

CHEMICAL HERITAGE FOUNDATION

CAROL W. GREIDER

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Neil D. Hathaway

at

The Cold Spring Harbor Laboratory
Cold Spring Harbor, NY

on

22, 24, 30 September and 5 October 1993

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

ACKNOWLEDGEMENT

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

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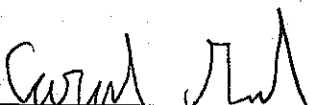
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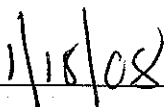
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CAROL W. GREIDER

1961 Born in San Diego, California on 15 April

Education

1981-1982 Georg-August-Universität
1983 B.A., Biology, University of California, Santa Barbara
1987 Ph.D., University of California, Berkeley

Research Appointments

1988-1990 Cold Spring Harbor Fellow, Cold Spring Harbor Laboratory
1990-1992 Staff Investigator, Cold Spring Harbor Laboratory

Professional Experience

1992-1994 Senior Staff Investigator, Cold Spring Harbor Laboratory
1994-present Senior Staff Scientist

Honors

1981 Auslandsamt Scholarship, Georg-August-Universität
1981 Regents Scholarship, University of California
1983 Phi Beta Kappa
1984 Graduate Opportunity Fellowship, University of California, Berkeley
1990-1994 Pew Scholar in the Biomedical Sciences
1992 Allied-Signal Corporation Outstanding Project Award

Selected Publications

Greider, C.W. and E.H. Blackburn, 1985. Identification of a specific telomere terminal transferase activity in Tetrahymena extracts. *Cell*, 43:405-13.
Greider, C.W. and E.H. Blackburn, 1987. The telomere terminal transferase of Tetrahymena is a ribonucleoprotein enzyme with two kinds of primer specificity. *Cell*, 51:887-98.
Greider, C.W. and E.H. Blackburn, 1989. A telomeric sequence in the RNA of Tetrahymena telomerase required for telomere repeat synthesis. *Nature*, 337:331-37.
Greider, C.W., 1990. Telomeres, telomerase and senescence. *Bioessays*, 12:363-69.

- Harrington, L.A. and C.W. Greider, 1991. Telomerase primer specificity and chromosome healing. *Nature*, 353:451-54.
- Greider, C.W., 1991. Telomeres. *Current Opinion in Cell Biology*, 3:444-51.
- Greider, C.W., 1991. Telomerase is processive. *Molecular and Cellular Biology*, 11:4572-80.
- Greider, C.W., 1991. Chromosome first aid. *Current Biology*, 2:62-64.
- Collins, K. and C.W. Greider, 1993. Nucleolytic cleavage and nonprocessive elongation catalyzed by Tetrahymena telomerase. *Genes and Development*, 7:1364-76.
- Auxtier C. and C.W. Greider, 1994. Functional reconstitution of wild-type and mutant Tetrahymena telomerase. *Genes and Development*, 8:563-75.
- Mantell, L.L. and C.W. Greider, 1994. Telomerase activity in germline and embryonic cells of *Xenopus*. *EMBO Journal*, 13:3211-17.
- Greider, C.W., 1994. Mammalian telomere dynamics: Healing, fragmentation shortening and stabilization. *Current Opinion in Genetics and Development*, 4:203-11.

ABSTRACT

Carol W. Greider was born in San Diego, California. Her father was a physicist; her mother was a biologist who died when Carol was young. Her father had a position at Yale University when Carol was a child, and they lived in New Haven for a couple of years. Then they returned to California, to the University of California at Davis, where they continued to live while Carol grew up, except for a year in Germany when Carol was about ten. She learned to speak German there and continued to study the language when she was in high school. Beatrice Sweeney, a friend of her father, inspired Greider to attend the University of California at Santa Barbara. She studied circadian rhythms there, working with a graduate student who was studying microtubules in chicken brains. She spent her junior year in Göttingen, Germany. In part because of Elizabeth Blackburn, Greider decided to attend graduate school at University of California at Berkeley. In Blackburn's lab she cloned telomeres by functional complementation and became interested in how sequences are added into telomeres. She began searching for the telomerase enzyme; when she discovered it she determined its nucleic acid component, finding that telomerase is sensitive to RNase and has an RNA component. After completing her Ph.D. she accepted a postdoc at Cold Spring Harbor Laboratory, where she remains. Greider continued work on telomerase, relating it to human aging and cellular senescence and attempting to clone the RNA component of telomerase. She found herself in competition with Blackburn's lab to some extent. But her collaboration with Calvin Hurley, who was recruited into Geron Corporation, led to a position as an advisor there; she has, therefore, what many scientists consider a great deal of funding. Competitors have risen in what used to be Greider's own area, but still telomerase remains uncloned. Greider has organized and held a conference on telomerase; she is editing a textbook; and she meets with others—most recently in Sweden—who are interested also in telomeres and telomerase.

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: Greider's office, Cold Spring Harbor Laboratory, Long Island, New York.

Dates, length of sessions: September 22, 1993 (106 minutes); September 24, 1993 (98) ; September 30, 1993 (108) ; October 5, 1993 (103).

Total number of recorded hours: 6.9

Persons present during interview: Greider and Hathaway.

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.

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 Greider 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 Greider's file at the Pew Scholars Program office in San Francisco, including her 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 is organized chronologically, beginning with Greider's youth in Davis, California, and continuing with her education at University of California, Santa Barbara, her graduate work at University of California, Berkeley, her post-Ph.D. work at Cold Spring Harbor Laboratory, and the creation of her own lab at Cold Spring Harbor. Major topics discussed include the discovery of telomerase and its role, cloning telomerase's RNA component, processivity and telomeres, the biotechnology industry, the funding and administration of research, and the place of women in science.

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.

Greider reviewed the transcript. She verified proper names and made minor corrections.

Steven J. Novak, senior editor, prepared the table of contents. Jayanti assembled the biographical summary. Kristian T. London, editorial assistant, compiled the interview history and the index.

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Entered University of California at Berkeley. Worked with Elizabeth H. Blackburn on cloning telomeres. Worked in Steven K. Beckendorf's lab. Telomerase enzyme; Tetrahymena; RNase.	
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