

CHEMICAL HERITAGE FOUNDATION

SUSAN M. PARKHURST

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Steven J. Novak

at

Fred Hutchinson Cancer Research Center
Seattle Washington

on

14, 15, and 16 December 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.

This oral history was completed under the auspices of the Oral History Project, University of California, Los Angeles (Copyright © 1998, The Regents of the University of California) and is made possible through the generosity of



**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. B970811

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 SUSAN M. PARKHURST having an address at Division of Basic Sciences, Fred Hutchinson Cancer Research Center, 1124 Columbia Street, Seattle, Washington 98104, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about December 14, 1996, and tentatively entitled "Interview with Susan M. Parkhurst". 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 her 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, except for commercial applications.
3. Interviewee acknowledges that she will receive no remuneration or compensation for her 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: Susan M. Parkhurst
Division of Basic Sciences
Fred Hutchinson Cancer Research Center
1124 Columbia Street
Seattle, Washington 98104

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

INTERVIEWEE

THE REGENTS OF THE UNIVERSITY
OF CALIFORNIA


(Signature)


(Signature)

Susan M. Parkhurst
(Typed Name)

Patricia Brennan, Director
for/Copyright Officer
UCLA-Sponsored Research
1400 Ueberroth Building
Box 951406
Los Angeles, CA 90095-1406

Division of Basic Sciences
(Address)

(Title)

Fred Hutchinson Cancer
Research Center

1124 Columbia Street

Seattle, Washington 98104

Date 12/14/96

Date 8/4/98

This interview has been designated as **Free Access**.

One may view, quote from, cite, or reproduce the oral history with the permission of CHF.

Please note: Users citing this interview for purposes of publication are obliged under the terms of the Chemical Heritage Foundation Oral History Program to credit CHF using the format below:

Susan M. Parkhurst, interview by Steven J. Novak at the Fred Hutchison Cancer Research Center, Seattle, Washington, 14-16 December 1996 (Philadelphia: Chemical Heritage Foundation, Oral History Transcript # 0552).



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



The Chemical Heritage Foundation (CHF) serves the community of the chemical and molecular sciences, and the wider public, by treasuring the past, educating the present, and inspiring the future. CHF maintains a world-class collection of materials that document the history and heritage of the chemical and molecular sciences, technologies, and industries; encourages research in CHF collections; and carries out a program of outreach and interpretation in order to advance an understanding of the role of the chemical and molecular sciences, technologies, and industries in shaping society.

SUSAN M. PARKHURST

1960 Born in Tacoma, Washington, on 25 August

Education

1982 B.A., Biology, Johns Hopkins University

1985 Ph.D., Developmental Biology, Johns Hopkins University

Professional Experience

1985-1986 Johns Hopkins University, Baltimore, Maryland
Postdoctoral Fellow

1986-1989 Imperial Cancer Research Fund, Oxford, England
Postdoctoral Fellow

1990-1991 California Institute of Technology, Pasadena, California
Research Fellow

1992-1994 Fred Hutchinson Cancer Research Center, Seattle, Washington
Assistant Member

1995-present Associate Member

Honors

1986-1989 Helen Hay Whitney Foundation Postdoctoral Fellowship

1989 Imperial Cancer Research Fund Postdoctoral Fellowship

1992-1994 Basil O'Connor Starter Research Award

1992-1994 James A. Shannon Director's Award

1992-1995 American Cancer Society Junior Faculty Research Award

1992-1996 Pew Scholar in the Biomedical Sciences

1995-2000 Leukemia Society of America Scholar

Selected Publications

Parkhurst, S.M. and V.G. Corces, 1985. *Forked*, *gypsy*, and suppressors in *Drosophila*. *Cell* 41:429-37.

