

CHEMICAL HERITAGE FOUNDATION

**ANN M. PULLEN**

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview  
Conducted by

Steven J. Novak

at

University of Washington  
Seattle, Washington

on

7, 8 and, 9 August 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 © 1997, 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. R960813

This Interview Agreement is made and entered into this 26<sup>th</sup> 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 ANN M. PULLEN having an address at Department of Immunology, SL-15, University of Washington, Seattle, Howard Hughes Medical Institute, 1-264 Health Sciences Center, Seattle, Washington 98195, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about August 7, 1996, and tentatively entitled "Interview with Ann M. Pullen". 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

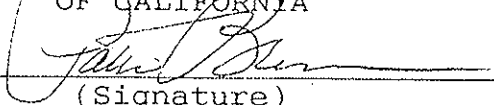
Attention: Ms. Carli V. Rogers  
Copyright Officer

If to Interviewee: Ann M. Pullen  
Department of Immunology, SL-15  
University of Washington, Seattle  
Howard Hughes Medical Institute  
1-264 Health Sciences Center  
Seattle, Washington 98195

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

INTERVIEWEE

THE REGENTS OF THE UNIVERSITY  
OF CALIFORNIA



(Signature)

(Signature)

Ann M. Pullen  
(Typed Name)

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

University of Washington,  
Seattle  
(Address)

(Title)

Department of Immunology

Health Sciences Center

Seattle, Washington 98195

Date 8/7/96

Date AUG 26 1998

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:

Ann M. Pullen, interview by Steven J. Novak at the University of Washington, Seattle, Washington, 7-9 August 1996 (Philadelphia: Chemical Heritage Foundation, Oral History Transcript # 0551).



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.

## ANN M. PULLEN

1961 Born in Eastbourne, England, on 23 January

### Education

1983 B.Sc., Biochemistry, University of Bath  
1987 Ph.D., Immunology, Cambridge University

### Professional Experience

1987-1991 Howard Hughes Medical Institute, National Jewish Center for Immunology and Respiratory Medicine, Denver, Colorado  
Postdoctoral Associate

1991-present University of Washington, Seattle, Washington  
Assistant Professor, Department of Immunology

1992-present Howard Hughes Medical Institute, University of Washington, Seattle, Washington  
Assistant Investigator

### Honors

1983 Cathenne Memorial Prize Biochemistry  
1992-1996 Pew Scholar in the Biomedical Sciences

### Selected Publications

Pullen, A.M. and P.C. Marrack et al., 1988. The T-cell repertoire is heavily influenced by tolerance to polymorphic self-antigens. *Nature* 355:796-801.

White, J. and A. Herman et al., 1989. The V3-specific superantigen staphylococcal enterotoxin B: Stimulation of mature T cells and clonal deletion in neonatal mice. *Cell* 56:27-35.

Pullen, A.M. and P.C. Marrack et al., 1989. Evidence that Mls-2 antigens shapes the T cell repertoire. *Journal of Immunology* 142:3033-37.

Berg, L.J. and B. Fazekas de St. Groth et al., 1989. Phenotypic differences between c3 versus 3 T-cell receptor transgenic mice undergoing negative selection. *Nature* 340:559-62.

Berg, L.J. and A.M. Pullen et al., 1989. Antigen/MHC specific T cells are preferentially exported from the thymus in the presence of their MHC ligand. *Cell* 58:1035-46.

Pullen, A.M. and W. Potts et al., 1990. Surprisingly uneven distribution of the T cell receptor

