

**NATIONAL LIBRARY OF MEDICINE**

**ORAL HISTORY PROJECT**

**INTERVIEW WITH**

**RUTH JOHANSSON HEGYELI, M.D.**

November 15, 2004

## **Ruth Johnsson Hegyeli, M.D.**

### **Biographical Statement**

An accomplished poet, writer, editor, artist, scientist, and physician, Dr. Hegyeli was born in Sweden but moved to Canada, where she received her B.A. in Sciences and her M.D. at the University of Toronto. In 1963 Dr. Albert Szent-Gyorgyi invited her to the United States. As Szent-Gyorgyi's research associate, Dr. Hegyeli established a tissue culture laboratory at Szent-Gyorgyi's facility in Woods Hole, Massachusetts. She then joined the Battelle Memorial Institute in Columbus, Ohio, where she was principal investigator for several research projects in cancer and cell biology. The National Institutes of Health (NIH) funded two of her projects, and in 1969 she was invited to join NIH as a research scientist. Currently she is Associate Director for International Programs at the National Heart, Lung and Blood Institute (NHLBI), NIH. She is an invited member of the Surgeon General's Advisory Committee for the first SG Report on Global Health, to be published in 2005.

Dr. Hegyeli's career at NIH spans thirty-five years. During her career at NIH, Dr. Hegyeli has edited twelve scientific books. In 1991, she was the United States Editor of the 400-page, 500-year history of medicine and science, *Discovering New Worlds in Medicine*. The history was written on behalf of the Christopher Columbus Commemorative Medical Sciences Committees of Genoa, Italy, and the NIH. Dr. Hegyeli also has developed major collaborative research programs and partnerships with more than thirty countries in cardiovascular, pulmonary, and blood diseases; in women's health; and in cardiovascular disease in the elderly. She has edited and produced two key publications on women's health that emerged from international conferences on that subject. One of them, a 300-page book titled *International Position Paper on Women's Health and Menopause: A Comprehensive Approach* (2002), has been translated into eleven languages.

Dr. Hegyeli has received numerous awards, including the Nicolaus Copernicus Medal from Academia Medica in Cracow, Poland, and the German Friendship Award from the German Ministry of Research and Technology. She also has received many international awards for her poetry, and was honored with the International Peace Prize in 2004 for her humanitarian contributions to medicine, science, and literature.

### **Interview Synopsis**

Dr. Hegyeli describes the circumstances under which she came to Albert Szent-Györgyi's lab at Woods Hole, and the challenge of designing and building a tissue culture lab there. She reviews Szent-Györgyi's style as a researcher and as head of his own lab, and illustrates her description with numerous anecdotes. Lastly, Dr. Hegyeli offers an assessment of Szent-Györgyi's contributions to her own career as well as to the larger fields of science and medicine.

**National Library of Medicine**  
**Interview with Ruth Johnsson Hegyeli, M.D.**  
**Conducted on November 15, 2004, by Adrian Kinnane**

**AK:** We could start by my asking if you could describe your first meeting with Albert Szent-Györgyi. When did that happen, and where did that happen?

**RJH:** Well, I can tell you that I came to Woods Hole, Massachusetts. Right after I finished my internship at Toronto General Hospital, in Toronto, Canada. I'm a Swedish Canadian American. And I had been invited by Dr. Szent-Györgyi to come to his lab to discuss some of my ideas in cancer research. The reason for the invitation was that I'd corresponded with him regarding a particular extract that they were studying in Woods Hole, which had an effect on cancer cells. The reason why I was interested in that particular extract was that I had received an invitation to Roswell Park Memorial Institute in Buffalo, New York. And that was also based on my ideas regarding cancer research.

I was 32 years old. I'd finished my Bachelor of Science and M.D. degrees at University of Toronto and then finished my internship. Then I wanted to do research. And the reason for wanting to do cancer research was that even since I was a teenager, I had studied any cancer research that I could find [in] Sweden, Canada, and the United States. And I became very interested in the thymus and the role of the thymus. I had developed and had an extensive portfolio ready to discuss with anybody who was interested about the role of the thymus and the development or lack of development of cancer. And so when I interacted with Dr. Szent-Györgyi, it had to do with some research that they had

reported from the lab in Woods Hole, in different national and international journals. It was more than one paper that I happened to come across that way. I didn't even have any idea about him being a Nobel Laureate. That was not part of the agenda, whatsoever, nor was my coming to Woods Hole as his Research Associate.

