Dr. Hugh Auchincloss

November 28, 2022

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This is an oral history with Dr. Hugh Auchincloss, Jr., on November 28, 2022, about his career at the National Institute of Allergy and Infectious Diseases (NIAID). The interview is being done over Zoom, and the interviewer is Dr. Victoria Harden, Founding Director, Emerita, of the Office of NIH History and Stetten Museum at the National Institutes of Health (NIH).

Harden: Dr. Auchincloss, please state your full name, that you know that this interview is being recorded, and that you give permission for the recording.

Auchincloss: My name is Hugh Auchincloss. I was born Hugh Auchincloss, III. I spent most of my life as Auchincloss, Jr., and, more recently, I've been just Hugh Auchincloss. I realize that we're on Zoom and that this is being recorded, and I give permission for the recording.

Harden: Thank you. You were born in New York City on March 15, 1949, to a prominent New York family. Your father, Hugh Auchincloss, Sr., was a surgeon. Your mother, Katherine Lawrence Bundy Auchincloss, was the sister of former National Security Advisor McGeorge Bundy. You were their only

son with two older and one younger sisters. You attended Groton School. Would you tell me about your family and your education through high school, especially about family and/or teachers who might've nudged you towards medicine and science?

Auchincloss: Well, you've mentioned two people who were very influential in choosing which career path I took. My uncle, McGeorge Bundy, was very much a factor in my life. I always admired him greatly. And, of course, there were my father and my grandfather, who were surgeons, so there was a government pull and a medical pull from the very beginning.

Having two older sisters, and one younger sister, and no brothers—that's the most spoiled familial position you can have in the world. My father was very much involved with the family, even though he was a busy surgeon. We sailed each summer for a week, and we went on skiing trips each winter for a week. I played a lot of golf with my father, so I saw quite a lot of him, and we were very close.

My mother got married at the age of 18. World War II started, and she said that being in college at that time was a waste of time, so she went to Washington. That meant she had no advanced education until I was in elementary school. Then she went back to school, so the whole family was in school except for my father. She finally graduated at the top of her class from the Columbia School of General Studies and went on to get a Master's degree. She was being educated during all of that time.

I first lived in Riverdale, New York, just out on the edges of New York up in the Bronx. Then we moved when I was about four years of age to Ridgewood, New Jersey, which is where I stayed until, at the end of eighth grade, I went off to boarding school at Groton School. I think by that point I felt that I was probably going to end up being a doctor. The family history was pretty strong. But I particularly enjoyed history in school. I think that was the subject that most fascinated me and actually continues to fascinate me. I did science because I thought I might be going to medical school, but I wasn't really concentrating on science. I did many other courses instead.

Harden: In 1967, you graduated from Groton and enrolled at Yale, where you earned a BA degree cum laude in political science and economics, as well as a Master's degree in economics. You were Phi Beta Kappa. You won Yale's Charles H. Dickerman Memorial Prize in economics. This is somewhat different from a strict pre-med undergraduate program moving inexorably towards medical school. Tell me about your studies at Yale and why you majored in political science and economics.

Auchincloss: Yale had several special programs. There was a directed studies program for the first two years where you did a lot of reading. A group of maybe 50 of us met together in seminars and did all of our courses together. There was also a political science and economics major that was similarly structured. They both were exciting courses to be in. I went to Yale declaring that I was pre-med, and so I did a few science courses in preparation. But I got increasingly caught up in history, economics, and government, and I really thought that I was going in that direction.

At the end of my sophomore year, I got an internship in New York, working for McKinsey & Company. At that time, they weren't considered to be the evil company that some people think they are currently. That was pretty exciting. We were working on a project to reorganize New York City's Health and Human Services Department. For reasons I never understood, the group that was doing this was actually based out of London, so there was a whole bunch of British consultants that I was working with. We had a very good time together. During the course of that time, they said to me, "Next year we're going to be doing a project in Tanzania. Maybe you'd like to come work with us next year on that project." I thought that sounded exciting.

Over the course of the next year when I was back at Yale, I didn't hear much from them. We exchanged a few letters, but there was nothing specific about my going to work for them in Tanzania. But when summer came, I did something that was out of character. I didn't have a job with them, but I got on a plane and flew to Tanzania. After a few days, I managed to track them all down and showed up on their doorstep, and they took me in. We spent that summer working on a project to reorganize the Ministry of Health in Tanzania. Then, I went back to Tanzania in January; I took a month out of school. I also went back again the next summer. I spent maybe eight months all together in Tanzania working on this Ministry of Health issue.

It was during that time, when I was thinking about government jobs, and consulting jobs in business and economics that it occurred to me that the people who were making the biggest difference were wearing white coats and seeing patients—much more than the people who were reorganizing ministries of health. When I got back to Yale, I decided that for sure I would be pre-med, and I needed a couple more science courses. Basically, I was just about to graduate from Yale, and the only way I could fit in additional science courses to go to medical school was to spend a fifth year at Yale. That turned out to be harder to do than you might think. There was a Master's program in which you got a Master's and a B.A. degree at the same time, and you could stay for a fifth year at Yale to do this. I joined that program, and that's how I ended up with the Master's degree in economics, because I was pretty close to finishing that degree already. I wrote my Master's thesis about the healthcare system in Tanzania, but now I was on my way to medical school.

Harden: Tell me about your training at Harvard Medical School, especially if there were any particular people who influenced you.

Auchincloss: Once I got to medical school, I assumed that I was going to be a surgeon. I went out of my way to hook up with surgeons. There was the Chief of Surgery at the Beth Israel Deaconess Medical Center. The hospital was then called the Beth Israel Hospital. In 1996, it merged with New England Deaconess Hospital. The Chief of Surgery when I arrived in 1972 was named Bill Silen [Dr. William Silen], who was an extraordinary human being. When you got on his service, you started rounds at 4:00 am, you saw the patients, and then you did it again with a resident at 5:00 am. Dr. Silen showed up at 6:00 am and we did rounds yet again but this time with Dr. Silen asking questions. He was really quite a remarkable teacher. I managed to convince him to create a journal club at his house that four or five of us who were thinking about being surgeons already held on our own. I became very fond of him.

But the person who was most influential in my medical school life was the woman whom I married at that point, Laurie Glimcher [Dr. Laurie Hollis Glimcher]. We got married at the end of first year of medical school. That was important because she was absolutely certain she was going to be a scientist, which she did become, and she was absolutely determined to get a true scientific education. I had just thought I was going to medical school and then heading off to a surgical residency, but she had different ideas about the way our careers should unfold.

Harden: Let me stop you for a minute and ask you a couple questions. Why did you assume that you were going to be a surgeon? Was it because your father was a surgeon or is there something about being a surgeon that attracted you more than, say, becoming a gastroenterologist?

Auchincloss: Well, you can see that I wasn't being very original, was I? I had a grandfather who was a surgeon and a father who was a surgeon, so I just assumed that I was going to be a surgeon. It appealed to me, the notion of being a surgeon.

Harden: Why?

Auchincloss: Well, the action of it, the intervention of it, using your hands to do things. Gosh. The notion of opening up the human body and getting to manipulate things and make them come out better is pretty extraordinary. I like being inside as opposed to looking at pictures of things.

Harden: My other question, which you have partly answered, I ask every physician I interview: Why did you chose either private practice, public health, or medical research for your career? You chose both academic practice in surgery and medical research. In part, it was because of the woman you married. Surely you didn't have to do that because she was doing it, but what did you find so appealing about continuing on this route?

