

INTERVIEWER: This is the 150th Celebration Interview with professor Gene Brown. I'm going to begin by asking about Pioneer, Missouri.

BROWN: My grandmother lived in Pioneer, Missouri. I was born in Pioneer, Missouri, but we lived in Cassville, Missouri, which is a little town about 1,000 population, until I was nine years old. Then Pioneer was just little-- it consisted of a grocery store and that's about it. My mother's parents lived in Pioneer.

INTERVIEWER: So tell me a little bit about your family.

BROWN: My family. Well, I had one brother. My mother and father, neither one went to high school. That was in southwest Missouri, in the Ozark Mountains actually. Hardly anyone ever went to high school around there because mainly they lived in the country and there were no buses or anything like that. So they would have to walk to get to school.

They had these little country schools up to the eighth grade. So neither of my parents went to high school. In fact, I was the first person in my whole family who ever went to high school.

INTERVIEWER: You didn't stop there.

BROWN: I didn't stop there, that's right.

INTERVIEWER: What did your parents do?

BROWN: My father, in Cassville, Missouri, he and another fellow opened a grocery store. After a few years it was clear that, this was during the depression, it was clear that the two of them couldn't make a living. There wasn't enough business for both of them. So in 1935 my father sold out to his partner and we moved to Idaho. That was where my grandmother had moved to. My mother wanted to be close to her.

So we moved to Idaho when I was nine years old and we settled in a little farming village in Idaho. Population about 200, I guess. I finished the eighth grade, up to through the eighth grade and high school there. There were 18 in my high school graduating class. I was the only person in the class who went to college.

INTERVIEWER: How did that come about? How is it that you wound up going to college?

BROWN: I always wanted to have an education. Neither of my parents gave me much-- they didn't know what to do. In fact, the teachers at that little high school I attended, it was during the war, and they weren't very good teachers. In fact I'll tell you that the math teacher was a boxing coach and he didn't know any math. He sent me to the board every day to show the other students in the class-- I was in the class, mind you --show the other students in the class how to do the problems. The principal taught the chemistry course and he didn't know any chemistry. He'd never had a chemistry course. So he used to leave me in charge of the chemistry class as well. I was supposed to be taking the class, mind you. So I got some experience in teaching while I was in high school. Fortunately, my fellow students in the class never held it against me. In fact, at class reunions they used to say, we learned more from you in high school than anyone else.

INTERVIEWER: So out in Idaho, how did you wind up at MIT?

BROWN:

You know, I have to pinch myself every once in awhile to realize how I ended up at MIT with my rather humble background. Keep in mind, this was during the war and I graduated from high school when I was 17. I didn't want to be drafted into the infantry when I turned 18, so I signed up for the Army Air Corps for training to be an officer in the Army Air Corps. Either a pilot, or a navigator, or a bombardier. But I was 17 and they didn't call people up until I was 18, of course.

So I had one year. I went to a small Liberal Arts college in Idaho, in Caldwell, Idaho, that first year. There I met a person who became my lifelong friend. He was from a town just 10 miles away from where I grew up, but we didn't know each other until we got to college. Then after that one year in college I went into the Army Air Corps.

By that time they didn't need any more officers, so what they did was ask me what I was interested in and I said chemistry. So guess what? They put me into chemical warfare operation, and at the age of 18 I was lecturing before 500 people at a time on how to protect themselves against chemical warfare activities. That's when I realized how nice it was to have a captive audience. So I sort of whetted my teaching interest while I was in the Army Air Corps.

When I got out I had the GI Bill, fortunately, because my parents by this time-- my parents were divorced when I was 15. They didn't have any money, neither one of them. My mother moved out to California, and my father stayed in Idaho. But I had the GI Bill, so I went to a cow college in Colorado, Colorado A&M. I went there because my friend, who I told you about, wanted to be a veterinarian. They had a good veterinarian school there, so he thought if he went there as an undergraduate he would have a better chance of getting into vet school. That was true, he did get into vet school.

So I thought well, I don't know where to go. I had nobody to give me any advice about that, so I'll just go with you. So I went there with him and I majored in chemistry. It was a pretty lousy chemistry department, in fact. But I majored in chemistry and I had enough on the GI Bill to get me through, to get a Bachelor's degree. But in my senior year, first term, I signed up for a course in biochemistry that was given in the chemistry department because that was the only one that fitted it into my schedule, and I needed one more chemistry course to graduate.

Halfway through the term the professor called me into his office. I thought, what's going on here? I thought I was doing pretty well in this course! The first thing he asked was did you ever think of going to graduate school? He said, you have a real knack for this subject. I said, I can't go to graduate school. I was thinking about it at that time, about taking some education courses in the second term so I could teach in high school. I said, I can't go to graduate school because my GI Bill was running out and I have no money.

He said, well if you're good enough, and I think you are, you can get a fellowship to go to graduate school. I didn't know what he was talking about. I said, what is that? What do you mean? He said, well they'll give you money, take care of you, to go to graduate school. Whatever you need. I said, I can't believe anyone would do that. What do I have to do?

He said, well the two best biochemistry departments in the country right now are Cornell and Wisconsin, the University of Wisconsin. He said, you write away to both of those biochemistry departments in those two institutions and ask for a form to fill out. Tell them you want to attend, that you want to be a PhD student in their departments. Tell them that you can't come unless you have a fellowship.

Actually, I had done very well at Colorado A&M. In fact, I graduated with only one B on my record. The rest of them were all A's. That B was in German. I didn't understand that because I did very well on all the tests and everything, so I went to see the lady who was teaching the course afterwards. I said, I don't understand why I got a B! She said, that's because you speak German with a Leipzig accent. I said well, that's not too surprising because my first year German course that I took in that one year I had in Idaho was from Leipzig. But that's the reason I got the B.

