CHEMICAL HERITAGE FOUNDATION

DANIEL P. RALEIGH

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Helene L. Cohen

at

State University of New York, Stony Brook
Stony Brook, New York

on

24 and 25 April 2001

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:

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. _____

This Interview Agreement is made and entered into this _____ day of _____, 2001 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 DANIEL P. RALEIGH, having an address at Department of Chemistry, State University of New York at Stony Brook, Stony Brook, New York 11794-3400, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about April 23, 2001, and tentatively entitled "Interview with Daniel P. Raleigh." 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.

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

If to University: Department of Special Collections
University of California, Los Angeles
Box 951575
Los Angeles, California 90095-1575

Attention: Victoria Steele, Ph.D.

If to Interviewee: Daniel P. Raleigh
Department of Chemistry
State University of New York at
Stony Brook
Stony Brook, New York 11794-3400

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

INTERVIEWEE

(Signature)

Daniel P. Raleigh
(Typed Name)

State University of New York
at Stony Brook

Stony Brook, NY 11794-3400

Date 4-24-01

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

(Signature)

Victoria Steele
(Typed Name)

Head, Department of Special Collections

Date 6/25/01

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DANIEL P. RALEIGH

1958 Born in Arcata, California, on 25 September

Education

1981 B.A., Chemistry and Mathematics, Humboldt State University
1988 Ph.D., Chemistry, Massachusetts Institute of Technology

Professional Experience

University of Oxford, Oxford, United Kingdom
1988-1991 Postdoctoral Fellow, Biophysics

DuPont-Merck Company
1991-1994 Postdoctoral Fellow, Structural Biology

State University of New York, Stony Brook
1994-1999 Assistant Professor, Department of Chemistry
1999-present Associate Professor, Department of Chemistry
1999-present Director of Graduate Education, Department of Chemistry

Honors

1981 American Institute of Chemists Award
1983-1985 NSF Graduate Fellowship
1985 Sigma Xi
1988 NATO Fellowship (Declined)
1988-1991 Helen Hay Whitney Foundation Fellowship
1995-2000 Pew Scholar in the Biomedical Sciences
1996-2000 National Science Foundation CAREER (Faculty Early Career Development Program) Award

Selected Publications

Raleigh, D. et al., 1989. Measurement of internuclear distances in polycrystalline solids: Rotationally enhanced transfer of nuclear spin magnetization. *Journal of American Chemistry Society* 111:4502-03.

Cheetham, J. et al., 1991. Antigen mobility in the combining site of an anti-peptide antibody. *Proceedings of the National Academy of Science, USA* 88:7968-72.

Raleigh, D.et al., 1992. Multiple frequency decoupling in magic angle spinning NMR of paramagnetic solids. *Journal of Magnetic Resonance* 97:162-70.

Raleigh, D. et al., 1992. A peptide model for proline isomerism in the unfolded state of staphylococcal nuclease. *Journal of Molecular Biology* 228:338-42.

Raleigh, D. et al., 1992. A de novo designed protein shows a thermally induced transition from a native to a molten globule-like state. *Journal of American Chemistry Society* 114:10079-81.

Betz, S. et al., 1993. De novo protein design: from molten globules to native like states. *Current Opinion in Structural Biology* III:601-10

O'Connell, J. et al., 1993. On the role of the C-terminus of a-CGRP; the structure of des-phenylalanine amide calcitonin gene-related peptide and its interaction with calcitonin gene-related peptide receptor. *Biochemical Journal* 291:205-10.

Kuhlman, B. et al., 1997. An exceptionally stable helix from the ribosomal protein L9: Implications for protein folding and stability. *Journal of Molecular Biology* 270:640-47.

Wu, W. and D. Raleigh, 1998. Conformational heterogeneity about pipecolic acid peptide bonds: Conformational, thermodynamic, and kinetic aspects. *Journal of Organic Chemistry* 63:6689-98.

Spector, S. et al., 1999. Native-like structure and stability in a truncation mutant of a protein mini-domain: The peripheral subunit-binding domain. *Biochemistry* 38:4128-36.