Parkhurst, S.M. and V.G. Corces, 1986. Interactions among the *gypsy* transposable element and the *yellow* and *suppressor of Hairy-wing* loci in *Drosophila melanogaster*. *Molecular and*

- Cellular Biology* 6:47-53.
- Parkhurst, S.M. and V.G. Corces, 1986. Mutations at the *suppressor of forked* locus increase the accumulation of *gypsy*-encoded transcripts in *Drosophila melanogaster*. *Molecular and Cellular Biology* 6:2271-74.
- Parkhurst, S.M. et al., 1988. The *Drosophila su(Hw)* gene, which controls the phenotypic effect of the *gypsy* transposable element, encodes a putative DNA-binding protein. *Genes and Development* 2:1205-15.
- Parkhurst, S.M. et al., 1990. X:A ratio, the primary sex-determining signal in *Drosophila*, is transduced by helix-loop-helix proteins. *Cell* 63:1179-91.
- Parkhurst, S.M. and D. Ish-Horowicz, 1991. Mis-regulating segmentation gene expression in *Drosophila*. *Development* 111:1121-35.
- Parkhurst, S.M. and D. Ish-Horowicz, 1991. *wimp*, a dominant maternal-effect mutation, reduces transcription of a specific subset of segmentation genes in *Drosophila*. *Genes and Development* 5:341-57.
- Parkhurst, S.M. et al., 1993. *achaete-scute* feminizing activities and *Drosophila* sex-determination. *Development* 117:737-49.
- Parkhurst, S.M. and P.M. Meneely, 1994. Sex determination and dosage compensation: Lessons from flies and worms. (review) *Science* 264:924-32.
- Lepage, T. et al., 1995. Signal transduction by cAMP-dependent Protein Kinase A in *Drosophila* limb patterning. *Nature* 373:711-15.
- Dawson, S.R. et al., 1995. Specificity for the Hairy/Enhancer of split basic-helix-loop-helix (bHLH) proteins maps outside the bHLH domain and suggests two separable modes of transcriptional repression. *Molecular and Cellular Biology* 15:6923-31.
- Gallant, P. et al., 1996. A *Drosophila* Myc homolog is encoded by *diminutive* and heterodimerizes with *Drosophila* Max to form a sequence-specific DNA-binding transactivator. *Science* (in press).
- Alifragis, P. et al., 1996. A network of interacting transcriptional regulators involved in *Drosophila* neural fate specification revealed by the yeast two-hybrid system. *Proceedings of the National Academy of Sciences U.S.A.* (submitted).

ABSTRACT

Susan M. Parkhurst was born in Tacoma, Washington, but raised in California, Alaska, North Carolina, and Colorado (where she attended high school), the second oldest of seven siblings. Both of her parents were in the U.S. Air Force (hence the travel)—her mother a radar officer, her father an airplane mechanic—though later in life, when Parkhurst was in high school, both of her parents went to college to obtain degrees. She was an avid reader and she played the flute, the bassoon, and the glockenspiel either in her school's marching band or in its orchestra. While she excelled in school, her education was also somewhat disrupted by the moves to various states, such that she never had a class in geometry but repeated some classes due to the different structures of state educational systems. While in high school she also participated in Explorers, which focused, in part, on seeing medical professionals at work.

Although not entirely certain of what career she wanted to pursue, Parkhurst matriculated at Johns Hopkins University in Baltimore, Maryland, starting on the pre-medical track. She recalled that her first two years at the institution were fraught with being in classes more advanced than the training she had in high school (like starting in Calculus III instead of Calculus II), most of which required rote learning, though once she began her junior year and started taking graduate-level classes in her field, which required thoughtful intellectual expression, that all changed. Also, she profited from an inspirational developmental biology class with Allen Shearn, who became a mentor, and from a friendship with a graduate student, Suki Parks, who provided guidance. While she worked a number of different jobs as an undergraduate, many during the summers, she felt fortunate to work for a Veterans Administration hospital studying nosocomial infections and to be an undergraduate teaching assistant. Having decided to pursue a graduate education in science rather than medicine, Parkhurst applied to various schools around the country but, with support from Shearn and Philip E. Hartman, she was allowed to continue at Hopkins. At Hopkins she rotated through Eric A. Fyrberg and Yuan Chuan Lee's labs and settled into the lab of Victor G. Corces for her doctoral research on suppression mechanisms, ultimately succeeding in the cloning of the *suppressor of hair-wing* locus.

