

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

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UNIVERSITY OF CALIFORNIA, LOS ANGELES

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Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about November 18, 1998, and tentatively entitled "Interview with Markus D. Meister". 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."

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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

THE REGENTS OF THE UNIVERSITY  
OF CALIFORNIA

Markus Meister  
(Signature)

Dale E. Treleven  
(Signature)

Markus D. Meister  
(Typed Name)

Dale E. Treleven  
(Typed Name)

Harvard University

Director, Oral History Program

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16 Divinity Avenue  
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Cambridge, MA 02138

Date 11/18/98

Date 1/27/99

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Markus D. Meister, Ph.D.

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## MARKUS D. MEISTER

1960 Born in Siegsdorf, Germany on 24 February

### Education

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

### Professional Experience

1987-1991 Stanford University  
Postdoctoral Fellow

1991-1995 Harvard Medical School, Department of Molecular and Cellular Biology  
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 flagellar 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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