CHEMICAL HERITAGE FOUNDATION

PAUL B. ROTHMAN

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Andrea R. Maestrejuan

at

Columbia University
New York City, New York

on

14, 15, and 16 April 1997

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.

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:

Holly Polish, Program Intern, Oral History, Chemical Heritage Foundation. B.A. History, American University.

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. 970421

This Interview Agreement is made and entered into this 26th day of May, 1998 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 PAUL B. ROTHMAN, having an address at Department of Medicine and Microbiology, Columbia University, Columbia University, 630 West 168th Street, New York, New York 10032, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about April 14, 1997, and tentatively entitled "Interview with Paul B. Rothman". 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 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:

Office of Research Administration
University of California, Los Angeles
P.O. Box 951406
Los Angeles, California 90095-1406

Attention: Ms. Carli V. Rogers
Copyright Officer

If to Interviewee:

Paul B. Rothman
Columbia University
Department of Medicine and Microbiology
630 West 168th Street
New York, New York 10032

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

INTERVIEWEE	THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
(Signature)	(Signature)
Paul B. Rothman (Typed Name)	Carli V. Rogers (Typed Name)
Columbia University (Address)	Copyright Officer (Title)
Department of Medicine and and Microbiology	
630 West 168th Street	
New York, New York 10032	
Date 4/14/98	Date 5/26/98

Pew Scholars in the Biomedical Sciences

Chemical Heritage Foundation Internet Posting Release Form

I, Paul B. Rothman, M.D., hereby grant permission to post portions of the digital copy of the audio-taped interview of me, and the related written transcript, on the internet for non-commercial, educational use only as per the checked selection below.

Please check one:

a. X **No restrictions for Internet Posting.**
NOTE: Users citing this interview for purposes of publication are obliged under the terms of the Chemical Heritage Foundation Oral History Program to obtain permission from Chemical Heritage Foundation, Philadelphia, Pennsylvania.

b. _____ **Semi-restricted Internet Postings** (My review of the material intended to post is required.)

c. _____ **Restricted access.** (Do not post.)

This constitutes my entire and complete understanding.

Paul B. Rothman, M.D.

2/20/08

Date

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

PAUL B. ROTHMAN

1958	Born in Queens, New York, on 9 January

Education

1980	B.S., Biology, Massachusetts Institute of Technology
1984	M.D., Yale University School of Medicine

Professional Experience

Columbia-Presbyterian Medical Center, New York City, New York

1984-1985	Intern, Medicine
1985-1986	Assistant Resident

Columbia University College of Physicians and Surgeons, New York City, New York

1986	Clinical Fellow, Department of Rheumatology
1987-1990	Visiting Fellow, Department of Biochemistry
1987-1990	Instructor, Department of Medicine
1989-1991	Assistant Professor, Department of Clinical Medicine
1991-present	Assistant Professor, Department of Medicine and Microbiology

Honors

1980	Phi Beta Kappa
1984	Alpha Omega Alpha
1984	Merck Manual Award for Outstanding Scholastic Achievement
1990	American College of Rheumatology Senior Rheumatology Scholar
1992-1996	Pew Scholar in the Biomedical Sciences
1995	Leukemia Society of America Scholar

Selected Publications

Lutzker, S. et al., 1988. Mitogen- and Il-4-regulated expression of germline Ig gamma 2b transcripts by LPS and IL-4: Evidence for directed heavy chain class switching. *Cell* 53:177-84.

Rothman, P. et al., 1988. Mitogen plus interleukin-4 induction of C epsilon transcripts in B lymphoid cells. *Journal of Experimental Medicine* 168:2385-90.

Rothman, P. et al., 1990. Structure and expression of germline immunoglobulin gamma 3 heavy chain gene transcripts: Implications for mitogen and lymphokine directed class-switching. *International Immunology* 2:621-27.

Rothman, P. et al., 1991. Identification of a conserved IL-4-responsive element located at the germline epsilon transcripts. *Molecular and Cellular Biology* 11:5551-61.

Xu, L. et al., 1993. Replacement of germline epsilon promoter by gene targeting alters control of immunoglobulin heavy chain class-switching. *Proceedings of the National Academy of Sciences USA* 90:3705-9.

Schindler, C. et al., 1994. STF-IL4: A novel IL-4 induced signal transducing factor. *EMBO* 13:1350-56.

Xu, L. et al., 1994. IFN-g represses epsilon germline transcription and subsequently down-regulates switch recombination to epsilon. *International Immunology* 6:515-22.

Bottaro, A. et al., 1994. S region transcription per se promotes basal IgE class switch recombination but additional factors regulate the efficiency of the process. *EMBO* 13:665-74.

Liao, F. et al., 1994. The transcription factor BSAP (NF-HB) is essential for immunoglobulin germline epsilon transcription. *Journal of Immunology* 152:2904-11.

Rothman, P. et al., 1994. Cytokines and growth factors signal through tyrosine phosphorylation of a family of related transcription factors. *Immunity* 1:457-68.

