CHEMICAL HERITAGE FOUNDATION

MARLA B. LUSKIN

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Arnold Thackray and Richard Sawyer

at

Coral Gables, Florida

on

6 March 1990

(With Subsequent Corrections and Additions)

ACKNOWLEDGEMENT

This oral history is part of a series supported by a grant from the Pew Charitable Trusts based on the Pew Scholars Program in the Biomedical Sciences. This collection is an important resource for the history of biomedicine, recording the life and careers of young, distinguished biomedical scientists and of Pew Biomedical Scholar Advisory Committee members.

THE BECKMAN CENTER FOR THE HISTORY OF CHEMISTRY

Oral History Program

RELEASE FORM

This document contains my understanding and agreement with the Center for History of Chemistry with respect to my participation in a tape-recorded interview conducted by Arnold Thackray and Richard Sawyer on 6 March 1990. I have read the transcript supplied by the Center and returned it with my corrections and emendations.

1. The tapes and corrected transcript (collectively called the "Work") will be maintained by the Center and made available in accordance with general policies for research and other scholarly purposes.

2. I hereby grant, assign, and transfer to the Center all right, title, and interest in the Work, including the literary rights and the copyright, except that I shall retain the right to copy, use and publish the Work in part or in full until my death.

3. The manuscript may be read and the tape(s) heard by scholars approved by the Center subject to the restrictions listed below. The scholar pledges not to quote from, cite, or reproduce by any means this material except with the written permission of the Center.

4. I wish to place the following conditions that I have checked below upon the use of this interview. I understand that the Center will enforce my wishes until the time of my death, when any restrictions will be removed.

   a. ____ No restrictions for access.

   b. ____ My permission required to quote, cite, or reproduce.

   c. X My permission required for access to the entire document and all tapes.

This constitutes our entire and complete understanding.

(Signature) Signed release form on file at the Science History Institute

(Date) 5/13/92

(Revised 24 February 1988)

Upon Marla B. Luskin's death in 2021, this oral history was designated **Free Access**.

***Please note*:** Users citing this interview for purposes of publication are obliged under the terms of the Center for Oral History, Science History Institute, to credit the Science History Institute using the format below:

> Marla B. Luskin, interview by Arnold Thackray and Richard Sawyer at Coral Gables, Florida, 6 March 1990 (Philadelphia: Science History Institute, Oral History Transcript # 0776).

Science History Institute

Chemistry · Engineering · Life Sciences

Formed by the merger of the Chemical Heritage Foundation and the Life Sciences Foundation, the Science History Institute collects and shares the stories of innovators and of discoveries that shape our lives. We preserve and interpret the history of chemistry, chemical engineering, and the life sciences. Headquartered in Philadelphia, with offices in California and Europe, the Institute houses an archive and a library for historians and researchers, a fellowship program for visiting scholars from around the globe, a community of researchers who examine historical and contemporary issues, and an acclaimed museum that is free and open to the public. For more information visit sciencehistory.org.

MARLA B. LUSKIN

1952 Born in Pasadena, CA on December 17

Education

1974 BA, Neurobiology, University of California, Berkeley
1981 PhD, Neural Sciences, Washington University in St. Louis School of Medicine

Professional Experience

Stanford University School of Medicine, Stanford, CA
1981-1984 Post Doctorate, Neurobiology

Salk Institute for Biological Studies, La Jolla, CA
1984-1986 Post Doctorate, Neurobiology

Washington University School of Medicine, St. Louis, MO
1986-1988 Post Doctorate, Neurobiology

Emory University, Atlanta, GA
1988-present Assistant Professor, Anatomy and Cell Biology

Honors

1975-1977 Washington University School of Medicine Division Fellowship
1977-1978 Sloan Foundation Fellowship
1978-1981 Institutional Pre-doctoral NIH Training Fellowship, Washington University
1981-1984 Institutional Post-doctoral NIH Training Fellowship, Stanford University
1986-1987 Grant from the McDonnell Center for Cellular and Molecular Neurobiology, Washington University School of Medicine
1989 Pew Scholar in the Biomedical Sciences

ABSTRACT

Marla Luskin grew up in the San Fernando Valley, near Los Angeles, California, one of three children. Her father was a plumber and her mother a housewife. Neither of her parents valued the need for higher education, especially for a daughter. All three children have advanced degrees, nonetheless, perhaps in part because of an uncle's encouragement. Always interested in science, Luskin was able to work in a lab while in high school. Luskin began college at University of California, Irvine, but transferred to Berkeley to work in Gerald Westheimer's lab, majoring in psychobiology (later called neurobiology). She refers to Westheimer as her "science father".