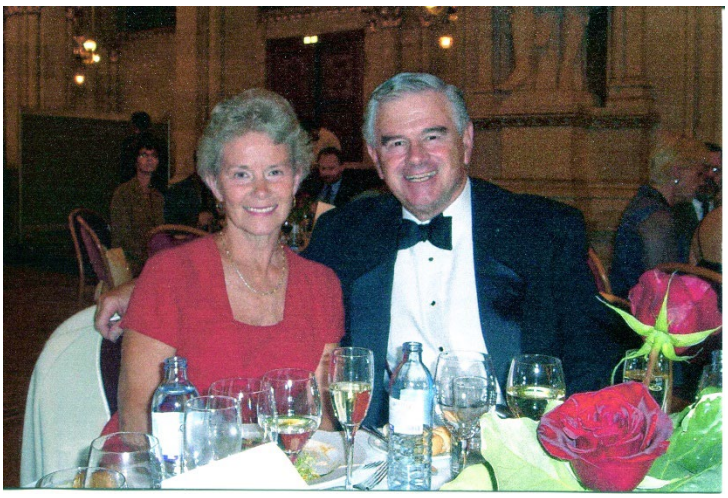
Auchincloss: Well, again, it hadn't really occurred to me that I would add science and research to my career. I was just going through the surgical residency which was a five year program. When she finished her medical residency after three years, we were both at Mass General Hospital [Massachusetts General Hospital (MGH)]. She said, "If I'm going to have a scientific career, I need to go to the NIH." I said, "Okay. We can go to the NIH." Our surgical program allowed people to take a couple of years out in the middle of the training and do other things, research being one of them. She lined up a position down here at the NIH as a fellow in Bill Paul's [Dr. William Paul] NIAID Laboratory of Immunology.

There was also a former MGH surgeon who was down here in the National Cancer Institute [NCI] named David Sachs [Dr. David H. Sachs], who was head of the Transplantation Biology Section in Dr. William

Terry's Immunology Branch. He always took at least one surgeon into his laboratory. I went to see him, and he ended up accepting me in the laboratory. Why, I'm not a hundred percent sure. I still remember sitting in his office for an interview. His question for me was, "If I picked up two mice running around in my office here and I wanted to know if they were from the same inbred strain of mice, how would I determine that?" I didn't even know what an inbred strain of mice was. I certainly didn't know what you did to determine whether they were from the same one. The answer, incidentally, is that you exchange skin grafts between them. If the grafts are accepted, then the mice are genetically identical.

Anyway, he was friends with some people that I knew at MGH, and so he gave me a position. The position for a surgeon in his laboratory that year had actually been filled already. So instead of being a pig doctor—pigs were the animals that the surgeon in the laboratory generally worked on—I became a mouse doctor. I worked with some extraordinary people, in particular a guy named Jeff Bluestone [Dr. Jeffrey Bluestone], who became a lifelong friend and is an extraordinary immunologist. I didn't know anything about doing research, but it turned out that I thoroughly enjoyed it and had a great time there. So I decided to make research a part of my career.

Harden: That's also when you started publishing. Your first paper in 1981 was in the prestigious Journal of Immunology, and it was followed fairly quickly by 13 more publications by 1985. These were highly technical studies, so would you tell me a bit about this work?



Christine and David Sachs, who was a mentor to Hugh Auchincloss.

Auchincloss: Everything we did while I was there turned out to be based on an incorrect hypothesis, but David Sachs ran an extraordinary laboratory. There was enormous productivity from everybody who was there. I benefited from the quality of people around me and the laboratory that I worked in. The fundamental thing that we were trying to understand was the T-cell receptor. Nobody knew quite what the T-cell receptor was at that point. We knew about B-cells and about antibodies, which were also the B cell receptors. We thought the T-cell receptor probably had something to do with antibodies, and therefore we were trying to immunize mice against what we thought would be the T-cell receptor in order to influence what their future immune repertoire would be. It turns out that the T-cell receptor has nothing to do with the B-cell receptor, and we were completely barking up the wrong tree. But at that time, people were very interested in that hypothesis, and some good journals took some of our papers that ended up, in the end, really disproving our fundamental hypothesis.

Harden: This was an exceptionally fruitful time, though, in immunology, if I recall correctly. Every week, people were learning something new about T cells and B cells.

Auchincloss: It was indeed an extraordinary time in immunology. It was just fabulous. There were amazing people at the NIH working in immunology, Bill Paul, obviously, was number one amongst them, but David Sachs was also, in his own way. He was interested in tolerance induction, and so I got interested in tolerance induction. Another very important person in immunology at NCI at that time was Al Singer [Dr. Alfred Singer], who eventually ran the Experimental Immunology Branch. It was an extraordinary opportunity to meet people who were on the forefront of immunology.

Harden: Between 1979 and 1988, you had three children: Kalah, Hugh, and Jacob. Since both you and your wife were working full time in medicine, no doubt working intensely on your research, will you tell me how the two of you managed what is today called work-life balance?

Auchincloss: My wife was responsible for 90% of making it work. When we came back to Boston, I was on call in the hospital every other night and every other weekend, and she was working really hard. We ended up having two nannies, one a regular day-time nanny and then a second one as a backup. They both lived with us and each had a room of their own. When we needed extra care, the back-up nanny would step in. We were extraordinarily spoiled in our childcare arrangements. We also had some catastrophically bad nannies from time to time—some of them lasting just weeks. We ended up with an Irish couple who lived with us for about seven or eight years. They had two children of their own while they lived with us. They became sort of second mother and father to my children. We had what might be described as an extended family arrangement. I'm still in touch with this nanny and her husband, but I don't think of her as a nanny. She was roughly our age. We had a lot of help.

My children seem to have survived their somewhat unusual up-bringing. My daughter, Kalah, is a lawyer who also got a Master's Degree in Public Health. She worked at the FDA [Food and Drug Administration] and now consults for companies that are trying to navigate the FDA. My older son, Hugh, is a thoracic surgeon on the staff at Mass General Hospital. My youngest son, Jake, graduated from Harvard and then joined the Marines. He is now a congressman from Massachusetts who is in his second term. So you can see that the dueling attractions to medicine and government continue even into the next generation.

Harden: You were at NIH, but you also maintained your ties with Harvard Medical School returning to Boston in 1982 to finish your residency and then to become Chief Resident in surgery at Mass General. The following year, you began your ascent through the professorship ranks in surgery at Harvard, leading to your becoming a full professor in 1999. You were also Director of Pancreas Transplantation at Mass General and of Kidney Transplantation at Brigham and Women's Hospital. Before we get to the details of your research during this time, I want to step sideways and ask you first why pancreas transplantation seems to be so much more rare and risky than, say, kidney or liver transplantation.

Auchincloss: Let me start by saying that I was the third transplant surgeon in our team at Mass General Hospital. The first one, Dr. Ben Cosimi, was fascinated by liver transplantation, so he became the Director of Liver Transplantation. The second one, Dr. Frank Delmonico, because there only were two organs we were transplanting at that point, became the Director of Kidney Transplantation. So we were doing kidneys and livers, and then we decided to get into the business of pancreas transplantation. So they turned to me and said, "I guess you're going to be the Director of Pancreas Transplantation." It wasn't any more complicated than that, although it turned out to be extremely important. Once they decided I was going to be in charge of pancreas transplantation, they decided that all the diabetic patients that we had, whether or not they'd had a pancreas transplant, would be followed by me in my clinic. The vast majority of the patients whom I took care of in my career, at least as a transplant surgeon, had type-1 diabetes. The most common operations that I did in my career were amputations of toes, digits, feet, et cetera, for people with lifelong type-1 diabetes.

Why is it so rare to do pancreas transplantation? Because it is not a good trade-off to substitute immunosuppression for insulin. You can get people off of insulin, but only if you give them lifelong immunosuppression, and that's not a smart trade off. You're better off sticking with insulin. The exception to that is if you've lost your kidney from your diabetes. Then we can give you a kidney transplant, and you're going to need immunosuppression for that new organ. We can give you a pancreas transplant at the same time, so you get the pancreas for free. One of my favorite patients, who became a friend—and we did a lot of teaching at Harvard Medical School together—developed type-1 diabetes when she was, I think, 12 years old. When I got to know her, she was 33 and had kidney failure from her diabetes. We gave her a combined kidney and pancreas transplant. For at least the next 25 years, she never took insulin again. It was really pretty amazing for her to be able to say that she used to have type 1 diabetes.

Harden: For more than 17 years, you operated a laboratory related to your transplantation work. Your research papers during these years go back and forth between clinical transplantation issues and basic immunology issues, and that is what you have just talked about. Is there anything else about this work that you want to get on the record?

