CHEMICAL HERITAGE FOUNDATION

MICHEL STREULI

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Helene L. Cohen

at

Dana-Farber Cancer Institute
Boston, Massachusetts

on

8-9 November 1999

From the Original Collection of the University of California, Los Angeles

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 the Pew Scholars Program in the Biomedical Sciences Advisory Committee members.

This oral history was completed under the auspices of the Oral History Project, University of California, Los Angeles (Copyright © 2000, The Regents of the University of California) and is made possible through the generosity of

From the original collection at the Center for Oral History Research, UCLA Library, UCLA.

The following oral history, originally processed at the UCLA Center for Oral History Research, has been reformatted by the Chemical Heritage Foundation. The process involved reformatting the front matter, adding a new abstract, replacing the table of contents, and replacing the index. The paragraph spacing and font of the body of the transcript were altered to conform to the standards of the Oral History Program at the Chemical Heritage Foundation. The text of the oral history remains unaltered; any inadvertent spelling or factual errors in the original manuscript have not been modified. The reformatted version and digital copies of the interview recordings are housed at the Othmer Library, Chemical Heritage Foundation. The original version and research materials remain at the Darling Library, University of California, Los Angeles and at the Bancroft Library, University of California, Berkeley.

REFORMATTING:

Marnie Berkowitz, Consultant to the Chemical Heritage Foundation. B.A., Classical Languages and Literatures, University of Minnesota; Ford Foundation Fellowship, Classical Languages and Literatures, University of Chicago.

David J. Caruso, Program Manager, Oral History, Chemical Heritage Foundation. B.A., History of Science, Medicine, and Technology, Johns Hopkins University; PhD., Science and Technology Studies, Cornell University.

UNIVERSITY OF CALIFORNIA, LOS ANGELES

Oral History Interview Agreement No. T1R0899c

This Interview Agreement is made and entered into this 14th day of December, 1999 by and between THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, a California corporation, on behalf of the Oral History Program at the UCLA campus, hereinafter called "University," and MICHEL A. STREULI, having an address at Department of Tumor Immunology, Dana-Farber Cancer Institute, 44 Binney Street, Boston, Massachusetts 02115, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about November 8, 1999, and tentatively entitled "Interview with Michel A. Streuli". This Agreement relates to any and all materials originating from the interviews, namely the tape recordings of the interviews and a written manuscript prepared from the tapes, hereinafter collectively called "the Work."

In consideration of the mutual covenants, conditions, and terms set forth below, the parties hereto hereby agree as follows:

1. Interviewee irrevocably assigns to University all his copyright, title and interest in and to the Work. This assignment applies to University, its successors, and assigns, for and during the existence of the copyright and all renewals and extensions thereof.

2. By virtue of this assignment, University will have the right to use the Work for any research, educational, or other purpose, including electronic reproduction, that University may deem appropriate.

3. Interviewee acknowledges that he will receive no remuneration or compensation for his participation in the interviews or for the rights assigned hereunder.

4. Interviewee will receive from University, free of charge, one bound copy of the typewritten manuscript of the interviews.

5. To insure against substantive error or misquotation, Interviewee will have the right to review the manuscript before it is put into final form. University therefore will send Interviewee a copy of the edited transcript for review and comment. Interviewee will return transcript and comments to University within 30 days of receipt of the transcript. In the event that Interviewee does not respond within 30 days, University will assume that Interviewee has given full approval of the transcript.

6. All notices and other official correspondence concerning this Agreement will be sent to the following:

If to University: Oral History Program
University of California, Los Angeles
Box 951575
Los Angeles, California 90095-1575

Attention: Director

If to Interviewee: Michel A. Streuli
Department of Tumor Immunology
Dana-Farber Cancer Institute
44 Binney Street
Boston, Massachusetts 02115

University and Interviewee have executed this Agreement on the date first written above.

