



## An Oral History of the Linus Pauling Institute, November 14, 2011

**Title**

“A New Life”

**Date**

November 14, 2011

**Location**

Valley Library, Oregon State University.

**Summary**

In interview 5, Lawson discusses his assumption of the role of Chief Executive Officer of the Linus Pauling Institute of Science and Medicine; recounts the history of the Linus Pauling Heart Foundation; and details the process by which it was decided that LPISM would move from Palo Alto, California to the campus of Oregon State University. He then provides insight into the Institute's physical and administrative relocation to Oregon; early allies that the Institute found at OSU; important hires that were made once the organization had settled at OSU; and the rationale behind the change of the Institute's name to the Linus Pauling Institute.

From there, Lawson discusses litigation that lingered in the early OSU years; the creation of the LPI Micronutrient Information Center; and broader research that continues on intravenous vitamin C. The session concludes with a discussion of the founding of the LPI Prize for Health Research; the construction and impact of the Linus Pauling Science Center; and future endeavors envisioned for LPI.

**Interviewee**

Steve Lawson

**Interviewer**

Chris Petersen

**Website**

<http://scarc.library.oregonstate.edu/oh150/lpi/>

## Transcript

**\*Note: Interview recorded to audio only.**

**Steve Lawson:** [I'm] Steve Lawson. We're here in a room at the Valley Library. It's the 14th day of November, 2011.

**Chris Petersen:** Ok, so today we will principally be talking about the Institute at OSU, but there are a couple of things that I wanted to touch on from the past chronology of our talks that we didn't actually get to. And the first is an important question, I think, and that's if you could trace how you advanced into the ranks of Executive Officer and then Chief Executive Officer of the old LPISM?

**SL:** Sure. That was quite a surprise. I think in our last conversation I'd outlined some of the financial problems that the Institute had been chronically experiencing, and these go way back to the 1970s, when staff was asked to take pay cuts and the contribution to the retirement plan was decreased periodically for a set period of time. The employees of the Institute were no strangers to financial hardship. The salaries were not very competitive, fairly low, probably, when you compared salaries to roughly equivalent positions in academia or the private sector. But I think people had a great passion for the Linus Pauling Institute, which is why I worked there certainly, because I felt strongly about the mission and I really liked Linus Pauling. The more I found out about him, the more I liked him. And I was very pleased and kind of honored to be part of the Linus Pauling Institute of Science and Medicine. As my skills developed in science, and I began to get involved in more and more projects, I found it very challenging and lots of fun. I think I demonstrated some aptitude, or I don't think I would have been asked by Pauling and others to participate at the level I was asked.

Then in the mid-1980s, Emile Zuckerkandl, who succeeded Art Robinson as President and Director of the Institute, was getting very interested in using a relatively new technique called two-dimensional polyacrylamide gel electrophoresis to profile proteins that might distinguish tumor cells from primary tissue and from metastatic tumor tissue. We set up a laboratory together and started on a fairly productive collaboration. As a result I became Co-Director of the lab for research in gene regulation, and reported directly to Emile Zuckerkandl. And Emile and I got along very, very well. I really respected him. He is an extraordinarily intelligent person. I can see why his collaboration with Pauling was so successful in the early 1960s.

As the Institute moved to the point of inflection of decades there, Emile's tenure was coming to an end. As I mentioned last time, Emile and Rick Hicks departed from the Institute because I think Emile was unwilling to make some of the changes that the Board felt were necessary to align income with expense. The Institute had expanded pretty dramatically under Emile's direction and had become kind of a broad molecular biological/biomedical research organization. It had areas of orthomolecular medicine, but it also had areas that really weren't germane to orthomolecular medicine that were of interest to Emile specifically and to others, of course, who were carrying out research at the Institute.

When Emile left - and Linus Pauling, of course, had become sick and was not interested in carrying out many administrator responsibilities - Linus Pauling Jr. stepped in to fill an obvious void, and that began my long association with Linus Pauling Jr. I got to know him very well, and I think we worked together very well. I took care of the day-to-day management of the Institute, and Linus Pauling Jr., as a result of his experience and wisdom, provided some direction for me as well. I think I mentioned last time, when the Institute was going through this reorganization, the fate of different research projects and different researchers within the organization was really up in the air. People weren't sure whether they would be asked to remain with the Institute or whether they would be laid off. Researchers whose work was carefully aligned with the newly refocused orthomolecular medical mission felt fairly confident about remaining with the Institute and others were anxious, of course.

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At some point there was a board meeting. There were board meetings more often during this period. Board meetings had been relatively rare during my tenure at the Institute. I was never sure exactly when a board meeting was being held. I think that they were only held as often as required by law, but not very often. But during this period of change and turmoil, board meetings were quite regular. I was unsure about my fate in the Institute as well, because the work I was doing was really not related specifically to orthomolecular medicine, so I was concerned that I might lose my job, and I was aware of Emile's imminent departure, so I obviously was concerned about my future then too.

It came as a great surprise when I was summoned to Linus Pauling's office, during a board meeting, by Dorothy Munro. I had no idea why they wanted to talk to me, or what I could offer to the board, but nevertheless I went down and met with the board. They introduced some changes that they had been thinking about and asked my opinion of these changes. On the board in the office there, somebody had written out a kind of organizational chart for the Institute. I looked at it and made a few comments and said that I thought it was a good idea that they had decided to really make clear the responsibilities within the Institute because it was something that was of great concern to people. The Institute had operated managerially as a bit of a black box and decisions were not always clear and the rationale for decisions was not always obvious. I think that's true for any organization, but for a small organization that can cause a lot of problems.

During the board meeting they asked me if I was interested in participating in the reorganized Institute and without giving it much thought at the time I said yes. I was a bit surprised, and I think a bit flattered, by this invitation to assume more responsibility within the Institute, and I thought it was likely to be quite a challenge. At that time I had no idea just how dramatic a challenge it would be, but I knew it would be stimulating, and like I said earlier, I like to solve problems, and I saw quite a few problems and thought I might be helpful in tackling them.

**CP:** So, your title changed at some point, though, from Executive Officer to Chief Executive Officer?

**SL:** Right. It went through a metamorphosis. Initially, Linus Pauling had asked me to be, I think the title was Assistant to the President, when he assumed, very temporarily, the role of President. And I took that job seriously. I didn't really know what it entailed, but I took it seriously. I started thinking about things that needed to be acted upon at the Institute, and I produced a list of some things that needed to be done and my rationale for doing them, and gave that to Linus Pauling. He left for a few months to go down to Big Sur, so there was really a bit of a vacuum. I think Linus Pauling Jr. recognized at that time that his father really had no interest in managing the Institute. I was left without much direction at that point. I had been given a new title but I didn't really have a firm grasp of what I was expected to do, and I didn't really feel that I had the authority to do what I felt was in the best interest of the Institute, because I was not Chief Administrator at the Institute. So my job title changed when the board reorganized the Institute and asked me to become involved in management from that to Executive Officer. I think Executive Officer is kind of old terminology from the military. Maybe after a year or so as Executive Officer, I was named Chief Executive Officer.

