

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

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*F. J. Rauscher III*  
(Signature)

Frank J. Rauscher, III  
(Typed Name)

The Wistar Institute of Anatomy  
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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

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

1990-1992 Wistar Institute, Philadelphia, Pennsylvania  
Assistant Professor

1992-present Associate Professor

1992-present Program Leader, Molecular Genetics

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

1993-present University of Pennsylvania Medical School, Philadelphia, Pennsylvania  
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 suppressor 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 mutations 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 Columbia University. 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

Early years	1
Family background. Father's scientific career. The signing of the National Cancer Act. Early interest in biology. Impact of the Vietnam War and assassination of Martin Luther King, Jr.	
College Years and Time as a Technician	13
Religion. Moravian College. Liberal arts college. Decides against becoming a Doctor. Research experience in Sol Spiegelman's lab at Columbia University. Works in a chemotherapy clinic at Yale-New Haven Hospital. Social life at College. Enters Edwin C. Cadman lab as a technician. Research on biochemical synergy as a means of killing tumors. The need for biomedical researchers to maintain ties with clinicians. The development of tests that predict tumor responses to chemotherapy. Decides to pursue graduate work in pharmacology. Interest in burgeoning field of molecular biology and oncogene research.	
Graduate School and Postdoctoral Years	50
The Terry A. Beerman lab and research on the interaction of drugs and chromatin. Cell resistance to drug therapy. The breakthroughs in oncogene research in the 1980s. Begins graduate work at State University of New York at Buffalo. Applies for a postdoc position in the Tom Curran lab. Switches from pharmacology to molecular biology. Administrative structure at the Roche Institute of Molecular Biology. The <i>fos</i> oncogene. Collaboration with Bruce M. Spiegelman and B. Robert Franza, Jr. establishes a DNA-binding site for <i>fos</i> . Discovers that <i>jun</i> and <i>fos</i> form a dimeric complex. Discovery of leucine zippers in <i>fos</i> and <i>jun</i> spurs new work on transcription. Attempt to inhibit oncogenic cell growth, using transdominant mutant dimerizing proteins.	
Faculty Years	74
Accepts a position as an assistant professor at the Wistar Institute. Grants. Identifies the Wilms's tumor gene DNA-binding site. Designing grant Applications. The pressures on a two-career couple.	
Final Thoughts	84
Attempting to design a project that is both "hypothesis driven" and capable of producing solid results. Study of zinc finger proteins. Research on <i>Krüppel</i> -associated box and <i>KRAB</i> -associated protein funded by the Pew Scholars Program in the Biomedical Sciences. Focus on <i>BRCA1</i> . Basic cancer research.	
Index	106

## INDEX

### 1

1-E-D-arabinofuranosylcytosine, 41

### A

Aaronson, Stuart A., 78  
Abate, Cory, 72, 74, 82  
Abelson virus, 53  
acquired immunodeficiency syndrome, 55  
activator protein-1, 69, 70, 71, 72, 73, 75  
AIDS. *See* acquired immunodeficiency syndrome  
American Cancer Society, 26, 49  
Anderson, Garth, 61, 62  
*Animal House*, 34  
*Antennapedia*, 92  
AP-1. *See* activator protein-1  
arabinofuranosyl cytidine, 41, 44, 45  
ara-C. *See* arabinofuranosyl cytidine  
Ashkenazi, 101  
Australia, 69

### B

Baker, Raymond M., 52, 57, 103  
Baltimore, David, 54, 61  
Barbacid, Mariono, 78  
Beerman, Terry A., 50, 52, 57, 58, 63, 103  
Benz, Christopher, 43  
Bernstein, Carl, 14  
Bertino, Joseph, 26, 46  
Bethesda, Maryland, 8  
Bethlehem, Pennsylvania, 5, 18, 34  
Biozentrum Universität Basel, 91  
Bishop, J. Michael, 87  
Bos, Timothy J., 70, 74, 78  
*BRCA1*, 99, 100, 101  
Brubaker, Mr., 25  
Bucharest, Romania, 3, 87  
Buffalo, New York, 56, 58, 67, 87