INTERVIEWEE

X _____
(Signature)

Michel A. Streuli
(Typed Name)

Dana-Farber Cancer Institute
(Address)

Boston, Massachusetts 02115

X Date 8 Nov 99

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

_____
(Signature)

Dale E. Treleven
(Typed Name)

Director, Oral History Program
(Title)

Date December 14, 1999

Chemical Heritage Foundation
Oral History Program
315 Chestnut Street
Philadelphia, Pennsylvania 19106

The Chemical Heritage Foundation (CHF) serves the community of the chemical and molecular sciences, and the wider public, by treasuring the past, educating the present, and inspiring the future. CHF maintains a world-class collection of materials that document the history and heritage of the chemical and molecular sciences, technologies, and industries; encourages research in CHF collections; and carries out a program of outreach and interpretation in order to advance an understanding of the role of the chemical and molecular sciences, technologies, and industries in shaping society.

MICHEL STREULI

1958 Born in Zurich, Switzerland on 17 April

Education

1981 B.S., Tufts University
1983 Diploma, University of Zurich
1986 Ph.D., University of Zurich

Professional Experience

Dana-Farber Cancer Institute and Department of Pathology, Harvard Medical School

1986-1991 Research Fellow, Division of Tumor Immunology
1991-1997 Assistant Professor, Division of Tumor Immunology
1998-present Associate Professor, Department of Cancer Immunology and AIDS

Honors

1981 Prix Jacques de Bedriaga, University of Zurich
1986 Swiss National Science Foundation Fellowship
1988 Cancer Research Institute Fellowship
1993-1997 Pew Scholar in the Biomedical Sciences
1997 Leukemia Society of America Scholar Award

Selected Publications

Streuli, M. et al., 1980. At least three human type α interferons: structure of α-2. *Science* 209:1343-1347.

Streuli M. et al., 1987. Differential usage of the three exons generates at least five different mRNAs encoding human leukocyte common antigens. *J. Exp. Med.* 166:1548-1566.

Streuli M. et al., 1988. A new member of the immunoglobulin superfamily that has a cytoplasmic region homologous to the leukocyte common antigen. *J. Exp. Med.* 168:1523-1530.

Streuli, M. and H. Saito, 1989. Regulation of tissue-specific alternative splicing:

exon-specific cis-elements govern the splicing of leukocyte common antigen pre-mRNA. *EMBO J.* 8:787-796.

Streuli, M. et al., 1989. A family of receptor-linked protein tyrosine phosphates in humans and *Drosophila. Proc. Natl. Acad. Sci., USA* 86:8698-8702.

Streuli, M. et al., 1992. Expression of the receptor-linked protein tyrosine phosphatase LAR: proteolytic cleavage and shedding of the CAM-like extracellular region. *EMBO J.* 11:897-907.

Serra-Pagès, C. et al., 1995. The LAR transmembrane protein tyrosine phosphatase and a colied-coil LAR-interacting protein colocalize at focal adhesions. *EMBO J.* 14:2827-2838.

Debant, A. et al., 1996. The multidomain protein Trio binds the LAR transmembrane tyrosine phosphatase, contains a protein kinase domain, and has separate rac-specific and rho-specific guanine nucleotide exchange factor domains. *Proc. Natl. Acad. Sci., USA* 93:5466-5471.

Beck, A.R.P. et al., 1998. RNA-binding protein TIAR is essential for primordial germ cell development. *Proc. Natl. Acad. Sci., USA* 95:2331-2336.

Serra-Pagès, C. et al., 1998. Liprins, a family of LAR transmembrane protein tyrosine phosphatase-interacting proteins. *J. Biol. Chem.* 273:15611-15620.

ABSTRACT

Michel Streuli was born in Zurich, Switzerland, where his father was a doctor and his mother a law librarian. When he was about three, Michel and his family moved to Bronxville, New York, where his father had taken a postdoc. After a couple of years the family moved back to Switzerland for a couple of years, and then returned to the United States, where Michel began school. In school he liked mathematics and engineering. He built a washing machine and an artificial kidney with his father when he was ten or twelve. In high school he enjoyed mathematics and science classes; he had a very good biology teacher. He tutored math in Harlem and enjoyed sports.

He had always wanted to be a doctor and a scientist, and since Tufts was known to have a good program in child development and pediatrics, Michel began college there, with biology as his major. He also joined the squash team. After his junior year he went to Switzerland for a summer but stayed for a year. He finished his degree in the United States and then went back to Zurich to do research in Charles Weissman's lab, where he worked on cloning interferon.

