

Zubrod, Gordon 1995

Dr. Gordon Zubrod Oral History 1995 A

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This is an interview of Dr. Gordon Zubrod, who was Scientific Director and Associate Director for Treatment, and Chairman of the NCI Executive Committee, taken on March 7, 1995. The interviewer is Dr. Carl G. Baker, former Director of the National Cancer Institute.

Baker: Gordon, perhaps first, you might give us a little bit of your background. I know you got your M.D. at Columbia University. But how about a little bit of your background first?

Zubrod: Well, I interned at the Presbyterian Hospital in New York, which is the hospital of Columbia and, while there, the Chairman of the Department of Medicine came up and said--I thought he was going to ball me out for something--and he said, "Come up in my office right away." And I did. And he said, "There's a young fellow named Jim Shannon over on Welfare Island and he's got a research project that's one of the most important to the armed forces, and he needs some good young doctors, so would you go over and be interviewed?" And so I did, and the result was that I signed up with Jim, Bob Berliner, Steve Brodie, and others who were in the Malaria Program which the United States instituted to deal with malaria faced in invasions into North Africa, Indonesia, the Pacific islands, Burma, China, and so on, all of which were full of malaria. So I got my introduction to research and my career in that move.

I think it was an important group because Berliner and John Taggart, who just died, and Jim and Bud Earle all really developed modern pharmacology from their interest in and study of renal disease, by determining disposition of different chemicals and their metabolites. They came to see how this was terribly important for the study of drugs in general and really, out of that program, not only came curative drugs for malaria but also the basis for modern pharmacology. So, that was a good start for me.

And, after that, I got a fellowship in medicine and pharmacology at Johns Hopkins--not in pharmacology--and then after that I stayed on the faculty at Hopkins. And then a lot of the people in the Malaria Program went to NIH in the Heart Institute and they got after me to come down and look at some jobs, and so I did.

Baker: When you were at Hopkins, were you with E.K. Marshall?

Zubrod: Yes. I was in his laboratory for 7 years. He was a wonderful, wonderful man. In summers he brought me up to his laboratory at Mount Desert Island, in Maine, near Bar Harbor, where he went every summer. He brought the whole lab up, including me. And Homer Smith was there, and Bob Berliner and a whole bunch of people interested in renal physiology. And it was a good exposure for general physiology of marine animals, but also of man.

And so, in '54, I guess, I went to NIH because Bo Mider, who was then Scientific Director of NCI, said he needed a Clinical Director, and so I was NCI Clinical Director for a number of years, and then Scientific Director, and then, on the recommendation by the Wooldridge Committee, we re-examined the Chemotherapy Program, as you remember.

Baker: Every other year practically.

Zubrod: Yes, but out of this came a reorganization of NCI in a way that I guess still exists. I don't know. And following that I was asked to take on the job of being in charge of, I guess, drugs and experimental therapy and so on, and we joined the Intramural with the Cancer Chemotherapy National Service Center (CCNSC) Program, as well as some of the extramural activities.

So then I retired after 20 years at NIH and took on the job as Cancer Center Director at the University of Miami, where I stayed for 17 years, and then retired and came back here.

Baker: Fine. I know that you weren't directly managing the Viruses Cancer Program areas, but you played a key role in your role as Chairman of the NCI Executive Committee which passed on a number of the proposals and plans made for the Viruses Cancer area. And we are looking to have peoples' views who were not actually directly responsible, so we're interviewing both people who were directly in the program, like John Moloney, and people not directly in it, such as yourself. So, as you know, we have given you some questions that we would like to discuss, so let's turn to the first question, which was to give us your views as to the five or more most important scientific results highly significant to the Viruses Cancer field during the period 1950-1980, and who were the key scientists involved as you see it?

Zubrod: Well, of course, I take the view that the important things were human beings, where patients are involved with cancer viruses. I know there have been extraordinary advances in molecular virology, but I think, to me, the important things are the viruses that turned up in man that produce cancer. And, of course, I think the Epstein-Barr virus is of great importance and becomes more important all the time. And I guess Epstein and the Henles were the major contributors to that. And there is an awful lot of Epstein-Barr virus disease in college students. I have a lot of grandchildren who are in college and these kids get what looks like severe infectious mononucleosis and it stays in them for 2 years or so, and I'm afraid some of them are going to get lymphoma eventually. I think some may already have.