After graduation Luskin took a year off to work and save money for graduate school, but she attended seminars and read to keep up with her science. She admired Viktor Hamburger's work and decided on Washington University in St. Louis (Wash U.) for her PhD. Her dissertation dealt with the organization of connectivity in the olfactory system. Next she looked for a postdoctoral position in developmental neurobiology, entering Carla Shatz's lab at Stanford University. She discovered a cell population that is found in the developing cerebral cortex before birth but gone after birth; called the subplate, this group of cells is unprecedented in the nervous system. Unfortunately, Luskin could not take the subplate work with her to Simon LeVay's physiology lab at the Salk Institute for Biological Studies.

After a short time Luskin went back to Wash U. to Joshua Sanes's lab. After recovering from a serious illness, Luskin decided to look for a job, consulting the ads in *Science*. She was offered an assistant professorship at Emory University, where she has now been for a year. She had a small startup package, but she has garnered a number of grants. Her lab is smaller than she would like but is scheduled to enlarge. She loves all the challenges she has found in her new position, though she would like to teach somewhat less, and is very happy at Emory. She works long hours and expects to continue to do so, hoping one day to understand which genes regulate development and how they do it.

TABLE OF CONTENTS

INTERVIEWEE: **Marla B. Luskin**

DATE: **March 6, 1990**

INTERVIEWERS: **Arnold Thackray**
Richard Sawyer

LOCATION: **Coral Gables, Florida**

THACKRAY: Marla, I'd like to start by asking you about your mother and father, about their education, their occupations, and literally, the world that you were born into.

LUSKIN: I grew up in Los Angeles [California]. Neither of my parents went to college. I wouldn't say it was an environment where there was great intellectual stimulation by any stretch of the imagination. It's been interesting finding, among the people who know us, I have an older brother who's a professor and quite successful, and that my parents, who if anything discouraged us, ended up with two professors.

THACKRAY: What did your father do?

LUSKIN: My father is a plumber and my mother has been a housewife, and that was very much the way it had to be, given their relationship and values.

THACKRAY: And you've at least one brother?

LUSKIN: I have two brothers.

THACKRAY: Two brothers. Are they older or younger?

LUSKIN: I have a brother who is a year older, a mathematician, and I have a younger brother, who's gone back to school for premed.

THACKRAY: And the mathematician is a professor? Where is he?

LUSKIN: Well, he's currently at Caltech [California Institute of Technology], but he'll be returning to the University of Minnesota. He is a supercomputer scientist.

THACKRAY: Did you grow up in Pasadena [California]?

LUSKIN: No, I grew up in Alhambra, California, until I was about ten, and then my family moved to the San Fernando Valley, and that's where I finished high school.

THACKRAY: In a little town?

LUSKIN: Granada Hills [California]. It was a relatively small town. It's where the earthquakes were in 1970. I had a fairly standard education.

THACKRAY: How big was the high school that you went to? How big was the graduating class?

LUSKIN: The graduating class was about twenty-five hundred or three thousand. It was quite a big high school. It was the largest west of the Mississippi.

THACKRAY: Probably to the east as well. And when did your awareness of science first

LUSKIN: I guess I don't feel the most objective about that, so I asked an uncle of mine who is, I would say, intellectual, cultured. We were talking not too long ago, and I was saying, "Well, did you know that I was interested in science when I was young?" He said, "Oh, yes, it was very clear. It was very obvious." We didn't go on. I think even in elementary school I liked science, but no more than art. I did a lot of art, and in junior high I took a lot of art courses. Also in junior high I had a science teacher who had actually written the science program for the L.A. [Los Angeles] city schools, who influenced me, and who to this day is still very active in her quest for knowledge. She was a very strong supporter on my part and actually mediated a lot between my parents, because my parents were opposed to women being in science. She tried to convince them that it wasn't such a bad thing. To this day, I'm still extremely close to her. She had two children who are professors, and so she had some clue as to what a career in science was like.

Then I went to high school. I'd say that's where things changed a lot, as far as my interest in science. I skipped part of high school, and my final year I spent working in a lab at UCLA [University of California at Los Angeles], a neurobiology lab. Actually it was

called a psychobiology lab, and that's when I discovered what neurobiology is, and now I am a neurobiologist. I think from that time on, I've been hooked.

THACKRAY: You were doing this while in high school?

LUSKIN: Right. I actually had an advanced placement science class in high school. I don't even remember the mechanism, but somehow—I don't know if it was formal—I was able to become a volunteer, it was at a VA [Veterans' Administration] hospital with UCLA-staffed professors, and they worked on sleep research. It was a time when that was a fairly active, interesting area of research, its heyday. The project that I plugged into was an analysis of the effects of sleep deprivation. I did very little for these people other than count spikes on charts and monitor the animals, but I'd say at the time it had a great influence on me. Not knowing for sure what it meant at that time, I decided I wanted to become a professor just like the people I had met. I knew no one else who was a professor.

THACKRAY: What did your parents think about your going to college? Were they in favor of that, or not?