**AK:** Right.

**RJH:** I had been offered a position at Roswell Park Memorial Institute based on the same ideas. And I had been there twice, but I was not eager to go there for reasons that I will tell you if there is any interest in this. The reasons had to do primarily with security issues for women scientists. For instance you had to have a guard going from your apartment across the road from the lab due to a high rate of crime in the area where the Buffalo lab was located. I felt that would be too limiting.

**AK:** Um-hmm.

**RJH:** In those days, anyway. The second reason was that although I come from Sweden, I did not like that when I was visiting they had three feet of snow. That, again, would be very limiting. Even if you had a car, it would be hard to get around.

**AK:** Oh, the snow in Buffalo is tough.

**RJH:** Yes. Exactly, so I was exploring other places in addition to Roswell, Pennsylvania. But

when I came to Woods Hole, it had to do with me asking for this extract, and if I could get some of that to study at Roswell Park. And Dr. Szent-Györgyi was agreeable at that time, if I wanted to do that. Well, so instead, Dr. Szent-Györgyi asked me in writing, could you please come down here to Woods Hole and we can talk in person. He liked my ideas. It was based on my ideas that he wanted me to come. But he said, you can do that, but you have to come here and do it in my lab, under my supervision. So off I went as a young person, with very limited resources. And when I saw him the first time, I would say it probably clicked immediately. So, he offered me a position there.

We had a very friendly interaction. But that turned very quickly into something challenging because I had not even gotten home before he had written me a letter—which was nice, but instead of what we had agreed for me to do, he said, "This is what I want you to do, to go to a University of Wisconsin post-graduate course immediately to learn tissue culture." Well, I was very familiar with tissue culture but had never done it because that was not part of my training. But I was very willing to do it. And I did. I felt very challenged, but I allowed this. In those days, in 1963, the course in Wisconsin had the best teachers you could have, the end of an entire generation, all in their 60's, even 70's, teaching young physicians and PhD's how to do tissue culture, and teaching not only what worked but also what didn't work. And that was several months—I don't remember how long any more. But it was extremely intense, lab and lectures, even in the evenings. During that whole time, I stayed every night in the library and learned everything—I went through, actually, every article they had in that library at the University of Wisconsin. And then I arrived at Woods Hole. And that was a shock,

really a shock, because the administrative assistant—a woman—who had promised to meet me . . . If you've ever been Woods Hole . . . Have you?

**AK:** Yes.

**RJH:** It's quite a lonely spot. Especially, when it's not summer, when everybody's around, right?

**AK:** It's very quiet, yes.

**RJH:** But actually, I just recall, this minute, that there was this special eclipse of the moon. So everybody was out on the street, but nobody was there to help me. The reason was that Dr. Szent-Györgyi's wife had just died, and everybody had gone to the funeral. They had forgotten that I was arriving from Canada that Friday evening. Nobody was there to meet me. Then I started in the lab Monday morning. We had a very good interaction, but things were very different than I had expected.

**AK:** You arrived there when Marta, his wife, had just died.

**RJH:** Yes.

**AK:** And that was a very low point in his life, I believe.

**RJH:** Probably.

**AK:** What a time to arrive!

**RJH:** Well, I didn't know that until afterwards. So I phoned the lab, and the only person who was there was a senior scientist, Dr. Andrew Hegyeli, who later became my husband, after some years. But he came to the bus station, and that's where I was, with my luggage. And simply, there was no room anywhere, except there was one room in that little hotel or motel they have close to the bus station. There was nothing . . . I knew that something had been arranged for me, but I didn't know where. And it was a weekend, Friday, maybe 5:00 or 6:00. And I was just fortunate that someone was in the lab working late. That was my beginning.

**AK:** You had already met Szent-Györgyi? Or had this all been done through the mail?

**RJH:** I had met him, and we had a good discussion.

**AK:** And then you left, and then he wrote you a letter saying go to Wisconsin.

**RJH:** Yes! (laughs) A tall order—but I'm glad that I could fill it—to start a tissue culture lab. Well, you don't start overnight a tissue culture lab. And this was another big lesson, how he ran this lab.