Auchincloss: I'd been working on tolerance induction with David Sachs, and we developed a model that he's still pursuing, called mixed chimerism, to induce tolerance in mice. It worked really well in mice. Then I sat down and said to myself, "I'm going to open my own laboratory, and I want to get some NIH funding. I don't want to do exactly what David's doing. I want to do something different, but I want to do it in a way that grew out of our experience together." It seemed to me, after thinking about it, that xenotransplantation might turn out to be an incredibly exciting field. Xenotransplantation is the transplantation of tissues from animals to humans or between species. I thought, "I am absolutely certain that the shortage of human organs is going to be ever increasing, and so people will want another source of organs. I bet the science of xenotransplantation turns out to be really interesting, and I bet it's something that will get solved in my lifetime." It turned out that I was right on the first two, but

I'm not sure that I'm going to last long enough to see successful xenotransplantation in people, although they're getting pretty close. So I sat down and wrote my first R01 grant application [NIH Research Project Grant] about xenotransplantation, using some of the techniques that I'd learned with David. It was a different time for writing your first NIH grant application. The pay lines were vastly higher than they are now, 35% instead of our current 14%. My first award was truly a gift. It was just, "Here's this well trained young guy, let's give him a chance." We don't quite do it that way anymore. It was an amazingly lucky break that I got a study section [NIH Scientific Review Group] score that was within the funding range. I am quite certain that I know who reviewed my application on the study section, because he was the only transplant surgeon on the study section at that time. It almost had to be him. He's actually somebody I've known pretty well since then. It truly was just a gift, but it turns out that the science was indeed really interesting.

One of the most important papers that I wrote about that time was a review article about xenotransplantation. The field was nascent, and people had very little idea what the actual biology was. I reviewed every single article that had been written on the subject up until that point. That made me well known in the field overnight because this was the piece of work that said everything that there was to say about what people knew at that point. As a result, I got a lot of invitations to speak on xenotransplantation, even though I hadn't been in the field very long. But that's where it got started. Sooner than many other people who got interested in the field, however, I grew disillusioned because I became convinced that we were not going to beat the immunology of the species barrier.

At the same time, and because my patient population now was made up of so many people with type-1 diabetes, I became interested in autoimmunity. Why did these people develop diabetes in the first place? In addition, when we gave them a dual kidney and pancreas transplant, it was important that they not have a recurrence of the diabetes that would destroy the new kidney or their new pancreas. So I got very interested in why people develop type-1 diabetes. And transplantation immunology, and autoimmunity hinge on the same two questions: What turns on the immune system when you don't want it to be turned on, and what turns off the immune system, if you want to turn it off, to do a transplant. This led me to working with an organization called the Juvenile Diabetes Research Foundation (JDRF). It is an extraordinary organization made up of parents of kids with type-1 diabetes, so they are enormously committed. They donate an incredible amount of money to try to find a cure for type-1 diabetes. They eventually made me their chief medical advisor. I got deeply involved with that organization.

At one point I became aware that the JDRF had more money than they actually knew how to spend. I convinced them to try a new funding model involving research centers made up of multiple scientists. The first example was a group I created at Harvard involving about thirty scientists in the fields of transplantation olerance, autoimmunity, stem cell biology, and islet transplantation. The JDRF Center for Islet Transplantation at Harvard was my first opportunity to lead a large group of scientists almost all of whom were fundamentally more talented than I was.

My other major contribution to immunology at Harvard was knowing when to recruit David Sachs to return to Boston. I had remained friends with David after I left his lab and I knew when he reached the 20 year mark in the Public Health Service, a point at which one can retire with a pension. I also knew

that there were some political tensions within the NCI that were making David's position there uncomfortable. I went to see Dr. Gerald Austen, who was the chief of surgery at MGH, and told him that if he ever wanted to bring David back to the MGH, now was his moment. I still remember Gerry sitting there quietly and then saying, "Yes, I'm going to make him an offer." When Gerry Austen set out to make things happen, they happened. David Sachs went on to have a distinguished career at MGH where he was recognized as among the world's most distinguished transplant immunologists.

Harden: You were also sitting on numerous boards and committees and consulting with private sector firms such as Pfizer and Repligen. Do you have any particular comments you'd like to make about that work?

Auchincloss: Well, the most interesting part of working with the small startup companies such as Diacrin was that they were companies created by smart people with good ideas. But I did learn that the big companies, when they take on a project, start looking as early as possible for the experiment that will prove that whatever that project is won't work. They want to get in, and if it's going to work, fine, but if isn't going to work, they want to know it quickly so they can move on to something else. The smaller biotech companies get started with an idea and the last thing in the world they want is to find out that that idea doesn't work because that's the end of them. And so, they literally would put off doing the fundamental experiment for as long as they possibly could.

Harden: Would you talk about the 1994 NIAID Task Force on Organ Transplantation?

Auchincloss: I became involved with the American Society of Transplantation and began serving on a variety of committees in that organization, which I was very fond of. Incidentally, there was also an organization called the American Society of Transplant Surgeons, which I was also a member of. But I was much closer to the people in the one that started as the American Society of Transplant Physicians, which changed their name to just the American Society of Transplantation. We got interested in the future of transplantation research and really lobbied NIAID to put more emphasis on it. A group of us from the society spent a lot of time talking with the people at NIAID about what they might do in the way of transplantation research and enhancing transplantation research in the future. This effort brought me much closer to NIAID than I had been before. My first series of grants were actually funded out of the National Heart, Lung and Blood Institute, and it was only later that I gravitated towards NIAID.

Harden: You also sat on multiple NIH study sections from 1992 to 2006. I would be interested to hear about what issues were central to discussions in these study sections and to the grants being funded at the end of the 20th century.

Auchincloss: First of all, about being on study sections: I was never a permanent member of any study section. In part, that was because NIH had strict rules about not having more than one person from an institution on a study section. Every time I looked at one of the study sections that I was interested in, there was already somebody from Harvard there, so they wouldn't take me. But what they did do was to ask me to be an ad hoc member. You couldn't do two consecutive rounds as an ad hoc member at that point. So for probably 15 years, I ended up being on a study section every other time it met. They'd ask me to come back and be an ad hoc member, which is actually the best way to be on a study section because you only have to do it twice instead of three times a year. One time I was actually asked to be a chairman of a study section even though I was an ad hoc member because I'd served on the study section so many times before, but I never was a permanent member of one.

Somewhere in there, I can't remember the year—there was a major reorganization of the study sections. NIH put together a panel of people, which included a lot of immunologists, but also a guy named Larry Turka [Dr. Laurence A. Turka] and me, from the world of transplantation. At that point, transplantation made up only about a quarter of a study section's applications, so it always had to be teamed up with a related field of science. At that point, it was part of a group called SAT, Surgery, Anesthesia, and Trauma. That's where transplantation grant applications were sent. When NIH proposed a reorganization of the study section, Larry Turka and I wanted to get a home for transplantation that would be more suitable than the one on which sat a weird mix of urologists and anesthesiologists as well as us. We thought that maybe the best place would be with cancer because at that point, cancer immunology was not a very big field. It wasn't like it is today, with immune checkpoint inhibitors. And we thought, well, it makes sense to be teamed up with cancer, and we'll have stronger grant proposals than they will, so we'll get more of ours funded. I'm talking about the transplant field in general.

As it turns out, we ended up being paired with autoimmunity and cancer for the reasons that I talked about before. The fundamental transplantation issue is the regulation of the immune system, whether turning it on or turning it off. So we created a study section called TTT, Transplantation, Tolerance, and Tumor Immunology. That was one of the bigger contributions to the world of transplant immunology that Larry and I made. We created a good home for it at NIH, and it still continues. The fundamental issue in our world of transplantation immunology is how to do transplants without lifelong immunosuppression. How do we get to what we call tolerance? How do you get people off of immunosuppression but still accepting their organ? The object is to have them accept their organ transplant but still be capable of mounting an immune response to infections.

