CHEMICAL HERITAGE FOUNDATION

WILLIAM A. MULLER

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Neil D. Hathaway

at

Rockefeller University & The Apartment of William A. Muller
New York City, New York

on

6, 14, 24, and 28 May 1993

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.

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REFORMATTING:

Kim Phan, Program Intern, Oral History, Chemical Heritage Foundation. B.A. expected 2011, Anthropology, Cornell University.

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UNIVERSITY OF CALIFORNIA, LOS ANGELES

Oral History Interview Agreement No. R930521

This Interview Agreement is made and entered into this 6th day of May, 1993, 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 WILLIAM A. MULLER having an address at Laboratory of Cellular Physiology and Immunology, Rockefeller University, 1230 York Avenue, New York, New York 10021-6399, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about May 5, 1993, and tentatively entitled "Interview with William A. Muller". 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.

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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 Intellectual Property Administration
University of California, Los Angeles
405 Hilgard Avenue
Los Angeles, California 90024-1406

Attention: Ms. Carli V. Rogers
Copyright Officer

If to Interviewee: William A. Muller
Laboratory of Cellular Physiology and Immunology
Rockefeller University
1230 York Avenue
New York, New York 10021-6399

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

INTERVIEWEE

William A. Muller
(Signature)

William A. Muller
(Typed Name)

Laboratory of Cellular Physiology and Immunology

Rockefeller University
(Address)

1230 York Avenue

New York, New York 10021-6399

Date May 6, 1993

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

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Carli V. Rogers
(Typed Name)

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Date May 24, 1993

Pew Scholars in the Biomedical Sciences

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This constitutes my entire and complete understanding.

William A. Muller

William A. Muller, M.D., Ph.D.

December 11, 2007

Date

Note: I am sure I will grant permission, but I would like to review the material you intend to post just in case something I said back then is now "sensitive."

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

WILLIAM A. MULLER

1953 Born in New York City, New York, on 22 October

Education

1975 B.A., Biology, Harvard University
1981 Ph.D., Cell Physiology and Immunology, Rockefeller University
1982 M.D., Cornell University Medical College

Professional Experience

RockefellerUniversity
1987-present Assistant Professor, Laboratory of Cellular Physiology and Immunology

Cornell University Medical College
1987-present Adjunct Professor, Department of Pathology

New York Hospital, New York
Assistant Attending Pathologist

Honors

1972-1975 John Harvard Scholarship, Harvard University
1973 Jacob Wendel Scholarship, Harvard University
1975 Arthur Eugene Sutherland Prize, Harvard University
1975 American Chemical Society (Northeast Section) Research Award
1975 Phi Beta Kappa, Harvard University
1976 Sigma Xi, Rockefeller University
1988-1992 Pew Scholar in the Biomedical Sciences
1988 RJR Nabisco Research Scholars Award
1990 Irvington Institute for Medical Research New Initiatives Award
1994 Established Investigatorship, American Heart Association

Selected Publications

Muller, W.A. and L.C. Klotz, 1975. Retardation time measurements on replicating Bacillus subtilis chromosomes: Effect of EDTA concentration. Biochemical and Biophysical

Acta, 378:171-85.
Muller, W.A., et al., 1980. Membrane flow during endocytosis. In Mononuclear Phagocytes: Functional Aspects, eds. R. van Furth, Z.A. Cohn. The Hague: Martinus Nijhoff.
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Muller, W.A. and S. Weigl, 1992. Monocyte-selective transendothelial migration: Dissection of the binding and transmigration phases by an in vitro assay. Journal of Experimental Medicine, 176:819-28.
Muller, W.A., 1992. PECAM-1: An adhesion molecule at the junctions of endothelial cells. In Mononuclear Phagocytes: Functional Aspects. The Proceedings of the Fifth Leiden Meeting on Mononuclear Phagocytes, eds. R. van Furth, Z.A. Cohn, and S. Fordon. London: Blackwell Publishers.
Xie, Y. and W.A. Muller, 1993. Molecular cloning and adhesive properties of murine platelet/endothelial cell adhesion molecule-1 (PECAM-1). Proceedings of the National Academy of Sciences, USA, 90:5569-73.
Muller, W.A., et al., 1993. PECAM-1 is required for transendothelial migration of leukocytes. Journal of Experimental Medicine, 178:449-60.

ABSTRACT

William A. Muller was born in Manhattan but grew up on Long Island; he is the oldest of three brothers, among whom might be found typical sibling rivalry. He is of Jewish ancestry, but his parents and his extended family are not especially observant. Muller had a childhood fear of dying that led him to want to "cure death"; he began to think of medicine as a career from that early age. He did well in school, being salutatorian in his high school. He believes, though, that his youngest brother is the most intelligent, and he discusses Toby's academic career.

