

CHEMICAL HERITAGE FOUNDATION

**PATRICK J. DOLPH**

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview  
Conducted by

Andrea R. Maestrejuan

at

Dartmouth College  
Hanover, New Hampshire

on

9-11 October 2002

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



**Patrick J. Dolph**

## 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 the Pew Scholars Program in the Biomedical Sciences Advisory Committee members.

This oral history was completed under the auspices of the Oral History Project, University of California, Los Angeles (Copyright © 2002, 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:**

Marnie Berkowitz, Consultant to the Chemical Heritage Foundation. B.A., Classical Languages and Literatures, University of Minnesota; Ford Foundation Fellowship, Classical Languages and Literatures, University of Chicago.

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. R110502E

This Interview Agreement is made and entered into this 5 day November, 2002 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 PATRICK DOLPH, having an address at Department of Biology, Dartmouth College, 6044 Gilman Laboratory, Hanover, New Hampshire 03755, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about October 9, 2002, and tentatively entitled "Interview with Patrick Dolph. 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, including electronic reproduction, 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: Oral History Program  
University of California, Los Angeles  
Box 951575  
Los Angeles, California 90095-1575

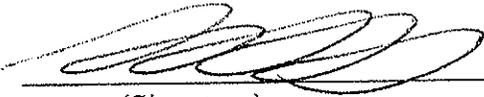
Attention: Janice L. Reiff

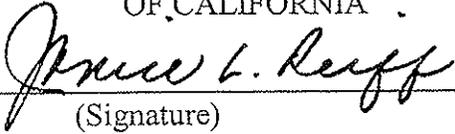
If to Interviewee: Patrick Dolph  
Department of Biology  
Dartmouth College  
6044 Gilman Laboratory  
Hanover, NH 03755

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

INTERVIEWEE

THE REGENTS OF THE UNIVERSITY  
OF CALIFORNIA

  
\_\_\_\_\_  
(Signature)

  
\_\_\_\_\_  
(Signature)

Patrick Dolph  
\_\_\_\_\_  
(Typed Name)

Janice L. Reiff  
\_\_\_\_\_  
(Typed Name)

Department of Biology  
\_\_\_\_\_  
(Address)

Interim Director, Oral History Program  
\_\_\_\_\_  
(Title)

Dartmouth College  
\_\_\_\_\_

Hanover, NH 03755  
\_\_\_\_\_

Date \_\_\_\_\_

Date 5 Nov 2002  
\_\_\_\_\_

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:

Patrick J. Dolph, interview by Andrea R. Maestrejuan at Dartmouth College, Hanover, New Hampshire, 9-11 October 2002 (Philadelphia: Chemical Heritage Foundation, Oral History Transcript # 0468).



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.

## PATRICK J. DOLPH

1961 Born in Portland Oregon on 6 July

### Education

1983 B.S., Biology, Oregon State University  
1985 M.S., Genetics, Ohio State University  
1989 Ph.D., Medical Sciences, New York University Medical Center

### Professional Experience

1984-1985 Ohio State University  
Graduate Research Assistant with Dr. David Coplin, Department  
of Plant Pathology

1985-1989 New York University Medical Center  
Graduate Research Associate with Dr. Robert Schneider,  
Department of Biochemistry

1990-1995 University of California, San Diego  
Postdoctoral Fellow with Dr. Charles Zuker,  
Department of Biology

1995-2001 Dartmouth College  
Assistant Professor, Department of Biology Hanover

### Honors

1997-2001 Pew Scholars Award  
1999 Whitney H. Eastman Award for Distinguished Faculty  
2000 Junior Faculty Fellowship  
2001 Sigma Xi: 2001

### Selected Publications

Deleault, N.R., Dolph, P.J., Nishina, N.A., Cook, M., Harris, D.A., and Supattapone, S. Post-translational suppression of pathogenic prion protein expression in *Drosophila* neurons. (in prep)