At any rate, I sent away and got the forms for Wisconsin and Cornell. I got the two of them back about the same time. The one from Cornell, they wanted all sorts of information that I didn't have readily available. The Wisconsin application was easy to fill out so I sent it back immediately. I was still trying to get all the information together for the Cornell application when I got my acceptance from Wisconsin with a fellowship. I didn't even bother to send the Cornell application back, I just decided to go to the University of Wisconsin.

INTERVIEWER: So when you got there, that must have been a pretty different kind of experience from your undergrad.

BROWN: Absolutely, I'll tell you. I realized immediately when I got there-- keep in mind that I graduated from my Bachelor's degree at Colorado A&M. The chemistry department was not all that great. I realized immediately that the entering class there at the University of Wisconsin, my class coming in with me, all had much better educations than I had in chemistry and biology. I'd never had any biology, in fact. So I was a little bit concerned about that.

I was immediately assigned a faculty supervisor when I got to Wisconsin, and after about three months I went in to see him, and I said, you know I'm not sure that I'm up to it here. Because these other students here had a much better education than I. He talked me in to staying. You know, there are two people who changed my life. The one in Colorado A&M, who sent me off to graduate school, and Esmond Snell at the University of Wisconsin, who was my PhD supervisor, who taught me how to be a scientist.

I got my PhD in three and a half years when it was taking four to five years, five years primarily for most of the kids. I can tell you there's no substitution for motivation and willingness to work hard.

INTERVIEWER: How did he teach you to be a scientist?

BROWN: By being a model. I always looked up to him. He took me under his wing and just helped me in every respect whenever I needed it. Several years later, after I had been here at MIT-- keep in mind that he had had many, many graduate students --he sent me a letter and he said I now believe that you have been my best student.

INTERVIEWER: Wow. How nice. So when you finished your graduate study at Wisconsin, how did you get to MIT?

BROWN: OK, that's interesting, too, because I got my degree in three and a half years. I had several offers to go to companies, but I didn't want that. I really wanted to go to a teaching institution. So Esmond said, well if you want to stick around for another year I'll pay you as a postdoc, pay you a salary as a postdoctoral person. You can finish off some work that you haven't quite finished yet. So I took him up on that. During that year he got a letter from Jack Buchanan here at MIT, who had just become the head of the Division of Biochemistry in the Department of Biology, and was involved in hiring faculty members to come into the Division of Biochemistry. He knew Esmond Snell, so he got in touch with Esmond and said, do you have a young PhD that you think might be interested in coming to MIT as a faculty member? Esmond said, I certainly do. So he sent my name in, and Jack Buchanan had me up here to give a talk.

After I gave my seminar on the research that I had been doing as a PhD candidate, he took me into his office and started talking as if I was coming to MIT. I said, well wait a minute, are you offering me the job? He said, oh yes, I thought you new that. I said, no I didn't know that. But at the time I had met the woman who became my wife.

I tell you, Professor Snell left Wisconsin and went to University of Texas when I was halfway through my PhD work. So I went to Texas with him and finished off my work, but went back to Madison, Wisconsin and defended my thesis. So my degree is from Wisconsin even though I spent the last year and a half to two years, I guess, at the University of Texas. While I was there, while I was a postdoc, in fact, while working as a postdoc I met a young woman who was a faculty member teaching theory of music at the University of Texas. We hit it off immediately. On our second date we decided to get married. We waited six months just to make sure that we weren't making a mistake.

So when Jack Buchanan offered me this job, I said well you know I'm engaged to a woman. I said, I can't give you the answer until I talk it over with her. I didn't want to give him the notion that I was too anxious. So I went back to the University of Texas and of course she thought that was great. So we got married in June, June 15, in fact. That's Flag Day. I keep telling her that's when I waved the white flag. We got married in June and I came here in July and I became a faculty member. I became an instructor here, first of all, for two years, and then I became an assistant professor and went up to associate professor, tenured full professor, and so forth.

INTERVIEWER: So, from your background in these small towns and then Madison, which is not that large--

BROWN: It's a great city.

INTERVIEWER: Can you remember what your first impressions were of MIT? Of the students, and the environment, and faculty?

BROWN: Well my first impression about the faculty here at MIT was that I was in over my head again, because I realized that they were very good. For the most part they were very good. So I realized that I'd have to work hard. I also realized that the students were really very good students. Which is great, because I wanted to be a teacher and my first impression was that I was going to have to work hard in order to stay here. So that's what I did.

INTERVIEWER: Let's talk a little bit about your interest in biochemistry and biophysics. You mentioned that you had a teacher who said you're pretty good at this. But, from your vantage point, what is it that captured your interest in this area?

BROWN: Well, I've always felt that biochemistry is equal parts biology and chemistry. I was very, very interested in how living systems carried out chemical reactions. I thought that was really very interesting. I decided I would devote my career to try to understand what I could about how living systems carried out chemical reactions in order to survive. There are enzymes around that help out.

So I trained myself in enzymology. My PhD thesis was more of a chemical thesis. I had to isolate and identify a compound that was very important in biological systems. So I had to teach myself when I got to MIT. I had to teach myself enzymology. Fortunately, I was able to do that. I got graduate students almost immediately, even while I was an instructor, I had graduate students working, PhD candidates working in my laboratory.

INTERVIEWER: How did you go about teaching yourself this field?

BROWN: Well, by watching other people and going to seminars. Finding out what other people were doing. Doing a lot of reading of the literature and textbooks, essentially just teaching myself. I really didn't have a mentor at MIT to teach me anything. It was all sort of self-taught. But I used to go to seminars, of course, so that helped a lot. About what other people were doing and realize that maybe I could do some of those things, too.

INTERVIEWER: Can you walk me through the research that you've done over the years?

BROWN: Well, my PhD thesis was the isolation and identification of a compound that happened to be a growth factor for a microorganism. Esmond Snell was interested in bacterial nutrition, and he was my PhD supervisor. There was this microorganism called lactobacillus bulgaricus that required an unknown substance. He gave me the job of isolating and identifying what that substance was. So I learned bacteriology at that time because I had to work with bacteria, and with lactobacillus bulgaricus and other bacteria as well. So my job was to isolate and identify this compound, which I was able to do. That's what got me the job here.