That's still the fundamental issue that the field is working on. It was at that point that we convinced NIAID that they really did need to do a much better job of tackling the issue of tolerance induction, not just in transplantation, but also for autoimmunity. We convinced the NIH to create something called the Immune Tolerance Network, which still exists. It was designed to run clinical trials to achieve tolerance induction, either to reverse autoimmunity or to enable people to accept organ transplants without lifelong immunosuppression. There was a lot of behind-the-scenes effort to organize a group that could write the first application for the Immune Tolerance Network that would bring people from all over the country to work together. And so, there was a big effort to figure out who would be the right person to

lead this and to convince others to follow his or her lead. This takes me back to my old friendship with Jeff Bluestone in David Sachs's laboratory when I was a Clinical Associate. Jeff had emerged as one of the premier immunologists in the country with a clinical orientation. We convinced Jeff to be the PI [Principal Investigator] for the first big application to the Immune Tolerance Network. And we got everybody else of importance in the transplant world to sign on as co-investigators. There was, I think, only a single application for the first cycle of funding for the Immune Tolerance Network. Jeff Bluestone ended up getting that award. He created a steering committee that I was part of, along with a number of other people, including Larry Turka. There was a group of 10 or 15 of us that was central in getting that organization underway.

Creating this organization was an important step in my career because it led to a major shift in what I did. When I started as a transplant surgeon, I was spending 80% of my time in the operating room and 20% of my time working on laboratory issues and research. By the time I got to the early 2000s, I was spending 20% of my time in the operating room and 80% of my time either in the laboratory or on administrative research issues. At that point I said to myself, "Spending 20% of your time operating on people is not enough time to stay at the top of your game," so I decided to stop operating altogether.

And at that point, Jeff offered me a job as the chief operating officer for the Immune Tolerance Network, and I went to work for him about 80% of my time. I still had the laboratory up in Boston, but for several years I flew from Boston down to Washington each week for work on the Immune Tolerance Network, which by this time was a pretty big organization with offices in Bethesda and laboratories spread around the world. We had, I don't know, maybe 50 or 100 employees. My job was organizational management. Jeff was setting the scientific direction for the organization, and my primary responsibility was to stay in touch with the people—Dan Rotrosen [Dr. Daniel Rotrosen], in particular at NIAID—who were funding the Immune Tolerance Network. We were spending $30 to $40 million a year, and it was my job to keep track of where we were spending the money, which trials were going on, and how expensive they were going to be, when we were going to need more money, when we needed less. Almost every time I came down to Washington I'd come over to NIAID and spend time with Dan Rotrosen and other people in the organization, and I began to understand NIAID much better than I had before. This was in the early 2000s.

Harden: Before we move in your career move to NIAID, several questions occurred to me as you were talking. One right off the bat, did you stop doing surgery completely at that point?

Auchincloss: Yes, I did.

Harden: Second, and this is stepping sideways from your narrative, I wondered about what transplantation or immunological issues were involved in the early 1990s when you were a member of the Plastic Surgical Devices Panel for the Food and Drug Administration. What plastic surgical devices were involved that you were giving them the benefit of your knowledge on?

Auchincloss: The first big issue that came up for that committee was the question of whether breast implants caused cancer.

Harden: Ah, yes.

Auchincloss: Do you remember all of that?

Harden: Oh, yes.

Auchincloss: In the end I don't know that I gave them any advice on anything to do with breast implants. I was sent hundreds, probably thousands of pages of documents, all of which I was supposed to keep locked up in a safe, because this was a pretty hot issue at this point, with a lot of people having a lot of money invested in the outcome of the deliberations. Before the committee ever met on that issue, most of us were dismissed from the panel, and they went on to do their own deliberations with the specially selected panel that I had nothing to do with. That was the end of my exposure. I did a lot of reading, but I had no important impact on the breast implant issue.

Subsequently, I served on several other FDA advisory panels, the most important of which were formed to offer advice on how to perform xenotransplants safely in the clinic.

Harden: Thank you. During this very busy period in your career, you were also a member of multiple professional societies and sat on the editorial boards of prestigious journals. Would you talk a little bit about the importance of these activities and how you managed to work all these responsibilities into your extremely tight working hours?

Auchincloss: Well, back then, I could go to bed at one o'clock in the morning and get up at five. I don't do that anymore. I spent an enormous amount of time trying to get the American Society of Transplant Physicians, now the American Society of Transplantation, and the American Society of Transplant Surgeons to marry each other and create just a single society. I thought we were going to sign the papers two hours into one meeting. But in the end, the surgeons could not overcome their paranoia that the medical people would take over and that no surgeon would ever have an important position in the society again. The American Society of Transplant Surgeons actually continues to exist as a separate society today. So that effort was a failure.

This meant that we had two annual meetings, and they both occurred in Chicago. The American Society of Transplant Surgeons had their meeting starting on Sunday and ending on Wednesday. And the American Society of Transplant Physicians started on Wednesday and went until Saturday. Four or five

years in a row, I gave a talk on Monday and then came back and gave the same talk again to the other society on Friday, and I wasn't alone in that experience. Finally, we created a joint committee between the two societies to try and marry these two meetings together. There was an Israeli-born guy named Avi Shaked [Dr. Abraham Shaked] and a Lebanese-born guy named Mohamed Sayegh [Dr. Mohamed H. Sayegh] who served with me as the three co-chairs of this group. The undertaking was like a Middle East peace talk. We did finally succeed, creating the American Transplant Congress, which is a single meeting run by the two societies together, which has been incredibly successful, and is really a great meeting. At that time there was one fundamental journal in the world of transplantation called Transplantation, but we decided that the two societies would create a new journal called the American Journal of Transplantation, and that now is far and away the premier transplant journal in the world.

Again, there was a lot of effort to figure out behind the scenes who would be the best person to lead this. We came up with a guy named Phil Halloran [Dr. Philip F. Halloran], who is Canadian. He created an editorial board that I was part of to get the journal launched. It was pretty exciting and turned out to be more successful than I thought possible. It was also a major money maker for the two organizations As you can tell, I spent a lot of time working especially with the American Society of Transplantation. Eventually they elected me to the position of President-Elect of the society. However, I started my position as Deputy Director of NIAID just as I was about to start my presidential year. The ethics office at NIH would not allow me to serve in that position, believing appropriately that it would pose a conflict of interest. I've always said that this is the ideal way to serve a society: you get the honor of being elected president of the organization, but you don't have to do any of the work.

Harden: In 2006, you made the huge shift from academia into the federal government to join NIAID. You talked about how you got to know NIAID people, but what led you to actually take this step with all the extra restrictions involved in federal employment? And can you tell me who recruited you? Did Dr. Fauci [Dr. Anthony S. Fauci] recruit you—he obviously would have been the person to make the offer? Or did you apply for a posted opening? How did it all go down?

Auchincloss: The way it happened is that I got a call, I guess it must have been in 2005, probably early 2005, from Rich Hodes [Dr. Richard J. Hodes], who, when I was in David Sachs's laboratory, had a laboratory across the hall. I had become very good friends with him, and I've always admired him enormously. He called me and said he was the chairman of a search committee that was looking to fill the position of the Scientific Director of the Intramural Program for NIAID. And he wanted to know if I'd be interested in that. I said, "Sure, I'd take a look at it." So I came down to Bethesda for an interview with that search committee, and then I had a second interview with them. Then I got a call—I don't remember whom that call was from—but the person said, "Several of us on this search committee are also members of another search committee for the Deputy Director of NIAID, and we think you ought to consider applying for that position."

I didn't even know there was such a job. John LaMontagne [Dr. John R. LaMontagne] held that job prior to my coming to this position, but he had died several years before in Mexico at an airport of what turned out to be a pulmonary embolus. Cliff Lane [Dr. H. Clifford Lane] was the Acting Deputy Director.

He thoroughly disliked doing the job and he couldn't wait to get it filled by someone else. And so, I had a series of interviews with that search committee, also, and then had several dinners with Tony and some of his other senior staff, including Cliff Lane. Now, you'd think that to be a candidate for senior positions on Dr. Fauci's staff, I must have known Tony Fauci well, and the fact of the matter is I had met him but never spent any time with him, and I really did not know him well, except now we had had a couple of dinners together. Come January 2006, I was still a candidate to become Scientific Director of the Intramural Program, and I was also a candidate for the Deputy Director's position.

