

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

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

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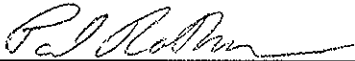
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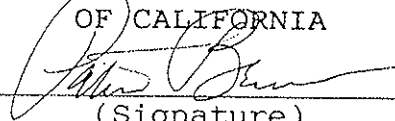
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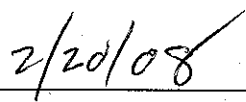
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## PAUL B. ROTHMAN

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.
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- 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

Early Years and College	1
<p>Family background. Enjoys athletics in high school and college. Decides not to attend Bronx High School of Science. The economic diversity of Queens. Parental expectations that Rothman would attend an Ivy League school. Enjoys problem solving in math and science. Jewish cultural background. Enters Massachusetts Institute of Technology (MIT). First year science curriculum at MIT. Rowing on the crew team. Living in a fraternity. Begins doing research in the Graham C. Walker lab under the Undergraduate Research Opportunities Program. Undergraduate life at MIT. Decides to pursue a medical degree in a research environment. The advantages of the M.D. degree over the M.D./Ph.D. for the clinician-researcher. Decides to attend Yale University School of Medicine. The problem-solving instructional approach at MIT and Yale.</p>	
Undergraduate Research, Medical School, and Postdoctoral Work	29
<p>View of science as a problem solving activity. Acquires molecular techniques in Graham C. Walker's lab. Course work in immunology. Works in the Leonard Chess lab. Briefly considers a career as an orthopedic surgeon. Decides on a medical residency at Columbia-Presbyterian Medical Center. The intellectual atmosphere at Yale medical school. Decides on rheumatology as a chemical subspecialty. Enters the Frederick W. Alt lab in the Department of Biochemistry and Molecular Biophysics at Columbia as a postdoc. Begins work on interleukin-4 regulation of immunoglobulin class-switching. Collaborations with other scientists facilitates the IL-4 research. Advantages of a medical background for doing research. Accepts a position at Columbia University. Collaboration with Christian Schindler on cytokine signaling.</p>	
Research, Clinical Responsibilities, and Thoughts about Science	56
<p>Projects that focus on the role of cytokines in lymphocyte development. Deciding which research directions to pursue. Lab management. Desire to study lung cancer. Difference between creativity and problem-solving ability in the practice of science. Clinical rheumatology responsibilities at Columbia. Teaching immunology. Funding. Study sections. Publishing. Basic research. Interface between the pharmaceutical industry and academic research. Balancing career and family.</p>	
Index	98

## INDEX

### A

*abl*, 68, 72, 81, 82  
acquired immunodeficiency syndrome, 78  
ACS. *See* American Cancer Society  
AIDS. *See* acquired immunodeficiency syndrome  
Al-Awqati, Qais D., 43  
Albert Einstein College of Medicine, 47  
Alt, Frederick W., 15, 19, 21, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 57, 61, 62, 63, 70, 71, 73, 85, 86, 95  
Alzheimer's disease, 3  
American Cancer Society, 66, 81, 82, 83  
Ames, Bruce N., 21  
Amherst College, 8, 9, 14, 18  
anterior cruciate ligament, 4, 37  
Asthma and Allergy Foundation of America, 81, 83  
Austria, 55  
Axel, Richard, 28, 44

### B

B cell lymphoma oncogene 6, 73  
B cells, 46, 68  
B cell-specific activator protein, 53  
Baltimore, David, 14, 15, 19, 44  
*Barron's*, 9  
Baruch College, 2  
Bayside, New York, 6, 7, 14  
Beta Theta Pi, 18  
Beth Israel Hospital, 24, 51  
Bishop, J. Michael, 96  
Boothby, Mark R., 49, 53  
*Boston Globe*, 17  
Boston Red Sox, 23  
Boston University, 18  
Boston, Massachusetts, 3, 18, 19, 20, 23, 24, 29, 39  
Brigham and Women's Hospital, 39  
Bronx High School of Science, 6, 7  
Bronx, New York, 4, 5, 6, 40

Brooklyn, New York, 4  
Brown University, 9, 19  
Brown, Gene M., 28  
Busslinger, Meinrad, 53

### C

Calame, Kathryn L., 49  
California, 10, 29  
Cambridge, Massachusetts, 18  
Cancer Research Institute, 28, 81  
Cancer Research Institute Clinical Investigator Award, 28  
CAT. *See* chloramphenicol acetyl transferase  
CD4, 44  
CD8, 44  
Charles River, 18, 24  
Chess, Andrew, 36  
Chess, Leonard, 25, 29, 30, 34, 36, 38, 42, 47, 66, 69, 80, 81, 83, 84  
Children's Hospital, 52  
chloramphenicol acetyl transferase, 50  
City University of New York, 2  
Coffman, Robert L., 46, 48, 55, 65  
Cohn, Lauren E., 52  
Cold Spring Harbor Laboratory, 6, 15  
College of William and Mary, 9  
Columbia University, 3, 8, 29, 30, 31, 32, 34, 39, 42, 44, 45, 51, 52, 56, 75, 76, 78, 80, 87, 88  
Columbia University College of Physicians and Surgeons, 29, 32, 42, 75, 88  
Columbia-Presbyterian Medical Center, 39, 75  
Cornell University, 8, 9, 14, 19, 29, 80  
Cossacks, 3  
crew, 4, 16, 17, 20, 21, 24, 29, 30, 34, 37, 40, 41  
cytokines, 46, 48, 49, 54, 55, 56, 58, 62, 63, 64, 72, 74