**CP:** Was there any significant difference in the powers that you had or your responsibilities? Or was it just a title change?

**SL:** I think it was just a title change. It was just recognizing the actual duties that I was performing at the Institute. Linus Pauling Jr., of course, was still living in Hawaii and he would come to the Institute periodically, sometimes as often as once a month for a day or two.

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But I was handling all the day-to-day administrative tasks at the Institute. We had some litigation at the time. We were trying to chart a course for the future and all those things I was acting on a daily basis and thinking about and discussing with my colleagues.

**CP:** What was Linus Pauling Jr.'s title?

**SL:** I believe he became Chairman of the Board of Trustees and Linus Pauling Sr., at some point, became Director of Research. Which is a little odd because technically Linus Pauling was on the Board and I reported to the Board. So I reported to Linus Pauling, who technically reported to me, as Chief Executive Officer. It was kind of an odd situation, but it didn't interfere with our relationship or any of our activities because I don't think we let titles get in the way.

**CP:** Another thing that we touched on in our last meeting that I wanted to follow up on real quick was the Linus Pauling Heart Foundation. You mentioned that in the context of something that Matthias Rath was involved in and I wonder what became of that.

**SL:** Right. As I mentioned, some of Matthias Rath's activities were unknown to the employees of the Institute. We became vaguely aware, at some point, that other organizations with kind of parallel missions to the Institute were being set up by Pauling and Rath, and that caused a little consternation because we weren't sure if - and I wasn't in management at that time - but the employees at the Institute weren't sure if these other organizations were going to be competitive with

the Institute. Were they going to compete for funds from the same donors, for instance? At some point it became clear to me that it wasn't strictly competitive, but I didn't really see the rationale for having independent organizations to carry out this work. I believe that Rath and Pauling set up the Linus Pauling Heart Foundation because they were anxious to get around the management of the Institute and raise money and carry out clinical trials in vitamin C and heart disease, specifically atherosclerosis, and do more investigative work, maybe mechanistic work on lysine, proline, vitamin C, and lipoprotein(a), which was the main focus of Pauling's research interest in orthomolecular medicine. But Rath and Pauling were starting to grow apart, because Pauling was, I think, expressing some decreasing confidence in Rath's behavior and abilities. Pauling decided to wrap up the Linus Pauling Heart Foundation. I believe this was probably after Rath had left the Institute.

But here was this organization that had an independent life, had headquarters in a small office building on California Ave. a few blocks from the Institute, and Rath had apparently hired a few people, so they were on the payroll. Some of the activities of the Foundation apparently were a surprise to Pauling, because when he was informed about these things, he was not pleased about some of the activities the Foundation had undertaken. He asked me if I would wind up the Linus Pauling Heart Foundation, and transfer the assets to the Linus Pauling Institute of Science and Medicine to carry out work on heart disease. I told him I would be happy to do that, and set about legally dissolving the Linus Pauling Heart Foundation and taking the physical assets back to the 440 Page Mill Road facility and also transferring the financial assets to a restricted account at the Linus Pauling Institute of Science and Medicine.

**CP:** Okay, so at the end of our interview last time we were at the point where Pauling had died. This is 1994. You've received a couple of pretty substantial gifts that have kept the Institute more or less alive but you also know you need to leave Palo Alto because of a rezoning issue. And in 1996, the Institute moves to OSU, so I'm interested in knowing how that process came about.

**SL:** Let me back up briefly. In 1994, it was a very pivotal year in many respects, not just because of Pauling's death, but it was also the year that we celebrated the 20th anniversary of the Linus Pauling Institute of Science and Medicine, in 1993, I believe, at the Rengstorff House in Mountain View, California. That was an opportunity for Pauling to see some of his old friends and colleagues. We invited quite a few of his colleagues from academic institutions, local donors and friends of the Institute, and of course the staff and faculty of the Linus Pauling Institute of Science and Medicine and their guests. So it was a really terrific event at a beautiful, renovated Victorian house that was on the mudflats in Mountain View. A representative of Special Collections here at OSU came down with some of Pauling's medals and awards that he had already given to the University. They were on display, and we had scientific posters. It was really a great time for Pauling to meet and greet, perhaps for the last time, some of his associates.

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Then in 1994, also to celebrate the twentieth anniversary of the Linus Pauling Institute of Science and Medicine, we decided to convene a large scientific conference. The Institute had historically convened a number of conferences. One was to honor Björn Nordenström from the Karolinska Institute. Pauling became quite interested in his bioelectric theory of cancer therapy. It was quite interesting, so there was a symposium to honor him. In 1998 there had been a symposium called "Nutrition, Health and Peace" convened by the Institute with presentations by people doing work in orthomolecular medicine, molecular biology, and chemistry. Again, to honor Linus Pauling's work in orthomolecular medicine, science and peace. Of course, there had been birthdays for Linus Pauling and the Linus Pauling Award for Humanitarianism. There had been a lot of events throughout the history of the Linus Pauling Institute, some with a fundraising focus and some with a scientific focus. But of course, Linus Pauling was always in the midst of these occasions.

We decided that an appropriate twentieth anniversary event would be a scientific conference organized around the theme of orthomolecular medicine. Linus Pauling was pleased to hear about this, and we decided to call it "The Therapeutic Potential of Biological Antioxidants." We had a scientific committee and organizing committee set up at the Institute that reviewed poster abstracts and invited people to speak at the conference. I remember going into Pauling's office to ask what he thought of our provisional title "The Therapeutic Potential of Biological Antioxidants." In his very characteristic way, he leaned back in his chair and closed his eyes and thought for a minute and without even opening his eyes he said to me, 'Well, I think it's fine, but we shouldn't forget that molecules like vitamin C serve many functions in the body. They are not strictly committed to being only antioxidants. They also have other very important properties. We shouldn't forget that.' I agreed with him completely, but he gave his blessing to our provisional title to the conference. And he also agreed

to be the keynote speaker at the conference—and this was scheduled for the Fall of 1994, in September—and people like Bruce Ames, Balz Frei, Maret Traber, Lester Packer, Enrique Cadenas, a lot of people in the free radical field were there. I hadn't met some of these people before. I had met Bruce Ames and Balz Frei as early as 1989 when they came to the Institute to give seminars on vitamin C because Ames had published with Frei a paper in *PNAS* that year showing that ascorbate is the outstanding antioxidant in human blood. In the pecking order, it's number one. Pauling, of course, was very excited by this paper, and they were invited to come give seminars the day of the earthquake, as it turned out. There were a lot of interesting people invited to speak at our conference.