I think, of course, the HIV is of terrible importance. I don't want to give any credit because the NIH "Truth Squad" will be after me. But obviously the CDC and, of course, Gallo and the Frenchman, I guess, played the key roles in bringing that out. But I think the CDC deserves a lot of credit for uncovering the first few cases, you know, and putting it all together very quickly and publishing the first five cases in their little bulletin, which was astonishing.

Baker: And then there is the nasopharyngeal cancer in China and the uterine cancer and hepatitis viruses?

Zubrod: Yes. The third one, of course, is the liver cancer and viral hepatitis in China, research findings which were developed by--was his last name Baruch?

He was at NIH, and he got the Nobel Prize, I think.

Baker: Baruch Blumberg. He is now head of one of the Colleges at Oxford.

Zubrod: And of course as you said nasopharyngeal cancer in China came in with the Epstein-Barr virus too, didn't it?

Baker: Yes.

Zubrod: So I think those are the three most important human viruses that are involved in induction of human cancers.

Baker: And, of course, therapeutically, the Burkitt lymphoma in Africa--mostly in Africa--the dramatic results of chemotherapy was a surprising efficiency of treatment, I think.

Zubrod: But they don't know that that was a virus yet. They haven't tied it down. I wouldn't have dragged that in.

On the animal side, of course it's too far back for your review, but I think the Rous sarcoma and the quantitative work that was done with the Rous sarcoma that Ray Bryan and others did after Peyton Rous found it, I thought was marvelous work and always provided a model for what viruses could do.

Baker: That, along with Joe Beard, kept the field alive, at least when most people didn't think viruses had anything to do with cancer.

Zubrod: Then I think the whole story of Ludwik Gross, the *polyomavirus*, Sarah Stewart and her girlfriend from the Division of Biologic Standards--

Baker: Bernice Eddy?

Zubrod: Bernice Eddy. Yes. I think they did a marvelous job, particularly Sarah Stewart. I think she did tissue cultures and was able to separate out the two viruses that were confusing Ludwig Gross. Ludwig deserved a lot of credit. He was laughed at year after year at the AACR meetings and yet he was right, except that he had two viruses instead of one, and Sarah Stewart was the one who separated them.

Baker: Yes. Those events, I think, opened up the field and really made it blossom.

Zubrod: And then there was a lot of work on *adenovirus*. I guess Huebner did most of that, didn't he?

Baker: A lot of it.

Zubrod: Yes. Well, those are the things that occur to me.

Baker: And Ruth Kirschstein was involved in the adenovirus area.

Zubrod: To mention one laboratory venture, I guess Temin's work on the RNA-directed DNA synthesis is probably a key feature of virus diseases, particularly HIV.

Baker: And Baltimore, I guess.

Zubrod: What?

Baker: Temin and Baltimore are usually mentioned jointly because they both came up with reverse transcriptase about the same time, for which they received the Nobel Prize.

Zubrod: I remember one of the AACR meetings, when Temin presented his work, as soon as he finished Sol Spiegelman got up and took his bag and went home to get to work. I don't think Gallo did. He stayed on. So, you know, the smart people were recognizing the importance of that within five minutes.

Baker: Yes. That one was recognized right away.

Zubrod: Yes.

Baker: Okay. The second question is what do you think were the key administrative or management decisions affecting this field and who made those decisions as you understood it?

Zubrod: Well, there was only one place that I played any role, and that wasn't much of one. I'm sure you've heard this story many times about the Department of Agriculture?

Baker: Go ahead and tell us about it.

Zubrod: Well electron microscope studies suggested that viral C-particles were seen in cow's milk. Ken Endicott called up the Department of Agriculture and told them about it, and they panicked because they could see the milk industry just vanishing overnight. So, they invited us down, and Ken brought me along. They were terrified. They said, "Dr. Endicott, we would like to collaborate and contribute \$10 million dollars to help settle this question as soon as possible." Ken said, "Okay." So he went back to see Jack Dalton, had him repeat the studies I think--well, maybe Jack would have anyway--and found it was all a mistake. And Ken called up the Department of Agriculture and they said, "Oh, thank goodness. You've saved our lives and the whole milk industry for the United States."

Baker: Did he transfer back the \$10 million?