## D

Dalla-Favera, Riccardo, 65, 81  
Danial, Nika N., 54, 64  
Darnell, James E., 53, 54, 72  
Dartmouth College, 9  
DePinho, Ronald A., 47, 50, 57  
Dildrop, Renate, 46  
DNA, 14, 21, 24, 30, 33, 48, 49, 50, 63, 65, 73  
  cDNA, 46, 47  
DNAX Research Institute of Molecular and Cellular Biology, 46  
Douglaston, New York, 6  
Duke University School of Medicine, 29

## E

*E. coli*, 30, 73  
East Egg, New York, 6  
East River, 40  
Edelson, Richard L., 34  
Elledge, Stephen J., 20  
Ellis Island, 3, 14  
England, 77, 96  
Europe, 14, 91  
Expo 67, 4

## F

F-22, 91  
Fenway Park, 18, 23  
Ferrier, Pierre, 53  
Florida, 37  
fluorescence-activated cell sorters, 35  
Flushing, New York, 7  
Ford, President Gerald R., 2  
French, 8, 35  
funding/grants, 33, 42, 50, 51, 52, 55, 63, 65, 66, 67, 72, 77, 80, 81, 82, 83, 84, 85, 86, 88, 89, 91

## G

Germany, 55  
germline, 46, 47, 48, 49, 50, 51, 53, 62, 81  
Gershon, Richard K., 29, 34  
Gingrich, Speaker Newton L., 91

Glickman, Robert, 42, 51  
Glimcher, Laurie H., 49, 53  
Goff, Stephen P., 44  
Goldfarb, Mitchell P., 44  
*Great Gatsby, The*, 6  
Great Neck, New York, 6

## H

Harrington rod replacement, 37  
Harvard Law School, 2, 3  
Harvard Medical School, 27  
Harvard University, 2, 3, 8, 9, 12, 14, 17, 26, 29, 39, 42, 49, 51, 52, 53, 62  
Harvard-MIT Division of Health Sciences and Technology, 26  
Hawaii, 95  
Hebrew, 12, 13  
Herzenberg, Leonard A., 85  
Herzenberg, Leonore A., 85  
Hopkins, Nancy, 19  
Howard Hughes Medical Institute, 20, 69  
Human Genome Project, 91

## I

Ig, 46  
IgE, 46, 63  
Ihle, James N., 56  
interferon, 53, 65, 72, 73, 81  
interleukin  
  interleukin-2, 58  
  interleukin-4, 46, 48, 49, 51, 53, 54, 58, 62, 63, 64, 65, 72, 81, 82  
  interleukin-7, 58  
Ireland, 14  
Israel Cancer Research Fund, 91  
Italy, 14

## J

Jak-STAT. *See* Janus kinases-signal transducers and activators of transcription  
James S. McDonnell Foundation, 51, 52  
Janeway, Charles A., Jr., 29, 31, 34  
Janus kinases-signal transducers and activators of transcription, 56, 63, 68, 72,

73  
Jew/Jewish/Judaism, 2, 3, 4, 11, 12, 13, 14,  
18, 23  
John Jay College of Criminal Justice of the  
City University of New York, 2  
Johns Hopkins University School of  
Medicine, 51

## K

Kashleva, Helena, 54  
Kenyon, Cynthia J., 20  
Khorana, H. Gobind, 19  
Klausner, Richard D., 90  
Krainer, Adrian R., 55, 56, 88  
Krolewski, John, 56

## L

Langer, Pamela J., 20, 21, 33  
Lederberg, Joshua, 70  
Leonard, Warren J., 25, 34, 56, 66, 69  
Leukemia Society of America, 81  
Levy, David E., 55, 72  
Lillian Goldman Library, 41  
lipopolysaccharide, 48, 64  
Listeria, 68  
Long Island, New York, 5, 12  
Los Angeles, California, 5  
Lu, Bingfeng, 54  
Luria, Salvador E., 19  
Lutzker, Stuart G., 46, 47, 48

## M

major histocompatibility complex, 49  
Marie Curie Junior High School, 5  
Massachusetts Institute of Technology, 2, 5,  
9, 10, 14, 15, 16, 17, 18, 19, 20, 21, 22,  
25, 28, 30, 32, 34, 36, 41, 47  
Maxam and Gilbert sequencing, 47  
McEnroe, John, 6  
Medical Scientist Training Program, 26, 27  
Meese, Edwin III, 2  
Mellis, Scott J., 50  
Merck Manual Award for Outstanding  
Scholastic Achievement, 40

