CHEMICAL HERITAGE FOUNDATION

KEN W.Y. CHO

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Helene L. Cohen

at

University of California, Irvine
Irvine, CA

on

3-4, 7 June 1999

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

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 oral history was completed under the auspices of the Oral History Project, University of California, Los Angeles (Copyright © 2000, The Regents of the University of California) and is made possible through the generosity of

From the original collection at the Center for Oral History Research, UCLA Library, UCLA.

The following oral history, originally processed at the UCLA Center for Oral History Research, has been reformatted by the Chemical Heritage Foundation. The process involved reformatting the front matter, adding a new abstract, replacing the table of contents, and replacing the index. The paragraph spacing and font of the body of the transcript were altered to conform to the standards of the Oral History Program at the Chemical Heritage Foundation. The text of the oral history remains unaltered; any inadvertent spelling or factual errors in the original manuscript have not been modified. The reformatted version and digital copies of the interview recordings are housed at the Othmer Library, Chemical Heritage Foundation. The original version and research materials remain at the Darling Library, University of California, Los Angeles and at the Bancroft Library, University of California, Berkeley.

REFORMATTING:

Laurent Delavaux, Program Intern, Biomedical Sciences and Technologies, Chemical Heritage Foundation. B.S. Molecular Biology, Lehigh University.

David J. Caruso, Program Manager, Biomedical Sciences and Technologies, 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. T0805 99C

This Interview Agreement is made and entered into this 5th day of August, 1999 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 KEN W.Y. CHO, having an address at Department of Developmental and Cell Biology University of California, Irvine, Irvine, CA 92697-2300, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about June 2, 1999, and tentatively entitled "Interview with Ken W.Y. Cho". 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.

2. By virtue of this assignment, University will have the right to use the Work for any research, educational, or other purpose, including electronic reproduction, that University may deem appropriate.

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: Oral History Program
University of California, Los Angeles
Box 951575
Los Angeles, California 90095-1575

Attention: Director

If to Interviewee: Ken W.Y. Cho
Department of Developmental and Cell Biology
University of California, Irvine
Irvine, California 92697-2300

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

INTERVIEWEE

Ken W.Y. Cho
(Signature)

Ken W.Y. Cho
(Typed Name)

Department of Developmental and Cell Biology
(Address)

University of California

Irvine, California 92697-2300

Date June 4 1999.

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

Dale E. Treleven
(Signature)

Dale E. Treleven
(Typed Name)

Director, Oral History Program
(Title)

Date August 5, 1999

Chemical Heritage Foundation
Oral History Program
315 Chestnut Street
Philadelphia, Pennsylvania 1910(

KEN W.Y. CHO

1956 Born in Seoul, South Korea on August 26

Education

1979 B.A., Chemistry, Grinnell College
1985 Ph.D., Molecular Biology, University of Pennsylvania

Professional Experience

University of California Los Angeles
1986-1991 Postdoctoral Fellow, David Geffen School of Medicine, Laboratory of Edward M. De Robertis

University of California, Irvine
1991-1997 Assistant Professor, Department of Developmental and Cell Biology.
1997-present Associate Professor, Department of Developmental and Cell Biology.

Honors

1992-1994 March of Dimes Basil O'Conner Starter Research Scholar Award
1993-1995 American Cancer Society Junior Faculty Research Award
1994-1998 Pew Scholars Program in the Biomedical Sciences Award

Selected Publications

Cho, K.W.Y. and E.M. De Robertis, 1990. Differential activation of *Xenopus* homeobox genes by mesoderm-inducing growth factors and retinoic acid. *Genes and Development* 4:1910-16.

Cho, K.W.Y. et al., 1991. Overexpression of a homeodomain protein confers axis-forming activity to uncommitted *Xenopus* embryonic cells. *Cell* 65:55-64.

Blumberg, B. et al., 1991. Organizer-specific homeobox genes from *Xenopus laevis* embryos. *Science* 253:194-96.

Cho, K.W.Y. et al., 1991. Molecular nature of Spemann's organizer: The role of the *Xenopus* homeobox gene *goosecoid. Cell* 67:1111-20.