Zubrod: They said, "We're so happy about it, Dr. Endicott, you keep that \$10 million dollars and do something with it." So Ken and I got together and he said, "What are we going to do?" He said, "We've got all these polio scientists hanging around without much to do now, why don't we put up some carrots for them and see if we can get them interested in cancer research?"

So, as far as I was concerned, that was the beginning of the Cancer Virus Program. I don't know what happened to the \$10 million dollars, but probably you do.

Baker: I never heard this story of money being transferred from the Department of Agriculture. Well before Ken was Director of NCI when I was with Smadel in Building 1 (about 1958), we talked to several polio scientists who, as you say, were looking for something new to do, since the polio problem had pretty well been solved. A year before the Special Virus Leukemia Program was started in 1964, Congress earmarked \$1 million for cancer viruses work, and that money went into grants. But then, as you know, Ken asked for a special appropriation for \$10 million for the Special Virus Leukemia Program. I think the scare about the C-particles in milk came after that.

Zubrod: After that.

Baker: After that. Dr. Shannon had insisted on our having good justification before he would approve Ken's going to ask Congress for a special appropriation. Rauscher, Bryan, and I had a hand in drafting that memo to Shannon from Endicott. I think you also reviewed it somewhere along the way.

Zubrod: Well, I didn't have too much to do with it. Earlier, however, before the Special Virus Leukemia Program started, Ken said I should get together with the in-house scientists and, of course, we didn't have very many interested in viruses, but Ray Bryan and I plotted out a program for in-house research on viruses. I don't know what happened to that. I think Ray did some of the things.

Baker: Well, I guess this effort was carried out under Ray's leadership. Rauscher joined him during this period. Moloney originally was Bryan's technician.

Zubrod: That's right.

Baker: Moloney got his Ph.D. at George Washington University while working with Ray. That preliminary planning effort with Ray was, I think, about 1961.

Zubrod: I think the Department of Agriculture deserves a great deal of credit for the Cancer Virus Program, with their rapid decision-making, "Here's \$10 million dollars."

Baker: I never heard of this. I think that the SVLP was started before the episode with the C-particle scare with milk.

Well, the third question is, well, I guess we just answered that. You said your main activities were--

Zubrod: I lost track of it after that because I was busy working more on therapy activities.

Baker: But I don't want us under-emphasize, though, your importance as Chairman of the Executive Committee. You and I worked together to develop the agenda items and to make sure the minutes recorded the activities and that follow-up was done.

Zubrod: And you don't have access to those minutes?

Baker: Well, they're gone. I think many activities were passed through the Executive Committee and many key decisions were made there. For example, on mammography we had to make a decision which in those days was somewhat difficult because it was \$3 million dollars cost for what we were talking about for a real study. And in those days we thought \$3 million dollars entailed a pretty rough decision to make, but we made the decision and I think it was a good one. Do you remember that one?

Zubrod: Yes. Oh, yes. And Mike Shimkin and the HIP Study and so on?

Baker: Yes. Well, whom do you think the main leaders who influenced the direction and course of events in the Cancer Viruses field actually were?

Zubrod: I think Endicott deserves a great deal of credit.

Baker: So do I.

Zubrod: He saw the possibilities and jumped in on it and got the mechanisms going. In a way Nixon deserves some credit for turning swords into ploughshares out at Ft. Detrick in 1972, and I think that became the basis of the NCI satellite activity out there which did a lot of work in viruses, didn't they, most of it, for NCI?

Baker: They still have some good people out there.

Zubrod: Yes.

Baker: How aware are you of the membership on the key committees and what do you think the main contribution of these committees are? Well, one of them I just was bringing up was, of course, the Executive Committee of the NCI, but there were other committees.

Zubrod: I lost track of that whole sequence of events after that, after the start-up of the program, so I don't know the names of the committees, I don't remember who was on them.

Baker: Well, there's one that you know about, and that's that special appropriation of \$10 million, some of it went for leukemia treatment research, and you were directly involved in that.

Zubrod: Yes. But that was indirectly related to viruses except Jack Dalton's foray in that?

Baker: Except that you did provide certain materials from those leukemia patients that your therapy research staff were seeing, and these were very instrumental for progress in the laboratory research.

Zubrod: Oh, yes. I see.

Baker: So I consider it an important part of the Program, even though it wasn't directly virus research *per se*.

Zubrod: In my answer I was focusing specifically only on viruses.

Baker: But I don't want to forget the contributions from the therapy area, because I think they were also important to the Program.