Parkhurst wanted to broaden her scientific background and chose to undertake a postdoctoral position abroad in the David Ish-Horowicz lab at Oxford University in the United Kingdom. After spending some time on transregulators and transposable elements, her work on *hairy-wing* led to the discovery of how to count chromosomes for sex determination and the transduction of sex-determining signals by helix-loop-helix proteins, which, in turn, led to a study of mutations in pattern formation in *Drosophila* and screens for early development mechanism suggesting the presence of an unknown *bicoid*-like gene for anterior/posterior patterning. Parkhurst then returned to the United States, taking a second postdoctoral position with Howard D. Lipshitz at the California Institute of Technology before accepting a principal investigator position at the Fred Hutchinson Cancer Research Center in Seattle, Washington.

The interview concludes with Parkhurst's thoughts on the ways in which her lab brings heterogeneous methods to the study of developmental genetics; on her commitment to mentoring lab personnel; and on the status of women in the sciences. She ends the interview discussing her efforts to encourage women and minorities in the sciences; Harold M. Weintraub's contribution to intellectual life at Hutchinson; the Pew Scholars Program in the Biomedical Sciences and the benefits of attending the Pew annual meetings; relationships

between basic research institutions and pharmaceutical companies; gene patents; and her excitement about doing science.

UCLA INTERVIEW HISTORY

INTERVIEWER:

Steven J. Novak, Senior Editor, UCLA Oral History Program. B.A., History, University of Colorado; Ph.D., History, University of California, Berkeley; M.B.A., UCLA Graduate School of Management.

TIME AND SETTING OF INTERVIEW:

Place: Parkhurst's office, Fred Hutchinson Cancer Research Center, Seattle.

Dates, length of sessions: December 14, 1996 (134 minutes); December 15, 1996 (147); December 16, 1996 (73).

Total number of recorded hours: 5.9

Persons present during interview: Parkhurst and Novak.

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 consultants developed a topic outline. In preparing for this interview, Novak held a preinterview conversation with Parkhurst to obtain written background information (curriculum vitae, copies of published articles, etc.) and to agree on an interviewing schedule. He also reviewed prior Pew scholars' interviews and the documentation in Parkhurst'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, Novak 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 Parkhurst's childhood and education and continuing through her years at Johns Hopkins University, her postdoctoral work at Oxford University and California Institute of Technology, and the creation of her lab at the Fred Hutchinson Cancer Research Center. Major topics discussed include the study of the *wimp* and *hairy* genes, suppression mechanisms, lab management, and science funding.

ORIGINAL EDITING:

Jacqueline Tran, 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.

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

Gregory M. Beyrer, editorial assistant, assembled the interview history and biographical summary.

Jane Collings, editor, prepared the table of contents

The interviewer compiled the index.

TABLE OF CONTENTS

Early and College Years	1
Family background. Siblings. Undergoes heart surgery as a child. High school courses. An inspirational science teacher. Undergraduate years at Johns Hopkins University. Extracurricular activities in high school. Premed-oriented rote Learning. Allen Shearn lab. Summer work on nosocomial infections.	
Undergraduate Research and Graduate School	24
An inspirational developmental biology class with Shearn. Meets Suki Parks. Inspiring lab experience. Shearn and Philip E. Hartman arrange for Parkhurst to be admitted to graduate school at Johns Hopkins. Judging whether a prospective student or postdoc will do well in the lab. Hiring technicians who plan to enter graduate school. Undergraduate lab experience. Rotations in the Eric A. Fyrberg and Yuan Chuan Lee lab. Johns Hopkins biology department curriculum. Victor G. Corces lab. Research on suppression mechanisms.	
Laboratory Life and Postdoctoral work	43
Saul Roseman. Benchwork. Cloning the <i>suppressor of Hairy-wing</i> locus. Decision to supplement molecular biology background with a postdoc in developmental biology. Informal interviews for postdoc positions. Enters the Ish-Horowicz lab at Oxford University. Postdocs in the Allan C. Spradling lab. Projects on transregulators and transposable elements. Work on <i>hairy</i> leads to the discovery of how to count chromosomes for sex determination. Transduction of sex-determining signals by helix-loop-helix proteins. Studying mutations in pattern formation in <i>Drosophila</i> . Screens for early development mechanism suggest the presence of an unknown <i>bicoid</i> -like gene for anterior/posterior patterning. Genes that are used twice in <i>Drosophila</i> development. Nomenclature in the biological sciences. Howard D. Lipshitz lab at California Institute of Technology.	
From Postdoc to Faculty	82
Adjusting to life in Southern California. The value of learning the history of the field from senior researchers. The job market. Accepts a principal investigator position at the Fred Hutchinson Cancer Research Center. The atmosphere at Hutchinson Promotion and funding at Hutchinson. Start-up grants and awards. Recruiting graduate students. Continues benchwork. A collaboration with Stephen M. Cohen. Heterogeneous methods to the study of developmental Genetics. Lab management and safety. Mark T. Groudine. Funding structures at Hutchinson. Participates in a faculty search. The status of women in the sciences.	
Career and Reflections on Science	126
Hutchinson's efforts to encourage women and minorities in the sciences. Hutchinson's expansion. Harold M. Weintraub. <i>Drosophila</i> . The scarcity of	