Hill, B. et al., 2000. De novo design of helical bundles as models for understanding protein folding and function. *Accounts of Chemical Results* 33:745-54.

ABSTRACT

Daniel P. Raleigh grew up in Arcata, California, the youngest of four children. His father was a professor at HumboldtState University, his mother a homemaker who had also been a teacher. In addition, all three siblings went into education. Raleigh spent much of his free time outdoors, even for reading. He attended Humboldt State University's laboratory elementary school and then junior high and high school in Arcata, California, public schools, remembering his education as being rather uninspiring, except for mathematics. His extracurricular activities focused on the outdoors: hiking, camping, and the like.

He attended Humboldt State, interested in both mathematics and science at first, but an excellent chemistry faculty member inspired him to pursue chemistry. He loved math too and could have majored in it, but he felt he lacked the "spark" to be an original mathematician. Raleigh decided to do graduate studies at the Massachusetts Institute of Technology; there he joined Robert G. Griffin's laboratory, feeling that Humboldt's strong chemistry faculty had prepared him well for graduate studies. While working in Griffin's lab Raleigh developed new theoretical and technical methods and became interested in applying his methodologies to biological problems. For that reason he chose Christopher Dobson's lab at University of Oxford for postdoctoral work in biochemistry. While he was there he met his future wife, Clare P. Grey. Partly from frustration with the relative lack of resources at British universities Raleigh and Grey decided to seek positions in the United States. A postdoc at DuPont Merck Company convinced Raleigh that he did not want to be in a corporate research environment.

Like most two-career couples, Raleigh and Grey found that obtaining positions together was challenging; they accepted positions at the State University New York, Stony Brook. He immediately undertook establishing his lab, developing his own form of lab management and mentoring, while at the same time taking on administrative tasks. He purposely chose to avoid corporate funding sources, preferring the freedom offered under traditional funding in the United States. Given the nature of Stony Brook's academic environment, when Raleigh was not writing journal articles or teaching he developed seminar courses for undergraduates, discussing at length the differences between teaching undergraduate and graduate students. He is interested in the history of science, as he feels it is important to place scientific findings in a broader context. Although an academic career afforded a great degree of flexibility, balancing personal life and career has been a challenge for Raleigh. When not working, he committed himself to some environmental causes, though he admitted that he loves his work so much that he feels no sacrifice at having so little free time.

His current research centers on conformational changes in proteins, and he talks a little about the practical aspects of his work. He answers the interviewers questions about patents; serendipity in science; the roles of competition and collaboration in science; ethics in science; the importance of overseeing students' work to ensure accuracy and integrity; and the problems inherent in regulating science. The interview ends with a proclamation of Raleigh's professional satisfaction; a discussion of his personal goals; and reflections on his career choices.

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: Raleigh's office, State University of New York, Stony Brook.

Dates, length of sessions: April 24, 2001 (171 minutes); April 25, 2001 (130).

Total number of recorded hours: 5

Persons present during interview: Raleigh and Cohen.

CONDUCT OF INTERVIEW:

This interview is one in a series with Pew Scholars Program in the Biomedical Sciences conducted by the UCLA Oral History Program in conjunction with the Pew Charitable Trusts's Pew Scholars Program 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 Raleigh 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 Raleigh's file at the Pew Scholars Program office in San Francisco, including his/her 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 Raleigh's childhood in Arcata, California, and continuing through his undergraduate work at Humboldt State University, his graduate work at Massachusetts Institute of Technology, his postdocs at University of Oxford and at the DuPont Merck Company, and the establishment of his own lab at State University of New York, Stony Brook. Major topics discussed include his work in the Robert G. Griffin laboratory, his postdoc at DuPont Merck Company, and his funding sources.

ORIGINAL EDITING:

Gail Ostergren, 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.

Raleigh did not review the transcript and therefore some names have not been verified.

Gail Ostergren prepared the table of contents, assembled the biographical summary and interview history. Romi Keerbs compiled the index.

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