LUSKIN: Very much against it, which partly accounts for where I went to college. I didn't apply to college until very late, so when I applied there were only a couple of UC [University of California] schools open. I started at [University of California] Irvine, which was a very good place. I went my first two quarters to UC-Irvine and then got a visitation transfer to [University of California] Berkeley, which I guess is important with respect to this history. My third quarter of my freshman year I went to UC-Berkeley and I took an upper division neurobiology course. I went to the professor teaching the course, and asked him if I could take his course since I had placed out of biology and I had some background in neurobiology, so I thought. He was not too keen about the idea. He didn't want lower division students, but he agreed to let me come in as long as I would accept whatever grade I got.

Again, to this day he's…I consider him my father in science. He's the person whose advice I trust the most. At the time, I didn't know that he was quite as revered as he is, but he's truly a stellar scientist…was then, and continues to be, and has received many awards.

THACKRAY: Who was that?

LUSKIN: Gerald Westheimer. Do you know him?

THACKRAY: I know his name. So he really noticed you. You did reasonably well in his course.

LUSKIN: I did well in the course. However, because I was on the visitation program to Berkeley, it meant I couldn't get a transfer right away and get a new advisor. I had to go back to Irvine for a quarter, which would be a theme in my life. I've moved a lot. Then I got a transfer that took me back to Berkeley. Upon returning to Berkeley I asked Dr. Westheimer if he would be my advisor, and he agreed. I became an independent major in neurobiology, because at the time there was no such major. I don't know what got into me, but I decided I wanted to major in neurobiology. I wanted to be a neurobiology major, which meant that I satisfy particular requirements that were approved by the dean. I could have been physiology, zoology, or a number of other majors, but with Dr. Westheimer I could design it around the area I was most interested in, so from that ordeal I think Dr. Westheimer took note of me. I think he knows my life better than I do. If you wanted factual information, he would know it.

THACKRAY: So now you're in Berkeley and you've got a mentor of some…

LUSKIN: Although I had very little interaction with him then. I think I was raised to think that…at least, I viewed at the time that professors were gods, and I would never have gone in and just talked to him. That would have been wasting his time. I would only have gone in for an express purpose. Now we talk to each other once a month or so, but back then I didn't have a lot of dealings with him. I'd go around and talk about my classes and he'd give me his thoughts.

THACKRAY: How were you financing being an undergraduate?

LUSKIN: Oh, I suppose, mostly by my parents' generosity.

THACKRAY: They weren't that opposed to your going?

LUSKIN: Well, they basically knew I was going to leave home or go to college. Either I was going to get a job and make enough money to go to college on my own, or they would finance my schooling. And the UC system, if you're a California resident, is quite reasonable financially. It wasn't a consideration at all to go someplace like a private school, although my brother was at Yale [University].

THACKRAY: They thought it was okay for him.

LUSKIN: Well, I love my parents dearly, but we've always had this problem when it came to my need for education. My brother got the *L.A. Times* scholarship, an award given to the outstanding graduating high school science student in Southern California. He got that, which covered more than half his way to Yale, and then he got other awards besides. At the time my parents said to him, "What's wrong with a junior college?" So they never quite picked up on the significance. I think now they have some clue. I mean they definitely do. They're actually fairly contemporary people. They just didn't see things the way we did, and that was part of the problem. They felt at that time the money ought to go to my brother who was going to have to support a family, and not me, so I lived with four, usually four people in a two-bedroom apartment, and it worked out.

THACKRAY: And you decided you wanted to go to graduate school?

LUSKIN: Right, except I took a year off. I took some time off between undergraduate and graduate school.

THACKRAY: Why did you take…

LUSKIN: Well, partly I had no money. At that point my parents really were completely opposed to any further education. I'm Jewish and I had a lot of guilt in taking their money and using it for things that they were not in support of, and I didn't want to feel like anything they gave me I had to owe them. So I felt if I made some money and had enough to just get me to the next stop, then I'd be better off. And I hadn't had a chance to work in a lab as an undergraduate at Berkeley. I tried many times, but if you're not on work-study, it was pretty difficult to get into labs…at least the ones that I approached. So it seemed like a good time to pick up experience.

On the other hand, I had been admitted to graduate school. Again, I applied late. It was not straightforward. When some professors I knew found out I wasn't doing anything after I graduated, they contacted various people they knew at other universities. These individuals at other institutions said send information. I got accepted to various places, but I decided that if I was going to go to graduate school, I was going to stay out a year and make sure that I looked over all the places I had interest in, not just take some place by default, so I stayed in Berkeley and had three jobs during that year. I worked as a research assistant to a linguistics professor for a while. I was a secretary to a developmental psychology group of professors, who incorporated me into more than just secretarial services.

