CHEMICAL HERITAGE FOUNDATION

MICHAEL D. SHEETS

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

William Van Benschoten

at

University of Wisconsin, Madison
Madison, Wisconsin

on

29-30 March 2004

Michael D. Sheets

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 © 2007, 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:

Marnie Berkowitz, Consultant to the Chemical Heritage Foundation. B.A., Classical Languages and Literatures, University of Minnesota; Ford Foundation Fellowship, Classical Languages and Literatures, University of Chicago.

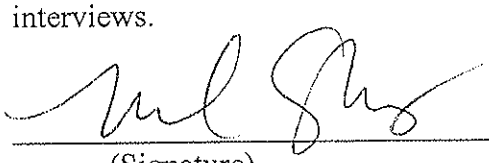
David J. Caruso, Program Manager, Biomedical Sciences and Technologies, Chemical Heritage Foundation. B.A., History of Science, Medicine, and Technology, Johns Hopkins University; PhD., Science and Technology Studies, Cornell University.

I, Michael D. Sheets, do hereby give to the Regents of the University of California the series of interviews the UCLA Oral History Program recorded with me beginning on or about March 29, 2004, to be used for any research, educational, or other purpose that the University may deem appropriate. I give these as an unrestricted gift and I transfer to the Regents of the University of California all rights, including the copyright. I understand that I may still use the information in the recordings myself without seeking permission from the University.

S. Ekmen

I have read the UCLA Oral History Program Use Policy, which outlines the current and likely future uses of interviews donated to the Oral History Program's collection.

Unless otherwise specified below, I place no restrictions on access to and use of the interviews.



(Signature)

Michael D. Sheets

(Typed Name)

Department of Biomolecular Chemistry
University of Wisconsin
694 Medical Sciences Building, 1300 University Avenue
Madison, Wisconsin 53706-1532

(Address)

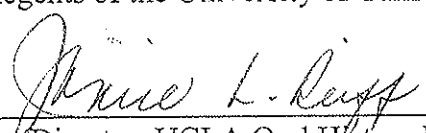
608.262.9452 (Phone Number)

mdsheets@facstaff.wisc.edu (E-mail Address)

3/29/04

(Date)

The Regents of the University of California hereby acknowledge this deed of gift



(Director, UCLA Oral History Program)

4/12/04

(Date)

Pew Scholars in the Biomedical Sciences

Chemical Heritage Foundation Internet Posting Release Form

I, Michael D. Sheets, Ph.D., hereby request that my wishes be followed as per the checked selection below with regards to posting portions of the digital copy of the audio-taped interview of me and the related written transcript on the internet for non-commercial, educational use only.

Please check one:

a. _____ **No restrictions for Internet Posting.**
NOTE: Users citing this interview for purposes of publication are obliged under the terms of the Chemical Heritage Foundation Oral History Program to obtain permission from Chemical Heritage Foundation, Philadelphia, Pennsylvania.

b. _____ **Semi-restricted Internet Postings** (My review of the material intended to post is required.)

c. _____ **Restricted access.** (Do not post.)

This constitutes my entire and complete understanding.

Michael D. Sheets, Ph.D.

4/4/2008

Date

Chemical Heritage Foundation
Oral History Program
315 Chestnut Street
Philadelphia, Pennsylvania 19106

MICHAEL D. SHEETS

Born in West Lafayette, Indiana

Education

1982	B.S., Purdue University
1989	Ph.D., University of Wisconsin, Madison

Professional Experience

University of Wisconsin, Madison

1990-1992	Postdoctoral Fellow
1996-present	Associate Professor, Biomolecular Chemistry

University of California, Berkeley

1992-1996	Postdoctoral Fellow

Honors

1995	American Cancer Society Fellow
1997	March of Dimes Basil O'Connor Scholar
1998-2002	Pew Scholar
1998	Beckman Young Investigator Award

Selected Publications

Sheets, M.D. (1998) Turning the frog into a princely model. Nature Biotechnology 16: 233-234.