### C

Cadman, Edwin C., 38, 40, 41, 42, 43, 45, 47, 48, 49, 56, 103  
Cancer Research Fund of the Damon Runyon-Walter Winchell Foundation, 67  
CAT. *See* computerized axial tomography  
Chambon, Pierre, 98  
Children's Hospital of Philadelphia, 42, 43, 84  
chromatin, 51, 52, 53, 60, 63, 97  
Cohen, Donna R., 69, 74, 77  
Cold Spring Harbor Laboratory, 31, 57, 70, 79, 82  
Cold War, 13  
collaboration, 69, 70, 71, 72, 74, 75  
Columbia University, 26, 28, 47, 57  
competition, 75, 86, 99  
computerized axial tomography, 23  
Connecticut, 34  
Connell, Joseph (maternal grandfather), 6  
Croce, Carlo M., 78  
Curran, Tom, 59, 60, 61, 62, 63, 66, 67, 68, 70, 72, 74, 75, 76, 77, 78, 80, 81, 82, 84, 85, 87, 88, 90

### D

Deep Throat, 14  
*del AG*, 101  
DNA, 2, 19, 20, 25, 49, 50, 51, 52, 53, 54, 55, 59, 60, 63, 64, 68, 69, 70, 71, 72, 73, 77, 81, 82, 83, 84, 94, 95, 96, 97, 99, 101, 103, 104  
*Drosophila*, 47, 91, 103, 104

### E

*E. coli*, 101  
E1A, 74  
early growth response-1, 78, 81, 82, 83  
EGR-1. *See* early growth response-1  
Ewing's sarcoma gene, 95

## F

fat-specific element 2, 69, 70  
Folkman, Judah, 92  
Ford, Elizabeth B.W., 15  
Ford, President Gerald R., 2  
Fort Detrick, 3  
*fos*, 43, 61, 62, 67, 68, 69, 70, 71, 72, 73,  
75, 76, 77, 78, 80, 81, 84, 90, 97  
*c-fos*, 67, 68  
*v-fos*, 67, 68  
France, 91  
Franza, B. Robert, Jr., 70, 71, 74  
FRAs, 69, 72, 73  
Frederick, Maryland, 3  
Fredericks, William J., 56  
Freemont, Paul S., 99  
Friend virus, 2  
Friend, Charlotte, 55  
FSE2. *See* fat-specific element 2

## G

GAL4, 97  
Gallo, Robert C., 55  
GCN4, 70  
Gehring, Walter J., 91  
Grace Cancer Drug Center, 51, 55, 57, 59,  
60, 62, 64  
Grant, Steven G., 43

## H

Haber, Daniel A., 87, 101  
Harlow, Edward E., 74, 82, 83  
Harvard University, 69, 74, 87, 101  
Hawaii, 26  
Hellertown, Pennsylvania, 5, 18  
hemangioma, 21  
hematopoietic differentiation, 80  
high pressure liquid chromatography, 42  
HIV. *See* human immunodeficiency virus  
Hodgkin's disease, 22, 44  
Hoffmann-La Roche, 65  
homeobox, 91  
Hospital of the University of Pennsylvania,  
42

HTLV-1. *See* human T-cell leukemia virus  
Human Genome Project, 104  
human immunodeficiency virus, 3, 55  
human T-cell leukemia virus, 55

## I

ICRF. *See* Imperial Cancer Research Fund  
IL-2. *See* interleukin-2  
Imperial Cancer Research Fund, 61, 67  
interferon, 65  
interleukin-2, 65

