

CHEMICAL HERITAGE FOUNDATION

**YASUSHI HIROMI**

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview  
Conducted by

Andrea R. Maestrejuan  
at

Princeton University  
Princeton, New Jersey

on

21 and 22 November 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 © 1999, 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. R961128

This Interview Agreement is made and entered into this 4<sup>th</sup> day of February, 1996 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 YASUSHI HIROMI, having an address at Department of Molecular Biology, Princeton University, Washington Road, Princeton, New Jersey 08544-1014, hereinafter called "Interviewee."

Interviewee agrees to participate in a series of University-conducted tape-recorded interviews, commencing on or about November 21, 1996, and tentatively entitled "Interview with Yasushi Hiromi" 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 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: 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: Yasushi Hiromi  
Department of Molecular Biology  
Princeton University  
Washington Road  
Princeton, New Jersey 08544-1014

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

INTERVIEWEE

THE REGENTS OF THE UNIVERSITY  
OF CALIFORNIA

  
(Signature)

  
(Signature)

Yasushi Hiromi  
(Typed Name)

Carli V. Rogers  
(Typed Name)

Department of Molecular  
Biology

Copyright Officer  
(Title)

Washington Road  
(Address)

Princeton, NJ 08544-1014

Date 11/21/96

Date January 2007

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

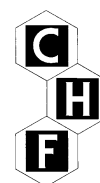
One may view, quote from, cite, or reproduce the oral history with the permission of CHF.

**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:

Yasushi Hiromi, interview by Andrea R. Maestrejuan at Princeton University, Princeton, New Jersey, 21—2 november 1996 (Philadelphia: Chemical Heritage Foundation, Oral History Transcript # 0434).



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.

## YASUSHI HIROMI

1954 Born in Osaka, Japan, in February

### Education

1976 B.S., University of Tokyo  
1978 M.S., University of Tokyo  
1982 Ph.D., University of Tokyo

### Professional Experience

1982-1983 University of Tokyo, Tokyo, Japan  
Postdoctoral Fellow

1983-1986 University of Basel, Biozentrum, Basel, Switzerland  
Postdoctoral Fellow

1987 Stanford University, Palo Alto, California  
Postdoctoral Fellow

1988-1990 University of California, Berkeley, Berkeley, California  
Postdoctoral Fellow

1990-1996 Princeton University, Princeton, New Jersey  
Assistant Professor  
1996-present Visiting Professor

1996-present National Institute of Genetics, Mishima, Japan  
Professor

### Honors

1978-1981 Predoctoral Fellowship, Nihon-Ikueikai, Japan  
1982-1983 Postdoctoral Fellowship, Japanese Society for Promotion of Science  
1987-1989 Postdoctoral Fellowship, American Cancer Society, California Division  
1991-1995 Pew Scholar in the Biomedical Sciences

### Selected Publications

- Hiromi, Y. et al., 1985. Control elements of the *Drosophila* segmentation gene *fushi tarazu*. *Cell* 43:603-13.
- Hiromi, Y. et al., 1986. Germline transformation with *Drosophila* mutant actin genes induces constitutive expression of heat shock genes. *Cell* 44:293-301.
- Hiromi, Y. and W.J. Gehring, 1987. Regulation and function of the *Drosophila* segmentation gene *fushi tarazu*. *Cell* 50:963-74.
- Doe, C.Q. et al., 1988. Expression and function of the segmentation gene *fushi tarazu* during *Drosophila* neurogenesis. *Science* 239:170-75.
- Mlodzik, M. et al., 1990. The *Drosophila seven-up* gene, a member of the steroid receptor gene superfamily, controls photoreceptor cell fates. *Cell* 60:211-24.
- Hiromi, Y. et al., 1993. Ectopic expression of *seven-up* causes cell fate changes during ommatidial assembly. *Development* 118:1123-35.
- Kramer, S. et al., 1995. Cell fate control in the *Drosophila* retina by the orphan receptor *seven-up*: Its role in the decisions mediated by the ras signaling pathway. *Development* 121:1361-72.
- Hiromi, Y. and West, S.R. (submitted). Autonomous activities of the *Drosophila* nuclear receptor *seven-up*.