It turned out that this compound was a very important compound. It was a part of a co-enzyme, it's called co-enzyme A, which had been identified earlier. The person who identified that compound, Fritz Lipmann got the Nobel Prize for that work. They realized that co-enzyme A contained pantothenic acid, which is a B vitamin, but it also had another component that they didn't know what it was. It turned out that the other component was the substance that I isolated and identified.

When I arrived at MIT, Fritz Lipmann at that time already had the Nobel Prize and he was working to try to identify this substance as well, and I beat him out. I felt very good about that because he had the Nobel Prize, and I was just a lousy graduate student. But he was very nice. The first thing, after I got to MIT, he got in touch with me and invited me over to his laboratory at Harvard Medical School to give a seminar on my work to his research group. That was very nice of him.

The substance that I isolated and identified, we called it pantethine. After I'd identified this compound, we called it just LBF in the lab because we didn't know what it was. LBF means lactobacillus bulgaricus factor. So one Sunday morning, Esmond and I-- I went in every day, Saturdays and Sundays, and he was there every day, too -- one Sunday morning he said, we've got to get together and decide what we're going to call this compound. So we got together and we thought about it.

Since it's a derivative of pantothenic acid and it contained a sulfur component and also an extra amine, I said, well why don't we call it pantethine? He said, that's remarkable, let's do that. So, I isolated that compound and identified it, and named it, in fact, as a graduate student. That's what got me the job at MIT of course.

INTERVIEWER: That's a good way to come in.

BROWN: Yes, very nice.

INTERVIEWER: So, can you sort of summarize the research you've done over the years?

BROWN: Yes, there were a whole variety of co-enzymes containing vitamins at that time that people didn't know how they were made. How co-enzymes were made enzymatically in microorganisms. So I decided that I would work on the enzymatic synthesis of some of the B vitamins that people didn't know how they were made in bacteria. That was what I was doing as a graduate student, so I decided to expand my work into the biosynthesis of thiamin, for example, and the biosynthesis of folic acid, the biosynthesis of riboflavin. Nobody knew how these things were made enzymatically in bacteria and other microorganisms. So I decided that I would try to find out what I could about all of those things.

So I had a number of graduate students and postdocs who we're working on these projects over several years, in fact. Folic acid, thiamin, riboflavin, coenzyme A, a whole host of these compounds that we didn't know much about. I made contributions in those areas, and that's what got me tenured at MIT.

INTERVIEWER: When you think about all of the research thank you've done, are there any contributions that you're most proud of?

BROWN: I'm the most proud, I think, of the material and the work that we did. When I say we I mean I, and the graduate students and the postdocs in my lab, on the bio synthesis of Folic acid and related compounds. Folic acid is a pteridine. There are naturally occurring pteridine pigments found in the eyes of drosophila, for example, fruit flies. So we did a lot of work on the bio synthesis of folic acid and pteridines that were found in the eyes of fruit flies as well. A lot of the work that I did in my later years had to do with that. That's what I think I'm known for most nationally and internationally.

INTERVIEWER: When you think of what you do, do you consider yourself primarily a researcher, or a scientist, or a teacher?

BROWN: Initially I always thought of myself about equal parts teacher and researcher. Then, of course, I gave up my research program when I was dean of science. I tried to keep the research part going when I was dean, but the office of the dean was in another building from where my laboratories were. Being dean was almost a full time job. I really felt that I wasn't doing justice to my graduate students and postdocs who were in the laboratory at the time. So finally when my graduate students all got their PhDs I didn't take on anymore graduate students. I just decided to give up my research laboratory.

When I resigned as dean and went back to the department, you know I was 65 years old by that time, and I just decided that it was too much of a job to try to revive my research program. So I just told the department head at that time-- incidentally, I continued to teach the whole time I was dean --I just told the department head at the time, I said, look I'll do whatever you want me to do in the department to help out.

So I continued to teach and then I took on a number of other activities to help out in the department. Being UROP coordinator and all sorts of other activities that nobody else had the time to do or wanted to do.

INTERVIEWER: OK, I have questions about those, too. Teaching has been so important in your career, starting in high school, what is it you think makes for good teaching at the university level?

BROWN: Be willing to make the effort. Being willing to be well prepared when you go in to give a lecture. I lecture without notes, incidentally, and students really are very impressed with that, being willing to take questions from students. I always say if you have a question, don't be afraid to ask me. Just in general being well prepared and presenting the material in a logical fashion so that students-- I know when students are getting it. I can tell on their faces when they're getting it and when they're not getting it. When they're not getting it, I go back again and do it again to make sure they're getting it.

INTERVIEWER: You've been teaching this Intro to Biochemistry course--

BROWN: For 56 years now.

INTERVIEWER: 56 years. Can you talk about how the content has changed over that time?

BROWN: Biochemistry during those early years when I was at MIT, biochemistry was flourishing at that time. There were lots of things we didn't know at that time about the enzymatic reactions involved in metabolism. So it's changed quite a bit since then. Every year I try to incorporate new things into the course where I think it's necessary in order to get a complete picture.

INTERVIEWER: So how, in the 56 years, how have you kept up with the field? What's required to keep up?

BROWN: Well, just the literature. Keeping up in the literature and the text books. Good text books. I mean, I know what a good text book is supposed to be. I've turned down many opportunities to write text books, because it's not anything I really want to do. It's too much trouble. It's just a matter of keeping up with what's going on.

INTERVIEWER: So in any given year, if you read through whatever the new literature is--

BROWN: Well, you know, in general biochemistry I don't really have to do that anymore because most of the general biochemistry that you give in a general biochemistry course has been there for a few years now. So I don't really have to add-- in fact, I wouldn't have time to add anything new in metabolism. I do the metabolic biochemistry. I teach half of the course and I have a colleague who does the other half which involves RNA and DNA and importance of RNA and DNA and how they function. He does that, and I do metabolism. So I, fortunately, don't have to keep up with DNA and RNA.