## J

Japan, 3  
*jun*, 43, 70, 71, 72, 73, 74, 75, 77, 78, 80,  
81, 84, 90, 97

## K

Kadonaga, James T., 68  
KAP-1. *See* KRAB-associated protein-1  
Kennedy, President John F., 4  
Kerppola, Tom, 77  
King, Martin Luther, Jr., 14  
Klausner, Richard D., 90  
Koprowski, Hilary, 79, 84  
Kouzarides, Tony, 78  
KRAB-associated protein-1, 71, 90, 93, 95,  
97, 98, 99, 100, 101  
Kuhn, Thomas S., 92  
Kulp, Stuart, 31  
Kutztown State Teacher's College, 18  
Kutztown University, 18

## L

Lehigh University, 19  
leucine zipper, 71, 72, 97, 99  
leucovorin, 28, 46  
leukemia, 1, 2, 45, 53, 60, 61, 70  
Lewis, Keith, 40, 41  
Livingston, David M., 74  
London, England, 61, 67  
Luck, Danny, 82  
Ludwig-Rauscher, Melissa A. (wife), 56, 87  
lymphoma, 1, 2, 22, 44, 61

## M

Macy's, 87  
Madden, Stephen L., 83  
Mallorca, Spain, 78  
Maniatis, Thomas P., 63  
Margolin, Judith F., 43, 98  
MCAT. *See* Medical College Admission Test  
McKnight, Steven L., 71  
MDR. *See* multidrug resistance  
Medical College Admission Test, 21, 33  
Mencken, H.L., 85  
Merck and Company, 79  
methotrexate, 46  
Mihich, Enrico, 103  
molecular biology, 2, 4, 20, 26, 49, 50, 55, 59, 61, 63, 76, 78, 80, 85, 93  
Moloney virus, 2  
Moloney, John, 2, 53, 55, 60  
Moravian College, 18, 19, 23, 26, 33, 35, 46, 48  
Moravians, 23  
Morris, Jennifer F., 83  
Muhlenburg College, 18  
multidrug resistance, 60, 61

## N

National Cancer Act, 3, 4, 22  
National Cancer Institute, 2, 3, 4, 8, 14, 15, 16, 21, 49, 65, 78, 90, 91, 103  
National Cancer Program, 1, 2, 4, 14, 15  
National Institutes of Health, 2, 7, 9, 16, 31, 55, 65, 81, 90, 97  
NATO. *See* North Atlantic Treaty Organization  
New Brunswick, New Jersey, 1  
New Haven, Connecticut, 27, 38, 56  
New Jersey, 2, 36, 87  
New Orleans, Louisiana, 43  
New York City, New York, 26, 87  
New York Giants, 6  
*New York Times*, 99  
New York University, 56  
Newark, New Jersey, 87

NIH. *See* National Institutes of Health  
Nixon, Julie, 15  
Nixon, President Richard M., 2, 3, 4, 14, 15  
NMR. *See* nuclear magnetic resonance  
Nobel Prize, 3, 65, 87  
North Atlantic Treaty Organization  
    Advanced Study Institute, 78  
N-phosphonacetyl-L-aspartate, 41  
nuclear magnetic resonance, 23  
Nutley, New Jersey, 87, 88  
NYU. *See* New York University

## O

osteosarcoma, 61

## P

p39, 74  
p39 FAP. *See* p39 *fos*-associated protein  
p39 *fos*-associated protein, 69, 70  
p53, 81  
patents, 66  
Pennsylvania, 18  
Perth Amboy, New Jersey, 1  
Pew Charitable Trusts, 88, 91, 102, 105  
Pew Scholars Program in the Biomedical Sciences, 16, 63, 83, 84, 88, 90, 95, 97, 103  
pharmacology, 27, 30, 38, 42, 43, 45, 46, 47, 49, 50, 51, 56, 57, 58, 63, 64, 68, 76, 104  
Philadelphia, Pennsylvania, 5, 56, 87, 88, 105  
Princess Margaret Hospital, 67  
Princeton, New Jersey, 87, 88  
protein 53, 73  
pyrimidine, 47