And I took a job with Elizabeth Roboz Einstein. I don't know if you know who she

is…the daughter-in-law of Albert Einstein. She's a neuroscientist, which is why I took the position originally. However, I ended up doing mostly secretarial work for her as well, and managing various Einstein affairs and correspondences, which was the more interesting part of the job. I also applied to graduate school during that year on schedule.

It was clear to me when I interviewed at Washington University [in St. Louis, Missouri], which is where I ended up, that that was exactly where I wanted to be, partly because that's where Viktor Hamburger was, and still is.

THACKRAY: How did you know his work?

LUSKIN: I think, unlike a lot of our undergraduates and other people I've contacted, I read a fair number of original papers during my year working and as an undergraduate. In addition, I took a graduate invertebrate neurobiology course. I was fortunate in that all the professors I worked for agreed that I could take off any time I wanted for seminars…just as long as I made up the time later. I had a lot of freedom, and I was being exposed to a lot of science during the time I spent working.

THACKRAY: You were working out for yourself where you wanted to go and who you wanted to be with.

LUSKIN: Right.

THACKRAY: It wasn't Gerald Westheimer saying, "Go to St. Louis."

LUSKIN: No, actually it was interesting in that respect. Nobody pointed me to schools at all. Dr. Westheimer would have been the most likely person to have given me input. However, at the time, I don't think people at Washington University were people he knew well, so that would not have been the place he would have recommended. I actually discovered it accidentally. I had a boyfriend who was planning to go there for an MD/PhD program. In the end he didn't go there; he went to Harvard [University, Cambridge, Massachusetts] instead. But through his looking at the place and telling me what it was like, I decided to check out their neurobiology program and discovered that it was outstanding.

THACKRAY: Let's go back for a minute to your parents' stereotypes. The Jewish parents' ambition for their children to succeed academically is such a stereotype. Why didn't your parents conform to that stereotype, do you think?

LUSKIN: It's somewhat of a mystery to me. They were both poor growing up, and they came from very traditional, close religious families, although they're not particularly religious themselves anymore. I was raised with a religious upbringing, but I don't practice it much now. I think my mother was a very bright student, but got married at eighteen (very willingly), and had two children by the time she was twenty (very willingly). My dad objected to her working, nor did she think she ought to work, despite the fact that we didn't have a lot of money when I was growing up. My mom didn't drive, either, so she couldn't take us places for music or dance lessons. That meant that we couldn't do many of the things my friends did. And so both my older brother and I independently pursued our interests. I remember enrolling during the summer in courses (dance, drama) at a local park, because I could walk there. I know less about my younger brother, who I'm very close with now, but know much less about his upbringing.

It's not clear to me why my parents didn't value education more, especially because they have a lot of friends who are well educated, and who wanted their children to go on and get degrees. My dad's older brother, who's probably the dominant figure in the family, was a very important person. Oddly enough, his children were not so interested early on in academic pursuits, or college, even though he wanted them to succeed academically. They eventually all finished college and have good jobs. I haven't figured out why my parents seemed opposed to education, nor, as far as I know, can anybody who knows my parents.

THACKRAY: Let's go to Washington University. You were in the neuroscience department. Were they offering you financial support?

LUSKIN: Right. I could basically live off of what they gave us for a stipend. St. Louis was a fairly reasonable place to live then.

THACKRAY: And how many people were in the class that entered with you?

LUSKIN: It was the division of biology and biomedical sciences, and it was broken down into different programs. In the neuroscience program I think there were probably six plus three MD/PhD students who joined my class.

THACKRAY: Did most of them survive through the program?

LUSKIN: No, not all of them did. I think that two or three dropped out and unfortunately a few committed suicide. Oddly enough, only the men have faculty positions and none of the women but me.

THACKRAY: How did you make your way to Joel [Joseph L.] Price's?

LUSKIN: By default. Initially I did my first research rotation in Viktor Hamburger's lab; even before going to Washington University I thought very highly of Dr. Hamburge'sr work. He was on the main campus. Wash U has two campuses. There is a medical school campus and, separated by Forest Park (site of the World's Fair), is an undergraduate campus where Dr. Hamburger's lab was located. I lived in the dormitories by the medical school campus. When I approached Dr. Hamburger, he agreed that I could come into the lab for a rotation, although he had not had a graduate student for years. I worked mostly with his postdoc Peggy Hollyday that first year. I didn't have a lot of exposure to him, however, because he was actually quite sick then. Do you know who Viktor Hamburger is?

THACKRAY: Umm hmm.

LUSKIN: Medically speaking, it was a real low period for him. In order to increase my exposure to him (he wasn't in the lab much, only his office) and to be able to have more interaction with him, we set up a reading course. I met with him at least once a week for an hour or two to discuss papers he'd assigned me to read in developmental neurobiology.

At Wash U., we had to do research rotations in different labs, which I was very much in favor of. When it came time to make a decision about where to do my thesis, Dr. Hamburger basically said that I could choose whether to stay or not in his lab, but there was a good chance that he wouldn't be around when I finished and I should think very seriously about that. So reluctantly I decided that it probably was not a very good idea to stay in his lab. That's one of the few mistakes, the few things I regret in life.