- V13 repertoire in wild mice. *Journal of Experimental Medicine* 171:49-62.
- Pullen, A.M. and T. Wade et al., 1990. Identification of the region of the T cell receptor 13-chain which interacts with the self superantigen, M1s-1<sup>a</sup>. *Cell* 61:1365-74.
- Pullen, A.M. and J. Bill et al., 1991. Analysis of the interactions site for the self superantigen M1s-1<sup>a</sup> on T cell receptor V13. *Journal of Experimental Medicine* 173:1183-92.
- Pullen, A.M. and Y. Choi et al., 1992. The open reading frames in the 3' long terminal repeats of several mouse mammary tumor virus integrants encode V133-specific Superantigens. *Journal of Experimental Medicine* 175:41-47.
- Morishima, C. and C. Norby-Slycord et al., 1994. Expression of two structurally identical viral superantigens results in thymic elimination at distinct developmental stages. *Journal of Immunology* 153:5091-103.
- Pullen, A.M. and L.Y. Bogatzki, 1996. Receptors on T cells escaping superantigens-mediated negative selection lack special 13-chain junctional region characteristics. *Journal of Immunology* 156: 1865-72.
- McMahon, C.W. and L.Y. Bogatzki et al., 1997. Mouse mammary tumor virus superantigens require N-linked glycosylation for effective presentation to T cells. *Virology* 228:161-76.
- Page, S.T. and N.S.C. van Oers et al., 1997. Differential contribution of Lck and Fyn protein tyrosine kinase to intraepithelial lymphocyte development. *European Journal of Immunology* 27:554-62.



## ABSTRACT

**Ann M. Pullen** was born in Eastbourne, a small town on the south coast of England, though was raised in Sutton Coldfield just outside of Birmingham, the elder of two sisters. Both of her parents were university-educated teachers who lived through World War II-era England (her father serving a stint in the military while in college): her father taught history and English, her mother English and music. Pullen was interested in science and nature from a young age, exploring the outdoors with her family on regular nature walks, keeping a “Wood Book”—a diary/log of what she discovered when out exploring—and using a microscope to dissect flies and other insects. She was always competitive in school, looking to perform the best on all of her exams and studying intently for her classes, and she had the opportunity to attend a new science-emphasized school (situated next to a pig farm) in her community while still young. By the time she was in her teens, Pullen self-selected to pursue a career in science, focusing her coursework on such a goal and attending what she felt was a more intensive pre-college school. Throughout her pre-college years, and in some cases well into them, Pullen played netball, threw the javelin on her track and field team, and also played piano. Several influential, female teachers helped guide her into a scientific career and into an appropriate university.

Pullen attended the University of Bath in the United Kingdom, in part because of the university’s emphasis on applied scientific training, providing students with real-world experience. While at Bath she worked for six months in a state-run agricultural lab that was a part of the University of Bristol’s Department of Agriculture and Horticulture, another six months at the Technical Research Centre of Finland in Helsinki, Finland, which was a brewing laboratory, and time in a lab with Michael J. Danson at Bath working on citrate synthase; her experiences led her to pursue a doctoral degree in science instead of a medical degree. She matriculated at Cambridge University in order to study immunology with Alan J. Munro, researching Peyer’s patch T cell hybridomas. Though Pullen found that Cambridge’s intellectual environment was rich and quite useful to a budding scientist, the limited funding and availability of resources proved somewhat frustrating. In order to continue her career and expand it beyond the confines of the British scientific community, Pullen then went on to a postdoctoral fellowship in the John W. Kappler-Philippa C. Marrack lab at the National Jewish Center for Immunology and Respiratory Medicine in Denver, Colorado. In the Kappler-Marrack lab she focused her work on T cells, quickly discovering superantigens (antigens that were extremely potent at triggering cells) and publishing her results in *Nature*. From there she moved on to an assistant professorship at University of Washington, starting her lab with funds from the Howard Hughes Medical Institute and the National Institutes of Health. At Washington she collaborated with Michael Patrick Stuart on *Mycoplasma fermentans* and also began using transgenic mice to study extrathymic T cell development.

At the end of the interview Pullen discusses various aspects of being a principal investigator, as well as what it is like to live the life of a scientist. She talks about dealing with administrative paperwork; the multidisciplinary focus of the Pew annual meetings; competition with other labs; the impact of research funding cuts on the University of Washington School of Medicine; problems with the tenure system; and her belief in preventive public health programs. The interview concludes with her thoughts on her participation in the Association for Women in Science and in a University of Washington biomedical faculty women’s group; problems facing women faculty who decide to have children while pursuing tenure; delivering one of the

university's Science in Medicine talks; balancing family life with her career; regulation of experimental animal use; animal rights activism and research; studying human T cell repertoire in patients with necrotizing fasciitis; and modeling her lab on the Kappler-Marrack lab.

