

Interviews of the Margaret MacVicar Memorial AMITA Oral History Project, MC 356
Massachusetts Institute of Technology, Institute Archives and Special Collections

Barbara Gilchrest – class of 1967

Interviewed by Hannah Levy, class of 2017

May 8, 2017

Margaret MacVicar Memorial AMITA Oral History Project

Barbara Gilchrest (SB Mathematics, 1967) was interviewed by Hannah Levy (SB Materials Science and Engineering, 2017) in MIT's Zeisger Center on May 8, 2017. At the time of the interview, Dr. Gilchrest was Professor in Residence at Massachusetts General Hospital (MGH).

After MIT, Barbara Gilchrest attended Harvard Medical School (HMS). Dr. Gilchrest then worked at the Department of Dermatology and Division on Aging at HMS, where she developed a laboratory funded by the National Institute on Aging to study the aging process in skin. In addition, Dr. Gilchrest then served as Professor and Chair of Dermatology at the Boston University School of Medicine and in multiple leadership roles in national dermatologic organizations. She is the author of 400 articles, reviews, abstracts and textbook chapters. Dr. Gilchrest served on the National Advisory Council on Aging and the Board of Scientific Counselors of the National Cancer Institute; chaired the Medical Advisory Committee American Skin Association; was elected to the Institute of Medicine (now the National Academy of Medicine) of the National Academies of Sciences, Engineering, and Medicine; and served as Editor-in-Chief of the *Journal of Investigative Dermatology* (2012-2017).

LEVY: I want to ask you about your current role. It seems that you worked at BU [Boston University] in the past, and that you are at MGH now.

GILCHREST: Yes. I was at BU from 1985, when I was recruited as Chair of Dermatology. I stepped down in 2008, and then I stayed on, on a part-time basis, until 2014. Since then I've had my current position over at MGH. It's called Professor in Residence, and frankly it's a little bit of a loose position. The idea is to mentor people and look for opportunities to bring together the somewhat separate research and clinical activities – get people to interact a little bit more between the laboratory and the clinic.

LEVY: Great. In what ways do you do that?

GILCHREST: I just get to know people and what their interests are, and then introduce them to others with complementary interests. The MGH Department of Dermatology is very large; there's something on the order of 40 clinicians. You may not be familiar with the layout, but the MGH's main campus is just across the Longfellow Bridge. But then for dermatology, essentially all the laboratory-based research has been moved to the Charlestown Navy Yard--

LEVY: Oh, interesting.

GILCHREST: MGH has a long-term lease on some very nicely renovated old warehouse buildings, which are now gorgeous laboratories.

LEVY: A lot of great space.

GILCHREST: Yes. There isn't any space available on the main campus, so the people who do research are about a mile and a half away from the people who do clinical work. Some of them have never met their colleagues. They go to different talks. They work in different places. They have different interactive peer groups, which is really a shame, because one of the areas that I think is very important in medical research is having communication between people who are doing laboratory-based science and those doing clinical medicine. I guess ideally the physician-scientist does both to some degree. But that's increasingly difficult to carry off.

Didn't you say you were going into medicine?

LEVY: Yeah, I'm going to medical school next year.

GILCHREST: Where are you going to go?

LEVY: I'll be at Thomas Jefferson in Philadelphia. I'm from Philadelphia.

GILCHREST: They have an incredible Department of Dermatology, doing cutting-edge research, so I'll give you the name of the chairman there.

It's wonderful when somebody who has trained in medicine and has seen problems in the clinic can bring that background to a research program. But that's uncommon. In fact, the proportion of NIH-funded scientists who are practicing physicians is very small, very small, because it's just so hard to compete with Ph.D. scientists who characteristically are better versed in current research methodologies.

LEVY: How do you think one can incorporate both medical practice and research into a career most effectively?

GILCHREST: You have to really want to do it. I was very lucky. I have an M.D. degree, but not a Ph.D. degree. It was a long time ago when I started my laboratory. Actually, I did a year's post-doctoral work with an extraordinary scientist named Howard Green, who at the time was professor in biology here at MIT.

LEVY: I saw that.

GILCHREST: That was a very important year for me. It allowed me to get a better understanding than I certainly ever got as an MIT undergraduate of what laboratory-based medical research is like. In today's world, no way I could have gotten NIH funding with that amount of laboratory training. It was a little bit like the Wild West.

So I was very fortunate. I just started and really learned on the job, if you will. I worked with people who knew a little bit more than I did and just gradually learned more.

I imagine you envision possibly doing laboratory-based research.

LEVY: Yes, I've worked a lot with the Langer Lab [lab of Professor Robert Langer, David H. Koch Institute Professor] here on campus.

GILCHREST: Oh, I know Bob Langer. Everybody knows Bob Langer!

Yes, do it [medical research]. It's wonderful. It's very hard to do both clinical medicine, even a small part, and really develop a laboratory program – but I encourage you to do it. In the beginning, it's very hard to get funding, and it's very hard to find the time. But if you can kind of get it going, and put a team together... Of course, the future of probably all research, certainly biomedical research, is going to be teams. You'll have people who have in-depth expertise here, and somebody else will bring depth of expertise there, and are willing to--

LEVY: --integrate the different perspectives.

GILCHREST: Yes. Actually, at Jefferson, dermatology – which may not be of your interest – presents a great opportunity.

As I mentioned, my colleague Jouni Uitto [Chair of the Department of Dermatology and Cutaneous Biology at Jefferson Medical College, Thomas Jefferson University], is someone you should meet – he's really a very, very capable guy, very accomplished. He's put together a wonderful program that spans very basic research and clinical medicine. So it can be done. But you have to be very strict with yourself and keep looking at how you're dividing your time.