Then, of course, Pauling died at the end of August. So I asked Henry Taube, who was one of Pauling's friends, and had done work in free radical chemistry as well, if he would step in as a substitute for Linus Pauling to give the keynote lecture. He was happy to do so, that was very gracious of him to consent to do that at the last minute because he was very active at Stanford, and I'm sure that there were many demands on his time, I thought that it was terrific that he really rose to the occasion and agreed to give that talk, which went very well. I picked him up from Stanford and drove him up to Tiburon that day to give the talk, and he did an outstanding job. Really thrilled the group there.

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After Pauling had died, of course, and even before his death, we were engaged in analyzing options for the future of the Institute. I discussed some ideas with some of the people that had attended "The Therapeutic Potential of Biological Antioxidants" in September, and then was approached in 1994 - 1993 to 1994 -by a fellow named Bill Kemp, who introduced me to people in different universities around the country. We had been talking, as I mentioned last time, with people all over the country. Bill had arranged for me to meet the governor of Oklahoma at the Jonathan Club in Los Angeles because the governor of Oklahoma was on a trip to try to get businesses to relocate or move some of their operations to the state of Oklahoma, because that's the economic engine that drives the state. So I met with the governor at the Jonathan Club. It was kind of a funny meeting. It was in a really luxurious room at the Jonathan Club, and the governor was there with his Chief of Staff, and maybe a dozen other people, that were all paying rapt attention to everything he said. They were all lined up on one side of a long, long conference table, and it was me on the other side of the conference table. I had no one with me, no advisors. Just me. I had a great conversation with him, and he invited me and Linus Pauling Jr. to Oklahoma City to give a presentation to the President of the university and the President of the foundation, which operates in a similar way to the Oregon State University Foundation here, with their relationship to the university.

But anyway, getting back more specifically to your question. Other people came and made presentations to our Board about their ideas for relocation. One of the people who came was John Byrne, who brought with him, I believe, Dick Scanlan, who was Dean of Research at that time. And Oregon State, in many ways seemed to be a good fit because Linus Pauling, this was his alma mater, he had already agreed to give his and his wife's personal and professional memorabilia to Oregon State University to be housed in a new special collections – which formed kind of the nucleus for Special Collections. So it seemed like a good fit, but we weren't really sure about specifically how the university would work into the program here. So John Byrne and Dick Scanlan talked about the centers and institutes that were already extant at Oregon State University, and how they were organized and who they reported to, and how they were staffed and so forth. And they talked a bit about the nutrition department, and the work that was going on there. Exercise and Sports Physiology and Medicine, Pharmacy, Biochemistry and Biophysics, Environmental & Molecular Toxicology - strong programs that seemed to have some relevance to the Institute's mission.

That led to many discussions and meetings between staff at Oregon State University and our staff at the Linus Pauling Institute of Science and Medicine, including hosting a meeting between a committee that John Byrne had put together to seriously analyze this prospect of the Institute relocating to Oregon State University, to find out if it was really a good thing to do or not. JoAnne Leong, George Bailey, and a number of other people were on that committee. They came down to Palo Alto, and I hosted them for a day and talked about the mission of the Institute and how we had been funded historically; talked a lot about the scientific work and a lot about the fund raising work. They weren't really familiar with the term *orthomolecular* so we spent quite a lot of time discussing that, and I think that they came to realize that they were doing work that could be considered orthomolecular, but they hadn't applied that term to their own work. As a result of those many meetings, it became clear that there was a good fit between the Linus Pauling Institute and Oregon State University, although it wasn't tenable to bring the whole institute, with all of its employees, up to Corvallis, because it

was just too many people. I can't remember what the specific number of employees was at that time, but back before the reorganization there were maybe 70-75 people at the Institute, then after the reorganization that dropped to maybe 40 or so.

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With the Institute moving to Oregon State University, a lot of the administrative functions that we had to assume ourselves in Palo Alto, we would no longer have to assume. We would have no need for a controller, or book keeper. We still had need for a fundraiser, but of course the fund raising activities were going to be taken over by the OSU Foundation, so we didn't really need to have a fund raising staff come with us to Oregon State University. We had broad and deep discussions about all those issues. The researchers at the Linus Pauling Institute of Science and Medicine whom the Dean of Research and the ad hoc committee formed by John Byrne believed had the best chance at succeeding here at Oregon State University were asked to come up and meet the faculty that they might interact with here on campus in the different departments. So there were a number of visits back and forth between OSU and LPISM. As a result of that, Dick Scanlan was pretty frank with me about who might really succeed at Oregon State University, and what might be the most important part of the Linus Pauling Institute to bring up to Oregon State University. That led to the decision to bring a relatively small nucleus, about half a dozen, to Oregon State University.

Now there were some people who could have made the transition if they wanted to. For instance, there was one fellow doing work that was supported by a Department of Energy grant at the Institute in Palo Alto. His wife was a physician and they had a comfortable life in the Bay Area, and they really didn't want to leave. Others were approaching retirement age and decided it might be better to just retire, rather than move up to Oregon. So there were a lot of factors determining who would actually move to Corvallis. At the time we had a very good contractual relationship with Unilever and Elizabeth Arden. It was continuing, so the people involved with that particular project were offered jobs at Oregon State University, and a number of other people were as well.

**CP:** So how many people made the move? You said maybe half a dozen?

**SL:** I think maybe half a dozen.

**CP:** Who were those folks?

**SL:** Conor MacEvelly, who was an Irish biochemist working on the Arden-supported project; Vadim Ivanov, who was working in cardiovascular disease research with his wife, Svetlana Ivanova; Waheed Roomi, who was doing some good work in trying to determine the cytotoxic moiety of the vitamin C molecule and some of its derivatives; and myself... and that could have been it.

**CP:** And you're the only one left?

**SL:** And I'm the only one left. That's right. Conor MacEvelly left after the contract-supported work expired. Vadim Ivanov and his wife Svetlana decided to return to the Bay Area, because they felt more comfortable in the Bay Area. They really liked California quite a lot. Vadim and Svetlana had come from the National Cardiology Center in Moscow, and found California to be paradise compared to what they left in Russia. I think that they just had a terrific fondness for California, so they weren't willing to become permanent residents here in Oregon. Waheed Roomi left after some time. We had an interim director at the Institute, Don Reed, who I believe at the time was director of the Environmental Health Science Center as well, and a

**CP:** I was going to ask you about his leadership.

**SL:** He was providing leadership. One of the first things we did together was to hire an office manager, Barbara McVicar. I believe she was the first employee—actually the first employee was Ober Tyus, who was selected by the Oregon State University Foundation to become our fund raiser. I worked quite closely with Ober in the early days, apprising him of some of our fund raising history; telling him about some of the contractual relationships that we had that generated income for the Institute, and some of the charitable foundations and philanthropists that had been very kind to the Institute over the years, and talked to him about some of our big donors and bequests and so forth, so I worked pretty closely with him.