And the next place I went was to work with a postdoc in Joel Price's lab, Lew [Lewis B.] Haberly, who's now at the University of Wisconsin. I joined him to learn physiology, did that for the summer. For various reasons I just stayed in Joel's lab for my thesis. The main reason I stayed is that I thought I was going to be able to work on development of the nervous system in his lab. There were a lot of really interesting things one could do studying the development of the olfactory system, which was the area that his lab worked in. It turned out that there were two other graduate students who had been there already for a year, who were in my year (class), and they had development projects. After I'd been there for another year, and we had to decide for sure what each of us was going to do, he said I couldn't work on development. I was terribly disappointed, but I figured it wouldn't be so bad because I'd be out of there in two years, and I did have a project that was going well. I just wasn't thrilled about it because it wasn't development. Fortunately, I can usually get myself interested in anything if I'm involved. It was pure adult organization. That's how I ended up staying.

THACKRAY: And your thesis was actually about what?

LUSKIN: The organization of connectivity in the olfactory system.

THACKRAY: What sort of techniques were you using?

LUSKIN: For the time, they were new techniques, not very standard. I was doing a lot of tracing of connections, so I used tritiated amino acids as anterograde tracers, and I used HRP as retrograde tracers. One of the projects I picked was to look at the projections of what are referred to as the mitral cells (the projection neurons of the olfactory bulb) to the olfactory cortex. Since the time of [Ramón y] Cajal, there'd been a question about whether a single cell has a widespread projection, or whether small groups of cells have a widespread projection. About that time is when what were called fluorescent retrograde tracers were first being used in neurobiology. It was about 1979, 1980. Larry Swanson, who you may have heard of, had just come back to Wash U. from being in a lab in Europe where they were first used. So I told him I'd beg, borrow, or steal the fluorescent tracers he had to do the project. (They could not be purchased then.) So I worked with these fluorescent tracers that Larry gave me. At the time there were just a handful of people in the country using them. Now they are very commonly employed.

THACKRAY: Your PhD took you six years, if I'm understanding. Was that about average?

LUSKIN: Yes. In fact, I finished before the two people in my lab who I mentioned started a year before me.

THACKRAY: When did you decide you were keeping going, you were going to do a postdoc and become an academic and do the whole business?

LUSKIN: I think that now I've decided. I'm not sure. Maybe I became committed when I decided to stay in graduate school. Previously (at the same time I applied to grad school) I had applied to OD [optometry]/PhD programs at Berkeley and been accepted. After I was already at Wash U. and liked it, I decided not to go to Berkeley that year, but I reapplied for the following year. One of the reasons I thought about getting an OD/PhD was so that I could make enough money to support my parents when they got old. When I concluded that I didn't have to worry about that, that I could accept them being poor, I decided to stay in graduate school. I don't think I've seriously questioned it since.

THACKRAY: So how did you get to Stanford [University, California]?

LUSKIN: Very much by design. As I said before, I knew all along that I was interested in developmental neurobiology, and as I approached the end of my time as a graduate student, I thought about what kinds of research problems I wanted to work on during my postdoc. I was very certain that I wanted to go to a lab where I could work in the field of developmental neurobiology.

So I wrote and corresponded with several people. Unlike a lot of labs where the advisor mediates the placement of their students, I told my advisor after the fact what I was going to do, and I had the good fortune of being accepted into the lab that was my first choice.

THACKRAY: What differences did you notice between the Stanford lab and Washington U?

LUSKIN: Well, I think Washington U is a wonderful, wonderful institution, and I think if I owe anyplace a lot, it's Wash U.. To this day I have a lot of very close friends who were my teachers, and friends from that time. I think Wash U. offered an excellent education, and I think it was one of the best places in the country for neurobiology. I don't think there was a better-designed program at the time.

In some ways Stanford was a better place for me, because I was working on problems I cared more about. In terms of the quality of science and the excitement around me, I think Wash U. and Stanford were very comparable. I think I was privileged to have been at both places.

THACKRAY: How large was [Carla J.] Shatz's lab when you got there?

LUSKIN: Let's see, when I got there, there was one graduate student. I think he had been there about three years, maybe two years, although he became a neurosurgeon and never finished.

THACKRAY: It was pretty small.

LUSKIN: Although it's quite big now. There are probably ten graduate students and

postdocs combined.

THACKRAY: What you did there was a little bit different from what you'd done at Wash U.?

LUSKIN: Initially it wasn't as different as I'd hoped it to be. There's some irony in that. The reason I didn't go to work with Pasko Rakic at Yale (if you know who he is) is that the one thing I didn't want to do was birthdating studies of the cortex, which means that you use tritiated thymidine to label dividing cells to determine when they leave the mitotic cycle. Although I thought Pasko's lab was really interesting, the last thing I wanted to do was more autoradiography. I thought that by going to Carla's lab, I wouldn't have to do that.