INTERVIEWER: So in that period of time, and not just that class but in the other classes that you've taught, what kinds of changes have you seen in the student body?

BROWN: Oh boy. When I arrived here in the biology department we were graduating about 10 students per year with Bachelor's degrees in biology. We had one female student at that time. You seldom saw a female student at MIT at that time. Back in the 1970s and in the 1980s, we were graduating about 300 students per year with Bachelor's degrees in biology. More recently, in the last 10 years or so, more than half of the biology majors are females.

INTERVIEWER: Have you seen a change in the quality of the students over the years?

BROWN: I think the quality has improved. I can't believe how smart these kids are. I told the advanced course that I teach, last year, last fall, I had 22 in that class. They tend to be the really top notch students. They're taking the class because they want to take it, not because they must take it. I told them, I said you know you're all smarter than I am. They said, oh no. I said, oh yes, it's true. You're more intelligent than I am. But I said, keep one thing in mind-- I'm wiser than you are now. So you have to listen to me. But these kids are so smart. They're very intelligent. Almost without exception our graduates go off to either medical school or graduate school.

INTERVIEWER: Do you feel like you were responsible for launching biochemistry as a field?

BROWN: Well, I helped to launch it as a field with my research work in vitamins and co-enzymes. Because there wasn't a whole lot known at that time, when I decided to get into that field. So in that respect I helped.

INTERVIEWER: Why don't we-- tell me a little bit after the UROP program, and your involvement in that.

BROWN: Well, I've been the UROP coordinator for several years in the department. All that means, really, is that I sign off on applications that come in and make sure that the students have a clear picture of what they want to do. This is a process that allows undergraduate students to get experience in research, which I think is very important. How do kids know whether they want to go into research unless they experience doing research?

I keep telling students, I say, be sure when you pick a career, be sure it's a career that you like. Because there's nothing worse than getting into a career and then realizing that you don't like what you're doing. I say, once you pick a career that you like, then be willing to make the effort. There's no substitute for motivation and hard work.

INTERVIEWER: What do you think that experience of doing research adds to the undergraduate experience?

BROWN: I think it's remarkable. Because if they find that they don't like doing a UROP project-- I'm getting a cramp in my leg--

INTERVIEWER: Do you want to walk around?

BROWN: No, it's OK. If they find that they don't like doing research then they should not try to go to graduate school. So it gives them sort of a way of determining whether or not they really want to have a career in research. I think that's terribly important.

INTERVIEWER: Can you tell me how the Gene Brown prize came about?

BROWN: Well there are two of them, actually. I became a MacVicar Fellow in 1991. Every year when you're a MacVicar Fellow MIT gives you money every year to use in any way you want to use it. I never used it, it just kept accumulating. Over a 10 year period it had accumulated to about \$50,000. So I decided just to set up a prize for undergraduates who had been working as teaching assistants in courses, either lecture courses or lab courses, and had done outstanding work. The prize is \$1,000 that goes to an undergraduate who has done remarkably well as a teaching assistant. Then my former graduate students and the company Merck got together a few years ago and decided to fund a Gene Brown Merck teaching assistant prize for graduate students who were doing outstanding work as a teaching assistant.

INTERVIEWER: That's a nice legacy.

BROWN: It's sort of a reward, as far as I'm concerned, for being a teacher all these years.

INTERVIEWER: I want to talk about your experience in administration. Can you tell me the story of how you first got involved?

BROWN: Well, in the 19-- let's see, when was it now? Irwin Sizer decided to give up, Irwin Sizer was the chairman of the department. Frank Schmidt was the chairman when I arrived here, but two years later he stepped down and became Institute Professor, and Irwin Sizer became the chairman, the head of the department. They don't call them chairman, head of the department.

When he decided to give it up-- by that time Boris Magasanik had come over from Harvard to become a faculty member here at MIT. He was a microbiologist, and a geneticist, and also a biochemist. He was in all three of those fields, and he was offered to be the new head of the department. But he said, I will only do it if Gene Brown becomes the associate head. So I said, yes, I would do the job. That was in 1967, I guess it was.

So he and I worked together at that time. He as department head and I was associate department head. For 10 years, in fact, and I took on more and more of the activities over the 10 year period. Then when Boris decided to step down as department head it was offered to me. So I decided to do it. I became department head in 1977 and kept my research going at the time.

When I made the decision to be associate head at the department, that was when I was in my early 40s. I had noted some of my colleagues had run out of gas in their 40s. In fact, some of them just gave up and resigned from the department and went out and did other things. I also noted that some of the faculty members in the department in their early to late 40s, their research programs just sort of petered out.

So I thought in my early 40s, well if that happens to me-- if my research begins to peter out --maybe I can be of use in other respects. So that was one of the things that helped me decide to take on an administrative position at that time. Well, it turned out that my research didn't dribble out like I thought it might. I was able to maintain a very active research laboratory while I was associate head, and even when I was head of the department. I think altogether I had 30 students who got their PhDs under my supervision at MIT. As well as a number of postdocs who worked in my laboratory and went off to faculty positions in other places.

Most of my former graduate students took up faculty positions in other institutions after they left MIT. Many of them had taken postdoc assignments before they took over faculty positions. That's one of the reasons I decided to get into administration, because I thought I could be of use in case my research program didn't go as well as I wanted it to go.

INTERVIEWER: Was there an appeal to administration? What was it you liked about it?

BROWN: Well, I liked being useful and helping people, faculty members and students, to get along. I was able to do that pretty effectively, in fact, as department head. I made it a point to know all of the graduate students in the department when I was department head. I'd go down to a room they had in the basement in the old building, building 56, where they all hung out. I used to go down there and meet with them. They used to call me Uncle Gene because I knew all of them, and was interested in what they were doing and what they should be doing when they left MIT. So that was another thing that I thought I could help out with.