LEVY: Absolutely.

I've been in biomaterials and material science engineering here, so I have a lot of interest in regenerative medicine and I've seen applications to dermatology a lot. I've also seen applications for like orthopedic devices and drug delivery. But I'm really excited about those clinical applications.

GILCHREST: Well, it's the future. That's a field that just going to take a quantum leap in the next 10 years.

LEVY: That's my hope.

GILCHREST: Do you have any sense of what area of medicine you will pursue?

LEVY: I think orthopedic surgery.

GILCHREST: That's a particularly tough area. It's still one of the areas where women have a very small presence, still. Surgical practice is also difficult to confine to part-time at a level compatible with serious research.

LEVY: I hope to be a part of changing that.

GILCHREST: And it's also, I think, traditionally, at least based on my observation of the field-- You make your name in surgery by doing surgery, which is very time consuming. So again, it's very hard--

LEVY: Hard to integrate that those interests in the same way.

GILCHREST: --but you'll figure it out.

LEVY: Yeah, I'll figure it out. We all have to figure out the division of our time. You've had a lot more time than me to piece through it.

GILCHREST: Things change over time. What works at one point could be done in a more effective way in the future.

LEVY: I'd love to just ask you a little bit your MIT experience and then kind of zoom back out, because I am so interested in all of your applications in medicine right now. So I hope we can get to more of them.

GILCHREST: OK – I guess when I tell my MIT story.

First, I loved being in it MIT. I was sort of just high the whole time, so enjoying the experience. I was the first person in my family to go to college, so there wasn't any expectation of what college ought to be.

I had the advantage of growing up in Rye, New York, which is a very nice suburban community a little bit north of New York City, about an hour's train ride. I was friends with very sophisticated families, and I was able to get a very good public school education. But I really had no understanding of what it meant to have a career, because nobody I knew well had a career. At best, they had "jobs."

My father was a house painter, when he could get work. My mother did some babysitting, but was mostly at home. There was no idea of how to put an education together, or what you needed to do or how things marched forward. I didn't have the foggiest idea.

But I was fortunate: one of my friends' fathers was himself an engineer, and he very much wanted his daughter to go MIT. And she didn't want to go to MIT. So in order to lure her into considering going to MIT, he said, "You can bring a friend. We'll go visit the place, and bring a friend." So she brought me. And I just fell in love with the place.

On this college tour, which was my only college tour, I came to Boston with my friend, Susie, and her father. I visited MIT, Radcliffe and Wellesley. At MIT, the students I spoke to were just so excited by what they were studying, so excited

by what they could do with their education. They probably all changed their minds [about what they wanted to do with their education], but they really had an idea of getting out into the world and making a difference.

Then I went to Radcliffe, and the students didn't express the same feeling about how they might use their education. They were trying to understand themselves. It might have been just whomever I happened to talk to, but they were...

LEVY: Less practical.

GILCHREST: Much less practical. Much less interested in what they could make happen in the world. They were obviously very bright young ladies and were learning a lot. But their interest wasn't in using that knowledge to make a difference in the world, at least not at the time they were undergraduates.

And the Wellesley girls— It just happened to be a Friday night, and my major interview was with women who were ironing their dresses because they all had dates that night. So I was sitting there, and they were ironing and comparing their dates.

LEVY: A very different impression.

GILCHREST: A very different impression. And again, as we know, very capable women go to Wellesley, but what they were thinking about and talking about seemed just so different. It was very different.

I just fell in love with MIT, and I came here. And what I discovered was what I think everybody who comes to MIT discovers: In high school, I was a math whiz. But I got to MIT and I was in the bottom half of my class, because half the class got 800 on their math SATs. It was just humbling

LEVY: Times haven't changed!

GILCHREST: It was just, you know-- I couldn't believe that there's this whole world of people who were so bright and were looking forward to doing such amazing things with their lives.

And another thing: I guess your class is what 46% women, or maybe it's more?

LEVY: I think it's more. I think we've gotten to 49.

GILCHREST: We were just under 2%.

LEVY: Wow.

GILCHREST: So, very different. But the nice thing was, of course, that as a woman everybody knew who you were.

I think something that was a problem at the time when I was here was that MIT was sort of an anonymous environment for many students. There wasn't a lot of appreciation on the part of the administration that people needed to be nurtured a bit as individuals, as well as being fed a lot of information and challenged to think rigorously.

And so I think for many of the men, they were just another cog. I know that had an effect for a lot of students I knew. But that really wasn't the case for women. Everybody knew who you were, and that was actually very nice. I never had that anonymous feeling. I always felt like I was part of a family.

LEVY: What do you think were the advantages and disadvantages of being known that way?

GILCHREST: There were disadvantages, but those didn't particularly bother me at the time. So I enjoyed that very much. And then, just wonderful classes.

I majored in math, partly because, at least, when I first came, I thought I was hot stuff, mathematically. I learned that I wasn't, but it was a much more flexible major than most, and that may still be the case. I was able to take a lot of other courses. In particular, I was able to take biology courses. You know, it was the time when the DNA helix was still brand new, and it offered just an amazing, eye-opening understanding of the world.

Your professors were learning at the same time that you were about how the whole thing works, and parsing it. So that was extremely interesting.