Zubrod: We were bringing in patients from all over partly to supply tissue and urine and blood samples and so on for Jack Dalton to look at.

Baker: Does any particular individual consultant come to mind? Like, I'll give you one: Wendell Stanley played a specially helpful role.

Zubrod: He was at the top of my list here because he and Bo Mider used to review the intramural activities frequently. Bo depended very much on him to keep straight appropriate surveillance of the viruses and cancer activities, especially on the polyoma stuff. He didn't really worry about Sarah Stewart.

Baker: Yes. I considered Stanley one of the most helpful consultants. And I don't know if you had much to do with Chuck Evans, but he was chairman of one of the committees that was very helpful, but I don't think you met with him much.

Zubrod: No. He didn't surface for me. I think Huebner probably provided a lot of stimulus, didn't he, with his oncogene stuff?

Baker: Oh, he was always stimulating.

Zubrod: And I don't know how much the Henles were in on it, any of the committees?

Baker: Yes, they were active, and Joe Melnick.

Zubrod: I was always impressed with Sol Spiegelman (of course he's from my school I guess) Sol Spiegelman. I thought he was a very bright person who was very honest and very helpful in looking in the future of virus research.

Baker: How about laymen and political figures? Does anybody come to mind in that area?

Zubrod: Well, I'd like to say Mathilde Krim, but I think she came mostly after that with the interferon story.

Baker: Well, in this latter period she was certainly involved, especially with Joe Burchenal in preparing some of the scientific background for passing the National Cancer Act of 1971. Well, you must admit, Mary Lasker had influence?

Zubrod: Oh yes, but that was so off in the distance I can't imagine what she did, because she'd have lunch with a key Senator and make decisions that way. Yes. I think she was always a force for the whole pot of NCI.

Baker: The next question relates to resources. A lot of people, I think, don't appreciate the amount of effort it takes sometimes to develop new resources. At the time the Special Virus Leukemia Program got started, the tissue culture cell lines and ways of standardizing the serum and antibody preparations and so forth were not too far along in animals (much less in humans). Do you think this program played a key role in that?

Zubrod: Oh, absolutely. I think it was highly significant because the scientists in the university laboratories had no way of getting their hands on adequate pure materials, and I think Ken Endicott's notion of contracts played the key role here and he was able to go out and use some of these virus funds to develop large amounts of highly purified materials--cell lines, animals and so on and so forth--and I think that made the field move much more rapidly than if each scientist had had to try to do this himself and buy it from the store.

Baker: There was an early view that industry could not make good enough quality materials, and I knew we got over that hump when Moloney came in one day when he said, Pfizer, the contractor, was making Moloney virus in preparations that were just as good as anything they'd ever made, and they had buckets of it. And I had kidded the virologists that they, by the time they exchanged samples with each other, checking on the quality of it, had used up all of it. So that was a hump that we had to get over and the contract mechanism solved that.

Zubrod: Yes. I think the contract was just terrific for the Chemotherapy Program, but also for the Virus Program, and neither one would have moved so rapidly without it.

Baker: You're probably not aware of the relative amounts of Virus Cancer grants versus contracts. I don't know why we say "versus," since you really need both, in my view.

Zubrod: No. I don't know. Usually, I think, on big broad things like that the grants program was, at that time, very slow to pick up on new developments and provide funding, but I just don't know the facts.

Baker: Yes. I thought you probably were not in on details there.

As you look back now, would you like to have seen anything changed compared to the way it developed?

Zubrod: Well, I think there was always this adversarial attitude between the university scientists and NIH, and I think probably more attention should have been paid as to how to prevent this, how to be prophylactic, so that people could be friends and work together. So, I would have paid more attention to laying the groundwork for getting along. And I'm surprised Ken didn't pick up on this, because he was so smart, and figure out a way of getting around it.

Baker: I think he tried mightily.

Zubrod: Yes. I think he probably did. But it certainly was a problem, a terrible problem, as you know, in the Chemotherapy Program, even though now many of the drugs that are being used in molecular biology and for all sorts of diseases besides cancer came out of that screening program, like hydroxyurea, for example, that's so important now in the sickle cell disease.

Baker: You do think that the program laid some foundations for molecular biology development, as well.

Zubrod: Yes. I think the other thing I'd change would be not to let NIH scientists take out patents. That, I think, has really caused them a lot of trouble.