funding in the sciences. The Pew Scholars Program in the Biomedical Sciences.
The benefits of attending the Pew annual meetings. Publishing in the sciences.
Interpreting scientific data. The limited clinical usefulness of gene therapy.
Relationships between basic research institutions and pharmaceutical companies.
Gene patents. Communication between basic research and clinical units at
Hutchinson. Excitement about doing science.

INDEX

A

acrylamide, 114
ACS. *See* American Cancer Society
Akam, Michael, 86
Alaska, 3, 9
American Cancer Society, 95, 96, 139, 144
Artavanis-Tsakonas, Spyros, 64
Ashburner, Michael, 68, 86
Atlanta, Georgia, 6
Aurora, Colorado, 5, 13

B

Baltimore, David, 34, 147
Baltimore, Maryland, 14, 61, 62, 85, 90
barrel, 79
Basil O'Connor Starter Scholar Research Award, 96
Bender, Welcome, 41
Bessman, Zita, 26, 27
bicoid, 78
biochemistry, 25, 26, 32, 33, 34
Bloomington, Indiana, 135
Blubaugh, Hal, 12
Bridges, Calvin B., 136
British Broadcasting Corporation, 61
Brown University, 88

C

C. elegans, 134
California, 3, 100
California Institute of Technology, 82, 83, 84, 85, 87, 88, 90, 95, 100, 131, 135, 147, 153
Caltech. *See* California Institute of Technology
Cambridge, England, 86, 143
Carnegie Institution of Washington, 34, 61, 63, 87, 91, 121
cell biology, 32, 33, 34, 106
Chen, Chao-Min, 133

Chicago, Illinois, 7
Chuan, Yuan, 33
Cline, Thomas W., 73
Cohen, Stephen M., 103
Cold Spring Harbor Laboratory, 121
Colorado, 3, 8, 9, 10, 12, 14, 16, 18, 27, 85, 90
Columbia University, 84
Cooper, Jonathan A., 92
Corces, Victor G., 34, 35, 37, 38, 39, 40, 41, 44, 45, 51, 52, 53, 54, 55, 57, 64, 67, 69, 70, 83, 107, 111, 134, 146, 155
Coutu, Michelle, 33
Cozumel, Mexico, 142

D

Dawson, Stephanie R., 99, 104, 132
Day, Robert W., 117, 122
decapentaplegic, 81
Denver, Colorado, 5, 7, 9, 11, 14, 23
development, 27, 32, 33, 34, 39, 48, 49, 53, 55, 57, 58, 59, 64, 65, 69, 70, 73, 75, 76, 77, 78, 79, 80, 87, 91, 92, 106, 107, 108, 109, 123, 134, 144, 149, 151, 152, 156
DNA, 42, 53
Dowell, Ann Kimberly Parkhurst (sister), 4, 5, 18
Drosophila, 20, 31, 33, 40, 45, 57, 58, 74, 76, 80, 84, 85, 86, 87, 133, 134, 135, 144

E

Eisenman, Robert N., 92, 108
EMBL. *See* European Molecular Biology Laboratory
End of Science, The, 151
England, 58, 82, 84, 85, 86, 87, 88, 94, 95, 143
ethyl methane sulfonate, 77
Europe, 4, 58, 59, 82, 83, 86, 87, 103
European Molecular Biology Laboratory, 103
Explorers, 18