I also took a lot of humanities courses, which I loved. And I took four years of Russian, which was one of my favorite courses. One of my professors – one of my very few women professors – was a woman who was a Russian and a professor of electrical engineering here at MIT. She taught Russian in addition, simply because she was Russian, and she was wonderful. We had tiny classes. After my freshman year, I think we had three people in the class. It was like private tutorials, so it was just wonderful. I enjoyed that very much. I felt like I got a very broad and excellent education here at MIT.

What were my impressions of MIT? There were many more amazing people in the world than I had hoped. And again, it reinforced my initial impression that you could learn enough here about who you were, how to manage things, what a career trajectory might be like – which again, for me, was critical, although I think I might have been somewhat unusual in not having the faintest idea about what you did with your life after you got an education. MIT was particularly helpful to me in that. There were examples everywhere around me.

LEVY: How did you understand the career trajectory differently after four years?

GILCHREST: You know, the people right in front of me, my professors, were passionate about what they were doing. They were teaching, but most of them were also doing research, which is the endless frontier. And they weren't just sloshing through the week to bring home a check. They were passionate about what they were doing, and there was no boundary. You could do what you wanted. You could go this way; you could go that way. How many fascinating questions there are!

I did get very interested in biology. One of my professors – somebody named Jerry Lettvin [cognitive scientist Jerome Lettvin, Professor of Electrical and Bioengineering and Communications Physiology] – was a big influence. I thought, you know, I was maybe very special because I had this relationship [with him], but it turns out he had that relationship with lots of his students! He was a great teacher.

LEVY: That's incredible, either way.

GILCHREST: He was teaching in electrical engineering and biology, but he was an M.D. by background. And so he said, "Have you ever considered medicine? You now have all these tools for understanding what goes wrong, and what might make it better." And it was he who suggested to me – it would never have occurred to me to go on my own – to volunteer at what was then the Boston City Hospital emergency room. I think probably you can't do it anymore, that you have to have more credentials these days.

LEVY: Not the same capacity, yes.

GILCHREST: But at the time, I'm hanging out in the emergency room and just see all the drama of medicine. It turns out that on a day-to-day basis, medicine isn't quite as dramatic as it is in the emergency room, but I was hooked.

To know that what you learn can so immediately impact people was terrific, and that appealed to me very much; also, the promise that biology would just keep unfolding. And it turned out to be absolutely true.

LEVY: So how do you relate your experiences in the ER to the MIT education you were getting at the same time?

GILCHREST: Well, I was reassured that understanding biology processes, which is where I was for most of the day, you know, my class work, could make a difference in the real world. If you understood hemodynamics, you could do this. If you understood wound healing, or what's required for wound healing, this would happen. Everybody around me in the emergency room was very busy doing important things.

I could see that having a body of knowledge had a very real and very immediate impact, but that even though people understood enough to save lives, to make a difference – a huge difference – in people's lives, that there was still a huge amount that wasn't known.

So what attracted me so much to medicine was this duality, the requirement to keep learning, because there were so many things that needed to be learned. And at the same time, to use what information was available to make a difference to people, one-on-one people interactions, which I thought was very exciting and which turned out to be incredibly rewarding.

Another thing that might be amusing for an oral history: I went to Harvard Medical School in town here. The first year, one of the first exams we had was anatomy, and everybody was studying like mad for their anatomy exam: they were memorizing the names of 207 bones. I said, "You have to be kidding. You're memorizing things? This is graduate school. You're kidding." And so I didn't do that. And guess what the exam was about? Naming all these bones!

I realized that the way one learns at MIT is understanding the process. How many exams do you have where it all comes down to whether you profoundly understand how to think about the problem, and the answer is zero or one, or something like that? Not, you know, how many things can you memorize, which is what a lot of my first year of medical school was like. And I was just shocked.

I hope medical school has moved on, and has a little bit more of the reasoning kind of learning. I'm sure it has. But Harvard Medical School has a pretty good reputation, and I was just shocked at how little reasoning they expected of their students and how much more just, "Learn it. Here it is. These 10 pages, you need to know everything on these 10 pages."

But, anyway, when I finally got into clinic, I just loved the contact with patients, and again the immediate recognition that things you knew helped people and things that you didn't know harmed people. And, that learning new things about a disease could have an enormous impact.

It's unlike high school, which was already very distant. In high school, if you're reasonably smart and work hard, you can kind of know everything you're supposed to know. Not possible in medicine. Not possible. I guess it depends how you view the world, but my heroes in medical school were the internists, because they were the 'thinking people,' supposedly, as opposed to the surgeons, who were the doers.

I actually had some wonderful experiences with my surgical rotations. I felt just a little bit more attuned with the internists. So I did my internship and residency in internal medicine.

And then I became aware of another career issue. This affects so many people going into medicine now, but particularly, probably, women. By the time I was in medical school, I was married. My husband had a job that was absolutely Boston-based. So, you know, he wasn't going to move to Kalamazoo.

LEVY: So you were limited to this area.

GILCHREST: Yeah, limited to this area. And by that time, I realized I just really loved the stimulation of being in an academic medical environment. I really enjoyed the patient contact, but if that was all I had, I would feel like I was missing a lot.

So I needed to stay in Boston, in an academic center. I finally began asking, "How does one shape a career?" I think I was being practical, probably for the first time.

And I said, "Well, what are the opportunities here?" So I looked around sort of within the broad sphere of internal medicine for areas that were relatively underdeveloped, and dermatology was one of those.

At the time – a it's a very interesting long history – dermatology was quite strong in Europe for a hundred years, even before that, and attracted some of the brightest minds. There was lots of work being done in dermatology in Europe. But until World War II, there was very little in the way of dermatology research – you know, creative thinking – in the United States.

