

Dr. Donald S. Fredrickson
Interviewed by Melissa Klein

Klein: Dr. Fredrickson, I will be recording this. Is that all right with you?

Fredrickson: Yes.

Klein: Perhaps you could begin by giving me a brief background of your childhood, where you attended college and what made you decide to pursue a career in medicine?

Fredrickson: My story is highly deterministic. I really don't believe in predestination, or then, again maybe I do. What my story proves is that things are sometimes out of your control in career formation. It was my senior year in high school when Pearl Harbor occurred. We could all see our futures dissolving in front of us. That fall, I went to the University of Colorado. I had my draft card and was certain that I would be called up in a matter of time. I hastened the process a little bit by joining the Army. That did allow me to have two quarters at the University of Colorado. I went one spring day to the Army headquarters, where I was called up. I was sent from there to Camp [?] in Texas which was an Infantry Training Camp. I was assigned to a heavy weapons company, which are 50 caliber machine guns and 80 millimeter mortars. So I went from April until the end of the summer in Infantry Basic Training. On the last week of our training before we were to be shipped out, several of us on the machine gun range were called out by name. They called out about 20 percent of us and told us, 'Get your gear, you are going out elsewhere.' So I was shipped out to

Camp Maxey which was not very far from where we were. When we got there we were told we were in a store camp. What that meant was we were to undergo a series of tests for a week and at the end of that we would be evaluated for possible assignment out of the infantry. So we took tests, all sorts of college level and high school level tests, and at the end of it a Lieutenant called me in and said, 'Your aptitude for engineering is very high and we are going to give you a chance to go to Engineering School.' I protested and said that I was not interested in engineering whatsoever. I really wanted to go to law school. I told him, 'If you are going to send me somewhere send me somewhere for language training.' He told me, 'Look, if you don't want engineering then we will just send you back to the camp.' So I decided that my options were better just to do what they said. One day we were all loaded on a troop train and not told where we were going. We went through Oklahoma and a few other states on this train without a destination until finally we arrived on a bright and sunny morning at a railroad station. We were told to get out of the train and march up the hill. So we marched into a place which turned out to be the east quadrangle of the University of Michigan. In those days it had four beds per room. We were given a big stack of books and a slide rule. As soon as we were settled we were told to get into formation again and were marched down the hill. We went into this big barn like place. They opened the door and we went in and there we were, at the Illinois versus Michigan football game. That was our introduction. So, I went to engineering school

and I loved it. I did not like engineering so much, but I liked the physics. I did very well. We were taking double credit, which meant thirty credits a semester. The captain used to turn the lights out in our room at 11 PM and we would continue to study under our covers with flashlights. On the weekends, we were required to work. For instance, would have to clean the barracks. One day, a notice on the bulletin board reported that the “Battle of the Bulge” was turning up very poorly for the American troops. So, they dissolved the engineering program for members of the Armed Forces at all the colleges. Everybody was taken off to the infantry because they needed reinforcements. On the day before we went out, once again, some of us were lined up. We were told that we were going to take another test. We were handed a blue book and on the front of it said ‘Check One- pre-Medical or pre-Dental.’ I checked pre-Medical because I had no interest in becoming a dentist. We took an Army prepared test. At the end of that, some of us were told that instead of engineering talent we now had pre-Medical talent. I was then interviewed by a member of the University of Michigan faculty. His name was Franklin Johnston and he was a cardiologist who had worked with Frank Wilson, the famous electro-cardiographer. Johnston was a very stiff, conservative guy. He interviewed me and asked if I wanted to go into medicine. I responded, ‘Yes, I think I will.’ He said, ‘Well, then what do you want to be?’ I replied, ‘I think I’d like to be a Neurosurgeon.’ But at that point I really had no idea. Boy did he turn a sour look at that. I thought for sure that he did not want me. But I

was picked among a few others to stay at the University of Michigan Medical School. Before I completed my first year, I was assigned to a top secret war project in the chemistry building. Our project was under the OSRD, which was the program that was funding Federal support of basic science projects during the war. F.E. Martell was the head of the project and we were supposed to make a new kind of fabric that would keep fliers alive when pitched into the North Sea. They were dying very rapidly from the temperature of the water. This fabric would allow a soldier to perspire but would keep the water out to give a soldier some warmth and protection. So we were bonding nylon fabric with a secret formula, which was latex and LD 50. When that project ended we went on to medical school. The war eventually wound down and I went home to Colorado for summer vacation. I decided to see what medicine was all about. What I had seen in the basic sciences and during my first year was fine, but I wanted some hands on experience. I decided to go to the town's most popular surgeon. I went every morning with him and I was in the operating room most of the time. I used to stand there and smell the ether. He was a very good surgeon for his age and time. However, I could see that there was a lot of hit and miss in this. In 1945, medicine was not very advanced and I decided that surgery was not what I wanted to pursue. I decided instead, after that summer, to go into medical science. Therefore, I had to leave the University of Michigan once I received my medical education because they had only rotating internships and that was not the ladder to