He returned after 5 years to the Dana-Farber Cancer Center to work in Stuart F. Schlossman's lab. He found a place in Haruo Saito's lab, working on cloning antigens, specifically the antigen CD45, the leukocyte common antigen. It had been cloned for a part of the rat gene but not for the human. During this period, he married Elsa Gontrum, who was studying art history at Yale. They have since had two children.

After finishing his postdoc, he accepted an assistant professorship at the Dana-Farber Cancer Center and at Harvard University, in the department of pathology. He is now an associate professor and continues his research, hoping that eventually scientists will develop cancer therapies. He has patented some of his discoveries; he continues to publish articles and win awards; and he and his wife attempt to balance family life with their two careers.

UCLA INTERVIEW HISTORY

INTERVIEWER:

Helene L. Cohen, Interviewer, UCLA Oral History Program. B.S., Nursing, UCLA; P.N.P., University of California, San Diego/UCLA; M.A., Theater, San Diego State University.

TIME AND SETTING OF INTERVIEW:

Place: Streuli's office, Dana-Farber Cancer Institute, Boston, Massachusetts

Dates, length of sessions: November 8, 1999 (106 minutes); November 9, 1999 (81)

Total number of recorded hours: 3.15

Persons present during interview: Streuli and Cohen

CONDUCT OF INTERVIEW:

This interview is one in a series with Pew Scholars in the Biomedical Sciences conducted by the UCLA Oral History Program in conjunction with the Pew Charitable Trusts's Pew Scholars in the Biomedical Sciences Oral History and Archives Project. The project has been designed to document the backgrounds, education, and research of biomedical scientists awarded four-year Pew scholarships since 1988.

To provide an overall framework for project interviews, the director of the UCLA Oral History Program and three UCLA faculty project consultants developed a topic outline.

In preparing for this interview, Cohen held a telephone preinterview conversation with Streuli to obtain written background information (curriculum vitae, copies of published articles, etc.) and agree on an interviewing schedule. She also reviewed prior Pew scholars' interviews and the documentation in Streuli's file at the Pew Scholars Program office in San Francisco, including his proposal application, letters of recommendation, and reviews by Pew Scholars Program national advisory committee members.

For technical background, Cohen consulted J.D. Watson et al., *Molecular Biology of the Gene.* 4th ed. Menlo Park, California: Benjamin/Cummings, 1987; Bruce Alberts et al., *Molecular Biology of the Cell.* 3rd ed. New York: Garland, 1994; Horace F. Judson, *The Eighth Day of Creation.* New York: Simon and Schuster, 1979; and recent issues of *Science* and *Nature.*

The interview is organized chronologically, beginning with Streuli's childhood in Zurich, Switzerland, and Bronxville, New York, and continuing through his undergraduate work at Tufts University, his graduate studies at the University of Zurich, his postdoc at the Dana-Farber Cancer Institute and Harvard Medical School, and the establishment of his own laboratory at the Dana-Farber Cancer Institute. Major topics discussed include his work on interferon, CD45, and tyrosine phosphorylation; differences between the organization of scientific research in Europe and the United States; and competition in science.

ORIGINAL EDITING:

Ji Young Kwon, editorial assistant, edited the interview. She checked the verbatim transcript of the interview against the original tape recordings, edited for punctuation, paragraphing, and spelling, and verified proper names. Words and phrases inserted by the editor have been bracketed.

Streuli reviewed the transcript. He verified proper names and made minor corrections and additions.

William Van Benschoten, editor, prepared the table of contents. Kwon assembled the biographical summary and interview history. Daniel Ryan, editorial assistant, compiled the index.

TABLE OF CONTENTS

Early Years 1

Family background. Early schooling in Switzerland and the United States. Helps build a washing machine and an artificial kidney as class projects. Streuli 's religious background. His secondary school science classes. Extracurricular activities. Impact of his parents' divorce.

College Years 23

Enters Tufts University to become a research physician. Streuli's summer trip to Zurich to study interferon in the Charles Weissmann laboratory.