Meyer, Frances (wife), 13, 51, 92, 94  
MIT. *See* Massachusetts Institute of  
Technology  
molecular biology, 15, 19, 20, 21, 22, 36,  
43, 45, 47, 48, 50, 59, 72, 75, 85  
MSTP. *See* Medical Scientist Training  
Program

## N

*Nanny, The*, 5  
National Council of Jewish Women, 2  
National Institutes of Health, 28, 42, 45, 66,  
67, 76, 77, 80, 81, 82, 83, 84, 88, 89, 90,  
91  
New Haven, Connecticut, 34, 38, 39, 41  
New York City, New York, 1, 3, 5, 7, 8, 10,  
15, 16, 17, 23, 35, 39, 52  
New York Mets, 2, 23  
New York University, 2, 55  
New York Yankees, 4, 23  
NIH. *See* National Institutes of Health  
N-myc, 46, 61  
Nobel Prize, 15, 19, 70, 71, 74, 92  
NYU. *See* New York University

## O

O'Neil, Edward H., 91

## P

Passover, 12, 13  
Paul, William E., 48, 56  
Pernis, Alessandra, 54, 65  
Pew Charitable Trusts, 67  
Pew Scholars Program in the Biomedical  
Sciences, 27, 51, 55, 57, 62, 77, 81, 83,  
88, 95  
Pfizer Pharmaceuticals, 28, 92  
Pfizer Pharmaceuticals Scholars Program  
for New Faculty, 28  
Physician Scientist award, 28, 42, 43, 45, 51  
pKM101, 21  
Poland, 3  
Princeton University, 12  
publications, 22, 28, 86, 87, 88, 89



Pullen, Ann M., 96

## Q

Queens, New York, 1, 4, 5, 6, 10, 22

## R

Rabbani, LeRoy E., 36  
Regeneron Pharmaceuticals, 47  
reverse transcriptase, 15, 44  
RNA, 56, 57  
Rothman, Alissa (daughter), 13, 70, 92  
Rothman, Allen (brother), 3  
Rothman, Daniel (son), 13, 70, 92  
Rothman, David (paternal grandfather), 3  
Rothman, Flora Spetalnick (mother), 2  
Rothman, Jessel (father), 2, 92  
Russia, 3

## S

Schindler, Christian, 53, 54, 56, 58, 62  
Schlissel, Mark, 51  
Schreiber, Robert D., 56  
*Seinfeld*, 5  
Shanabruch, William G., 20  
Sharp, Phillip A., 14, 19, 44  
Shea Stadium, 1, 7  
signal transducers and activators of transcription, 53  
Spetalnick, Abby (maternal cousin), 12  
Spetalnick, Frieda (maternal grandmother), 3  
Spetalnick, Jeffrey (maternal cousin), 12  
Spetalnick, Victor (maternal uncle), 10  
Stanford University School of Medicine, 27, 42  
STAT6, 63, 81  
State University of New York at Albany, 8  
State University of New York at Stony Brook, 12

## T

T cell, 35, 36, 47, 65  
T helper cell, 55, 65, 72  
tenure, 76, 88

Texas, 91  
Thomas, Yolene, 35, 36  
TNF. *See* tumor necrosis factor  
Tonks, Nicholas K., 88  
tumor necrosis factor, 77

## U

U.S. Congress, 90, 92  
UCLA. *See* University of California, Los Angeles  
Undergraduate Research Opportunities Program, 20, 22  
United Nations, 2  
United States of America, 3, 13  
University of California, Irvine, 10  
University of California, Los Angeles, 51  
University of Chicago, 51  
University of Notre Dame, 37  
University of Pennsylvania, 12, 27, 29, 42  
UROP. *See* Undergraduate Research Opportunities Program

## V

V(D)J recombination, 44, 45, 49, 61, 75  
Vagelos, Pindaros Roy, 91  
Varmus, Harold E., 90  
Vienna, Austria, 53

## W

Walker, Graham C., 19, 20, 21, 22, 24, 25, 28, 32, 33, 34, 73  
Washington, D.C., 12, 51  
Watson, James D., 15  
West Egg, New York, 6  
Wharton School, 12  
Woods Hole Oceanographic Institution, 15  
World War I, 3

## X

Xu, Lixing, 53

## Y

Yablon, Babette (paternal aunt), 12  
Yablon, Bruce (paternal cousin), 12

Yablon, Jeffrey (paternal cousin), 12  
Yale University, 2, 27, 29, 30, 34, 36, 38,  
39, 40, 41, 42, 43, 44  
Yale University School of Medicine, 2

Yancopoulos, George D., 47  
Yeshiva University, 47  
Yohalem, Mr., 8, 9