## R

*ras*, 54, 55  
Rauscher virus (murine leukemia), 2, 53, 61  
Rauscher, David (brother), 1, 2  
Rauscher, Frank, Jr. (father), 1, 33, 45, 78, 102  
Rauscher, Frank, Sr. (paternal grandfather),

- 5
- Rauscher, Griffin O'Neill (son), 88
- Rauscher, Margaret Connell (mother), 5
- Rauscher, Mary (sister), 1, 7
- Rauscher, Megan (sister), 1, 2, 7
- Rauscher, Michael (brother), 1, 7
- Really Interesting New Gene, 99, 100, 101
- Really Interesting New Ggene, 99
- Reddy, Premkumar, 68, 78, 79, 80
- religion
- Roman Catholic, 8, 17
- retinoblastoma, 74, 81
- Ricciardi, Robert P., 80
- Rimel, Rebecca W., 102
- RING*. See Really Interesting New Gene
- RNA, 26, 53, 54, 61, 78
- Roche Institute of Molecular Biology, 57, 65, 66, 67, 68, 82
- Rockville, Maryland, 8
- Roswell Park Cancer Institute, 43, 44, 45, 46, 47, 50, 51, 54, 55, 56, 57, 58, 61, 62
- Rous, Francis Peyton, 55
- Rovera, Giovanni, 80, 84
- Russia, 3
- Rustum, Youcef M., 45, 50, 55, 56, 58
- Rutgers University, 1, 33
- S**
- Salk Institute for Biological Studies, 67, 79
- Salzburg, Austria, 1
- Sambucetti, Lidia C., 68
- San Diego, California, 87
- Sanger, Frederick, 49
- scheusslich, 32
- Sears, Roebuck, and Company, 12
- Sharp, Philip A., 94
- Sigler, Paul B., 71
- Silver Spring, Maryland, 8
- Sound of Music, The*, 1
- Southern blot, 59, 63
- Spiegelman Bruce M., 69, 70, 74
- Spiegelman, Solomon, 26
- Stanford University, 19
- State of New York, 57
- State University of New York at Buffalo, 49, 55, 57
- Strasbourg, France, 98
- Struhl, Kevin, 70, 74
- SUNY. See State University of New York at Buffalo
- SV40, 74
- T**
- Temin, Howard M., 54
- Tjian, Robert T., 68, 74, 75, 78
- Toronto, Ontario, Canada, 60, 67
- Twain, Mark (Samuel Clemens), 85
- U**
- United States Congress, 4, 15, 104
- United States of America, 4
- University of California, Berkeley, 102
- University of Maryland, 64
- University of Pennsylvania, 7, 19, 35, 47, 56, 57, 100
- University of Virginia, 43
- V**
- Van Deasorde, George, 78
- Verma, Inder M., 67, 78
- Vietnam War, 13
- Vogt, Peter K., 70, 74, 75
- W**
- Washington, D.C., 2, 8, 13, 14, 21, 34, 36, 43
- Watergate, 13, 14
- Weinberg, Robert A., 54, 55
- Weissbach, Herbert, 65
- Western blot, 58
- Whitehead Institute for Biomedical Research, 79
- Wilms' tumor, 44, 81, 83
- Winfrey, Oprah, 99
- Wistar Institute, 7, 42, 56, 68, 78, 79, 80, 82, 84, 87, 90, 94, 99, 100
- Woods Hole Marine Biological Laboratory, 31
- Woodward, Robert, 14

WT1, 81, 82, 84, 85, 87, 93, 94, 95, 96, 97,  
98, 99, 101

**Y**

Yale University, 19, 26, 27, 28, 31, 38, 40,

41, 42, 43, 44, 45, 46, 47, 48, 56, 57, 58,  
59, 102

**Z**

zinc fingers, 78, 81, 82, 83, 94, 96, 99