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Ober had been coming down to Palo Alto to go through some of our fund raising files as well, to help him identify what was important to bring up to Oregon State. One of the most precious resources that was transferred was our donor database, because Oregon State University recognized, I think, that absent large government grants, it was going to be tough to keep the Institute going without the contract that we had with Arden and Unilever and without sustained giving by our donors. So that was very important, to keep that safe and to cultivate the donors. That began even before we moved here.

**CP:** So what sort of commitment did OSU make to the Institute, and vice versa?

**SL:** Well, the commitment was spelled out in a document that we wrote jointly - the Memorandum of Understanding that was signed in 1995 by Linus Pauling Jr., myself, John Byrne, and Paul Risser, who was the incoming president of Oregon State University. It really spelled out how the Institute's assets, including financial assets, fund raising assets, physical assets, and personnel would be transferred here to the campus of Oregon State University and the Oregon State University Foundation, and how the Institute would go through legal dissolution, and also the expectations for what the university would provide for the Institute in the future, including, I think, a really key phrase about launching a capital campaign to secure a building for the Institute as soon as that was feasible. Right from the get-go, there was the promise of a building for the Institute, because on any university campus, space is at a premium. I think maybe Biochemistry and Biophysics may have been in the space that the Institute occupied in Weniger Hall - but in 1995, after the Memorandum of Understanding had been executed, and renovation of this space on the 5th floor in Weniger hall was undertaken, I would come up periodically to work hard with Dick Scanlan and others on the details and logistics of the move from Palo Alto to Corvallis, including an analysis of the laboratory requirements.

Laboratories were renovated, they were painted, the wood was spiffed up - they were sanded and painted - and new countertops were installed. Air conditioning was installed because these old labs in the center of the building didn't have building-wide air conditioning. The south part of the 5th floor of Weniger was renovated for LPI. There were still offices and laboratories there for other departments, Oceanography and Atmospheric Sciences, to name one, and some other people were scattered throughout that space. So it wasn't a contiguous LPI space from the west end all the way around to the east end, but it was certainly satisfactory for the Institute's initial efforts here at Oregon State.

The furniture, the laboratory equipment, centrifuges, laboratory supplies, chemicals, paper, journals, a lot of the material from Pauling's office in Palo Alto, were all transferred up in July of 1996. That was a very, very difficult process. We had professional movers, of course, that we hired to make this move, but we had to make lots of decisions in Palo Alto about what should be moved, what shouldn't be moved, what could be recycled, and what needed to be thrown away. So we filled up two dumpsters a week with just junk that we had no use for in the future. Then everything was packed securely and brought up here to Oregon State University. A lot of the journals and laboratory equipment that weren't used immediately were stored on the 6th floor of Weniger, with some storage on the 5th floor as well.

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Balz Frei was recruited as the Director of the Linus Pauling Institute here at Oregon State - and following that, I think I mentioned once before that when the candidates for director of that endowed position came to interview on campus, they asked the university administration the same question, 'What are you going to do to provide for growth for the Institute? How will the Institute grow?' The university, to its credit, responded satisfactorily to those questions by offering to set up a couple of faculty lines and start-up packages in order to recruit new faculty. That was an incentive in recruiting a good director; that we would have the ability to grow the Institute. When new faculty were recruited, the material that had been stored on the 5th floor had to be moved, and a lot of the filing cabinets with Pauling's files and manuscripts were moved over here to Special Collections. A lot of the other stuff that we had no reason to keep, old journals for instance that the library couldn't use, were recycled.

**CP:** So the university did commit to some on-going funding then? It wasn't just an issue of providing space and saying 'Well, you have the Foundation which will help you raise some money,' but 'we'll give you some on-going funding as well.'

**SL:** Well, on-going funding to provide startup packages and salary lines for additional faculty was not part of the Memorandum of Understanding. That was something that developed as a result of feedback from interviews with the Director candidates. And to be honest with you, it wasn't something that we anticipated. Had we anticipated that we really needed to secure a mechanism to grow the Institute, we probably would have incorporated it in the Memorandum of Understanding. But it escaped analysis at that time. It was only later that was addressed. The idea of a building for the Institute was there from the beginning, because we recognized that the renovated part of Weniger was not going to be sufficient, should the Institute be successful, that it wasn't going to be big enough to hold the Institute. And we thought that having our own new building would really be a fitting tribute to Linus Pauling. I think that John Byrne and other people at Oregon State University agreed that that was important.

**CP:** It sounds like President Byrne was crucial to this process happening in the first place, but then Paul Risser came around, and I wonder what his role was in that.

**SL:** Paul Risser didn't have much to do with this mechanistically. He signed the Memorandum of Understanding because by the time that document was generated, John Byrne was leaving as President, and Paul Risser was the incoming President. I think there were a lot of press releases then, so Paul Risser had to respond as the new face of Oregon State University about this move of the Linus Pauling Institute. His scientific training, I believe, was as a botanist. So he probably had less appreciation for Pauling's scientific work than maybe people of other biological or physical sciences, like physics and chemistry. He certainly was aware of Linus Pauling, but I think that this was basically John Byrne's baby. And Dick Scanlan assumed a really pivotal role, a very important role, in helping the Institute integrate into Oregon State University. Paul Risser was certainly aware and very supportive of everything, but did not play a pivotal role early on. It was really Dick Scanlan working very hard in that area.

**CP:** What were your initial impressions of the university and Corvallis?

**SL:** Well, I'll be frank: my initial impressions were not great. I had spent my life on the East Coast near Boston and at Stanford near San Francisco, which was a hive of intellectual, cultural, and academic activity. Silicon Valley burgeoned during my time there, so it was a very dynamic and thrilling environment that I had grown to love. So coming up here to Corvallis, it struck me as a very sleepy town in those days. Didn't seem to have a big bookstore in town, many movie theaters, a lot of good restaurants. And it surprised me because here's a college town with tens of thousands of students and a lot of faculty who are very bright and energetic and I was surprised that that kind of energy and intellectual dynamism, which I'm sure existed here on campus, didn't translate into more that I could perceive in town.

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Nevertheless I felt that this was the best option for the Institute, and I felt compelled from a professional standpoint to work very hard to ensure that the Institute was a success because, like Linus Pauling Jr., we didn't want to see this fail. I felt personally and professionally committed to making this work, and I realized that it was probably imperative for me to become part of this process in moving from California to Oregon, at least initially, to get the Institute up and running and make sure that everything was happening appropriately, and that we didn't really lose sight of the reason that the Institute existed in the first place, mainly to study orthomolecular medicine.