academic medicine. I was urged to stay at Michigan but I applied for the Boston internships at Harvard. So I interviewed at Mass General and at Boston City, and at the Brigham. I was picked at the Brigham. I went there at the end of the summer and started my internship. After my internship, I got a fellowship from Harvard and I worked at the Harvard Medical School at the Brigham and had two or three projects to begin. That was the year that the Korean War started. Here we were, facing another draft. This time however, I was serious about medical science. I was determined to do what I could to get into some basic science training in the military. I remember a friend of mine, who is now at Johns Hopkins, Hugo Moser, came by and said 'I am going to NIH', and I said, 'What's the NIH?' He said, 'Well, I hear they are hiring a few people to go down there. The head of the Heart Institute is Jim Shannon.' I asked him when he was going and I told him that I would drive down with him. So we went down and we first aimed for the Army Chemical Center. We knew that Bruce Dill, the physiologist, was hiring people. He was very eager to have us but he told us that the Army could not guarantee to put us anywhere. So we understood that, we signed up and applied. But then we went on to Bethesda, Md. There was a man in Building 3 by the name of James A. Shannon whom we learned we could interview with. Now, James Shannon had just arrived and was building the intramural program at the Heart Institute. He had already hired a certain number of very excellent people who were very important in formulating the intramural program. But he

also needed to hire young physicians who could be brought back for two years to work on the wards as Clinical Associates. The Clinical Center at that point was just a big bundle of bricks standing there unfinished like a ghost. I had an interview with Shannon. He was a big, tall man, lanky, with a low voice. He put his feet up on the desk and looked at me through big glasses and talked to me about science. I hadn't the faintest clue when I left, whether I scored or was out. He had given me no sign at all. Before I left, I looked at the Clinical Center again and I wondered about it. What would it become and would I ever be a part of it? I knew that he had done nearly all of his hiring. He had earlier gone to Columbia and to Harvard and to Cornell and picked out from friends he knew the students recommended by preceptors there. Anyway, we drove home and unsuspectingly we arrived back at the Brigham and somebody ran out in my intern class and said, 'You've been picked to come to the NIH'. I was very happy, but Shannon had said one thing. He said, 'Remember that the Army has first digs at you guys. If they call you up first, I cannot touch you. The Public Health Service has some Commissions here, but they are second order.' I went back to my internship and then one day I got a draft notice. This time for the physician's draft. I was not in the Berry Plan. I did not apply for it because I did not know about it. That weekend, I went to Stowe to ski for the first time in my life. I flew down the mountain and when I reached the bottom, I was exhilarated. When I got to the bottom however, I had the worst pain in my back. I went home with one of my

intern friends and we looked at my urine and it was full of red cells. I went to get an X-ray and there was a great big kidney stone in the right kidney. So I was told that I would have to have it out. There was no other way. I went to the draft officer and he did my physical and I passed, but then I showed him the X-ray. He said, 'Oh, you are going to have to have it removed. Come back when you are finished.' I went and had my kidney stone out and on the last day of my convalescence, I got a telegram. It was from the Public Health Service and it is said you are commissioned, report to your commanding officer. I went to the Professor of Medicine, George Thorn, I saluted him and said, 'Reporting for duty.' I never went back to the draft board. I wrote them a letter and that was it. Then I had two years to go before Shannon could take me. He told me to get a job, so I went into a laboratory and I got a job with Ivan Franz who was a great scientist. That is where I started working with cholesterol. I worked there for two years and I arrived in Bethesda July 1, 1953. It was interesting though, because in my third year in medical school I went to Europe on a bicycle trip with another student. I got to Holland and met a young woman and fell in love. The story is very long and it happened by accident. She and her mother had gotten some English pounds in a lottery. They had a car and the four of us decided to go to the north of England and take a trip. We went up to Edinburgh, Scotland. It is quite an enchanting country. By the time I headed back home I had agreed to come back that winter to pursue this engagement. So I went back to Holland. One day when we were on the

