CHEMICAL HERITAGE FOUNDATION

STEPHEN J. ELLEDGE

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Andrea R. Maestrejuan

at

Baylor College of Medicine
Houston, Texas

on

16, 17, and 18 August 1995

Stephen J. Elledge

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:

Holly Polish, Program Intern, Oral History, Chemical Heritage Foundation. B.A. History, American University.

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. R950910

This Interview Agreement is made and entered into this 14th day of November, 1995 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 STEPHEN J. ELLEDGE having an address at Department of Biochemistry, Howard Hughes Medical Institute, Baylor College of Medicine, Houston, Texas, 77030, called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about August 16, 1995, and tentatively entitled "Interview with Stephen J. Elledge". 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:

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University of California, Los Angeles
P.O. Box 951406
Los Angeles, California 90095-1406

Attention: Ms. Carli V. Rogers
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If to Interviewee: Stephen J. Elledge
Department of Biochemistry
Howard Hughes Medical Institute
One Baylor Plaza
Houston, Texas 77030

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

INTERVIEWEE

Stephen J. Elledge
(Signature)

Stephen J. Elledge
(Typed Name)

Howard Hughes Medical Institute

One Baylor Plaza
(Address)

Houston, Texas 77030

X Date 8/16/95

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

Carli V. Rogers
(Signature)

Carli V. Rogers
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(Address)

Date March 19, 1996

Pew Scholars in the Biomedical Sciences

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Stephen J Elledge

Stephen J. Elledge, Ph.D.

Jan 23, 2008

Date

Chemical Heritage Foundation
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315 Chestnut Street
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STEPHEN J. ELLEDGE

1956	Born in Paris, Illinois, on 7 August.

Education

1978	B.S., University of Southampton, Southampton, England and University of Illinois at Urbana- Champaign
1983	Ph.D., Massachusetts Institute of Technology

Professional Experience

Stanford University, Palo Alto, California

1984-1989	Postdoctoral Fellow

Baylor College of Medicine, Houston, Texas

1989-1993	Assistant Professor
1993-1995	Associate Professor
1995-present	Professor

Howard Hughes Medical Institute, Chevy Chase, Maryland

1993-present	Associate Investigator

Honors

1974-1978	Illinois State Scholar
1974-1978	James Scholar
1975	Monsanto Scholarship-Freshman Chemical Engineering Award
1976	Chemical Industries Council Scholarship-Sophomore Chemistry Award
1977	Elliot Richie Alexander Award
1977	Eta Sigma Phi Honorary Fraternity
1978	Senior Chemistry Award, Phi Lambda Upsilon
1978	Bronze Tablet, University of Illinois
1984-1987	Helen Hay Whitney Postdoctoral Fellowship
1987-1989	American Cancer Society Senior Fellow
1991-1995	Pew Scholars Program in the Biomedical Sciences Grant
1994	Michael E. DeBakey, M.D., Award for Research Excellence

Selected Publications

Elledge, S.J. and G.C. Walker, 1983. Proteins required for UV and chemical mutagenesis: Identification of the products of the *umu*C locus of *Escherichia coli. Journal of Molecular Biology*, 164:175-92.

Elledge, S.J. and R.W. Davis, 1990. Two genes differ-entially regulated in the cell cycle and by DNA-damaging agents encode alternative regulatory subunits of ribonucleotide reductase. *Genes and Development,* 4:740-51.

Elledge, S.J. et al., 1991. Lambda YES: A multi-functional cDNA expression vector for the isolation of genes by complementation of yeast and *E. coli* mutations. *Proceedings of the National Academy of Sciences USA,* 88:1731-34.

Zhou, Z. and S.J. Elledge, 1992. Analysis of the DNA damage sensory pathway through the isolation and characterization of the *CRT* mutants, constitutive for *RNR3* transcription. *Genetics,* 131:851-66.

Durfee, T. et al., 1993. The retinoblastoma protein associates with the protein phosphatase type 1 catalytic subunit. *Genes and Development,* 7:555-69.

Zhou, Z. and S.J. Elledge, 1993. *DUN1* encodes a protein kinase that controls the DNA damage response in yeast. *Cell,* 75:1119-27.

Harper, J.W. et al., 1993. The p21 Cdk-interacting protein Cip1 is a potent inhibitor of G1 cyclin-dependent kinases. *Cell,* 75:805-16.

Dulic, V. et al., 1994. p53-dependent inhibition of cyclin-dependent kinase activities in human fibroblasts during radiation-induced G1 arrest. *Cell,* 76:1013-23.

Allen, J.B. et al., 1994. The SAD1/RAD53 protein kinase controls mutiple cell cycle checkpoints and DNA damage induced transcription in yeast. *Genes and Development,* 8:2401-15.