I was a little surprised at the parochial attitude of some of the faculty here at Oregon State. Nutrition seemed to be a little old fashioned. But I thought that the Institute would probably settle in and do quite well. There were a number of faculty that were extraordinarily bright and excited about the Institute being here, and they were the ones we were going to be working with, so I felt very good about that. But I was concerned, really, about my own personal satisfaction here in Corvallis. I know the ocean is an hour and a half away, and the mountains are an hour and a half away, and Portland is an hour away. But everything is at least an hour away! And Palo Alto is right in the midst of things. San Francisco is a short train ride; a half hour by car. So I was concerned about that. But Corvallis has changed quite a lot over the years.

**CP:** You mentioned Dick Scanlan was an important early ally. Who else was important in terms of getting the Institute sort of integrated?

**SL:** I think George Bailey was very important as well. He was in Environmental & Molecular Toxicology and was Director of the Marine Freshwater Science Center at the time, using trout as a model to study carcinogenesis. He had been

part of this committee set up by Dick Scanlan and John Byrne to analyze the association of the Institute with OSU. Also, Chris Mathews, who was the Chairman of the Department of Biochemistry/Biophysics played a very important role. Part of the reason these people were important was that new faculty coming into the Institute, which was essential, were going to have their academic homes across campus. It was very important for the Institute to be close to these departmental chairs and deans. JoAnne Leong played a very important role early on, and Tim White, I think, was involved as well. I can't remember all the people who constituted the search committee for the Director, but we took that job extremely seriously, reviewed numerous applications, and whittled the field down to a number of outstanding candidates. The choice was overwhelmingly Balz Frei, which was terrific.

Phil Whanger, who was in Environmental & Molecular Toxicology working on selenium at that time, was closely associated with the Institute.

**CP:** The hire of Balz Frei strikes me as being a real watershed moment for the Institute.

**SL:** It really was. Hiring Balz Frei, who was working on vitamin C, was very strategic. He's a terrific scientist. He had a terrific recommendation from Bruce Ames, a National Academy of Science member, and winner of the National Medal of Science.

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Bruce Ames really recommended him very strongly. I had known him for a few years, since he gave a seminar at the Institute back in California in 1989. After leaving Bruce Ames' lab as a post-doc in Berkeley, he'd gone to Harvard and was currently at Boston University School of Medicine doing work on vitamin C and atherosclerosis. We felt that it would be terrific for the Institute to get him because that would ensure the central importance of orthomolecular medicine. And coincidentally, one of Pauling's favorite molecules, vitamin C, would have a very prominent place in the Institute's research. And Balz Frei would be a really terrific director.

With the faculty lines and start-up packages created by OSU, the Research Office, I think that really was an exciting time. We now had a mechanism for moving forward. We weren't going to have to be completely dependent on fund raising from our donors to make the Institute a success. Now we were going to be able to bring in high-caliber faculty because of these faculty lines, and when those people were recruited, things really started to progress pretty dramatically.

**CP:** So a year later, you hired Tory Hagen, Maret Traber and Rod Dashwood.

**SL:** That's right.

**CP:** Sort of the backbone, the research backbone, of the Institute; and all three are endowed professors now.

**SL:** That's right. Those were all very good decisions. Tory now is director of our Healthy Aging Program; Rod Dashwood is director of the Cancer Chemoprotection Program. Rod had been here previously to work with George Bailey many years ago, and is one of the leading researchers in phytochemicals and cancer in the world, so that is a very important part of our research program. And Maret Traber coming up from UC Berkeley, from Lester Packer's lab, is one of the world's leading experts on vitamin E. We thought that the combination of Tory Hagen working on age-essential micronutrients, Rod working on phytochemical protection against carcinogenesis, and Maret working in molecular mechanisms of vitamin E, another very important physiological antioxidant, and then Balz Frei working on vitamin C, would really constitute a great attack on some of these problems that had interested Linus Pauling.

**CP:** Is it safe to assume that Balz' presence was essential to these other three coming?

**SL:** I think it's safe to say that. I think Balz impressed all of them. Of course, Maret Traber knew Balz already from their prior association at UC Berkeley, but I think his acumen, abilities, energy, and reputation were really critical in attracting these other candidates who were hired.

**CP:** And these four people's ability to successfully attract grant money too, I'm sure was important to the Institute.

**SL:** That's right. It's always been a major consideration when becoming a Primary Investigator in the Institute and being selected from the enormously large pool of qualified candidates. The ability to support a research program through NIH or NCI or independent funding can't be understated. I mean, it's absolutely critical for a position like that. And to achieve success in that funding on a regular basis, I think, speaks very well of the caliber of any candidate who's selected for that position.

**CP:** David Williams was hired shortly thereafter.

**SL:** David Williams was doing very good work here in Environmental & Molecular Toxicology and also had assumed directorship of the Marine Freshwater Biomedical Sciences Center. He also was very interested in phytochemical protection against carcinogenesis, which fit right into the Institute's mission. And he's been a Principal Investigator all this time as well.

**CP:** So he was at OSU already?

**SL:** He was. He was not recruited extramurally. George Bailey, of course, continued to remain as a professor at OSU and just retired a few years ago. I think we've been very fortunate that none of the faculty that we've recruited has left for a job any place else. I think that shows that the Institute has become a collegial and productive home for people where they feel good about their ability to carry out their research programs, and like their colleagues.

[0:50:07]

**CP:** At some point the Institute changed its name from the Linus Pauling Institute of Science and Medicine to just the Linus Pauling Institute and I'm wondering if you could comment on the reason why?

**SL:** Well, the two organizations overlapped, so the 501(c)(3) entity incorporated in the state of California was known from 1973 on as the Linus Pauling Institute of Science and Medicine. The Institute, as it exists here at Oregon State University, has always been known as the Linus Pauling Institute and was independent from the Linus Pauling Institute of Science and Medicine. When the Institute moved here we transferred, as I said, the financial and physical assets and some personnel to establish the Linus Pauling Institute at Oregon State University, but the shell Institute continued to be viable in the State of California for quite a few years after that.

There were a number of reasons for that. One reason was we wanted to continue to receive bequests that named specifically the Linus Pauling Institute of Science and Medicine. There were a couple of pending bequests in which the executors and the attorneys handling the estate weren't sure they could recognize Oregon State or the Oregon State Foundation as the successor of the Linus Pauling Institute of Science and Medicine. So we thought rather than to imperil any of these large bequests, and there were several that were quite large, it would be best to just continue that shell organization that could be the recipient of some of these funds.