I also wanted to help out junior faculty members when I was department head, as much as I could. I was able to do that, both when I was associate head and when I was head of the department. Generally speaking, just being useful, being helpful, doing what was necessary to help faculty members and students along.

INTERVIEWER: Do you have a couple of examples of how, as a department head, you wind up helping junior faculty or students?

BROWN: Well I was always readily available. My door was always open. When young faculty members had a problem they wanted to discuss with me, they knew all they had to do was come in and see me. I can't think of anything particularly-- I used to help them when they were worried about tenure. I used to help them out, give them pep talks, not to worry. Just do what's necessary and keep things going. I think particularly, the junior faculty members really interacted with me quite well.

INTERVIEWER: Sounds like it's mostly the role of a therapist.

BROWN: More or less.

INTERVIEWER: So, after you were department chair, how did you continue in Administration?

BROWN: Well, when I was head of the department for a few years, I kept getting offers from other places, other institutions, to be department head at various other places. In fact, to be dean at other places. Because I had a national reputation, even an international reputation by that time with my research work and so forth. John Deutsch was dean of science at that time, toward the end of my career as department head, and I knew John was getting ready to probably give up being dean, and because I think he was being offered to be provost.

I was interviewing at various other places for being deans at other institutions. One of them was actually at Purdue University. I told John that I had interviewed at other places, University of Oklahoma, University of Florida, and I don't know where all. Several places. University of Missouri, they tried their darndest to get me at University of Missouri because they thought they had an in there because I was born in Missouri.

But I thought, well you know, why should I leave what I consider the best place in the country? But I went out to interview at Purdue and I told John at the time. I said, well I'm going out to interview at Purdue. He said, you're not going to take that job at Purdue. And I said, I don't know, it depends.

So I went out there and it went very well in fact. The provost there was an MIT graduate and they really tried to talk me into coming to Purdue. I met all of the department heads, and they really made a huge effort. So I came back and told John that I had a very good offer from Purdue. He said, you're not going to Purdue. I said, I don't know, I might. So a couple of days later he called me over to his office and he said, I'm offering you to be the new dean here at MIT.

So I decided, again why should I leave MIT when it's probably the best place in the country? So I decided take on that position as dean.

INTERVIEWER: With the exception of Purdue, did you think of leaving MIT at any point? Or, the other way to ask that is why have you stayed here for so long?

BROWN: Well, before I was associate head of the department, the University of Florida wanted me to come down there to become head of the biochemistry department. So I went down there and interviewed, but unfortunately it was on a day when it was terribly hot and humid. I just decided that I couldn't be happy in a place like that. University of Missouri tried their darndest to get me to come out and be head of the biochemistry department there. In fact, I went out there a couple of times. The first time just to give a seminar, and the second time to interview. They wanted me to come out to interview to be department head. I turned them down. Then they sent a committee of three people here to try to talk me into it again, but I had just decided by that time-- why go anywhere else when I was already at what I thought was the best place in the country? So I just turned down all of those offers. University of Oklahoma, and I was approached by several other places without going out to interview and I'd just say no.

INTERVIEWER: Not to mention swapping Boston for Columbia, Missouri.

BROWN: Yes.

INTERVIEWER: I wanted to ask about publications. You've got tons of publications over the years. Is that something that you've enjoyed doing, or is it something that's required?

BROWN: Well, first of all, it's required. I mean research is not finished until it's communicated, really. So you have to do it. I have to say, I never really enjoyed writing, the writing of papers. But it's something that had to be done. So, yes, I have more than 100 publications, actually. Which is not a whole lot for MIT, but it's enough. I wrote several reviews. I'd go in to review books, chapters for books, for reviews. So it's something that I have to say I really didn't enjoy doing, but it's something that you have to do.

INTERVIEWER: I've always assumed that a scientist, once the research is over it's kind of anticlimactic to have to write it up--

BROWN: Yes

INTERVIEWER: --because you want to go on to the next thing.

BROWN: I never minded giving oral presentations. But writing it up was always a chore.

INTERVIEWER: In the various professional memberships over the years, can you talk a little about the value of being part of those, if there is any?

BROWN: I don't know. I used to go to the yearly meetings of the National Biochemistry Society. That was nice, because you met your friends and gave talks on your research at those yearly meetings, usually. So it was kind of nice to go to those meetings at the Biochemistry Society. But more recently, particularly when I became dean, I didn't go to those meetings. I haven't gone recently, either. But I guess I much prefer just to be right here at MIT and be doing the job here.

INTERVIEWER: So when you think about the Institute, what is it that you think makes MIT unique?

BROWN: We want to make sure that we have the best faculty possible here. I hope that that's still true. I believe that we give students, particularly graduate students, really an outstanding education in how to do research. In all of the Schools. Engineering, science, and all of the other Schools as well. Economics, the business school, they all have national reputations and international reputations. And they should. They're all internationally known. That's one of the things that I think makes MIT unique. The other thing I would like to believe, I'm not sure it's true but I'd like to believe that we are top notch in teaching as well. I'm not sure that I should say this, but I believe that we do a much better job of teaching undergraduates than Harvard does.

INTERVIEWER: I don't think that there's any question about that. We could have a whole discussion about that. Are there ways in which you think being at MIT has helped you in your research?

BROWN: Oh yes. Primarily because of the students that we're able to attract here. Both the undergraduate students and the graduate students, and the postdocs. Because MIT has an outstanding reputation in research and so students want to apply here to get a PhD. Graduate students, we get top notch graduate students here and send our graduate students off when they get their PhDs to other institutions. Outstanding institutions. Also the postdocs that we're able to attract here are outstanding. The junior faculty members are outstanding.

INTERVIEWER: I imagine that's true of even the ones that don't get tenure.

BROWN: That's true. They go off to other places. Other places that are very good places, in fact.

