CHEMICAL HERITAGE FOUNDATION

# FRANK J. RAUSCHER, III

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Andrea R. Maestrejuan

at

Wistar Institute
Philadelphia, Pennsylvania

on

7, 8, and 9 October 1996

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.



**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:

Holly Polish, Program Intern, Oral History, Chemical Heritage Foundation. B.A. History, American University.

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. R961014

This Interview Agreement is made and entered into this 6th day of August, 1998 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 FRANK J. RAUSCHER III, having an address at The Wistar Institute of Anatomy & Biology, 3601 Spruce Street, Philadelphia, Pennsylvania 19104, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about October 6, 1996, and tentatively entitled "Interview with Frank J. Rauscher III". 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 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: Ms. Carli V. Rogers
Copyright Officer

If to Interviewee: Frank J. Rauscher III
The Wistar Institute of Anatomy & Biology
3601 Spruce Street
Philadelphia, Pennsylvania 19104

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

INTERVIEWEE

F.J. Rauscher III
(Signature)

Frank J. Rauscher, III
(Typed Name)

The Wistar Institute of Anatomy & Biology

3601 Spruce Street
(Address)

Philadelphia, Pennsylvania 19104

Date October 7 1996

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

(Signature)

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Date 8/6/96

Chemical Heritage Foundation
Oral History Program
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**FRANK J. RAUSCHER, III**

1957 Born in Perth Amboy, New Jersey, on 11 December

## Education

1979 B.S., Moravian College
1987 Ph.D., State University of New York at Buffalo

## Professional Experience

Roche Institute of Molecular Biology, Nutley, New Jersey
1987-1990 Postdoctoral Fellow, Department of Molecular Oncology

Wistar Institute, Philadelphia, Pennsylvania
1990-1992 Assistant Professor
1992-present Associate Professor
1992-present Program Leader, Molecular Genetics

University of Pennsylvania, Philadelphia, Pennsylvania
1990-present Member, Molecular Biology Graduate Group

University of Pennsylvania Medical School, Philadelphia, Pennsylvania
1993-present Adjunct Associate Professor of Genetics

## Honors

1991-1995 Pew Scholar in the Biomedical Sciences
1991 Wilson S. Stone Memorial Award
1995 David M. Kovitz Visiting Professorship Award, University of Calgary, Canada
1995 William L. McGuire M.D. Memorial Fellowship, Susan G. Komen Breast Cancer Foundation
1996 Annual Esther Zoller Breast Cancer Lecture, University of California, San Francisco

## Selected Publications

Rauscher, F.J., III et al., 1988. Common DNA-binding site for Fos protein complexes and

transcription factor AP-1. *Cell* 52:471-80.
Rauscher, F.J., III et al., 1988. Fos-associated protein p39 is the product of the *jun* proto-oncogene. *Science* 240:1010-16.
Rauscher, F.J., III et al., 1988. Fos and Jun bind cooperatively to the AP-1 site: Reconstitution *in vitro. Genes and Development* 2:1687-99.
Gentz, R. et al., 1989. Parallel association of Fos and Jun leucine zippers juxtaposes DNA-binding domains. *Science* 243:1695-99.
Rauscher, F.J., III et al., 1990. Binding of the Wilms' tumor locus zinc finger protein to the EGR-1 consensus sequence. *Science* 250:1259-62.
Madden, S.L. et al., 1991. Transcriptional repression mediated by the WT1 Wilms' tumor gene product. *Science* 253:1550-53.
Drummond, I.A. et al., 1992. Repression of the insulin-like growth factor-II gene by the Wilms' tumor supressor WT1. *Science* 257:674-78.
Margolin, J.F., et al., 1994. Krüppel-associated boxes are potent transcriptional repression domains. *Proceedings of the National Academy of Sciences USA* 91:4509-13.
Rauscher, F.J., III et al., 1995. Novel oncogenic mutatations in the WT1 Wilms' tumor suppressor gene. A recurrent t (11;22) fuses the Ewing's sarcoma gene, EWS1 to WT1 in desmoplastic small round cell tumor. *Cold Spring Harbor Symposium on Quantitative Biology.* 59:137-46.
Friedman, J.R. et al., 1996. KAP-1, a novel co-repressor for the highly-conserved KRAB repression domain. *Genes and Development* (in press).