## ABSTRACT

**Yasushi Hiromi** was born in Kaizuka City, in Osaka Prefecture, Japan, the elder of two sons. His father was a biochemist and his mother a housewife. When Yasushi was about ten his father took a postdoc at Yale University, and the family lived in New Haven, Connecticut, for a year. There the two boys learned to speak idiomatic English. As a youngster Yasushi was fascinated by figuring out how things work. He was always good in mathematics and liked physics and chemistry. This desire to understand things is what drew him to science. When he entered the University of Tokyo his declared major was physics, but in his last year he did a rotation in *Drosophila* genetics in Yoshiki Hotta's lab, and he decided to become a biologist. In Japan it is usual to stay in the same lab for graduate school, and Yasushi liked *Drosophila* genetics, so he stayed in Hotta's lab. There he worked on phosphorylation and eclosion, and he found the heat shock response at room temperature. While in that lab he met Walter Gehring, in whose lab in Switzerland he took a postdoc. There he discovered the *ftz* (*fushi tarazu*) gene (*fushi tarazu* means "not enough segments"). This led to his career interest, the developing central nervous system. He accepted a second postdoc in Corey Goodman's lab at Stanford and then UC Berkeley, where he worked with Chris Doe on the *seven-up* gene, which he took with him when he joined the faculty at Princeton University. He wanted to learn about the relationship between ligand and receptor and how that relationship influenced the function of a gene. Each round of experiments required three or four months. He did this for five years, never obtaining the dispositive result for which he hoped. He did, however, get publications in very good journals. Although he is going back to Japan, to the National Institute of Genetics, he says he still prefers to do risky science.

Hiromi still works at the bench. He likes a small lab because he then does have time to work at bench, rather than overseeing lab members. He looks forward to the challenge of a different system of doing science in Japan, where there is less emphasis on grant-writing, and he can exploit the joy he feels in solving problems. He will take the *seven-up* gene and a postdoc back with him; this person will have the position of *joshu*.

Hiromi makes a point of having dinner and spending the early evenings and some weekend time at home with his wife and children. Balancing this time away from the lab with this family time means often working in the middle of the night, but he believes it is important to be with his family as much as he can.

## UCLA INTERVIEW HISTORY

### INTERVIEWER:

Andrea R. 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:** Hiromi's office, Princeton University.

**Dates, length of sessions:** November 21, 1996 (157 minutes); November 22, 1996 (60).

**Total number of recorded hours:** 3.6

**Persons present during interview:** Hiromi 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 Hiromi to obtain written background information (curriculum vitae, copies of published articles, etc.) and to agree on an interviewing schedule. She also reviewed prior Pew scholars' interviews and the documentation in Hiromi'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 general background on the recent history of the biological sciences, 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*. 3rd ed. New York: Garland.

The interview is organized chronologically, beginning with Hiromi's childhood in Japan and continuing through his education at Tokyo University, his biomedical training at the Walter J. Gehring lab in Switzerland, his postdoctoral career at the University of California, Berkeley, and his career as a principal investigator at Princeton University.

Major topics discussed include Hiromi's research on the function and expression of *ftz* during *Drosophila* neurogenesis, his research on *seven-up*, and differences in the structure and funding of science in the United States, Switzerland, and Japan.

## 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.

Hiromi did not review the transcript and therefore some names have not been verified.

William Van Benschoten, editor, prepared the table of contents, interview history, and biographical summary.

Aileen Tu, Gold Shield intern, compiled the index.

## TABLE OF CONTENTS

Early Years	1
Parents and brother. Growing up in Japan. Father a biochemist. A childhood year at Yale University. Liking to solve problems. Liking physics and chemistry. Good at mathematics. Long commute to the competitive junior high school. Learning photography from father. Competitive high school, mathematics and science curriculum.	
College Years	3
Attends University of Tokyo, as it is the best university in Japan. Physics major. Rotation in <i>Drosophila</i> genetics causes him to switch to biology in graduate school. Works in Yoshiki Hotta's lab.	
Graduate School Years	5
Customary to stay in same lab for graduate school. Phosphorylation and eclosion. Heat shock response at room temperature.	
Postgraduate Years in Japan	19
One and one-half years in Hotta's lab. Molecular analysis. Meets Walter Gehring. <i>Ftz</i> ("not enough segments") gene in <i>Drosophila</i> neurogenesis. Transgenic animals not allowed in Japan. The <i>jonshu</i> position. Marriage.	
First Postdoc	13
Goes to Zurich, Switzerland, to Gehring's lab. Discovers large <i>Drosophila</i> genetics population in world. Collaborates with Corey Goodman's student Chris Doe at University of California, Berkeley.	
Second Postdoc	17
Goes to Goodman's lab to enhance collaboration. Takes <i>ftz</i> gene with him. Discovery of <i>seven-up</i> gene. Publications slow but in excellent journals.	
Faculty Years	38
Accepts assistant professorship at Princeton University. Continues study of central nervous system in <i>Drosophila</i> . Wants to find ligands for new receptors, but wants even more to understand the relationship between the interaction of the ligand and receptor and the biological function of the gene.	
General Thoughts	48
About to go back to Japan's National Institute of Genetics. Differences between American and Japanese systems of science. Writing grants. Publishing. Joy of benchwork. Sharing his life with wife and children.	
Index	64