Baker: I think that whole development was unfortunate. The idea of patenting some of these life forms, it seems to me, was a mistake in the first place.

Zubrod: I think so.

Baker: And then, on the other hand, if you look at it from a business standpoint, I guess, it's allowed biotechnology to blossom, and it might not have blossomed to that degree if there weren't money-making schemes there.

Zubrod: Well, I think it's all right for the Government to patent it, to protect it from being raided by the commercial outfits, but to let the scientists get some money out of it I think is wrong.

Baker: Well, I think it led to unfortunate consequences but, on the other hand, it's hard to argue that if other people are making money on patents why restrict the good Government scientist from that.

Zubrod: The third thing that I would change, I think we should have made a real effort to recruit hot young virologists to NCI to build for the future who were not only virologists but competent in molecular biology. I think we had the old-timers like Ray Bryan and Wilton Earle and so on, but what we needed was an infusion, as we had in the clinical area, of the brightest young people in the country.

Baker: The Program did some of this starting with Tim O'Conner. Of course Frederick did pretty well, I think--

Zubrod: Who did?

Baker: Frederick did pretty well in recruiting those.

Zubrod: Well, I was thinking of NCI itself, internally.

Baker: Well, I meant the NCI people at Frederick. I think there are some bright young molecular biologists there. Also, Moloney and others in appreciation of the changes toward molecular biology taking place moved the Program in that direction.

Zubrod: Yes. Once the Frederick thing came, I think that all changed.

Baker: Well, Gallo. I don't know what you think of Gallo as a scientist. He's certainly produced a tremendous output.

Zubrod: I can't figure that out at all. Now, Stephen, my youngest, worked in Gallo's laboratory for a summer, just to get to know something about laboratory work, and he likes Gallo very much. He's always kidding me about *The Chicago Tribune* and so on and their vendetta against Gallo.

The fourth thing I would have changed is that when we were in Uganda and had all those wonderful opportunities to study Burkitt's lymphoma, there was so much Kaposi's sarcoma around that we had to start a second unit just to hospitalize the Kaposi's sarcoma, and that was about 10 years before the HIV broke. I'm sure that was a nest of patients important for research.

Baker: Very likely.

Zubrod: And it's like the Kaposi's sarcoma you see in the HIV patients. It spreads all over. It isn't just a couple of red spots on an old man's legs, but it's a real fulminating diffuse disease. I'm sure, had we done that, we probably would have infected some Public Health Service officers, but also we might have found out something very significant.

Actually, I worry about that now as to whether people like Ziegler and Chuck Vogel and so on, because they ran that unit, might suffer bad consequences, but nobody was thinking that kind of virus infection at that time. But that would have been a tremendous opportunity, especially if they had saved samples from all of them.

Baker: Well, hindsight is great.

Zubrod: Well, your question is one of hindsight. But those are the things I'd change.

Baker: I'd next like to turn to the tenth question, which deals with the problem of the public's perception of science, including biomedical research. Do you think the general viewpoint of the public toward science is the same now, better, or worse, than it was when we were at NCI?

Zubrod: I think it's better, Carl, I think, as people get more educated. You know, you talk to your grandchildren and they have courses in chemistry and biology and so on, and they really have a basic understanding of what's going on. I think that is changing their attitudes and when they grow up--and even now for their parents--more sympathy for far-out research will result. So, I think it is changing. Whether it has already changed, I don't know. I think it has, but I think the big changes will come.

Baker: Well, I'm not sure I agree with you on that one.

Zubrod: Really?

Baker: Those who are going into science are better educated about science. Those people who are broadly educated, I think, have more access to information for non-scientists, like *The Washington Post* is doing pretty well on Monday mornings in their special Science Section. On the other hand, those who are not in science are, to me, abysmally ignorant of science, and a good example is the complete lack of knowledge of the Second Law of Thermodynamics, which is certainly one of the most important cultural developments. And I find that when I was teaching those who were not going into science, they didn't really know much about science at all, and I think that's gotten worse.

It's like computers. We're going to have a gap between those who can use computers and those who don't, and that gap is getting larger all the time, I believe. So, I'm worried about people who are not going into science. And I don't think the Science Departments have done a good job in teaching those who are not going into science. They devote their energies quite well to those who are going into research, but they don't pay much attention to those who are not going into science.