INTERVIEWER: When you think about-- since you've been here for such a long time, when you think about your legacy, what do you want your legacy to be?

BROWN: Primarily I want my legacy to be that I was terribly interested in undergraduate teaching. I was the first person in the biology department to give examinations that were open book and open note examinations. Because I believed that students should not prepare for examinations by memorizing this and memorizing that. The examinations ought to test student's ability to think and to solve problems. I've always said to students, if you don't remember the formula for the amino acid leucine, you can look it up in five seconds in a textbook or wherever. But you have to know the importance of this amino acid.

INTERVIEWER: I think you were ahead of your time.

BROWN: But practically everybody in the department now gives these kinds of examinations. I was the first person to do it, and the only person for quite a long time.

INTERVIEWER: I bet you got a lot of comments.

BROWN: Yes, the students enjoyed it very much.

INTERVIEWER: I imagine that the faculty didn't understand why you were doing it.

BROWN: They didn't immediately, but most of them finally realized the advantage of doing it that way.

INTERVIEWER: When you think about the School of Science at MIT, what do you think are its chief strengths?

BROWN: Well, I think the quality of the faculty members is very high in the School of Science. The quality of graduate students is very high. We have to keep it that way in order to maintain our reputation.

INTERVIEWER: There's a report this morning from some organization in London that names MIT as number three internationally.

BROWN: I'd like to think we're number one.

INTERVIEWER: I always wondered why you weren't number one--

BROWN: I know they've listed Harvard as number one. But you know, I believe that Harvard has maintained its reputation because of its name.

INTERVIEWER: I happen to agree with that; and its money.

BROWN: Its money, absolutely. Its name and its money.

INTERVIEWER: How about the strengths of the biology department? What would you say those are?

BROWN: I think the strength of the biology department is the faculty that we have in the department now. Particularly the young faculty members who are really top notch that are coming up. Of course, in the biology department we have a whole variety of different biological areas that are being looked at.

INTERVIEWER: One of the things that's changed in the years that you've been here is the shift from the sort of silo department designation. You know, chemistry is separate from physics, is separate from biology. MIT has been pretty forward thinking in terms of a multi disciplinary approach, and breaking down those boundaries. Is that something that you have some thoughts on?

BROWN: Sure. I will tell you something that, back in the late 1940s and in the early 1950s, before I came here-- each department has a Visiting Committee that meets every year. The Visiting Committee in the biology department told the department head in the late 1940s, 1950 perhaps-- I can't remember exactly --that biochemistry at that time, in the biological area, was the coming science. The Visiting Committee said, you ought to appoint some biochemists in the department.

At that time, the department was not very rich in biochemistry. There were only two biochemists in the department, and they weren't really top notch. So they told the department head that he should do that. Frank Schmidt was the department head at that time. Then they met a couple of years later and asked, what progress have you made? He responded by saying, well I've tried to get a couple of faculty members, biochemists, to come but they've said no.

The dean at that time, he was a physicist in fact, he made the suggestion, he said, well why don't you have a Division of Biochemistry at MIT with appointments in the chemistry and biology department? Call it the Division of Biochemistry, where appointments could be made in either chemistry or biology. So the Division of Biochemistry would overlap these two departments. So that was what happened. They decided to do that. So they hired Jack Buchanan, who at that time was a faculty member at the University of Pennsylvania, to come here to be head of the Division of Biochemistry.

I want to go back for a minute. The chemistry department wasn't interested in doing this. The head of the chemistry department just flat out said, no we don't want any biochemists in this department. So the dean of science, a physicist, decided that, well why don't you do it just in the biology department then? Have a Division of Biochemistry within the Department of Biology? So that's what happened. Then Jack Buchanan was hired to be head of the Division of Biochemistry within the biology department.

Now, he was not head of the biology department, but he was head of the Division of Biochemistry within the department. His first appointment was me. Then he maintained his appointment as division head. We made several other appointments in the department and the division both over a period of years. Until finally, when Boris became department head in 1967, it was decided to do away with the Division of Biochemistry. The feeling was that there was no need for it anymore. Now Jack Buchanan wasn't very pleased about that, because he was still head of the division, but that's what happened in fact.

The new dean of science at that time came around and interviewed every faculty member in the department about whether or not we ought to maintain a Division of Biochemistry. It was clear that people thought that there was no need to do that anymore. So the Division of Biochemistry was no more after that. I would have to say, though, that we operated within the department just like other department faculty members. We just called ourselves the Division of Biochemistry within the department. We just felt, finally, there's no need for that.

INTERVIEWER: Chemistry never came around?

BROWN: Recently. The first faculty member that they appointed in the chemistry department was somebody that I recommended to them when I was associate head in the Department of Biology. Chris Walsh had just got his degree and done his postdoc assignment and was ready to be a faculty member somewhere. I knew him very well and I knew that he was on the market. We didn't have a position available at that time. So I went around and talked to the head of the chemistry department.

The head of the chemistry department at that time had been making gestures that they were maybe interested in biochemistry. So I got in touch with the head of the chemistry department. I said, there's this young fellow, Chris Walsh, on the market and I think you ought to consider him. So they called him in for an interview and he got appointed. So he was the first biochemist in the chemistry department. Now they have three or four or more real biochemists in the chemistry department. More than that, five or six, I guess. Some of them are jointly appointed in biology department as well. Barbara Imperiali and Joanne Stubbe and Drennan. I've forgotten her first name. They're all jointly appointed in biology and chemistry. Primarily women.

INTERVIEWER: So MIT's is at the forefront of this multi disciplinary approach to science, can you talk a little bit about how collaboration plays into that? Because it seems to me that there's a lot of collaboration among faculties across disciplines.

BROWN: Well, of course there are many individual disciplines within the biology area now. You know, immunology, and molecular biology, neurobiology. I mean all of these disciplines are in the biological area. We have people in the department and all of these areas who interact with one another. It's very important, I think, to have those interactions, not just to be isolated in one department. So we have seminars in all those areas, and research work going on in all those areas. Faculty members with joint appointments.