And in Europe, I'm getting a little far afield, but because of the prejudice that long antedated World War II, Jewish physicians were sort of forced into dermatology and venereology, which is always lumped together in Europe and considered less prestigious than other specialties. And so a lot of the leading people in dermatology in Europe were Jewish. And before World War II, a very large number of them came over to the United States to escape the Nazis.

LEVY: That's very interesting. I've never thought about that trend that way.

GILCHREST: It affected many aspects of medicine and science, but I think it disproportionately affected dermatology. Suddenly the academic medical world woke up and said, "Well, you know, dermatology was not just "If it's wet, dry it; if it's dry, wet it." There are other ways to think about this." And so universities that had never had academic departments started creating them. The MGH, which is where I trained in dermatology, had one of the first two real American academic leaders in the whole field.

It was a perfect choice for me. Dermatology is a three-year residency, and in my second year, I had an opportunity to step out of the normal clinical rotations. I was the first photobiology fellow for the department. My faculty supervisors were just discovering how to use ultraviolet light for treatment of different diseases and what the mechanisms were.

LEVY: That's very exciting.

GILCHREST: It was very exciting. I was so fortunate. I spent this year doing clinical work. I still was taking care of patients who were either being treated with light or had problems that were caused by light; I was working on both sides. I pretty much had a free rein, so I was able to design and conduct all sorts of really interesting clinical studies. It was just a fantastic year.

When I finished my residency, I said, "I have to know more science than I know. I have to go back—"

LEVY: Is that what drew you back, for the research fellowship?

GILCHREST: Yeah, so I went back to MIT. I was introduced to Howard Green by a mutual acquaintance, and he was kind enough to take me into his lab. And at that time, he and one of his post-doctoral fellows had just figured out how to culture human keratinocytes (skin cells). That had been a barrier. Nobody could do that, and they'd been trying and trying for a long time. Dr. Green figured out what was needed to do that, to understand the growth requirements for these fastidious cells. So it just broke open a huge field. You know, the epidermis, composed mostly of keratinocytes, does so many things. And it's so integral to just about everything with skin.

LEVY: And for the beginning of synthetic development.

GILCHREST: Yes, yes. Dr. Green's work found immediate application in cultured epidermal grafts for burn victims and many other indications. And so in a year-- I should have stayed 10 years, but in a year I was able to learn at least how to culture cells and ask a few questions. And that allowed me to, again, way back when, in the '70s, to write an NIH grant and get it funded.

LEVY: Yeah!

GILCHREST: Wow, you know.

LEVY: So much easier.

GILCHREST: So a lot of serendipity goes into these things: who you've worked with, problems you've seen, how you've seen them handled. You will have a great step up having had experience in the Langer Lab--

LEVY: Absolutely.

GILCHREST: --which is a very forward thinking. I'm sure you've heard from Bob all of his horror stories about how people told him he couldn't do things.

LEVY: Yeah. And he just used it as fuel, but a lot of people stopped at that point.

GILCHREST: Yeah, so that's the trick. You can't stop. You have to keep bludgeoning ahead.

LEVY: From my MIT education, looking back, I've already seen that there is an MIT lens to viewing things and to problem solving – an engineering mindset, regardless of what field you're in. How have you seen that lens incorporate into medicine, and incorporate into dermatology and how have you been able to utilize it effectively?

GILCHREST: Well, I think you're absolutely right. There is a way of thinking and looking at problems that one absorbs during four years at MIT. And it's very valued in the world. The world outside knows that that's a good way to do things. Let me think about how to answer your question.

I guess something that people have told me over and over again – and I think it's a reflection of this problem-solving orientation that one acquires at MIT – is, "You get things done. You know what can be solved and what can't, and you go do it."

I think that's an approach that is learned from many people at MIT: "Here's something that is doable. It's doable. So go do it. And here's something that isn't yet ready. You know, the world isn't ready, or it's going to be a very long haul, so maybe work on something else that can be done." And that sense that it's important to get it done, it's important to have something concrete come out of your search for knowledge, and just caring about whether you get a problem solved or not.

I think those are values that become unconscious, but you carry them into what you do. And I think that marks a great many MIT graduates.

LEVY: Absolutely. In different fields, but having the confidence to carry out that task and having the driving force to want to, that's behind it.

What do you think is the most unique or important thing about an MIT education?

GILCHREST: Well, you just used the word confidence, and I think it's crucial. My freshman year we sat in Kresge Auditorium and one of the deans said, "Look to your right, look to your left. One of you won't be here in four years."

But being able to keep up with what is clearly a demanding environment instills confidence. It has to. And being exhausted and still getting it done, feeling that you can't get it done, and then you seeing you can get it done.

You're frequently pushed to your limit, and you do it. And that, you know, cumulatively, I think, is very helpful. And it's always the nature-nurture: To what degree do people, maybe particularly women, who choose to come to MIT have that within them, but perhaps it's not very well developed? And it matures

during the course of four years. I think it's probably true of all people who show up at MIT. If you're looking for a party school, you probably don't come here!

LEVY: You probably didn't choose correctly!

GILCHREST: Right. So it attracts a certain kind of person. But then, I think you see people around you doing amazing things with that skill set that you're acquiring. It's very inspiring.

LEVY: Yes. How would you describe your MIT colleagues at the time, and in what ways do you think they inspired you?

GILCHREST: I've been thinking about that. I've been getting reacquainted with my classmates as part of our 50th Reunion Committee work.

LEVY: Yeah. You've had a chance again.