There were also some legal issues that needed to be tied up. There was litigation with Raxit Jariwalla about wrongful termination that needed to be resolved. There was continuing litigation with Matthias Rath that needed to be resolved. So there were mainly financial and legal issues that were still dangling.

**CP:** I didn't know that about Jariwalla.

**SL:** Yeah, everybody in California, as I might have mentioned, was employed 'at will.' That was the employment status. It's a common employment status in California, where you don't offer people contracts. It would have been nice to offer people long-term contracts, but it really wasn't economically feasible or prudent because the Institute had no reliably safe source of chronic funding. We didn't have an endowment, and as you're well aware, the income was up and down over the years. In California, there is what's known as 'at will' employment, which means that you can be fired at any time for no cause, or you could leave at any time with no notice. But it mainly benefits the employer and not the employee. And I felt terrible about continuing that policy, but there was really no way to move to any other kind of policy at that time in Palo Alto.

Of course, the Linus Pauling Institute of Science and Medicine really could not dictate which employees from that organization would be offered jobs by Oregon State University. Oregon State University was making those offers. When

it became clear which staff members in Palo Alto would be offered jobs and which weren't offered jobs, of the ones who weren't offered jobs, some retired, some resigned, some had made the decision they didn't want to go to Oregon anyway, and some were laid off. Raxit Jariwalla, in turn, sued the Institute for wrongful termination, and that was one of these outstanding litigations that was a reason why the Institute could not go out of business right away. There was a period of overlap with the Linus Pauling Institute here at Oregon State University, and the continuing shell organization in California, the Linus Pauling Institute of Science and Medicine.

Another reason is that we had entered into a contract with Arden and Unilever that was with the Linus Pauling Institute of Science and Medicine. There were lots of complicated legal and financial issues that all of us agreed to be resolved by just keeping the Institute a shell organization until all these loose ends could be tied up. And that finally was achieved in 2003.

[0:55:11]

**CP:** That long?

**SL:** 2003 was when the Institute went through legal dissolution and transferred remaining assets to the Oregon State University Foundation. So I served two roles. I was continuing to serve as the Chief Executive Officer of LPISM and then also as Administrative Officer for LPI here at Oregon State University.

**CP:** In 2000 one of your more interesting and successful public outreach efforts, the Micronutrient Information Center came online, and I'm wondering if you could talk about it a little bit. One thing that's interesting in looking at it is that by that point the Institute has certainly backed away from the megadose claims about vitamin C – 400 mg is a far cry from what Pauling was talking about when he was active. I wonder if you could talk about the conversation behind that.

**SL:** Sure. Well, there has never been a litmus test for employment at the Linus Pauling Institute, even in California. People have different behaviors, as far as supplementation goes. There were people at the Institute in California who took large doses of vitamin C and vitamin E and multivitamins, and there were people who didn't take supplemental vitamins. Nobody has ever been forced to toe a party line about vitamin supplements. Everyone is free to make up their own mind about what to do. I think the scientists associated with the Linus Pauling Institute that came on board here in Oregon all had, without fail, tremendous respect for Linus Pauling, but were a little skeptical of the enormous megadoses that Pauling advocated, and, therefore, weren't comfortable recommending these kinds of doses themselves, because they either hadn't done the research to convince them that the magnitude of those doses was warranted. They weren't familiar with a lot of Pauling's arguments about this.

Then the Micronutrient Information Center came about in 2000, partly as a result of conversations at early retreats, and also feedback from the scientific advisory board about the Institute being a resource for peer reviewed, scientifically accurate, and updated information on the role of micronutrients, including vitamins and minerals, and phytochemicals and dietary constituents, in preventing disease, treating disease when applicable, and also in maintaining optimal health. We had an idea similar to this on a more limited scale back in California, where we had talked about becoming a resource, a world-wide resource, for vitamin C information specifically, because we had some expertise in vitamin C, obviously through Pauling and other staff members. We had talked about that if there was some way to become a resource for that kind of information. This was before the internet had really taken off, so it would have required hiring people with more knowledge about nutrition and molecular biology and the intersection between nutrition and molecular biology and medicine, and we just didn't have the funds to do that at that time. It was also not prudent to do that because there was a lot of uncertainty about the future of the institute, so it would have been foolhardy to set up a new program only to lose it with the move of the Institute to a new location or liquidation of the Institute.

We never acted on that idea at that time, but this kind of resurfaced in a broader sense, before the year 2000. The idea then was - of course the internet had really taken off - to make this an electronically accessible database. We started thinking about who would be appropriate to set up and manage such an informational database, and we felt someone with a Ph D. in nutrition, or molecular biology related to nutrition, and somebody with computer skills would be required to do this.

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At that time, Jane Higdon had just gotten a Ph D. in nutrition from Oregon State University, and was not interested in pursuing a career in experimental science, wasn't really interested in securing a tenured track position in academia, but was interested in staying in the scientific realm. And she applied for that position and was perfectly suited for it. She had experience as a nurse in New York City - I think she had a nursing degree from Pace University - and had gotten an undergraduate degree in biology from Stanford. She was very smart, had great experience, and was very willing to take on this task of setting up our Micronutrient Information Center. We also hired somebody to work with her who could do the initial computer and software work that was required to get this up and running.

The two of them collaborated on this, and over the years its developed into quite an astonishing resource, to the extent that when we thought about updating Pauling's book *How to Live Longer and Feel Better* - and this is something Pauling himself had pursued back in the 80's. He'd signed a contract with Brian Leibowitz, in fact, to work on an update of *How to Live Longer and Feel Better*, but I think they had a disagreement on the strategy and the scope of the work, and that really came to naught. But Linus Pauling Jr. and I were very interested in getting a new edition of *How to Live Longer and Feel Better* published. We talked to a number of people who we thought would be good candidates, including Gladys Block. We wanted somebody who was sympathetic to Pauling's ideas on orthomolecular medicine, but also extremely knowledgeable and kept up with the literature. To find somebody to do that, who already has a productive research career, is really difficult, and we weren't able to secure anyone to carry out that work.

With the advent of our Micronutrient Information Center, it occurred to me that that was really an electronic update of Pauling's book, because now we were continuing to stay abreast of all the research information in orthomolecular medicine. Instead of compiling it into a book, it was online. So we decided when the prospect of publishing an anniversary edition of *How to Live Longer and Feel Better* came up - I approached Oregon State University Press about that - to keep the book intact, add back some illustrations and other work that had been deleted because when the book went from trade paperback size on nice paper to mass market paperback size on coarse paper, some of the resolution was lost and some of the illustrations just weren't appropriate, so they were deleted from that mass market paperback edition. We wanted to bring those back, and decided that the best way of doing this new edition of the book, which would be the 20th anniversary edition, would be to have a new foreword, an afterword to put the work in context on the basis of new research that had been done since the book was first published in 1986, and make some judicious annotations where people that Pauling referred to in the present tense had died, or if the RDAs changed, indicate why the RDAs changed. We really limited tinkering with the text to annotations and providing some more text at the beginning and end of the book, and then directing people in the afterword to visit the Micronutrient Information Center, because that really provides an update on *How to Live Longer and Feel Better*.