**AK:** What was your understanding about how long you would be at Woods Hole?

**RJH:** It could be indefinite. And I was the one who finished it, in terms of accepting another position.

**AK:** When you arrived that first Friday, you must have wondered whether you had made a mistake.

**RJH:** Well, I was still very excited about this. But what I was very challenged about was the tissue culture lab. He was there in the lab on Monday. He expected me to start immediately. Very forceful, very—I would say magnetic, even.

**AK:** Now, his wife had just died.

**RJH:** Yes.

**AK:** He was right back in the lab on Monday morning.

**RJH:** As far as I remember. I had nobody else talking to me. And not only that—I'm very fortunate to have been brought up in Sweden, where we learn drafting, for instance, in the high schools. And I had learned that to the limit. So what he said was, "Now I want you to start this (laughs) tissue culture lab." He wanted you to do everything from scratch, everything. So, for instance, he just told me this corner over here would be the tissue culture lab. But there was nothing there, not even any walls.

So I had to design that from scratch. No big deal because I could do that, but I then had to work with workers, right? But not only that, he did not want to order anything. Even in '63 you could order all sorts of things, like walk-in incubators and so on. But he would not let you order anything like that. I had to design that, including with the gases going in and out, to have constant temperature and certain properties, and, of course, sterile lab, etcetera, and the hoods and everything.

**AK:** Was this an economic measure?

**RJH:** No, I don't think so at all. He wanted everybody to know and operate and be familiar with all aspects of the lab. The salaries were not big, but you could live on them if you just had a room. I learned a lot. But you can imagine, I was almost scared to death about this, until I knew that everything was working, including the gas exchange, and so on. The only thing that he would allow you to order was microscopes and similar items. But in Woods Hole you have access to all sorts of special equipment, you know. But anyway, it all worked. It all worked.

**AK:** Yes.

**RJH:** And I was very grateful to God for that because it was, you know . . . you can imagine, if somebody told you to make this room into a tissue culture lab even here at NIH.

**AK:** Yes. That's very interesting. So he believed that you would do better work if you built everything.

**RJH:** From scratch! You drew it, and, you know, the contractors prepared everything, including what your benches were made of and so on. So I did it!

**AK:** Yes. What do you think of that?

**RJH:** I think it was a very good lesson. I really do. And I don't think any young person would do it, these days, maybe. But I was not alone in that. I'm sure he would have done it to anybody . . .

**AK:** Interesting.

**RJH:** The other thing that I wanted to share with you about starting work there was that you found out very quickly that his management style was, as you would expect, extremely demanding. He would put you totally on autopilot, your own autopilot. But he expected results any time, any time. So, for instance, it could be six months, depending upon what he felt was a good time for him. He expected you to work at 110 percent all the time and it could be any morning, any time of the week, he would say, for instance, "Ruth, let's sit down and go over your experiments and see what results you have."

And he expected you then to go over things immediately, with no notice whatsoever, I

would say not even an hour, you know? And if you did okay, then you were fine, but it could be another two weeks, for instance. So you never felt that you were at ease. It could always be on demand, kind of like an oral exam. And so, if people—and this happened—didn't pass this, then they were out on the spot. They were out on the spot. Such things happened. Everybody knew that. So people were very dedicated and focused. But I don't think there was any fear. I didn't sense any fear. Every day he was in the lab, too, doing experiments. I never saw him idle, if he was in the lab and not giving lectures. So it was, to me, a super environment in terms of demanding the best. And also, he felt that he was getting somewhere.

But I think he wanted to tackle things, in general, that people had not done. So that meant you couldn't predict. If you do high-risk research, you cannot predict, let's say, a favorable outcome within X months. You cannot. That is part of that kind of environment. It is not easy. I don't know how other Nobel Laureates conduct their research, but I would say, in retrospect, I think that one should respect that kind of attitude and approach, even though it is very hard on the people who are there because you never know whether you're going to find something that is “pleasing” to the director of the institute. And you see people come and go. I'll give you an example. For instance, one day—and this was not unique at all—people would come from thousands of miles just to see him, Nobel Laureate Szent-Györgyi. He was an interesting character in addition to being a good scientist. Whether other people think he was a good scientist or not, I would think, having won the Nobel Prize and being so dedicated—I do think that he deserved everything, every respect that people gave him. I really do.