GILCHREST: I certainly know people, many people, who are MIT graduates, but I've been encountering them not as MIT, finding one here, one there – they're everywhere. So, some MIT colleagues are just very bright, very creative, and have managed to succeed in ways that I wouldn't have anticipated anybody would succeed. Just to put together a big business ... to win a Nobel Prize. These are huge. In any MIT class, you're going to have a small number of people who achieve at that level. It's astounding.

Actually, most of my classmates I really didn't know very well as undergraduates. I was studying really hard a lot of the time and also worked 10-20 hours a week. But I've been interacting in the last few months to a surprising degree with my women classmates, and as I told you, we were a very small group.

LEVY: Yeah, the 2%.

GILCHREST: We were the first residents at McCormick Hall, which allowed the freshman class to be bigger than previously.

But we've actually developed a sort of an online, I don't know, sort of a chat room. You know, a 50th reunion makes you think about what's happened. How did all this happen? And what struck me in comments from these 20-plus women classmates, is that everybody feels that their MIT education made a huge difference for them professionally – that people took them seriously when they might not have been taken seriously otherwise. We're going way back now in history and I hope that you won't encounter things like this. But this whole gender inequity thing really affected a lot of women in my generation. Their MIT education mitigated against that.

I'm told that women just graduating today feel that the problem's all gone. And I think probably my classmates and I thought the problem was all gone when we graduated. But it isn't all gone, at least, it wasn't all gone for us over our careers. What I've heard over and over again from these classmates is that they saw women around them being sort of marginalized and ignored, and they were taken much more seriously.

LEVY: And do you think that's just because of an MIT education?

GILCHREST: I'm sure it's not just because they had an MIT degree. I think they needed to be taken seriously because they were the kind of person who could and did earn an MIT degree.

LEVY: That commanded respect?

GILCHREST: Yeah, but it's a combination. When employers or would-be employers first encounter you, they either pay attention or they don't. And I think having an MIT degree you get, at least initially, a point for that. And you're considered a bit more seriously.

LEVY: Absolutely. Did you experience any gender inequity on campus itself or was it more in your future career?

GILCHREST: No gender bias on campus. Subsequently, there were multiple instances, although I like to think I neutralized most.

You know, after 50 years of hardly communicating. I'd say the most common thing I've heard from my co-ed classmates is that they didn't feel gender bias here. Of course, there was a story here and there – you know, some put-down remark, whatever – but nothing that really, really bothered them. However, many of them felt that same-age women who they thought were very substantial people were being ignored a bit.

And in medicine, there's a whole literature – don't read it yet – about how, if you look at women getting to full professor, department chair, the various recognitions that medicine allows, i.e., in academic medicine – women are incredibly under-represented, and have been forever.

When there were 20% of physicians who were women, only 1% got to be professors. Now, at least, at the level of people graduating from medical school, it's 50% or so. But it's still a small percent of women who "make it." There is much debate about whether this is because women simply opt out!

Dermatology is the area that I know best. I think I was the first chair of dermatology who was a woman. And a lot of other firsts. The women just weren't there. What happened to them, you know? What happened to them?

There's a paper published, not about dermatology but in academic medicine generally, by a woman named Phyllis Carr, here in Boston. The title is, "A Ton of Feathers," and there's a long subtitle. But the point was that women are no longer told, as they were not so long ago, "You can't get an education, it will fry your brain. You women belong at home." You're not told that anymore. But there are so many little tiny things that happen over and over, just the little feathery things, but over and over and over until there are a ton of them.

LEVY: Yeah, until they build up to something larger.

GILCHREST: Yeah, it's just constantly being marginalized in subtle, subtle, subtle ways.

Back to the impact on me of being a student at MIT, I didn't see the world as the guys and the girls, I just saw us all as students together.

It was hard to have a female identity, as a future scientist or leader. There was no one to model on, really. One couldn't be feminine. I had a great social life, endless study dates. But just that wasn't your identity. It wasn't a group of professional women that you could identify with.

LEVY: Do you think you create an identity for yourself in any way?

GILCHREST: I'm sure I must have, but that was-- I think, generally speaking, women didn't identify as women at MIT. They identified as students at MIT.

LEVY: That's incredible. And then being the first woman department head or in other leadership roles in different points of your career, did you feel an added sense of responsibility for that?

GILCHREST: Well, I'll tell you, at mid-career I was so busy all the time. I didn't focus on this. It's been increasingly the case over the past 30 years, however, that I became painfully aware of my responsibility to mentor and support young women. You learn from difficulties, you know, and there are lessons that can be shared. It's a good thing. Many ambitious careers – and academic medicine is a pretty ambitious career track – you're really busy. You have to get in there to stay in the game. Nights and weekends. I had three kids and a lot of guilt for work undone and time away from my family. As I've reduced my level of activity, I've been invited a lot to talk about gender inequity in dermatology and medicine.

At the end of this month [May 2017] I stepped down as editor-in-chief of the major research publication in the field, the *Journal of Investigative Dermatology*. At our annual research meeting out in Portland, Oregon a week and a half ago, they threw a lovely party for me. They had put together this book in which the 100 or so people on the editorial board all wrote about our time together. It was so touching. So many people, especially women, saying, "You have been my role model." "You have been my mentor." "Seeing you do it, gives me courage." You

know, just all this kind of stuff, and it's really-- One does assume the mantle [as the women's voice] fairly early on, but you don't notice it for a long time.

LEVY: And you don't realize the way you're impacting those people to that extent.

GILCHREST: So I'm beginning, in the last few years-- I now feel a great responsibility, now that I guess I'm not in the position to do too much about it. Too late! [LAUGHS]

LEVY: It's always funny how it happens that way.