Sheets, M.D., Amersdorfer, P., Finnern, R., Sargent, P., Schier, R., Wong, C., Gerhart, J., and J. Marks. (1998) Efficient construction of a large non-immune phage antibody library: the production of panels of high affinity human single chain antibodies to protein antigens. PNAS 95(1 1):6157-62.

Lane, M. C. and M.D Sheets. (2000). Designation of the anterior/ posterior axis in pre-gastrula Xenopus embryos. Developmental Biology 220(1): 37-58.

Fritz, B.R, and M.D. Sheets. (2001) Regulation of the mRNAs encoding proteins of the BMP signaling pathway during the maternal stages of Xenopus development. Developmental Biology 23 6(1): 230-243.

Wong C. Waibel R. Sheets M.D. Mach JP. Finnern R. (2001) Human scFv antibody fragments specific for the epithelial tumour marker MUC- 1 ,selected by phage display. Cancer Immunotherapy. 50(2): 93-101.

Mitchell T.M., and M.D. Sheets. (2001) The FGFR pathway is required for the trunk-inducing functions of Spemann's organizer. Developmental Biology. 237(2): 295-305.
Lane, M. C. and M.D Sheets. (2002). Primative and definitive blood share a common origin in Xenopus embryos. Developmental Biology (248) 52-67.
Audic, Y. Fritz, B. Garbrecht, M. Sheets, M.D. and R. S. Hartley (2002). Zygotic control of maternal cyclin A1 translation. Developmental Dynamics 225 (4) 511-521.
Lane, M. C. and M.D Sheets. (2002). Rethinking axial patterning in Xenopus embryos (Review). Developmental Dynamics 225 (4) 434-447.
Abler L.L., and M.D. Sheets (2003) Expression of scFv antibodies in Xenopus embryos to disrupt protein function: implications for large- scale evaluation of the embryonic proteome. Genesis 35(2) 107-113.
Lane, M. C. and M.D. Sheets (2004) Fate Mapping Hematopoietic Lineages in the Xenopus Embryo. Methods in Molecular Medicine. 105:137-48, 2004. Good PJ. Abler L.
Herring D. Sheets MD. (2004) Xenopus embryonicpoly(A) binding protein 2 (ePABP2) defines a new family of cytoplasmic Poly(A) binding proteins expressed during the early stages of vertebrate development. Genesis. 38(4): 166-175.
Lane, M. C. Davidson, L., and M.D. Sheets (2004) BMP antagonism by Spemann's organizer regulates rostral/caudal fate of mesoderm. Developmental Biology. 275(2):356-74, 2004.
Sheets, M.D. (1998) Turning the frog into a princely model. Nature Biotechnology 16: 233-234.
Sheets, M.D., Amersdorfer, P., Finnern, R., Sargent, P., Schier, R., Wong, C., Gerhart, J., and J. Marks. (1998) Efficient construction of a large non-immune phage antibody library: the production of panels of high affinity human single chain antibodies to protein antigens. PNAS 95(1 1):6157-62.
Lane, M. C. and M.D Sheets. (2000). Designation of the anterior/ posterior axis in pre-gastrula Xenopus embryos. Developmental Biology 220(1): 37-58.
Fritz, B.R, and M.D. Sheets. (2001) Regulation of the mRNAs encoding proteins of the BMP signaling pathway during the maternal stages of Xenopus development. Developmental Biology 23 6(1): 230-243.
Wong C. Waibel R. Sheets M.D. Mach JP. Finnern R. (2001) Human scFv antibody fragments specific for the epithelial tumour marker MUC- 1 ,selected by phage display. Cancer Immunotherapy. 50(2): 93-101.
Mitchell T.M., and M.D. Sheets. (2001) The FGFR pathway is required for the trunk-inducing functions of Spemann's organizer. Developmental Biology. 237(2): 295-305.
Lane, M. C. and M.D Sheets. (2002). Primative and definitive blood share a common origin in Xenopus embryos. Developmental Biology (248) 52-67.
Audic, Y. Fritz, B. Garbrecht, M. Sheets, M.D. and R. S. Hartley (2002). Zygotic control of maternal cyclin A1 translation. Developmental Dynamics 225 (4) 511-521.
Lane, M. C. and M.D Sheets. (2002). Rethinking axial patterning in Xenopus embryos (Review). Developmental Dynamics 225 (4) 434-447.
Abler L.L., and M.D. Sheets (2003) Expression of scFv antibodies in Xenopus embryos to disrupt protein function: implications for large-scale evaluation of the embryonic proteome. Genesis 35(2) 107-113.
Lane, M. C. and M.D. Sheets (2004) Fate Mapping Hematopoietic Lineages in the Xenopus Embryo. Methods in Molecular Medicine. 105:137-48, 2004.