F

FASEB. *See* Federation of American Societies for Experimental Biology
Federation of American Societies for Experimental Biology, 138
Feynman, Richard P., 152
forked, 42, 45, 53
Fred Hutchinson Cancer Research Center, 28, 90, 91, 94, 96, 98, 99, 100, 101, 102, 103, 104, 106, 116, 119, 120, 121, 122, 125, 126, 127, 128, 130, 131, 132, 133, 134, 138, 140, 142, 149, 150, 151
Fuller, Patrick, 108
funding/grants, 54, 61, 104, 106, 117, 120, 126, 131, 136, 137, 138, 140, 142, 149
Fyrberg, Eric A., 33, 34, 52

G

Garrett, Michael, 100
Gateway High School, 15
Gehring, Walter J., 64, 86
gender, 67, 128
genetics, 27, 32, 33, 34, 55, 56, 70, 73, 86, 92, 98, 134, 136, 144
Germany, 100
Geyer, Pamela, 54
Girl Scouts of America, 11
Goodstein, Judith R., 135, 153
Great Britain, 61, 68, 82
Groudine, Mark T., 116, 133

H

Hahn, Steven M., 92
hair, 64, 70, 71, 73, 74, 75, 79, 81, 83, 84, 91, 92, 96, 104, 105, 132
Hartman, Philip E., 27, 28
Hartwell, Leland H., 150
Harvard University, 39, 41, 42, 98, 103
Haverford College, 29, 30
heat shock proteins, 39, 40, 41, 53, 64
hedgehog, 104
Heidelberg, Germany, 64
Helen Hay Whitney Foundation, 59
helix-loop-helix proteins, 73, 74, 91, 92,

132

Horgan, John, 151
Howard Hughes Medical Institute, 140
Hutchinson, William, 121

I

ICRF. *See* Imperial Cancer Research Fund
Imanishi-Kari, Thereza, 147
Imperial Cancer Research Fund, 59, 64
Ingham, Philip W., 74
Iowa, 1, 2, 5
Ish-Horowicz, David, 57, 58, 59, 64, 68, 70, 71, 72, 74, 82, 83, 86, 87, 95, 99, 146, 155

J

Jackson, Phyllis Anne Parkhurst (sister), 8
Jensen, Eric, 108
Jewish/Judaism, 4
Johns Hopkins University, 17, 18, 19, 21, 22, 27, 28, 31, 32, 34, 35, 38, 40, 41, 45, 50, 61, 67, 87, 90, 91, 101
Johnson and Johnson, 149

K

Kankel, Douglas, 99
Kevles, Daniel J., 147
Kohler, Robert E., 135

L

Lake Union, 97
Laxon, Linda B., 23
Lederberg, Joshua, 31
Lepage, Thierry, 103, 104
Leukemia Society of America, 95
Levis, Robert W., 63
Lewis, Edward B., 84, 86, 104, 137, 153
Lindsley, Dan L., 86, 153
Lipshitz, Howard D., 82, 83, 87, 155
Little Red Hen, The, 116
London, England, 59, 60, 63, 64, 86, 143, 152
long terminal repeat, 69
Lords of the Fly, 135
Los Angeles, California, 19

LTR. *See* long terminal repeat
Lucille P. Markey Foundation, 83, 87

M

Mad, 81
Mahaffey, James, 33
Manseau, Lynn J., 8, 65
Max, 81
McDonald's Corporation, 6
 Olympics, 6
Medical Research Council, 152
Meneely, Philip M., 29, 92
Meselson, Matthew, 39, 40, 41
Meyer, Michael, 29, 101, 106, 108, 109
Miller, Dusty, 148
Millikan's School, 135
Minneapolis, Minnesota, 2
Minnesota, 1, 2
Morgan, Thomas H., 84, 136
Morse code, 15
mothers against decapentaplegic (mad), 81
Muller, Hermann J., 153
myc, 81, 108
MyoD, 91, 132

N

National Cancer Institute, 119
National Institutes of Health, 40, 41, 96,
 119, 131, 138, 140, 142
NCI. *See* National Cancer Institute
NeuroD, 149
New Prague, Minnesota, 2
New Yorker, 147
Newton, Sir Isaac, 153
NIH. *See* National Institutes of Health
Nobel Prize, 58, 84, 153
North Carolina, 3, 7, 10, 12, 44
Northern blots, 44
nosocomial infections, 23
Nöthiger, Rolf, 71, 72
Nüsslein-Volhard, Christiane, 57, 58, 64, 69,
 74, 75, 76, 79, 86, 151