GILCHREST: I think you can't escape these issues. If you get into mechanical engineering and academic orthopedics, you will find yourself, I'm sure, in an environment that is overwhelmingly male. I did, even in dermatology.

I have a great picture: I was an invited speaker at an international research conference, and they invited everybody up on the stage for a group photo – probably 150 people. And there's one woman. One woman. So it was like being in freshman physics class.

LEVY: About the same ratios as MIT.

GILCHREST: Same ratios. As you kind of move up the male-dominated career pyramid there are not so many women. What has been said over and over again, and I'm sure it's true, is that the decisions get made by men: who should be the next whatever, how to choose who's going to do this, is who's going to do that. Workplace research shows overwhelmingly that the guys are likely to pick a guy.

So one of the huge challenges for women in medicine now, and in many fields, is doing something to assure that there are an adequate number of qualified women that you can't help but consider.

Because many times the data is really so overwhelming that women just haven't been at the table. There haven't been senior women at the table, to say, "Well, maybe you don't know any mid-level woman who clearly should advance, but I do. And here are a bunch of names." And that makes such a huge difference.

LEVY: Just to have that perspective.

GILCHREST: Yes. I was also researching Ellen Swallow Richards, the first MIT woman graduate. She clearly just got hit in the face over and over and over again with "Women shouldn't get educated," and she just kept on going. She was inspiring. She also worked tirelessly to increase educational opportunities for women.

But until there are enough women around to pull others forward, and we're thinking about that, it just doesn't happen. When I was in medical school, we were 11 women in a class of 140. So it was better than MIT, but I still

remember. There weren't any women around, you know? No women professors. They just weren't there.

The good news is that something can be done. In the organizational aspects of dermatology, big organizations where it's very prestigious to be a muckety-muck in the organization, there were no women. There were no women officers from the American Academy of Dermatology. There were no women invited to speak at the annual meeting. There were no women heading committees. I mean, they kind of weren't there. It was all men, although about 20% of dermatologists in the U.S. were women. So a friend and I got together and made lists of women who would be qualified for every position and every program, educational programs, and handed it in to the board of directors. And the next year, they took people off the list and appointed them.

So I think at this point, 100 years on, it's not an active decision that women don't belong. It's so easy to forget. It's so easy to ignore them, because the higher up you get, the fewer women there are.

LEVY: Just an availability heuristic.

GILCHREST: So I hope that will change. There's a lot of lip service being given by men and women – at least in academic medicine – about fixing that. It is getting better, but I'm sure it will require attention for many years to come.

LEVY: Yeah, absolutely.

I wanted to follow up on a few things you had said before. Very early on, we were talking about the 2% and you were saying that MIT was an incredibly nurturing environment. And are there ways that you think that's changed?

GILCHREST: When I said it was nurturing, I think it wasn't *intentionally* nurturing. People were very nice to me. I mean, you know, some of my professors, as I've mentioned, Dean Ken Wadleigh, after whom our class named a scholarship fund, was wonderful to me. You know, just to say, "Hello. How are you?" when you're walking down the hall. So I never felt unnurtured. I was happy as a clam.

LEVY: That's great to hear.

GILCHREST: But I think at that time, there wasn't the idea of a student environment or, you know, worrying about the person, worrying about somebody who's having a tough time. That wasn't very much part of the conversation among the faculty.

And I think that has changed at MIT and a lot of other places. But clearly, at least as I see it, as I talk to people, as I look and see what's on the calendar, there's a real effort to have social time with the professors to allow them to know their students a bit as human beings, as opposed to just names on a paper.

LEVY: Absolutely.

GILCHREST: And I think that obviously makes an education happier, pleasanter for many people on a regular, daily basis. And it probably prevents some people, you know, what used to be one-third, from dropping out. Everybody has rough spots.

LEVY: Until you lift back up.

GILCHREST: Yeah, and if you just give them a little help sometimes is all it takes. I don't think MIT had an intention to be mean to people, but I think it just wasn't part of anybody's thinking.

LEVY: Yeah, it just wasn't there.

I saw that you have done a lot of work with the MIT Corporation. What got you involved in that? What made you want to keep staying involved in MIT?

GILCHREST: Well, as I said, I loved MIT, and MIT unquestionably changed my life. You know, if I had-- Well, if I had done what was expected, which is not to go to college, I can't even imagine what opportunities I would have had. If I had gone to Wellesley, where I'm sure I'd have gotten a good education, would I have gone on to professional school? I don't know.

I think I'm a pretty organized, goal-oriented person. But you know, a lot of that you pick up from your environment as you grow up.

LEVY: Yeah.

GILCHREST: And I don't think I would have picked that up to the same degree in another kind of setting.

LEVY: But just in terms of MIT preparation--

GILCHREST: So one of the things – it wasn't such a long time after graduation – I was busy, going straight ahead to get my labs funded and [LAUGHS] get to see my patients. And I was invited to serve on the [Institute's] Medical Department Committee, the Visiting Committee. That was such a thrill for me.

I'm sure there were 1,000 people who were better qualified, better known, whatever. I just loved doing that. And I was very keenly aware, throughout my career, of my debt to MIT. So to be able to, in some tiny way, pay that back, to be right in front again of the excellence of MIT in so many regards. Plus, not only is it wonderful and excellent, but it can be a little better. And to have finally some insight into the kinds of things which might make it to be able to contribute to that is--

LEVY: What kind of things are you thinking about when you say that?

GILCHREST: Well, with the Medical Department Committee, the kinds of services that they would offer – hours, availability. And concerns about confidentiality. There were different things. It wasn't broken, but just things which any busy group--

LEVY: It's hard to address all of them.