But what happened, for instance—and I was the person whom he told this to. I was across the hall from where he did his work. This woman scientist had come, I think, from Europe. And she wanted to see him for a few minutes. I do not know whether they had been writing to each other. I have no idea. And I don't remember her name any more. But it was not unique. So I said, "This scientist would like to meet with you for a few minutes." He said, "Could you please tell her that I am not available," or something like that. She's standing there at the door, and she was not let in, for instance. And I had to tell her that. But she could hear it herself. And he wanted her to hear it, you see? He was very jealous of his time. If he hadn't agreed to see somebody, he was not going to meet her, even if she came 3,000 miles. That's how he was.

**AK:** Very focused on his research.

**RJH:** Yes, he was.

**AK:** That came first.

**RJH:** Right.

**AK:** You had gone there with some ideas about an extract to do some cancer research. What happened with that idea?

**RJH:** Well, that was very interesting. It did not come through the way that I had anticipated. And so I was very straightforward with him about that. But I did discover another thing, and it happened to be while Dr. Szent-Györgyi was away. You cannot time these things, as I was telling you. And it had to do with Dr. Andrew Hegyeli's research. He kept discovering new properties in different extracts. And this particular one—I wasn't looking for this, but I was always extremely observant—I do have a very good eye for observation, since I was a child. And so as I was looking at these cancer cells that had been exposed to a particular extract. The cells, instead of kind of clumping like cancer cells usually do, organized into a pattern.

Now, other people have done a lot of research on biological response modifiers, which is what they call them now. These substances don't kill the cells. They introduce a level of control. So I wrote up my new research finding while Dr. Szent-Györgyi was away and presented it when he came back. He couldn't believe it, at first. First of all, that it had happened while he was away. But that was the case. As I was saying, Dr. Andrew Hegyeli had extracted it and kept purifying it more and more. So I told Nobel Laureate Szent-Györgyi that I would like to publish this as an observation. Well, he said not to publish it at all. He simply said, "No." He said, "Okay, but I want you to work only on my research. I would not want you to continue that here, in this lab. Because I want you to focus only on my research, not on any other discovery." So, then you can understand what I did. As a young scientist, I tried to find out where I could continue that research. And within one month, I had an offer from the Battelle Memorial Institute at Columbus, Ohio. And so I did that. Dr. Andrew had to leave too, but, at that time, we had nothing

personal to do with each other. I had already planned to go to California, and he was going to New York.

**AK:** This is Dr. Andrew Hegyeli.

**RJH:** Yes. So we agreed to collaborate for two years, just on that new discovery. Within just a couple of weeks or so, Dr. Szent-Györgyi came to me and said, "Oh, I don't want you to leave. I want you to stay here, and I want you to do both, my and your discovery." I said to him, "I'm sorry, but I've already accepted another job offer." And I didn't want to go back on that. You understand. So that's what happened. And he wrote me—I wish I had kept it, actually, for posterity—a wonderful recommendation letter. And then this discovery that we made jointly was published, in fact in the *Proceedings of the National Academy of Sciences*. It was an observation which—and I predicted, at that time, which has since happened, that cancer, eventually—would eventually, at least some cases be reversible. It is now forty years later, and my prediction has come true.

And so what I want to talk about, as far as what happened in the lab—you know, people came from all over the world to visit and discuss the scientific issues. For instance, we had these seminars—to give you an example I think one could not be in a better place, in a sense. Woods Hole is wonderful. So many scientists from all over the world come, especially during the summer. And you can develop both contacts and collaborations with all of these people. We had seminars once a month, for instance. And, you know, Woods Hole is about 80 miles from Boston. Nobody forced anybody to come there. But

people drove 80 miles each way, even in the winter, just to participate in Szent-Györgyi's seminars. And he, of course, supervised and participated in the seminars.

And I still remember the first one I gave, which was on microsomes. Now a lot of things have been learned about microsomes within the cell. Well, now that's one of the big stories in genetic research, etcetera. But anyway. I still remember that really well, and for many reasons. And that is, I was amazed that people would come all that distance from Boston to participate. We started, I think, about 4:00 in the afternoon. And you had to make tea . . .