- Arruda, S.E., Dolph, P.J. A gain-of-function allele of *pawn* that dramatically disrupts phototransduction in *Drosophila melanogaster* (in prep)
- Orem, N.R.; Dolph, P.J. Subcellular localization of rhodopsin in endocytosis-induced retinal degeneration. (submitted)
- Dolph, P.J. (2002) Arrestin: roles in the life and death of retinal neurons. *The Neuroscientist*. 8(4): 347-355.
- Orem, N.R.; Dolph, P.J. (2002) Loss of the phospholipase C gene product induces massive endocytosis of rhodopsin and arrestin in *Drosophila* photoreceptors. *Vision Research* (42): 497-505
- Alloway, P.A., Howard, L., Dolph, P.J. (2000) The formation of stable rhodopsin-arrestin complexes induces apoptosis and photoreceptor cell degeneration. *Neuron* 28: 129-138.
- Alloway, P.A., Dolph, P.J. (1999) A role for the light-dependent phosphorylation of visual arrestin. *Proc. Nat. Acad. Sci.* 96: 6072-6077
- Dolph, P. J., Man, Son, Hing, H., Yarfitz, S., Colley, N. J., Deer, J. R., Spencer, M., Hurley, J. B., and Zuker, C. S. (1994). An eye-specific G beta subunit essential for termination of the phototransduction cascade. *Nature* 370: 59-61.
- Dolph, P.J., Ranganathan, R., Colley, N.J., Hardy, R.W., Socolich, M., Zuker, C.S. (1993). Arrestin function in inactivation of G protein-coupled receptor rhodopsin *in vivo*. *Science* 260: 1910-1916
- LeVine, H., Smith, D.P., Whitney, M., Malicki, D.M., Dolph, P.J., Smith, G.F., Burkhart, W., Zuker, C.S. (1990). Isolation of a novel visual-system-specific arrestin: an *in vivo* substrate for light-dependent phosphorylation. *Mech. of Dev.* 33: 19-25.
- Dolph, P.J., J.T. Huang, and R.J. Schneider. (1990). Translation by the adenovirus tripartite leader: elements which determine independence from cap-binding protein complex. *J. Virology* 64: 2669-2677.
- Zhang, Y., P.J. Dolph, and R.J. Schneider. (1989). Secondary structure analysis of the adenovirus tripartite leader. *J. Biol. Chem.* 264: 10679-10684.
- Dolph, P.J., V. Racaniello, A. Villamarin, F. Palladino, and R.J. Schneider. (1988). The adenovirus tripartite leader eliminates the requirement for cap-binding protein complex during translation initiation. *J. Virology* 62: 2059-2066.

## ABSTRACT

**Patrick Dolph** was born and grew up in Portland, Oregon, the middle child of three. His father was a dye maker in a box factory, and his mother was an administrative nurse, though she did not work while the children were young. Dolph can remember that from about the age of five he has wanted to be a scientist, though the particular area of his interest has changed. He began wanting to be an entomologist; he collected bugs and mounted them with the aid of his parents. In elementary school he had a fourth-grade teacher who inspired Dolph's interest in biology. In junior high school he became fascinated with the tide pool creatures he discovered while on family vacations in the San Juan Islands off Seattle, Washington, and decided to become a marine biologist. His high school had few science classes, but he took what he could, including the one biology class. The teacher of that class emphasized Mendel's genetics experiments, stirring up Dolph's enthusiasm, the enthusiasm that determined his future.

Dolph matriculated at Oregon State University, immediately declaring his major to be biology. He began his genetics classes as a sophomore, greatly influenced by Paul Roberts, a *Drosophila* geneticist who taught genetics of organisms. In his junior year, Dolph applied to work in Roberts' lab, but was rejected, so he began work in Dallice Mills' plant pathology lab, where he stayed for perhaps a year and a half. Though he had been on his high school's swim team, Dolph was not good enough to continue in college, but he established a number of good friendships.

After college Dolph worked in Michael Litt's lab at the Oregon Health Science Center. There he gained confidence he felt he lacked during his college career. He did his Master's work on the genetics of *Erwinia stewartii* at Ohio State University, working in David Coplin's lab. From there Dolph moved to New York University's Ph.D. program, where he studied adenovirus gene translation in Robert Schneider's lab. Dolph moved then to the University of California at San Diego, to Charles Zuker's lab, where he took up a postdoc, working on arrestin and the regulation of signal transduction in the *Drosophila melanogaster* visual system.

When he finished his postdoc, Dolph accepted an assistant professorship at Dartmouth. He continues his current research on cell death in photoreceptor cells; he plans to study the biochemistry and genetics of apoptosis in the retinal pathway. His days include publishing; teaching; seeking funding; and attempting to balance his work life with life in rural New Hampshire with his wife and two children.

## UCLA INTERVIEW HISTORY

### INTERVIEWER:

Andrea R. Maestrejuan, Interviewer, UCLA Oral History Program; B.S., Biological Sciences, University of California, Irvine, 1986; M.A., History, University of California, Riverside, 1991; C.Phil., History, University of California, Los Angeles, 2000.

### TIME AND SETTING OF INTERVIEW:

**Place:** Dolph's office at Dartmouth College

**Total number of recorded hours:** 5.07

**Persons present during interview:** Dolph 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' 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 Dolph 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 Dolph'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.

### ORIGINAL EDITING:

Carol Squires 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.

Dolph reviewed the transcript. He verified proper names and made a number of corrections and additions.

Carol Squires prepared the table of contents and index. William Van Benschoten, senior writer, assembled the interview history.