GILCHREST: If somebody can come in and say, "Ah, you can do that better." They're all little things, but it's having an opportunity-- Seeing again how terrific [the Institute] is and imagining that you could contribute in some tiny way to making it a little bit better is wonderful.

And then after that, I guess I was invited to be on the Biology Department Visiting Committee. And I was just amazed at the incredible people there. One of the Koch brothers was there.

LEVY: That's awesome.

GILCHREST: A lot of people who are invited onto these committees are people who will hopefully want to do something financially for MIT, like the Koch brothers.

LEVY: It worked out in their case.

GILCHREST: Yeah, and that worked out for them. But you know, the heads of big pharmaceutical companies, world-class biologists from various places around the world-- I mean, it's just a really heady environment. And to think that I can make a tiny contribution, or that I can at least sit at the table with a group like this and – that I brought a particular perspective of having taken these courses, you know?

LEVY: When you say, "Pay it back to MIT"--

GILCHREST: Pay it back, yes.

LEVY: --what do you think of in terms of that?

GILCHREST: You know, MIT has given me so much more than I will ever be able to give back. How many hours have I spent on these committees [LAUGHS]-- I have to say it was a gift. It burns a lot of hours. But the experiences really just increase my debt. So, I give as generously as possible.

LEVY: So you're paying it off over time.

GILCHREST: When, my God, I was invited to be on the Corporation, I was amazed. It was an unbelievable group of people. I was asked to chair the HST [Health Sciences & Technology] Visiting Committee.

LEVY: That's an incredible program. I've taken classes in it, too.

GILCHREST: It's an amazing program.

LEVY: It's a great combination of different departments at MIT, and integration with Harvard Medical School.

GILCHREST: But, you know, I'd be interested in your perspective. It seemed to me that MIT never really appreciated the gem that they had in the HST program. Was that your impression?

And now biomedical research is spread across many MIT departments, certainly including engineering. You know, I think there was hardly any biomedical research at all when I was a student here. What year was it – 2005? – when NIH funding became the number-one source of research funding for MIT?

LEVY: That sounds about right to me, too. I don't know the details.

GILCHREST: That's an incredible flip-flop because, you know, for a long time, anything to do with medical research was seen as being a little "soft."

LEVY: Yeah, it wasn't the pure research that had been carried out in the same way.

GILCHREST: Right, and so to help kind of put that type of thinking away – to be a voice pointing out what MIT can contribute in that area and the opportunities to make a huge difference to the world – was exciting.

LEVY: So apart from the NIH funding specifically, what do you think MIT has done to enable biomedical research?

GILCHREST: Well, they hired many excellent biology faculty. That made a big difference. I am not in a position to know whether some of the huge gifts that have come to MIT to support biomedical research were because MIT was aggressively soliciting money for those areas or whether people came and said "I want my gift to be in the area of biomedical research."

LEVY: Yeah.

GILCHREST: Which is, I think, probably what happened.

Levy: Maybe it's some of both.

GILCHREST: Anyway, being chair of the HST Visiting Committee for 10 years was an incredible experience, you know, to see the program get finally, I think, a lot of the credit that it deserved.

LEVY: Yeah, I think it's an incredible program.

GILCHREST: I guess it was also-- Here, I'm going to get political. I don't want to get political. There are people who are still living.

LEVY: That's fair.

GILCHREST: Politics, you know, play a part of everything.

LEVY: They do.

GILCHREST: They do.

LEVY: You can leave it at that.

GILCHREST: You know, when I think of the things that I feel truly honored to be involved in, one of them for sure was serving on the MIT Corporation, just to realize the kinds of people that make the world go around. You know, that really, really make the world go around. And who devote themselves not only to being enormously successful in their own areas, but want to give back to MIT. To see that there are people like that really care that MIT has been that important to so many people – it's awe-inspiring.

LEVY: In what way is coming back working on the Corporation and being involved in planning committees like this-- In what ways does MIT seem very similar to your experience, and in what ways have you seen it transform?

GILCHREST: Well, you know, it's like the blind men and the elephant. As a student, you know, you feel this part-- It seems like MIT is one kind of thing. You know, I don't think I even knew there was an MIT Corporation as a student.

I felt, but did not understand at a very granular level, the power that was in MIT and the energy and the vision that was in MIT. But it was just kind of a bit of a blur. I felt I was close to something really important.

So it wasn't until, you know, I got out in the world that I realized the impact that MIT was having in many areas, for example, fighting the good fight to keep scholarship packages across all the Ivy League schools comparable.

The Department of Justice, our United States Department of Justice, told the schools that they could not compare packages, that that was sort of price fixing. But, in fact, it wasn't price fixing. They wanted kids to be able to decide where they wanted to go to school not based on whether they were going to get \$1,000 more here than there.

All the big schools – Harvard, Columbia – they all came out and said, "We'll do whatever you want. Just leave us alone." And MIT said, "That's wrong," and they took them to court and won.

MIT does things like that, you know? And to see, to see that this institution has such a conscience and such-- They do things that are important. They don't do what's easy.

LEVY: And has the means to advocate for their conscience.

GILCHREST: Yes, they do. And they do it when it's not convenient. And that's happened many times.

And then, you know, just to realize that-- getting into the research world. MIT, if you want to pick one institution that has brought medical science along, I think you would have to certainly consider that it's MIT.

LEVY: I think I would too. Just the amount of collaboration and the amount of research this place has spurred in so many different fields.

