

CHEMICAL HERITAGE FOUNDATION

RICHARD W. CARTHEW

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Helene L. Cohen

at

University of Pittsburgh
Pittsburgh, Pennsylvania

on

2, 3, and 5 July 2001

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

ACKNOWLEDGEMENT

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REFORMATTING:

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Attention: Victoria Steele, Ph.D.


If to Interviewee: Richard W. Carthew
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Pittsburgh, Pennsylvania 15260

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

INTERVIEWEE

THE REGENTS OF THE UNIVERSITY
OF CALIFORNIA


(Signature)


(Signature)

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Date July 2, 01

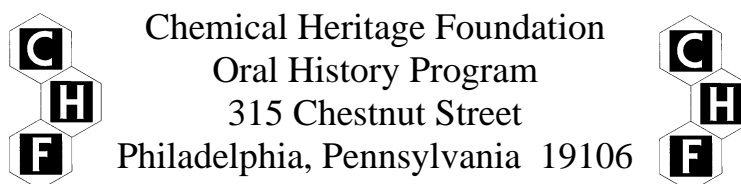
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RICHARD W. CARTHEW

1956 Born in Toronto, Canada, on 5 September

Education

1978 B.Sc., Biology, Queens University
1980 M.Sc., Botany, University of Toronto
1987 Ph.D., Biology, Massachusetts Institute of Technology

Professional Experience

1980-1982 University of Toronto
Research Technician, Banting and Best Department of
Medical Research

1987-1992 University of California, Berkeley
Postdoctoral Fellow, Department of Molecular and
Cell Biology

1992-1998 University of Pittsburgh
Assistant Professor, Department of Biological Sciences
1998-2001 Associate Professor, Department of Biological Sciences
2001 Professor, Department of Biological Sciences

1995-1999 Chiron Corporation
Scientific Consultant

2001-present Northwestern University
Professor, Department of Biochemistry, Molecular
Biology, and Cell Biology

Honors

1990-1992 Howard Hughes Postdoctoral Fellowship
1995-2000 Pew Scholar in the Biomedical Sciences
1997 Chancellor's Distinguished Research Award, University of
Pittsburgh

Selected Publications

- Carthew, R.W., 1980. The thermodynamics of photosynthetic adaptation to photon fluence rate in the cyanophyte. *Oscillatoria limnetica*. *Photosynthetica* 14:204-12.
- Sopta, M., R.W. Carthew, and J. Greenblatt, 1985. Isolation of three proteins that bind to RNA polymerase II. *Journal of Biological Chemistry* 260:10353-360.
- Carthew, R.W., L.A. Chodosh, and P.A. Sharp, 1985. An RNA polymerase II transcription factor binds to an upstream element in the adenovirus major late promoter. *Cell* 43:439- 48.
- Chodosh, L.A. et al., 1987. The adenovirus major late transcription factor activates the rat gamma-fibrinogen promoter. *Science* 238:101-04.
- Carthew, R.W. and G.M. Rubin, 1990. Seven in absentia, a gene required for specification of R7 cell fate in the *Drosophila* eye. *Cell* 63:561-77.
- Hariharan, I.K., R.W. Carthew, and G.M. Rubin, 1991. The *Drosophila* Roughened mutation: activation of a rap homolog disrupts eye development and interferes with cell determination. *Cell* 67:717-22.
- Kauffmann, R.C. et al., 1995. Activated *Drosophila Ras* is selectively suppressed by isoprenyltransferase inhibitors. *Proceedings of the National Academy of Sciences, USA* 92:10919-923.
- Li, S. et al., 1997. Photoreceptor cell differentiation requires regulated proteolysis of the transcriptional repressor Tramtrack. *Cell* 90:469-78.
- Kennerdell J. and R.W. Carthew, 1998. Use of dsRNA-mediated genetic interference to demonstrate that *frizzled* and *frizzled2* act in the Wingless pathway. *Cell* 95:1017-26.
- Kennerdell J. and R.W. Carthew. 2000. Heritable gene silencing in *Drosophila* using double-stranded RNA. *Nature Biotechnology* 18:896-98.
- Xu, C. et al., 2001. Overlapping activators and repressors delimit transcriptional response to receptor tyrosine kinase signals in the *Drosophila* eye. *Cell* (in press).