**AK:** Yes.

**RJH:** . . . English tea. And so one had to make tea, and then there was discussion. And I remember that discussion—how intense it used to be. They were meaningful seminars. Sometimes they even continued until after midnight. Can you imagine that, from four o'clock? And people were just trying to understand and kind of pick each other's brains and learn more. And so that was the kind of thing that Szent-Györgyi attracted. It wasn't for any of us, right? It was because the scientists who came all that way felt that it was worth their time to interact with Dr. Szent-Györgyi.

**AK:** Yes.

**RJH:** So when I read some of these things, you know, I don't think it hits on how valuable a

resource he was considered to be. One more thing that I thought could be of interest to anybody looking into this for the future, and that is, he did talk a lot about philosophy of science, in lectures and so on. He was a wonderful writer, absolutely wonderful.

Whether he wanted to bend to the format of NIH, well that's another thing. He was a very, very good writer. He told me quite early that every five years, he challenged himself to start another direction, so that he could use whatever he had learned before.

So, for instance, if one looks at what kind of books he authored, which I looked at in this Nobel Prize summary, and maybe you have seen that . . .

**AK:** Yes.

**RJH:** . . . well, you know, it looks like he skipped from this to that to this to that. So, for instance, you look at—he studied muscular contraction. Well, what he did, and why people came to his Institute of Muscle Research was that he continued to make some new discoveries. And he started all these people on that road. They didn't do it. He kind of made it happen. I don't mean that he did everything alone. And then he turned to bioenergetics, which is related. Then he had some ideas about cancer. And I now don't even remember all the things that I was interested in. But many of those have happened, you see. People often joked about him that, how come he was in muscle contraction and why did he now want to do something in cancer? Personally, I think it had to do with his second wife, who died around that time from cancer. So he was challenged, as a scientist, “what can I do?”

**AK:** Yes.

**RJH:** So anyway, he consciously decided every five years to challenge himself to do something different, to use all that background that he had. And I would say, if one says one word about him, it is that he had a very, very sharp intellect. Some people, I think, didn't like him, but the people in Woods Hole generally liked him a lot and kind of revered him. I did respect him also, very much, but I was very challenged by his approach, sending me to Wisconsin, which was a big favor because I learned a lot.

And those people [at Wisconsin] died, even within a couple of years, some of them world-famous, you see. And they gave those courses. And people just pumped them for knowledge, especially on negative outcomes of experiments, which is very valuable. And then coming back and finding that he wasn't going to buy anything except the microscope and then finding that you had to physically design and build the tissue culture lab from scratch and make it work. There was another thing. There were no lab assistants available. I could have one, but I had to train this person, and she happened to be Portuguese and had never been in a lab. But I taught her to do it, which is also a challenge. The only thing you could order was cells, different kinds of cells. And that was a hard thing, too, because they were transported on trucks and sometimes when they arrived, they were dead. So we had to start over again. And it was a rough time. But it worked.

**AK:** Yes. How long were you there?

**RJH:** Two years.

**AK:** Two years. So about '63 to '65.

**RJH:** Right. I know that because I was '65 to '69 in Columbus, Ohio. And the invitation there was to be head of a tissue culture lab which was already established, which was quite a beautiful thing to see, a lab all equipped. (laughs) You didn't have to do everything from scratch again.

**AK:** Yes. But you knew a lot more about it, having done that.

**RJH:** Yes. That was important, you know? That was very important for that second assignment—later, I was head of the cell biology lab there. I had very experienced lab assistants, who happened to be men. And they were superb. And you can imagine coming, as a woman, for the first time, to a lab that had not had any women there before. I knew how to do things. And, of course, that was a big advantage there.

**AK:** Yes. But now, Szent-Györgyi never held or even sought any formal academic appointments in the United States.

**RJH:** Well, he was Director for his Institute of Muscle Research. He didn't need to.

**AK:** That's right.

**RJH:** I don't think he wanted it. He wanted to be free to explore research wherever it led.

**AK:** Right. But the fact that he didn't hold formal academic appointments doesn't mean that he wasn't a good teacher.

**RJH:** Would you go 80 miles to hear somebody who isn't going to give you anything?

**AK:** Right.

**RJH:** He was very probing and very, I would say, incisive. Cut to the core.

**AK:** An excellent teacher.

**RJH:** (laughs) Yes! I mean, think of people going from Boston to there, out in nowhere. Like I said, I don't know if they drove back the same night, because, what I remember was they just lingered on.