GILCHREST: Forging new areas – Bob Langer being a wonderful example of that, but not by any means the only example.

LEVY: Absolutely. I've found that the innovative mindset and the mindset if something doesn't exist, be OK creating it.

GILCHREST: Just do it.

LEVY: Yeah, and then I saw that you were involved in the 50th anniversary at McCormick a little bit ago. What do you think of that experience, and how was it meeting women alumni from all different periods there?

GILCHREST: It was very meaningful to me. Again, one doesn't spend all one's day thinking about how you got to where you are. But whenever I stop to think about how I get to where I am, you know, MIT is right at the top of that list. And I remembered thinking that the dormitory was gorgeous, so far beyond my expectations, and meeting Katharine Dexter McCormick, for whose-- I don't know if you know her story, but just like so many women graduates from way back, an amazing story.

Did you go to that – you would have been a freshman?

LEVY: I didn't actually go to that. But recently, I've heard more about McCormick from Margery [Margery Resnick, Associate Professor of Literature; founder and director of the Margaret MacVicar Memorial AMITA Oral History Project].

GILCHREST: Yes. She [McCormick] just had an amazing story. She wanted to come to MIT, you know? She's one of those crazy women way back when. And they wouldn't admit her. She had a college education, she'd done extremely well – but they were sure she wasn't up to handling MIT. So she went off to Europe and studied for, I think it was two years, maybe three years, doing laboratory science at the

Sorbonne and other places so she could finally get admitted as a freshman in 1901.

LEVY: So funny to think.

GILCHREST: What she didn't have to deal with was not being able to get a job after she finished MIT, which a lot of women at her time had to cope with. Nobody, you know, would hire her then. Katherine married a very, very wealthy man, but he was, unfortunately, diagnosed with schizophrenia a couple of years after they were married and spent his life in institutions.

LEVY: Oh, wow.

GILCHREST: But she devoted her life to developing – paying for, but also having intellectual input into – the development of the birth control pill and many other women's issues. I mean, just wow, you know? That's the kind of-- You can't stop those MIT women! You stop them here; they go there. So anyway, she's very inspiring. So yes, she reminded me of what those who go before, you know, how much they contribute that you don't necessarily notice.

LEVY: Yeah, and then your contributions to people coming after, and everyone's a step in the process.

GILCHREST: Yes. So it's a chain.

LEVY: I wanted to hear a little bit about how your mathematics background and the lens that you got studying math here has impacted your projects in research and in dermatology if at all.

GILCHREST: Well, let's see. I like to prepare budgets.

I think mathematics is a sort of a mindset. I still think math is very beautiful. I don't have the luxury of doing abstract mathematical thinking, but I think it shapes the way you think of so many things. You know, if you study literature, I think you come at problems in a different way than if you study math.

LEVY: Yeah. You can't not.

GILCHREST: Yeah, you can't help it. So I don't think I even really know all the ways that math has influenced how I think. I also took computer courses here. And at the time, we had punch cards, and it was the early days for computing. In my classes, we wrote binary programs – you know, 0, 1, 0, 1 – to make programs to make things happen. Actually, my honors thesis at Harvard was writing an interactive program to teach the clotting system to students.

LEVY: Oh, wow.

GILCHREST: And so--

LEVY: Yeah, and there are different ways to visualize the spaces that we already try and understand.

GILCHREST: Actually, that program was very sophisticated. I was very proud of it.

LEVY: I'm sure it was.

GILCHREST: You know, to take free-form speech, input that students could give, and figure out what they were trying to find out was challenging. And that it came down very much to 0, 1, you know?

LEVY: And everything can be modeled, in some sense, in a binary platform.

GILCHREST: Yes. So I guess that's an example of my math and computing interests influencing my later "unrelated" career choice. But you know, it's hard to know. I'm sure that you will find, when you stop to sort of reflect, you will find that the whole thought, how you were taught to think-- Not that you didn't think when you came here, but, you know, that your thought process--

LEVY: Yeah, how it cultivated--

SUBJECT: Yes, it cultivated a certain way of looking at things, which just then impacts everything you do. And you don't even think about it.

LEVY: Is there anything else that you should mention about your MIT experience?

GILCHREST: Well, again, this interaction I'm having with my classmates in preparation for the 50th reunion [June 8-11, 2017]. I sent a questionnaire around and asked them a few questions, as many as I thought I could get them to answer.

LEVY: Yes. It's always a balance.

GILCHREST: Yes. Not too many, but an almost 90% response rate. One question was, "How would you counsel a female high school student interested – you know, a well-qualified student – about coming to MIT?" It was multiple choice.

LEVY: Multiple choice.

GILCHREST: a) Yes, if they're going into a STEM field (if they're sure that's what they want to do), b) yes no matter what, c) possibly, and d) no. And overwhelmingly, the answer is b) yes, no matter what they're going to study.

LEVY: Interesting.

GILCHREST: And I just thought that was such a reinforcement of--

LEVY: The power of an MIT education regardless of application.

GILCHREST: Yes, of what education has meant to all of these women individually. And, you know, it's just a real endorsement of MIT in general, for women.

LEVY: So is that how would you counsel high school students?

GILCHREST: Oh, absolutely: No matter what.

LEVY: What would you tell them if they were thinking about MIT?

GILCHREST: I would tell them you'll get a terrific education and you'll come out better prepared for life than most people. You'll just come with high expectations, able to get done the tasks you set for yourself.

LEVY: I completely agree with that. I'm curious to see different ways it will impact me. Well, thank you so much.

GILCHREST: It's a pleasure to meet you. I wish you very good luck.