Good PJ. Abler L. Herring D. Sheets MD. (2004) Xenopus embryonicpoly(A) binding protein 2 (ePABP2) defines a new family of cytoplasmic Poly(A) binding proteins expressed during the early stages of vertebrate development. Genesis. 38(4): 166-175.

Lane, M. C. Davidson, L., and M.D. Sheets (2004) BMP antagonism by Spemann's organizer regulates rostral/caudal fate of mesoderm. Developmental Biology. 275(2):356-74, 2004.

ABSTRACT

Michael D. Sheets, the oldest of three children, was born in West Lafayette, Indiana, while his father was studying at Purdue University. When Michael was about five, his father moved the family to East Lansing, Michigan, so that he (Michael's father) could obtain a master's degree; then they all moved back to a small town in Indiana; and the elder Sheets became a teacher of science and of industrial arts in high school. Sheets' mother had an associate's degree in accounting but chose to stay at home with her children. They lived on a very small farm, with a few animals and a large vegetable garden, and they were involved with 4H. Sheets liked to read; the family subscribed to the Time-Life Series of books, and their grandmother had a wall filled with *National Geographics*, both of which further increased his interests.

Sheets entered Purdue unsure just what he would study. Though he was interested in many of the sciences, he did not see a clear science path in the same way that he saw certain pre-professional options, but a counselor encouraged him to get lab experience, so he worked in Morris Levy's plant ecology lab his freshman year. After that year he switched to a chicken lab where he worked on gene expression. Excited by molecular biology but still not certain where to go to graduate school, he took Brian Larkins's advice and applied to the University of Wisconsin because they could provide a good general science education, as well as illuminating the many possibilities in science. There Michael worked on polyadenylation of RNA in Marvin Wickens's lab. He stayed in Wickens's lab for an extra two-year postdoc. He also met his future wife, Catherine Fox, in Wickens's lab, and they married just before going off to their postdocs.

Sheets accepted a postdoc at University of California at Berkeley, working in John Gerhart's laboratory, where he developed an antibody library for studying gene function during frog development. From Berkeley Michael and his wife had to find jobs at the same institution; the University of Wisconsin was their choice, as they love both the school and Madison, Wisconsin.

Today, Sheets continues his research on regulating gene expression in vertebrate development. He works at the bench, teaches, writes grant proposals and journal articles, and ponders the applicability of his research for clinical use. In addition, he and his wife have recently adopted a young son. Balancing work life and family life in a two-scientist family is difficult at best, but with his son's appearance, this balancing has become ever more complicated, though far more rewarding.

UCLA INTERVIEW HISTORY

INTERVIEWER:

William Van Benschoten, Interviewer, UCLA Oral History Program; B.A., History, University of California, Riverside, 1990; M.A., History, University of California, Riverside, 1991; C.Phil., History, University of California, Los Angeles, 1995.

TIME AND SETTING OF INTERVIEW:

Place: Sheets's office at University of Wisconsin.

Dates of sessions: March 29, 2004; March 30, 2004.

Total number of recorded hours: 5.

Persons present during interview: Sheets and Van Benschoten.

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, Van Benschoten held a telephone preinterview conversation with Sheets to obtain written background information (curriculum vitae, copies of published articles, etc.) and agree on an interviewing schedule. He also reviewed documentation in Sheets's file at the Pew Scholars Program office in San Francisco, including Sheets's proposal application, letter of recommendation, and reviews by Pew Scholars Program national advisory committee members.

ORIGINAL EDITING:

Carol Squires 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.

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

Carol Squires prepared the table of contents and TechniType Transcripts, and compiled the guide to proper names.

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