When Muller entered Harvard University he was shocked at the intense level of competition there. He describes his undergraduate curriculum and his experience purifying DNA under lab director Lynn C. Klotz. He also ran track and cross country. During his college summers he participated in a vaccination project in Central America.

Feeling that clinical and research work should complement each other, Muller chose to attend the Rockefeller University-Cornell University Medical College M.D./Ph.D. program. At that time the draft was still an important factor in Muller's life. David Baltimore came to Rockefeller at this time, and transforming the nature of the Rockefeller community.

Muller decided to work in the Zanvil A. Cohn/James Hirsch lab, where he actually worked with Ralph M. Steinman on endocytosis-iodination techniques. He explains showing that membrane recycles and describes the reaction of the scientific community. He talks about his clinical training in medical school and the practical nature of medical education. He accepted a residency at Massachusetts General Hospital and began a pathology residency at Brigham and Women's Hospital. Muller talks about his social life during medical school and residency; how residencies differ; how clinical experience enhances research; the empirical nature of medicine; and the importance of basic research. He studied endothelial cells in the Michael A. Gimbrone Jr. lab, showing that angiotensin converting enzyme is apically polarized. His experimental methods included testing the validity of the data on slaughterhouse aortas. He took a monoclonal antibody approach and brought biochemical expertise to the Gimbrone lab. Muller discusses his work examining how leukocytes bind to endothelial cells and his fellow Pew scholars who work on endothelial cells. His research on cell adhesion molecules led to his discovery that PECAM-1 is required for transendothelial migration of leukocytes; this discovery may have clinical application. He continued researching multiple functions of PECAM and searching for unknown adhesion molecules.

Although he was anxious at first about returning to his first graduate-school lab, Muller accepted a position at Rockefeller University and in pathology at Weill Cornell Medical College. His first grant application rejected, Muller shifted the focus of his research; he now studies proteins that mediate monocyte binding and transmigration. Muller concludes his interview with a discussion of the process of scientific discovery, especially as he experienced it while establishing the role of PECAM in endothelialcell adhesion; and an explanation of the significance of the Pew Scholars in the Biomedical Sciences award and the RJR Nabisco Research Scholars Award in his career development.

UCLA INTERVIEW HISTORY

INTERVIEWER:

Neil D. Hathaway, Interviewer, UCLA Oral History Program. B.A.., English and History, Georgetown University; M.A. and C. Phil., History, UCLA

TIME AND SETTING OF INTERVIEW:

Place: Tapes I-II, Caspary Hall, Rockefeller University; Tape III, Muller's apartment, New York; Tapes IV-VI, Muller's lab, Rockefeller University.

Dates, length of sessions: May 6, 1993 (30 minutes); May 14, 1993 (63); May 24, 1993 (86); May 28, 1993 (217).

Total number of recorded hours: 6.6

Persons present during interview: Tapes I-II, Muller and Hathaway; Tapes III-VI Muller, Hathaway, and Muller's wife, Joan Tugendhaft Muller.

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, from 1988 through 1992.

In preparing for this interview, Hathaway, in consultation with the director of the UCLA Oral History Program and three UCLA faculty project consultants, developed a topic outline to provide an overall interview framework. Hathaway then held a telephone preinterview conversation with Muller to obtain extensive written background information (curriculum vitae, copies of published articles, etc.) and agree on a research and interviewing timetable.

Hathaway further reviewed the documentation in Muller'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 general background on the recent history of the biological sciences, Hathaway consulted such works as: J.D. Watson et al., The Molecular Biology of the Gene. 4th ed. 2 vols. Menlo Park, CA: Benjamin/Cummings, 1987; Lubert Stryer, Biochemistry. 3d ed. New York: W.H. Freeman, 1988; The Journal of the History of Biology; H.F. Judson, The Eighth Day of Creation: Makers of the Revolution in Biology. New York: Simon and Schuster, 1979; and recent issues of Science, Nature, and Cell.

The interview begins with a discussion of science publishing and Muller's papers on platelet/endothelial cell adhesion molecules. It then proceeds chronologically through Muller's childhood and education in New York, his years at Harvard University and the Rockefeller University-Cornell University Medical College M.D./Ph.D. program, his medical residencies in

Massachusetts hospitals, and the creation of his lab at Rockefeller University. Major topics discussed include endothelial cells, cell adhesion molecules, iodination techniques, and research strategies.

ORIGINAL EDITING:

Vimala Jayanti, editor, 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.

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

Steven J. Novak, senior editor, prepared the table of contents, biographical summary, interview history, and index.

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