## ABSTRACT

**Frank J. Rauscher, III**, one of five children, grew up mostly in suburbs of Washington, D.C. His father was a cancer researcher with the National Institutes of Health at first, eventually becoming director of the National Cancer Institute; his mother was a teacher and homemaker. Because of his father's important scientific career, he was often fully aware of politics and science, even shaking President Nixon's hand at the signing of the National Cancer Act. Rauscher attributed his early interest in biology to being immersed in the field because of his father's career. He was a young teen at the time of the Vietnam War and the assassination of Martin Luther King Jr., both of which amplified, to him, the fact that he lived in a city at the center of internationally important decisions.

Rauscher attended Moravian College in Pennsylvania. He was familiar with the college because his father had gone there. It was only in his junior year that he decided to major in biology. The removal of a large tumor from his chest helped change his mind about becoming a doctor, and an exceptional teacher's help in mathematics helped make a science career possible. During one mid-year break, Rauscher gained research experience in Sol Spiegelman's lab at ColumbiaUniversity. During his other school breaks he worked in a chemotherapy clinic at Yale-New Haven Hospital. These two different aspects of treating cancer solidified Rauscher's career choice; he made his final decision to be a scientist, and he devoted his remaining college time to science courses.

Feeling that experience would stand him in good stead when he applied to graduate school, Rauscher entered Edwin Cadman's lab as a technician, where he did research on biochemical synergy as a means of killing tumors. While in Cadman's lab, Rauscher decided to go into pharmacology and began to prepare to enter a graduate program. The burgeoning field of molecular biology and oncogene research ensnared his interest, so he entered graduate school at State University of New York at Buffalo. He went into Terry Beerman's lab to study the interaction of drugs and chromatin. Then came the breakthroughs in oncogene research in the 1980s.

Rauscher applied for a postdoc position in the Tom Curran lab at Roche Institute of Molecular Biology and switched from pharmacology to molecular biology. Research in the lab focused on the *fos*oncogene. Collaboration with Bruce Spiegelman and B. Robert Franza Jr. established a DNA-binding site for *fos.* The discovery that *jun* and *fos* form a dimeric complex and the discovery of leucine zippers in *fos* and *jun* spurred new work on transcription. Rauscher described the attempt to inhibit oncogenic cell growth, using transdominant mutant dimerizing proteins. Curran provided practical career advice for Rauscher, advice that helped him define a research focus for his own lab. He set up his lab as an assistant professor at the Wistar Institute.

At the end of the interview Rauscher discusses the necessity of bringing in grant money and his strategy for designing grant applications; how seeking grants fosters "tactical science"; how he identified the Wilms' tumor gene DNA-binding site; the competitiveness of experimental science; the pressures on a two-career couple; and how he attempts to design a project that is both "hypothesis driven" and capable of producing solid results. He describes how he used technology from his research on WT1 to study zinc finger proteins and how his research on *Krüppel*-associated box and *KRAB*-associated protein was funded by the Pew Scholars Program in the Biomedical Sciences award. Rauscher concludes his interview with his

explanation of the necessity for a researcher to pursue new ideas and new fields of research and with renewed emphasis on the importance of continuing basic cancer research.

## UCLA INTERVIEW HISTORY

INTERVIEWER:

Andrea Maestrejuan, Interviewer, UCLA Oral History Program; B.A., History, University of California, Irvine, 1988; B.S., Biological Sciences, University of California, Irvine, 1988; C.Phil., History, University of California, Riverside.

TIME AND SETTING OF INTERVIEW:

**Place:** Rauscher's office, Wistar Institute.

**Dates, length of sessions:** October 7, 1996 (125 minutes); October 8, 1996 (99) ; October 9, 1996 (148).

**Total number of recorded hours:** 6.2

**Persons present during interview:** Rauscher 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 Rauscher 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 Rauscher'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.* 3d ed. New York: Garland, 1994.

The interview is organized chronologically, beginning with Rauscher's childhood and education in New Jersey and continuing through his work at the Yale-New Haven Hospital, his graduate career at the Roswell Park Cancer Institute, State University of New York at Buffalo, and the establishment of his lab at the Wistar Institute, Philadelphia. Major topics discussed include the relationship between clinical practice and pharmacological research, advances in the field of cancer chemotherapy, the role of *fos* and *jun* in DNA-binding activity, and funding in the sciences.

ORIGINAL EDITING:

Gregory M.D. Beyrer, editorial assistant, edited the interview. He 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.

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

Jane Collings, editor, prepared the table of contents, interview history, and index.

Beyrer compiled the biographical summary.

## TABLE OF CONTENTS

# INDEX

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