tennis court in Holland we realized that if we did not go publish the banns [for marriage] within that week we could never get married. So, we went into the city hall and got the banns. We later got married. I am telling you this story because it just another example of things working out at the last minute. And the whole thing started in an odd way. Anyway, my wife was on a boat with loads of furniture coming to America when this whole episode with the draft occurred. She knew I had a kidney stone out and wanted desperately to nurse me back to health. I guess I had made it clear to her that I was selected to be drafted but she did not believe that. She arrived just after I had gotten into the Public Health Service. Now all this must seem like too much of a 'story' but you have to believe it. That is what happens in life. So, we came down here and found an apartment. We stayed there for two years and then we bought a house. That was in 1955 and we are still in that house today. So, in 1953 I started with eight others as Clinical Associates.

Klein: You were one of the first Clinical Associates?

Fredrickson: I was one of the first groups to come. We were assigned to Chris Anfinsen, the Nobel Laureate, who died not too long ago. We got into the Lipid Laboratory but it was called Physiology and Metabolism. I had friends, Richard Hamel [sp] who was at Cornell, and he and I worked together a lot. Robert Bordum [sp], an extremely bright guy who came from Columbia, he and I worked together a lot as well. There were others like Jim Wyngaarden who succeeded me as director and who was in

Michigan one year before I was. Ed Leonard, who is still here in the Cancer Institute. We were the first group. I was assigned to Building 3 where I had first interviewed with Shannon. Shannon was about to leave to become the Director of the NIH. I got into a room of Thressa Stadtman's because we were all waiting for the Clinical Center to open. I was there with four women and I thought all the scientists were women at the NIH. I was very generously given a spot and my project was with Marjorie Horning. We worked on cholesterol oxidation. Then, at the end of the third year I stayed on the ward for another year. So instead of spending one year on the ward I spent two because I was short on training time for a residency. We all wanted to get our residency and then go back and be a professor of medicine. That was our goal after we finished our draft time. But, eventually we got in our own labs in Building 10. I started work on lipids.

Klein: How did your experience as an NIH Clinical Associate help you in your work with Tangier disease?

Fredrickson: Well, the NIH was the most marvelous place in the world to do research. We had no budgets, we just went to the Director of Research when we needed something, explained it and usually got it. We had all the free time in the world to work outside our lab and we usually worked 18 to 20 hours a day because we loved it. The lights were always on at the NIH. You could meet your friends at the library at 2 AM. It was a time when the opportunity to pursue research in this setting was simply unmatched.

You not only had the facilities, you had an expert in virtually everything you were working on right here on this campus. There was total exchange and opportunity for people to help you do what you wanted. You pursued your own ideas and you were never assigned anything. You had total independence. The motto was, 'Look, you are only here once so you better work like hell.' And we did. We made sure to take every advantage of what we could. When I finished my two years as a Clinical Associate, I went to Dr. Berliner who was my Scientific Director. He told me that he had discussed it with Dr. Anfinsen and they would like me to stay on for awhile. So I continued working and in 1961 they needed a Clinical Director in the Heart Institute. They never had one and so Dr. Berliner approached me and asked me if I would do it. I replied, 'I've only got two conditions. One is that I would like a section and the other is that I would like to have another module.' He said, 'Well, I guess we can do that.' In 1966, Shannon approached me and asked me if I would be the Director of the Heart Institute. I told him that I needed the option of reporting back in one year and telling him if I would stay in that position. I also wanted to keep my laboratory. At that point, I had a lot of people in my lab and it was going gung ho. At the end of that year I did go back to my lab but when Berliner left I took over as Scientific Director. But to get back to your question it was then and it probably still is one of the greatest programs for doing science. Certainly for learning science and becoming

an independent scientist there has never been anything better or anything like it for the first years of the programs existence.

Klein: Could you explain what you think the purpose of the program was?

Fredrickson: I have written this and can give you a copy because I know this history cold. The story is called *Biomedical Science and the Cultural Warp*. I think it will help you and give you what you need to know. You should know about Thompson. He was such an operator and he was the one who got the land for NIH out here.

Klein: Could you tell me about your interactions with the Clinical Associates once you were the Director?

