

CHEMICAL HERITAGE FOUNDATION

LEE ANN NISWANDER

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Helene L. Cohen

at

Memorial Sloan-Kettering Cancer Center
New York City, New York

on

15, 17-18 May 2000

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

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 May 15, 2000, and tentatively entitled "Interview with Lee Ann Niswander". 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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University and Interviewee have executed this Agreement on the date first written above.

INTERVIEWEE

THE REGENTS OF THE UNIVERSITY
OF CALIFORNIA

X Lee Ann Niswander
(Signature)

Dale E. Treleven
(Signature)

Lee Ann Niswander
(Typed Name)

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Date June 2, 2000

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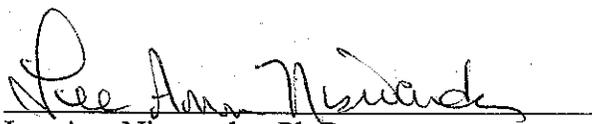
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Lee Ann Niswander, Ph.D.

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LEE ANN NISWANDER

1957 Born in Bluffton, Ohio on 27 June

Education

1980 B.A., University of Colorado, Boulder
1985 M.S., University of Colorado Health Sciences Center
1990 Ph.D., Case Western Reserve University

Professional Experience

1980-1984 University of Colorado Health Sciences Center
Research Assistant

1990-1993 University of California, San Francisco
Postdoctoral Fellow

1993-1998 Memorial Sloan-Kettering Cancer Center, Molecular Biology Program
Assistant Member
1998-present Associate Member

Honors

1991-1993 American Cancer Society Postdoctoral Fellowship
1995-1999 Pew Scholar in the Biomedical Sciences
1997-present Howard Hughes Medical Institute, Assistant Investigator

Selected Publications

Niswander, L. et al., 1989. The albino-deletion complex in the mouse defines genes necessary for development of embryonic and extraembryonic ectoderm. *Development* 105:175-82.

Niswander, L. and G.R. Miller, 1993. FGF-4 and BMP-2 have opposite effects on limb growth. *Nature* 361:68-71.

Niswander, L. et al., 1993. FGF-4 replaces the apical ectodermal ridge and directs outgrowth and patterning of the limb. *Cell* 75:579-87.

Niswander, L. et al., 1994. Positive feedback loop coordinates growth and patterning in the vertebrate limb. *Nature* 371:609-12.

Yang, Y. and L. Niswander, 1995. Interaction between the signaling molecules WNT and

- SHH during vertebrate limb development: dorsal signals regulate anteroposterior patterning. *Cell* 80:939-47.
- Zou, H. and L. Niswander, 1996. Requirement for BMP signaling in interdigital apoptosis and scale formation. *Science* 272:738-41.
- Kuhlman, J. and L. Niswander, 1997. Limb deformity protein: Role in mesodermal induction of the apical ectodermal ridge. *Development* 124: 133-39.
- Zou, H. et al., 1997. Distinct roles of type I bone morphogenetic protein receptors in the formation of different cartilage. *Genes and Development* 11:2191-203.
- Pizette, S. and L. Niswander, 1999. BMPs negatively regulate structure and function of the limb apical ectodermal ridge. *Development* 126:883-94.
- Pizette, S. et al., 2001. BMP controls proximodistal outgrowth, via induction of the apical ectodermal ridge, and dorsoventral patterning in the vertebrate limb. *Development* 128:4463-74.

ABSTRACT

Lee Ann Niswander was born in Bluffton, Ohio, the fourth child of six. Her parents were moderately devout Mennonites until her father's job caused them to move to Okemos, Michigan, where they became Methodists. Both parents were musical and they taught their children to be musical as well (the family won an award in a national musical contest). Lee Ann loved school, especially mathematics and science, in both of which she did well. When she was in high school she worked with disabled people, and she began Western Michigan University intending to major in special education. Finding that boring she moved to Colorado, where she worked on dude ranches for a few years before matriculating at the University of Colorado. She wanted to take her degree in chemistry, but she discovered that she enjoyed her biology classes as well.

Still not sure that she wanted to go to medical school, but not knowing what else she could do, she finished college and applied to the Peace Corps. Although she was accepted and assigned to Lesotho, she decided not to go. Instead she worked as a technician at the University of Colorado Health Sciences Center for four years before deciding to go back to school. During these four years she also obtained a Master's degree and met her future husband, Richard Davis. When Davis decided to accept a postdoc at Case Western Reserve University, Lee Ann applied to and was accepted into a PhD program in developmental biology at Case Western. There she worked in two *Drosophila* labs, one with Anthony Mahowald; then she went to Terry Magnuson's lab to work on mouse genetics. She also spent three months in Sweden, learning microdissection and microcloning; she was working on a phenotype that arises from a deletion of a part of mouse chromosome 7 and that has an early embryonic phenotype during gastrulation. When she finished her PhD she and Davis married and went to the University of California at San Francisco, where Lee Ann had a postdoc in Gail Martin's lab. There her project involved FGF-4.

From California Niswander and her husband moved to New York City, where she accepted an assistant member position at Memorial Sloan-Kettering Cancer Center. In addition to the Pew grant she has also won a Howard Hughes Medical Institute award and has been promoted to associate member at Sloan-Kettering. As a PI, she has three major projects in her lab: limb development in the chick embryo; neural tube patterning, or why there are different types of neurons along the dorsal-ventral axis in the neural tube; and feather bud development. She also is co-director and a teacher of a developmental biology course the cell biology course at the Weill Medical College of Cornell University. In summers she co-teaches a section of a course in embryology with John Saunders at Woods Hole Oceanographic Institute.

Lee Ann continues to publish, to teach, to experiment, to seek funding, and to attempt to balance all this with her family life.

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: Niswander's Office, Memorial Sloan-Kettering Cancer Center.

Dates, length of sessions: May 15, 2000 (96 minutes); May 17, 2000 (100); May 18, 2000 (90).

Total number of recorded hours: 4.8

Persons present during interview: Niswander 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 telephone preinterview conversation with Niswander 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 Niswander's file at the Pew Scholars Program office in San Francisco, including her 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 Niswander's childhood in Okemos, Michigan, and continuing through her undergraduate work at University of Colorado, Boulder, her graduate work at University of Colorado Health Sciences Center and Case Western Reserve University, her postdoc at University of California, San Francisco, and the establishment of her own lab at Memorial Sloan-Kettering Cancer Center. Major topics discussed include her Mennonite family background, her research on fibroblast growth factor family members in the Gail R. Martin laboratory, and the scope of her present work at Memorial Sloan-Kettering Cancer Center.

ORIGINAL EDITING:

Gail Ostergren, 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.

Niswander reviewed the transcript. She verified proper names and made minor corrections and additions.

William Van Benschoten, editor, prepared the table of contents. Ostergren assembled the biographical summary and interview history. Victoria Simmons, editorial assistant, compiled the index.

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