing that every year.

TS: Great. You've got a list of papers that's a mile long that you've done over the years, and a lot of them have been done with students. Any with other faculty members here?

PR: Yes, there are a few there. Al Panu, in chemistry, is a co-author on a couple. Most of the papers that I have are multiple co-author papers because we do the modeling and the drug design, but we also have the drugs synthesized and tested. A lot of my papers have got the people who we work with at Research Triangle Institute on there as co-authors. [There's] also the pharmacology people who test for us. I learned from Dr. Weinstein that [if] you [are] just hypothesizing that something will be good, it is not worth it. You need to find out whether you're right or not.

TS: Right. Well, what would you say are the major, if you can summarize it in layman's English, findings from your research? What have we discovered that we didn't know before because of the research that you've been doing?

PR: Because it's something we've done? I think that we have contributed sort of a three-dimensional model for how these things bind to the receptors. The models have gotten good enough that I'm starting to get drug companies coming to me. Right now, I'm negotiating with Bristol-Myers Squibb. They want one of my models. And what they told me is that it was clear from the papers that we published that the models had really good predictive value, and that for them to develop such models would take them years. It does—it took me years. They would rather pay to license the one that we know already is really good, you know. So that I've contributed, I think. Right now, we're trying to figure out just what the drug does when it gets to the site, and how it gets to the site. We've got research running right now, I think, that will be very interesting on a fundamental science level. We think these drugs approach from lipid, which is unusual, that is, from the cell membrane, instead of coming from outside the cell. We're collaborating with people who make this [a] three-pronged approach to prove that that's the way they come in. If we can actually do that, then I would call it a basic science contribution to the field.

TS: Fantastic. Well, I appreciate you taking the time today because I know you were very busy trying to wind things up.

PR: I am.

TS: I know you were in Italy to do a paper a month ago?

PR: At an International Cannabanoid Research Society meeting. I only got to see Pompeii one day; that's it, nothing else. I spent the entire time at the meeting, and then I had to go home.

TS: Yes. Well, I really appreciate you coming in and talking to me.

PR: Thanks for asking me. I think it's a great project.

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