Over the years, as the number of chapters grew in the Micronutrient Information Center, and it became widely accessible through search engines, it became wildly popular. Recently, it has been 20-25 million hits per year, and most of those, of course, are not local. They're all over the country. They're all over the world. It's been a terrific resource for people to use in consulting with their physicians about health problems, or to find out more about the biochemical or physiological actions of some of the important micronutrients. The emphasis of the Micronutrient Information Center has always been human health, so we discuss cell cultures or animal studies when there doesn't seem to be much human data available. But the focus is really on humans, because humans are the ones who are reading this, they're the ones who are interested in applying this information to their own health, and that's been the focus.

[1:04:45]

The information written by Jane Higdon - she was succeeded by Dr. Victoria Drake, and now we have another person working with Victoria Drake, Dr. Giana Angelo - all the articles that they write are sent out to leading experts in the field for peer review, and then they're periodically updated to take into account new information or new studies which may cause the Institute to modify its recommendations. Each of these chapters ends with a Linus Pauling Institute recommendation. Many times it's the same as the DRIs that the Food and Nutrition Board publishes. In some cases it's different. For vitamin C, for instance, it's different.

We don't recommend the enormous quantities of vitamin C that Linus Pauling recommended, because pharmacokinetic studies and molecular studies have revealed that the amount of vitamin C absorbed from the gut into the bloodstream is limited by the sodium-vitamin C transporters, which are relatively newly discovered - they hadn't been discovered before Pauling died - and explain why only a fraction of a dose of vitamin C gets from the gut into the bloodstream. It

just doesn't diffuse against a gradient. It really is limited. So, practically speaking, it doesn't make sense to take a huge dose of vitamin C because only a fraction of that will be absorbed. We decided on the basis of meta-analyses, on the basis of biochemical and epidemiological studies, that it's important to keep blood levels of vitamin C high that produce high concentrations in circulating cells in the blood and also cells in different tissues because vitamin C is very important and non-toxic. So we now recommend to get at least 400 mg a day. By saying "at least 400 mg a day," we recognize it is important to get much more than the RDA, for instance, and we also recognize implicitly the safety of high-dose vitamin C. So we don't specifically recommend many grams a day, but we recognize also that high-dose vitamin C is very safe. As a matter of fact, the UL - which is the tolerable Upper-intake Level - for vitamin C was established in 2000 at 2000 mg/day based solely on the transient laxative effect of higher doses in some people, which is really not a serious side effect. It's not really toxic.

**CP:** Is the argument in favor of intravenous vitamin C being a possible therapeutic procedure still an open question?

**SL:** Well actually, that's been greatly reinvigorated by some of these pharmacokinetic studies. After the Mayo Clinic studies, as we discussed, there was kind of a dismissal of vitamin C, the utility of vitamin C, as a therapeutic agent in cancer. A lot of oncologists and physicians became very uninterested in vitamin C. 'This pedestrian molecule has already been studied by the Mayo Clinic and it failed, it's time to move on.' However, pharmacokinetic studies demonstrated very clearly that when you give vitamin C intravenously you get much higher concentrations in the blood than when you take it orally. Depending on the dose given intravenously, you can end up with mM concentrations in the blood. When you take vitamin C orally, it's hard to get above 200  $\mu\text{M/L}$  in the blood. So with mM concentrations, you're talking about 70 or 100 times greater concentration vitamin C when given intravenously. And that led people conducting the pharmacokinetic studies to think more carefully why Cameron's work with Pauling was so successful in Scotland and why the Mayo Clinic's work in Minnesota failed. And it's pretty clear that these high levels of vitamin C exhibit cytotoxicity, selective cytotoxicity against tumor cells. This has been shown in cell culture experiments for many years.

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Even in the 1980s, Pauling himself published with Japanese colleagues a paper showing that vitamin C has cytotoxicity against tumor cells in culture, and this was completely nullified by the addition of catalase to the culture medium. Catalase, of course, quenches hydrogen peroxide, so they surmised that the cytotoxicity was due to vitamin C acting as a pro-oxidant and generating hydrogen peroxide, which was then killing tumor cells. This very mechanism was rediscovered many years later and shown to occur when pharmacological concentrations of vitamin C in the blood, when given intravenously, start generating hydrogen peroxide, which attacks tumor cells. It seems to be very selective; either normal cells are protected by endogenous antioxidants or some other kind of protective mechanism is at play. And that led to renewed interest in the prospect of using high dose vitamin C as adjunctive therapy in cancer. There have been many anecdotal studies published, case histories, and a couple of Phase I clinical trials as well.

I think there is quite a lot of interest now, but there are also quite a lot of issues that need to be much more fully characterized. For instance, which types of human cancer are most sensitive to these high concentrations of vitamin C? Which patients are the best candidates for high-dose vitamin C? At what stage can vitamin C be given with chemotherapeutic drugs in a synergetic manner? Would vitamin C negate the effect of some types of chemotherapeutic drugs? Should it be used in connection with radiotherapy? And what would be the optimal protocol for the administration of IV vitamin C?

For instance, Cameron, with his terminally ill patient population - these people were hospitalized and waiting to die, so he could give continuous slow-drip intravenous vitamin C, high-dose vitamin C, hour after hour, day after day. Hydrogen peroxide must have been rather continuously generated and continuously attacking tumor cells in vivo. For many patients now who get high dose- vitamin C, it's given in a periodic fashion. So hydrogen peroxide is being generated transiently. And then after about 6 hours, the level of vitamin C in the blood is back at baseline with no more hydrogen peroxide generated. All these issues are very nuanced and difficult, and have to be really thoroughly characterized before we will really understand the merits of vitamin C against cancer. But there are people who are actively working in that area, and they recognize these issues.

**CP:** In 2001 the Institute hosted its first Diet and Optimum Health conference, and that also came with the first LPI Prize for Health Research, which is a \$50,000 prize, a pretty remarkable turnaround for an organization that was teetering on the brink of going out of business fifteen years before.

