

CHEMICAL HERITAGE FOUNDATION

WILLIAM BRAELL

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Arnold Thackray and Stephanie Morris

in

Ixtapa, Mexico

on

7 March 1989

(With Subsequent Corrections and Additions)

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 Stephanie Morris on March 7, 1989.

I have read the transcript supplied by the Center and returned it with my corrections and emendations. *See # 9006*

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

This constitutes our entire and complete understanding.

(Signature) William R. Braell

William Braell

(Date) 7/11/89

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.



This interview has been designated as **Semi-restricted**.

One may view, quote from, cite, or reproduce the oral history with the permission of CHF.

Please note: Users citing this interview for purposes of publication are obliged under the terms of the Chemical Heritage Foundation Oral History Program to credit CHF using the format below:

William Braell, interview by Arnold Thackray and Stephanie Morris at Ixtapa, Mexico, 7 March 1989 (Philadelphia: Chemical Heritage Foundation, Oral History Transcript # 0718).



Chemical Heritage Foundation
Center for Oral History
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.

WILLIAM BRAELL

1953 Born in Geneva, New York, on 23 September

Education

1975 B.S., Life Sciences, Massachusetts Institute of Technology
1981 Ph.D., Biochemistry, Massachusetts Institute of Technology

Professional Experience

1981-1984 Stanford University
Postdoctoral, Department of Biochemistry

1984-present Harvard Medical School
Assistant Professor, Department of Biological Chemistry

Honors

1974 Phi Lambda Upsilon, Massachusetts Institute of Technology
1975 Phi Beta Kappa, Massachusetts Institute of Technology
1976 USPHS traineeship at Massachusetts Institute of Technology
1981 Fellow of the Jane Coffin Childs Memorial Fund for Medical Research

ABSTRACT

William Braell grew up in Palmyra, a small town in New York, the oldest of five children. His father was a general practitioner, his mother a housewife. He was always interested in science and always had chemistry sets. His physics and chemistry teacher was a good teacher and helped steer him to Massachusetts Institute of Technology instead of the local colleges his classmates mostly attended.

Braell settled on biochemistry halfway through college and worked in Philip Robbins' biochemistry lab his senior year. At the time, not much was known about membranes, so for his PhD, Braell chose to stay at MIT because of its good membrane program. There he worked on spectrin and band 3 membrane proteins of red cells, eventually losing interest in spectrin and concentrating on band 3 in Harvey Lodish's lab. Braell did his postdoctoral work at Stanford University, in the lab of James Rothman, who had an "idea a minute." Arthur Kornberg's management at Stanford produced an electric atmosphere and many famous scientists.

Braell goes on to detail some of the advances in sciences, particularly in membrane studies. He talks about the discovery of a signal on proteins; mannose-6-phosphate; Peter Walter and SRP; Randy Schekman and *sec*; and Stuart Kornfeld and lysosomal enzymes. Braell focuses on the biochemistry involved in the enzymology of membrane fusion. He explains some of the difficulties of the scientist: getting good students; isolating vesicles; competing with molecular biology and cloning. He likes having his small lab, as it is more efficient to supervise and easier to fund. He points out that his work has potential clinical implications: for the AIDS virus, for example, and for drug-protein interactions. He explains that since we don't know which proteins are involved or how they work, fusion could be temporary or contact cell-to-cell; thus understanding membrane fusion is very important. Braell hopes to emulate his ideal scientist, Eugene Kennedy, and be still on the bench many years from now.

INTERVIEWER

Arnold Thackray is president of the Chemical Heritage Foundation. He majored in the physical sciences before turning to the history of science, receiving a Ph.D. from Cambridge University in 1966. He has held appointments at Oxford, Cambridge, Harvard, the Institute for Advanced Study, the Center for Advanced Study in the Behavioral Sciences, and the Hebrew University of Jerusalem. In 1983 he received the Dexter Award from the American Chemical Society for outstanding contributions to the history of chemistry. He served on the faculty of the University of Pennsylvania for more than a quarter of a century. There, he was the founding chairman of the Department of History and Sociology of Science, where he is the Joseph Priestley Professor Emeritus.