The new cancer center building would be a good example of that. I mean, we're going to have engineers over there as well as biologists, and molecular biologists, biochemists, and immunologists, and geneticists, and all of those areas can focus on cancer biology. In fact, it's important to have all those areas focusing on cancer biology.

INTERVIEWER: When you kind of look to the future, do you have any thoughts on whether there will still be these sort of traditional disciplines 50 years from now or 100 years from now?

BROWN: Gee, I don't know. It's awfully hard to know what's going to happen. I mean, who would have thought 50 years ago the we would be in the position we're in now in the biological area? I mean, I never thought it. So I don't know what 50 years from now? Who knows what we'll be doing? It really depends on what we find out in the next 50 years.

INTERVIEWER: So I'd like to talk about the period of time when you were dean of science.

BROWN: I thought you might.

INTERVIEWER: You know, I'm not sure I've ever asked this question, but tell me what a dean is responsible for.

BROWN: The dean is responsible for making sure that all the departments in the school are doing their jobs properly. That is to say the teaching, and research, and making the faculty appointments. The dean has to approve all of the faculty appointments that are made. All the promotion cases that come up, the dean has to approve of the promotion cases. So it's quite an important job.

INTERVIEWER: Can you tell me some stories from the period of time you were dean? Either things that were particularly challenging, or things that you particularly enjoyed.

BROWN: Well, first of all I'll tell you a couple of things that I didn't like. One of the activities that a dean has to deal with are sexual harassment issues. Where one person makes charges against another person, and the other person says, no that didn't happen. There's no third party evidence. It's a very, very difficult issue. I had several of those to deal with between faculty members and students. Where a student would bring charges against a faculty member and there'd be no third party evidence. Those are very difficult things to deal with. I didn't enjoy it, but I tried to do my best to get those things straightened out. Fortunately I was able to get all of them straightened out without too much trouble. But it wasn't easy.

INTERVIEWER: How do you resolve something like that?

BROWN: You get all the information together that you can, and then make the decision about what you think may have happened, then make the decision and try to settle it so that everybody is more or less satisfied. Of course that never happens completely.

INTERVIEWER: Yes, that's a tall order.

BROWN: Yes.

INTERVIEWER: I'm just curious, did you find over the years-- I don't know how many instances like that you dealt with --did you find mostly that you felt the charges were not true?

BROWN: I found that mostly I thought they were true.

INTERVIEWER: That's what I would expect.

BROWN: The other things I had to deal with was to make sure-- I was very interested in making sure that teaching was being done properly in all the departments in the School of Science. That was the one main thing. I would meet with the faculty members in each department and let them know that teaching was very important. If people came up for tenure and their teaching was not up to par, then that would be held against them. I let them know that research wasn't all that was important at MIT, but teaching was, if anything, more important than research.

INTERVIEWER: I wouldn't imagine that that's a message that all deans give.

BROWN: Well, it's probably not. It was a message that most department heads didn't like to hear, either, I might tell you. But I was able to turn around the teaching in some of the departments that wasn't being done very well. I called in all of the untenured young faculty members within the department and let them know that when the time came for them to get tenure they had better make sure that they had been teaching well. They took it seriously, as well as their research. I said, you're not going to get tenure merely on research. But on teaching as well as research. I think I was able to turn around a lot of the departments that actually hadn't been up to par.

INTERVIEWER: Are there other instances of things that you didn't like to do? Or that you did like to do?

BROWN: Oh yeah. You've heard of the Baltimore affair?

INTERVIEWER: Yes.

BROWN: Well I was dean at that time. It all started when this young postdoc came over to see me and said that she thought that something was wrong with the publication that Imanishi-Kari and Baltimore had made. I said well, are you charging them with merely making a mistake, or you're charging them with something more serious? She said, no I think it's just maybe a mistake. I said, well I could deal with that easily. I said I will just appoint a senior faculty member to read the paper and see what he says. We did that, but she didn't give up though. She brought charges saying that they had knowingly published something that was wrong. It got all the way down to Congress. I had to testify before a Congressional Committee. She also testified and just lied, lied about that meeting that I'd had with her. She just testified and said that I told her that I couldn't do anything for her, couldn't do anything about it. I couldn't believe that. I just couldn't believe that she would say that. You know, it's no fun to testify before a Congressional Committee, believe me. John Deutsch and I were both there because he was provost at that time. So the whole thing finally got settled and it turned out that of course-- well Imanishi-Kari was not going to get tenure, we all knew that anyway. So she resigned from MIT and went over to Tufts Medical School and was a faculty member at Tufts within a year or two after all this came up.

That was really a very difficult situation that came up, and we finally got it settled properly.

INTERVIEWER: Turned out to be much ado about not much.

BROWN: That's right. There's been a whole book written on the Baltimore affair, in fact.

INTERVIEWER: Yes, I interviewed him, too.

BROWN: You interviewed Baltimore?

INTERVIEWER: Yes, I did. Are there things you feel like you were able to do as dean that you really couldn't do in any other way? Clearly the emphasis on teaching would be one.

BROWN: Emphasis on teaching, absolutely, and also making sure that tenure decisions were made properly. That is to say that people coming up for tenure in a department, that they were qualified both as a teacher and in research.

INTERVIEWER: I took a look at the 2000 report about adopting communication requirements--

BROWN: Oh yes.

INTERVIEWER: --for undergraduate students. Can you tell me about that?

BROWN: Yes, well it was very clear to me that MIT was not doing a very good job in getting students prepared to write papers or to give talks. Undergraduate students. In fact we were getting feedback from companies, where students went off to companies, saying that they didn't know how to write and that they didn't know how to communicate properly. I knew that too, in fact. It was clear to me after hearing students give talks and so forth. So I pushed for a communication requirement after I became dean.