I knew that there was one other final candidate for the Deputy's position and one other candidate for the Intramural job. I had no idea what was going to happen, whether I'd be offered one or the other or neither. But I got a call in early January 2006, and Tony offered me the Deputy position. I have to tell you how unlikely that whole scenario still seems to me: Tony was not somebody I knew well, and I was not the kind of scientist who focuses on the diseases of primary importance to NIAID, namely infectious diseases—AIDS, tuberculosis, et cetera. The transplant portfolio is a pretty small piece of what NIAID does. So this was almost strange.

But your question was about what did it take for me to come join the federal government. If you go all the way back in my life, there'd always been this tension in my career. Was I going to be in medicine or was I going to be in government?

Harden: Ah, yes.

Auchincloss: I had done a lot of medicine, and now was my opportunity to work in government. I was thrilled at the thought. I have to say that I'm unusually lucky in having the opportunity to do so. By this time, I was no longer married to Laurie, but we remained close friends and shared our kids together. Laurie had made quite a lot of money serving on several boards of directors for major pharmaceutical companies, so the cost of educating our children basically ended up being her responsibility, because we were dividing things up according to our incomes. I didn't have huge financial responsibilities at that point, and, in fact, although I made more money in the private sector, I was quite surprised at how much the federal government did pay me.

Harden: When you arrived at NIAID, what did you find—who were the people that you were going to work with? Describe the makeup of the immediate office of the NIAID Director.

Auchincloss: When I arrived, there was a note from Cliff Lane on the desk. I don't remember exactly what it said, but basically, it said, "Thank God you're here. I'm out of here." And he left a hard hat on the desk along with his note. But John LaMontagne, before he died, had hired a woman named Carole Hudgings [Dr. Carole Hudgings] to assist him in his job. Carole Hudgings had worked in the Nursing Institute [National Institute of Nursing Research]. She was a nurse by background and also has a Ph.D.. She knew the NIH backwards and forwards. She knew NIAID backwards and forwards. And she could

perfectly well have been the Deputy Director herself. Instead, she helped me in every conceivable way to learn the institute, and the job, and how to do it. That was a major boon.

I had already decided that if the job of deputy director had not gone to me, I probably would've applied for a division director position in the Division of Allergy, Immunology and Transplantation. But I think that coming in at a division-director level would have been much harder than coming in as the deputy director of the institute. Other than coaxing people and coordinating people, et cetera, I don't do anything. Everybody else knows how to do their job. The deputy director just has to make sure that everybody else is doing their jobs. The division directors, however, really have to know what's going on with the grants process in their divisions. And I think that would be much harder to come into.

I also think it would have been hard to come in as the Scientific Director of the Intramural Program if you didn't really know how the NIH worked. I had the opportunity 10 years later, when Kathy Zoon [Dr. Kathryn C. Zoon] stepped down as its director, to learn the details. Tony asked me to be the acting scientific director. So some 10 years after I didn't get that job, I ended up being the acting scientific director for one year. Of course by that time I did know how NIH worked. That year was probably the most fun that I had in my whole time down here, because in that job, you really had get to know the science being done by the Intramural scientists in order to plan resource distribution. It was incredibly exciting to see what everybody was up to and learn what they were doing. I had a ball. The Intramural scientists are just an amazing group of people and some of them, truly extraordinary.

I can contrast the careers of Intramural scientists with that of my first wife, who could perfectly well have been a career intramural investigator at NIH. Bill Paul would have loved to have her stay. But Laurie wanted to create a kind of empire. She raised a lot of money and wrote grants furiously and got them funded. The people who really want to have big laboratories and kingdoms don't end up staying in the Intramural program, because no Intramural scientist ever gets quite that big. But they do have a pretty good life. And they have more money than many people on the outside and fewer restrictions on what they choose to research, particularly back then. So for the right person, a career as an Intramural NIH scientist is a spectacularly wonderful job.

Harden: On your CV [curriculum vitae], I saw a long list of NIAID task forces, advisory committees, working groups, strategic planning groups, and the like. Would you begin by telling me about some of your major responsibilities?

Auchincloss: The fundamental job that I do, in my own mind, is to spend a lot of time listening to Tony Fauci about the things that he thinks are important. And then in my weekly or biweekly meetings with the division directors, I make sure that they are hearing what Tony is thinking about. And this responsibility also runs vice versa. In my time with the division directors, I hear what their problems are. I hear where they think we need to be going. And my job then is to bring that back to Tony so that he's in touch with his institute, which is not to say that he's not directly in touch with his division directors, because of course, he is. But that's the communication channel that I think is most important in my job.

The other aspect of my job that has been very important to me has been developing the institute's leadership. Cliff Lane and Dan Rotrosen were appointed before my tenure and J.J. McGowan [Dr. John J. McGowan] picked Jill Harper [Dr. Jill R. Harper] as his successor. The other six senior leadership positions have been filled while I was here and while Dr. Fauci made the final decision in every case, I feel that I made important and, in a few cases critical contributions. Beyond the senior leadership, I have delighted in looking for leadership potential among the next generation. I believe that I've nudged at least thirty promising younger staff members forward in their careers. I feel very confident that NIAID will be in good hands for many years to come. As they say, at NIAID we have a really strong bench. One thing that I am absolutely certain of is that the standards of commitment and integrity that Dr. Fauci has etched into the character of NIAID will remain for decades to come.

Harden: You mentioned that John LaMontagne held your position previously, and during a 2010 trip to Mali, you inaugurated a laboratory in Dr. LaMontagne's memory. You were also celebrating the 20th anniversary of NIAID'S partnership with the University of Bamako for research on Anopheles mosquitoes that transmit malaria. Will you tell me about this NIAID-University of Bamako effort and the dedication of the laboratory?

Dr. Kathryn Zoon, Mrs. Elaine LaMontagne, and Dr. Hugh Auchincloss at the dedication of a community-based laboratory and clinical research site in Bancoumana, Mali that honors the life and work of Dr. John R. LaMontagne (from NIH Record, March 19, 2010, p. 8.

Auchincloss: The partnership with the University of Bamako and NIAID is really quite an extraordinary affair that's been going on at least 30 years now. It got started when individual NIAID scientists realized that the environment there, first for the study of malaria, but then also for other tropical diseases, was really spectacular. And the university was totally committed to joining with us. This was organized long before my time, but NIAID was totally committed to working with them. Over the years, the Malians have been so well trained—they have done postdocs and fellowships in the United States and then gone back to Mali—that many of our research projects are really run almost entirely by the Malians to this day.

We've just completed a study of monoclonal antibody that is turning out to be extraordinarily effective at preventing malaria. And that was done in part in Mali, almost a hundred percent without an American setting foot on Malian soil. The security situation there right now is a mess; it's not a great place for Americans to be visiting anymore. But our research goes on, because they ended up so well trained and so committed to the partnership. I've made two trips to Mali, and I've met with them when they've come to this country many times. But that trip to dedicate a new building at an infirmary to Dr. LaMontagne was really spectacular.

As we came into the village, the kids were lined up for, I don't know, a mile or more, three or four deep, all carrying pictures of John LaMontagne, singing and chanting his name. And a number of kids were born during the two days that we were at the site. They all ended up being named John. It was an amazing relationship. It still is an amazing relationship.

Harden: Was there a reason for putting this new building named after him there as opposed to somewhere else in the world?

Auchincloss: The new building was at a site where we had been doing research for many years and John had helped foster that research. I never knew John. I never met him. I've met his wife many times. He had wide ranging interests in infectious disease research. His major specialty was influenza. But he was interested in all sorts of infectious diseases. The only thing that Dr. Fauci said to me when I was starting this job was, "John LaMontagne was absolutely a spectacular human being and a fabulous Deputy, but he traveled too much." I got the message.

Harden: When you were there in 2010, did you have any kind of sense that NIAID people might be in danger from the political and military conflict that erupted in 2012, which you mentioned? And you said that the research was still going on, because the Malians had been trained to lead it. Is there anything else you should say about that?