ABSTRACT

Richard W. Carthew was born and raised in Toronto, Canada, the second youngest, and only son, of four siblings. His father received a degree in civil engineering from Queen's University and worked for the province-run hydro-electric utility, Ontario Hydro; his mother was a homemaker. From an early age he was interested in exploring the great outdoors—studying insects, climbing trees, and the like—he played piano, and tobogganed. He excelled in school until junior high and high school when he found the subjects uninteresting, though he regained his interest during his senior year, especially due to classes in science (chemistry and biology) and mathematics.

Carthew entered Queen's University in Kingston, Ontario, Canada with an interest in ecology; he had the opportunity to work for Seward R. Brown, an ecological paleontologist. Though he was hoping to be in the field for his senior thesis work, most of the research on which Brown wanted Carthew to work was laboratory based, serving to further his interest in science and resulting in a publication on the thermodynamics of photosynthetic adaptation to photon fluence rate in the cyanophyte. After completing his undergraduate degree he went on to study at the Royal Conservatory of Music while also pursuing a master's in botany at the University of Toronto. Then he became a research technician in Jack F. Greenblatt's laboratory at the Banting and Best Department of Medical Research at the university and contributed to work isolating three proteins that bind to RNA polymerase II; Greenblatt encouraged him to apply to graduate school. He chose to attend the Massachusetts of Technology and selected to study in Phillip A. Sharp's laboratory, working on transcription regulation (also researching with and training Stephen Buratowski, Pew Class of 1995). While in Sharp's lab, though, Carthew began to develop an interest in neurobiology, deciding, then, to pursue a postdoctoral fellowship with Gerald M. Rubin at the University of California, Berkeley. From there he accepted a faculty position at the University of Pittsburgh, where he studied the *ras* oncogene; his work on *ras* led to consulting work for the Chiron Corporation.

The interview ends with Carthew's thoughts on the Pew Scholars Program in the Biomedical Sciences; race and gender issues in science; combining the teaching of the history of science with methodological and technical approaches; using kits in the lab; his love of sailing; and the ways in which fatherhood has changed his views about his career. The interview concludes with a discussion of his current research on RNAi and *frizzled*; the application of his work to Alzheimer's disease; patents; competition and collaboration; ethics, laboratory practice, and laboratory research; and his pending move to Northwestern University.

UCLA INTERVIEW HISTORY

INTERVIEWER:

Helene L. Cohen, Interviewer, UCLA Oral History Program. B.S., Nursing, UCLA; P.N.P., University of California, San Diego/UCLA; M.A., Theater, San Diego State University.

TIME AND SETTING OF INTERVIEW:

Place: Carthew's office, University of Pittsburgh.

Dates, length of sessions: July 2, 2001 (115 minutes); July 3, 2011 (149); July 5, 2001 (176).

Total number of recorded hours: 7.3

Persons present during interview: Carthew and Cohen.

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, Cohen held a telephone preinterview conversation with Carthew 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 Carthew's file at the Pew Scholars Program office in San Francisco, including his/her proposal application, letters of recommendation, and reviews by Pew Scholars Program national advisory committee members. For technical background, Cohen consulted J.D. Watson et al., *Molecular Biology of the Gene*. 4th ed. Menlo Park, California: Benjamin/Cummings, 1987; Bruce Alberts et al., *Molecular Biology of the Cell*. 3rd ed. New York: Garland, 1994; Horace F. Judson, *The Eighth Day of Creation*. New York: Simon and Schuster, 1979; and recent issues of *Science* and *Nature*.

The interview is organized chronologically, beginning with Carthew's childhood in Toronto, Canada, and continuing through his undergraduate work at Queen's University, his master's work at University of Toronto, his work as a research technician in Jack Greenblatt's lab at Banting and Best Department of Medical Research, his Ph.D. studies at Massachusetts Institute of Technology, his postdoc at University of California, Berkeley, and the establishment of his own lab at University of Pittsburgh. Major topics discussed include his research in Phillip A. Sharp's and Gerald M. Rubin's labs, his work at University of Pittsburgh, and his current research on RNAi and *frizzled*.

ORIGINAL EDITING:

Gail Ostergren, editor, 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

Carthew reviewed the transcript and made a number of corrections.

Gail Ostergren prepared the table of contents. Ostergren assembled the biographical summary and interview history. Victoria Simmons, editorial assistant, compiled the index.

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