TABLE OF CONTENTS

Early Years	1
<p>Born in Palmyra, New York, oldest of five children. Father general practitioner, mother housewife. Early interest in science. Chemistry sets. Most classmates went to local colleges. Influenced by high-school Latin teacher and physics and chemistry teacher; latter persuaded him to go to Massachusetts Institute of Technology (MIT).</p>	
College and Graduate School Years	2
<p>Matriculated at MIT “because they accepted me;” rigorous but not impossible. Decided on biochemistry halfway through college. Chose graduate school and research instead of medical school. Found biochemistry lab for last undergraduate year. Accepted for graduate school at Harvard University and California Institute of Technology, but stayed at MIT because of good membrane program. Not much known about membranes at time. Other membrane scientists: Günter Blobel, David Sabatini, César Milstein. Differences between undergraduate and graduate programs at MIT. Philip Robbins’ and Harvey Lodish’s contrasting management styles. Worked on spectrin and band 3 membrane proteins of red cells.</p>	
Postgraduate Years	9
<p>Stanford University. James Rothman’s “idea-a-minute” science. Arthur Kornberg’s influence at Stanford: working together; sharing grants; common equipment; interacting people. Students criticizing and supporting each other. Famous names from that period: Welcome Bender; Kevin Struhl; Randy Schekman; Charles Richardson; William Wickner.</p>	
Subsequent Years	12
<p>Many changes in science since early 1980s. Discovery of signal on protein. Stuart Kornfeld and lysosomal enzymes. Mannose-6-phosphate. Peter Walter isolated SRP. Schekman and <i>sec</i>. Recalibrating in fast-moving field. Braell’s interest in endocytosis. Biochemistry involved in enzymology of membrane fusion. Difficulty getting isolated vesicles. Difficulty getting good students. Popularity of molecular biology and cloning. Robert Collier. Braell’s small lab: easier to fund; easier to supervise and still work at bench. Drug-protein interactions: which proteins and how do they work? Implications for AIDS virus and other medical correlations. Possibility of temporary fusion. Cell-to-cell contact infection. Eugene Kennedy Braell’s ideal scientist: with Konrad Bloch accounts for most lipid scientists in United States and Canada and still at bench.</p>	
Index	21

INDEX

A

acquired immune deficiency syndrome, 19
AIDS. *See* acquired immune deficiency syndrome

B

Bender, Welcome W., 12
Berg, Paul, 11, 13
Blobel, Günter, 7, 14
Bloch, Konrad E., 20

C

California Institute of Technology, 5
Caltech. *See* California Institute of Technology
Cambridge, Massachusetts, 3
Collier, Robert John, 17
competition, 10, 15

D

Davis, Ronald W., 11, 12
Dictyostelium, 9
DNA, 6, 13, 16, 18
Drosophila, 12
Duke University, 9

E

endocytosis, 14, 15

G

Geneva, New York, 3
glycosylation, 14, 16
Golgi, 13

H

Harvard University, 5, 13, 17, 18
HIV. *See* human immunodeficiency virus
Hobart College, 3
Hogness, David S., 12
human immunodeficiency virus, 19

K

Kennedy, Eugene P., 20
Kornberg, Arthur, 11, 13, 20
Kornfeld, Stuart, 14

L

Lederberg, Joshua, 4
Lodish, Harvey F., 7, 8, 10

M

mannose-6-phosphate, 13, 14
Massachusetts Institute of Technology, 2, 3, 4, 5, 7,
9, 10, 11
membranes, 5, 6, 7, 8, 9, 11, 13, 14, 15, 18, 19
Milstein, César, 7
MIT. *See* Massachusetts Institute of Technology

N

National Institutes of Health, 11
Neupert, Walter, 14
New York University, 7
NIH. *See* National Institutes of Health
NMR. *See* nuclear magnetic resonance
nuclear magnetic resonance, 18, 19
NYU. *See* New York University

P

Palmyra, New York, 1
Pew Scholars Program in the Biomedical Sciences,
17

R

Robbins, Philip W., 7, 10
Rockefeller University, 7
Rothman, James E., 10, 11, 13

S

Sabatini, David D., 7
Schatz, Gottfried, 14
Schekman, Randy W., 13, 14
sec, 14, 15

signal recognition particle, 14
spectrin, 8
SRP. *See* signal recognition particle
St. Louis University, 3
Stanford University, 5, 9, 11, 20
Struhl, Kevin, 12, 18

T

tenure, 18

W

Walter, Peter, 14
Washington University [in] St. Louis, 14
Whitehead Institute for Biomedical Research, 9
Wickner, William, 13