Auchincloss: Well, it's just a scary situation. And periodically, I think it's time for us to move on, because I stayed several times in the main hotel in Bamako which subsequently became the target of a terrorist

attack. One of these days one of us could certainly get shot, so at what point should you say that we just can't live with the risk? Our investigators have marched with their own feet. They have refused to pull out of Mali. Some of them are still going back periodically, although not as often as they used to. It's a hard to know what the right thing to do is in this situation.

Harden: Also, in 2010, you traveled to China to launch the Sino-US Tuberculosis Prevention and Treatment Project, which was focused especially on multidrug-resistant tuberculosis. Will you tell me about that initiative?

Dr. Hugh Auchincloss speaking at the opening of a Sino-U.S. (Henan) Tuberculosis Prevention and Treatment Research Institute, Zhengzhou, China, March 11, 2010. Behind him is Dr. Karyl Barron. (see story in NIH Record, April 30, 2010, p. 3). Photo courtesy of the U.S. Embassy in China.

Auchincloss: There are several initiatives, but the one that's the most important to us was a program that we developed with a man named Gray Handley [F. Gray Handley]. He is the Associate Director for International Research here at NIAID. He reports directly to Dr. Fauci. He came to that position about six months after I started as the Deputy. And he's taught me a lot about the principles of doing research in an international setting. What are the best partnerships to form? What are the core principles we needed to follow to work in parts of the world that have diseases of interest to us? What are the countries that have the infrastructure and the core of investigators that would make sharing research with them productive. Did they have a core competency, and were they well enough off to fund at least as much of the research as we would be funding?

We picked several places to concentrate on: China, Brazil, South Africa, and India have been our primary focus. The partnership with China was the prototype for all of them. That program requires that a Chinese investigator team up with an American investigator on projects that they can work on together. The projects get peer reviewed and, if they pass peer review, selected. In the end, the Chinese government pays for the Chinese portion of the collaboration and we, NIAID, pay for the American

portion of the collaboration. And it's worked extremely well. We've been through three cycles of it. We're supposed to start another cycle right about now, but it's sitting in the State Department waiting for the Biden administration to determine whether we still want to have that kind of relationship with Chinese scientists or not. I've been to China now three times as a result of that collaborative effort.

Harden: Washington is a city filled with ambitious and powerful people. Have you enjoyed living in the Nation's capital?

Auchincloss: I have loved living in Washington although I have not mingled extensively with the City's power brokers. Of course, being associated with Tony Fauci, you can't help brushing shoulders with some pretty famous people. And I've learned about many activities that don't show up in the newspapers, none of which I talk about outside the office.

I have been privileged to meet several of our presidents. I first met Bill Clinton [President Bill Clinton] in 2002, when several of us organized a gala at the Kennedy Library in honor of Dr. Joseph Murray who had performed the first successful kidney transplant 50 years earlier. One of my transplant patients had worked in the Clinton campaign and managed to extend an invitation to him to be our keynote speaker, which he accepted. The event took place shortly after Clinton's cardiac surgery, and I was shocked to shake hands with him and realize how frail he was at that time. When he started his speech, it seemed that he might not be able to continue. But then it was as if somebody pushed a button, and he went on give a spell-binding 50 minute speech, without notes, about the intersection between medicine and science. It was eloquent beyond words. I went over to his table to talk with him after the speech and was crouched near his chair eventually dropping to one knee. I immediately found myself raised up by two secret service agents. Apparently it is not acceptable to kneel before a former president.

I met Bill Clinton again several years later when he came to the Politics and Prose bookstore in Washington to do a book signing for his memoirs. It was a members-only event but still the line to shake his hand and receive a book stretched around the block several times. His handlers had it well organized, however, and since Bill Clinton is left-handed he could sign a book and shake hands and move people along at a rapid pace. When it came my turn, I mentioned that I had heard the speech that he had given the day before for World AIDS day about how to provide more drugs to people with HIV. It was again as if someone pushed a button. The line screeched to a halt and Clinton spent the next several minutes repeating his themes from the day before. I received many angry glares from the people organizing the event.

I met George W. Bush [President George W. Bush] when Tony invited several us to accompany him to the White House to receive the National Medal for Science. I was not a fan of this president for many reasons, but he did ask Tony to organize the President's Emergency Plan For AIDS Relief (PEPFAR), which saved the lives of millions of people in sub-Saharan Africa by providing them with access to drugs to treat their previously fatal HIV infection.

2008 White House Medal of Freedom to Dr. Anthony Fauci event. L-R: Greg Folkers, Dr. Clifford Lane, Dr. John Gallin, Patricia Conrad, Dr. Anthony Fauci, Dr. John J. McGowan, Dr. Hugh Auchincloss, Elaine Gallin.

I met Barack Obama [President Barack Obama] at the NIH when Tony invited him to come and thank the many NIH staff who had helped respond to the west African Ebola outbreak. It gave me goose bumps just to shake his hand.

I never met Donald Trump [President Donald Trump], and I would have gone out of my way to avoid doing so, if I had been given the chance.

I still haven't met Joe Biden [President Joseph R. Biden] , at least not yet. I met Hillary Clinton [Secretary of State Hillary R. Clinton] many times and have a picture with her in my office. She is the least charismatic politician I ever met, but I believe that she might have been one of the best presidents of my lifetime.

Harden: I'm about to turn to the COVID-19 [Coronavirus Disease 2019] pandemic, but before I get there, I wanted to ask you if there is anything else about the programs with which you worked that you would like to get on the record before we get into COVID-19?

Auchincloss: We ought to talk a little bit about HIV because it is the flagship undertaking by NIAID under Dr. Fauci's leadership. And it involves not only the basic research, which is typified by his own

laboratory, but the fundamental quest first, to come up with treatments for HIV and to continue to try to develop an HIV vaccine. Second, we want to develop other prevention strategies that are effective. HIV/AIDS research is a major aspect of what NIAID is all about. Before I got here, a system of clinical trial networks was created. Four of them aimed at treatment, prevention, vaccine development, mother-to-child transmission. A fifth network was a large sprawling network designed to answer some of the really big questions such as, "When is the best time to start therapy for HIV now that we have an effective treatment?" Those networks have been unbelievably successful at running good clinical trials that have answered questions such that we really do know exactly how to prevent mother-to-child transmission of HIV. It should no longer ever be necessary to have children get infected. We now have long-acting prevention therapies, where with a shot twice a year, we can essentially guarantee you that you will not get HIV. Needless to say, this is not all being used by everyone, but the scientific knowledge is there now to prevent HIV transmission. We know that if you treat people who have HIV and get their viral load down, they will not transmit the virus to others.

The work of these networks has been really fabulous. And it's a big undertaking. It requires roughly 300 million dollars a year to run these clinical trial networks. But they've been hugely productive. That's actually a good way of moving into the discussion of COVID-19, because in the end, the speed of the vaccine trials for the COVID-19 vaccines depended in part on these networks pivoting from their HIV activity to actually running COVID-19 vaccine trials, which they did beautifully.

I also want to have it on the record about how the COVID-19 vaccines were created so quickly. Many people don't realize that there was a guy named Barney Graham [Dr. Barney S. Graham] at the NIAID Vaccine Research Center (VRC). He retired recently, but he was there for the entire existence of the VRC. His lifelong interest was in making a good respiratory syncytial virus (RSV) vaccine. The problem in making an RSV vaccine turned out to be an issue of stabilizing F protein of the virus which is analogous to the spike protein on the SARS CoV-2 virus.

Barney spent a decade or so learning how to stabilize this protein so that it was highly immunogenic, and he succeeded. And before very long, we will actually have an effective RSV vaccine. Unfortunately, it will not quite be in time for this year's outbreak. But when the RSV work was done, which was really his life's work, Barney said to himself, "We had SARS [Severe Acute Respiratory Syndrome] in 2002, we had MERS [Middle East Respiratory Syndrome] 10 years later, and I believe that there's going to be another coronavirus outbreak at some point in the future." So he set out over the next four years to learn how to stabilize the spike protein of the MERS coronavirus, which is called the S protein. He found that with two mutations, two proline mutations in the spike protein, he could stabilize the structure to make it highly immunogenic. These are called the S-2P mutations.