## INDEX

### A

actin, 6, 8, 9, 10, 13, 22  
Akam, Michael, 11  
*Antennapedia*, 11, 12

### B

Basel, Switzerland, 55, 61  
Benzer, Seymour, 4, 32

### C

*cactus*, 62  
Carroll, Sean B., 17  
central nervous system, 17, 18, 52, 56, 57  
CNS. *See* central nervous system  
Cold Spring Harbor Laboratory, 58  
Cole, Michael D., 62

### D

DNA, 17, 39, 40, 42  
Doe, Chris Q., 18, 52, 53  
*Drosophila*, 4, 5, 13, 30, 33, 49, 51, 53, 57,  
58, 62

### E

eclosion, 7, 9  
EMBL. *See* European Molecular Biology  
Laboratory  
enhancer trap, 53, 55, 57, 61, 62, 63  
European Molecular Biology Laboratory,  
59  
*even-skipped*, 52

### F

*ftz*. *See* *fushi tarazu*  
Fujita, Shinoba, 6  
*fushi tarazu*, 12, 13, 15, 17, 18, 19, 20, 21,  
22, 35, 38, 51, 52, 53, 55, 61

### G

Gehring, Walter J., 10, 11, 12, 16, 19, 20,  
33, 35, 36, 53, 54, 56, 61  
Germany, 13, 14, 38  
glia, 61  
Goodman, Corey S., 17, 18, 38, 45, 51, 52,  
53, 55, 57, 58, 59, 61

### H

Hafen, Ernst, 11, 20  
Heidelberg, Germany, 59  
helix-loop-helix, 62  
Hiromi, Akira (brother), 2, 25  
Hiromi, Hiroku (wife), 10, 35, 36, 37  
Hiromi, Keitaro (father), 2, 24  
HLH. *See* helix-loop-helix  
Hogami, Kaname, 6  
Hogness, David S., 11  
homeobox, 17, 20, 35, 53  
Hotta, Yoshiki, 4, 6, 30, 32, 33, 36, 37

### J

Jans, Lily Weh, 55  
Jans, Yuh Nung, 55  
Japan, 1, 2, 3, 4, 9, 10, 13, 14, 15, 19, 22,  
26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37,  
44, 46, 47, 48, 50, 59, 60, 61, 62  
*joshu*, 32, 34, 60

### K

Kaizuka City, 1  
Karess, Roger E., 45  
Kloter, Uvs, 16  
Kramer, Susanne, 62  
Krasnow, Mark A., 62  
Kuroiwa, Atsushi, 11, 15, 20, 61  
Kyoto University, 24, 29

### L

*lacZ*, 15, 16, 18, 19, 20, 40, 53, 54

Laemmli, Ulrich K., 6  
Lis, John T., 15

## M

methionine, 6, 7, 8  
Mlodzik, Marek, 56, 58, 59, 62  
mosaic fate mapping technique., 4  
myosin light chain, 7, 9

## N

National Institute of Genetics, 46, 47  
National Institutes of Health, 43, 44, 45, 48  
New Haven, Connecticut, 2  
NIH. *See* National Institutes of Health  
Nobel Prize, 11  
Nüsslein-Volhard, Christiane, 11, 20, 62

## O

O'Farrell, Patrick H., 6  
O'Kane, Cahir J., 54, 63  
ommatidium/a, 39, 57, 58  
Osaka prefecture, 1  
Osaka University, 29

## P

P element, 13, 14, 15, 53, 54  
Paris, France, 45  
Pew Scholars in the Biomedical Sciences,  
20, 38, 40, 43, 44, 46, 48  
phosphorylation, 7, 9  
Princeton University, 3, 37, 43, 44, 45, 46,  
47, 49, 59, 62

## R

rhabdomere, 57  
RNA, 8, 11, 16  
Rubin, Gerald M., 13, 56, 58

## S

Salton, Stephen R.J., 51

Schedl, Paul, 11  
Schüpbach, Gertrud M., 19  
Scott, Matthew P., 17  
*seven-up*, 39, 41, 55, 56, 58, 62  
*sex cone reduced*, 54  
Spradling, Allan C., 13  
Stanford University, 51, 52, 55, 62  
Switzerland, 10, 18, 19, 34, 35, 36, 37, 38,  
44, 61

## T

Tomizawa, Jun-Ichi, 48  
Tübingen, Germany, 62

## U

United States of America, 2, 5, 19, 20, 24,  
25, 27, 31, 33, 34, 35, 37, 44, 45, 46, 47  
University of Basel, 10  
University of Basel Biozentrum, 33, 53  
University of California, Berkeley, 44, 51,  
55, 59  
University of California, San Francisco, 55  
University of Tokyo, 3, 29, 31

## V

vitelline, 15

## W

Wakimoto, Barbara T., 12  
Weber, Ursula, 58  
Western blot, 16, 17  
Wieschaus, Eric F., 11, 20, 49  
World War II, 14

## Y

Yale University, 2, 10

## B

$\beta$ -galactosidase, 15, 16, 17, 19, 40, 53