## 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:** Pullen's office, University of Washington.

**Dates, length of sessions:** August 7, 1996 (122 minutes); August 8, 1996 (123) ; August 9, 1996 (94).

**Total number of recorded hours:** 5.65

**Persons present during interview:** Pullen and Novak.

### CONDUCT OF INTERVIEW:

This interview is one in a series with Pew Scholars Program in the biomedical sciences conducted by the UCLA Oral History Program in conjunction with the Pew Charitable Trusts's Pew Scholars Program 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 telephone conversation with Pullen 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 Pullen'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 Pullen's childhood in Eastbourne, England, and continuing through her education at the University of Bath and Cambridge University; her postdoc at the Howard Hughes Medical Institute (at DenverNational Jewish Center for Immunology and Respiratory Medicine; and her appointment to an assistant professorship at the Department of Immunology, University of Washington. Major topics discussed include superantigens, laboratory management, treatment of laboratory animals, science funding, and the status of women in science.

## 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.

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

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

Beyrer assembled the biographical summary and interview history.

## TABLE OF CONTENTS

Early Years	1
Family background. Early childhood interest in science. Participation in sports and music. Decides on a career in science.	
Undergraduate Years and Graduate School	12
Support from female science teachers in high school. Attends University of Bath. University's emphasis on applied science training. Residential and social life. Studies citrate synthase with Michael J. Danson. Begins Ph.D. work in immunology with Alan J. Munro at Cambridge University. Atmosphere of the Munro lab. PhD thesis work on Peyer's patch T hybridomas. Teaching's impact on research.	
Postdoctoral Work	27
Cambridge's rich intellectual environment. Begins postdoc in John W. Kappler and Philippa C. Marrack lab at the National Jewish Center for Immunology and Respiratory Medicine in Denver. Life in Denver. Meets future husband, Andrew Herman. Atmosphere of the Kappler-Marrack lab. Pullen's two initial lab projects focus on T cells. The discovery of superantigens. The English educational system. Adapting to the United States. Competition. Work on feral mice defines the region on the T-cell receptor that recognizes superantigens. Role of luck in laboratory discoveries. Debate on the evolutionary advantages of superantigens. Standardizing the terminology used to discuss superantigens.	
Faculty Years	50
Accepts an assistant professorship at University of Washington. Two-career Couple. Starting up lab with Howard Hughes Medical Institute and National Institutes of Health funding. Balancing work and leisure. Chihiro Morishima's publication on two viral superantigens' effect on T-cell repertoire. <i>Mycoplasma fermentans</i> with Michael Patrick Stuart at Washington University. Using transgenic mice to study extrathymic T-cell development. The Hughes review process. The multidisciplinary focus of the Pew annual meetings. Talking with other junior investigators at Pew meetings. Research on extrathymic T-cells. Don C. Wiley's work on the molecular aspects of immune recognition. Preventive public health programs. Association for Women in Science.	
Reflections on Science	85
University of Washington Department of Immunology's recruitment policy. Roger M. Perlmutter nominates Pullen to deliver one of the university's Science in Medicine talks. Child care. The pressure to publish before tenure review. English lab safety standards compared to American standards. Caring for experimental animals. Regulation of experimental animal use. Impact of animal rights activism on researchers. Benchwork. Studying human T-cell repertoire in patients with necrotizing fasciitis. Deciding whether to stay in the United States	

or return to England.

Index

106

## INDEX

### A

Aberystwyth, Wales, 2  
Acha-Orbea, Hans, 75  
acquired immunodeficiency syndrome, 82  
acrylamide, 34  
ACS. *See* American Cancer Society  
AIDS. *See* acquired immunodeficiency syndrome  
Alderley Edge, England, 23  
Alderley Park, 23  
Allen, Elizabeth, 24  
American Association of Immunologists, 80, 95  
American Cancer Society, 59  
Anderson, Paul J., 53  
Animal Liberation Front, 100  
Arden House, 54  
Arthur Terry School, 10  
Association for Women in Science, 85  
AWIS. *See* Association for Women in Science