Well, for various reasons, the project that I started with was to study the neurogenesis of the rat's visual cortex. I found myself in some ways not using radically new techniques, but that led me into a gold mine.

THACKRAY: A gold mine of...

LUSKIN: During the course of my first year there or so, I discovered a population of cells that are now referred to as the subplate. They are a transient population of cells in developing cerebral cortex, present prenatally and absent postnatally.

These cells were not recognized before I found them, although I think several people could have seen it in their material. It's fair to say, I believe, that these cells have become the focus of many people's research and are talked about in basic courses in developmental neurobiology. Sue [Susan K.] McConnell worked on one aspect of these cells as a postdoc in Carla's lab. I don't know if you interviewed Sue McConnell yet.

THACKRAY: Not yet.

LUSKIN: I don't think it was as clear at the time, because I worried about whether I was missing something. It was a very novel idea, that there was massive cell death in the cortex, that a population of cells serves a temporary function, and then virtually disappears by cell death. There's no precedent for that in the nervous system. There was sculpting of cell populations in relation to target size, but nothing like this.

So I spent a lot of sleepless nights thinking what am I missing, or designing experiments to narrow it down better. And actually it wasn't until Sue McConnell did some work this year with Carla that I finally really believed that subplate cells exist, even though I

had already published several papers on them.

[END OF AUDIO, FILE 1.1]

THACKRAY: So you moved on in 1984. Why was that?

LUSKIN: Because I thought that one should continue to learn new things and get new exposure. I was influenced by Denis [A.] Baylor, a professor at Stanford, who I admire greatly. He encouraged me to not think about jobs, but to just get the best training before taking a position. After being in Carla's lab, I was fairly committed to studying the development of the visual cortex. I thought at the time if I was going to do that, I should learn more about its adult structure and function, so I went to Simon LeVay's lab to learn to do physiology.

THACKRAY: You went straight from one to the other.

LUSKIN: I took a course at Woods Hole during the summer that I moved. I think I left Carla's lab with some reticence, because I already realized how much more there was to do on this transient population of cells, and it was clear that it was a wide open field and I had the lead in it.

THACKRAY: Did you leave the work behind you or did you take it with you?

LUSKIN: I had no choice.

THACKRAY: You left it behind you. What do you think about that now, having to do that?

LUSKIN: Well, I think, in retrospect, that it wasn't the best thing to keep dropping projects every move I made. I think I respected what people that I worked with said about how projects could or could not leave the lab, and I think that in the future, if I have people who are going on, I hope that I would let them take their projects or parts of them when they leave.

At the time I left Carla's lab it was clear to me that this subplate population was going to be very interesting. When I looked for jobs, which was a year after I left Carla's lab, I wrote up a description of my future plans about the subplate. Carla's lab wasn't

studying them in depth then, and at the time she had said that I could have this area as mine, she wasn't going to pursue it. She said she would go on studying subplate, although she wouldn't because I had found them and I had known what was to be done.

THACKRAY: So that changed into, "You can't take it with you."

LUSKIN: Well, I didn't. When I went to Simon's lab, I wanted to continue to work on those cells; I wanted to do physiology on them under his guidance. I couldn't do it on my own. However, I don't think he wanted to be in a position whatsoever—although Carla and Simon had worked with each other in the past—of taking a project from Carla's lab into his lab. So that was made clear immediately after I arrived.

THACKRAY: So it was a problem at both ends.

LUSKIN: Yeah, and I think I already knew that I wanted to continue working on those cells.

THACKRAY: But you effectively had to drop it for a couple of years.

LUSKIN: Well, I'd say forever, I mean in the way that I envisioned. I believe you need to know when not to compete with someone.

THACKRAY: But the Shatz lab is still working on those?

LUSKIN: There's probably five or six people working on one aspect or another of those cells, and there are labs all over the world working on them now.

THACKRAY: Don't you feel rather bitter about it?

LUSKIN: I think I might have in the past. I felt bitter because when I wrote for jobs in 1986 my whole thrust was to work on the subplate, and Carla knew that, but she didn't tell me that she was switching her lab over to mostly subplate as well. I think I felt a little bit embarrassed because I would not have proposed to do the same thing that she was proposing to do. I guess I don't see where bitterness gets you, and I've always felt the senior person is going to win out no matter what. It's not to say, I mean, I'm in a very, probably a fairly

competitive, controversial field right now, and people say, "Well, how do you feel about so-and-so?" And I say, "Well, I can't keep switching projects. I'm committed to this. Even if somebody else is doing it I'm going to continue doing it because we will see things differently. Besides, I would get nowhere if I were to just try to keep staking out areas that nobody else is in." Carla's probably a very strong supporter and a very good role model, and I have a lot of positive to…

THACKRAY: So what did you do at Salk [Institute for Biological Studies]?

