CHEMICAL HERITAGE FOUNDATION

MARKUS D. MEISTER

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Andrea R. Maestrejuan

at

Harvard University
Boston, Massachusetts

on

18, 20, and 25 November 1998

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

Markus D. Meister

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 the Pew Scholars Program in the Biomedical Sciences Advisory Committee members.

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

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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, 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. 70126991

This Interview Agreement is made and entered into this 27th day f January, 1998 by and between THE REGENTS OF THE UNIVERSITY OF ALIFORNIA, a California corporation, on behalf of the Oral History Program t the UCLA campus, hereinafter called "University," and MARKUS D. MEISTER, aving an address at Harvard University, Molecular and Cellular Biology, 16 ivinity Avenue, Cambridge, Massachusetts 02138, hereinafter called Interviewee."

Interviewee agrees to participate in a series of University-conducted ape-recorded interviews, commencing on or about November 18, 1998, and entatively entitled "Interview with Markus D. Meister". This Agreement elates to any and all materials originating from the interviews, namely he tape recordings of the interviews and a written manuscript prepared rom the tapes, hereinafter collectively called "the Work."

In consideration of the mutual covenants, conditions, and terms set orth 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: Office of Research Administration
University of California, Los Angeles
P.O. Box 951406
Los Angeles, California 90095-1406

Attention: _____

If to Interviewee: Markus D. Meister
Harvard University
Molecular and Cellular Biology
16 Divinity Avenue
Cambridge, Massachusetts 02138

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

INTERVIEWEE

Markus Meister
(Signature)

Markus D. Meister
(Typed Name)

Harvard University

Molecular and Cell Biology

16 Divinity Avenue
(Address)

Cambridge, MA 02138

Date 4/18/98

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

(Signature)

Dale E. Treleven
(Typed Name)

Director, Oral History Program

(Title)

Date 1/27/99

Pew Scholars in the Biomedical Sciences

Chemical Heritage Foundation Internet Posting Release Form

I, Markus D. Meister, 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.

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This constitutes my entire and complete understanding.

Markus D. Meister, Ph.D.

2/1/08

Date

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

MARKUS D. MEISTER

1960 Born in Siegsdorf, Germany on 24 February

Education

B.A**.,** University of Munich, Munich, Germany
1987 Ph.D., in Physics, California Institute of Technology

Professional Experience

Stanford University
1987-1991 Postdoctoral Fellow

Harvard Medical School, Department of Molecular and Cellular Biology
1991-1995 Assistant Professor
1995-1998 Associate Professor
1998-present Professor

Honors

1993-1997 Pew Scholar in the Biomedical Sciences

Selected Publications

Meister, M. and H.C. Berg, 1987. The stall torque of the bacterial flagellar motor. *Biophysical Journal* 52:413-19.

Meister, M. et al., 1987. The proton flux through the bacterial flagellar motor. *Cell* 49:643-50.

Meister, M. et al., 1991. Synchronous bursts of action potentials in ganglion cells of the developing mammalian retina. *Science* 252:939-43.

Meister, M. et al., 1994. Multi-neuronal signals from the retina: Acquisition and analysis. *Journal of Neuroscience Methods* 51:95-106.

Meister, M. et al., 1995. Concerted signaling by retinal ganglion cells. *Science* 270:1207-10.

Meister, M. 1996. Multineuronal codes in retinal signaling. *Proceedings of the National Academy of Science USA* 93 :609-14.

Berry, M.J. et al., 1997. The structure and precision of retinal spike trains. *Proceedings of the National Academy of Science USA* 94:5411-16.

Soucy, E.R. et al., 1998. A novel pathway from rod photoreceptors to ganglion cells in mammalian retina. *Neuron* 21:481-493.

Meister, M. and M.J. Berry, 1999. The neural code of the retina. *Neuron* 22:435-50.

ABSTRACT

Markus D. Meister was born in Siegsdorf, Germany, a small town in Swabian Germany, in the foothills of the Alps. His father completed a PhD in physics, and when Markus was a young boy the family moved to the village of Ranco, Italy, near the small town of Ispra, where Markus's father worked for Euratom. Markus's mother was a housewife, staying at home with Markus and his younger brother.

When Markus was seven the family moved to Brookhaven National Laboratory in upstate New York, where his father worked for two years. They lived on site in barracks that were still used to house visitors. Markus's father was able to take his children to work there, as he had not been able to do at Euratom. Markus particularly remembers walking through a particle accelerator tunnel and seeing the particle-bending magnets. As a child, Markus loved mathematics (his father was once accused of raising a "math animal"), and he considered studying math at university, but his father advised against it so going into physics was inevitable. After returning to Europe, Markus went to the "European School," a school that had been established for the children of Euratom employees, as they came from many different countries and spoke different languages. His curriculum in high school was the modern language/natural sciences curriculum; his languages were French and English and his science physics.

Markus attended the University of Munich, in part because the political situation in Italy was chaotic; at the university he felt less challenged than he had expected to, and he decided to apply to schools in the United States. He was accepted into the PhD program at California Institute of Technology and spent his first year or so trying to catch up to his classmates. He was recruited into Edward C. Stone's cosmic-ray lab, a place he found exciting, and sometimes had the night shift at the jet propulsion lab.

When NASA's budget was radically reduced Markus began to look around for an alternative; he decided to switch his course of study to biology. Howard C. Berg had given a colloquium about flagellar motion to physicists, a talk that really pushed Meister in that direction. He spent a summer in Berg's lab and was given permission to write his PhD thesis for Berg, as long as it dealt with the physics of biological systems. Meister accepted a postdoc at Stanford University in Denis Baylor's lab. From there the rigor of neuroscience attracted him, and he developed an interest in human visual perception. He considered a position at the University of California at San Diego but decided to accept Harvard's offer of an assistant professorship in the medical school. He now has tenure there and continues to enjoy his research; to look for funding; to publish; and to balance his work and his life with his wife, Elizabeth Anne Gibb, an architect, and his young daughter, Michela.

UCLA INTERVIEW HISTORY

INTERVIEWER:

Andrea R. Maestrejuan, Interviewer, UCLA Oral History Program; B.A., History, University of California, Irvine, 1986; B.S., Biological Sciences, University of California, Irvine, 1986; M.A., History, University of California, Riverside, 1991; C.Phil., History, University of California, Riverside.

TIME AND SETTING OF INTERVIEW:

Place: Meister's office, Harvard University Department of Molecular and Cellular Biology.

Dates, length of sessions: November 18, 1998 (66 minutes); November 20, 1998 (128); November 25, 1998 (64).

Total number of recorded hours: 4.65

Persons present during interview: Meister 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 Meister 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 Meister'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 technical background, 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 Meister's childhood in Siegsdorf, Germany, and continuing through his undergraduate work at the University of Munich, his graduate work at California Institute of Technology, his postdoc at Stanford University, and the establishment of his own lab at Harvard University. Major topics discussed include his work on the bacterial flaggellar motor, his interest in human visual perception, the differences between biology and physics, and the need for working out more encompassing organizing principles in biology.

ORIGINAL EDITING:

Ödül Bozkurt, 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.

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

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

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