**AK:** Right. I think it was one of the advantages of his house.

**RJH:** I was there a couple of times.

**AK:** It was fairly large, wasn't it?

**RJH:** It was large. It was sitting on a bluff. He was very, very much for the outdoors, sailing and nature. The other thing was that he was always thinking about his Vitamin C discovery, and he often talked about it. I did, I think, meet his wife the first time, when I was there. Yes, I am quite sure. She was very well organized in the house. So everything was just so, you know? But the house was more like . . . I think he wanted it to be part of nature. I don't know what else you've heard about him, but he had many funny quirks. For instance, he had a big study just totally filled with paper and stuff. And I happened to know the person who cleaned there because she was also helping in the lab sometimes, with cleaning.

And I don't know if she did it, but somebody who didn't know his habits, you know, many men are like this, and, I guess, women too. They know where everything is. But if somebody comes in and says, this paper is there, and that should be here, they will move things around, including his clothes. And he got very upset and fired this person, I think, on the spot. He had a temper, I would say. He didn't show it very often, but when he did, that was yes or no and out and gone, you know? But he used to hang up his work pants or slacks on his chair in this fancy, big office. And it was a big, big table, bigger than this room. He had all these things there, and this person moved the stuff around. And then, of course, he couldn't find anything, right? And I think she sent those pants or slacks to the cleaner, which was the biggest insult, you know? And it was certainly not his wife. It must have been after she died. That was very disruptive to him.

**AK:** Yes.

**RJH:** And he reacted very, very strongly to that.

**AK:** One advantage of having that large house, I think, was that he thought that if scientists or visitors did come, it was such a nice location and would be an extra incentive for them to come and stay at the house.

**RJH:** I don't know if he let people stay there. When I was there, I don't know.

**AK:** Were there parties there?

**RJH:** Remember his wife had just died when I arrived to the lab.

**AK:** I see, yes.

**RJH:** And after she died, I think his life changed very much.

**AK:** Yes.

**RJH:** And I noticed, in this Nobel Prize biography that he had a daughter with his second wife.

**AK:** Nelly. Nelly also died of breast cancer.

**RJH:** She did?

**AK:** Yes.

**RJH:** I do know about his wife. Yes. I know some things but I don't know if it has anything to do with science. He was very involved with the peace movement because he believed very much—and with some other Nobel Laureates—that whatever a person can do, especially in such a prominent position, could be of value in terms of influencing for the good.

**AK:** Yes. What sort of contact did you have with him after you left?

**RJH:** After I left, I wrote him a nice letter. But I do not think he forgave me for leaving. I don't know. I never looked back.

**AK:** So did you not have any exchange with him after you left, then?

**RJH:** No. But, like I said, I do have this wonderful recommendation letter somewhere which, particularly, talked about when I had to do that tissue culture lab from scratch. Because he said I was particularly good with my hands in making things. I don't know . . .  
(laughs) I mean, you don't expect that in this kind of letter, right?

**AK:** Yes.

**RJH:** Well, you know, it was kind of a surprise. His writing was wonderful! His writing style was wonderful. Oh, that's another thing. He had correspondence with people all over the world all the time. And I can quite guarantee, since I'm also a writer and a poet, etcetera, myself, I'm quite sure he did his own writing. He had a very good secretary, whom I did know, and she kind of took me under her wing, initially, because she was quite senior. She tried to explain him to me, you know, all his quirks and so on. But he wrote his own things. There are many people in his position who would not write and have, let's say, a secretary write. You can tell that from the way he wrote. He was very personal in his letters. And he had his own expressions, and they were very beautiful, in fact.

**AK:** I think he's an excellent writer, too. He couldn't write grants, but that doesn't mean he couldn't write. You had mentioned that after Marta's death there wasn't much play or socializing going on at Woods Hole.