Pernis, A. et al., 1995. Gamma chain-associated cytokine receptors signal through distinct transducing factors. *Journal of Biological Chemistry* 270:14517-22.

Pernis, A. et al., 1995. Lack of interferon gamma receptor beta chain and the prevention of interferon gamma signaling in T_H1 cells. *Science* 269:245-47.

Danial, N. et al., 1995. Jak-STAT signaling induced by the v-*abl* oncogene in pre-B cells. *Science* 269:1875-77.

Pernis, A. et al., 1995. IL-4 signals through two related pathways. *Proceedings of the National Academy of Sciences USA* 92:7971-75.

Lu, B. et al., 1997. Identification of the STAT6 domain required for IL-4-induced activation of transcription. *Journal of Immunology* 159:1255-64.

ABSTRACT

Paul B. Rothman grew up in Queens, New York, one of two children in a Russian-Polish Jewish family. His father was a lawyer, his mother a professor of criminology interested in juvenile justice. He attended public schools, being an athlete rather than an academic. His parents had high expectations of their children, as well as the knowledge and income to send them to better (Ivy League) schools. From a young age, Rothman liked to take things apart to see how they worked and then to put them back together; this translated into doing well in mathematics and science classes.

Rothman matriculated at the Massachusetts Institute of Technology (MIT). The first-year science curriculum at MIT did not prevent him from rowing on the crew team. He also began doing research in the Graham C. Walker lab under the Undergraduate Research Opportunities Program. He chose to pursue a medical degree in a research environment, reflecting upon the advantages of the M.D. degree over the M.D./Ph.D. for the clinician-researcher.

Rothman decided to attend the Yale University School of Medicine, which used a problem-solving instructional approach, correlating nicely with his view of scientific inquiry. He acquired molecular techniques in Graham C. Walker's lab; took courses in immunology; and also worked in the Leonard Chess lab. For a short time he considered a career as an orthopedic surgeon, but he finally decided on a medical residency at Columbia-Presbyterian Medical Center, with rheumatology as a chemical subspecialty. He began a postdoc in Frederick Alt's biochemistry and biophysics lab at Columbia; there he worked on interleukin-4 regulation of immunoglobulin class-switching and collaborations with other scientists facilitated the IL-4 research.

After his postdoctoral work, he took a position at Columbia University, and he found himself unsure of the ways in which to split the class-switch and IL-4 signal transduction work with Alt, though soon he began collaborating with Christian Schindler on cytokine signaling. He has since focused his research on the role of cytokines in lymphocyte development, though pursuing this work in varied directions.

The interview concludes with Rothman discussing his own lab: the advantages of being medium-sized; his lab management; and the lab's current research projects, into which he hopes to enfold research into lung cancer. He follows this with his explanation of the difference between creativity and problem-solving ability in the practice of science. He explains his clinical rheumatology duties and his teaching responsibilities at Columbia and he addresses the interviewer's questions about his funding and science funding in general; publishing; job possibilities for himself and for his lab personnel; skills necessary for a good clinician; and the interface between the pharmaceutical industry and academic research. The interview ends with a description of the challenge of balancing career and family.

UCLA INTERVIEW HISTORY

INTERVIEWER:

Andrea R. Maestrejuan, Interviewer, UCLA Oral History Program; B.A., History, University of California, Irvine, 1988; B.S., Biological Sciences, University of California, Irvine, 1988; C.Phil., History, University of California, Riverside.

TIME AND SETTING OF INTERVIEW:

Place: Rothman's office, Columbia University.

Dates, length of sessions: April 14, 1997 (80 minutes); April 15, 1997 (84) ; April 16, 1997 (110).

Total number of recorded hours: 4.55

Persons present during interview: Rothman and Maestrejuan.

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, Maestrejuan held a telephone preinterview conversation with Rothman 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 Rothman'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, Maestrejuan consulted J.D. Watson et al., *Molecular Biology of the Gene.* 4th ed. Menlo Park, CA: Benjamin/Cummings, 1987 and Bruce Alberts et al., *Molecular Biology of the Cell.* 3d ed. New York: Garland, 1994.

The interview is organized chronologically, beginning with Rothman's childhood and continuing through his education at Massachusetts Institute of Technology and Yale University School of Medicine and the establishment of his lab at the University of Columbia College of Physicians and Surgeons. Major topics discussed include the advantages of the M.D. degree for doing biomedical research, Rothman's postdoctoral research in the Frederick W. Alt lab on interleukin-4, collaborations in the sciences, and science funding.

ORIGINAL EDITING:

Gregory M.D. Beyrer, editorial assistant, edited the interview. He 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.

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

Jane Collings, senior editor, prepared the table of contents. Beyrer assembled the biographical summary and interview history. Kathleen McAlister, editorial assistant, compiled the index.

TABLE OF CONTENTS

INDEX

K

L

M

N

O

P