Fredrickson: In 1961, I became the Clinical Director and I had all the Clinical Associates in my fold. They worked in other labs. My wife and I had what was called, "The Forum". Once every two months we would have all the Clinical Associates to our home. Everybody would go down to the basement and discuss their work. I remember once I got a wreath and put it on Berliner's head. Nothing was sacred then. The Forums were an interesting thing because there was not much social life, except for Top Cottage, the old caretaker's, house that burned down. They used to have occasional social gatherings there. Top cottage was the first social hub on the campus. Now, I remember that once I was surprised when I had met an old associate who had gone off to a university as they all did eventually. I asked him, 'How are you doing. Are you happy? Are you getting the social life there that the NIH could never give you? Are you getting out and

doing things?’ He said to me, ‘Look, the one thing that I will never forget in my life are the Forums. We don’t have anything like that here. It is important to note that we were very concerned that our staff would work all the time and not have a social life. We were especially concerned for the wives of these men. I think that is another story, the husbands did not make very much money and they had kids and they were working all the time, all through the night. In those days, my wife decided that she had to make a living for us because I was not making enough and she became an importer. She was the first importer of Dutch cigars in the United States. She made enough money for us to survive. The reason I say that is because everybody use to smoke our cigars at the Forums. The house used to be full of smoke. It was a great thing. But that is long over, we do not smoke cigars anymore and the Forums eventually stopped occurring. But I felt that was one of the major contributions we made. It did offer an opportunity to get together and it bonded everybody.

Klein: You mentioned that when you came here, Shannon had gone to the medical schools and recruited. Now did that continue?

Fredrickson: No, that summer he went and recruited and he had filled his quota except for one, when I had talked to Hugo, to whom I will be eternally grateful. Hugo was not picked, he went to Korea but thank God he got back. He is now head of the Kennedy Krieger Institute at Hopkins. Then, of course after we started, people applied for the program and were selected. There would be about 400 applications.

Klein: How did people learn about it? Was it advertised?

Fredrickson: Well, everybody knew about it. Everybody wanted to come to NIH because it was so unique.

Klein: How was it unique?

Fredrickson: First of all, you could get out of the draft for the Korean War. If you really had a career goal and you wanted to seriously pursue academic medicine it was either this or nothing. The best, the absolute *crème de la crème*, the “Tiffanys”, all applied. The Institutes would do their damndest to get what they considered the best. In 1961, when I became Clinical Director, Dr. Berliner asked me to help him pick the Clinical Associates. We would sit down and go through these applications and narrow them down to about 200 hundred. We kept trying to design the applications, to get people answer questions and to write something. It was extremely difficult because all we really had was the scholastic record of most people Very few had done any research and frankly sometimes someone would have done so much research that we were suspicious. So the art of picking out of a whole group of qualified people those who might become successful scientists was extremely difficult and still is today. The scholastic record usually meant a lot, and if somebody had shown inventiveness, and had really gone into the lab for a year or two, but we still had to gamble and bet on who was going to be good. I can tell you that there are some students from Harvard who never made it after they were picked and they just did not turn out anything. Then, there were some people who you

would not bet on very highly who came and who got turned on and who were excellent. But the applicants to this program were the cream of the crop and I used to tell Berliner that if we were applying for the program now, we would never make it with our write-ups. It was really just like sitting in Tiffany's and sorting out from all of the stones what would be the highest caret. We would have to pick them with a certain amount of variety because our programs needed people of diverse interests. The main objective was getting people who would use this environment to turn into scientists. Of course, as a result of this program most of the second generation of medical school faculty had alumni of the NIH Associate Program. They were the best.

Klein: What was the role of the Associates Program in advancing clinical research in the United States?

Fredrickson: Well, it established the research faculties at a very large number of medical schools. I will give you an anecdote that Strickland actually published. Walter Bauer was a Professor of Medicine at Mass General. We were talking one day and he said, 'I heard you are going to Bethesda.' I said, 'Yes, I am and I am very excited about.' He said to me, 'I think you are a fool because it will be a Federal backwater and nothing will ever come out of it. Well, ten years later, Walter Bauer was down here desperately trying to pick among the Associates his next year's junior faculty at Harvard. So anybody who left here could count on a ticket to opening faculty jobs that were created by NIH grants. The schools were

expanding with the folks that they wanted. It was the greatest pool of people doing medical research at that time. Of course, after we gleaned all the NIH applicants at other medical schools then the size and the quality of the applicant pool came down, especially after the draft turned off. It is by no means now what it was then.

Klein: Actually, I found an article in the May/June 1964 edition of the House Physician Reporter, the CA position was highly prized because the 2 years of service required by the program satisfied a participant's military service obligation. Did this in any way influence your decision to apply to the program? Do you think the program would have been as popular had this not been the case?