**RJH:** No.

**AK:** What happened in the off hours, on the weekends? Were there any get-togethers?

**RJH:** He was trying to reach out. But I think he kind of dug himself into work.

**AK:** Did you know Delbert Philpott?

**RJH:** A little bit, yes. What did he say about it, if I may ask?

**AK:** Well, he was there in the 50's . . .

**RJH:** Oh, Okay.

**AK:** . . . and I think he may have left—he overlapped a little bit, I think . . .

**RJH:** Yes.

**AK:** . . . when you came. He was getting his PhD.

**RJH:** I heard of him.

**AK:** Yes. But he described volleyball, picnics, lobster-fests.

**RJH:** No.

**AK:** None of that after Marta died.

**RJH:** No, not after she died.

**AK:** Very interesting.

**RJH:** I think he was so sad.

**AK:** Did he seem sad to you?

**RJH:** I don't think he was sad on his face or anything. My late husband, you know, he died suddenly some years ago. And I think one of the best things you can do is just focus on work, so that you make your life meaningful. And then you gradually get out of that feeling of loss. But apparently she was a very, very social kind of person.

**AK:** I see. So much of the socializing might have been done by her.

**RJH:** I think so.

**AK:** This is a very general question, and answer it any way you wish. How would you describe Albert Szent-Györgyi's influence on you?

**RJH:** On me?

**AK:** Yes.

**RJH:** As I told you, I do respect him, so his influence was, I would say, very positive. Because if he hadn't insisted that he wanted a tissue culture lab, and not next year but now—so he

sent me, as a young scientist, to the University of Wisconsin . . . so he must have trusted me. I'm pretty sure he must have known that it was a very complicated task. It is now. Then, it was even worse. And so I benefited from him forcing me to do something that I had no plans to do.

**AK:** How about his approach to science? Was this something unusual, different from others that you had encountered?

**RJH:** Yes. Very abrupt. And, like I said, very demanding. And some people would say even rough. But one could also, at the same time, say that one could trust him.

**AK:** Sometimes his style is described as . . .

**RJH:** Forceful.

**AK:** Forceful . . . open, creative, innovative. The opposite of practical, careful.

**RJH:** Absolutely . . . nothing careful. You know, I don't mean to make a god of him, at all, but I would say he was energetic every day. I observed him when he was seventy and he was as alive as anybody twenty-one. Like I said, he was fussing there with his test tubes every day. He usually had his back to the door, and just did these experiments over there in the corner. That was his bench. And what he was thinking, one never knew at the time. But he was always sharp on something. Very observant. During the daytime he did his experiments, and I'm sure the writing was at night. And then, in the meantime,

his secretary wrote up whatever. She was in another room, as far as I remember, and was not in the lab.

**AK:** I gather that he didn't think that one should spend the workday writing . . .

**RJH:** No.

**AK:** . . . that should happen after you've done your work.

**RJH:** That you did on your own.

**AK:** People don't think that way now. They think that writing up your research is part of your workday.

**RJH:** No, no. But that's another thing. He expected that your lab book would be totally up to date. And, you know, especially, he was interested all the time in observations. So this thing that we did discover, jointly, my husband and I, in terms of extracts and so on—I couldn't have done it without him, but he probably could never have done it with another scientist because I was so extremely observant. And I can tell you, when I look back to the first experiments, I did—later on, I of course marked these test tubes and so on. And I could hardly find it. And then I asked him to refine it more, refine it more, and then the entire test tube became full of transformed cancer cells. And so that's how I knew we were on to something, etcetera. And then we did the *in vivo* experiments in rats as well.

But anyway, I think that initially Szent-Györgyi didn't believe that they could have been done so quickly. But it was so. When you see something new, you don't know when it is going to happen, whether next year or this year. You hope you will find something new and exciting. So that led to a whole new line of research. But I had the same thing happen, actually—although we're talking about Szent-Györgyi now—when I came to Battelle Memorial Institute. They wanted us, and me, particularly, because I love writing, just to write proposals to NIH. We did that at night, as an extra thing, you know? That's what we did. So there it was primarily writing. And I became principal investigator on two projects that were funded by NIH, one by NHI, and one by IDDK.

And so that led to invitations here. In those days, one was invited like that. But anyway, it's a different approach. I think if one were to say one word about Szent-Györgyi, it's that he really was truly creative. And I respect that, regardless of how hard he was to work with. I said I wasn't scared. I was not scared. But I was really challenged.