### B

B cells, 24  
Bath, England, 16, 29  
Bevan, Michael J., 31, 69, 74, 91  
Big Blue, 33  
Birmingham, England, 1  
Bjorkman, Pamela J., 76, 93  
Blum, Janice S., 90  
Bogatzki, Lisa Y., 64, 75, 104  
Boomer, Sarah, 86  
Born, Willi K., 31  
Boston, Massachusetts, 44  
Bristol, England, 56  
British Broadcasting Company, 3  
Butterworth, Anthony E., 29

### C

California, 30

Cambridge (Immunology, later Cantab Pharmaceuticals), 23  
Campbell, Dr., 14  
Canada, 76  
Cancer Research Institute, 59  
CASE. *See* Collaborative Award in Science and Engineering"  
Catholic (Roman), 6  
CD4 cells, 36  
CD4CD8, 64  
CD8 cells, 36, 74  
Cech, Thomas R., 72  
Cellgenesis, 57, 58  
Celltech, 23  
Chevy Chase, Maryland, 70, 71  
Children's Hospital and Medical Center, 64, 102  
Choi, Yongwon, 45, 48  
Church of England, 4, 6  
Clark, Michael, 27  
Coffin, John M., 38  
Collaborative Award in Science and Engineering, 23  
Columbia, 84  
Columbia University, 54, 72, 73  
Commonwealth (of England), 9, 10  
Cornwall (County), England, 8  
Cowan, W. Maxwell, 93, 94  
Crohn's and Colitis Foundation of America, 81  
Crohn's disease, 58

### D

*Daily*, 15  
Dana Farber Cancer Institute, 91  
Danson, Michael J., 19  
Denmark, 18  
Denver, Colorado, 30, 31, 32, 33, 42, 43, 47, 56, 62, 63, 85, 96  
DNA, 38, 43, 44  
*Drosophila*, 49, 73  
Dutton, Richard W., 32

## E

Eastbourne, England, 1  
Eisentahl, Robert, 18  
Ellis, Ivan, 9  
England, 1, 3, 8, 10, 13, 16, 18, 19, 20, 30,  
31, 41, 42, 43, 54, 96, 100, 104  
enterotoxins, 37, 39  
enzyme-linked immunosorbent assay, 96  
Europe, 18, 55, 83

## F

FASEB. *See* Federation of American  
Societies for Experimental Biology  
Federation of American Societies for  
Experimental Biology, 80, 83  
Festenstein, Hilliard, 38, 44, 52  
Fialkow, Philip J., 79, 86  
Fink, Pamela J., 69, 90  
Finland, 14, 15, 16, 18  
France, 18, 42, 49, 66  
Frankel, Wayne N., 38, 43  
Fred Hutchinson Cancer Research Center,  
84, 86, 89  
funding/grants, 1, 20, 31, 35, 55, 59, 60, 61,  
64, 69, 70, 78, 79, 80, 81, 82, 83, 88, 89,  
99

## G

Gainesville, Florida, 45, 53, 54  
Gordon Research Conference, 48  
Goverman, Joan M., 90  
Grigg, Michael E., 48, 65  
Guy-Grand, Delphine, 76

## H

Hamerman, Jessica, 66, 67, 75  
Helsinki Technical Research Centre, 14  
Helsinki, Finland, 14, 15, 18  
Henry VIII, 2, 11  
Herman, Andrew (husband), 5, 11, 33, 40,  
41, 53, 54, 55, 56, 57, 62, 80, 88, 89, 94,  
95, 102, 104  
Herman, Benjamin Pullen (son), 5, 6, 56,  
62, 70, 85, 88, 89, 92, 94, 97, 101

Herman, Lisa (mother-in-law), 5  
Herman, Sol (father-in-law), 5  
HIV. *See* human immunodeficiency virus  
Hodgkin's lymphoma, 62, 88  
Holmes, Jenny, 23  
Hopkins, Mrs., 14  
Howard Hughes Medical Institute, 27, 31,  
32, 35, 39, 55, 58, 59, 60, 61, 64, 66, 68,  
69, 70, 71, 72, 78, 79, 80, 81, 82, 88, 92,  
93, 94, 96, 97, 99  
Huber, Brigitte T., 38, 44, 75  
human immunodeficiency virus, 36, 65, 79,  
83, 84, 92, 100  
hybridomas, 24, 27, 28, 36