## TABLE OF CONTENTS

|  |    |
|--|----|
| Early Years  | 1  |
| Family background. Early schooling. Impact of religion on his life. His early interest in entomology and science. High school education in Portland, Oregon. Influence of Dolph's father. Influential teachers.  |    |
| College Years  | 18 |
| Majors in biology at Oregon State University. Works in Dallice I. Mills' plant pathology laboratory. Takes classes with <i>Drosophila</i> geneticist Paul A. Roberts; Roberts' influence. Dolph's college classes in genetics. College experiences.  |    |
| Graduate School Years  | 23 |
| Attends graduate school at Ohio State University as a master's degree candidate in David L. Coplin's laboratory. Graduate programs in plant pathology and in genetics at Ohio State. Works in Michael Litt's laboratory at the Oregon Health Science Center after college. A typical day during graduate school at Ohio State. Living in the Midwest. His master's research on the genetics of <i>Erwinia stewartii</i> , a bacterial corn pathogen. Attends New York University for his Ph.D., working on adenovirus gene translation in Robert J. Schneider's laboratory. The process of writing journal articles. Schneider's mentoring style.  |    |
| Postgraduate Years   | 37 |
| Dolph's neurobiology postdoctoral fellowship in Charles S. Zuker's laboratory, where he works on arrestin and the visual transduction system in <i>Drosophila melanogaster</i> . The Charles S. Zuker laboratory. Zuker's mentoring style.   |    |
| Faculty Years  | 49 |
| Dolph accepts a position at Dartmouth College. Setting up his laboratory. Dolph's current research on cell death in photoreceptor cells. Future research plans to study the biochemistry and genetics of apoptosis in the retinal pathway. The grant-writing process. Funding. Dolph's role in the lab. His assessment of his professional success. Teaching responsibilities. Living and working in rural New Hampshire. The tenure process at Dartmouth College. Dolph's wife and children; balancing family and career. The gender make-up of his laboratory; gender issues in science. Ethnic diversity in science and in his laboratory. Collaborations between academia and industry. Ethical questions in science. The role of the principal investigator in forming scientific public policy. Impact of the Pew Scholars Program in the Biomedical Sciences award on his work. |    |
| Index  | 97 |

## INDEX

### A

adenovirus, 33, 34, 39  
Alloway, Paul G., 64, 87  
apoptosis, 55, 56, 70  
*Arabidopsis*, 42, 73  
Arruda, Susan, 86

### B

bacterial pathogenesis, 52  
Benzer, Seymour, 38  
biochemistry, 18, 28, 52, 54, 57, 60, 61, 72, 77  
Boston, Massachusetts, 49, 90  
Boulder, Colorado, 49  
Buffalo, New York, 30

### C

*Caenorhabditi elegans*, 73  
Cancer Institute, 62  
CAP. *See* Committee Advisory to the President  
Chalfie, Martin, 37  
Chevron Oil Company, 6  
Cold Spring Harbor Laboratory, 68  
College of Wooster, 25  
Columbia River, 2  
Columbia University, 2, 37  
Columbus, Ohio, 25, 30  
Committee Advisory to the President, 81  
Coplin, David Louis, 28  
Cornell University, 49  
Corvallis, Oregon, 17  
Cowan, Nicholas J., 32, 33

### D

Dallas, Texas. *See*  
Dartmouth College, 1, 18, 26, 43, 46, 48, 49, 53, 61, 66, 69, 70, 72, 77, 79, 80, 81, 82, 84, 88, 89, 91, 92  
*Dartmouth Vox*, 88

Denver, Colorado, 6  
Discovery Channel, 94  
DNA, 24, 25, 27, 28, 42, 51  
Dolph, Cecilia Marcela (daughter), 8, 83  
Dolph, Clifford Robert (paternal grandfather), 2  
Dolph, Gregory Allan (brother), 5  
Dolph, Julie Ann (sister), 5  
Dolph, Margery Ann Pollman (mother), 1  
Dolph, Maria Josefina Vasquez (wife), 10  
Dolph, Robert Edward (father), 1  
Dolph, Ruth Clair Thompson (paternal grandmother), 2  
Dolph, Steve (son), 10, 83  
*Drosophila melanogaster*, 12, 19, 39, 41, 45, 49, 50, 72, 73, 75, 82  
Duke University, 49

### E

E. E. Just Program for Students in the Sciences, 89  
electrophysiology, 54, 72  
electroretinogram, 41  
endocytosis, 56, 70  
England, 3, 6  
entomologist, 11, 16  
ERG. *See* electroretinogram  
Eugene, Oregon, 49

### F

*Frontline*, 95

### G

genetics, 17, 18, 19, 20, 22, 23, 24, 27, 29, 30, 34, 39, 41, 42, 50, 57, 63, 65, 71, 72, 73, 76, 91  
Genetics Study Section, 63  
GI Bill (Servicemen's Readjustment Act), 4  
Goldendale, Washington, 2