Graduate and Postgraduate Years 31

His graduate research on interferon in the United States and Zurich. Weissmann's management style. Accepts a position as a postdoc at the Dana-Farber Cancer Institute. Joins the Haruo Saito laboratory and helps clone CD45. Differences in tenure and government support of science between Switzerland and the United States. Saito's management style. Streuli's research on tyrosine phosphorylation.

Establishing His Own Lab 43

Accepts an assistant professorship at Dana-Farber Cancer Center. Establishing his laboratory. Exploiting new research technologies. Drafting grant proposals. Streuli's teaching responsibilities. Writing articles The size and makeup of Streuli's laboratory. His laboratory management style. Balancing career and family life. Gender and race in the sciences. Clinical applications of Streuli's research. Patents in science. His laboratory's financial support.

Index 86

INDEX

A

Aarau, Switzerland, 1
Anderson, Paul, 82
Australia, 2, 3

B

Barr-Weaver Investigator Award, 80
Basel, Switzerland, 7, 9
Belgium, 2
Benacerraf, Baruj, 33
Blobel, Günter, 51
Boston, Massachusetts, 33, 34, 42
Brigham and Women's Hospital, 78
Bronxville, New York, 5, 9, 12, 22
Brookline, Massachusetts, 53
Brown, Dianne (sister-in-law), 2

C

Cambridge, Massachusetts, 66
CD45, 34, 41
Chicago, Illinois, 3
Children's Hospital, 78
Cold Spring Harbor Laboratory, 54
Connecticut, 33, 42

D

Dana-Farber Cancer Institute, 33, 45, 52, 76, 77, 78
DNA, 51

E

Eliot Pearson Children's School, 23, 24
erythropoietin, 31

F

Fisher, Edward, 41
France, 1, 3

G

Gontrum, Elsa (wife), 9, 25, 29, 33, 34, 38, 42, 43, 53
Greenberg, Mr., 18
Guinee, Alice, 18

H

Harlem, 19
Harvard Medical School, 44, 60, 66
Harvard University, 36, 45, 66

I

immunology, 33, 45
interferon, 26, 28, 31, 35, 71, 76
  alpha, 64
  alpha1, 31
  alpha2, 31
  gamma, 31, 47

K

Krueger, Neil X., 39

L

LAR, 41, 66
Leukemia Society of America Scholar Award, 80
leukocyte common antigen, 34, 41
London, England, 2
Lupton, Ruby, 10

M

Massachusetts General Hospital, 78
Matura, 2

N

National Institutes of Health, 52, 80
National Science Foundation, 35, 36
New York Hospital, 5

New York Times, 10
New York University, 5
NIH. *See* National Institutes of Health
Nobel Prize, 51
NYU. *See* New York University

O

Oberassistant, 43
Orshansky, Miss, 18

P

pathology, 33, 44, 45
Pew Charitable Trusts, 81
Pew Scholars Program in the Biomedical Sciences, 80, 81, 84
phosphorylation, 41

R

R01, 59, 79, 81
Rac/rho signaling, 66
ribonucleic acid, 76
RNA. *See* ribonucleic acid

S

Saito, Haruo, 34, 38, 39, 40, 41, 45, 46, 67, 70
Schlossman, Stuart F., 34, 38, 40, 41, 45, 56
Streuli, Alice (paternal grandmother), 1
Streuli, Andreas Peter Charles (son), 10, 53
Streuli, Christian D. (brother), 3
Streuli, Fritz H. (father), 1
Streuli, Huguette V. (mother), 1
Streuli, Julia Margrate Alice (daughter), 10, 53
Streuli, Nicholas F. J. (brother), 2
Switzerland, 1, 2, 3, 4, 7, 8, 10, 12, 15, 25, 26, 29, 31, 35, 36, 37, 39, 43, 44, 49, 54, 79

T

T cells, 34
Tonegawa, Susumu, 51
Trio exchange factor, 66
Tufts University, 23, 24
tyrosine phosphatase, 41, 66

U

University of California, 46

V

Verelst, Germaine (maternal grandfather), 1
Verelst, Jean (maternal grandmother), 1

W

Weissmann, Charles, 27, 28, 30, 32, 35, 39, 40, 41, 50, 67, 68

Y

Yale University, 33, 39

Z

Zurich, Switzerland, 1, 26, 29, 31, 35