**SL:** Really amazing turnaround. And part of that has to do, I think, with Rick Hicks' cultivation of donors over the years by always putting information about bequests and gifts in the periodic newsletter that went out to our constituents. People were aware of that from the mid-70s on, and named the Institute in their wills. Those bequests came in very irregularly and unpredictably, but allowed us to do really wonderful things, including endowing new faculty positions within the Institute, convening things like the Diet and Optimum Health conference, and giving the prize for health research. Also, the cost of doing business here at Oregon State was much less because we weren't having to pay rent any longer, we weren't having to pay people to participate in a large fund raising program or pay a controller or a book keeper. A lot of activities that had to be supported in an independent organization did not have to be supported in this context of Oregon State University. Costs were decreased, therefore the bequests and money that was coming in could be applied towards the growth of the Institute, as opposed to merely sustaining the Institute.

**CP:** Also in 2001, Joe Beckman arrived at the Institute. Could you talk a little bit about the background behind that, and the fact that his work on ALS seemed to open up a different angle of research for the Institute.

[1:14:50]

**SL:** That's right. There's always been interest in neurodegenerative diseases at the Institute, and we were looking for a candidate who could open up that area of research, and Joe Beckman was one who had applied. He'd done some outstanding work, some molecular work, on ALS in Birmingham, at the University of Alabama, showing that peroxynitrite is a very interesting and destructive molecule that is generated through the evolution of nitric oxide and its reaction with superoxide in the body. A very damaging molecule. His work really appealed to us. Work on reactive nitrogen species is a new avenue of research. Research on reactive oxygen species, of course, had been undertaken by many people around the world for many years, including people at LPI. But reactive nitrogen species was a new facet that would be very interesting to pursue. Joe was given the Ava Helen Pauling endowed position, because we thought it would be nice to honor Linus Pauling's wife with the second endowed position, and at the time we had the money, thanks to the bequests, in order to do that.

Also, some of the money that came into the Institute was not from bequests but from legal actions. As an example, when the insurance companies refused to reimburse us for legal expenses during the Rath litigation, I decided to sue them because they weren't honoring our claims. They made up reasons why they couldn't honor the claims, but nevertheless our commercial general liability and directors and officers policies had provisions that would apply and I was shocked that they refused to honor the claims. So we decided to sue them, and that was settled before going to trial, which resulted in quite a lot of money. We had money coming in from a couple of different sources that allowed us to endow these positions.

**CP:** Just a couple more questions. We talked about the Principal Investigators' roles; I'm wondering if there are any other folks who have been major figures in the last 10 years or so, sort of charting the path of the Institute?

**SL:** Well, I think the people who were in the Research Office were, and have been, very important because Balz Frei reports to the head of the Research Office. Funds that are available through returned overhead and through the Research Office have been very important to the Institute through the years. The Deans and departmental chairs have also been extraordinarily important, because when candidates are being interviewed for faculty positions within the Institute, they have to have an academic home as well, which means that the chairperson of the appropriate academic unit, and his or her colleagues have to vote on whether or not this candidate would fit into their department. So it's a very convoluted process of selecting someone both for the Institute and for an academic department.

**CP:** How has your job changed over time?

**SL:** Well, my job changed after the dissolution of the Linus Pauling Institute of Science and Medicine. Once that was legally dissolved I didn't have to think about it any longer and could focus on my responsibilities as Administrative Officer of the Institute. When we first moved here, I took over editorship of the newsletter, because we recognized that the

newsletter continued to be an important educational and fundraising tool for the Institute. And that's been a lot of fun. We have historically given out pilot project grants to fund initial research done by people doing work related to the Institute's mission, in order to allow them to obtain enough data to apply for larger, more sustaining grants from NCI or NHI. The work that they've done has been reported in the newsletters. Talking with those people about their research, editing those articles, trying to translate that information from very technical language to language that is a little more friendly to the average reader has been a lot of my responsibility.

[1:20:04]

Pursuing a new building for the Institute has been something that Balz Frei and I have been working on very diligently from the very beginning. Even before the funding came together, we spent quite a lot of time talking to architects and visiting buildings to try to get a clearer idea of what it was we wanted, and also to provide us with material that could be shown to prospective donors. We wanted to have a good idea of what the new building could look like, something that we could show to people, a visual representation or a model. Balz and I worked very closely on that, and I became a member of the steering committee of the Linus Pauling Science Center. So I'd say, for the last two or three years, I've been working very intensively with user groups trying to identify issues that needed to be incorporated into the design.

There has been a bit of a fund raising component to my position as well. Because I have such a long history with the Institute, and I know about a lot of our past activities and knew Linus Pauling pretty well, I'm often asked by our fund raiser, or various groups - Rotary Club, Lions Club, different groups here at Oregon State University and elsewhere - to give talks on Linus Pauling, or orthomolecular medicine, or to provide an overview of the research that's going on at the Institute now. I also travel to scientific or medical conferences to make presentations on Pauling, orthomolecular medicine, or LPI.

**CP:** My last set of questions is about the building. It opened this last September, more or less, and you were obviously involved in that process from the get-go. I was wondering if you could reflect on that a little bit.

**SL:** Well, it's just such a terrific change for the Institute. Weniger, as I said, was completely satisfactory in the early days. But as the Institute grew, we became very fragmented because we had faculty in different buildings all over campus, and it became less and less likely to interact with fellow faculty who were part of the Institute. I think that decreases the collegiality and diminishes the prospect for meaningful scientific interactions on a frequent basis that could generate new ideas and progress in research projects. The new building has allowed almost all the LPI Principal Investigators to be housed together now. Joe Beckman is still in ALS, but it's just a stone's throw from the Linus Pauling Science Center, which is next to Nash, the building that sits between ALS and the Linus Pauling Science Center. So he's still physically very close to the Institute. Being in a very spacious, well lit, modern building with open, modular space that's quite flexible is such a wonderful inspiration for everyone. The interactions with colleagues now are dramatically increased because all the offices are aligned along the north wall on the 3rd and the 4th floors, and there is an open atrium, kind of a cathedral-esque environment between the 3rd and 4th floors, a staircase in the middle there allows people to get from one floor to the other. There is just this feeling of openness and integration, which is just wonderful.

**CP:** Now that you've achieved this milestone in this building, what now is the next set of priorities for the Institute? What lies ahead?

**SL:** Well the next set of priorities, I think, are to expand and develop our Micronutrient Information Center. We'll also work on a new outreach program called the Healthy Youth Program, which is trying to introduce the concepts of good nutrition and exercise among elementary and middle school children, so kids can learn how to stay healthy. Also, we still have the ability to recruit more faculty for our Healthy Aging Program. Once we recruit more faculty, we will be saturated with respect to filling the main research areas in LPI.

[1:25:03]

**CP:** Well, that's the end of my questions. Are there any things we didn't cover that come to mind offhand that we should talk about as far as the history of the Institute, either at OSU or prior to that? It's been a lengthy discussion

**SL:** Probably, but I can't think of anything offhand.

**CP:** Alright, thank you Steve.

[1:25:21]