## H

Harvard University, 54  
Henderson, Leslie P., 51  
Hercules, 69  
Hill, Samuel, 2  
Hitchcock Foundation, 62  
Howard Hughes Medical Institute, 59, 60  
hydrocracking, 6

## I

immunohistochemistry, 51

## J

Jan, Lily Y. and Yuh Nung, 37, 38  
Just, Ernest Everett, 89

## K

Karess, Roger E., 50, 82

## L

Langford, George, 89  
Litt, Michael, 24  
Los Angeles, California, 30, 49

## M

marine biology, 14, 17, 18  
Maryhill Museum of Fine Arts, 2  
Massachusetts Institute of Technology, 86  
Maue, Robert A., 51  
Mendel, Gregor Johann, 17  
microbiology, 27  
Mills, Dallice I., 19, 22  
milo, 4  
MIT. *See* Massachusetts Institute of Technology  
molecular biology, 20, 25, 29, 30, 32, 33, 39, 41, 72  
Montreal, Quebec, Canada, 94  
Morgan, Thomas Hunt, 44  
Mt. Hood Community College, 4

## N

National Eye Institute, 62

*National Geographic*, 15, 93, 94  
National Institutes of Health, 58, 59, 60, 62, 63, 67, 68, 93  
National Science Foundation, 63  
Nebraska, 1, 4  
nematode, 42  
neurobiology, 36, 37, 39, 41, 50, 51, 72  
New York City, New York, 30, 49, 79, 94  
New York University, 24, 30, 32, 34, 36, 37, 52  
NIH. *See* National Institutes of Health  
NSF. *See* National Science Foundation  
NYU. *See* New York University

## O

Ohio State Buckeye Extravaganza, 26  
Ohio State University, 22, 23, 24, 25, 29, 34, 35  
Ohio State University Agricultural Technical Institute, 25  
Ondek, Brian, 39  
Oregon, 94  
Oregon Health Science Center, 24  
Oregon State University, 17, 18, 19, 24, 26  
Osaki, Herb, 16  
OSU. *See* Ohio State University

## P

Pak, William L., 57  
Paris, France, 50  
PCR. *See* polymerase chain reaction  
Petrie, Ross, 16  
Pew Scholars in the Biomedical Sciences, 1, 32, 50, 58, 62, 69, 81, 83, 92  
phosphorylation, 55  
photoreceptor cell, 55, 56  
plant pathology, 19, 22, 23, 25, 28, 29, 32  
Pollman, Lois Elizabeth Thompson (maternal grandmother), 3  
Pollman, Walter Carl (maternal grandfather), 3  
polymerase chain reaction, 42, 65, 67  
polysaccharide, 28, 29, 34  
Portland, Oregon, 1, 2, 4, 5, 6, 7, 9, 11, 26, 33

President's Council on Bioethics, 91  
prion proteins, 75  
protein  
  arrestin protein, 39, 40, 41, 43, 48, 55, 69,  
  70  
Providence Hospital, 4  
PrP. *See* prion proteins  
*Pseudomonas aeruginosa*, 22  
Public Broadcasting System, 94

## R

*ras*, 32  
restriction fragment length polymorphisms,  
  24  
retinal degeneration, 48, 55, 57, 70  
retinitis pigmentosa, 58, 62  
RFLP. *See* restriction fragment length  
  polymorphisms  
rhodopsin, 40, 55, 57, 58, 69, 70, 74  
Rimel, Rebecca, 92  
RNA  
  messenger RNA, 20  
Roberts, Paul A., 19  
Rocky Mountains, 26  
Roswell Park Cancer Institute, 30  
Rubin, Gerald M., 37

## S

San Diego, California, 7, 49, 79, 83, 90  
San Francisco, California, 49  
San Juan Islands, 13  
Schneider, Robert J., 32, 33, 35, 36, 37, 50,  
  52, 82  
South Carolina, 6  
*Strongylocentrotus purpuratus*, 13  
Supattapone, Surachai, 75

## T

tubulin, 32, 33

## U

University of California at Irvine, 23  
University of California at Los Angeles, 30,  
  53  
University of California at San Diego, 78  
University of Connecticut Health Center, 49  
University of New Hampshire, 49  
University of Oregon, 4, 17, 23  
University of Texas, 53  
University of Washington, 6, 17

## V

*Vision Research*, 82  
Visual Sciences C Study Section, 62

## W

Washington, 1  
Western blot, 43, 44, 56  
WISP. *See* Women in Science Project  
Women in Science Project, 89, 90  
Wooster, Ohio, 25  
World War II, 4

## X

Xia, Luxi, 86

## Z

Zuker, Charles S., 35, 36, 37, 38, 42, 43, 45,  
  46, 47, 51, 54, 57, 60, 63, 65, 67, 69, 73,  
  74, 81, 90