That was for MERS. But Barney had no intention of making a MERS vaccine because there just aren't enough MERS infections to make it necessary. His larger goal was to learn how to make a coronavirus vaccine for the next pandemic. In December 2019, reports of a disease that became COVID-19 emerged, and the genetic sequence of its causative virus, the SARS-CoV-2 virus, was posted on the internet on January 11th, 2020. Two days later, scientists from Moderna met with Barney Graham and his team. They looked at the sequence and they said, "This has a sufficient homology to the MERS sequence that we predict the same two proline mutations in SARS-CoV-2 will stabilize this spike protein." And two days

after that meeting, Moderna began production of the vaccine that became the Moderna vaccine. It was based on that prediction that these two proline substitutions would stabilize the protein and make a good immunogen. As you know, the vaccine turned out to work extremely well. And the so-called S-2P spike protein, with the two proline mutations, was used by five out of the six American backed vaccines. Pfizer has the same construct, Novavax has the same construct. And so the reason that these vaccines started production in four or five days is because the hard work had been done four years before. It's an amazing story of basic science coming to the rescue in a big clinical crisis.

Harden: Moderna has recently claimed that it should get all the rewards from a patent for this vaccine, that NIAID and Dr. Graham and his team should not. This is almost identical to what happened with the patent for AZT during the AIDS epidemic when Burroughs Wellcome said that Sam Broder [Dr. Samuel Broder] and his team at NCI were simply "hired hands," even though they did the initial animal and human trials. Of course, that happened before the 1986 Technology Transfer Act. How do you think the patent issue about who invented the mRNA COVID-19 vaccine will play out?

Auchincloss: We continue to negotiate with Moderna. I don't know how this will come out, although I think that in the end there will be acknowledgement of co-inventorship. And there will be a financial settlement that will be pretty comfortable for NIH. But that hasn't happened yet. I don't want to go on the record with my comments about Moderna in general because they wouldn't be positive.

Harden: I'm concerned because it seems so unfair that after the American people have invested in NIH research through their tax money, a pharmaceutical company uses the research and claims all the profits with nothing is returned to the federal Treasury.

Auchincloss: There are two issues there. Yes. The American people fund an enormous amount of basic research that makes a bunch of companies very handsomely profitable. But you probably know that Harold Varmus [Dr. Harold E. Varmus] looked at this issue very carefully. What we learned is that if the government tries to claim the profits from products derived from NIH funded research, no products get produced. So we have developed a system in which we knowingly allow companies to profit from tax-payer funded research. It's not an ideal solution and it is too-often abused by the companies. However, there is no simple way to fix the problem.

But in the case of Moderna and the other companies, with the exception of Pfizer, which went its own way, we paid for and helped run the clinical trials that got these vaccines approved. I mean, we didn't just help invent the vaccine. We actually did much of the work developing them. We have billions of dollars in invested in these vaccines.

Harden: When the COVID-19 pandemic arrived, how did your particular responsibilities change in NIAID?

Auchincloss: Well, they didn't in a fundamental sense. But the entire institute went into hyperdrive. Let me just give you just one example. Our communications office fields roughly 600 media inquiries in an average year. In 2020 it handled 8,000 inquires with a slightly reduced number of staff. People in every part of the institute were working 20 hour days. Everybody was full steam ahead. And I'm not just talking about scientists and program offices, I'm also talking about every part of the institute, such as contract officers and grant management specialists. Everybody was working. My life didn't change very much, because again, my task is just to organize people to make sure that they're doing their job. They were all doing their job.

Harden: Your name as an NIAID administrator seemed to appear in the national press more after COVID-19 began than it had in the past. Would you comment on how becoming a press target affected you personally and professionally?

Auchincloss: Well, I don't know that I'm really much of a press target, because nobody's all that interested in me compared to picking on Tony Fauci. He really is taking it on the chin, as everybody knows. There was a Wall Street Journal article about my stock trading. My only regret about that is that NIH wouldn't allow me to talk to the reporter, because it is NIH policy not to comment on personal financial issues other than to state that everything was done in accordance with NIH's strict ethical rules. I had nothing to do with any of those stock trades all of which involved mutual funds. They were entirely done by my financial advisor to rebalance the portfolio.

The more complicated issue has been the oversight of so-called gain-of-function research, which for us, started in 2012 when an investigator named Ron Fouchier [Dr. R.A.M. Fouchier] held up a vial at a meeting and said, "Inside this vial, I have created the most dangerous virus in the world." What he had done was to take one of the highly-pathogenic avian influenza viruses and made it more transmissible in humans. People kind of went berserk, and probably with good reason. That was a pretty stupid experiment, and certainly, the way he presented it to the world was really stupid. We've never fully recovered from that in terms of having a calm, rational discussion about the right degree of regulation for this type of research. What's the right oversight? How scary is it to make viruses more pathogenic or more transmissible? It's a really complicated field. And if you're not approaching it calmly, thoughtfully and without politics, you're in deep trouble. And as you know, COVID-19 has made that dynamic even more complicated. Nobody's talking about it rationally or calmly at this point.

Harden: Let's pursue that a little further. I want to focus on the one situation that has reached to Senator Rand Paul and others in Congress that involves you directly. And although I know you are familiar with this email exchange, I'll read it into the record here. It's the email between you and Dr. Fauci on February 1, 2020, where he sent you an email about the gain-of-function research at Wuhan Institute of Virology and said, "Hugh, it is essential that we speak this AM. Keep your cell phone on. . . . Read this paper... You will have tasks today that must be done." You replied: "The paper you sent me

says the experiments were performed before the gain of function pause but have since been reviewed and approved by NIH. Not sure what this means since Emily is sure that no Coronavirus work has gone through the P3 framework. She will try to determine if we have any distant ties to this work abroad." So tell me who Emily is, and what the P3 framework is, and what the next step following this exchange was for you.

Auchincloss: Emily is Dr. Emily Erbelding, the Division Director for our Division of Microbiology and Infectious Diseases. The P3 reference is to a 2017 White House OSTP [Office of Science and Technology Policy] policy on Pathogens of Pandemic Potential Care and Oversight (P3CO) that followed the Ron Fouchier debacle. At that time, there was a pause on certain types of research involving increasing the pathogenicity of dangerous viruses. A long deliberation took place. And then the US government, largely through OSTP, but with other parts of the government having input as well, created something called the Enhanced Potential Pandemic Pathogens (ePPPs)—that's P3—Care and Oversight Framework. It outlined the kinds of experiments that should undergo a higher level of review than just study section or internal NIH review. Those projects would get sent downtown to a committee that would review the experiments and pass judgment on whether they should be done or should be modified in some way, et cetera.

The confusion that took place in that email exchange was that the newspaper article said we were doing gain of function research that had been approved by NIH. That was confusing to me, which is what I was expressing to Tony, because by that time, I had talked with Emily Erbelding about whether we had approved these experiments and had been told that no Wuhan experiments had been approved by the committee downtown.

In fact, it turned out that everybody was saying true things, but confusing the terminology. NIAID program officers had reviewed the Wuhan experiments and determined that they were not subject to the P3CO framework because they involved bat viruses that weren't known to infect humans and therefore wouldn't be considered to be pathogens of pandemic potential in humans. So the proposed research didn't go downtown for review, nor should it have, according to the rules that had been approved, and we eventually sorted all that out.

But the email exchange has looked to a certain number of people as if there was something nefarious going on, when there really wasn't. We were just trying to figure out what the actual facts were, and it took time before they finally emerged. I've seen some of the Twitter exchanges about Tony's original message to me, and the initial ones said, "Boy, that guy Fauci seems like a real jerk if he has to say, "Keep your phone on, and we're going to have work to do today. He sounds like a real task master." A subsequent Twitter message said, "This guy, Auchincloss, he must be the jerk. He's the guy who never has his phone on and they can never reach him when they need to." The fact is that this stuff really doesn't bother me a whole lot. My stake is not in what people are saying about me on Twitter.