Zubrod: Well, you may be right. I'm impressed though with the young people, say my grandchildren, and they're not especially going into science, but, you know, they're on a computer all the time and on Internet and asking questions. It's hard to avoid picking up some good information.

Baker: Well, I'm glad to hear that.

Zubrod: Yes. They made me sign up for the Internet a couple of weeks ago on my computer, and they come over Sunday nights and we fool around with it.

Baker: Well, I put in my modem, but I didn't get it in right, apparently, so I haven't got it working yet. But I'm writing up memoirs, so I'm using mine mostly as a word processor at the moment.

Zubrod: Yes. Well, that's what I do too. I'm writing up my--

Baker: They're wonderful, aren't they?

Zubrod: Yes. I'm writing up my family history. I'm on my fifth or sixth essay now about the family.

Baker: Yes. You told me you were doing that. That's good.

Zubrod: I'm almost getting enough for several chapters in a book. But they come over and straighten me out when I can't get something up on the computer.

Baker: That's a nice resource to have.

Zubrod: Oh, boy, I should say. They're so clever at it.

Baker: Some of these programs are amazing.

Zubrod: They just take one glance at what's on the screen and they say, "Oh, that's what's wrong. We'll do this and this and this," and it's all fixed. And I have to worry about it and try to dig it out, but once they show me I can maybe remember it.

Baker: Well, the last question. Are there any other comments or opinions or views you'd like to express in relation to this general topic, or anything else you'd like to say, particularly from an historical standpoint?

Zubrod: Well, as you know, I've always been impressed with the teams of experts that get together and work together actively, and I think many of the great advances have come in that way--penicillin, malaria, to some extent the HIV--and I think this is getting to be more and more recognized as seen in *The New England Journal*, especially in the clinical side. You rarely see a study by a single individual anymore, and especially in the clinic.

Baker: Well, cancer also is a multidiscipline problem, and I think we had a good group in NCI that appreciated that, and I thought we worked together pretty well.

Zubrod: Yes. So I think that will be a bigger and bigger direction to go in, to pull teams together, like task forces and so on, to really hone in on a problem and not just leave it up to the single bright guy with a grant who often can't get at the resources he needs to do things. This is particularly true in the clinic.

The other thing is if you look at the treatment of viral diseases, it's hard to count any chemotherapeutic agents that are effective. Almost all of the successes have been in inoculations or vaccine, and I'm sure this is receiving lots of attention in HIV and other areas, but I see very little likelihood of getting a chemotherapeutic agent that's going to kill a virus.

Baker: You, and I, and Sol Sheppartz and Lou Carrese, spent about four weeks in laying out the plans for the Chemotherapy Program.

Zubrod: Oh, yes. Yes.

Baker: Would you comment on how influential and useful, or not, you thought that was?

Zubrod: Well, I think it was extraordinarily effective in straightening out my thinking and, I think, the thinking of the other people who participated in it. And I think the fact that Shannon accepted it showed that it was pretty good.

Baker: Lou Carrese really was impressed by that.

Zubrod: I think that's a very important thing, to sit down and really study something like that for a couple of months and see where the gaps are and what can be done, what resources are needed, and so on. I thought that was a very interesting time in my life.

Baker: In mine too. At Sol Sheppartz's retirement party he commented on this and said that the basic logic is still the same for running the Chemotherapy Program. A few details have been added, but basically the same flow of logic was still there as the basis for the program.

Zubrod: Well, I was fortunate because Shannon, when I proposed putting the CCNSC and the Intramural Program in Chemotherapy together, when he allowed us to do that, I think we were able to take that program and make that the basis for the combined CCNSC-Intramural Program, and I think it really worked.

Baker: I don't think the virologists paid as much attention to their plans as the chemotherapy people did to the chemotherapy ones.

Zubrod: Did they ever do that?

Baker: They used it as a communication device, especially the networking aspects.

Zubrod: We used this as the operational device.

Baker: Oh, yes. Sure. And then Chemical Carcinogenesis, later they used it pretty well, but the virologists pretty much tried to ignore it. But, as Moloney said though, the other day, suddenly they were using it when they didn't even realize it. He says, "We didn't realize we were actually planning, but we were, in running the program."

Well, anything else, Gordon? I appreciate your time and comments.

Zubrod: Well, I think it's nice that you and Bob are putting this together.

Baker: Thanks a lot, Gordon.

Zubrod: Okay. You're very welcome.