I co-chaired the committee that got the communications requirement established at MIT. We worked hard on that committee. We went around and talked to every department head and every dean at MIT about what they should be doing to prepare students to be prepared in writing, writing up the work that they were doing, and in giving talks. Both written and oral communication. We decided to try to establish a communications requirement. So we wrote it up and had a faculty meeting and got it approved. We had a committee of about seven or eight people, I guess it was, and I co-chaired that committee. That's one of the things I'm very proud of that I did at MIT, is to get the communications requirement established.

I'm still not absolutely clear that they're prepared properly, particularly the undergraduate students. They talk too fast when they give a talk. Young kids, young students always talk too fast. They don't make eye contact and they tend to mumble when they talk. So we still need to do a lot, particularly in the oral communication, for the undergraduates. I think the written communication has been going much better, because each department now has a communications requirement in the department with somebody in the department to oversee the writing of the undergraduates. That's going much better, I think, than the part about oral communication. The oral communication still needs attention.

INTERVIEWER: I think it's getting worse.

BROWN: It's getting worse?

INTERVIEWER: I think it's getting worse because it's all texting and--

BROWN: Yeah, that's too bad.

INTERVIEWER: There's not a lot of interpersonal communication anymore. Anything else about dean of science that you want to talk about?

BROWN: Well of course I had the responsibility of having a budget for each department. So the dean has a budget assigned to him or her. Then you have to decide how that can be allocated to the various departments. That was always an issue that came up. So I had to be very careful that I manage the monetary part of being dean properly. Of course, department heads were never satisfied with the amount of money they had to run the department. They always wanted more.

I tried very hard when the need was there, when it wasn't just something usual or something unusual. When the need was there, I tried very hard to be helpful. The dean always has-- I don't know if that's still true, but when I was dean --we always had a little bit of money available for rainy days, for people you thought were really needy, or situations which really needed more money. So managing the money was always an issue to being dean.

INTERVIEWER: Not an easy way to become popular.

BROWN: That's true. Department heads are never satisfied with the amount of money that they have available. I never was satisfied when I was department head, either.

INTERVIEWER: Oh, I'm sure. So in your years at MIT, what kinds of changes have you seen in the faculty?

BROWN: The main thing is we have more female faculty members now. I just looked it up in the Department of Biology a couple of days ago. We have 18 female faculty members in the Department of Biology now. When I came here there were no female faculty members, and for several years after that no female faculty members in the department. I think Lisa Steiner was the first female faculty member in the Department of Biology. She came in before I was associate head. But then Mary Lou Pardue came after I was associate head of the department.

Since then we've made a lot of other female appointments in the Department of Biology. Likewise, the Department of Chemistry has several females now. In fact there's a female department head there for awhile. Brain and cog has several females now in the department, and so does the earth, atmospheric and planetary science department have a lot of females. There were no females when I was dean.

INTERVIEWER: Do you have thoughts about how the increase in diversity among the faculty has changed the faculty? Has it made a difference in any way? Or it's just other knowledgeable and intelligent people?

BROWN: Yeah, I'm not sure I would say there are any drastic changes. The females have to do what the males do. That is teach, supervise research, and write up and publish.

INTERVIEWER: Did you observe a lot of resistance to the hiring of more women?

BROWN: No, not really. In fact, most departments were ready and willing to do whatever they could do.

INTERVIEWER: We've talked about most of the questions that I have, and we've got about 10 minutes or so left. I'm wondering, what have we not talked about that you think is important? Your perspectives on MIT, or the changes that you've seen here? **BROWN:** As far as the changes are concerned, there are several things I think, changes that have happened in the 56 years I've been here that I think have been in the positive side. One is, of course, having a high female population of students and faculty members.

Also having what we just talked about, having joint appointments, people coming together. Chemists, and biologists, and physicists, biophysicists-- there are biophysics areas now --neurobiologists. I mean, having everybody here all at once interacting together is something that was unusual for a long time. Maybe even unusual in many other institutions still. But it's not unusual here at MIT now.

INTERVIEWER: What would you say is the chief benefit of the more collaborative, cross-disciplinary approach?

BROWN: Well you make more progress. You make more progress in understanding what life is all about.

INTERVIEWER: Can you talk anymore about that? How that happens, or why it happens?

BROWN: Well it happens because we know now that it's important to have input from all of these other areas. We should not isolate ourselves in one department and say, we're just going to concentrate here, we're not interested in anything else, just this one area.

The biological area is a good example of that. We need to have the input of chemists. We need to have the input of engineers. We need to have the input of neurobiologists and physicists and all of these areas. Because these are areas that are all coming together now and it's important to have people around here that are knowledgeable in all of these areas so that if you need information about something that you're not quite up to par with, you know you can get it from somebody else. Just go have a talk with somebody, or do a joint research project. It happens frequently now. It never happened before, when I first came here. Never happened. I mean, we never had engineers who were interested in biological areas at that time. We didn't have chemists that were interested in biological areas.

It's not true anymore. The engineers are making huge contributions to the biological area now. Some of the physicists, not all, but some of the physicists are making contributions, but the particular chemists are making contributions. The chemists that are jointly appointed in the biology department are making huge contributions. Also the brain and cognitive science department. You know, when I first came here it was all cognitive science. They were just interested in that and they have morphed into more molecular biology area over the years.

INTERVIEWER: Anything else?

BROWN: Well, all I can say is I'm just happy I made the right decisions about remaining at MIT. I think I did make the right decisions. I enjoy dealing with students. I still enjoy teaching. If I didn't enjoy teaching I wouldn't be doing it. I mean, I'm way past retirement age. I don't know when I'll retire, but who knows? I still enjoy teaching.

INTERVIEWER: You can retire when you feel like it.

BROWN: Yeah, anytime I want to. I lecture without notes. That really impresses students. It's the one thing that they can't understand. How do you do that? How do you lecture without notes? Because everybody else has notes. I say well, I've been doing it for long time. I should know it by now.

INTERVIEWER: Well, I think we're done.