Navas, T. et al., 1995. DNA polymerase epsilon links the DNA replication machinery to the S phase checkpoint. *Cell,* 80:29-39.

Matsuoka, S. et al., 1995. $p57^{KIP2}$, a structurally distinct member of the $p21^{CIP1}$ Cdk-inhibitor family, is a candidate tumor suppressor gene. *Genes and Development,* 9:650-62.

Sicinski, P. et al., 1995. Cyclin D1 provides a link between development and oncogenesis in the retina and the breast. *Cell,* 82:621-30.

Deng, C. et al., 1995. Mice lacking $p21^{CIP1/WAF1}$ undergo normal development, but are defective in G1 checkpoint control. *Cell,* 82:675-84.

Matsuoka, S. et al., 1996. Variable imprinting of the human cyclin-dependent kinase inhibitor $p57^{KIP2}$. *Proceedings of the National Academy of Sciences USA,* 93:3026-30.

Sanchez, Y. et al., 1996. Regulation of *RAD53* by the ATM-like kinases *MEC1* and *TEL1* in yeast cell cycle checkpoint pathways. *Science,* 271:357-60.

ABSTRACT

Stephen J. Elledge was born in Paris, Illinois. He had two older sisters and an older half sister. He attended Roman Catholic elementary school but rebelled against the religious teaching and switched to public schools. From a young age, he was interested in science; Elledge's grandmother bought him chemistry kits, and he made rockets. Elledge's high school had very good science and mathematics classes, and he loved chemistry ("fun" he calls it). He was on the chemistry team, on which he won the individual and team competitions.

He was the first in his family to go to college, and he did not have enough guidance to know what he could or should do, so he entered the University of Illinois intending to major in chemical engineering. He won the chemical engineering prize as a freshman, but then switched his major to chemistry. By his junior year he'd taken all the chemistry courses, and recombinant DNA was just becoming the hot topic in biology, so when he went to University of Southampton for his junior year he took a genetics course. During his senior year he took a biochemistry class, which he found combined chemistry and his new interest in biology, and he officially switched to biology for graduate school. He decided to apply to Harvard University for graduate school, but he ended up going to the Massachusetts Institute of Technology, which people said was the best place in the world. There he worked in Graham Walker's lab, combining molecular biology and genetics. He did his first cloning there and became interested in methodologies for cloning.

Stanford University offered him a postdoc in Ronald Davis' lab, where he first began work in plants, but soon switched to yeast. He became convinced that it was important to find out how cyclin-dependent kinases that run the cell cycle were regulated, with a view toward an intersection between cell cycle and cancer. While at Stanford Elledge met his future wife, Mitzi Kuroda, herself a scientist.

Elledge accepted an assistant professorship at Baylor College of Medicine, where he has since advanced to associate and then full professor. He has brought some technological advances to genetics, and he and his lab discovered inhibitor molecules, especially the tumor suppressor p21, the first mammaliam inhibitor. It was a new field then, but in the few years since publication, Elledge estimates that others have published perhaps a hundred papers on the subject. Elledge himself has continued his interest in what these molecules actually do, now that they have mostly been found. He has been selected a Howard Hughes Medical Institute Associate Investigator; he continues to publish; he has won numerous awards, including the Pew Scholars in the Biomedical Sciences Award. Most importantly, he attempts to balance his life at work with his life at home with his wife and two children.

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: Elledge's office, Baylor College of Medicine.

Dates, length of sessions: August 16, 1995 (86 minutes); August 17, 1995 (135); August 18, 1995 (124).

Total number of recorded hours: 5.75

Persons present during interview: Elledge 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 Elledge to obtain written background information (curriculum vitae, copies of published articles, etc.) and to agree on an interviewing schedule. She also reviewed prior Pew scholars' interviews and the documentation in Elledge'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 thebiological sciences, 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.* 3rd ed. New York: Garland, 1994.

The interview is organized chronologically, beginning with Elledge's childhood in Paris, Illinois, and continuing through his graduate work at Massachusetts Institute of Technology, his postdoc at Stanford University, and the establishment of his own lab at Baylor College of Medicine.

Major topics discussed include the discovery of cyclin-dependent kinase 2, work on DNA damage response, the intersection of cell cycle and cancer studies, technological advances Elledge has brought to genetics, and funding in the scientific community.

ORIGINAL EDITING:

Mimi Luc, editorial assistant, 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.

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

Kristian London, assistant editor, prepared the table of contents, biographical summary, and interview history.

Kathleen McAlister, editorial assistant, compiled the index..

TABLE OF CONTENTS

INDEX

M

N

O

P

R

S