**AK:** Yes.

**RJH:** And I didn't know how it would turn out because, you know, you're out in nowhere in Woods Hole. There's nowhere to go, right? You're just alone, out in this little village, in the winter. Oh, there's something that we did have in common. We never met on that intersect, but he liked art very much. And I'm an artist by training, too. So that's how I kept my balance, you know? I took art courses and so on, which many people in that

situation do. But it was real tough.

**AK:** The winters are long up there.

**RJH:** Yes, but it is also good for creativity. You can paint.

**AK:** That's true.

**RJH:** Have you been in Woods Hole a lot?

**AK:** I've made one visit there.

**RJH:** About Szent-Györgyi?

**AK:** Yes.

**RJH:** Did you go to his house.

**AK:** His house has been sold.

**RJH:** His house, if you saw it from the outside, is, as far as I recall, the last one on the peninsula. And in those days, you were not allowed to go in that road unless you had business to transact and were invited. And I'm sure they phoned ahead about coming.

**AK:** Okay.

**RJH:** I do think he was a great man, regardless of what people say.

**AK:** Well, he attracted great admirers, and he attracted a lot of criticism.

**RJH:** Oh, of course!

**AK:** As charismatic and inspirational people do, I suppose.

**RJH:** Right. But, you know, you asked about influence on me.

**AK:** Yes.

**RJH:** I think I was pleasantly surprised that he would even consider having somebody with no experience in the lab come down there. He obviously had something in mind to have this tissue culture lab, you know? And I'm glad that I was able to help with that. But, at the same time, I have no idea what happened after I left. And, in a way, I wouldn't want to know because it was successful when I was there. I don't know what happened after. You're only responsible for the time when you're there.

**AK:** Right.

**RJH:** Yes.

**AK:** Well, Dr. Hegyeli, thank you, very much for your time this morning. I know that you've just come out of a very busy period in your professional life, and you're coming up on another one.

**RJH:** Yes.

**AK:** So we're just right in the middle here. Thank you again.

**RJH:** You're welcome.

[End of Interview]

## Index

Battelle Memorial Institute .....	12, 27
Canada.....	1, 4
Hegyeli, Andrew .....	5, 11, 12, 24, 27
Death of.....	24
Hegyeli, Ruth Johnsson	
And contact with Szent-Györgyi after leaving Woods Hole .....	21
And death of husband .....	24
And formation of tissue culture lab .....	3, 6-8, 16, 17, 21, 25, 30
And how death of wife changed Szent-Györgyi's life.....	20, 21, 24
And influence of Szent-Györgyi on.....	24–26, 30
And initial contact with Szent-Györgyi .....	3
And interaction with Szent-Györgyi.....	3, 4
And opinion of Szent-Györgyi.....	10, 18, 29
And study of tissue culture .....	3
And Sweden.....	2, 7
And Woods Hole, first experience at.....	4, 5
And work in cancer research.....	1, 11, 13
Educational background.....	1
Institute of Muscle Research.....	15, 17
National Academy of Sciences .....	13
National Institutes of Health .....	8, 14, 27
Nobel Prize.....	10, 15, 20
Philpott, Delbert.....	23
Roswell Park Memorial Institute .....	1, 2
Sweden.....	1, 2, 7
Szent-Györgyi, Albert.....	1, 3-5, 9, 10, 12-15, 17, 24, 27, 29
And character .....	16, 19, 25–28
And death of daughter.....	21
And death of wife.....	4, 15, 19–20, 21
And his management style .....	9
And his writing style.....	14, 15, 22
And Nobel Prize.....	2
And seminars at Woods Hole .....	13, 14
And work ethic.....	15, 16
And work in cancer research.....	15, 27
And work in muscle contraction.....	15
And working style.....	7–11, 15–16, 25
Szent-Györgyi, Marta .....	4, 22, 24
Toronto General Hospital .....	1
University of Toronto .....	1
University of Wisconsin .....	3, 4, 25
Vitamin C.....	19

Woods Hole, Massachusetts ..... 1, 2-4, 6, 8, 13, 16, 22, 28  
Culture..... 13-14, 24