## I

ICI Pharmaceuticals, 23, 24, 57, 96, 100  
IgA, 24, 25  
Immigration and Naturalization Service, 58  
Imperial College of Science and  
Technology, 65  
India, 7  
International Association for the Exchange  
of Students for Technical Experience, 18  
intraepithelial lymphocyte, 67, 73, 76, 99  
Iron Curtain, 18  
IRS. *See* U.S. Internal Revenue Service  
Italy, 18

## J

Jackson Laboratory, 36, 47  
Janeway, Charles A., Jr., 37  
Jenner, Edward, 83  
Jewish/Judaism, 5  
John Wilmott Grammar School, 10  
Jones, Mary Morris (maternal  
grandmother), 6  
Jones, Thomas (maternal grandfather), 6  
Joseph, Mary Fran, 69  
Julius, Michael H., 76

## K

Kappler, John W., 31, 32, 34, 36, 39, 43, 44,  
45, 58, 63, 74, 75, 97, 101, 103



keeney swot, 40  
Kenya, 29  
Krebs, Edwin G., 27, 82

## L

lab safety, 96, 97  
Lake Union, 62  
Lapland, 18  
Las Vegas, Nevada, 30, 31  
Lawson, Yvonne, 24  
Lederberg, Joshua, 90  
Lefrançois, Leo, 76  
Leningrad, Russia, 18  
Linial, Maxine L., 86  
Little Sutton School, 9  
Llanbadarn (Fawr), Wales, 6  
London, England, 6, 7, 44, 54, 65  
Lowe, David, 63  
Lukacher, Aron E., 50

## M

major histocompatibility complex, 36, 37,  
45, 47, 48, 50, 64, 76  
molecule IE, 36  
Malissen, Bernard, 66  
Manchester, England, 23  
Marrack, Philippa C., 30, 31, 32, 34, 35, 37,  
38, 39, 43, 44, 45, 48, 50, 51, 54, 55, 56,  
58, 63, 74, 75, 76, 77, 103, 104  
Maryland, 34  
McConnell, Kim R., 68  
McMahon, Christopher C., 48, 64, 66, 95  
Medical Research Council, 27, 29  
Methodist, 4  
MHC. *See* major histocompatibility  
complex  
Milstein, César, 27  
minor lymphocyte stimulating antigen, 37,  
38, 43, 44, 45, 52, 76  
Mls. *See* minor lymphocyte stimulating  
antigen  
MMTV. *See* mouse mammary tumor virus  
monoclonal antibodies, 27  
Morishima, Chihiro, 64, 87, 94, 99  
Moses, 5

Mount Rainier, 62  
mouse mammary tumor virus, 38, 45, 63  
Munro, Alan J., 20, 22, 23, 29, 30, 57  
*Mycoplasma arthritides*, 83  
*Mycoplasma fermentans*, 65, 83

## N

National Institutes of Health, 34, 59, 60, 61,  
64, 68, 70, 71, 78, 79, 83, 89, 99  
National Jewish Center for Immunology  
and Respiratory Medicine, 31, 33, 34, 38,  
39, 43, 96  
necrotizing fasciitis, 102  
Nepom, Gerald T., 56  
netball, 9, 12, 17, 18, 29  
NIH. *See* National Institutes of Health  
Nobel Prize, 27, 69, 76, 77  
Nomoto, Kikuo, 76  
Norby-Slycord, Colette, 68  
Norway, 18

## O

O'Neil, Edward H., 78  
Oettinger, Marjorie A., 73  
Ojala, Ethan W., 68  
Olympic Mountains, 62  
onchocerciasis, 29  
Oregon, 69  
Overbaugh, Julie M., 65, 73, 86  
Oy Alko Ab, 16

## P

Page, Stephanie T., 65, 66, 69, 75, 76, 91  
Palmer, Edward, 38  
Palmiter, Richard D., 69  
Paris, France, 76  
Pasteur, Louis, 49  
Perlmutter, Roger, 41, 54, 58, 59, 66, 67,  
68, 69, 79, 92, 93, 99  
Pets Are Worth Safeguarding, 100  
Pew Scholars Program in the Biomedical  
Sciences, 1, 12, 26, 42, 51, 56, 59, 70, 72,  
73, 76, 78, 84, 93, 99  
Peyer's patches, 24