LUSKIN: At the Salk I learned to do physiology and learned that I don't enjoy doing physiology as much as anatomy and cell biology. Stanford was a place where I made a lot of professional contacts and dear friends, besides Carla's lab, which was a good place to be. There are people I met there, such as Dr. John Nicholls, who just came to visit in Emory [University] last week, who I have a lot of interaction with now. I have less interaction with Dr. Denis Baylor, but I very much benefited from my time spent with him. I wasn't particularly overjoyed with the research project I had at the Salk, but the people around were pretty good, mighty good.

THACKRAY: With the benefit of hindsight, it might have been better to stay longer at Stanford.

LUSKIN: Absolutely. Absolutely.

THACKRAY: Did you move from Salk back to Wash U.? Was that because the Salk experience wasn't going too well?

LUSKIN: Well, yeah, it was for multiple reasons. I'd actually been offered a non-tenure-track position before going to the Salk, which I decided not to take because I didn't feel I was ready to be at that level. Then I decided that the Salk wasn't the place for me; Simon's lab wasn't the place for me because I didn't want to continue doing the research he intended for his lab to do. I left at the same time that Max [W. Maxwell] Cowan (vice president of Salk) left, so it was not a time when you could actually appeal for continued support. Consequently there was a lot of instability at that time at the Salk. Again, I considered, okay, well, if I'm going to stay in science, what's the best thing to do? Do I just try to stay in San Diego [California] and find the best possible position I can, or do I go wherever I can get the best training?

I had applied for jobs during that period and had been offered a job in Texas, which I might have taken, I don't know, but it got canceled because of the oil crisis. When the oil

crisis came, Texas put a freeze on all state hiring. Since the job I was offered was at a state university, what would have been my job—I mean it was all on paper except for not signed by the chancellor—evaporated.

I had already made contingency plans; I mean I was already working on it months before, to go work with Dr. Dona [M.] Chikaraishi, who's a molecular neurobiologist at Tufts [University, Medford, Massachusetts] , whom you might know because she's a senior Pew Scholar recipient. I changed my mind and decided to go to St. Louis instead because Dr. Josh [Joshua R.] Sanes had just introduced a new method that had potential for the questions I was interested in and he invited me to come. So I decided to go there.

THACKRAY: Did that work out better?

LUSKIN: Yes, in some ways. I had thought I was going to stay in St. Louis for a number of years. However, I got very, very sick, spent a lot of time in doctors' offices, had to have surgery in the hospital, and be out of work a while. My absence caused a lot of problems in that it was no longer reasonable that I could stay on at Wash U. and write grants and have some independence. Since my work was going very well, nonetheless, I decided that I was going to go and find a job (assistant professor, tenure track), that I didn't want to wait longer to set up my own lab. If I couldn't do it at Wash U., then I was going to go elsewhere.

So it was mixed. If I hadn't gotten sick, I would probably still be there.

THACKRAY: How did you find the job at Emory? Was that looking in *Science*?

LUSKIN: Yes, yes, even though some people say you'll never find a job by answering advertisements. I believe that that is the way to do it, and, actually, I like to know that I get things because I deserve them, not because there was some connection, some favor, anything like that. So I wouldn't take any word-of- mouth suggestions about jobs to pursue. If somebody told me there's a job someplace that wasn't advertised as a full-fledged job, I wasn't interested. In fact, Emory was one of the few places I applied for a job that I didn't know people at. I knew it was considered a good university, but I knew only a few people there previously.

THACKRAY: And what did they give you to help start up at Emory?

LUSKIN: Much less than most people. Twenty-five thousand [dollars].

THACKRAY: Was that enough?

LUSKIN: Not by a long shot! No. It was twenty-five up front, and then I could write a BRSG grant [Biomedical Research Support Grant] for another twenty-five thousand, which I got after I was there. But it could not be guaranteed beforehand, and required a ten-page grant.

THACKRAY: What grants do you have now?

LUSKIN: Now I'm fortunate. I have the Pew. I understand that my NIH [National Institutes of Health] will start April 1, although I haven't seen the money yet. I have a Sloan. I have a NATO [North Atlantic Treaty Organization] grant. I have a university research fund grant for ten thousand. Did I say an NSF [National Science Foundation]? An NSF coming also. The Pew has made a huge difference, because it was the first big sum of money that I knew I was going to have to work with. I don't think I was envisioning how bad things could be if I didn't get it, and I wasn't planning on it by any stretch of the imagination. By last summer I had no money; I couldn't order anything. I basically had my hands tied for a while, partly because Pew was supposed to activate on July fifteenth, but the Emory University didn't send the money until August fifteenth, and since I started teaching August twentieth, it didn't help much last summer. Consequently research moved along slowly and I couldn't hire a technician.