Fredrickson: The NIH Associates program would never have been as popular or as competitive as it was without the draft. Although, its popularity lasted well beyond the period of the draft because it offered an excellent research opportunity, regardless of the draft. It was great that one could fulfill their military obligation, but what you are getting is a grounding that you could almost never get anywhere else. I remember going into Building 3 and there was Arthur Kornberg, and Earl Stadtman, who is probably the greatest preceptor of the Heart Institute. Who was under with him? Theriault, who was a great scientist and the head of City of Hope [?]. Stanley Prusiner, Nobel Prize winner for prions. You could go through Earl Stadtman's preceptorships and you would see why they were highly prized. We had three Research Associates. Chris Anfinsen started that

program. They could go anywhere in the Institute, So, we had about 6 Clinical Associates, 3 Research Associates and another group called Pharmacology Fellows. In the height of the program we had about 9 or 10 slots to fill. We did our best to pick the best. It was funny because we would have friends of ours who would write us from the universities and say, 'This guy is really tops, better than Burt Sobel.' [sp] Well neither one of us had ever heard of Burt Sobel but every year we would get a Burt Sobel comparative. But again, it came down to scholastic record.

Klein: In my interviews with other former Clinical Associates, they agreed that in the sixties if you wanted to get ahead in academic medicine having the Associates Program on your CV was what you needed. Do you agree?

Fredrickson: That is absolutely true. You can just go down the faculties and name people who were here. Some examples would be Wyngaarden, Kelley, Vagelos who went to St. Louis to be a professor of biochemistry, there was no end. Gordon Talbot [sp?] went to California. He was a brilliant young man who was a Research Associate in my group and was one of my greatest friends. He died tragically of a brain tumor but the contributions he made to Berkeley and to science are unparalleled. The NIH provided a faculty for an entire medical school in San Diego when it started. Eugene Braunwald went around like the Pied Piper and took former associates. So that whole medical schools or at least of half of them would be populated with NIH graduates. I could give you endless number of examples. Many of the prominent people in academic medicine left our labs and we helped

them get started. Our job was to be preceptors if you had to make sure that they could write. I spent a lot of time, as did other preceptors, grinding into people, telling them they had to be able to write. We had many Clinical and Research Associates surprised that we took such good care of them. We made sure that they got good problems and turned out good publications and were well trained while at the NIH. We wanted to teach them how to be a scientist. One of the great ways to tell if someone was going to become a good scientist, we thought was to ask a physician who had done a piece of research to critique his preceptor. You learn a lot that way. The care and morality we had about scientific investigation was what made the NIH and this program unique. The morality has changed a little bit. I do not think it has necessarily changed for the worse but it has become entrepreneurial. The patent was the watershed event. It was at this time that the entrepreneurial spirit replaced the serendipity spirit on campus.

Klein: It seems today that the number of applications for the Associates Program has dropped dramatically. I was wondering why that is the case since former Associates are holding such prestigious positions at the NIH and all over the country?

Fredrickson: It is quite simple. The faculty at medical schools want to keep their best people at home. That is the whole reason. They know how valuable they are. It is competitive. They are competing for research grants that those people will earn and this is all a part of base funding for medical schools.

There is no doubt about why this is happening and I do not blame the schools.

Klein: Is the NIH shooting itself in the foot?

Fredrickson: Well, yes in way. But that is what it's job is. 90 percent of its money from the beginning was to go out and fund research at medical schools. But what it did was provide a tremendous guide in role models in the guys that they sent out. It was a contribution that no other institution would ever have the opportunity to make. It established a whole pattern across the country, even the world.

Klein: Could you describe the feeling on the NIH campus in regards to President Johnson's Vietnam Policy.

Fredrickson: Vietnam had some manifestations here at the NIH. Chris Anfinsen was a leader of one group on the campus against Johnson's policy. This was a group of people that had liberal politics in the main. There were very few conservatives in those days, there are very few now. There were people who were more or less imbued with a sense of public service and who want that to be very important in their life. We really felt that we had an obligation but we also felt we had a right to speak out.

Klein: Do you believe that the participants in the Associates Program served their country in a way that was equally as important as the soldiers who fought in Vietnam?

Fredrickson: Well, it is very hard to talk about that kind of sacrifice. Anybody who came here and worked hard to learn and become better scientists and

became better scientists made very important contributions to medical science and therefore to health. Yes, I think that that statement could be justified.

Klein: What did the program have to offer its participants and the NIH?