Portnoy, Daniel A., 51  
Potts, Wayne K., 45  
Poussier, Philippe, 76  
Prewitt, Katherine, 68, 95  
publishing, 78, 82, 95  
Pullen, Aldwyth Jones (mother), 1, 6, 41, 104  
Pullen, Annie (paternal grandmother), 3  
Pullen, Clare J. (sister), 1, 7, 8, 11, 12  
Pullen, Frederick (paternal grandfather), 3  
Pullen, John F. (father), 1, 41, 104

## R

Rao, Anjana, 91  
Riley, Lee W., 51  
RNA, 48  
Roger, 8, 41  
Rose Hospital, 33  
Ross, Susan R., 76  
Rothman, Paul B., 72  
Rubens, Craig E., 102  
Rudensky, Alexander Y., 65, 69, 91  
Russia, 18

## S

San Francisco, California, 57  
Sanger, Frederick, 27  
Scandinavia, 18  
schistosomiasis, 29  
Science and Engineering Research Council, 23  
Searle and Company, 59  
Seattle, Washington, 1, 40, 56, 57, 61, 62, 73, 79, 81, 85, 88  
Sheldon, Mrs., 9  
simian immunodeficiency virus, 65, 100  
SIV. *See* simian immunodeficiency virus  
Snow, C.P., 40, 41  
Society for the Prevention of Cruelty to Animals, 99  
Spies, Thomas, 89  
Stuart, Michael Patrick, 65, 83  
superantigens, 36, 37, 38, 39, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 58, 59, 60, 63, 64, 65, 73, 74, 75, 76, 83, 99, 102

Supragen, 58  
Sutton Coldfield, England, 1, 18  
Sweden, 18  
Switzerland, 18, 75

## T

T cell, 20, 24, 25, 26, 35, 36, 37, 38, 39, 43, 45, 46, 47, 48, 49, 50, 51, 53, 54, 55, 58, 60, 64, 65, 66, 67, 74, 76, 81, 91, 92, 102  
gut T cells, 67  
tenure, 80, 81, 82, 85, 86, 88, 95  
Thorne, Kareen J., 28  
thymus, 36, 46, 60, 66, 67, 74  
Tonegawa, Susumu, 76  
toxic shock syndrome, 39  
*Two Cultures, The*, 40

## U

U.S. Internal Revenue Service, 60  
UCSF. *See* University of California, San Francisco  
United States of America, 1, 2, 3, 6, 20, 30, 31, 33, 42, 54, 58, 76, 95, 100, 104  
University of Bath, 14, 18, 21, 29  
University of Bristol, 14, 94  
University of California, San Diego, 32  
University of California, San Francisco, 66  
University of Cambridge, 10, 20, 23, 27, 28, 29, 31, 32, 41, 54, 96, 100  
University of Colorado Health Science Center, 33  
University of Florida, 45, 53  
University of Indiana, 90  
University of Maryland, 34  
University of Oxford, 10  
University of Virginia, 34  
University of Wales, 2, 7  
University of Washington, 1, 15, 29, 41, 54, 58, 59, 69, 73, 79, 85, 88, 100  
University of York, 8

## V

V13 component, 36  
V1317a, 36

V3, 37, 38, 43, 46, 47, 49, 50, 58, 63  
V33, 37, 63  
V38, 37  
Varmus, Harold E., 83, 100  
Virginia Mason Research Center, 56, 99,  
*See*  
Vose, Brent M., 23  
vSAG, 52

## W

Wakeland, Edward K., 45, 53  
Waldhausen, John A., 102  
Waldmann, Herman J., 20, 22, 27  
Wales/Welsh, 2, 4, 6, 7  
Washington, 69  
Washington University in St. Louis, 65  
Washington, D.C., 33, 80

Weiss, Arthur, 66  
Wembley, England, 7  
White, Janice, 35, 104  
Wildy, Peter, 23  
Wiley, Don C., 76  
Williams, Nigel, 83  
Winestock, Claire H., 94  
Winslow, Gary M., 75  
women's group, 87  
World War II, 6

## Y

Yale University, 54

## Z

Zinn, Kai, 49