THACKRAY: Did the Pew do things for you beyond the simple fact of the cash? Or was that really what it was all about?

LUSKIN: I think that partly remains to be seen. I think this experience at the meeting has been extremely positive. I didn't really know much about the Pew before my chairman asked if I wanted to be considered. The way Emory worked the Pew nominations was that every chairman got to submit a name, and then amongst the deans and council of chairmen they selected one person. I don't think I was very aware of what the Pew was. Now I actually know, have several friends who do have them prior to this year. So I think I immediately thought it was a very distinguished award, very prestigious award. I told my uncle that I couldn't imagine how I got it. He said, "Well, do you think you could have deserved it?" I said, "Well, I suppose so."

THACKRAY: What's the difference between being an assistant professor and being a postdoc?

LUSKIN: A world of difference. I probably haven't been happier. I don't think I went into being a professor knowing whether I'd like it or not. I'd never had to be responsible for setting up all the equipment, to make sure it works. I didn't know if I'd get grants. It was very much an unknown. Nonetheless, from the moment I got there, I've really enjoyed every challenge. Every bit of it has been fun. Most people who know me would not have predicted that reaction.

THACKRAY: How much teaching obligation do you have?

LUSKIN: A fair amount. Let's see, my first year—this is my second year there—I taught in the human anatomy course. I gave lectures in a neuroscience course, gave lectures in an undergraduate biology course. I taught in an allied health histology and cell biology course. Much more than I anticipated. Again, my chairman knows I wasn't pleased, and I don't think he realized that I was being asked to teach by his faculty members, without checking with him first. I assumed that if these people were coming to me, they had checked it out with him in advance. Even teaching human anatomy my first year was a surprise. It was only after I got there that I was told I had to teach my first year. I thought I would be observing the course my first year, like the professor who came before me had. My labs weren't ready, so I spent August to December doing practically nothing but teaching. It was a setback, but…

THACKRAY: How many people are in your lab now?

LUSKIN: Let's see, there was a pediatric neurology fellow who worked from July till December, and he was a joy to have. He was really wonderful. He left, although he will have a position in the pediatrics department come July, and he'll spend the next five years in my lab learning to become a scientist. He is very well thought of by the clinical staff, and consequently they really want to do what it takes to build his scientific training. I'm fortunate that he will be in my lab. Right now there are people applying for postdocs, and I'm just waiting to see if any of them could be the right person. There's an undergraduate who I don't think will go on in science who's doing a senior project, and a technician. It's small.

THACKRAY: How many hours a day and days a week have you spent on your science in recent years?

LUSKIN: In recent years, not counting this year? In the past I'd say I worked most every day, and I tend to work probably seven days a week, and most evenings, but not full time on the weekends. I think I've done the least amount of science the last two years—since I

looked for jobs and took a job—than ever in my life. There has been a lot of grant writing, teaching, the business of science, setting up the lab.

THACKRAY: How many hours and days a week do you expect to be working three or five years from now?

LUSKIN: Probably Monday through Friday, most evenings at least a few hours, and one weekend day, at least one weekend day a week.

I enjoy it, but I do find that I like to pursue other interests, and there are other necessities of life that have to be met, so in some ways I've worked less this year, because I find that I work so hard when I'm working that I just have to take time off. So I do.

THACKRAY: Two last things very quickly, Marla, since we're running out of time. One is, ten years from now, if you got really lucky, what would you like to have done or shown scientifically? If your wildest dreams came true, what…

LUSKIN: I haven't thought about that. I suppose that I'm hoping that I will go in a more molecular direction, still keeping biological principles in mind, but that I will be finding genes that are very important in regulating development.

THACKRAY: A more trivial question...

LUSKIN: I taught a developmental neurobiology course this year, as well. I forgot to mention it earlier.

THACKRAY: Are you keeping your old grant proposals, correspondence, notebooks, or stuff that documents what you've been up to?

LUSKIN: My life's in total disarray.

THACKRAY: Has it traveled with you or not, that sort of stuff?

LUSKIN: Has what traveled with me?

THACKRAY: As you've gone between these different labs, have you kept all this stuff with you or not?

LUSKIN: Well, most everything I've always had to leave. From the work I did in Carla's lab, I have all the data analysis. I have boxes and boxes of all the analysis. She has all the original material and slides, but I have all the analysis. I have most everything from my work with Josh, and some from my work with Simon, and much less from my work with Alan [L.] Pearlman. I think having moved as much as I have moved, I've gotten rid of more than most people.

THACKRAY: Well, let's hope you stay put and accumulate.

LUSKIN: I plan to. I'm very happy there, so I plan to.

THACKRAY: Okay, good. Thank you very much.

[END OF AUDIO, FILE 1.2]

[END OF INTERVIEW]

INDEX