Blitz, I. and K.W.Y. Cho, 1995. Anterior neuroectoderm is progressively induced during gastrulation: The role of the *Xenopus* homeobox gene *orthodenticle. Development*

121:993-1004.
Hawley, S. et al., 1995. Disruption of BMP signals in embryonic *Xenopus* ectoderm leads to direct neural induction. *Genes and Development* 9:2923-35.
Watabe, T. et al., 1995. Establishment of Spemann's organizer formation: Conserved growth factor synergy between *Xenopus* and mouse. *Genes and Development* 9:3038-50.
Candia, A.F. et al., 1997. Cellular interpretation of multiple TGF-b signals: Intracellular antagonism of activin/BVg1 and BMP2/4 signaling mediated by Smads. *Development* 124:4467-80.
Laurent, M. et al., 1997. The *Xenopus* homeobox gene *Twin* mediates Wnt induction of *goosecoid* in establishment of Spemann's organizer. *Development* 124:4905-16.
Marques, G. et al., 1997. Production of a Dpp activity gradient in the early *Drosophila* embryo through the opposing actions of the *Sog* and *Tld* proteins. *Cell* 91:417-26.
Scott, I.C. et al., 1999. Mammalian BMP-1/Tolloid-related metalloproteases, including novel family member mammalian tolloid-like 2, have differential enzymatic activities and distributions of expression relevant to patterning and skeletogenesis. *Developmental Biology* 213:283-300.
Wunnenberg-Stapelton, K. et al., 1999. Involvement of the smal GTPases XrhoA and XRnd1 in morphogenesis and head formation in early *Xenopus* development. *Development* 126:5339-53.

ABSTRACT

Ken W.Y. Cho was born in 1956 in Seoul, South Korea; the eldest of three siblings. His father, a shrewd entrepreneur from a very modest background and his mother, the daughter of a well-to-do Korean family, both fled North Korea in 1945, following the Soviet takeover at the end of World War II. Cho's parents would later meet and marry in South Korea and eventually move to Japan when he was only five years old. Cho was therefore forced to learn Japanese rapidly in order to excel in the rigorous educational environment. His childhood interest in the sciences came from watching his favorite cartoon about a scientist.

Cho received his B.A. in Chemistry from Grinnell College in 1979. He elected to attend an undergraduate institution in the United States based on the advice of a family friend and because his Korean heritage severely limited his career options in Japan. Once again Cho was forced to rapidly assimilate a new language and culture, and often spent entire nights just completing reading assignments and homework. He matriculated into the Department of Molecular Biology at the University of Pennsylvania, where he conducted his research in Roberto Weinmann's lab at the Wistar Institute, and received his Ph.D. in 1985.

Cho began his postdoctoral research at the University of California, Los Angeles in 1986 in Dr. Edward M. De Robertis's Lab, where he became interested in homeobox genes and their role in the development of embryos. He studied these homeobox genes in *Drosophila* before switching to *Xenopus* and creating a cDNA library that would shed light on several new developmentally crucial genes; most notably *goosecoid* genes. In 1991 Cho was appointed assistant professor in the Department of Developmental and Cell Biology at the University of California, Irvine. His research there has encompassed an interest in the regulation of homeobox genes and goosecoid genes in the context of embryological development in vertebrates. Most of his research focuses on the implications of these genes on a specific group of embryological cells in amphibians, a group known as Spemann's Organizer.

Throughout his oral history Cho stresses the importance of choosing a career that one truly loves, and he hopes that his children will be happy in whatever career path they choose. He has received several award and grants, including a March of Dimes Basil O'Conner Starter Research Scholar award, an American Cancer Society Junior Faculty Research award, and most notably a Pew Scholars Program in the Biomedical Sciences grant, which he discusses in the oral history interview.

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: Cho's office, University of California, Irvine.

Dates, length of sessions: June 3, 1999 (109 minutes); June 4, 1999 (106); June 7, 1999 (60).

Total number of recorded hours: 4.6

Persons present during interview: Cho and Cohen.

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' 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, Cohen held a personal preinterview conversation with Cho 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 his 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 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 Cho's childhood in South Korea and Japan and continuing through his undergraduate work at Grinnell College, his graduate work at University of Pennsylvania, his postdoc at UCLA, and the establishment of his own lab at University of California, Irvine. Major topics discussed include Cho's father's life and career in Korea and Japan, Cho's early schooling in Japan, his research characterizing the *goosecoid* gene, and the education of his two children.

ORIGINAL EDITING:

Ji Young Kwon, 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.

Cho reviewed the transcript. He verified proper names and made a number of corrections and additions.

William Van Benschoten, editor, prepared the table of contents and index. Kwon assembled the biographical summary and interview history.

SUPPORTING DOCUMENTS:

The original tape recordings of the interview are in the university archives and are available under the regulations governing the use of permanent noncurrent records of the university. Records relating to the interview are located in the office of the UCLA Oral History Program.

TABLE OF CONTENTS

INDEX