Harden: Because Dr. Fauci was the target of Congressional attacks, did you have any kind of role in helping him prepare for the Congressional testimony that he was called on to present?

Auchincloss: I contributed, along with many other people. There were probably 10 or 15 people who probably had—oh, I don't know, in the course of all of this, 20, 25 sessions with Tony in preparation for the various hearings. The bulk of it has been a matter of staff, the people who were really in the trenches, explaining how the whole process was working. And they got pretty closely questioned by Tony about whether we were doing oversight of this research correctly and whether they were doing their jobs. Well, I can tell you that the staff really emerged looking good. You could only be proud of the work that our NIAID staff were doing, trying to make judgements about these complicated experiments.

Now, just to show you how naive I remain after years in Washington, when the virus emerged in Wuhan, I learned for the first time that we were funding research done at the Wuhan Institute of Virology and that we had a whole project in China to sample bat viruses to see if there were viruses that we should be concerned might be the next coronavirus disease like SARS. I was delighted. I said, "Oh my God, how good are we going to look that we had the foresight to be in the right place doing the right kind of research in preparation for what would eventually occur, the next coronavirus pandemic?" Well, we don't cheer about it quite as much now as we did back then, but it was true. We were doing the right research ahead of the pandemic.

Harden: I think of the bat research being done in Africa to try to get ahead of the next Ebola virus.

Auchincloss: Yes.

Harden: Tell me about the security arrangements surrounding Dr. Fauci.

Auchincloss: For the past several years, Dr. Fauci has had a security detail with him at all times. No other NIH institute director has had a hundred percent security at all times. He hasn't driven a car in two and a half years. We still have a bomb-sniffing dog come by the floor twice a day. And the security detail is there outside his office at all times. When he's done public events where he gets mobbed, as he does by people wanting signatures and selfies, et cetera, the security people have their hands full trying to keep people off of him.

It's a sad testament to the situation that we've gotten into. He has been so overwhelmed with email traffic that we set up a system in which if you don't have .gov at the end of your email, it goes into a separate email box. Two or three other people and I screen that non-.gov email box containing 500-1000 emails a day, take out junk, and pass on emails that he needs to see. We also take out the hate mail and threat mail that comes his way. We put that in a special folder for his security detail to track and determine which ones need to be followed up. You probably know that his family has received death threats and violent threats on more than one occasion, including his daughters. The head of the security detail, an absolutely spectacular guy named Brett Rowland [Special Agent Brett D. Rowland],

got irritated about one person who was particularly threatening to the family and set out to track him down, despite the fact that he was using sophisticated technology to bounce his emails over 15 servers and five continents—that kind of thing. But Special Agent Rowland tracked him down, finally. The FBI [Federal Bureau of Investigation] arrested the guy in a cabin in West Virginia, and he's been convicted of, I don't know what you'd get convicted of when you threaten people via email, but whatever it is, he's going to prison.

Harden: I've often wondered how Dr. Fauci's wife, Dr. Christine Grady, was coping with all this because with their daughters also being attacked, it's got to be incredibly stressful for both of them.

Auchincloss: I think the kids had an especially hard time. You probably know that one of his daughters got married and that the wedding took place one week after Tony tested positive for COVID-19, so he couldn't participate in the ceremony. But they set up a Zoom link so that everybody who was at the reception was able to wander over in front of a camera and have a little chat with Tony. He said he talked to more people at the reception than he ever has before, but it still wasn't quite the same as being there in person.

I don't know Christine Grady well, but she is an extraordinary woman. Not too long after I got here and was organizing one of our periodic institute conferences, I asked Tony for permission to invite Christine to give a talk to our people. He was very reluctant, not wanting to appear to be playing favorites with his family. It took me quite a lot of arm twisting, but finally we were able to do it. Afterward, I got dozens of calls from people in the institute saying, "I had no idea that Tony's wife was so accomplished and so skillful." She was extraordinary.

Harden: Dr. Fauci will be leaving NIAID by the end of the year, and you have just today been named NIAID Acting Director. Can you tell me how you and the institute are preparing for the next steps to choose a new director?

Auchincloss: What I've said to people is that there is no way in the world that anybody replaces or acts as Tony Fauci. He has a unique place in the world and a unique stature in front of the public. So I'm not even going to pretend that as acting director I would be a Tony Fauci. What I do believe is that I can work with Jill Harper and Cliff Lane, the two other deputy directors, and with a really extraordinary team of division directors, and that working together, we do know how to keep the institute on an even keel for the months that are going to be required before we have a new permanent director. The search committee is already formed, the job posting is out. It needs to be out until, I think mid-January before they can actually start considering candidates. I'm hopeful that we'll have a permanent director named by middle-late spring. I don't see why that shouldn't be possible.

Harden: Once the search committee has narrowed the candidates to two, who will make the final decision: you or Dr. Tabak [Dr. Lawrence A. Tabak, Acting Director, NIH]? Both of you are "Acting Directors," so I wasn't sure.

Auchincloss: I believe the final selection of then NIAID Director will be made by Dr. Tabak. Of course I would be surprised if he didn't consult many others including Secretary Becerra [Xavier Becerra, Secretary of the Department of Health and Human Services], and probably Francis Collins [Dr. Francis Collins] and even Tony himself. I doubt that he will consult any of us in NIAID. We're kept pretty far out of the loop.

Harden: In 2010, you married Mary Lurline McCain. Would you tell me a bit about her? You noted that you enjoy sailing and opera. Would you tell me about these pursuits and others in which the two of you may be involved outside of NIH?

Auchincloss: I came down to NIH unmarried. I met an extraordinary woman who lived across the street from me, a very attractive, very vivacious woman. And quite early on in our acquaintanceship, she said, "I'm not looking for a relationship here, but I make really good arm candy, so if you want to do things together, family events, official functions, etc., I'd be happy to accompany you," which she did quite frequently. We became very good friends. Finally, after about a year she said, "You're obsessed with politics, and I've got a friend who's equally obsessed with politics, and I think we ought to hook the two of you up." So she had a party, and I did meet her friend. It didn't take long before we were in fact together. She was a consultant on workforce development. She has a Ph.D. in history. And we've been married now for 12 years.

Harden: What does she do with her Ph.D. in history, if I may ask?

Auchincloss: She did a lot of politics and then created her own consulting business. She is fascinated by the problems of workforce development in a digital age. Her Ph.D. in history is only slightly related to the work she ended up doing with her career. She worked for a number of large companies as a consultant.

As far as sailing goes, I grew up sailing with my father and family. When I got married, my first wife turned green if she looked at the ocean. And that was the end of my sailing experience for the next 30 odd years. But after my divorce and remarriage, I discovered that Mimi loves sailing. We've been going sailing every summer for the past 12 years, usually off the coast of Maine. And my older sister, Kay is a big sailor also. So she joins us every year.

Harden: And you like opera?

Auchincloss: When I was growing up, my father and I built train sets on Saturday afternoons. We created an extensive set over the course of several years, and we always worked with the Metropolitan Opera's Saturday afternoon radio broadcast playing in the background. By the time I was in high school, I'd heard lots of opera and liked it. It's an acquired taste. In Boston I attended the opera, especially in the old days, when the Metropolitan went on tour after the season. They went around the country appearing in various cities, and when they came to Boston when I was a medical student, I actually appeared as an extra. I've been in several operas, in the sense of carrying a spear in the background. We've been subscribers to the Washington National Opera during the whole time that I've been in Washington. We've been doing it long enough now that our seats have moved up to about the fourth row, notable for being three rows in front of Ruth Bader Ginsburg and two rows in back of Newt Gingrich.

Harden: These are all the questions I have. Do you have anything else you'd like to get on the record before we stop?

Auchincloss: No, that I think will do well. Let me just end by saying that it has been the privilege of a lifetime to work for Tony Fauci. Can you imagine? I mean, I've got no claim to fame about what I've been doing for the past 17 years. I'm not the greatest scientist. But somehow I ended up in a position in which I've watched one of the great Americans do extraordinary things.

Harden: Thanks, Dr. Auchincloss, for an exceptionally fine oral history.