O

O'Hare, Kevin, 63
O'Neil, Edward H., 140, 142
Oakland, California, 140
Olympic Mountains, 94, 136
Oregon, 5
Oxford, England, 59, 60

P

P elements, 63, 69
Parkhurst, Charles E. (brother), 7
Parkhurst, Earl L. (father), 1
Parkhurst, Janet Lynn (sister), 8
Parkhurst, Myrna Rogge (mother), 1
Parkhurst, Timothy L. (brother), 7
Parks, Lilly Ann (Suki), 62
Parks, Suki, 26, 34, 38, 61, 62, 63, 65
Pasadena, California, 85
patent, 149, 150
PCR. *See* polymerase chain reaction
Peifer, Mark, 41, 43
Pell grants, 19
Pew Charitable Trusts, 1, 140, 144
Pew Scholars Program in the Biomedical
 Sciences, 1, 13, 41, 51, 78, 96, 108, 131,
 139, 141, 143, 147, 150, 156
PKA, 104
Poland, 64
polymerase chain reaction, 42
Poortinga, Gretchen, 99, 106
Priess, James R., 92, 103
Princeton University, 64, 65, 73, 77, 82, 86,
 95
publishing, 40, 78, 144, 145, 146
Puerto Rico, 140, 141, 148
Puget Sound, 94

R

Raff, Martin, 152
Red Lake Falls, Minnesota, 1, 2
Reeder, Ronald H., 92
religion
 Roman Catholic, 4
Rifkin, Jeremy, 148

Rimel, Rebecca W., 140
RNA, 75
roadkill, 81
Roberts, Mary F. Parkhurst (sister), 6, 7
Roseman, Saul, 47
Rubin, Gerald M., 63
Rupp, Ralph, 100

S

Salk Institute for Biological Studies, 91,
121, 125, 149
San Diego, California, 140
San Francisco, California, 14
Sandoz Pharmaceuticals, 149
Scatchard plots, 33
Schedl, Paul, 64
Schüpbach, Gertrud, 77
Sears, Roebuck, and Company, 22, 23
Seattle, Washington, 14, 30, 94, 95, 130,
136, 142
Shearn, Allen, 20, 21, 26, 27, 28, 34, 49, 51
Shoop, Richard, 100
South Carolina, 43
Spain, 39
Spradling, Allan C., 34, 62, 63
suppression, 40, 41, 42, 53, 107, 154
suppressor
suppressor of Hairy-wing, 41, 42, 52
Surely You're Joking, Mr. Feynman!, 152

T

Tacoma, Washington, 1, 2, 3
tenure, 29, 38, 62, 93, 94, 105, 144
Tilghman, Shirley M., 130
Tucker, Robert, 32
Tuva or Bust!, 152

U

U.S. Air Force, 1, 2, 3
U.S. Congress, 142
Umeå, Sweden, 135
United States of America, 59, 65, 82, 87, 88,
89
University of Arizona, 65

University of Basel, 64
University of California, Berkeley, 63
University of California, San Diego, 91, 101
University of Colorado
Health Sciences Center, 27
University of Michigan, 21
University of Minnesota, 21
University of Oxford, 59, 60, 64, 66, 67, 81,
143
University of Virginia, 100
University of Washington, 28, 63, 91, 98,
99, 134, 150

V

Vail, Colorado, 121
van der Waals forces, 152
Veterans Administration Medical Center, 23

W

Wakimoto, Barbara T., 63
Washington, 2
Washington, D.C., 138
Watanabe, Minoru, 102
Weintraub, Harold M., 12, 91, 92, 102, 132,
149, 150
Wells, Kim, 118, 119
Whitehead Institute of Biomedical
Research, 121
Whitehead, Edwin C., 121
Wieschaus, Eric F., 43, 57, 62, 64, 65, 69,
74, 75, 76, 77, 79, 86, 151, 156
wimp, 70, 74, 75, 76, 77, 78, 81, 83, 92, 96,
104, 105, 139
Wistar Institute, 121

X

X chromosomes, 72
Xenopus, 103, 134

Y

Yale University, 99, 100
yellow, 42, 53

Z

ZymoGenetics, 149