Fredrickson: Well it gave physicians a chance to take care of and work directly with patients. There were not any physicians here and the idea that they could get enough physicians here to take care of patients at a research center was a pretty bold approach. It only happened that the Vietnam War brought enough people of very high quality and very high credentials to come here to do that and that it worked.

Klein: Do you recall any female Associates during that time period?

Fredrickson: No, there were very few if any but we really fought for some. We finally got one. I do not recall what year that was but we really tried to get some but there were no female candidates. No females applied.

Klein: It was mentioned to me that women knew not to apply because those slots were to be saved for the men so that they would not be drafted. Do you agree?

Fredrickson: I doubt it. Maybe they felt that way, but we were never protecting those slots. Maybe for women there were fears of getting pregnant and not completing their training. That could be the case. Also, research as a career for women was not that sought after. Most females in medical school wanted to become practicing physicians and not researchers.

Klein: I found two separate statements in *Science* magazine. The first said, “The NIH is different... it really isn’t like a government research establishment.” That was in 1967. The second statement published in 1969 said that “For better or worse, federal policy making on health matters and therefore on biomedical research is being politicized”. And this, as well as the Vietnam War budget squeeze, has abruptly brought to an end the decade of remarkable growth in biomedical research which is already being remembered with nostalgia as the good old days at NIH. What do you think caused this shift in opinion? Do you believe that this view was the general consensus among NIH researchers at the time?

Fredrickson: I can tell you right now that although we were in academic science, all of our work was competing with other academic institutions. We never thought we were a government institution for one minute. That is why we never wore uniforms. I never had a uniform. We were not disloyal to the Public Health Service, we would wear a uniform if we needed to. There was always someone whom we could borrow one from. I think the Public Health Service is a great organization and has done a wonderful job but we never really thought we were part of the government. And we still don’t think that. We were so close and were such a large part of the academic community that we really just considered ourselves part of that. There was a time when we were not allowed to be on any study sections because they thought NIH scientists were going to steal ideas from people who were seeking grants. There was about 10 years where we couldn’t get on a study

section. Eventually we were allowed on and we proved to be valuable members.

Klein: Did the Vietnam War budget squeeze in any way hinder your ability to conduct research?

Fredrickson: No. Scientists do not get politically active. The reason is being anything that would prevent them from getting to the tools of science is anathema. We are pretty well behaved citizens in the political sense. Anything that would stop us in this pursuit of science would be death. Our minds were made somehow how to seek answers and I do not know why that is. Biomedical science and science have a high aesthetic value and it is difficult to think of anything that I would place above it. Certainly not politics. Every so often it all pays off. The pursuit just goes on and on.

Klein: That is what I am trying to get at in this paper in many ways. The Vietnam War concentrated a large number of brilliant minds at one institution and all that these brilliant minds wanted to do was pursue science. It is quite remarkable. The importance of the Associates program in terms of biomedical research and the health of the nation is not really emphasized.

Fredrickson: That is true and the numbers who came here were relatively small when compared to the number of people who had to serve. As a result it is not really fair to compare the two. But you can say that out of this program, unequivocally, came a remarkable surge of momentum that has set the standard for biomedical research in this country and all over the world. The NIH has never had a major scandal. We had tough leaders who set

high moral standards and passed those standards on. I am quite sure that I am a product of James Shannon. I know that I am. These people that I admired were absolutely gold and I hope that I lived up to their standards. I think I did. The core of people who started here were idealistic and wanted to start something. They refused to listen to those that warned them not to come.

Klein: How did by participating in the Clinical Associates program further your career?

Fredrickson: Well, I chose along the line a considerable number of appointments I just preferred to stay in the research environment. I left in 1995 to go the Institute of Medicine because I had run out of my equity and I could not make another cent. I knew that I was going to be poverty stricken but then I came back anyway. I was trained here to be a scientist and I stayed here to help that tradition continue. In the latter years of my career I have learned a lot about commercial science, the good and the bad of commercial science. If you want to know how it helped me you would have to judge if I have done anything right in my career. I look back on it fondly. The only regret I have is the strain it put on my family. We were here until all hours of the night and it was hard on the wife and kids.

Klein: Finally, could you just evaluate the Clinical Associates Program.

Fredrickson: It made the investment that government put into the NIH and to this huge hospital worthwhile. The government has really recovered this investment. It has recovered its standard setting and the creation of a mold which is

pretty well perpetuated, and survives the entrepreneurial spirit that has naturally become part of it.